

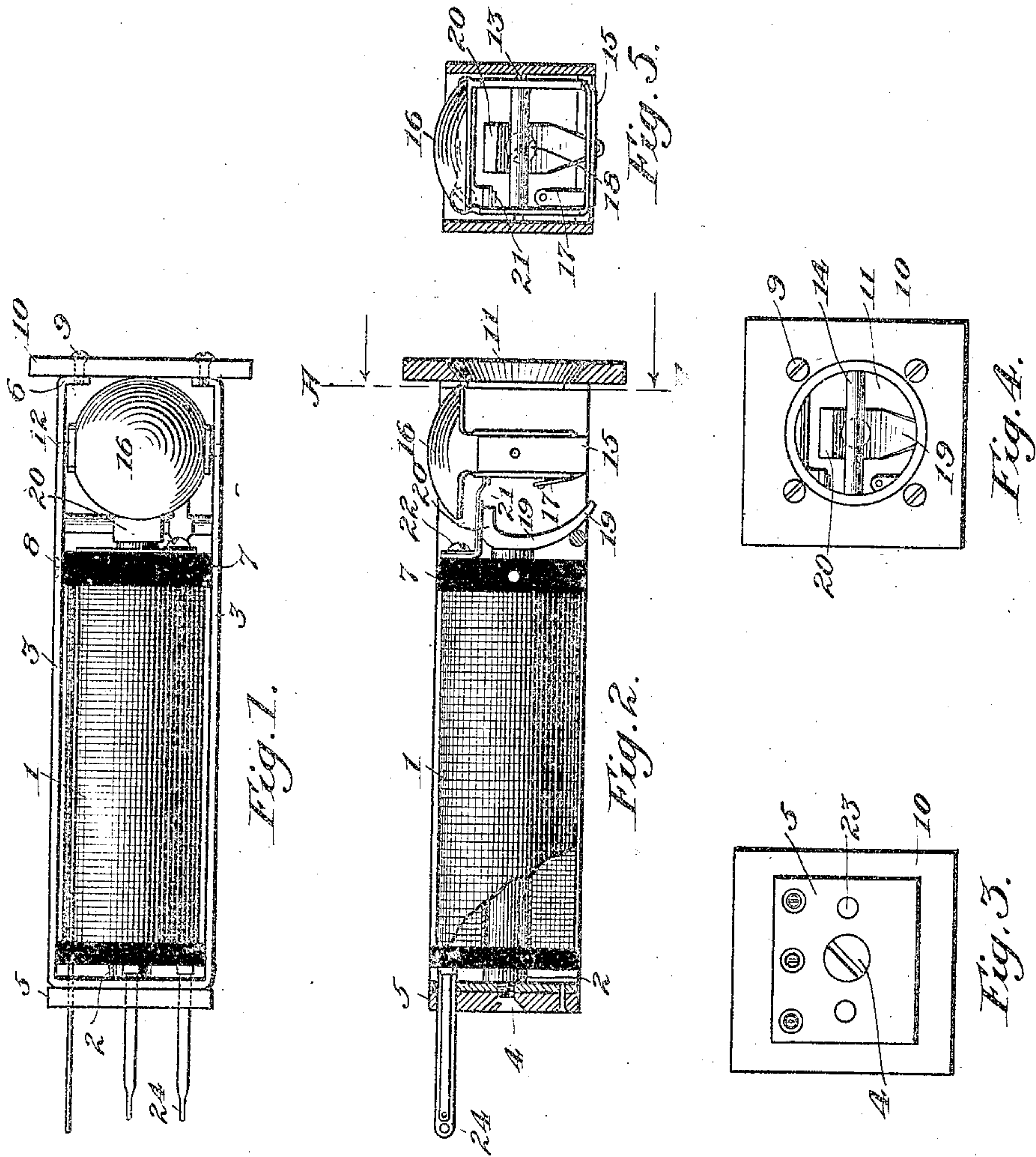
No. 878,112.

PATENTED FEB. 4, 1908.

E. W. BRACKETT.
ELECTROMECHANICAL SWITCHBOARD SIGNAL.

APPLICATION FILED MAY 29, 1907.

