

No. 660,802.

Patented Oct. 30, 1900.

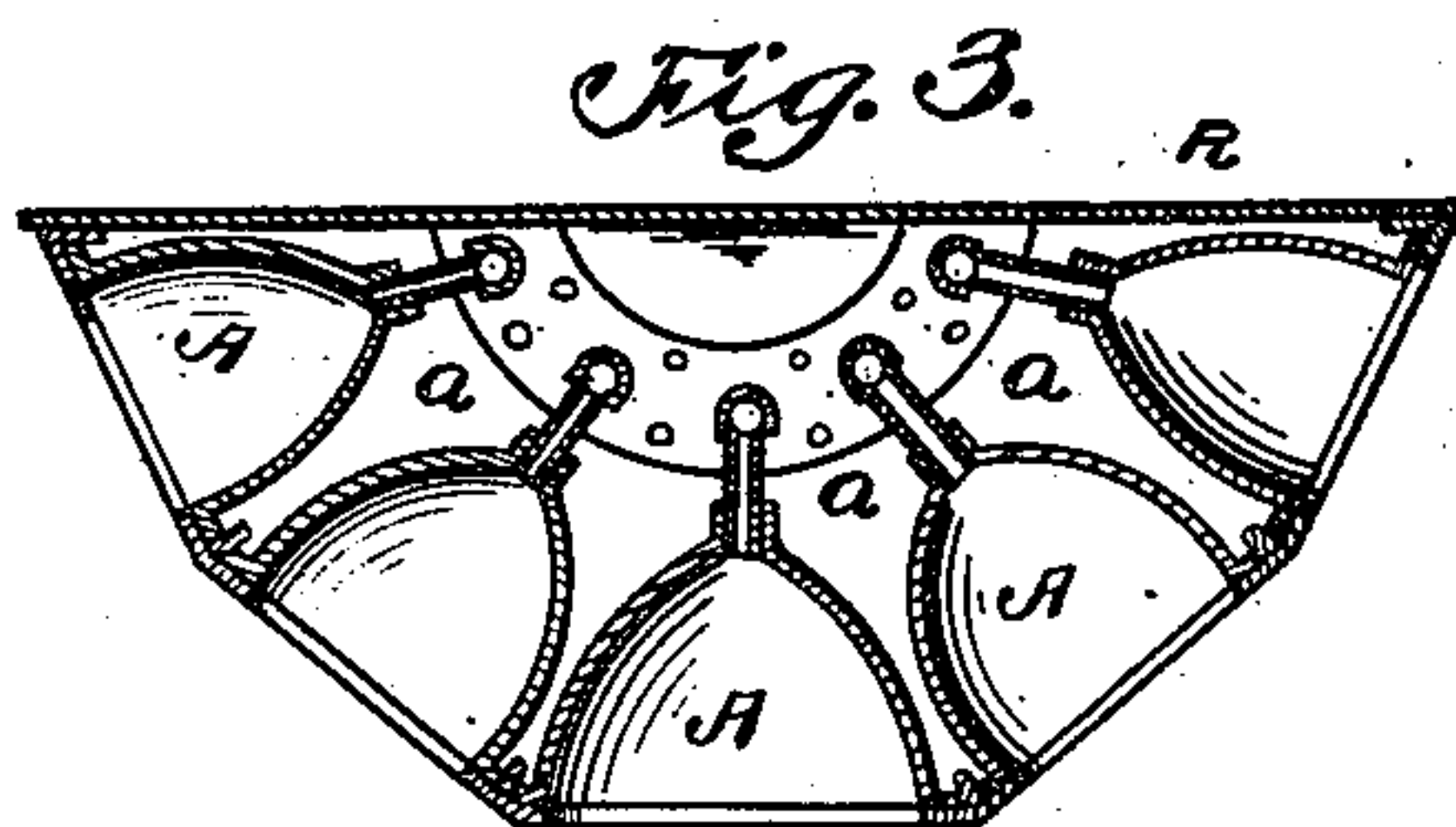
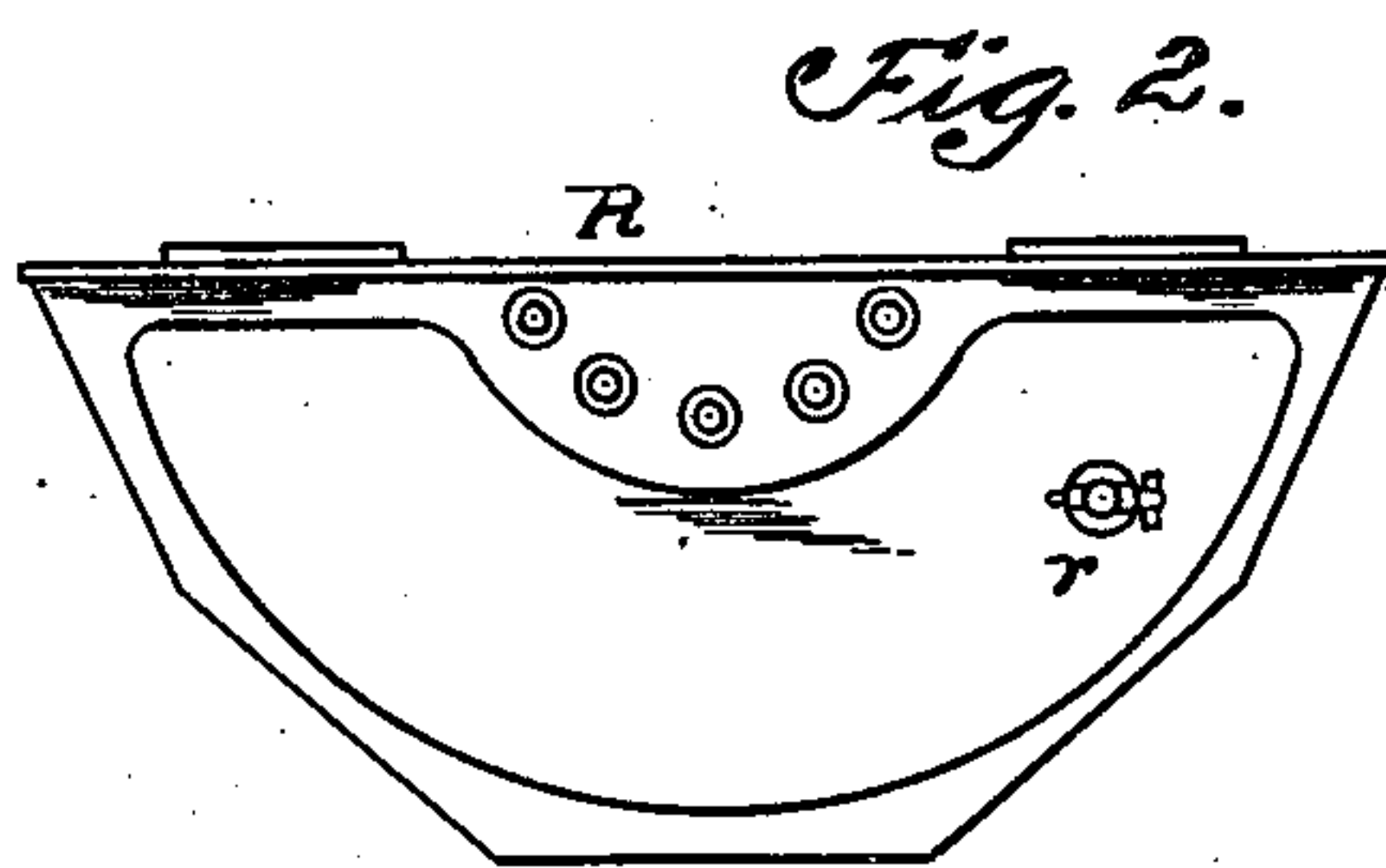
