

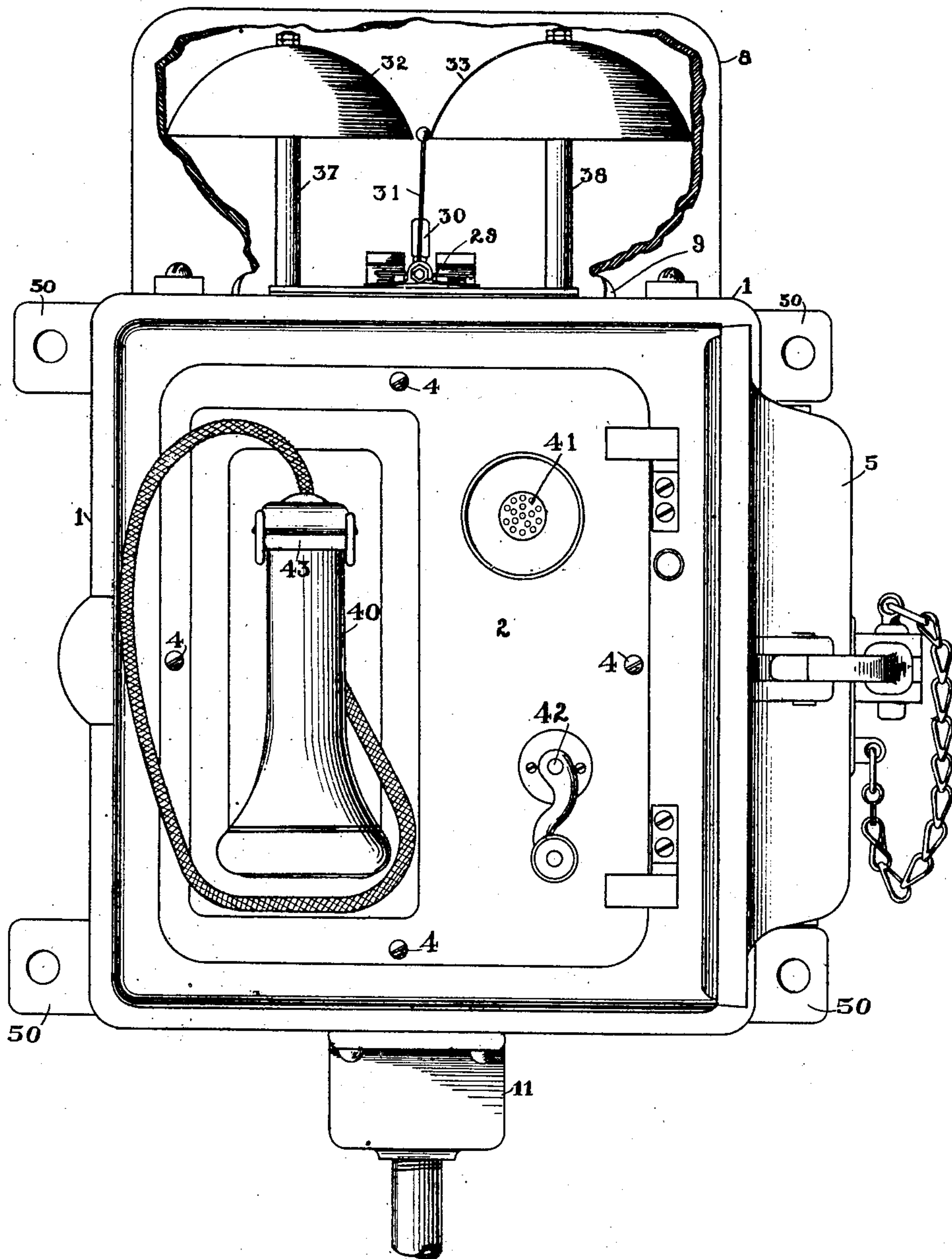
C. E. HAGUE.
MOISTURE PROOF TELEPHONE SET.
APPLICATION FILED MAY 25, 1910.

1,108,166.

Patented Aug. 25, 1914.