2 SHEETS—SHEET 1.



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Fig. 7

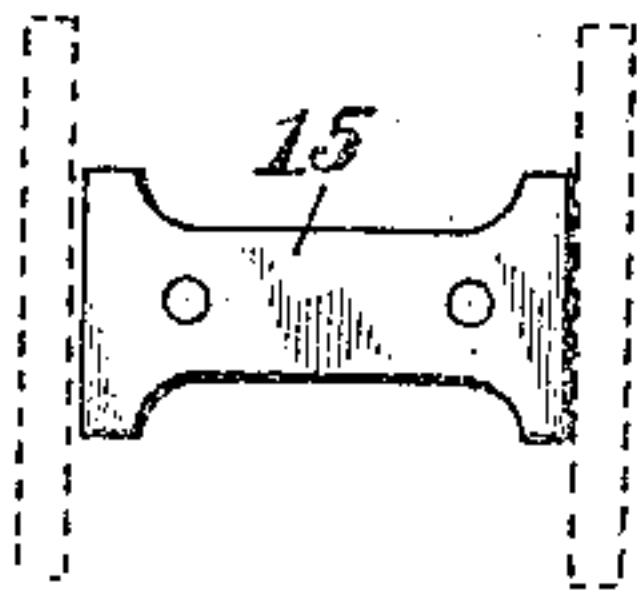


Fig. 6.

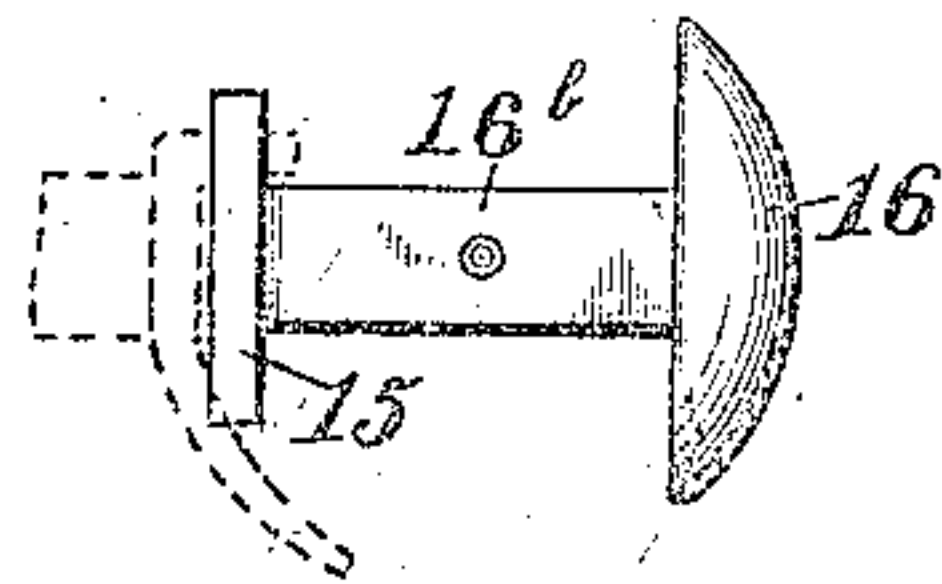


Fig. 8.

