

(No Model.)

F. & H. F. KEIL.
ELECTRIC BELL.

No. 560,506.

Patented May 19, 1896.

Fig. 1.

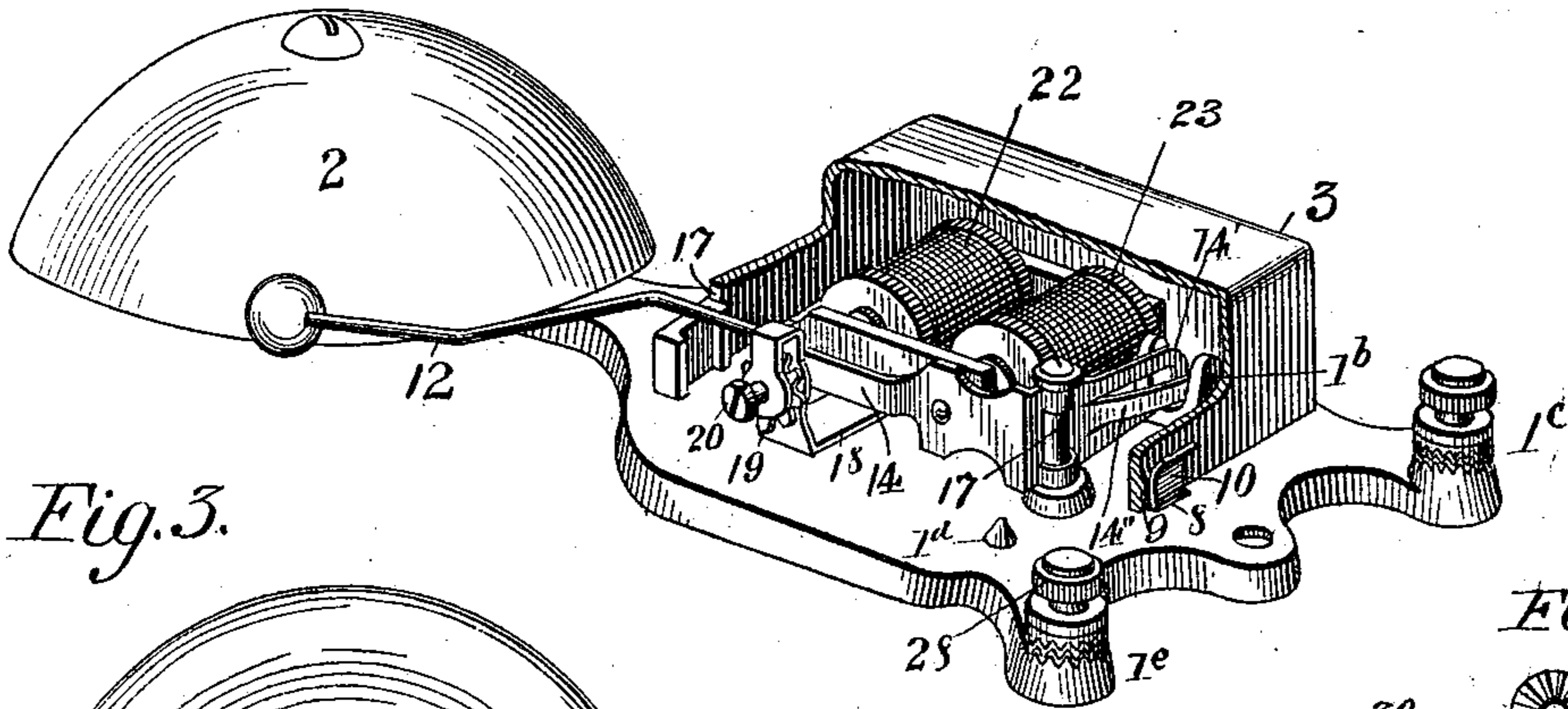


Fig. 3.

