

No. 667,958.

Patented Feb. 12, 1901.

R. SEGERDAHL.  
ALARM APPARATUS.

(Application filed Sept. 2, 1899.)

(No Model.)

Fig. 1

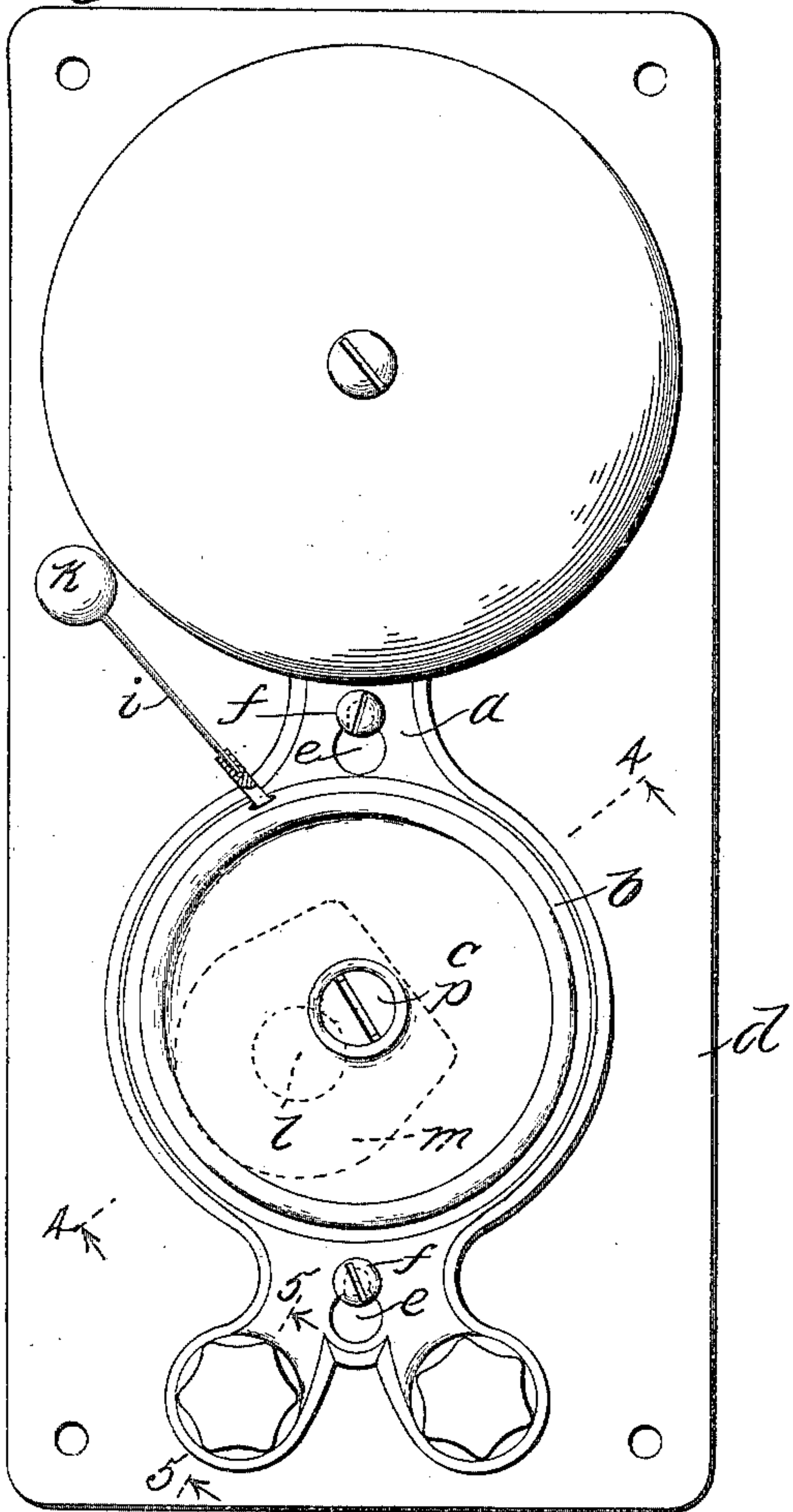


Fig. 2.