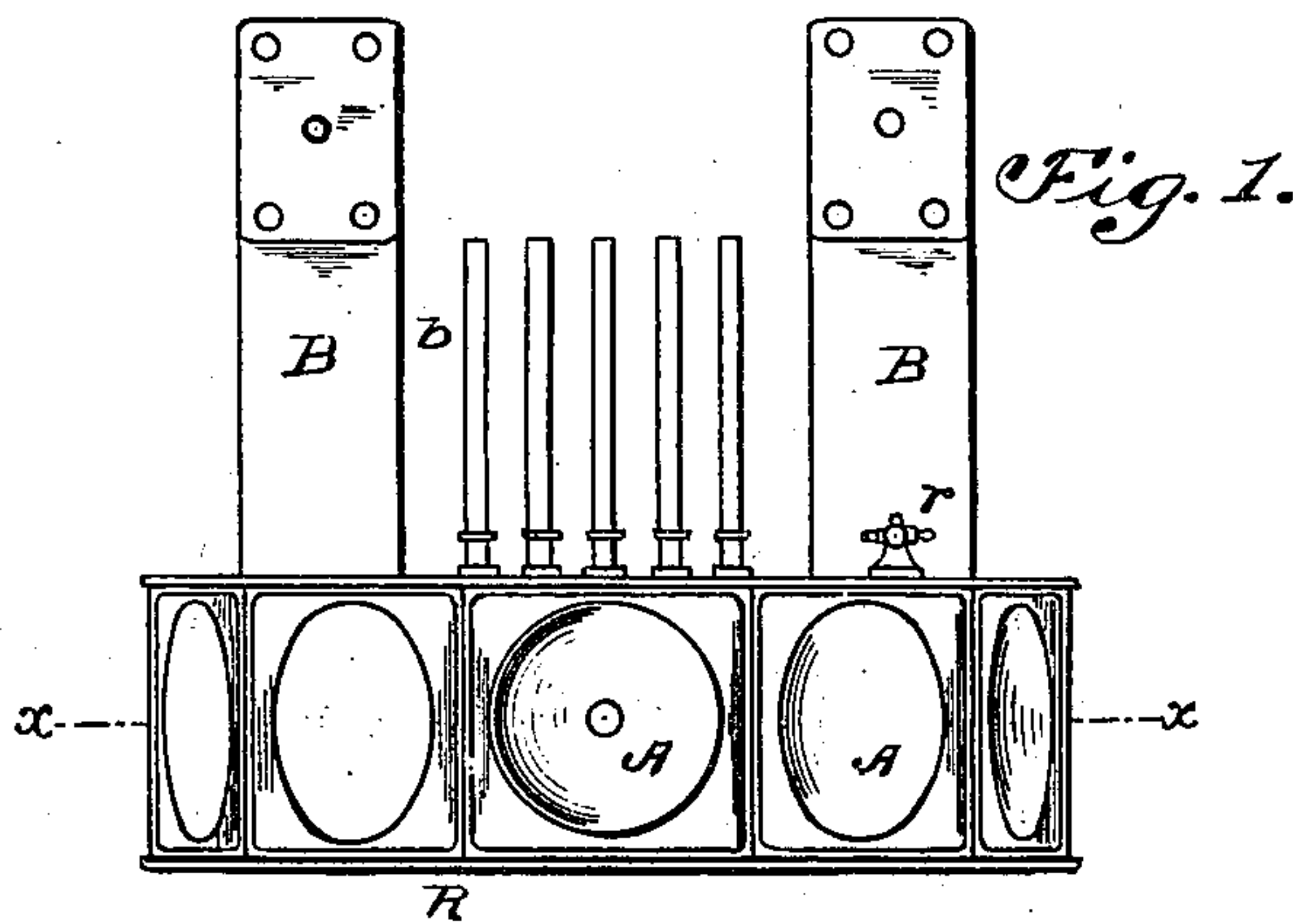
M. RUSSO D'ASAR.