2 SHEETS-SHEET 1.

Fig 1



Witnesses
James Comee
H. W. Lucia

Inventor
Charles E. Hague
By Clifford C. Bradbury
ATTORNEY

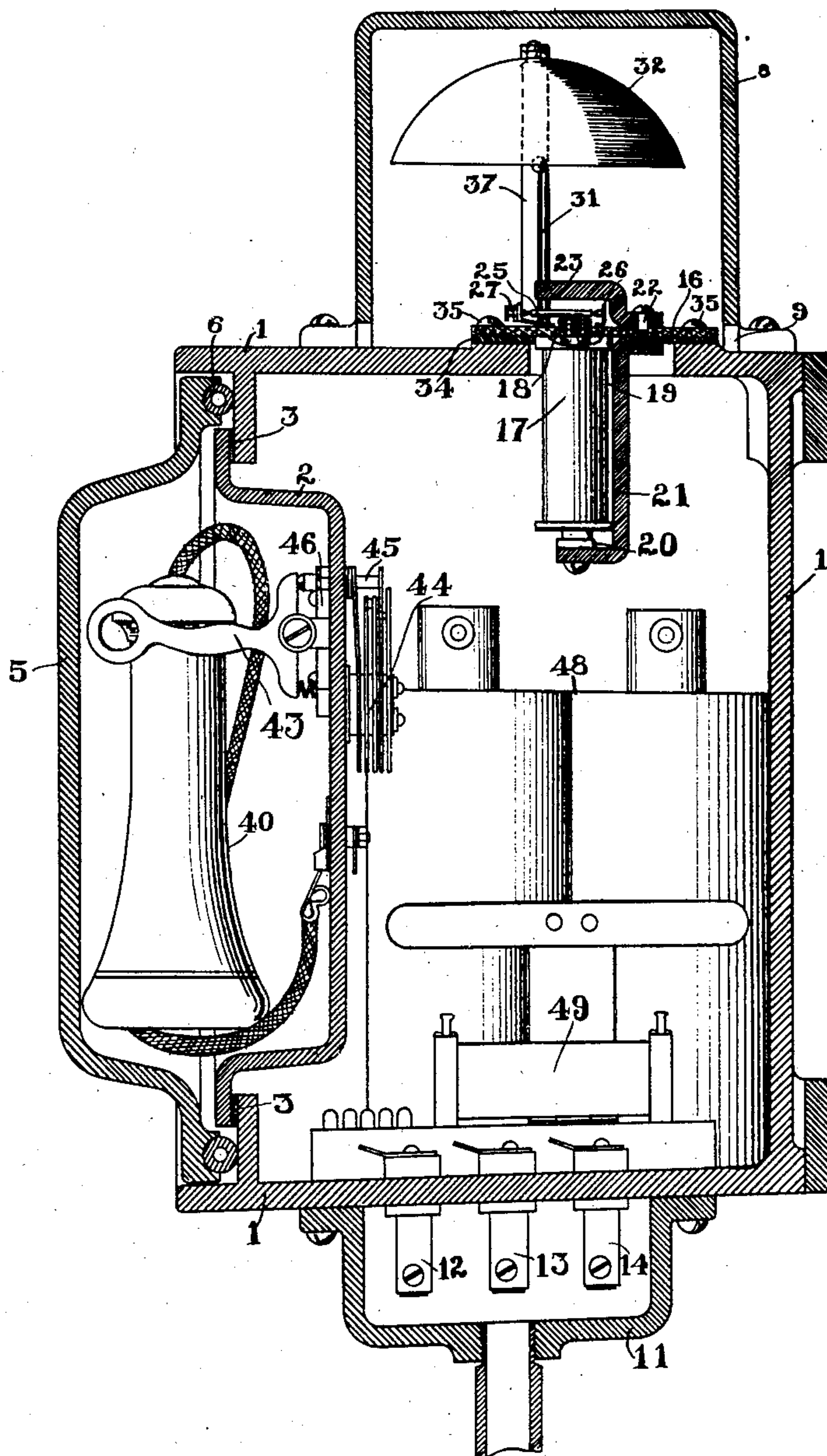
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2 SHEETS—SHEET 2.

Fig 2



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES E. HAGUE, OF ROCHESTER, NEW YORK, ASSIGNOR TO STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

MOISTURE-PROOF TELEPHONE SET.

1,108,166.

Specification of Letters Patent.

Patented Aug. 25, 1914.

Application filed May 25, 1910. Serial No. 563,260.

To all whom it may concern:

Be it known that I, CHARLES E. HAGUE, a citizen of the United States, residing in Rochester, county of Monroe, and State of New York, have invented certain new and useful Improvements in Moisture-Proof Telephone Sets, of which the following is a specification.

My invention relates to water-proof telephone sets of the character adapted for use in mines or other places where the apparatus must necessarily be protected from moisture and from gases which would cause corrosion if allowed to come in contact with the interior parts of the telephone sets.

A particular feature of my invention is the means by which I operate the tapper for sounding the call-bells, these being necessarily more or less exposed to the dampness and gases, and at the same time maintain the electro-magnet entirely inclosed within the gas-proof chamber of my telephone set.

My invention is illustrated in the accompanying drawing in which—

Figure 1 is a front view partially broken away with the door open, and Fig. 2 is a section through Fig. 1 with the door closed.