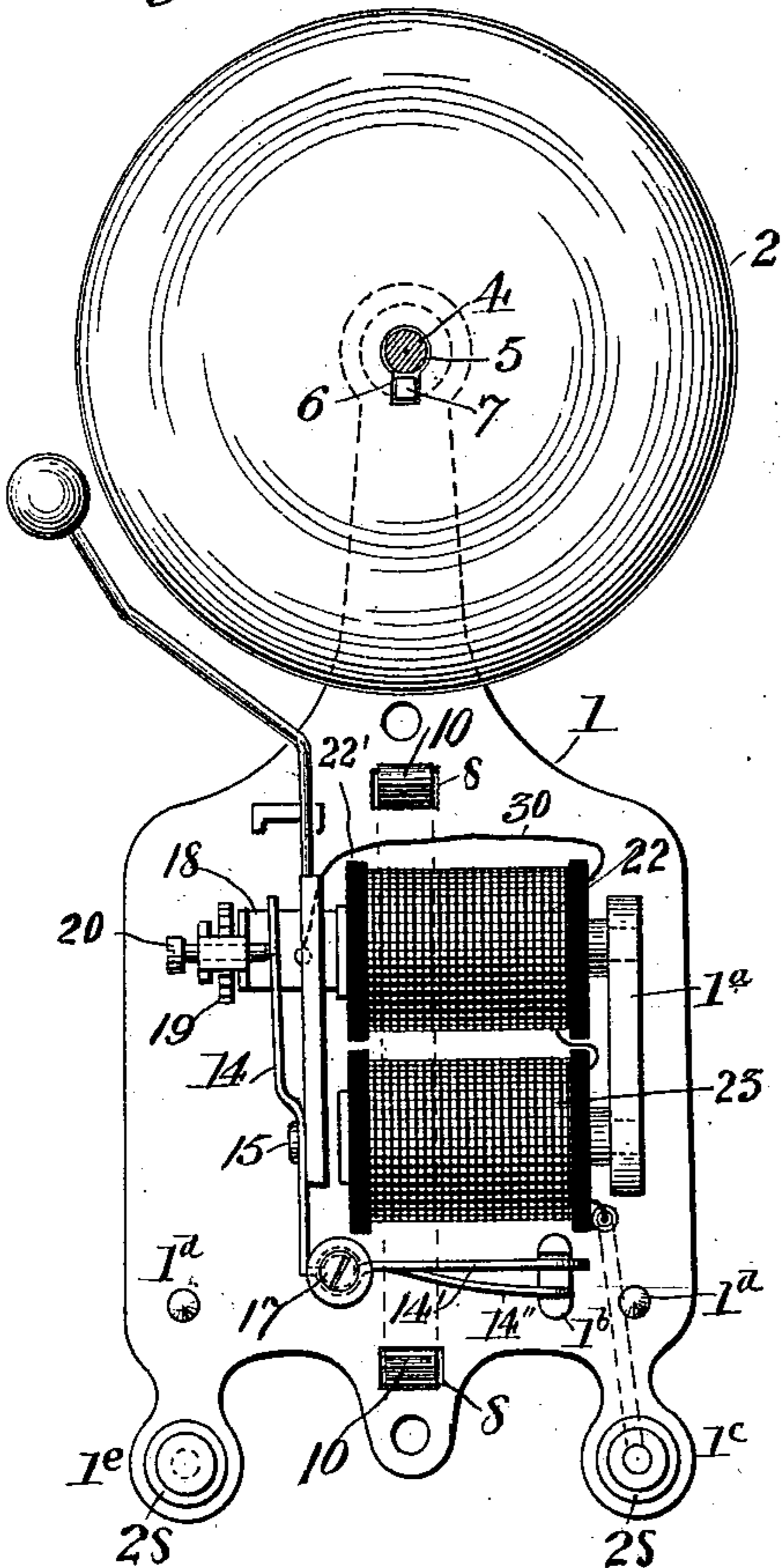


Fig. 6.