TELEPHONIC APPARATUS FOR USE ON VESSELS, &c.

(Application filed Feb. 28, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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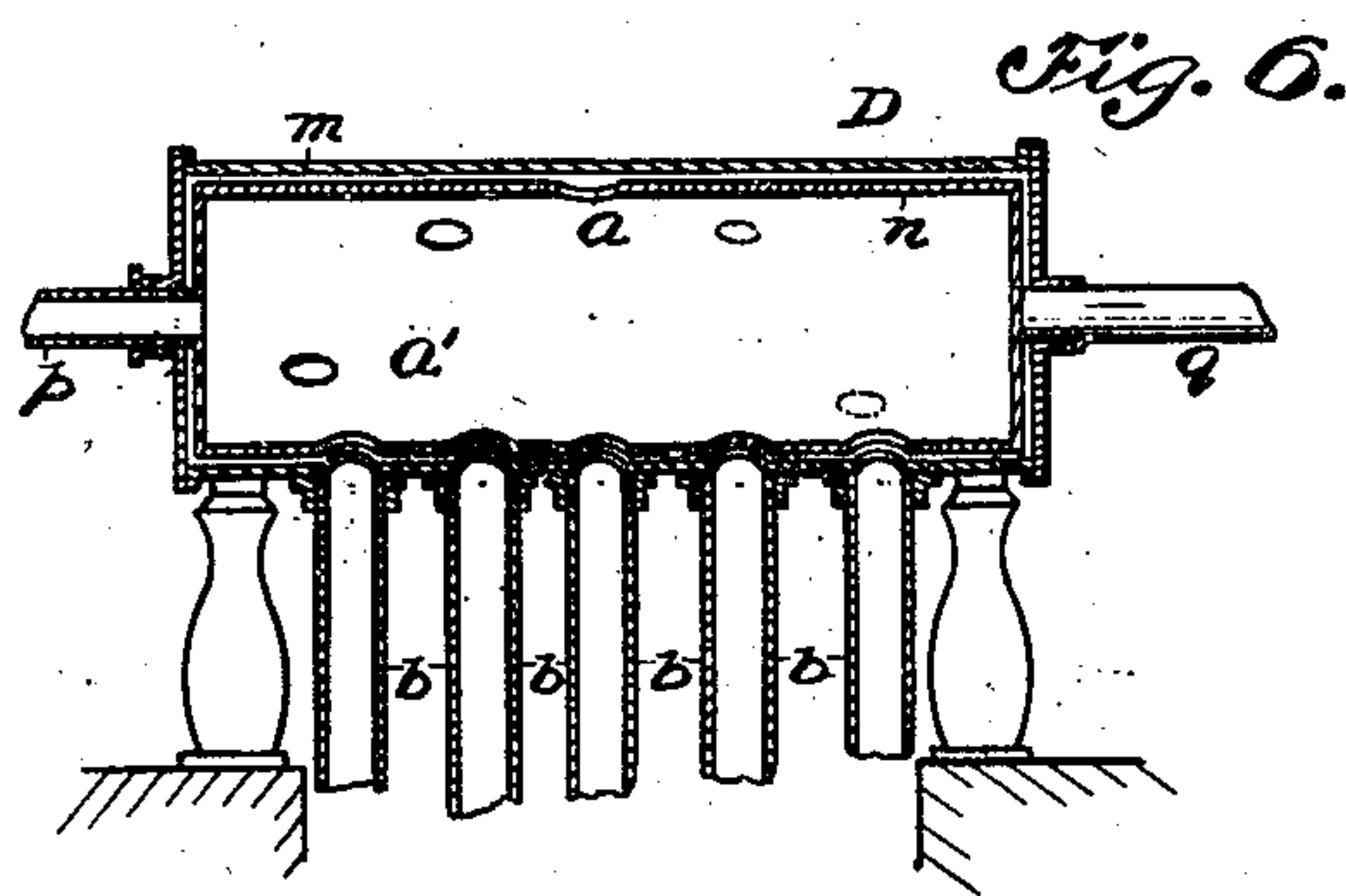
