December 16, 1963

Mr. Harry Gilbert
Blonder-Tongue Electronics
9 Alling Street
Newark 2, New Jersey

Re: U.S. Application S.N. 325,511
for "Directive Antenna"
(Blonder Schenfeld)

Dear Harry:

We enclose for your file a copy of the specification, claims and drawing in connection with the above-numbered application, which application was filed on November 21, 1963.

Yours very truly,

RINES AND RINES

By_____

RR/BD
Enc.
cc: Mr. I. S. Blonder

P.S.

Dear Ike:

Bob plans to add claims directed to the modification shown him on December 4, 1963.

Add P/S

IK:

Bot plans to add
closure clauses to the
modification clause in
the December 4, KC3

Claude Blanda Band

in Log Cabin

R 24 Gene Chan, Bottom Billy, Lead Singing

In Dixon model Log Cabin.

Blanda Band at one time

was Parallel Army

Field Band Leader.

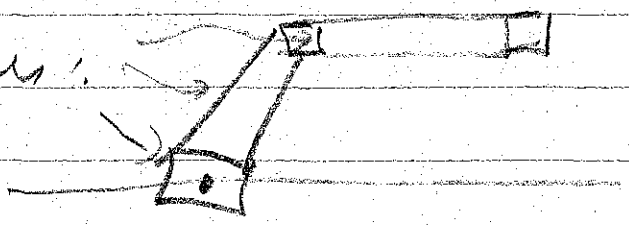
Claude is not a

Dec 4 '63 – Guy

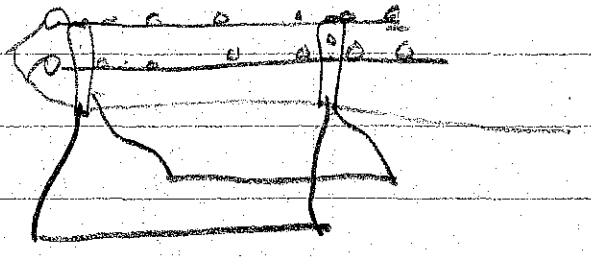
In Blonder new antenna applic. – prepare a claim just to H-structure without changing end. Also prepare claim with prior specs of H-elements with means (metal-wire means) for support antenna connected with at least one of above means.

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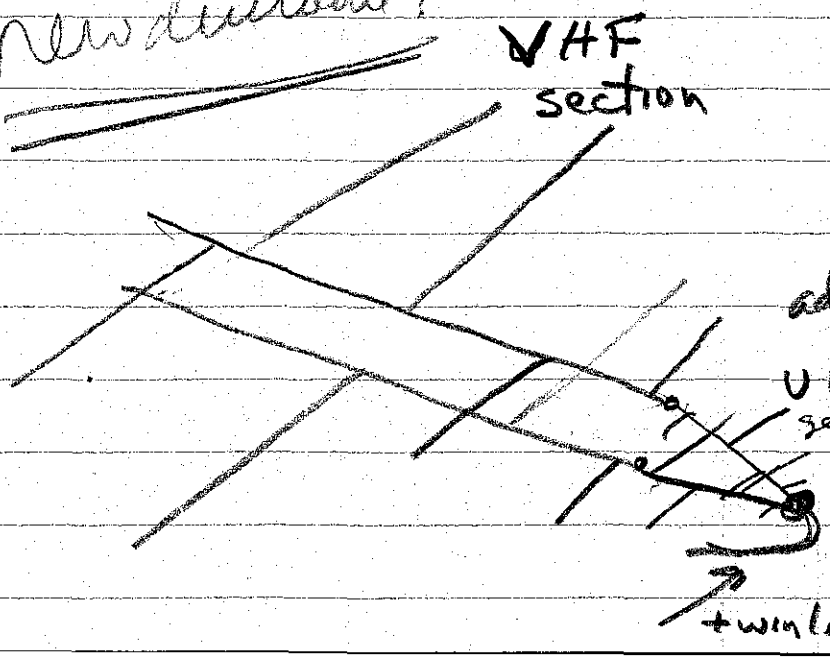
Bars:



Will give each corner wire



New drawing:



Dec 4 63

Witnessed / read and understood by Norman Blonder Dec 11 '63

← tapered for a match

antenna element clamp. Dec 4 '63

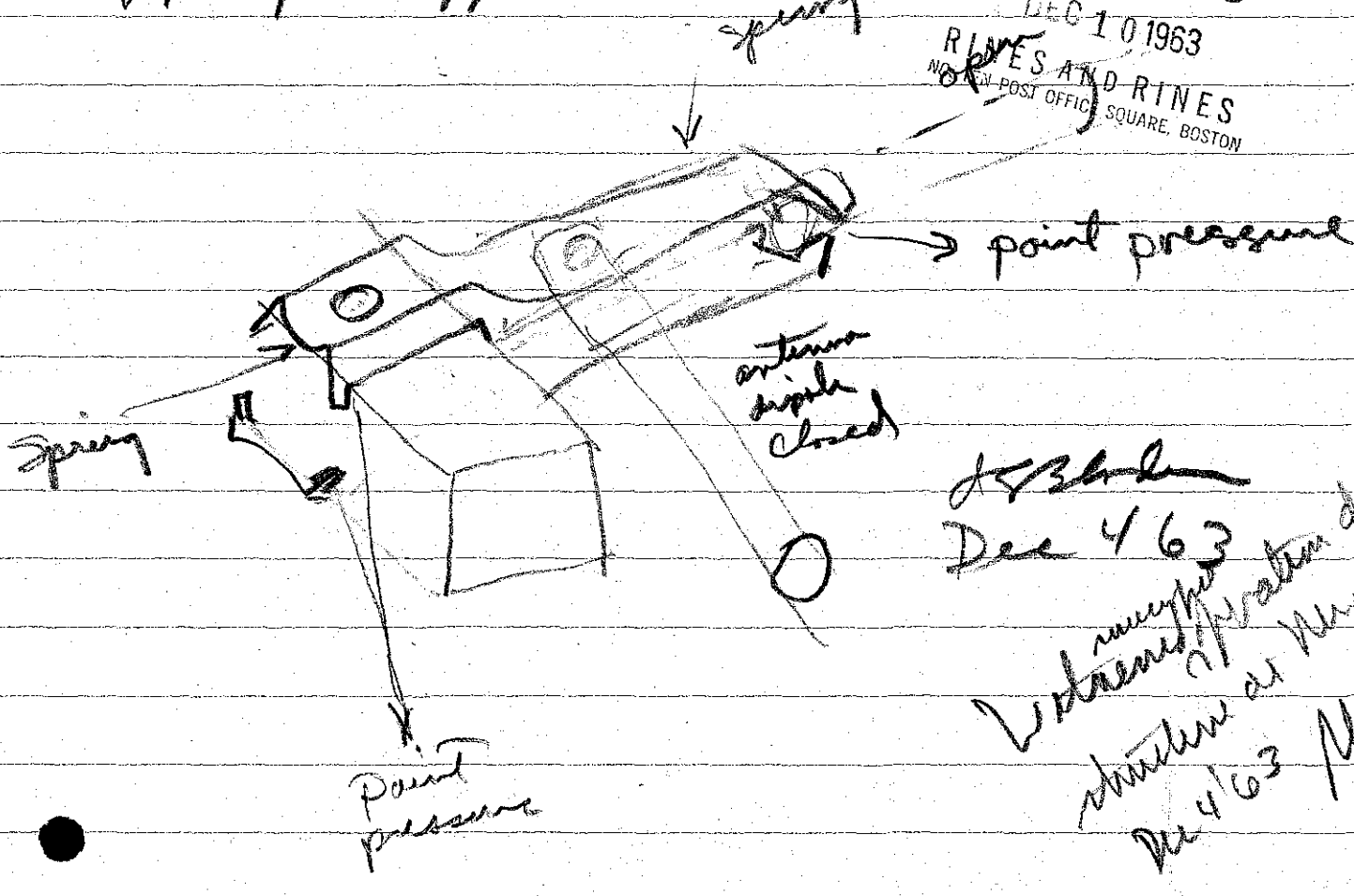
(board mounting & interconnecting antennas power-dividers & other connections for antenna elements)

Blenden & Helmut Schneider

Show 1st working model, Fittings complete antenna elements & the tubes & rods

Simple application:

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NORTH POST OFFICE SQUARE, BOSTON



Dec 4 63

Witnessed & read by the inventors & Mr. Rines at Rines & Rines Dec 4 '63

FORM P.O.-103(a)
(7-1-55)

FILING RECEIPT

U. S. DEPT. OF COMMERCE
PATENT OFFICE

Receipt is acknowledged of this patent application identified at right. It will be considered in its order and you will be notified as to the examination thereof.

Commissioner

(Over)

DIV. NO.	FILING DATE	SERIAL NO. (Series of 1960)
250	NOV. 21, 1963	325 511

cards & made out

BLONDER, ISAAC S. OF WEST ORANGE, N. J.
SCHENFELD, ABRAHAM OF NEW YORK, N. Y.

APPLICANT

DIRECTIVE ANTENNA

INVENTION

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DEC 9 1963
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DRAWINGS	EXTRA CL'S	FILING FEE	TRANSACTION	ATT'Y DK.
1		$30	64955	

RINES AND RINES
TEN POST OFFICE SQUARE, ROOM 1318,
BOSTON 9, MASS.

Mailed to P.O. 11/20/63

DIRECTIVE ANTENNA

The present invention relates to directive antennas and, more specifically, to antennas adapted for receiving very high frequencies, such as the ultra-high-frequency television band.

Numerous types of antennas have been evolved for broad-band directive radio and television reception including driven arrays, Yagi-type arrays, log periodic linear and V-type antennas, helical antennas and other configurations. The problems of mounting such antennas upon masts for outdoor operation or upon portable structures adapted for directional adjustment in connection with indoor reception have, however, long plagued the art; the mounting and adjusting structures introducing "ghosts" and other deleterious electrical field-pattern aberrations over the band. It is to the improvement of such mounting structures and the minimizing of electrical interfering effects over a wide band of frequencies, including stabilizing of outdoor performance and providing for ready adjustability in indoor performance, that the present invention is primarily directed.

A further object of the invention is to provide a new and improved antenna particularly adapted for ultra-high-frequency television reception.

Still another object is to provide a novel antenna of improved performance for more general use, also.

Other objects will be made more evident hereinafter and will be particularly pointed out in the appended claims. In summary, however, the invention contemplates

relative orientations without being confined to actual direction. Similarly, though the invention is described in connection with radio-wave reception, the antenna may also be used for transmission, if desired, as is well known.

Unlike prior-art arrays, including Yagi arrays, conventional log-periodic structures and the like, first and second pluralities of horizontal dipole elements 5, 7, 9...11 and 5', 7', 9'...11' are provided, lying in corresponding first and second vertically spaced horizontal planes I and I' containing the respective conductors 1 and 1'. The dipole elements are shown extending from opposite sides of each conductor at successive points therealong. The dipole elements connected to one conductor, moreover, extend in opposite horizontal directions to the corresponding dipole elements of the other conductor (such as 5 to the right, 5' to the left; 7 to the right, 7' to the left; and so on). The length of the dipole elements preferably successively increases from one end (5, 5' being shortest) towards the other end (11, 11' being longest), as is well known, to provide directivity. A parallel-wire transmission line TL is connected at looped terminal portions 1'' and 1''' beyond the clamp 2, extending outside or to the left of the smallest dipole elements 5, 5'. The line TL may be supported below the antenna by depending guides 2' and 4' in the respective clamps 2 and 4, the latter being shown positioned near the largest dipole elements 11, 11'.