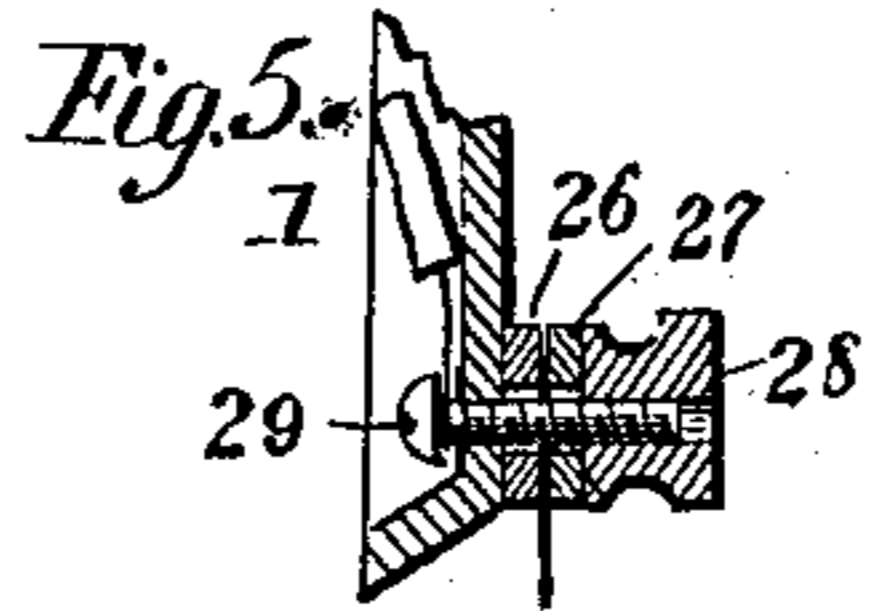
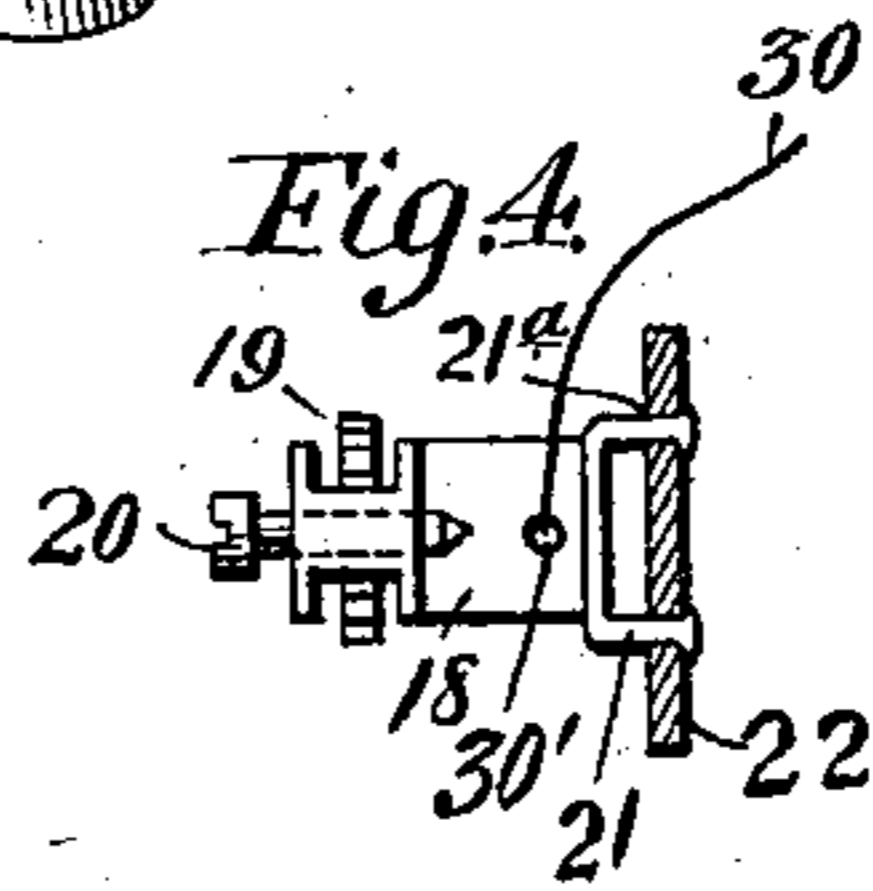