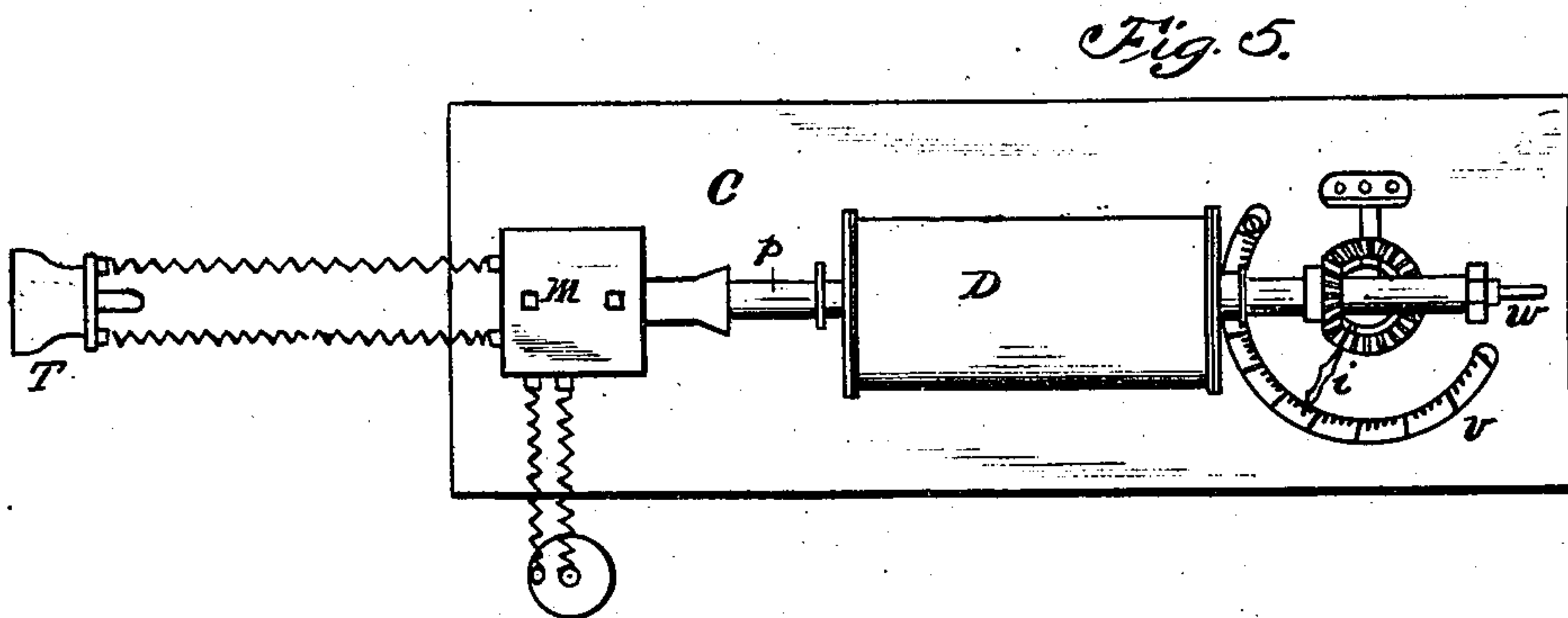
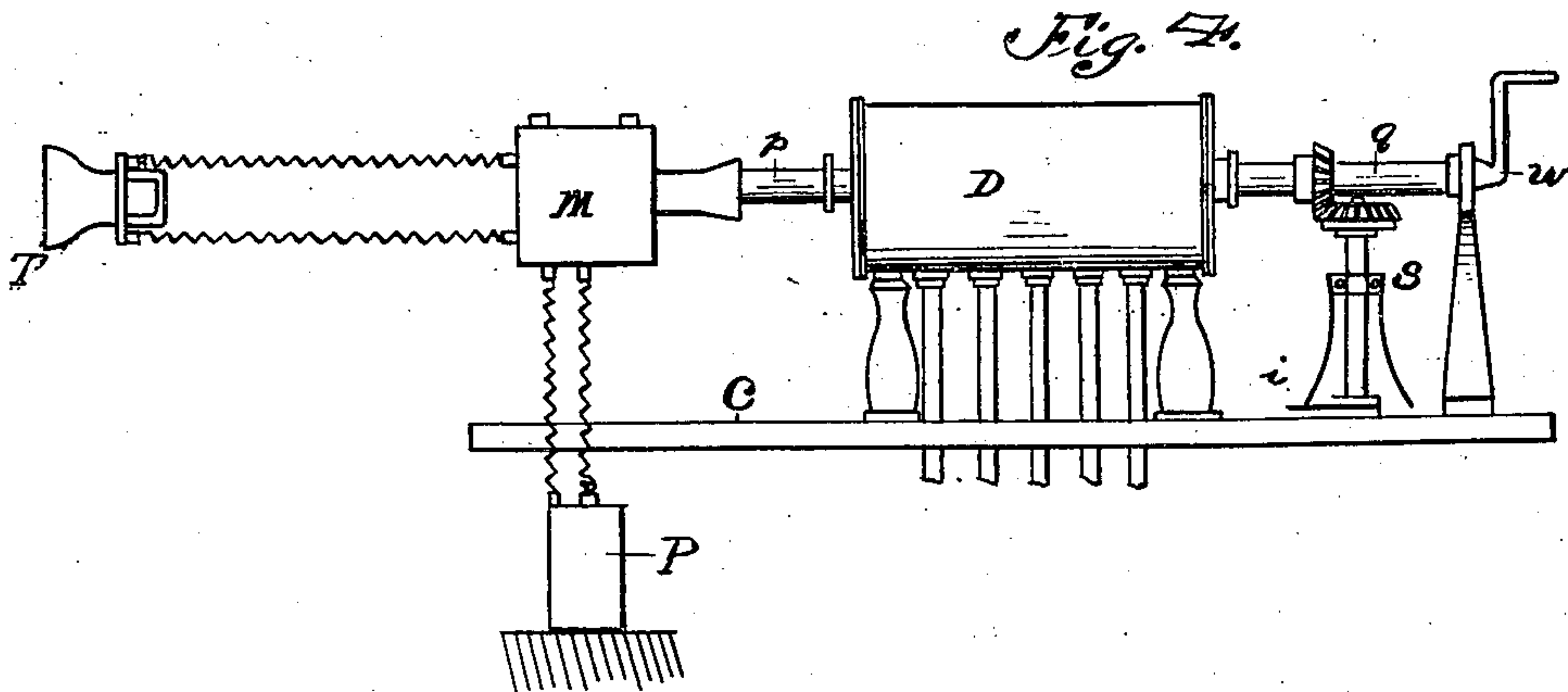
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# UNITED STATES PATENT OFFICE.