The antenna of Fig. 1 is mounted upon a mast M through the use of pairs of horizontally spaced conductor-loop extensions 10 and 10', shown extending to the right beyond the longest dipole elements 11, 11'. The extensions 10, 10', respectively, terminate in upwardly and downwardly extending vertical loops 12 and 12' that may be transversely

curved to fit the mast M, as shown, and are securely mechanically strapped at 14 and 14' to the mast to hold the system 1-1' in rigid spaced-apart relation at the mast end. Further to aid in mechanical stability, the extension 10', while in part initially extending in the lower horizontal plane I', diverges downwardly at 10''. Fortuitously, this mechanical stability-providing diverging construction has been found minimally to affect the electrical field pattern, particularly if the length of the extension between the longest elements 11, 11' and the mast M is made comparable to the separation along conductors 1 and 1' of the last dipole elements 11 from the next-to-the last element, to its left in Fig. 1. Minimal field aberrations and "ghost" reflections over the complete ultra-high-frequency band, for example, has been thus attained with the above construction, together with satisfactory broad-band impedance matching, provided further that the vertical separation distance of the rigid conductors 1, 1' is kept less than the average distance between successive dipole elements (preferably the order of an inch for UHF band operation), and which, in turn, is kept much less than the wavelengths involved, as is well known. At the UHF channel 47 frequency, for example, (671 megacycles) a 20 decibel front-to-back ratio has been obtained with this construction, providing about a 36-degree half-power horizontal beam width and no detectable forward secondary lobes.

This same general type of construction has also been found admirably suited for indoor direction adjustable antennas, as shown in Fig. 2. In this embodiment, however, the small-dipole end of the antenna is used not only for the

connection to the transmission line, but also for the support-providing extensions. These extensions are illustrated as rigid conductors 20 and 20' depending at preferably an acute angle below the antenna at the insulating clamp 2 and slightly diverging for mechanical and impedance-matching purposes, being clamped at their bottom or free ends by a further insulating clamp 6. The transmission line TL is thus connected to the conductors 1 and 1' by these combined extension-supporting and transmission-line feed members 20, 20'. The clamp 6 is pivoted at 6' to a bracket carried by a base 22 so that the members 1-1'-20-20' may be adjusted as a unit for maximizing reception. For both electrical impedance-matching purposes and appropriate pivoting action for reception-direction adjustment, the length of the preferably diverging extension lines 20, 20' is made substantially equal to the length of the rigid antenna-supporting conductors 1, 1'.

If VHF reception is also to be provided, it has been found that minimal interference is caused by the antenna of the present invention if V-type VHF dipoles 30 are mounted on the base forward of the pivoted clamp 6 and with a sufficient included angle in the V to contain the array of the invention.

Further modifications will occur to those skilled in the art and all such are considered to fall within the spirit and scope of the invention as defined in the appended claims.

What is claimed is:

1. An antenna for ultra-high-frequency operation and the like, having, in combination, a pair of rigid conductors held spaced a predetermined vertical distance apart in a vertical plane, first and second pluralities of horizontal dipole elements lying in corresponding first and second vertically spaced horizontal planes containing the respective conductors, the dipole elements extending from opposite sides of each conductor at successive points therealong with dipole elements connected to one conductor extending in opposite horizontal directions to the corresponding dipole elements of the other conductor, the length of the dipole elements successively increasing from one end of the conductors towards the other end thereof, means for connecting a parallel-wire transmission line to the said one end of the conductors and means for mounting the antenna comprising a further pair of rigid diverging conductive extensions of the said conductors mechanically secured in rigid spaced-apart relation at an end thereof.

2. An antenna as claimed in claim 1 and in which the said vertical distance is less than the distances between the said successive points.

3. An antenna as claimed in claim 1 and in which the said diverging conductive extensions are provided at the said other end of the pair of rigid conductors and the mechanical securing means comprises mast-strapping means.

4. An antenna as claimed in claim 3 and in which the said extensions each comprise a pair of horizontally spaced conductors terminally provided with a vertical loop for strapping against the mast.

5. An antenna as claimed in claim 4 and in which one of the said extensions extends to the mast in the said horizontal plane of its rigid conductor and the other extension in part extends toward the mast in the said horizontal plane of its rigid conductor but then diverges therefrom.

6. An antenna as claimed in claim 4 and in which the distance of the said mast-strapping loops from the said other end is comparable to the distance between the longest and next-to-longest pairs of dipole elements of the antenna.

7. An antenna as claimed in claim 1 and in which the spacing means holding the rigid conductors comprises a pair of insulating clamps, one of which is disposed at the said one end extending outside the region of the shortest dipole elements and the other of which is disposed near the longest dipole elements near the other end of the said pair of rigid conductors.

8. An antenna as claimed in claim 1 and in which the transmission-line connecting means and the diverging conductive extensions are combined and extend downward from the said one end to include an acute angle between the dipole carrying conductors and their extensions.

9. An antenna as claimed in claim 8 and in which the conductive extensions are clamped at their free ends against relative movement with the clamp being pivotally mounted upon a base to permit adjustment, as a unit, of the dipole-carrying conductors and their extensions.

10. An antenna as claimed in claim 9 and in which a pair of V-type dipole elements for different frequency reception, are mounted on the said base forward of the pivotal clamp, with the said horizontal dipole elements contained within the V.

11. An antenna as claimed in claim 2 and in which all of the said distances are much less than the wavelength of the ultra-high-frequency.

12. An antenna for operation over a predetermined frequency band, having, in combination, a pair of rigid conductors held spaced a predetermined vertical distance apart in a vertical plane, first and second pluralities of horizontal dipole elements lying in corresponding first and second vertically spaced horizontal planes containing the respective conductors, the dipole elements extending from opposite sides of each conductor at successive points therealong with dipole elements connected to one conductor extending in opposite horizontal directions to the corresponding dipole elements of the other conductor, the length of the dipole elements successively increasing from one end of the conductors towards the other end thereof, means for connecting a parallel-wire transmission line to the said one end of the conductors and means for mounting the antenna comprising a further pair of rigid conductive extensions of the said conductors mechanically secured in rigid spaced-apart relation at an end thereof.

13. An antenna as claimed in claim 12 and in which the said vertical distance is less than the distances between the said successive points and much less than the wavelengths of the said band.

14. An antenna as claimed in claim 8 and in which the lengths of the said conductors and of their extensions are substantially equal.

Oath Letters

ISAAC S. BLONDER

ABRAHAM SCHENFELD

the United States of America — West Orange, New Jersey

the United States of America — New York, New York

DIRECTIVE ANTENNA

Ten Post office Square. Room 1318

25th October 63

s/ Isaac S. Blonder

5 Crestview

West Orange, New Jersey

s/ Abraham E. Schenfeld

564 Audubon Avenue

New York, New York

New Jersey

Essex

ISAAC S. BLONDER

ABRAHAM SCHENFELD

s/ Donald M. Shocket

Seal

My commission expires:

Aug 27, 1967

A S S I G N M E N T

Know all Men by these Presents:

That Whereas We, Isaac S. Blonder, of 5 Crestview Avenue, West Orange, County of Essex and State of New Jersey and Abraham Schenfield, of 564 Audubon Avenue, New York, County of New York and State of New York, have invented certain improvements in

DIRECTIVE ANTENNA

and have described and claimed the same in an application for Letters Patent of the United States therefor, said application having been executed by us of even date herewith; and

WHEREAS, Blonder-Tongue Electronics, a corporation duly organized and existing under and by virtue of the laws of the State of New Jersey and having a principal place of business at Newark, in the said State of New Jersey, hereinafter called the Company, is desirous of acquiring the entire and exclusive right, title and interest in, to and under the said invention, the said application for Letters Patent of the United States and of all other countries that may be granted for the said invention;

Now, Therefore, for and in consideration of the sum of One Dollar ($1.00) and other good and valuable considerations to us paid by the Company, the receipt of which in full is hereby acknowledged, We, the said Isaac S. Blonder and Abraham Schenfield, have sold, assigned, transferred and set over and by these presents do hereby sell, assign, transfer and set over unto the Company, its successors and assigns, the entire and exclusive right, title and interest in, to and under the said invention, the said application for Letters Patent of the United States, and any and all Letters Patent of the United States and all other countries that may be granted for the said invention, and all other patent rights that may be based thereon, including all renewals, divisions, reissues, continuations, and extensions thereof;

To Have, Hold and Enjoy the same to the Company, its successors and assigns, to its and their own use and behoof, to the full end of the term or terms for which the said Letters Patent or other patent rights may be granted, as fully and entirely as the same might have been held and enjoyed by us if no sale or assignment thereof had been made.

And We hereby authorize and request the Commissioner of Patents or other proper governmental authority to issue all Letters Patent or other patent rights for the said invention resulting therefrom to the Company, its successors and assigns, in accordance with this assignment, as assignee of the entire right, title and interest therein and thereto, and covenant that we have full right so to do.

And for the considerations aforesaid, We agree that We will communicate to the Company, or its representatives, any facts known to us respecting the said invention, whenever requested, and will testify in any legal proceeding, sign all lawful papers, make all rightful oaths, and generally do everything possible to aid the Company, its successors, assigns and nominees, to obtain and enforce proper patent protection for the said invention in all countries, or to perfect or defend its or their title in the premises.

Witness our hands and seals at Newark, New Jersey this 25th day of October 1963.

s/ Isaac S. Blonder
Isaac S. Blonder

s/ Abraham Schenfeld
Abraham Schenfeld

ACKNOWLEDGMENT

State of New Jersey:
ss.
County of Essex :

On this 25th day of October 1963, before me personally appeared Isaac S. Blonder and Abraham Schenfield, to me known to be the persons described in and who executed the foregoing instrument, and each acknowledged that he executed the same as his free act and deed.