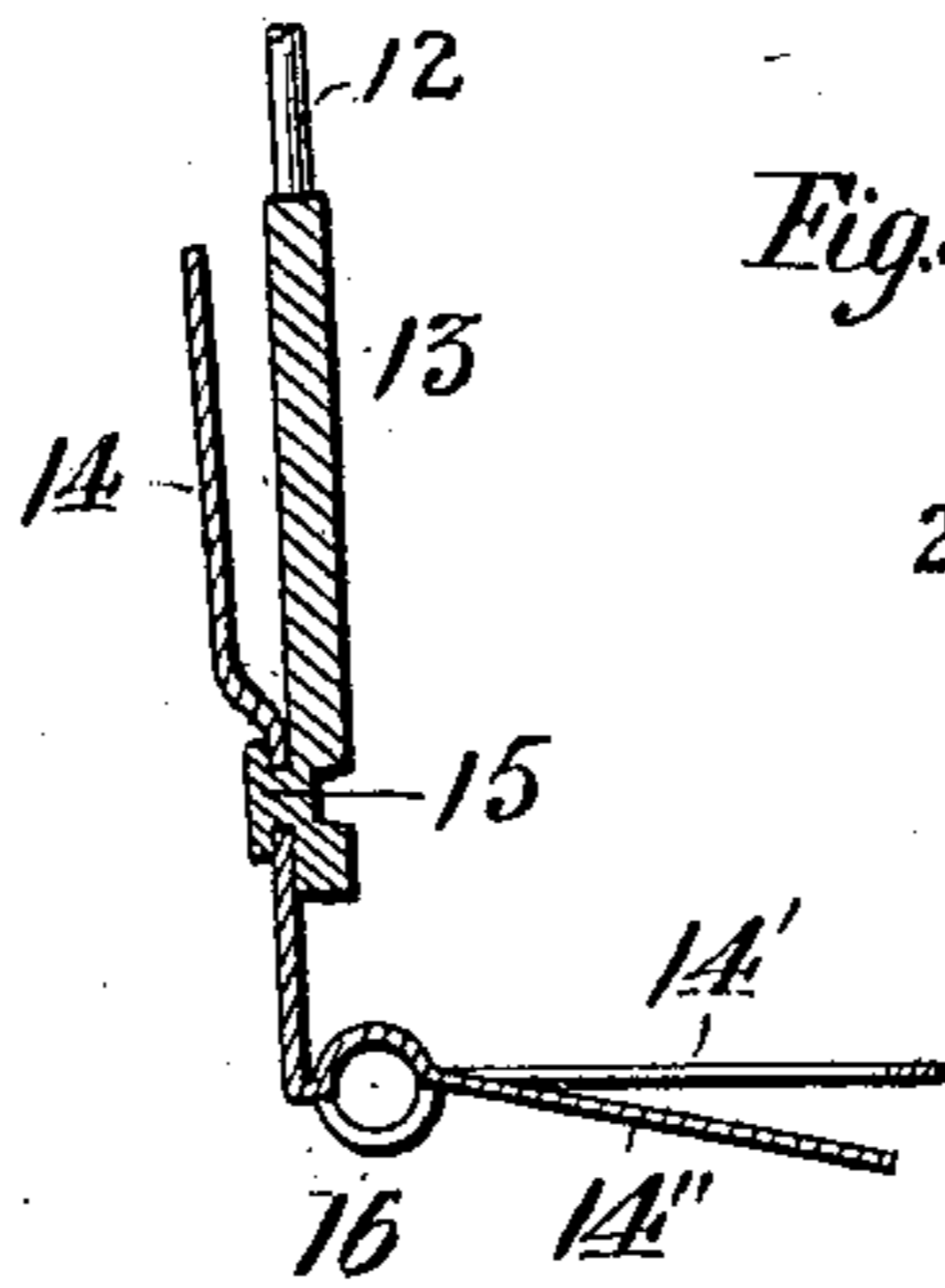


