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SPARK COIL.

APPLICATION FILED AUG. 30, 1909.

998,892.

Patented July 25, 1911

Fig. 1.

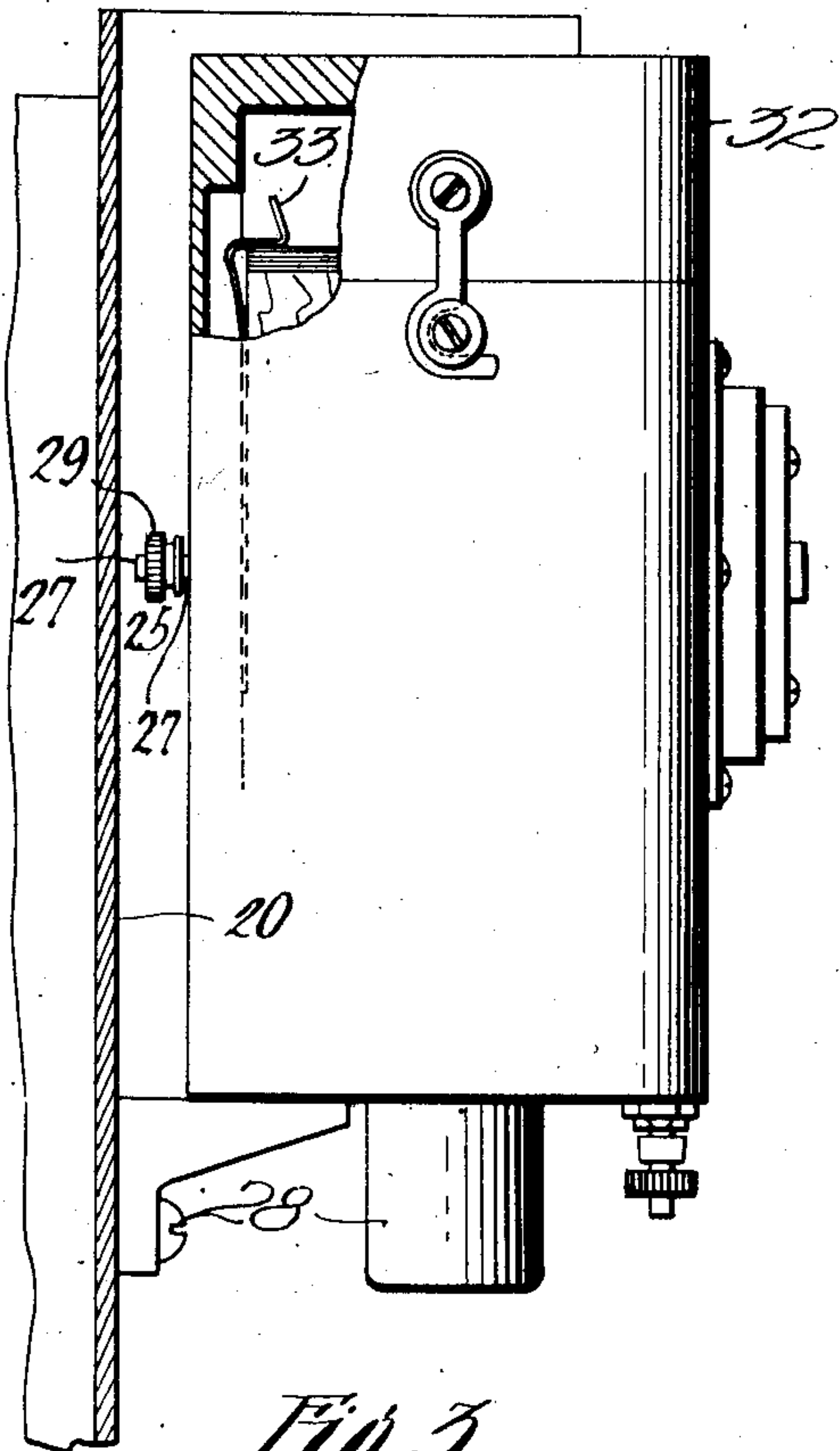


Fig. 2.