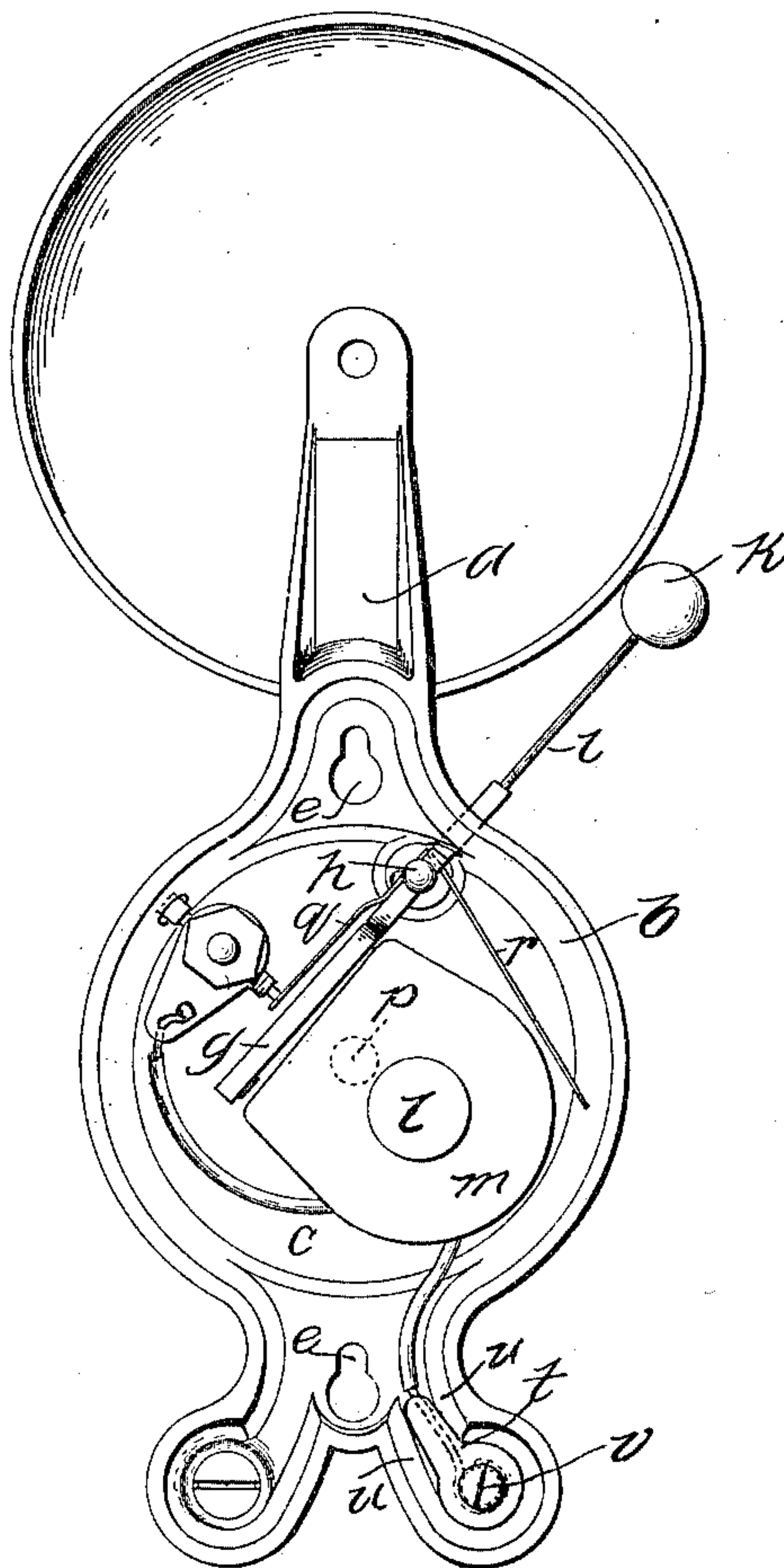


Fig. 3

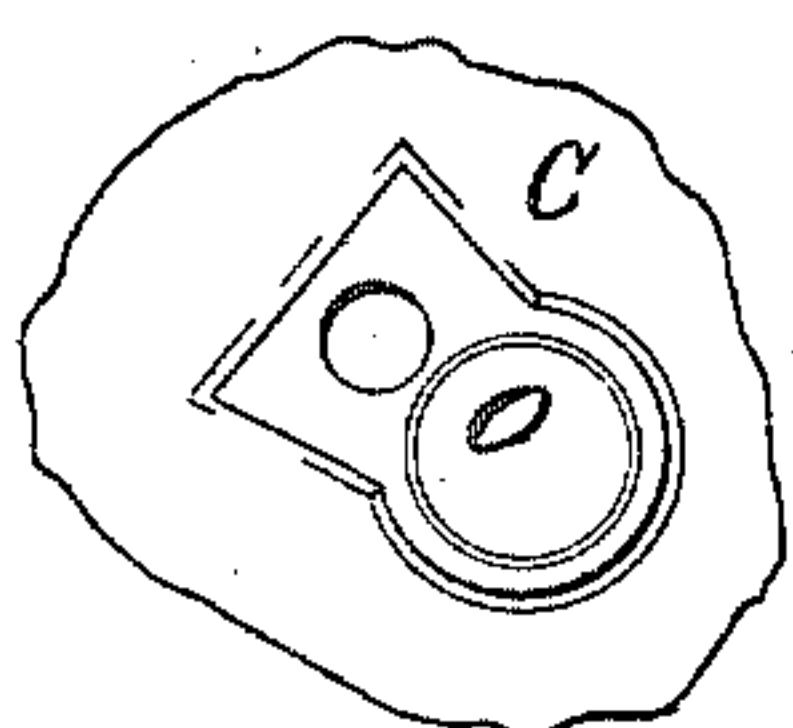


Fig. 4

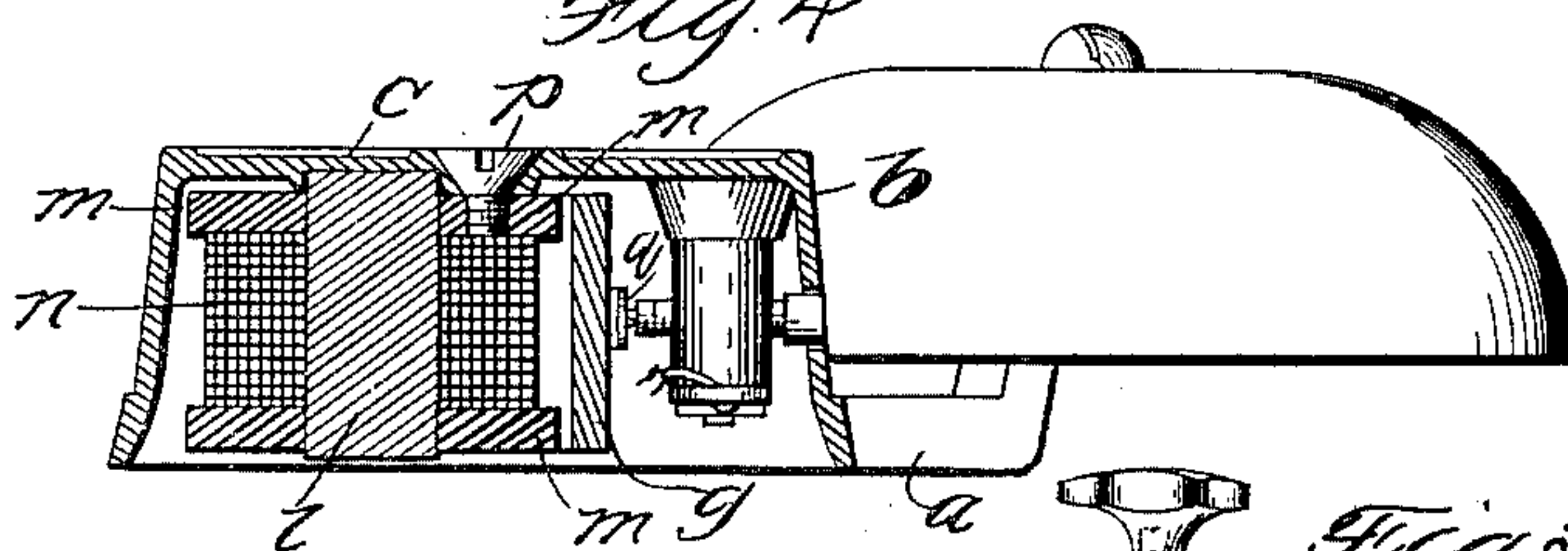
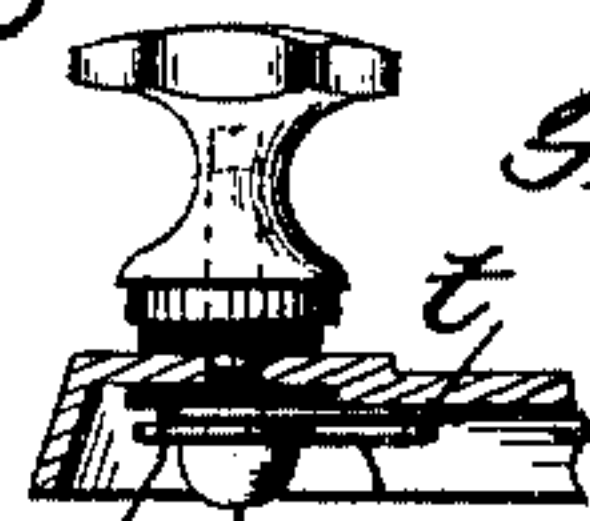