Fig. 8.



Fig. 7.

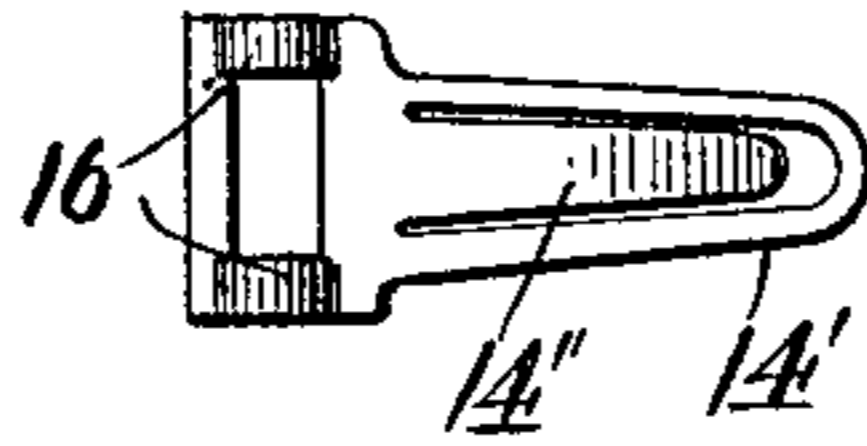


Fig. 2.

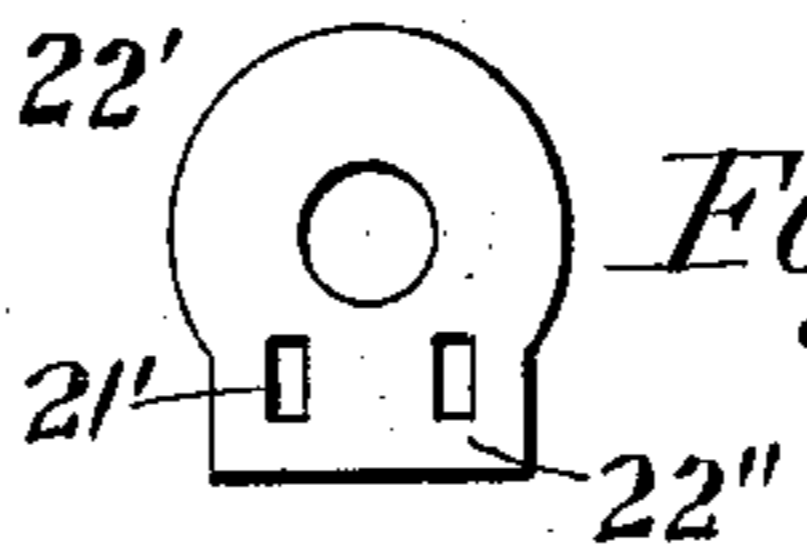


Fig. 9.