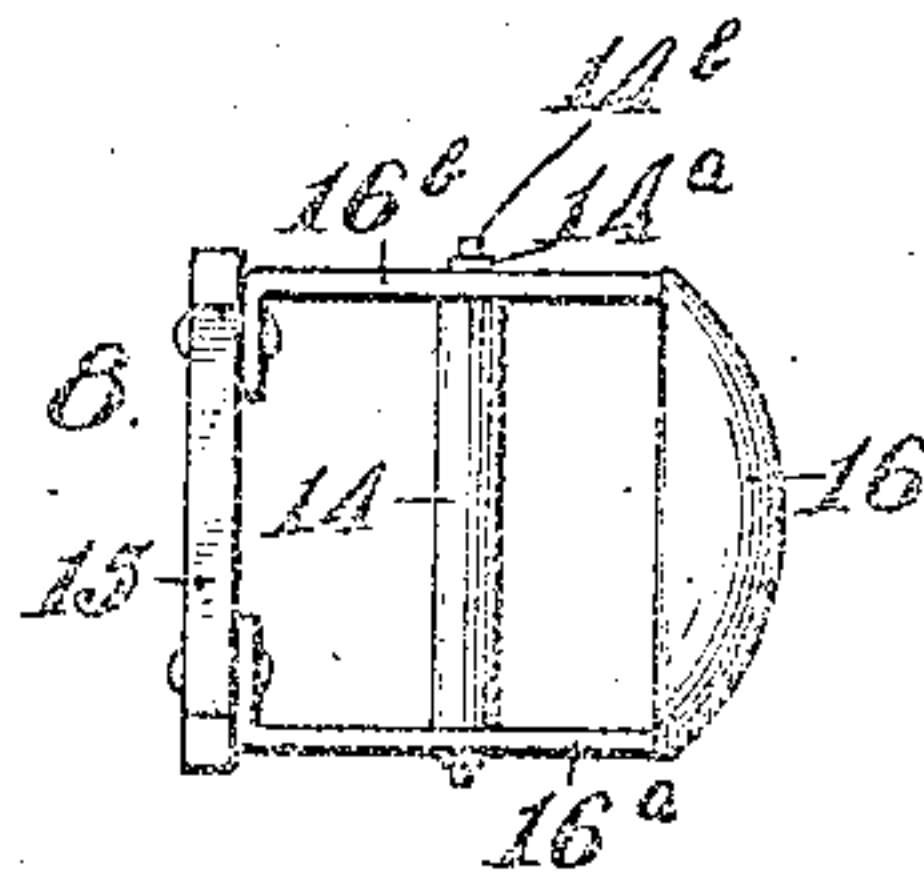


Fig. 10.

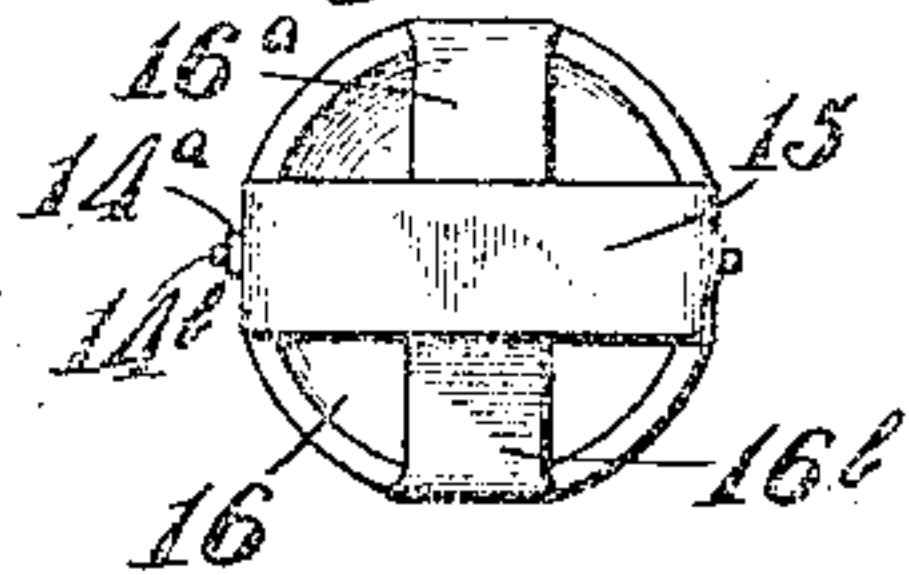


Fig. 9.

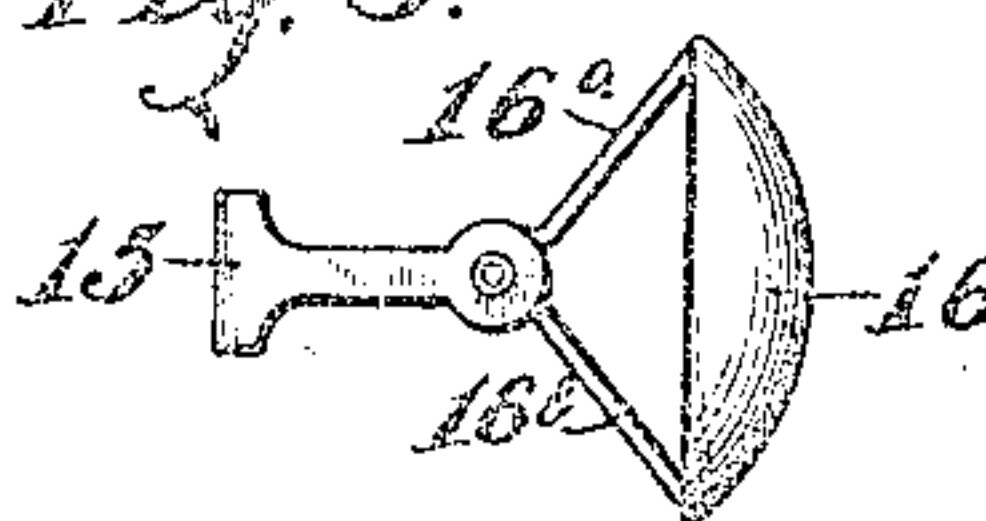


Fig. 12.