Notarial Seal

s/ Donald M. Lobdell
Notary Public
My commission expires:
8/7/67

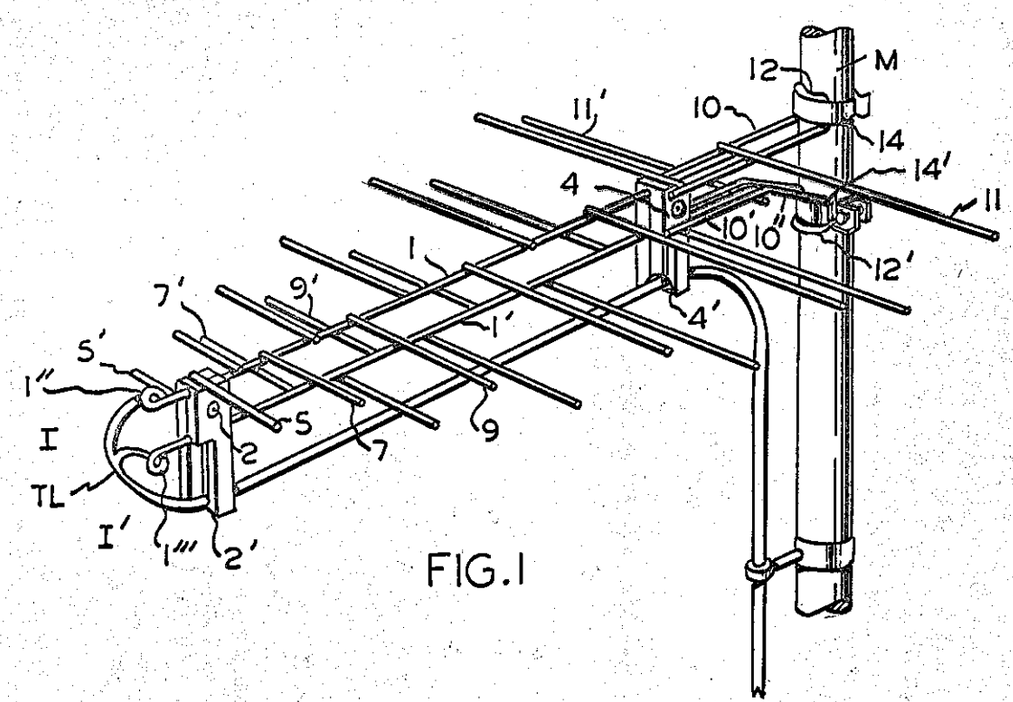


FIG. 1

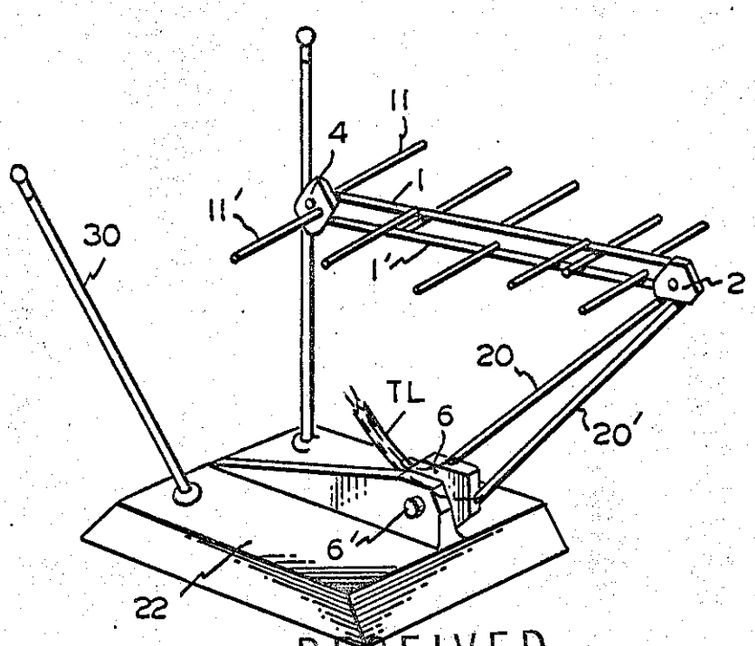


FIG. 2

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NOV 19 1963
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INVENTORS
ISAAC S. BLONDER
ABRAHAM SCHENFELD

BY Rines and Rines

ATTORNEYS

1). page 3 line 4 from bottom
... extensions 10 and 10' . were is 10 on FIG. 1. ?

2). page 4 line 6 from top 10" were is it on FIG 1 ?

3). page 4 line 6 from bottom 36° ? (about 50°).

My full name.

ABRAHAM E. SCHENFELD.

A. S

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OCT 28 1963
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NO. TEN POST OFFICE SQUARE, BOSTON.

October 18, 1963

Mr. Isaac S. Blonder
Blonder-Tongue Electronics
9 Alling Street
Newark 2, New Jersey

Re: "Directive Antenna" Application

Dear Ike:

We enclose the specification, claims and drawing in connection with the above-entitled application. We request, if all is in order, that you sign the oath-petition (the last page) and have Mr. Schenfeld sign the oath-petition before a notary. We request also that both of you sign the enclosed assignment and that you return all of the enclosed documents to us for filing.

Very truly yours,

RINES AND RINES

By_____

RS/BD
Encs.

Jerome Wolkin
ISAAC S. BLONDER
and
ABRAHAM SCHENFELD
U.S. Pat. Off.
564 Audubon Ave
NYC

FINAL

Irvington
5-cc

Vertical Plane

Directive Antenna

The present invention relates to directive antennas and, more specifically, to antennas adapted for receiving very high frequencies, such as the ultra-high-frequency television band.

Numerous types of antennas have been evolved for directive broad-band radio and television ~~ultra-high-frequency~~ reception including log periodic linear and V-type antennas, driver-arrays, Yagi-type arrays, helical antennas and ~~others~~ other configurations. The problems of mounting such antennas upon masts for outdoor operation or upon portable structures adapted for directional adjustment in connection with indoor reception have, however, long plagued the art; the mounting structures introducing "ghosts" and other deleterious electrical field-pattern aberrations over the band. It is to the improvement of such mounting structures and the minimizing of electrical interfering effects over a wide band of frequencies, including stabilizing of performance outdoors and providing for ready adjustability in indoor performance, that the present invention is primarily directed.

A further object of the invention is to provide a new and improved antenna particularly adapted for ultra-high-frequency television reception.

Still another object is to provide a novel antenna of improved performance for more general use, also.

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OCT 7 1963
BURNS AND ROSNER
TEN POST OFFICE SQUARE, BOSTON

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OCT 7 1953
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Other objects will be made more evident hereinafter & will be particularly pointed out in the appended claims. In summary, however, the invention contemplates a pair of rigid conductors held spaced a predetermined vertical distance apart in a vertical plane, first & second pluralities of horizontal dipole elements lying in first & second corresponding vertically spaced horizontal planes connecting the respective conductors, the dipole elements extending from opposite sides of each conductor at successive points therealong with dipole elements connected to one conductor extending in opposite horizontal directions to the corresponding dipole elements of the other conductor, the length of the dipole elements successively increasing from one end of the conductors towards the other end thereof, and means for mounting the antenna

means for feeding the energy received by the antenna at the said one end of the conductors,

comprising a further pair of rigid, preferably diverging, conductive extensions of the said conductors mechanically secured in rigid spaced apart relation at the end thereof. Further preferred details are hereinafter set forth.

The invention will now be described in connection with the accompanying drawing, Fig. 1 of which is an isometric view of an outdoor preferred embodiment thereof; and

Fig. 2 is a similar view of a modified in-door version.

Referring to Fig. 1, the antenna comprises a pair of rigid conductors 1, 1' held spaced apart a predetermined vertical distance in a vertical plane by forward and rearward insulating clamps 2 and 4. While the terms "vertical" and "horizontal" as herein employed describe the preferred orientation for ultra-high-frequency television reception, they are intended to be illustrative of relative orientations, rather than limiting, the invention being confined to actual direction. Similarly, although the invention is described in connection with radio-wave reception, the antenna may also be used for transmission, as is well known.

First and second pluralities of horizontal dipole elements 5, 7, 9 ... H and 5', 7', 9' ... H' (any number), lying in correspondingly first and second vertically spaced horizontal planes I and I' contain the respective conductors 1 and 1'. The dipole elements are shown extending from opposite sides of each conductor at successive points therealong. The dipole elements, moreover, connected to one conductor (5, 7, 9 ... H, for example) extend in opposite horizontal directions to the correspondingly dipole elements

Plurality of arrays - as arrays, reflectors, "spider arrays", conventional log-periodic structures and the like)

of the other conductor (such as 5 to the right, 5' to the left; 7 to the right, 7' to the left; and so on). The length of the dipole elements increases from one end (5, 5' being shorter) towards the other end (11, 11' being longest), as is well known, to provide directivity. A parallel-wire transmission line TL is connected at looped terminal portions 1" and 1'" beyond the clamps 2, extending outwardly to the left of the smaller dipole elements 5, 5'. The line TL may be supported below the antenna by depending guides 2' and 4' in the respective clamps 2 and 4, the latter being shown positioned near the largest dipole elements 11, 11'.

The antenna of Fig. 1 is mounted upon a mast M through the use of pairs of horizontally spaced conductor-loop extensions 10 and 10', shown extending to the right beyond the largest dipole elements 11, 11'. The extensions 10, 10' respectively terminate in upwardly and downwardly extending vertical loops 12 and 12' that may be transversely curved to fit the mast M, as shown, and are secured to the mast mechanically, as by straps at 14 and 14'. To the mast is fixed the system 1-1' in rigid spaced-apart relation at the mast end. Further to aid in mechanical stability, the extension 10', while initially extending in the horizontal plane I', diverges downwardly at 10". Fortunately, this mechanical stability - which was given during construction - has been found to minimally affect the field pattern, particularly if the length of the

At the UHF channel 47 frequency, for example, (671 megacycles) a 20 degree front-to-back ratio has been attained with a 16-dipole half-panel array.

(5)

horizontal beam width and acceptable forward to secondary lobes.

separation between the larger elements 11, 11' and the main reflector is comparable to the separation along conductors 1 and 1' of the last dipole element 11 from the rest of the last element, as is clear in Fig. 1. Minimal field aberrations and "ghost" reflections over the complete ultra high frequency band, for example, has been thus attained together with broad-band satisfactory impedance matching, provided the mechanical separation distance of the rigid conductors 1, 1' is kept less than the average distance between successive dipole elements (referred to the ordered operation for UHF band) and which, in turn, is kept more than less than the wavelengths involved, as well known.

With the above construction,

This same type of construction has also been found admirably suited for wider adjustable ground antennas, as shown in Fig. 2. In this embodiment, however, the small-dipole end of the antenna is used not only for the connection to the transmission line, but also for the supporting-mounting extensions. These extensions are illustrated as rigid conductors 20 and 20' depending at preferably an acute angle below the antenna at the insulating clamp 2 and slightly diverging for mechanical and impedance -

matching purposes, being clamped at their bottom ends by a further insulating clamp 6. The transmission line TL is thus connected to the conductors 1 and 1' by these combined ~~extension~~ extension-supporting and ~~feed~~ transmission-line feed members 20, 20'. For both electrical impedance-matching purposes and appropriate pivoting action for reception directive aperture, the lengths of the extension lines 20, 20' as mounted ~~are~~ primarily determining are substantially equal to the length of the rigid antenna-supporting conductors 1, 1'.

The clamp 6 is pivoted at 6' to a bracket carried by a base 22 so that the members 1-1'-20-20' may be adjusted as a unit for maximizing reception.

If VHF reception is also to be provided, it has been found that minimal interference is caused by the antenna of the present invention if V-type VHF dipoles 30 are mounted on the clamp forward of the pivoted clamp 6 and with a suppressor included angle at the V to contain the array of the invention.

Further modifications will occur to those skilled in the art & all such are considered to fall within the spirit & scope of the invention as defined in the appended claims.

What is claimed is:

1. An antenna for ultra-high-frequency operation and the like, having, in combination, a pair of rigid conductors ~~open-wire transmission line sections~~ mounted held spaced a predetermined vertical distance apart in a vertical plane, first and second horizontal pluralities of dipole ~~elements of successively decreasing length~~ connected to each conductor ~~and~~ elements lying in horizontal planes containing the conductors, ~~one extending~~ elements extending from opposite sides of the dipoles each conductor at successive points therealong with dipole elements connected to one conductor ~~each~~ extending horizontally opposed between the corresponding dipole elements of the other conductor, the length of the dipole elements successively increasing from one end of the conductors towards the other end thereof, means for connecting a parallel-wire transmission line to the said one end of the conductors and means for mounting the antenna comprising a further pair of rigid diverging conductive extensions of the said conductors mechanically secured in rigid spaced-apart relation at the end thereof.

2. An antenna as claimed in claim 1 in which the said vertical distance is less than the distance between the said successive points.

3. An antenna as claimed in claim 1 and in which the said diverging conductive extensions are provided at the said other end of the pair of rigid conductors and the ~~said~~ mechanical securing means comprises mast-strapping ~~clamping~~ means.

