

R. H. LINDAL.
TELEPHONE.

APPLICATION FILED APR. 22, 1908.

1,043,526.

Patented Nov. 5, 1912.

FIG. I.

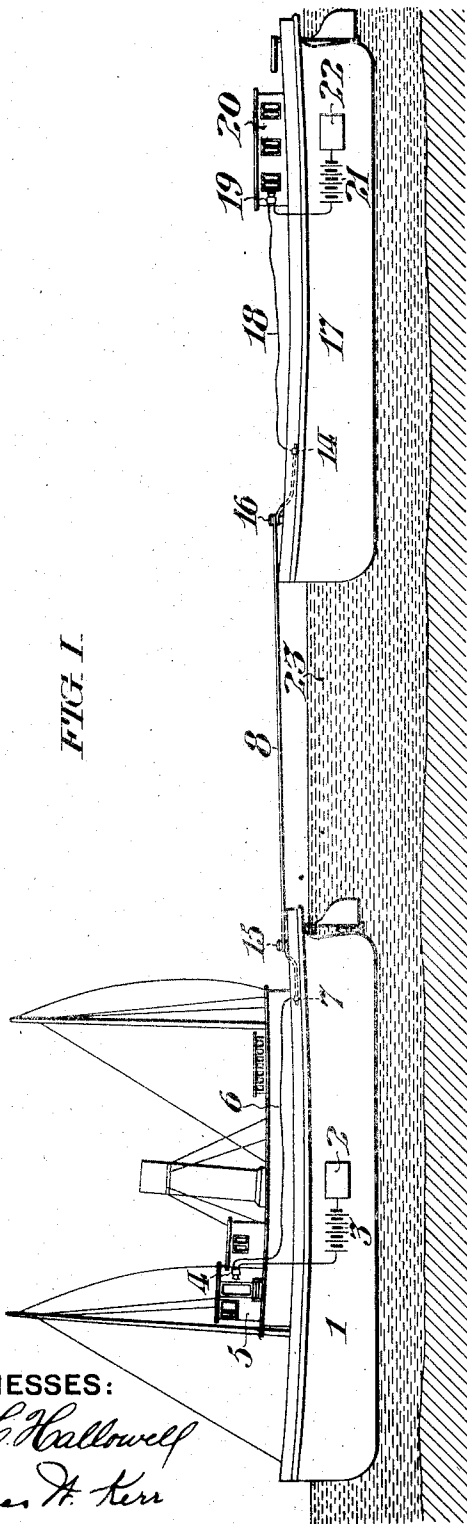
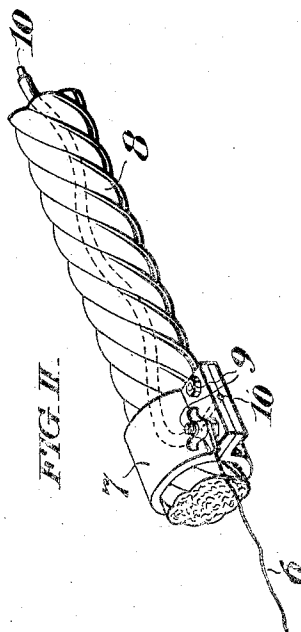


FIG. II.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ROBERT H. LINDAL, OF GLOUCESTER CITY, NEW JERSEY.

TELEPHONE.

1,043,526.

Specification of Letters Patent.

Patented Nov. 5, 1912.

Application filed April 22, 1908. Serial No. 428,542.

To all whom it may concern:

Be it known that I, ROBERT H. LINDAL, of Gloucester City, in the county of Camden and State of New Jersey, have invented a
5 certain new and useful Improvement in Telephones, whereof the following is a specification, reference being had to the accompanying drawings.

My improvement is particularly applicable to telephone circuits adapted for inter-communication between marine vessels, and particularly between a tug boat and a barge connected therewith by a tow line. As hereinafter described, one side of the telephone
15 circuit is completed through an electrical conductor carried by the tow line, and the other side of the circuit is completed through the water from metallic plates attached to the hulls of the respective vessels.

20 My invention comprises the various novel features of construction and arrangement hereinafter more definitely specified.

In the drawings; Figure I, is a side elevation of a tug operatively connected with a
25 barge and embodying my improvement. Fig. II, is a fragmentary perspective view of an end of the hawser which forms the tow line between said vessels.

Referring to Fig. I; the tug hull 1, is provided with an exterior metallic plate 2, permanently connected with the battery 3, and telephone set 4, which latter is conveniently located in the pilot house 5.