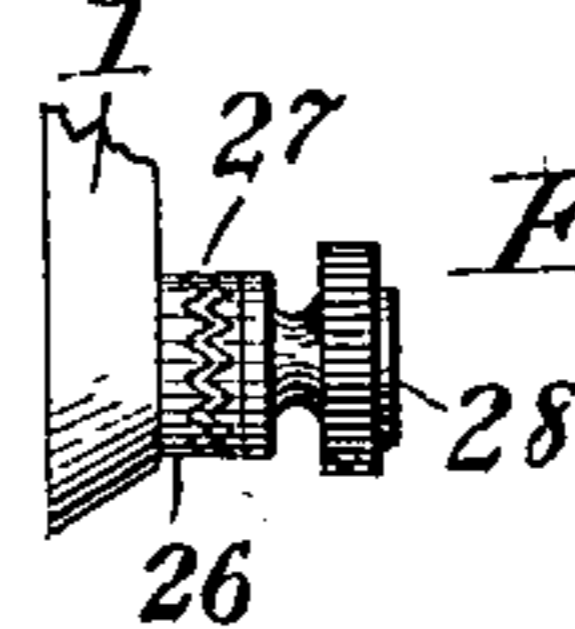
Fig. 10.



Fig. 11.



Fig. 12.



Witnesses

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UNITED STATES PATENT OFFICE.

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ELECTRIC BELL.

SPECIFICATION forming part of Letters Patent No. 560,506, dated May 19, 1896.

Application filed December 16, 1895. Serial No. 572,231. (No model.)

To all whom it may concern:

Be it known that we, FRANCIS KEIL and HENRY FRANCIS KEIL, citizens of the United States of America, and residents of the city of New York, county and State of New York, have invented a new and useful Improvement in Electric Bells, of which the following is a specification.

Our invention relates to electric bells, our object being to simplify and improve the construction and produce a perfect bell at a nominal cost.

Our invention consists in the construction and combination of parts, substantially as hereinafter described and claimed.

In the drawings, in which like numerals of reference indicate like parts in all of the views, Figure 1 represents a perspective view of a complete apparatus embodying our invention. Fig. 2 represents an elevation of the insulating spool-head. Fig. 3 represents a front elevation with the cover and bell removed. Fig. 4 represents a detail plan of the back-stop screw and its bracket and a portion of the bobbin in section. Fig. 5 is a detail view of the binding-post in section. Fig. 6 represents a detail view of the armature and its spring. Fig. 7 represents an elevation of the lower part of the armature-spring. Fig. 8 represents the fulcrum-post for the armature-spring. Figs. 9, 10, and 11 represent the different face views of the binding-washers. Fig. 12 represents a side view of one of the binding-posts.

1 represents the base-plate, having suitable openings to receive screws by which it and the entire bell mechanism may be attached to the wall or other support. This base-plate has cast integral therewith an elongated rib or yoke-piece 1^a, which supports the bobbins, a bifurcated stud 1^b, arms 1^c for the binding-posts, guide-studs 1^d for the cover, and an arm or bracket 1^e, provided with a head 1^f, to which the bell 2 is secured. A screw 4 passes through a hole 5 in the bell and secures the latter to the head 1^f, while a projection 7 from said head fits a recess or slot 6 in the bell at one side of the hole 5 and prevents the bell from turning on said head.

The base-plate is provided with two slots 8, through which the ends 10 of a spring-strip extend, said spring ends being bent to catch

over lips 9, formed on the cover 3. The cover 3 is held in position by said springs 10, and is prevented from moving or being displaced laterally by the guide-studs 1^d, which extend just inside of the lower corners of said cover. The spring-strip being a single piece, is held in position by the ends 10 passing through the slots 8, and requires no other fastening means.

Screwed into the base-plate near its lower edge is a round post 17, which forms the support for the armature-carrying spring 14, the said spring being made of one piece and adapted to turn slightly on said post. The armature 13 is secured to said spring by means of a projection or stud 15, (see Fig. 6,) which is punched out from the armature and riveted in an opening in the spring. The upper end of the armature carries the bell-hammer arm 12, which projects through an opening 11 in the cover 3.