4. An antenna as claimed in claim 3 and in which the said extensions each comprise a pair of horizontally spaced conductors terminally provided with a vertical loop for strapping against the ~~said~~ mast.

5. An antenna as claimed in claim 4 and in which the said extensions extends to the mast in the said horizontal plane of its rigid conductor and the other extension extends toward the mast in the said horizontal plane of its rigid conductor but then diverges therefrom.

6. An antenna as claimed in claim 4 and in which the distance of the ~~mast~~ said strapping loops from the said other end is comparable to the distance between the ~~longest~~ longest and next-to-longest pairs of dipole ~~elements~~ elements of the antenna.

7. An antenna as claimed in claim 1 and in which the ~~spaced holding~~ spacing means holding the rigid conductors comprises a pair of insulating clamps one of which is disposed at the said one end extending outside the region of the ~~shortest~~ shorter dipole elements and the other is disposed near the longer dipole elements near the other end of the said pair of rigid conductors.

8. An antenna as claimed in claim 1 and in which the transmission-line connecting means and the diverging conductive extensions are combined and extend downward from the said one end to include an acute angle between the dipole carrying conductors and their extensions.

9. An antenna as claimed in claim 8 and in which the conductive extensions are clamped at their free ends against relative movement with the clamp being pivotally mounted upon a base to permit adjustment, as a unit, of the dipole-carrying conductors and their extensions.

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OCT 7 1963
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ONE POST OFFICE SQUARE, BOSTON

10. An antenna as claimed in claim 9 and in which a pair of V-type dipole elements, are mounted on the said base forward of the pivotal clamp, for different frequency reception with the said dipole elements contained within the V.

12. Yes: (Copy 1 with pulley changes.)

11. An antenna as claimed in claim 2 and in which all of the said diverances are much less than the wavelength of the ultra high-frequency

12. diverse or change ultra-high-frequency operation of the lines 1, 2, 3 from end, over a predetermined frequency band.
"diverging".

13. An antenna as claimed in claim 12 and in which the said reversed distance is less than the distance between the said successive points and much less than the wavelength of the said band.

14. An antenna as claimed in claim 8 and in which the lengths of the said conductors and of their extensions are substantially equal.

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(OVER)

October 8, 1963

Baran Associates
637 Warner Building
Washington 4, D. C.

Re: Directive Antenna

Dear Sirs:

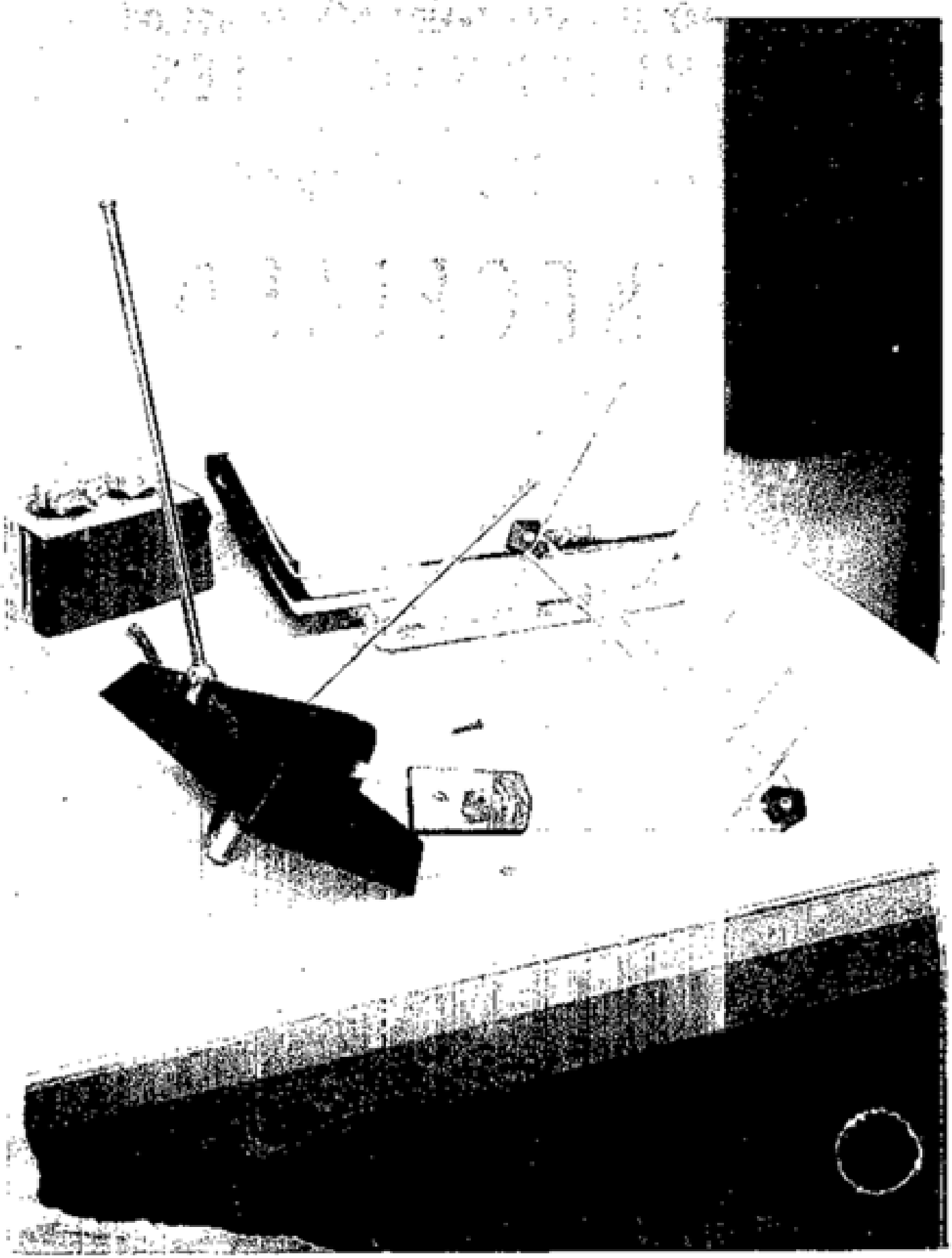
Please prepare a patent drawing comprising Figs. 1 and 2 shown in the enclosed material. Note that Fig. 2 is the figure of the photograph and not the Fig. 2 shown in the lower right-hand corner of the enclosed Blonder-Tongue bulletin.

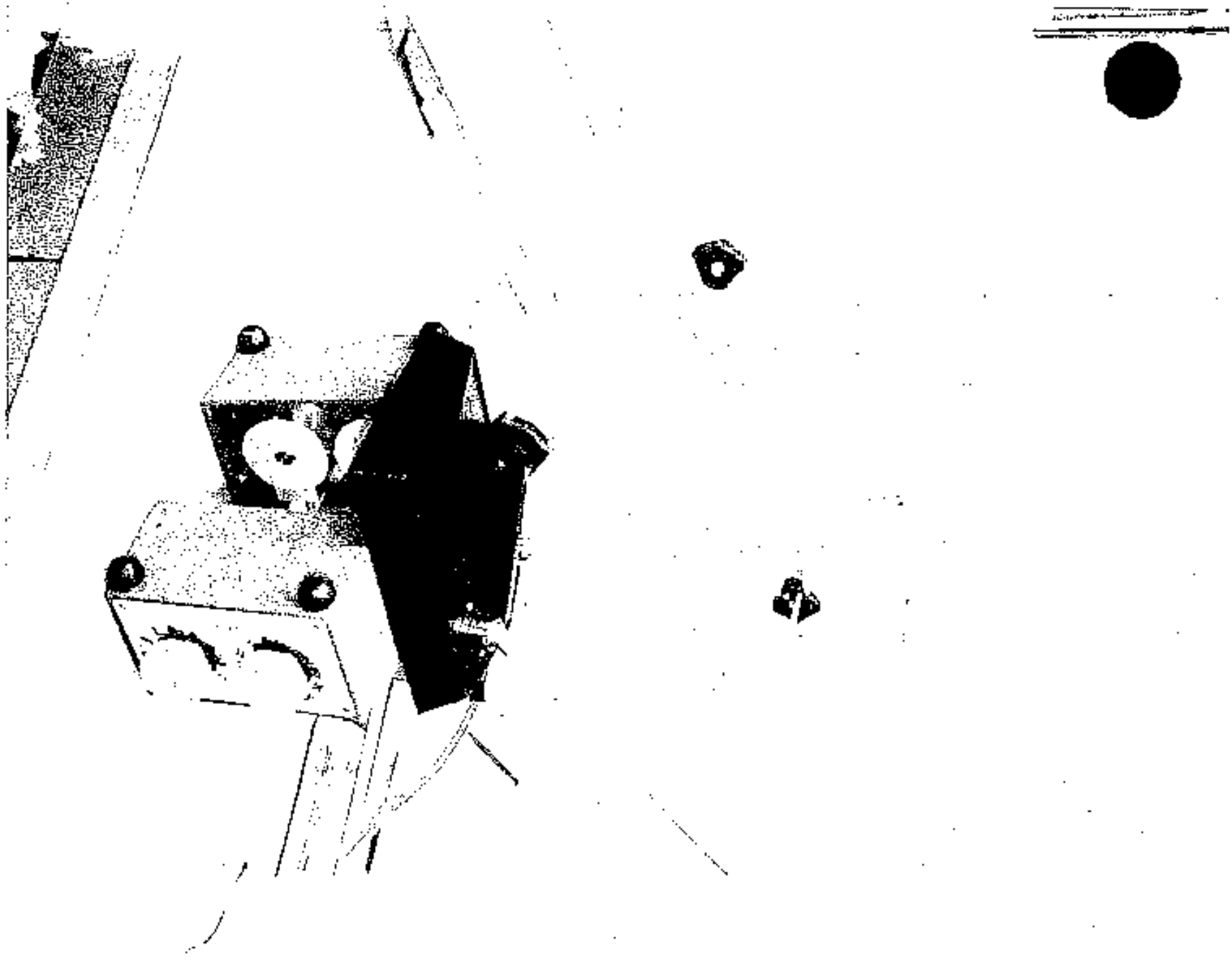
Very truly yours,

RINES AND RINES

By _____

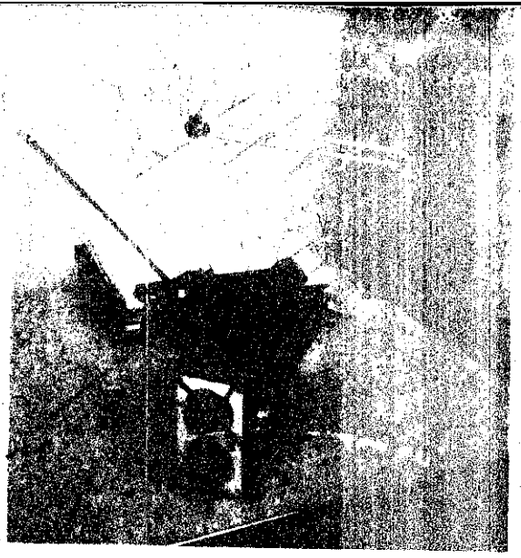
RS/BD
Enc.
cc: Mr. Isaac S. Blonder
Mr. Abraham Schenfeld