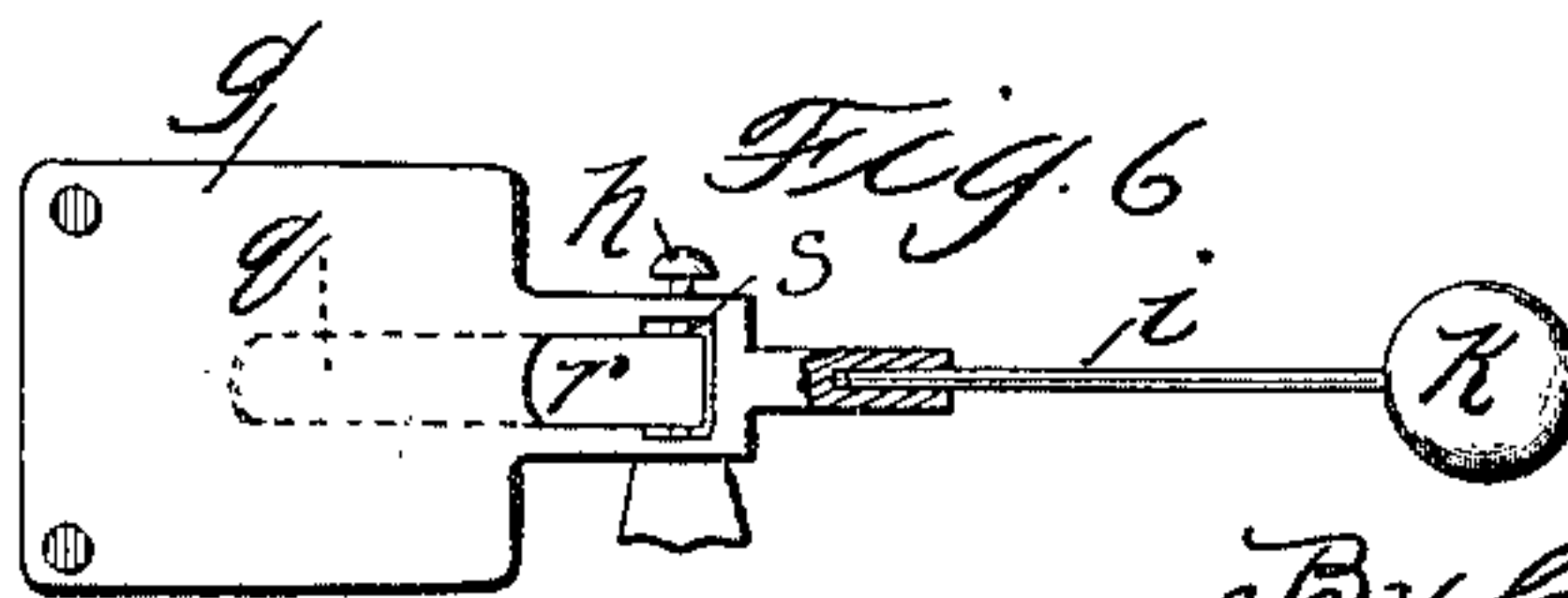


Fig. 5



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# UNITED STATES PATENT OFFICE.

RUDOLPH SEGERDAHL, OF CHICAGO, ILLINOIS.

## ALARM APPARATUS.

SPECIFICATION forming part of Letters Patent No. 667,958, dated February 12, 1901.

Application filed September 2, 1899. Serial No. 729,382. (No model.)