The spring 14, as indicated in Figs. 1, 3, and 6, is bent at an angle, and near the location of the bend is slitted and bent in opposite directions to form bearings 16 fitting the post 17. The lower end of the spring is cut to form a loop 14' and a tongue 14'', said loop and tongue being bent to spread apart at their free ends, where they are received in the fork of the bifurcated stud 1^b. This construction enables us to obtain the sensitiveness of a long spring without increasing the length of the base-plate and cover or casing.

Referring to Figs. 1, 2, 3, and 4, 22' represents the head (of insulating material) of the upper bobbin 22, said head having a projection 22'', provided with openings 21', which receive lips 21 of the arm or bracket 18, said arm being thus supported by the insulated head 22' above and out of contact with the base-plate. The free end of the arm 18 is arched or bent over and is threaded to receive the back-stop screw 20, having a set-nut 19.

23 represents the lower bobbin, and the core of this, as well as of the upper bobbin 22, is riveted in the yoke-piece 1^a.

Each binding-post arm 1^c has an opening through which passes a screw 29, having a thumb-nut 28. (See Figs. 3 and 5.) As indicated in Fig. 1, the surface of the binding-post arm is corrugated at 25 and a washer 26 fits the screw 29 above said corrugated face

25. A second washer 27, loose on the screw 29, has a corrugated under surface and a flat or plain upper surface for the thumb-nut 28 to bear against. Both faces of the washer 5 26 are corrugated, the under surface being adapted to immovably clamp between it and the corrugated face 25 a washer of insulating material when the wire connection is to be insulated from the base-plate and the upper 10 surface of the said washer being adapted to coact with the corrugated under surface of the washer 27 in securely holding the wire connection. The corrugations may be as indicated in Fig. 9, or as at 26' and 26'', respectively, in Figs. 10 and 11. 15

At 30 is indicated the connection from the upper bobbin to the point 31 on the arm or bracket 18.

One of the great drawbacks in the construction of the armature-spring has been that the spring was necessarily short. To avoid this and provide a longer-armed spring, which allows a more delicate adjustment, we construct our armature-spring as shown. We 25 regulate the tension of the spring by forcing the tongue 14'' out of the loop 14'. This spring is preferably stamped out of the best sheet-steel.

The binding-posts we find are of great efficiency, in that they prevent the slipping of the wire when once set, and we can adjust the wire at any angle. It is obvious that when the wire is set between the corrugated face of one washer and the corrugated face of the 35 other is forced upon it the wire is firmly fixed in position and cannot be pulled out.

What we claim is—

1. In an electric bell the frame having the shank provided with a head having the stud 40 7, the yoke 1^a, the spring-slots 8, the studs 1^d,

the bifurcated post 1^b, arms 1^c and 1^e having corrugated faces substantially as set forth.

2. The magnet-core 22 having one head 22' of insulating material provided with a projecting portion 22'' having openings, and the 45 set-screw arm or post 18 having lips 21, combined substantially as set forth.

3. The combination of the armature with the angular pivoted spring having the tongue and loop separated at their ends and the bifurcated stud receiving said tongue and loop, 50 substantially as set forth.

4. The bed-plate having the slots 8 and the cover-holding spring 10 consisting of the single strip having spring ends extending 55 through said slots, in combination with the cover having lips 9, substantially as set forth.

5. The binding-post for electrical instruments having corrugated face 25 in combination with a washer 26 having both sides corrugated, a washer 27 having one side corrugated and the screw and thumb-nut, substantially as described. 60

6. The combination of the magnets with the post 17, the spring 14 having bearings 16 struck therefrom and having the loop 14' and tongue 14'' extending under the magnets, the fixed bifurcated stud 1^b, and the armature 13 attached to said spring, substantially as described. 65 70

In testimony that we claim the foregoing as our invention we have signed our names, in presence of two witnesses, this 12th day of December, 1895.

FRANCIS KEIL.
HENRY FRANCIS KEIL.

Witnesses:

JOHN WERNER,
JAS. KATSCHER.