17

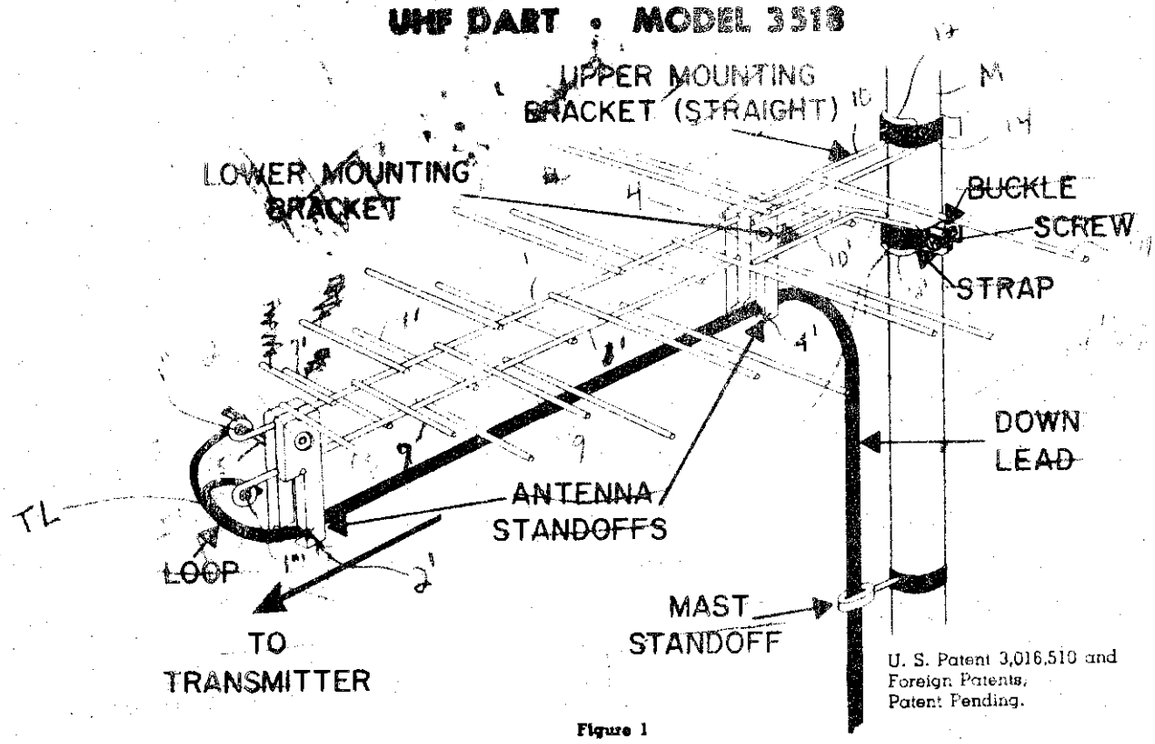
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SEP 14 1990
OFFICE OF THE SECRETARY
FEDERAL COMMUNICATIONS COMMISSION



BLONDER TONGUE

OUTDOOR ANTENNA

UHF DART • MODEL 3518



U. S. Patent 3,016,510 and Foreign Patents, Patent Pending.

Figure 1

THE DART IS A QUALITY ANTENNA THAT EMPLOYS THE LATEST DEVELOPMENTS IN THE ANTENNA FIELD

Among Its Features

- **All joints welded for long life**
- **Front-to-back ratio over 20 db**
- **Completely pre-assembled**
- **Excellent for color TV**
- **Works with all-channel sets, UHF boosters and UHF converters**
- **Good match and gain over the full UHF band**

INSTALLATION INSTRUCTIONS

1. Remove the antenna from the carton.
2. Remove the plastic bag. It contains: (2) stainless steel mounting straps.
3. Place antenna on the pole (as shown in Figure 1). Make sure that the straight mounting bracket is on top. Pull the mounting strap around this mounting bracket and the mast. Then, thread the mounting strap through the buckle (from inside out) and tighten the screw until the unit is secured.
4. Now secure the lower mounting bracket in the same manner. (Bend the loose ends of the straps, around and behind the antenna).
5. Down lead 300Ω connection.
   - A. It is recommended you use low loss foam twinlead. If you use flat twinlead, cut slit 1¼" to 1½" as shown in fig. 2. Slip each side of the twinlead under the sawtooth washers and then tighten the screws so that these washers pierce the twinlead, making contact with the wires inside. Be careful not to strip the threads of the terminal screws by turning them too hard. To attach UHF tubular or encapsulated twinlead, reduce the thickness of the cable by trimming off with a knife about 1/16" from each wide surface.
   - B. If a low loss coaxial downlead is desired, a balun such as Blonder-Tongue CMB-92U can be used. RG11/U foam cable is recommended.
   - C. Form a loop as shown in Figure 1. Slip cable into antenna stand offs. allow no slack in cable. Dress cable as shown, and use additional UHF standoffs alongside the mast. Make sure that the cable will not touch any metal parts of the antenna or the mast.

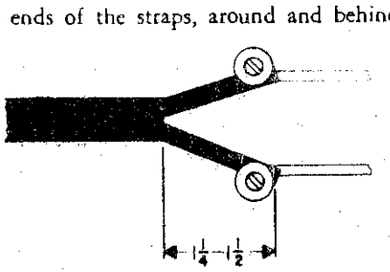
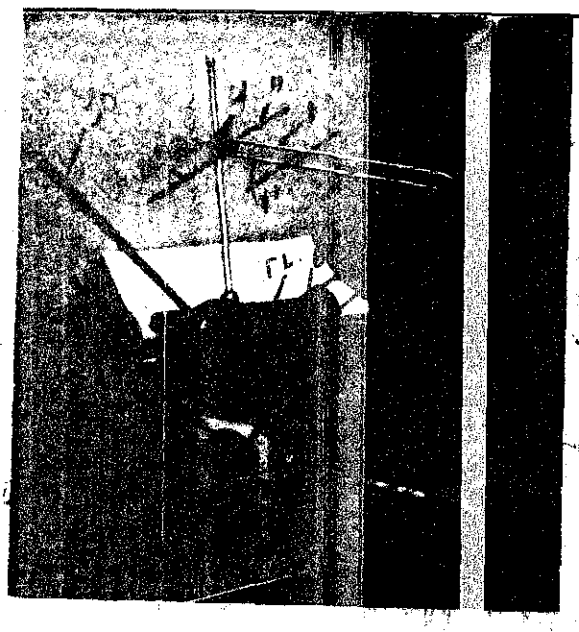


Figure 2

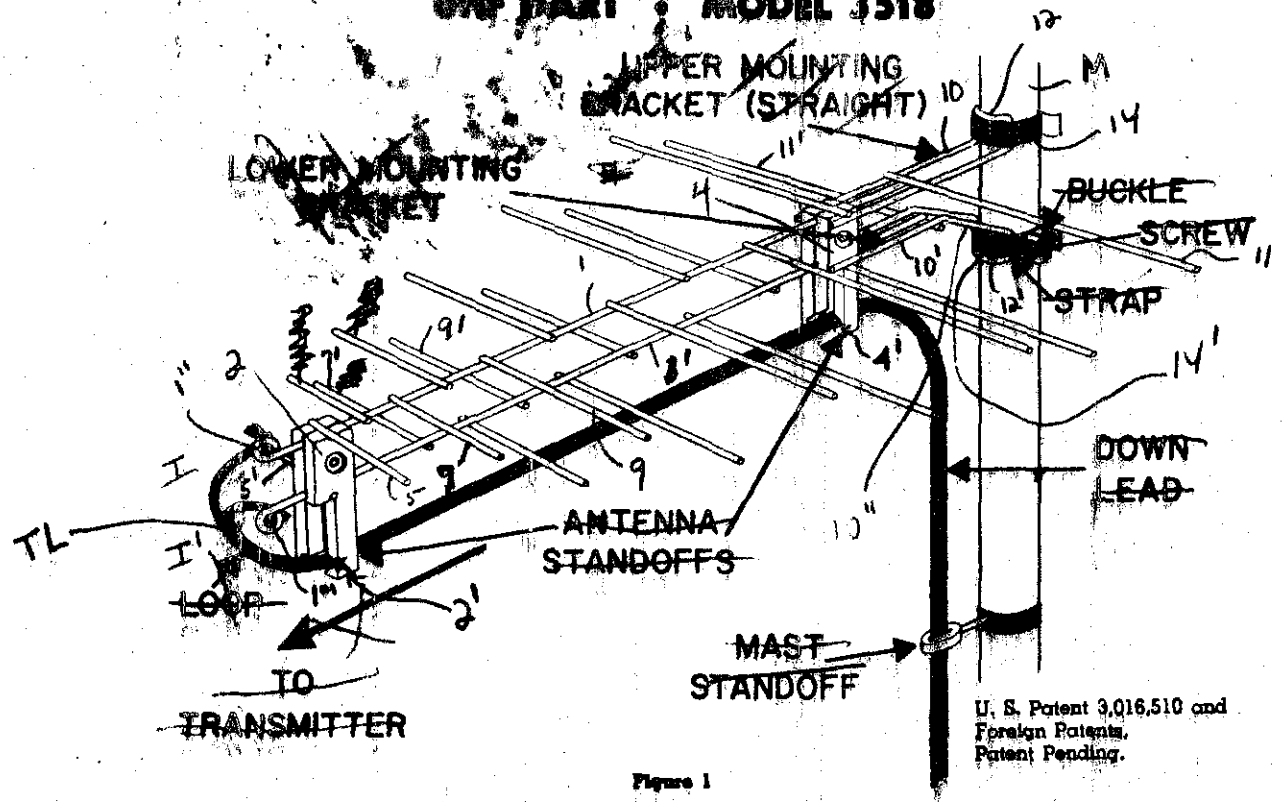
6. After connecting your antenna properly, orient your antenna towards the transmitter as shown in figure 1 for picture reception.



BLONDER TONGUE

OUTDOOR ANTENNA

UHF DART • MODEL 3518



U. S. Patent 3,016,510 and Foreign Patents. Patent Pending.

Figure 1

THE DART IS A QUALITY ANTENNA THAT EMPLOYS THE LATEST DEVELOPMENTS IN THE ANTENNA FIELD

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- **Front-to-back ratio over 20 db**
- **Completely pre-assembled**
- **Excellent for color TV**
- **Works with all-channel sets, UHF boosters and UHF converters**
- **Good match and gain over the full UHF band**

Fig. 1

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OCT 1 1963
RINES AND RINES

INSTALLATION INSTRUCTIONS

1. Remove the antenna from the carton.
2. Remove the plastic bag. It contains: (2) stainless steel mounting straps.
3. Place antenna on the pole (as shown in Figure 1). Make sure that the straight mounting bracket is on top. Pull the mounting strap around this mounting bracket and the mast. Then, thread the mounting strap through the buckle (from inside out) and tighten the screw until the unit is secured.
4. Now secure the lower mounting bracket in the same manner. (Bend the loose ends of the straps, around and behind the antenna).
5. Down lead 300Ω connection.
   - A. It is recommended you use low loss foam twinlead. If you use flat twinlead, cut slit 1¼" to 1½" as shown in fig. 2. Slip each side of the twinlead under the sawtooth washers and then tighten the screws so that these washers pierce the twinlead, making contact with the wires inside. Be careful not to strip the threads of the terminal screws by turning them too hard. To attach UHF tubular or encapsulated twinlead, reduce the thickness of the cable by trimming off with a knife about 1/16" from each wide surface.
   - B. If a low loss coaxial downlead is desired, a balun such as Blonder-Tongue CMB-92U can be used. RG11/U foam cable is recommended.
   - C. Form a loop as shown in Figure 1. Slip cable into antenna stand offs, allow no slack in cable. Dress cable as shown, and use additional UHF standoffs alongside the mast. Make sure that the cable will not touch any metal parts of the antenna or the mast.

