F. DELLA TORRE.

LOCOPHONE.

APPLICATION FILED MAR. 26, 1909.

1,035,920. Patented Aug. 20, 1912.

FIG. 1.

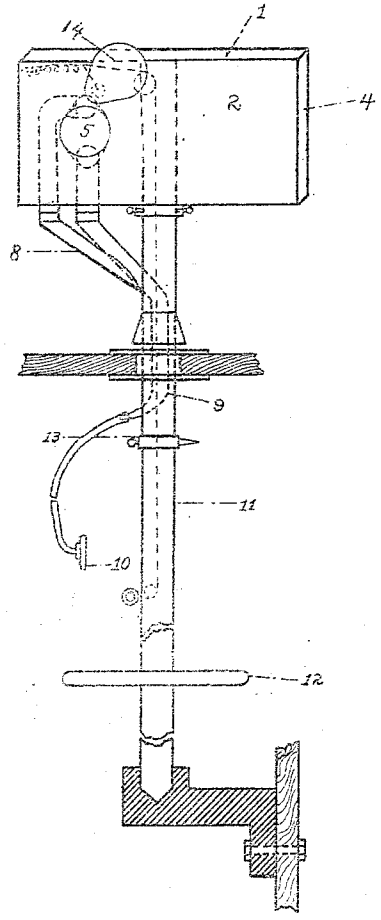


FIG. 2.

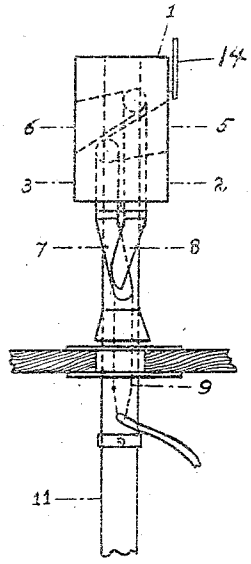
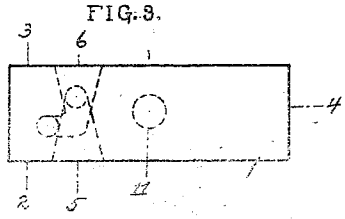


FIG. 3.



WITNESSES

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LOCOPHONE.

1,035,920. Specification of Letters Patent. Patented Aug. 20, 1912.

Application filed March 26, 1909. Serial No. 486,038.

To all whom it may concern:

Be it known that I, FRANK DELLA TORRE, a citizen of the United States, residing at Baltimore city, in the State of Maryland, have invented a new and useful Locophone, of which the following is a specification.

My invention relates to a new and improved method and apparatus for detecting and determining the direction or position of an object from which sounds emanate or are reflected, and is especially designed for use as an aid to navigation or for ascertaining the position of a more or less distant object at night, during foggy weather, or under similar conditions precluding normal observations.

My present invention has for its object a method whereby an observer can quickly and with great accuracy determine the direction of the object or station from whence acoustic signals are transmitted. The principal elements involved in my methods are a sound divider, means of vibrating the same and means of relatively comparing the various parts of the divided wave. I attain this object by the apparatus illustrated in the accompanying drawing, in which—

Figure 1 is a perspective view in a partial side elevation of my apparatus showing the method of mounting same; Fig. 2, is a vertical end view especially showing by dotted lines the receivers; Fig. 3, is a plan view taken at right angles to the view shown in Fig. 2.

Similar numerals refer to similar parts throughout the several views.

1 is the sound divider, which is preferably rectangular and on each side of which are faces 2 and 3. The front or forward end of divider 1 is the surface 4 forming the front or cutting edge which separates faces 2 and 3; 5 and 6 are the receivers located near one end of faces 2 and 3 and flush therewith; receivers 5 and 6 lead to tubes 7 and 8, which tubes are siamesed into the single flexible tube 9 and to which is connected ear piece 10.

Divider 1 with its receivers and tubes is revolved about vertical shaft 11; 12 is a hand wheel secured to vertical shaft 11 for operating same.

13 is a pointer secured to shaft 11 above hand wheel 12 to inform the operator as to the direction of divider 1 when the operator and divider are somewhat separated.

The operation of my invention is as follows—The operator placing himself for the easy manipulation of the hand wheel 12 and the observation of pointer 13 places the ear piece 10 at his ear and if desired may secure the same by any well known means. The operator being on the lookout for sound signals when hearing same proceeds at once to rotate by short vibrations or rapid rotation divider 1 as shown by the following illustration. Ordinarily when the apparatus is mounted on ship board divider 1 will be carried nominally at right angles to the keel pointing to port with we will say face 2 forward. We will take a concrete illustration; suppose a sound actually emanates from a source two points off the starboard bow, how will the operator find it? He hears the sound through receiver 5 which is located in face 2, he proceeds to rotate the divider 1 to the right at the same time vibrating it until a point is reached where the cutting edge 4 interferes with the continuous sound. By means of the rapid vibration and the gradual revolving, the sound wave is thus divided by the cutting edge 4, and thrown alternately into receivers 5 and 6 at a point reached when the faces 2 and 3 are alternately similarly located with reference to the source of sound. In this case for example the divider 1 will be pointing to the source of sound, *i. e.*, two points off the starboard bow. To determine whether the sound is two points off the starboard bow or two points off the port quarter, means is provided for blanking one of the receivers by a cover as shown by 14 or other convenient means as by closing one of the receiver tubes. He may then by swinging the divider 1 at right angles to this line then by reversing 180 degrees determine the actual source of sound.

What I claim as my invention and desire to secure by Letters Patent is—

1. The method of locating a source of sound which consists in dividing the waves emanating from said source, and comparing the divided parts by bringing first one part then another through a common conductor.

2. The method of locating a source of sound which consists in, dividing the waves emanating from said source, and comparing the direction of the divided parts by bringing first one part then another through a common conductor rotated through a determined arc.

3. The method of determining the direc-

tion of a sound wave by receiving the same into one of two diametrically opposite receivers and determining the direction of the source of the sound wave by stopping one of the said receivers, thus determining into which of the receivers said sound wave was received.

4. The method of locating a source of vibrations which consists in, dividing the vibrating waves emanating from said source and comparing the divided parts by bringing first one part and then another part to a common point.

5. The method of locating a source of vibrations which consists in, dividing the vibrating waves emanating from said source, and comparing the direction of the divided parts by bringing first one part and then another part to a common point.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK DELLA TORRE.

Witnesses:
WILLIAM W. VARNEY,
H. WESTON CROWL.