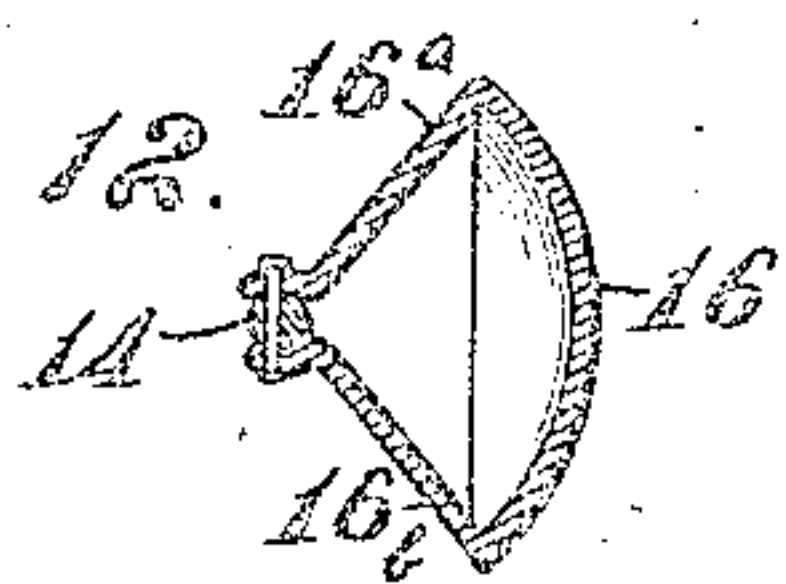


Fig. 11.

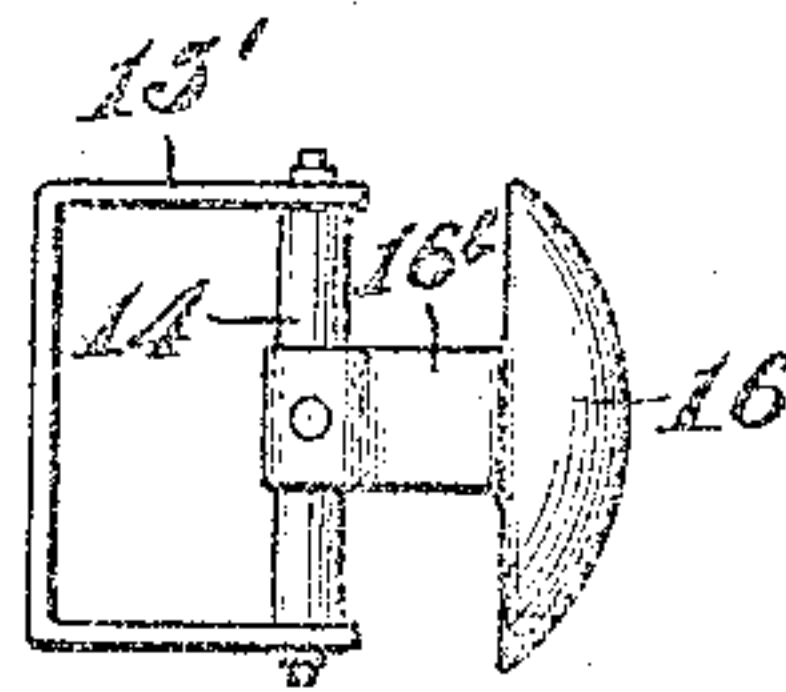


Fig. 13.