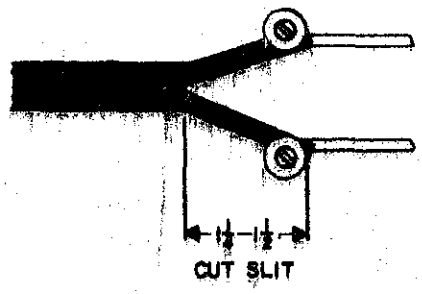


Figure 2

6. After connecting your antenna properly, orient your antenna towards the transmitter as shown in figure 1 for best picture reception.

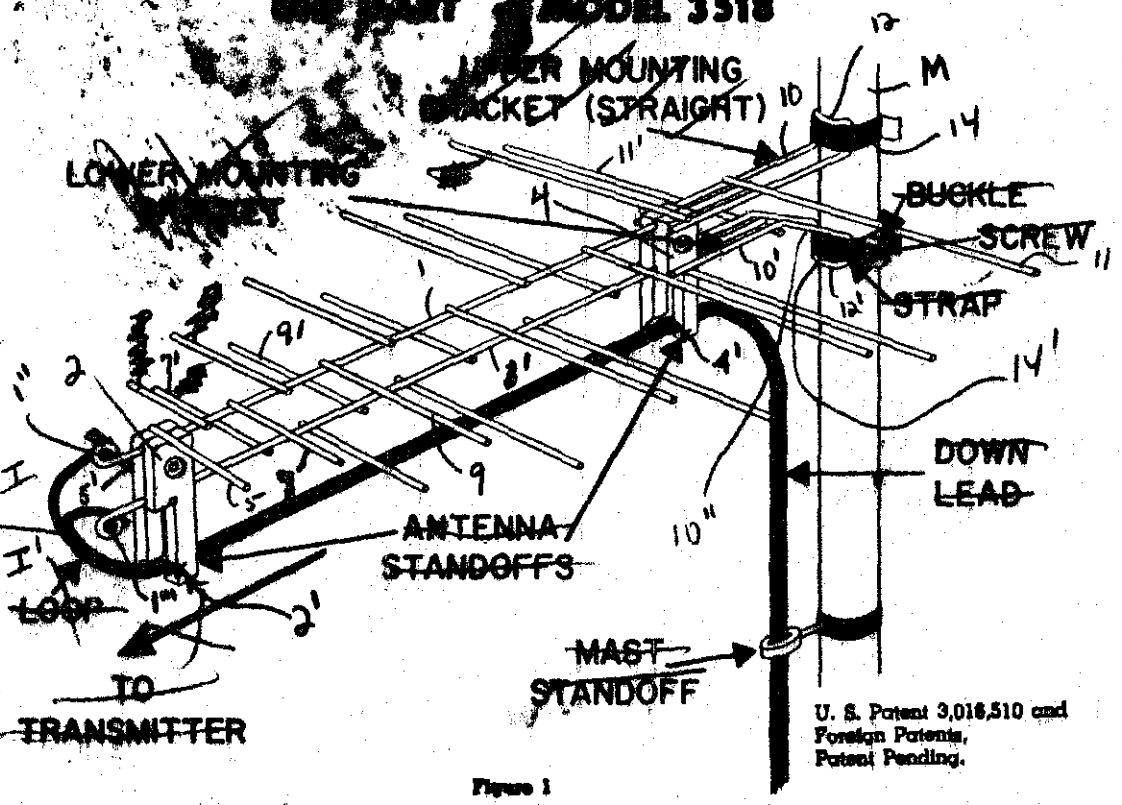


FIG. 2

BLONDER TONGUE

OUTDOOR ANTENNA

THE DART — MODEL 3518



U. S. Patent 3,018,510 and Foreign Patents, Patent Pending.

Figure 1

FIG. 1

THE DART IS A QUALITY ANTENNA THAT EMPLOYS THE LATEST DEVELOPMENTS IN THE ANTENNA FIELD

Among Its Features

- All joints welded for long life
- Front-to-back ratio over 20 db
- Completely pre-assembled
- Excellent for color TV
- Works with all-channel sets, UHF boosters and UHF converters
- Good match and gain over the full UHF band

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OCT 7 1953
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NO. TEN POST OFFICE SQUARE, BOSTON

INSTALLATION INSTRUCTIONS

1. Remove the antenna from the carton.
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3. Place antenna on the pole (as shown in Figure 1). Make sure that the straight mounting bracket is on top. Pull the mounting strap around this mounting bracket and the mast. Then, thread the mounting strap through the buckle (from inside out) and tighten the screw until the unit is secured.
4. Now secure the lower mounting bracket in the same manner. (Bend the loose ends of the straps, around and behind the antenna).
5. Down lead 300Ω connection.
   A. It is recommended you use low loss foam twinlead. If you use flat twinlead, cut slit 1¼" to 1½" as shown in fig. 2. Slip each side of the twinlead under the sawtooth washers and then tighten the screws so that these washers pierce the twinlead, making contact with the wires inside. Be careful not to strip the threads of the terminal screws by turning them too hard. To attach UHF tubular or encapsulated twinlead, reduce the thickness of the cable by trimming off with a knife about 1/16" from each wide surface.
   B. If a low loss coaxial downlead is desired, a balun such as Blonder-Tongue CMB-92U can be used. RG11/U foam cable is recommended.
   C. Mount a loop as shown in Figure 1. Slip cable into antenna stand offs, allow no slack in cable. Dress cable as shown, [illegible] alongside the mast. Make sure that the cable will not [illegible]

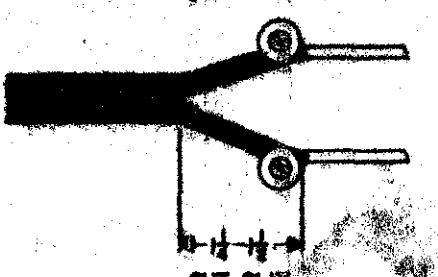


Figure 2

Form No. 6
Letter to Office
Draftsman

4 ? 0

Andrea

>b5 11

etc

The Office Draftsman is requested to
correct the drawing as indicated on red
on the accompanying copy, changing the case No
to the account of the Undersigned attorneys.

Very respectfully
Yours

Note: Be sure to state the re-issued drug
Thereof

(orig + 2 cop)

Paper No. 5

Amendment A B

UNITED STATES PATENT OFFICE

ISAAC S. BLONDER et al

S.N. 325,511

Filed: November 21, 1963 Group 250

DIRECTIVE ANTENNA

Boston, Massachusetts

May 5, 1965

April 1, 1966

Hon. Commissioner of Patents

Washington 25, D. C.

Sir: Replying to the Examiner's communication of January 26, 1966,

Please amend the above-numbered application as follows:

Page 3, line 10, before "conductors" insert: --longitudinal--.

Page 3, line 11, change "extending" to: --angularly extending transversely--.

Page 3, line 22, before the comma insert: --that secures the connecting portions 1'' and 1''' in spaced-apart relation--.

Claim 12, line 2, after "rigid" insert: --longitudinal--.

Claim 12, lines 4 and 5 and in line 10, cancel "horizontal".

Claim 6, cancel line 1 and substitute:--
An antenna for ultra-high-frequency operation and the like, having, in combination, a pair of rigid conductors held spaced a predetermined nominal distance apart in a vertical plane, first and second pluralities of horizontal dipole elements lying in corresponding first and second vertically spaced horizontal planes intersecting the respective conductors, the dipole elements extending from opposite sides of each conductor at successive points therealong with dipole elements connected to one conductor extending in opposite horizontal directions to the corresponding dipole elements of the other conductor, the length of the dipole elements successively increasing from one end of the conductors towards the other end thereof, means for connecting a parallel-wire transmission line to the said one end of the conductors and means for mounting the antenna comprising a further pair of rigid diverging conductive extensions of said conductors mechanically secured in rigid spaced-apart relation at one end thereof, the said diverging conductive extensions being provided at the said other end of the pair of rigid conductors and each comprising a pair of horizontally spaced conductors terminally provided with a vertical loop, and the said mechanical securing means comprising insulator-strapping means for strapping the said vertical loops and --.

Claim 6, line 3 change "is" to :-- being --.

Claim 8, cancel line 1 and substitute :-- An

Claim 8, line 3, change "are" to :-- being --. Same line, change "extend" to :-- extending --.

Claim 13, cancel line 1 and substitute: — An antenna for operation over a predetermined frequency band, having, in combination, a pair of rigid longitudinal conductors held spaced a predetermined vertical distance apart in a vertical plane, first and second pluralities of dipole elements lying in corresponding first and second vertically spaced horizontal planes containing the respective conductors, the dipole elements extending from opposite sides of and transversely at an angle to each conductor at successive points therealong with dipole elements connected to one conductor extending in opposite direction to the corresponding dipole elements of the other conductor, the length of the dipole elements successively increasing from one end of the conductors towards the other end thereof, means for connecting a parallel-wire transmission line to the said one end of the conductors,

~~and substitute~~

, rigid insulating means securing the said connecting means mechanically in spaced-apart relation and connected with means for supporting the transmission line near the said one end, and means for mounting the antenna at a region of the said conductors remote from the said one end, further rigid insulating means being provided for securing the said longitudinal conductors mechanically in rigid spaced-apart relation near the said region,—

Claim 13, line 2, change "is" to -- being --

Please delete, without prejudice or disclaimer, claims 1 through 5, 7, 11 and 12.

Page 5, line 12, cancel "maximizing reception. For".

REMARKS

While the applicants do not concur that the novel structures of the rejected claims are mere obvious expedients, none of the references even hinting at the same, let alone disclosing them, since the office has indicated certain claims to be allowable that the applicants consider adequately protect the commercial embodiments of this assignee, it appears unnecessary to prolong the prosecution further, and the rejected claims are accordingly cancelled without prejudice or disclaimer.

The remaining claims having been allowed and being, now submitted in independent form, reconsideration and allowance appear to be in order and are requested.

Very respectfully,

Rimer Rines

By

Attorney for the Applicants

	FILING DATE	SERIAL NO.	PATENT NO.	DATE OF PATENT
	11/21/63	325511	3259904	07/05/66

INVENTOR	Blonder, Isaac S. ;West Orange, N. J., and Sohenfeld, Abraham; New York, N. ;Y.
ASSIGNEE	Blonder-Tongue Electronics
INVENTION	Antenna having combined support and lead-in

EST DR'W & SPEC PAGES	ISSUE FEE PAID	DATE FEE PAID	CLASS-SUB
000 2	$122	05/19/66	343/792.5

PO-162D ISSUE FEE RECEIPT

THE ISSUE FEE IN THIS APPLICATION HAS BEEN RECEIVED

COMMISSIONER

Rines and Rines
Ten Post Office Sq.
Boston 9, Mass.

RECEIVED
JUN 10 1966
RINES AND RINES
NO. TEN POST OFFICE SQUARE, BOSTON

02020

U. S. DEPARTMENT OF COMMERCE PATENT OFFICE

POL-85b
(9-65)

ADDRESS ONLY
THE COMMISSIONER OF PATENTS
WASHINGTON, D. C. 20231

U. S. DEPARTMENT OF COMMERCE
PATENT OFFICE
WASHINGTON

All communications respecting this application should give the serial number, date of filing, and name of the applicant.

NOTICE OF ALLOWANCE AND ISSUE FEE DUE

The application for patent identified below has been examined and found allowable for issuance of Letters Patent.