*To all whom it may concern:*

Be it known that I, RUDOLPH SEGERDAHL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Alarm Apparatus, (Case No. 1,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to electrical instruments, such as alarm-bells or similar devices, and more particularly to that class of instruments in which the operating mechanism is disposed within an inclosing casing. The construction of this class of instruments is ordinarily such as to require that the casing be detachable from the mechanism. This arrangement involves increased cost in the construction of the device, and the mechanism being thus made accessible tends to permit inexperienced persons to tamper therewith.

The objects of my invention are generally to provide means whereby the objections arising from the requirement that the casing should be detachable from the mechanism may be overcome and, further, to provide means whereby the manufacture of apparatus of this class may be accomplished on a large scale without the exercise of any great skill or pains, thus reducing the cost of production to a minimum.

In accordance with these objects my invention consists in the features and details of construction hereinafter set forth and described.

I will explain my invention more particularly by reference to the accompanying drawings, in which—

Figure 1 is a front elevation of a bell constructed in accordance with my invention, the bell being shown in place upon a wall-board. Fig. 2 is a rear elevation of the bell shown in Fig. 1. Fig. 3 is an elevation of a portion of the interior of the receptacle for the operating mechanism which serves in part to secure the electromagnet in place. Fig. 4 is a cross-sectional view on line 4 4 of Fig. 3. Fig. 5 is a cross-sectional view on line 5 5 of Fig. 1. Fig. 6 is an elevation of the armature and the bell-striker in place thereon, a portion being broken away to show a feature of construction.

Like letters indicate similar parts throughout the different views.

The frame *a*, for supporting a sounding piece or bell, and the receptacle *b*, for containing the operating mechanism, are preferably cast or formed in one integral piece, the receptacle being preferably closed at the front and open at the rear to receive the mechanism. The construction is such that when the bell is mounted upon a wall-board *d* the operating mechanism contained within the receptacle is perfectly inclosed on all sides and at the front and rear. The mechanism is thus well protected from interference, bugs, dust, &c. I preferably form keyhole-slots *e* in the frame for the screws *f*, which facilitate placing and removal of the bell.

The strike-lever is, as shown, preferably arranged with reference to the sounding-piece in a manner similar to that shown in my previous patent, No. 570,508, dated November 3, 1896, the frame of the lever being located near the sloping walls of the receptacle or casing of the mechanism. The armature *g*, which constitutes a part of the striking-lever, is preferably provided with a reduced portion extended through an opening in the said wall, the striker-arm *i*, carrying the clapper *k*, being preferably formed separate and secured to the armature from the outside of the receptacle. To secure the striker-arm to the armature, I provide the armature with a bore, into which the stem *l* is forced, the frictional contact between the armature and the stem being sufficient to secure the stem in position. The striking portion of the lever is thus made detachable, and I am enabled to retain the feature embodied in the device of my prior patent, the opening in the wall which accommodates the movement of the striking-lever being reduced to a minimum on account of the location of the pivotal point of the lever at this place. By this construction dust, &c., is excluded from the mechanism.

The armature *g* has an elastic leaf-spring *q*, which is preferably made in the form of a bell-crank and attached to the said armature in close proximity to its pivotal point. The armature is preferably provided with a recess *s*, through which the upper end of the spring *q* is extended, forming a retractile spring *r*, engaging the wall of the receptacle at its free



end and serving normally to secure contact between the other end of the spring  $q$  and its anvil, as shown, and serving also to resiliently carry the armature away from the pole-pieces of the magnet. Another function of the recess  $s$  is to reduce the length of the bore in the armature required for its pivotal axis  $h$ , which is preferably, as shown in Fig. 6, made in the form of an escutcheon extended through said bore and into a stud provided in the bottom of the casing  $a$ , thus facilitating the pivoting of the armature.

In manufacturing this class of apparatus in large quantities it is desirable that the parts of the apparatus may be quickly assembled. This desirable result is secured by the means I will now describe.

In the receptacle there is provided a seat or engaging portion for the mechanism, whereby by the electromagnet may be retained in a predetermined position with reference to its armature. The electromagnet  $l$  is provided with a core portion preferably extended longitudinally beyond the polar projections, one end of the projecting core being seated in a circular recess  $o$ , which is slightly removed from the center of the receptacle. In order to secure the proper relative position of the polar projections with relation to the armature, I provide the cover  $c$  of the receptacle with an opening, which is preferably located centrally therein. A retaining-screw  $p$  is passed through this opening into a threaded hole in the opposite polar projection, which when registered with the said opening is adapted to determine the proper position of the magnet with relation to its armature. This means permits a very high degree of accuracy in adjustment, and by means of this arrangement the electromagnet becomes practically self-adjusting with reference to its armature. While I have shown the preferred form of my invention, it is obvious that the seat or centering device may be so constructed that the desired adjustment may be secured without effecting the rotation of the magnet. I therefore do not wish to limit myself to the precise centering device shown.