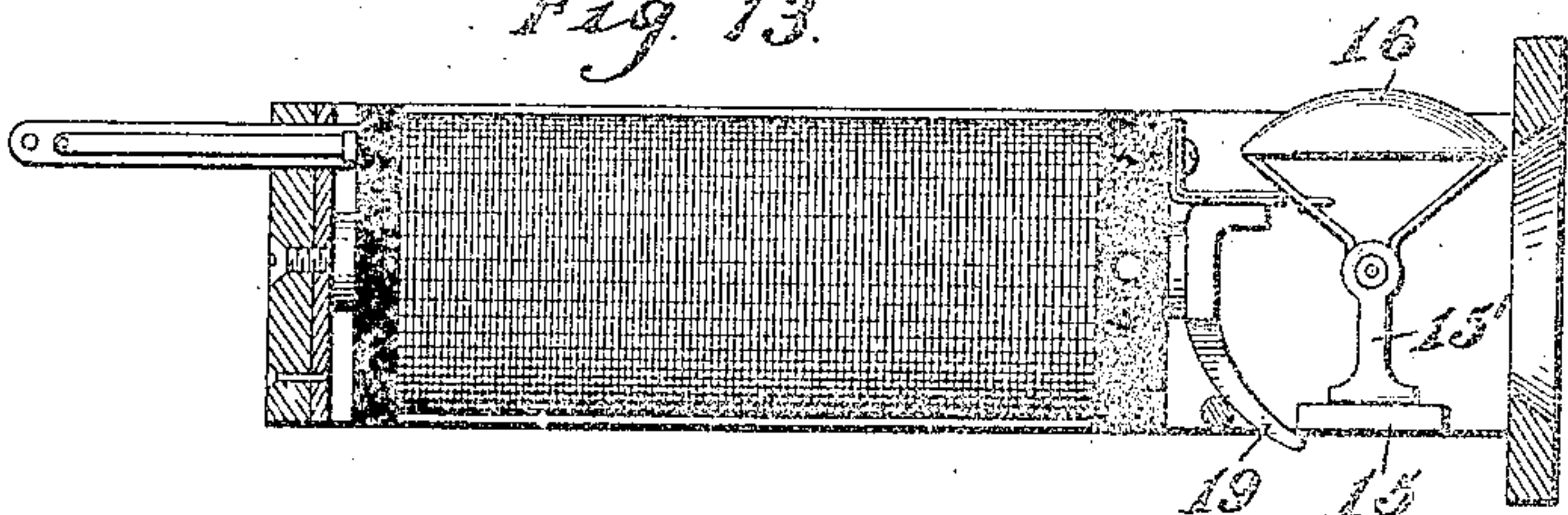
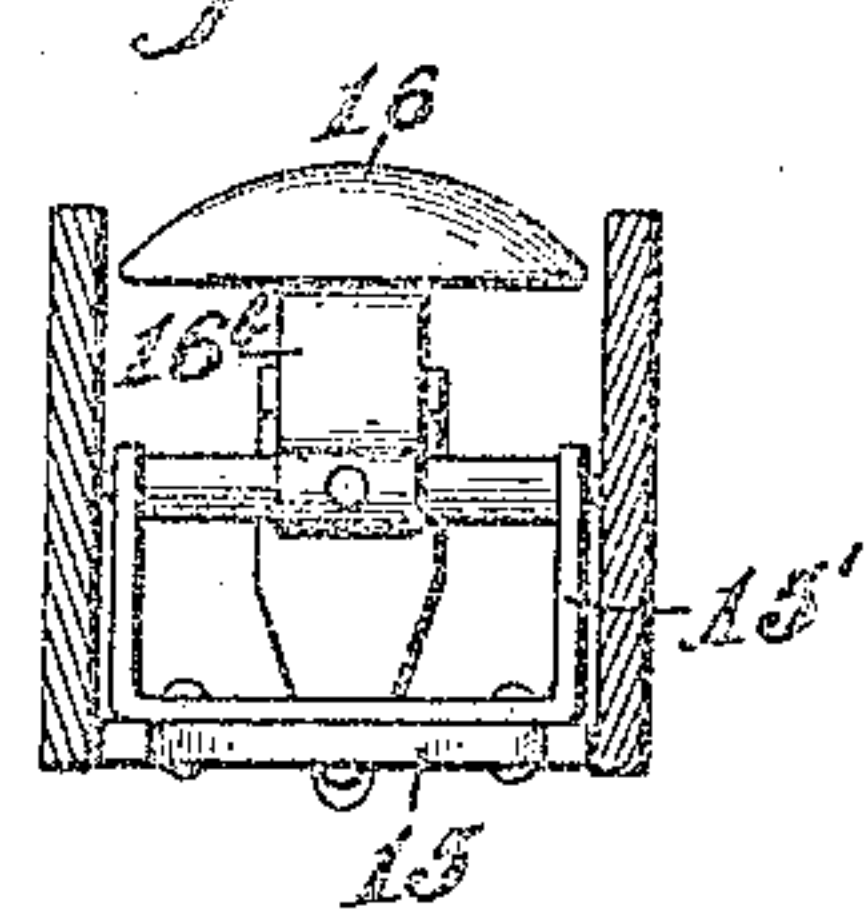


Fig. 14.