The illustrated embodiment of my invention comprises a cast-iron box portion 1, having an open front into which the inner door 2 is fitted, this door being held tightly against the sealing ring 3 by means of screws 4 so that no moisture or gases may pass the inner door and enter the inner chamber. The outer door 5 is hinged to the main casing 1 and is provided with a rubber or other sealing cushion 6, which, when the door is closed, prevents moisture and gases from entering the space between the outer and inner doors. The cap 8 forms a cover and partial protection for the bells and the moving mechanism for sounding the gongs, this cap having the opening 9 at the front and sides to permit the sound to emanate freely in all directions.

The exterior circuit wires are brought to the telephone through water-proof conduit, this conduit terminating in the connection box 11 which is adapted to be tightly secured against the lower surface of the main inclosing case so that the connection terminals 12, 13 and 14 are completely protected from moisture and gas.

The polarized ringer, the working parts

of which are exposed more or less to gases and moisture, is mounted upon the non-magnetic metal plate 16, the magnet coils 17 extending below this plate and being secured to the plate by the nuts 18 which thread upon the iron cores 19 of the coils. The lower ends of these cores are connected by a soft iron yoke 20, this yoke bearing against the upper faces of the two steel polarizing magnets 21. The magnets 21 are Z shaped and the upper ends are turned back and rest against the lower face of the non-magnetic plate 16. Above the non-magnetic plate 16 and secured to the upper end of the permanent magnets 21 by iron screws 22 are the extensions 23 which carry the magnetism of the permanent magnets 21 into proximity with the armature 25 so as to polarize this armature in a manner well known in the art. This armature is pivoted between the point 26 and the set screw 27 which are held in the spring brass bridge 29. The middle portion of this bridge is adapted to be moved toward and away from the ends of the magnet poles by means of the set screw 30 which affords a ready adjustment for the position of the armature relative to the magnet cores. The tapper arm 31 is secured to the armature and extends outwardly into the proper position to strike the gongs 32 and 33 in the vibration of the tapper. The non-magnetic plate 16 is separated from the main inclosing case by the rubber or other sealing ring 34, this plate being securely held in position by means of the screws 35. The bells 32 and 33 are supported by posts 37 and 38 and the adjustment, to secure the proper spacing between bells, is accomplished by drilling the bells slightly eccentric and then rotating them to the proper position.

Upon opening the main door 5, the receiver 40, transmitter 41, and generator crank 42 are exposed to the party desiring to use the telephone. The receiver is supported upon a pivoted switch-hook 43, this hook being adapted to control the switch springs 44 by means of the plunger 45, this plunger being fitted closely through the plate 46 to prevent gases and moisture from entering the interior of the case. Within the main case are the battery cells 48, induction coil 49 and generator not shown, these parts being of the usual type and forming no part of my present invention.

The main case 1 is provided with four ears 50 by means of which the telephone may be secured to a support.

It will be seen that with my invention the 5 parts of the telephone which would be damaged by moisture or gases are entirely enclosed so that even though the telephone should become entirely submerged in water it would not be damaged and could be used 10 immediately after the water had subsided below the level of the door. This becomes of considerable importance in the operation of mine telephones, since it is very important that the telephones should at no time become 15 disordered.

Though I have shown my invention applied to a mine telephone, it is to be understood that it is also applicable to police or outdoor telephones and in fact to extension 20 bells or any other device wherein it is important to protect the electrical parts of the device from moisture and gases.

What I claim is:—

1. In a telephone set, the combination 25 with a water and gas proof casing, of a polarized ringer mechanism, a permanent magnet for said mechanism, said magnet being in two pieces, one piece within the waterproof casing and the other piece outside the 30 waterproof casing, said pieces being joined by connectors of magnetic material and an armature outside the casing polarized by the portion of the permanent magnet extending outside the casing.

35 2. In a telephone set, the combination with a plate, of an electromagnet and a permanent magnet on one side of said plate and

an armature and an extension for said permanent magnet on the other side of said plate, said plate forming a water and gas 40 proof partition between the armature and the electromagnet.

3. In a telephone set, the combination with a non-magnetic plate, of a ringer coil having its core extending through said plate, 45 a nut on the end of said core to secure said core and said plate together, a permanent magnet extending from the other end of said core to said plate, a magnetic extension for said permanent magnet on the opposite side 50 of said plate, binders of magnetic material extending through portions of said magnets and said plate, and an armature adapted to be polarized by said permanent magnet.

4. In a telephone set, the combination 55 with a non-magnetic plate, of a pair of electro-magnets secured to one side of said plate, an armature secured to the other side of said plate in position to be actuated by said electro-magnets, a permanent magnet 60 on the former side of said plate having a portion resting against that side of said plate, an extension for said permanent magnet on the latter side of the plate for polarizing said armature, and magnetic means 65 for securing the extension to said permanent magnet.

Signed by me at Rochester, county of Monroe, and State of New York, in the presence of two witnesses.

CHARLES E. HAGUE.

Witnesses:

H. W. LUCIA,
J. H. HOLDEN.