The electromagnet  $l$  consists, preferably, in a single coil  $n$ , disposed between the lateral pole projections  $m$ , which serve as pole-pieces to attract the armature  $g$ . These pole-pieces are preferably made circular in their general contour and provided with pole-faces which extend beyond the circular contour of the same to conform with the armature  $g$ , thus providing a large attracting-surface for the armature and at the same time affording a path of low resistance for the magnetic lines of force. I have found by a series of experiments that the particular form of the pole-pieces shown is peculiarly adapted to secure the greatest efficiency in the smallest space. It will be readily understood that since no portion of the space it occupies is wasted it enables me to arrange the mechanism in a compact structure. The arrangement shown

provides means whereby the power exerted by the magnet may be applied in very close proximity to the fulcrum of the striking-lever, which makes the bell extremely sensitive in action, there being but a slight excursion required for the armature toward and away from the poles of the magnet.

Referring to the terminal connection, it is a fact well known that where binding or contact posts are employed there is often experienced a difficulty arising from loose connections. The circuit-wire is ordinarily disposed between washers, which are liable to become loosened from shrinkage and other causes.

In Figs. 2 and 5 I have shown my improved device for securely locking the terminal connections. In this construction a washer  $t$  is employed having a projecting nose, which in the precise embodiment of the invention shown is adapted to be inserted within the sleeving covering the terminal wire leading to the screw  $v$ . The portion of this wire which engages the stem of the washer is preferably bared of its insulation, so as to form contact with the wire. When securing this wire to the binding-post, the screw  $v$  is passed through the washer  $t$  and the wire is placed upon the stem of the screw in the usual manner and secured against the insulating-washer  $w$  in the bottom of the frame. The terminal wire is brought to the screw through the channel in the bottom of the frame formed by the walls  $u$ , and a recess of non-circular section is formed by this channel and the enlargement at the screw, so that when the washer  $t$  is fitted therein this washer is prevented from turning. The washer  $t$  is preferably formed from spring metal and is thus adapted to establish and maintain a tension between the washer and the wire when placed in position, which not only improves the electrical connection, but also tends to maintain this connection if for any reason the clamping device should fail to perform its function. By means of the improvement which I have described the construction of apparatus of this class is greatly facilitated and the cost thereof cheapened and a high degree of efficiency in the apparatus secured.

Modifications in the structure may be made without departing from the spirit of my invention, and I therefore do not wish to be limited to the precise construction shown; but,

Having described my invention, I claim as new and desire to secure by Letters Patent—

1. In an apparatus of the class specified, the combination with an open-bottomed frame having a recess on the inner side of its cover, of an electromagnet having an extension of its core adapted to fit into said recess, and means for holding the magnet in position with said extension in the recess, said means engaging the magnet at a point eccentric to its core, substantially as described.

2. In an apparatus of the class specified, the combination with the frame having an



open bottom and having a recess in the inner face of its cover, of an electromagnet having an extension adapted to fit into said recess, and a screw extended through the frame-cover 5 and engaging the magnet at a point eccentric to the point of engagement of the extension and recess, substantially as described.

3. In an apparatus of the class specified, the combination of an open-bottomed frame 10 and an electromagnet arranged therein, the cover of the frame and the magnet being constructed to engage one another, and a retaining device holding the magnet against the cover of the frame and engaging such cover 15 at a point at one side of the point of engagement of the magnet and cover, substantially as described.

4. In an apparatus of the class specified, the combination of a vibratory armature, an

inclosing case having an aperture through 20 which the armature extends, the armature being pivoted near the point where it passes through the case, an electromagnet for acting upon the armature, and a flat spring secured to the armature and acting as a con- 25 tact member therefor, the said spring having an extended portion which extends laterally from the armature at its pivotal point, and acts against the wall of the inclosing casing so as to automatically return the armature to its 30 normal position, substantially as described.

In witness whereof I hereunto subscribe my name this 31st day of August, A. D. 1899.

RUDOLPH SEGERDAHL.

Witnesses:

CHARLES A. BROWN,  
CHARLES E. HUBERT.