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UNITED STATES PATENT OFFICE.

ERNEST W. BRACKETT, OF ELYRIA, OHIO, ASSIGNOR TO THE DEAN ELECTRIC COMPANY, OF ELYRIA, OHIO, A CORPORATION OF OHIO.

ELECTROMECHANICAL SWITCHBOARD-SIGNAL.

No. 878,112.

Specification of Letters Patent.

Patented Feb. 4, 1908.

Application filed May 29, 1907. Serial No. 376,433.

To all whom it may concern:

Be it known that I, ERNEST W. BRACKETT, a citizen of the United States, residing at Elyria, in the county of Lorain and State of Ohio, have invented certain new and useful Improvements in Electromechanical Switchboard-Signals, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to electro-mechanical switch board signals, and it may be classed with those devices in which an electromagnet is provided with a comparatively heavy armature pivoted in close proximity to said magnet, and attached to which is a light target that is brought into view when the armature is attracted toward the pole-piece of the magnet, and in which on the breaking of the circuit in the magnet coils, the weight of the armature overbalances that of the light target and the latter is swung back to its original position.

The object of my invention is to provide a signal which operates quickly and positively when the electromagnet controlling the signal is energized, and one in which the operating parts are automatically restored to their normal position as soon as the current is cut off.

A further object of my invention is to provide a self-contained indicator arranged in a compact form which can be readily assembled with other similar indicators on the switchboard and which can be readily removed without the necessity of dismantling its various parts.

Heretofore in devices of this kind trouble has been experienced in constructing the operating parts so that they will respond instantly to the energizing and deenergizing of the actuating magnets, owing to the fact that the indicator has connected therewith an armature which is attracted by the magnet and which adheres thereto when the current energizing the latter ceases to flow, due to the residual magnetism in the pole-piece. My invention obviates this objection by providing means for instantly detaching the armature from the pole-piece and restoring the signal to its normal position.

A further object of my invention is to provide a device having comparatively few operating parts, thus making it simple of construction and comparatively inexpen-

sive to manufacture, while at the same time lessening the liability of the operating parts getting out of order, which is often the case in devices employing more complicated mechanism.

A further object of my invention is to provide means whereby the operation of the signaling device will cause the closing of a circuit through certain contact pieces so that a local circuit having an audible signaling means, such as a night bell, can be closed which will give the operator additional warning in case she is not in position to observe the dropping of the target.

My invention is illustrated in the accompanying drawings in which—

Figure 1 is a plan view of my invention. Fig. 2 is a side elevation, the ends of the device being shown partly in section. Fig. 3 is a rear end view of the device. Fig. 4 is a front end view showing the target and armature in normal position. Fig. 5 is a sectional view of the device on the line A—A of Fig. 2 looking in the direction of the arrows. Figs. 6 to 14, inclusive, are detail views of modified forms of the target and armature.

Referring to the drawings, 1 denotes the coil of an electromagnet having a core 2. The said coil 1 is embraced by the arms 3 of a U-shaped return bar which is secured to the core 2 by a retaining screw 4 which clamps the U-shaped bar between said core and a non-magnetic plate 5. The arms 3 of the U-shaped bar are extended beyond the end of the magnet and are provided with inwardly turned flanges 6. A spool head of insulating material 7 is provided at the forward end of the magnet and the arms 3 of the U-shaped bar are secured thereto by means of the screws 8. Secured to the inwardly turned flanges 6, by means of the screws 9, is a non-magnetic plate 10, provided with an opening 11.

The construction described above provides a main frame with an electromagnet located at the rear end thereof. Adjacent the forward end of said frame the arms 3 of the U-shaped bar are provided with openings 12 in which are journaled the reduced ends 13 of a spindle 14 bearing a small rectangular frame. The bottom of the latter carries an armature 15 while at the top there is located a light curved target 16. Projecting rear-

wardly from said armature is a spring contact piece 17.

Attached to the forward end of the central core or pole-piece 2 by means of a screw 18 is a forwardly extending arc shaped tongue 19, provided with a laterally extending flange 20 at its top. A contact piece 21 is provided with an upturned end and is secured to the insulating member 7 by means of the binding screw 22. The plate 5 on the rear end of the device is perforated as at 23 to form an outlet for the terminals 24 of the coil.