The flexible line conductor 6, is detachably electrically connected at one end with said telephone set 4, at the pilot house, and, at its opposite end with the terminal 7, carried by the hawser 8. As indicated, in Fig. II, said terminal 7, is securely clamped upon
40 the end of the hawser 8, by the bolts 9, and is electrically connected with the end of the line conductor 10, which extends through said hawser to the terminal 14, at the opposite end thereof, which is similar to the
45 terminal 7, above described. Said conductor 10, is preferably spirally laid in said hawser so as to be capable of extension under the strain to which the hawser is subjected, and without disturbing its electrical connection with said terminals 7 and 14.
50 Said hawser 8, is engaged with the capstan 15, in the tug 1, and with the capstan 16, in the barge 17, so as to form a tow line between said vessels. Said terminal 14, is
55 electrically connected, by the flexible line conductor 18, with the telephone set 19, in

the cabin 20, of said barge 17, and said set 19, is permanently connected through the battery 21, with the metallic plate 22, upon the exterior of the hull of said barge 17.
60 Therefore, it is to be understood that when the two vessels are connected as above described, an electric telephone circuit is established, upon one side through the line carried by the hawser 8, and upon the other
65 side through the water 23, supporting said vessels.

I do not desire to limit myself to the precise details of construction and arrangement above described, as it is obvious that
70 various modifications may be made, therein without departing from the essential features of my invention as defined in the appended claims.

I claim:—

1. The combination with a hawser connecting two relatively movable marine vessels and limiting the range of their relative movement; of a telephone conductor extending spirally in said hawser; electric terminals carried by said hawser, comprising
80 connecting means for said conductor; telephone sets respectively supported by said marine vessels and detachably connected with said terminals, including means upon
85 each of said vessels in electrical connection with the water supporting them.

2. The combination with a hawser connecting two relatively movable marine vessels and limiting the range of their relative
90 movement; of a telephone conductor extending in said hawser; electric terminals carried by said hawser, comprising connecting means for said conductor; telephone sets respectively supported by said marine vessels
95 and detachably connected with said terminals, including means upon each of said vessels in electrical connection with the water supporting them.

3. The combination with a hawser connecting two relatively movable marine vessels and limiting the range of their relative
100 movement; of a telephone conductor extending spirally in said hawser; electric terminals carried by said hawser, comprising
105 connecting means for said conductor; and, telephone sets respectively supported by said marine vessels and detachably connected with said terminals.

4. The combination with a hawser connecting two relatively movable marine vessels and limiting the range of their relative
110

movement; of a telephone conductor extending in said hawser; electric terminals carried by said hawser, comprising connecting means for said conductors; and, telephone sets respectively supported by said marine vessels and detachably connected with said terminals.

5 The combination with a hawser; of a telephone conductor extending spirally in said hawser; electric terminals carried by said hawser comprising connecting means for said conductor; and, telephone sets respectively detachably connected with said terminals; whereby limited relative movement of said sets, and limited extension and contraction of said hawser is permitted without breaking the telephone circuit.

6 The combination with a hawser; of a telephone conductor extending in said hawser; electric terminals carried by said hawser comprising connecting means for said conductor; and, telephone sets respectively detachably connected with said terminals; whereby limited relative movement of said sets, and limited extension and contraction of said hawser is permitted without breaking the telephone circuit.

7 The combination with a hawser; of an electric conductor extending spirally in said hawser; and, electric terminals carried by said hawser comprising connecting means for said conductor; whereby limited extension and contraction of said hawser is permitted without breaking the electric circuit.

8 The combination with telephone sets respectively supported by relatively movable marine vessels; of a hawser connecting said vessels, limiting their relative movement, and, means extending in said hawser, electrically connecting said sets in operative relation.

9 The combination with telephone sets respectively supported by relatively movable marine vessels; of a hawser mechanically connecting said vessels, limiting their relative movement; an electric conductor permanently secured to and carried by said hawser; and, terminals permanently secured to and carried by said hawser, at the respectively opposite ends thereof, permanently electrically connected with the respectively opposite ends of said conductor and having means arranged to detachably electrically connect said conductor with the respective telephone sets; whereby, said permanently united hawser and conductor form a single flexible mechanical and electrical connector, which may be readily detached, attached, and coiled like an ordinary hawser.

In testimony whereof I have hereunto signed my name at Port Richmond, N. Y., this 7 day of April, 1908.

ROBERT H. LINDAL.

Witnesses:

WILLARD CONKLIN,
FRED. D. MAY.

Correction in Letters Patent No. 1,043,526.

It is hereby certified that in Letters Patent No. 1,043,526, granted November 5, 1912, upon the application of Robert H. Lindal, of Gloucester City, New Jersey, for an improvement in "Telephones," an error appears in the printed specification requiring correction as follows: Page 2, line 4, for the word "conductors" read *conductor*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 26th day of November, A. D., 1912.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.