MARIO RUSSO D'ASAR, OF GENOA, ITALY.

## TELEPHONIC APPARATUS FOR USE ON VESSELS, &c.

SPECIFICATION forming part of Letters Patent No. 660,802, dated October 30, 1900.

Application filed February 28, 1899. Serial No. 707,154. (No model.)

To all whom it may concern:

Be it known that I, MARIO RUSSO D'ASAR, a subject of the King of Italy, and a resident of Genoa, Kingdom of Italy, have invented certain new and useful Telephonic Apparatus for Use on Vessels for Determining the Position of Bodies Moving Outside of Same, of which the following is a specification.

My invention relates to a telephonic apparatus for use on vessels for determining the position of bodies moving outside of the same, so that, for instance, a vessel in a fog can ascertain the position of vessels moving near the same, and thus avoid collisions.

The water in which a steam vessel travels is put in a vibratory condition owing to the concussions imparted thereto by the propelling apparatus. According to my invention I provide an apparatus for use in connection with ships to admit of such vibrations being collected and transmitted to a telephonic apparatus, this forming the subject of the present invention.

The apparatus consists of a sound-receiver, a direction-indicator, operating means for the same, a microphone, a battery, and a telephone.

The accompanying drawings represent the apparatus.

Figure 1 shows the sound-receiver in elevation. Fig. 2 is a plan view of the same. Fig. 3 is a section on line  $x x$ , Fig. 1. Fig. 4 is an elevation of the direction-indicator, its operating parts, the microphone, the battery, and the telephone. Fig. 5 is a plan view of the same. Fig. 6 is an enlarged vertical longitudinal section through the center of the direction-indicator.

The sound-receiver R, Figs. 1, 2, and 3, is a metallic box of the shape of a semiprism, or having faces at angles to each other, with a cock  $r$  serving to keep it closed when the air has been exhausted. Each of the faces of the box is provided with a concave semispherical or parabolic sound-collector A, which may also be of metal, the arrangement being such that the axial lines of all the sound-collectors converge toward the rear wall of the box, radiating from the same like the lines of a fan. In the center of each collector a circular opening is provided, connected to a metal tube  $a$ . All these metal tubes  $a$  are bent down to-