	FILING DATE	SERIAL NO.	NO. OF CLAIMS ALLOWED	EXAMINER / GROUP
	11/21/63	325,511	6	H. K. Saulbach 25
APPLICANT	Blonder, Isaac S., West Orange, N. J., and Schenfeld, Abraham, New York, N. Y.			
TITLE OF INVENTION (X indicates as amended by examiner)	Antenna having combined support and lead-in			Mailed May 19, 1966
X	DRAWING: NO. SHEETS @ $2 EACH: 1	SPEC: NO. PAGES @ $10 EACH: 2	ISSUE FEE DUE: $122.00	CLASS-SUB: 343/792.5

With the allowance of the application, the above indicated Issue Fee becomes due and payment must be made within three months of the date of this Notice or the Patent will become abandoned (forfeited).

The Issue Fee is one hundred dollars ($100) plus two dollars ($2) for each printed sheet of drawing and ten dollars ($10) for each printed page of specification, or portion thereof.

Inasmuch as the number of printed pages of specification must be determined in advance of printing from the amount of matter in the allowed application, the Issue Fee is subject to change. After the patent has been printed, the estimate will be reviewed in light of the actual number of pages of specification. If it is found that an overcharge was made, you will be notified thereof with the issuance of the Patent and a refund will be forthcoming. If the number of pages is underestimated by two or more pages, you will receive a notice of Additional Issue Fee Due with the Patent and payment of this amount must be made within three months of the date of that Notice. Failure to remit any additional fee due within three months from the date of that Notice will result in lapse of the Patent.

As a convenience in remitting this fee, use of the enclosed Form POL-85a is suggested. The Issue Fee will not be received from anyone other than the applicant, his assignee or attorney, or a party in interest as shown by the records of the Patent Office. A form is enclosed relating to the address of the inventor(s) which requires your attention.

If it is desired to have the patent issued to an assignee or assignees, an assignment, together with the fee for recording the same, must be filed in this Office on or before the date of payment of the Issue Fee.

The patent will be issued and forwarded within approximately two months after receipt of the Issue Fee.

By direction of the Commissioner.

Rines and Rines
Ten Post Office Square,
Room 1318
Boston 9, Massachusetts

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MAY 25 1966
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NO. TEN POST OFFICE SQUARE, BOSTON

(This form is provided for optional use in recording information for your files. It is so designed that with the use of carbon paper it may be filled in concurrently with the completion of the Issue Fee Transmittal Form for this case.)

ISSUE FEE RECORD

1. The COMMISSIONER OF PATENTS is requested to apply the accompanying fee to the case identified below, and deliver the patent as indicated.

Date _____ Attorney, Agent or Applicant _____

NOTE—Issue Fees will not be received from other than the applicant, his assignee, or attorney, or a party in interest as shown by the records of the Patent Office. Issue Fees will not be applied to pending applications.

2. Assignee: (If assigned and name does not appear on reverse side)	3. FEE ENCLOSED $_____

MAILING INSTRUCTIONS

NOTE—The Patent Office will send the patent to the address entered on the reverse side of this form unless otherwise directed. Any change in mailing instructions have been indicated below. However, if an additional Issue Fee Due Notice is required, this option is cancelled and the patent will be mailed to the address entered in the stub at left below.

4. Do not send the patent to the addressee entered on the reverse side of this form. Send potent to (check one)

☐ Patentee ☐ Associate Attorney (See specific authorization in file)

☐ Assignee ☐ Change of address—Attorney

The address of the person checked above is typed in Item 5 below.

5. (If an additional Issue Fee is required the patent will not be sent to this address)

U.S. DEPARTMENT OF COMMERCE
PATENT OFFICE
WASHINGTON, D.C. 20231

ADDRESS ONLY
THE COMMISSIONER OF PATENTS
WASHINGTON, D.C. 20231

MAY 13 1966

Rines and Rines
Ten Post Office Square, Room 1318
Boston 9, Massachusetts

APPLICANT	Isaac S. Blonder, Et Al
SERIAL NO.	325,511
GROUP	250
ORDER NO.	
LETTER OF	April 4, 1966

Dear Sir:

In accordance with the instructions in the letter dated above the drawing in the application identified has been corrected and returned to the Examiner in charge of this application.

A photocopy of the drawing is furnished herewith so that you can verify the corrections that have been made. Additional photocopies may be obtained from the Patent Office at a cost of 30 cents per sheet.

Very truly yours,

Daniel M. Mills

Daniel M. Mills
Chief Draftsman

Entd

DEPOSIT ACCOUNT CHARGE	$ 3.00
CASH FEE PAID	
NO CHARGE	

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MAY 16 1966
RINES AND RINES
NO. TEN POST OFFICE SQUARE, BOSTON

POL-19 (12-65)

USCOMM-DC 46842-P65

Paper No. 5

Amendment B

UNITED STATES PATENT OFFICE

ISAAC S. BLONDER ET AL

Ser. No. 325,511

Filed: November 21, 1963

DIRECTIVE ANTENNA

Group 250

Boston, Massachusetts

April 1, 1966

Hon. Commissioner of Patents

Washington 25, D.C.

Sir:

Replying to the Examiner's communication of January 26, 1966, please amend the above-numbered application as follows:

Claim 6, cancel line 1 and substitute: --An antenna for ultra-high-frequency operation and the like, having, in combination, a pair of rigid conductors held spaced a predetermined vertical distance apart in a vertical plane, first and second pluralities of horizontal dipole elements lying in corresponding first and second vertically spaced horizontal planes containing the respective conductors, the dipole elements extending from opposite sides of each conductor at successive points therealong with dipole elements connected to one conductor extending in opposite horizontal directions to the corresponding dipole elements of the other conductor, the length of the dipole elements successively increasing from one end of the conductors towards the other end thereof, means for connecting a parallel-wire

transmission line to the said one end of the conductors and means for mounting the antenna comprising a further pair of rigid diverging conductive extensions of said conductors mechanically secured in rigid spaced-apart relation at an end thereof, the said diverging conductive extensions being provided at the said other end of the pair of rigid conductors and each comprising a pair of horizontally spaced conductors terminally provided with a vertical loop, and the said mechanical securing means comprising mast-strapping means for strapping the said vertical loops, and--.

Claim 6, line 3 change "is" to: --being--.

Claim 8, cancel line 1 and substitute: --An antenna for ultra-high-frequency operation and the like, having, in combination, a pair of rigid conductors held spaced a predetermined vertical distance apart in a vertical plane, first and second pluralities of horizontal dipole elements lying in corresponding first and second vertically spaced horizontal planes containing the respective conductors, the dipole elements extending from opposite sides of each conductor at successive points therealong with dipole elements connected to one conductor extending in opposite horizontal directions to the corresponding dipole elements of the other conductor, the length of the dipole elements successively increasing from one end of the conductors towards the other end thereof, means for connecting a parallel-wire transmission line to the said one end of the conductors and means for mounting the antenna comprising a further pair of rigid diverging conductive extensions of

said conductors mechanically secured in rigid spaced-apart relation at an end thereof, --.

Claim 8, line 3, change "are" to: --being--. Same line, change "extend" to: --extending--.

Claim 13, cancel line 1 and substitute: --An antenna for operation over a predetermined frequency band, having, in combination, a pair of rigid longitudinal conductors held spaced a predetermined vertical distance apart in a vertical plane, first and second pluralities of dipole elements lying in corresponding first and second vertically spaced horizontal planes containing the respective conductors, the dipole elements extending from opposite sides of and transversely at an angle to each conductor at successive points therealong with dipole elements connected to one conductor extending in opposite direction to the corresponding dipole elements of the other conductor, the length of the dipole elements successively increasing from one end of the conductors towards the other end thereof, means for connecting a parallel-wire transmission line to the said one end of the conductors, rigid insulating means securing the said connecting means mechanically in spaced-apart relation and connected with means for supporting the transmission line near the said one end, and means for mounting the antenna at a region of the said conductors remote from the said one end, further rigid insulating means being provided for securing the said longitudinal conductors mechanically in rigid spaced-apart relation near the said region, --.

Claim 13, line 2, change "is" to: --being--.

Please delete without prejudice or disclaimer, claims 1 through 5, 7, 11 and 12.

Page 5, line 12, cancel "maximizing reception. For" .

REMARKS

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The remaining claims having been allowed and being now, where appropriate, rewritten from independent form, reconsideration and allowance appear to be in order and are requested.

Very respectfully,

RINES AND RINES

By
Attorneys for the Applicants

See Notes no. 1 Under

Annual Board of Trustees

Laboratories

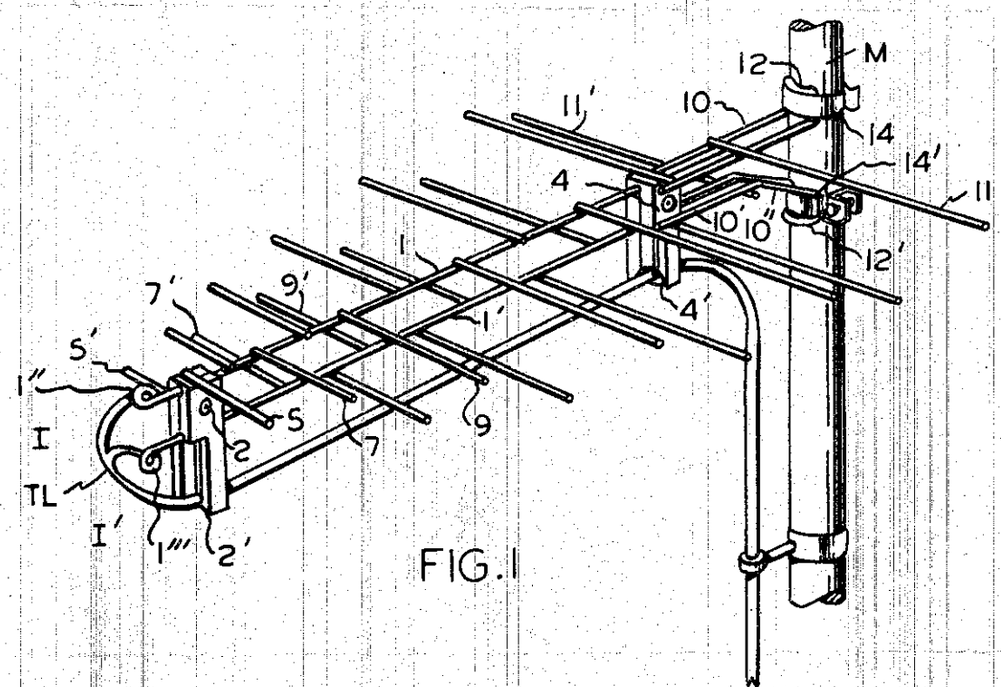


FIG. 1

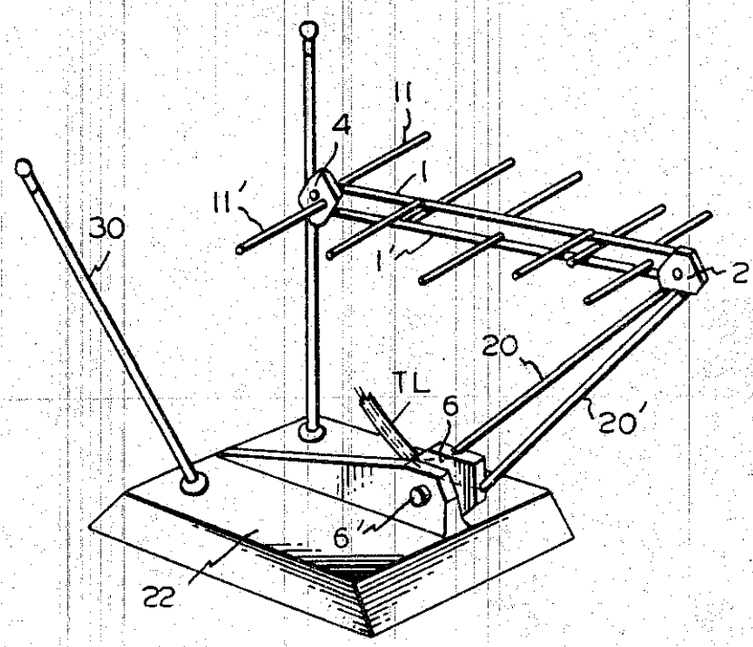


FIG. 2

INVENTORS
ISAAC S. BLONDER
ABRAHAM SCHENFELD

BY Rines and Rines

ATTORNEYS

Mailed to P.O. April 1'66 MR

Paper No. 6

Letter to Office Draftsman

UNITED STATES PATENT OFFICE

ISAAC S. BLONDER ET AL

Ser. No. 325,511

Filed: November 21, 1963

Directive Antenna

Group 250

Boston, Massachusetts

April 1, 1966

Hon. Commissioner of Patents

Washington 25, D.C.