The operation of my invention is as follows: When current is passed through the coil 1, the magnet is energized and the armature is drawn toward the arc shaped tongue 19. The upward movement of the armature is limited by the forwardly extending flange on said tongue. The other end of the frame is swung downward and the curved target is now brought into view through the opening 11 at the forward end of the frame. It will be noted that the peculiar shape of the target renders the latter easily seen from the side as well as from the front, since it not only fills the opening but projects through the latter to some extent. The spring contact piece 17 is arranged to contact with the spring member 21 to close the local lamp or alarm bell circuit. These contacting members 17 and 21 also serve another useful purpose. It will be noted that these members contact before the armature has reached its upper position. Both members 17 and 21 are therefore under tension while the armature is being held by the magnet. Now when the current is cut off from the coil 1 and the pole piece 2 is deenergized, the reaction between the spring members 17 and 21 will force the armature away from the pole-piece against any residual magnetism in the latter. It will be observed, however, that while the magnet is energized, the springs are opposed by the force of maximum magnetic attraction.

The peculiar construction of the tongue 19 serves the purpose of directing the magnetic flux in such a manner that the greatest attraction is exerted on the armature 15 when the magnet is energized.

Figs. 6 to 14 show modifications of the target and armature. In Figs. 6 to 8 a hemispherical aluminium target or shutter 16, is mounted on the central portion of a non-magnetic spindle or shaft 14, by means of the two integral perforated arms 16^a and 16^b. These arms are sprung over the reduced ends of the shaft 14 and are held against an inner shoulder by upsetting the edges of a second shoulder 14^a, on the outer side of the arms. A further reduced portion 14^b of the shaft, constitutes a journal. The free ends of the arms 16^a and 16^b are bent inwardly, and a soft iron armature 15 is riveted to them as shown in Fig. 8. In

order to make the area of the iron in the air gap as large as possible, the two sides of the armature are enlarged to extend on the sides of the tongue 19, as shown in Fig. 7.

In the construction shown in Figs. 9 to 12, the integral arms of the shutter 16 are bent inwardly and riveted to the shaft 14. The arms of the U-shaped iron armature 15 are secured to the ends of the shaft by upsetting the outer shoulder on the latter in the manner described above.

Figs. 13 and 14 show my preferred form of construction, which is a combination of those shown in Figs. 6 to 12, inclusive. In this form, the shutter 16 is riveted to a non-magnetic shaft in the manner described. A U-shaped brass or other non-magnetic member 15' is secured to the ends of the shaft, and the iron armature 15 is riveted to the latter. The ends of the armature are extended in the manner shown in Fig. 7.

Having thus described my invention what I claim and desire to secure by Letters Patent is—

1. In an electromechanical switchboard signal, an electromagnet having a central core provided with an arc shaped tongue at one end thereof, a U-shaped return bar secured to the other end of said core and provided with forwardly extending arms, a non-magnetic shaft journaled between said arms, a light hemispherical target having integral arms secured to said shaft at its central portion, a nonmagnetic U-shaped member secured to the shaft on the opposite side from said target, an armature secured to said non-magnetic U-shaped member and having extended ends, said armature being adapted to swing toward the core of the magnet when the line is energized and to straddle said arc-shaped tongue.

2. In an electromechanical switchboard signal, an electromagnet having a central core provided with an arc-shaped tongue at one end thereof, a U-shaped return bar secured to the other end of said core and provided with forwardly extending arms, a non-magnetic shaft journaled between said arms, a light hemispherical target having integral arms riveted to said shaft at its central portion, a nonmagnetic U-shaped member disposed on the opposite side of the shaft from said target and having its arms secured to the ends of said shaft, an armature provided with extended ends secured to said nonmagnetic U-shaped member and adapted to swing toward the core of the magnet when the latter is energized and to straddle the arc-shaped tongue.

3. In an electromechanical switchboard signal, an electromagnet having a central core provided with an arc-shaped tongue at one end thereof, a U-shaped return bar secured to the other end of said core and provided with forwardly extending arms, a shaft journaled

between said arms, a target secured to said shaft on one side thereof, and an armature having extended ends secured on the opposite side of said shaft and adapted to swing
5 toward the core of the magnet when the latter is energized and to straddle said arc-shaped tongue.

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

ERNEST W. BRACKETT.

Witnesses:

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GEO. A. SCOVILLE.