ward the bottom of the box in a curved line and finally terminate in the cover of the box itself, whence, through the medium of the transmitting-tubes  $b$ , of flexible or suitable material, they are connected to the indicator. The whole receiver R is fixed, by means of supports or brackets B or in any other appropriate manner, to a side of the ship, so that it remains permanently immersed in the water, while the tubes  $b$ , starting from the receiver, are carried into the ship and connected to the direction-indicator. This indicator D, Figs. 4, 5, and 6, is formed of two concentric metal cylinders, the outer cylinder  $m$  being fixed and supported by two small columns on a base C. On the under side it is provided with as many openings having corresponding sockets as there are collectors in the receiver R—in the present case five. To these sockets are secured the tubes  $b$ , coming from the receiver R. The second cylinder  $n$  is located inside the first and is adapted to turn on end bearings in the vertical end walls of the cylinder  $m$ . This second cylinder  $n$  terminates at one side in a tube  $p$  and at the other side in a small shaft  $q$ . It is also provided with five openings in line with each other in the direction of its length, which correspond with the five openings of the cylinder  $m$ , so that the two may coincide. In addition to these openings the cylinder  $n$  is furnished with five other openings  $a'$ , arranged spirally upon its surface, so that at each sixth turn successively one of these openings will correspond with one of the five openings of the cylinder  $m$ . The small shaft  $q$ , which terminates in a crank  $w$ , is provided with a bevel-wheel which is adapted to gear with another bevel-wheel or with a toothed sector mounted on a spindle  $s$ . On this spindle  $s$  a hand or index  $i$  is fixed, which indicates upon the graduated dial  $v$  on base C which of the openings of the cylinder  $m$  and cylinder  $n$  coincide. The tube  $p$  of the cylinder  $n$  extends to the microphone M, which is in communication with the battery P and with the telephone T.

With reference to Figs. 1 to 6 the operation is as follows: When the five openings of cylinder  $n$ , which are arranged in a straight line, correspond with the five openings of the cylinder  $m$ , the interior of the cylinder  $n$  receives the sounds collected by all the five collectors



of the receiver R. On rotating the cylinder *n* to the extent of one-sixth of its circumference the coincidence of the first hole of the cylinder *m* with the first hole *a'* of the cylinder *n* is obtained. Thus into the interior of the last cylinder there will only pass the vibrations collected by the first collector. On continuing to turn the cylinder to the extent of another sixth of its circumference the second hole only of the cylinder *m* will coincide with the second hole *a'* of the cylinder *n*, and thus the vibrations collected by the second collector pass into the interior of the cylinder *n*, and so on, so that into the interior of the cylinder *n* there can arrive, and consequently can be thence transmitted to the microphone and to the telephone-receiver of the telephone apparatus, either the vibrations collected by all the collectors together or those collected by each collector, according as is indicated by the index *i* upon the dial *v*.

It is evident that the base C may be so arranged on the ship that the direction of the five collectors of the collector correspond with the positions of the five divisions of the dial *v*, so that when the operator holds the telephone to his ear while turning the cylinder *n* by means of the crank he will, owing to the characteristic vibrations he hears, gather from the index *i* the real direction in which the moving body or vessel he is listening for is at the time, while the intensity of the vibrations will be able to approximately indicate the distance. In Fig. 4 indicator D and pipe *p* form means for connecting the collectors at will, separately or together, to the electric telephone apparatus. Finally, it is evident that instead of one telephone two of them may be employed, but joined by a band placed upon the head of the operator, and that details of the different arrangements shown in the drawings may be varied without departing from the essence of my invention.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In an apparatus of the character described the combination of a box adapted to

be applied to a submerged part of a ship, the box having several sides at different angles, concave collectors in several such sides, and a separate sound-transmitting tube extending from each collector.

2. The combination of submerged collectors A, sound-transmitting tubes *b* extending therefrom, and a direction-indicator to which tubes *b* connect, as and for the purposes set forth.

3. In a telephonic apparatus for ships two concentric cylinders, the interior one of which is provided with openings and can be rotated, while the exterior one is fixed and is provided with openings and tubes, which are connected to submerged collectors, substantially as and for the purpose described.

4. In a telephonic apparatus for ships an inner and an outer cylinder each provided with a series of holes all of which can be in correspondence with each other at the same time the inner one having in addition another series of holes arranged so that at each turn or partial turn of the inner cylinder one of them corresponds with one of the openings of the outer cylinder, substantially as and for the purpose described.

5. The combination of a direction-indicating device, submerged collectors, tubes from the collectors to said indicating device, a microphone, a pipe from the indicating device to said microphone, and a telephone-receiver.

6. The combination of several submerged collectors, electric telephone apparatus at a distance from the collectors, and sound-transmitting tubes for connecting the collectors with the electric telephone apparatus.

7. The combination of several submerged collectors, a direction-indicating device, pipes connecting the several collectors to the indicating device there being a separate tube for each collector, a dial, and an index-hand moved with said device to indicate the position of the collectors.

Signed at Genoa, Italy, this 9th day of February, 1899.

MARIO RUSSO D'ASAR.

Witnesses:

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