Sir:

The Office Draftsman is requested to correct the drawing as indicated in red in the accompanying copy, charging the cost to the account of the undersigned attorneys.

Very respectfully,

RINES AND RINES

By _____

Attorneys for the Applicants

Mailed to P.O. April 1/66 MR

Paper No. 5

Amendment B

UNITED STATES PATENT OFFICE

C/Blonder 4/1/66

ISAAC S. BLONDER ET AL

Ser. No. 325,511

Filed: November 21, 1963

DIRECTIVE ANTENNA

Group 250

Boston, Massachusetts

April 1, 1966

Hon. Commissioner of Patents

Washington 25, D.C.

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Claim 6, line 3 change "is" to: --being--.

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said conductors mechanically secured in rigid spaced-apart relation at an end thereof, --.

Claim 8, line 3, change "are" to: --being--. Same line, change "extend" to: --extending--.

Claim 13, cancel line 1 and substitute: --An antenna for operation over a predetermined frequency band, having, in combination, a pair of rigid longitudinal conductors held spaced a predetermined vertical distance apart in a vertical plane, first and second pluralities of dipole elements lying in corresponding first and second vertically spaced horizontal planes containing the respective conductors, the dipole elements extending from opposite sides of and transversely at an angle to each conductor at successive points therealong with dipole elements connected to one conductor extending in opposite direction to the corresponding dipole elements of the other conductor, the length of the dipole elements successively increasing from one end of the conductors towards the other end thereof, means for connecting a parallel-wire transmission line to the said one end of the conductors, rigid insulating means securing the said connecting means mechanically in spaced-apart relation and connected with means for supporting the transmission line near the said one end, and means for mounting the antenna at a region of the said conductors remote from the said one end, further rigid insulating means being provided for securing the said longitudinal conductors mechanically in rigid spaced-apart relation near the said region, --.

Claim 13, line 2, change "is" to: --being--.

Please delete without prejudice or disclaimer, claims 1 through 5, 7, 11 and 12.

Page 5, line 12, cancel "maximizing reception. For" .

REMARKS

While the applicants do not concur that the novel structures of the rejected claims are mere obvious expedients, none of the references even hinting at the same, let alone disclosing them, since the Office has indicated certain claims to be allowable that the applicants consider adequately protect the commercial embodiments of their assignee, it appears unnecessary to prolong the prosecution further, and the rejected claims are accordingly cancelled without prejudice or disclaimer.

The remaining claims having been allowed and being now, where appropriate, rewritten from independent form, reconsideration and allowance appear to be in order and are requested.

Very respectfully,

RINES AND RINES

By _____
Attorneys for the Applicants

ADDRESS ONLY
THE COMMISSIONER OF PATENTS
WASHINGTON, D.C. 20231

Paper No. 4

U.S. DEPARTMENT OF COMMERCE
PATENT OFFICE
WASHINGTON

In Reply Please Refer To: Group 250

Rines and Rines
Ten Post Office Square
Room 1318
Boston 9, Mass.

Applicant: Isaac S. Blonder et al.

Ser. No. 325,511

Filed November 21, 1963

For DIRECTIVE ANTENNA

Mailed 1966

Cited References Charge Data (If applicable)	
Deposit Account No.	No. of Copies

SHORTENED TIME FOR REPLY - 4/28/66

Please find below a communication from the EXAMINER in charge of this application.

Commissioner of Patents.

This application has been examined.

References:

3,086,206	4-63	Greenberg	343-815
3,150,376	9-64	Cafrel et al.	343-792.5
3,212,094 (Filed 5-61)	10-65	Berry	343-792.5
3,210,767 (Filed 5-60)	10-65	Isbell	343-792.5
3,134,979 (Filed 1-61)	5-64	Bell	343-792.5
3,108,280	10-63	Mayer et al.	343-792.5

There is no label showing Fig. 2 of the drawing. In this Fig., the transmission lines TL should be shown clearly preferably as a separate showing and its electromagnetic characteristics in relation to the antenna should be clearly defined.

Page 5, lines 10-17, what are the electromagnetic effects achieved by the specified lengths of diverging lines 2o, 20' and conductors 1, 1', and their exact relation to the reception.

Claims 1, 2, 3, 4, 5, 7, 11, 12, are each rejected on Isbell or Greenberg. Under 35 U.S.C. 103, there is no apparent patentable significance in providing various mechanical and clamp limitations in claims

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POL-90 (11-64)

2 - Applicant's Copy

2, 3, 5, 7 other than design aspects or obvious mechanical expedients.

1-28-66

Claims 6, 8, 9, 10, 13, 14 are allowable if rewritten as independent claims.

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS LETTER.

ELI LIEBERMAN
Examiner

CBaraff:ap

WO-7-3277

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THE COMMISSIONER OF PATENTS
WASHINGTON, D.C. 20231

Paper No. 4

U.S. DEPARTMENT OF COMMERCE
PATENT OFFICE
WASHINGTON

In Reply Please Refer To: Group 250

Rines and Rines
Ten Post Office Square
Room 1318
Boston 9, Mass.

Applicant: Isaac S. Blonder et al.	
Ser. No. 325,511	Mailed
Filed November 21, 1963	JAN 26 1966
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This application has been examined.

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There is no label showing Fig. 2 of the drawing. In this Fig., the transmission lines TL should be shown clearly preferably as a separate showing and its electromagnetic characteristics in relation to the antenna should be clearly defined.

Page 5, lines 10-17, what are the electromagnetic effects achieved by the specified lengths of diverging lines 2a, 2a' and conductors 1, 1', and their exact relation to the reception.

Claims 1, 2, 3, 4, 5, 7, 11, 12, are each rejected on Isbell or Greenberg. Under 35 U.S.C. 103, there is no apparent patentable significance in providing various mechanical and clamp limitations in claims

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3 - Applicant's Duplicate Copy

2, 3, 5, 7 other than design aspects or obvious mechanical expedients.

Claims 6, 8, 9, 10, 13, 14 are allowable if rewritten as independent claims.

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS LETTER.

ELI LIEBERMAN
Examiner

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Paper No. 4

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In Reply Please Refer To: Group 250

Rines and Rines
Ten Post Office Square
Room 1318
Boston 9, Mass.

Applicant: Isaac S. Blonder et al.	
Ser. No. 325,511	Mailed
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This application has been examined

Commissioner of Patents

References:

3,086,206	4-63	Greenberg	343-815
3,150,376	9-64	Carrel et al.	343-792.5
3,212,094	10-65	Berry	343-792.5
	(Filed 5-61)		
3,210,767	10-65	Isbell	343-792.5
	(Filed 5-60)		
3,134,979	5-64	Bell	343-792.5
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There is no label showing Fig. 2 of the drawing. In this Fig., the transmission lines TL should be shown clearly preferably as a seperate showing and its electromagnetic characteristics in relation to the antenna should be clearly defined.

Page 5, lines 10-17, what are the electromagnetic effects achieved by the specified lengths of diverging lines 2o, 2o' and conductors 1, 1', and their exact relation to the reception.

Claims 1, 2, 3, 4, 5, 7, 11, 12, are each rejected on Isbell or Greenberg. Under 35 U.S.C. 103, there is no apparent patentable significance in providing various mechanical and clamp limitations in claims

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POL-90 (11-64)

4 - Reference Transmittal

Mailed to PO 5/5/65
Copy sent to I. S. Blonder 5/5/65

Paper No. 3

Amendment A

UNITED STATES PATENT OFFICE

ISAAC S. BLONDER

S.N. 325,511

Filed: November 21, 1963 Group 250

DIRECTIVE ANTENNA

Boston, Massachusetts

May 5, 1965

Hon. Commissioner of Patents

Washington 25, D. C.

Sir:

Please amend the above-numbered application as follows:

Page 3, line 10, before "conductors" insert: --longitudinal--.

Page 3, line 11, change "extending" to: --angularly extending transversely--.

Page 3, line 22, before the comma insert: --that secures the connecting portions 1'' and 1''' in spaced-apart relation--.

Claim 12, line 2, after "rigid" insert: --longitudinal--.

Claim 12, lines 4 and 5 and in line 10, cancel "horizontal".

S.N. 325,511 - Amendment A

Claim 12, line 8, after "of" insert: --and transversely at an angle to--.

Claim 12, line 10, singularize "directions".

Claim 12, cancel from "and", line 4 from end, through the period in the last line and substitute: --, rigid insulating means securing the said connecting means mechanically in spaced-apart relation and connected with means for supporting the transmission line near the said one end, and means for mounting the antenna at a region of the said conductors remote from the said one end, further rigid insulating means being provided for securing the said longitudinal conductors mechanically in rigid spaced-apart relation near the said region.--.

Claim 13, line 3, cancel "much".

REMARKS

Upon review of the above application, certain ambiguities, language repetitions, and inaccuracies of language were noted in claim 12, which have been obviated by the present amendment.

Respectfully submitted,

RINES AND RINES

ORIGINAL SIGNED
BY ROBERT H. RINES

By _____
Attorneys for the Applicant

Amendment

325,511

Page 3, line 10, before "conductors" insert: -- longitudinal --.

Page 3, line 11, change "extending" to: -- angularly extending transversely --.

Page 3, line 22, before the comma insert: -- that secures the connecting portions 1" and 1"' in spaced-apart relation --.

Claim 12, line 2, after "rigid" insert: -- longitudinal --.

Claim 12, lines 4 & 5, cancel "horizontal" (and in line 13).

Claim 12, line 8, after "of" insert: -- and transversely at an angle to --.

Claim 12, line 10, pluralize "direction".

Claim 12, cancel from "and" line 4 from end, through the period in the last line and substitute: --, rigid insulating means securing the said connecting means mechanically in spaced-apart relation and connected with means for supporting the transmission line near the said one end, and means for mounting the antenna at a region of the said conductors remote from the said one end; further rigid insulating means securing the said longitudinal conductors mechanically in rigid spaced-apart relation near the said region. --.

Claim 13, line 3, cancel "mum".

Reconsideration,

REMARKS

Upon review of the above application, certain inaccuracies of language were noted in claim 12, which have been eliminated by the present amendment.

Respectfully submitted,

Ramon Nunez

By

Attorney for the Applicant