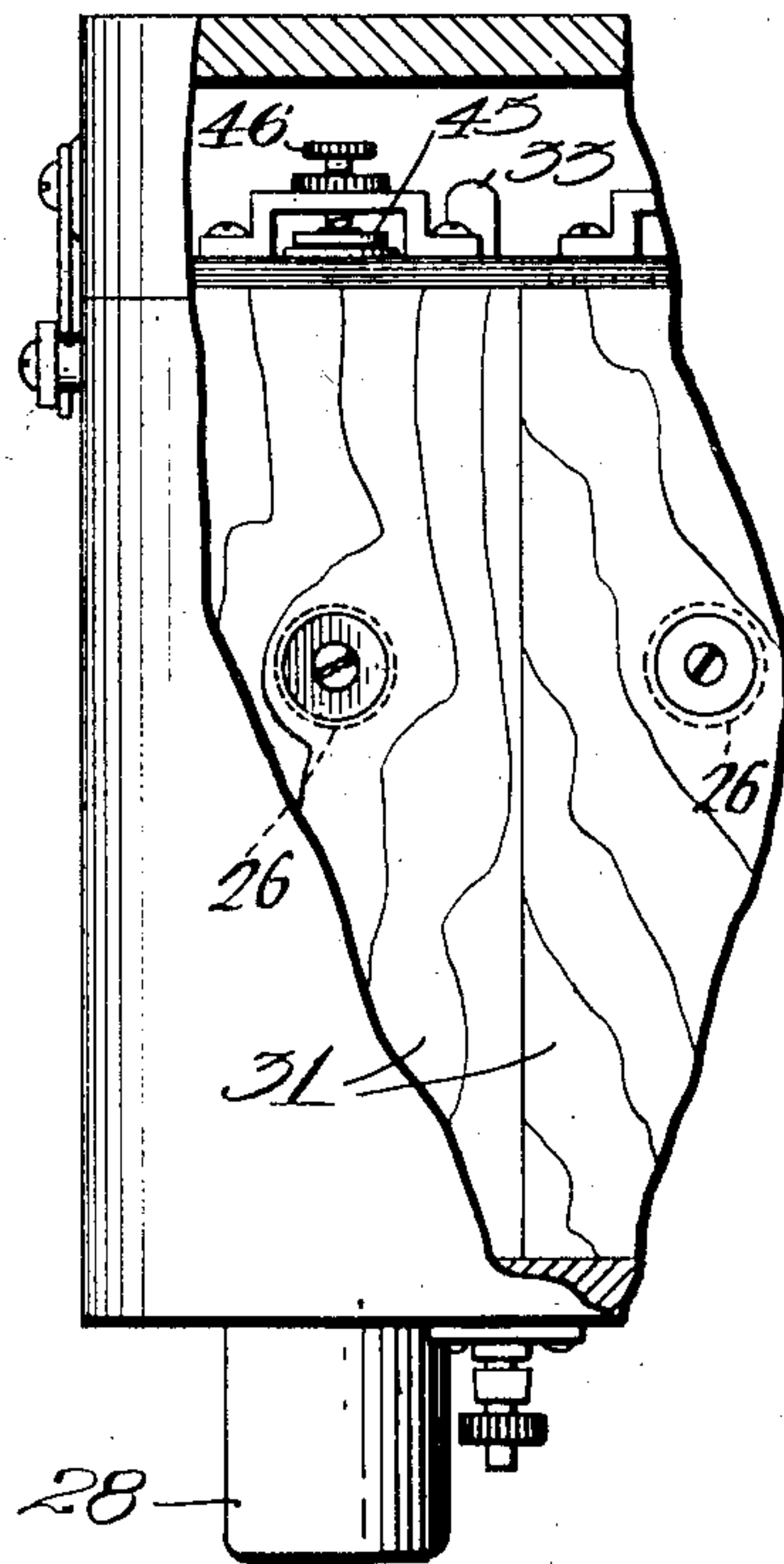


Fig. 3.

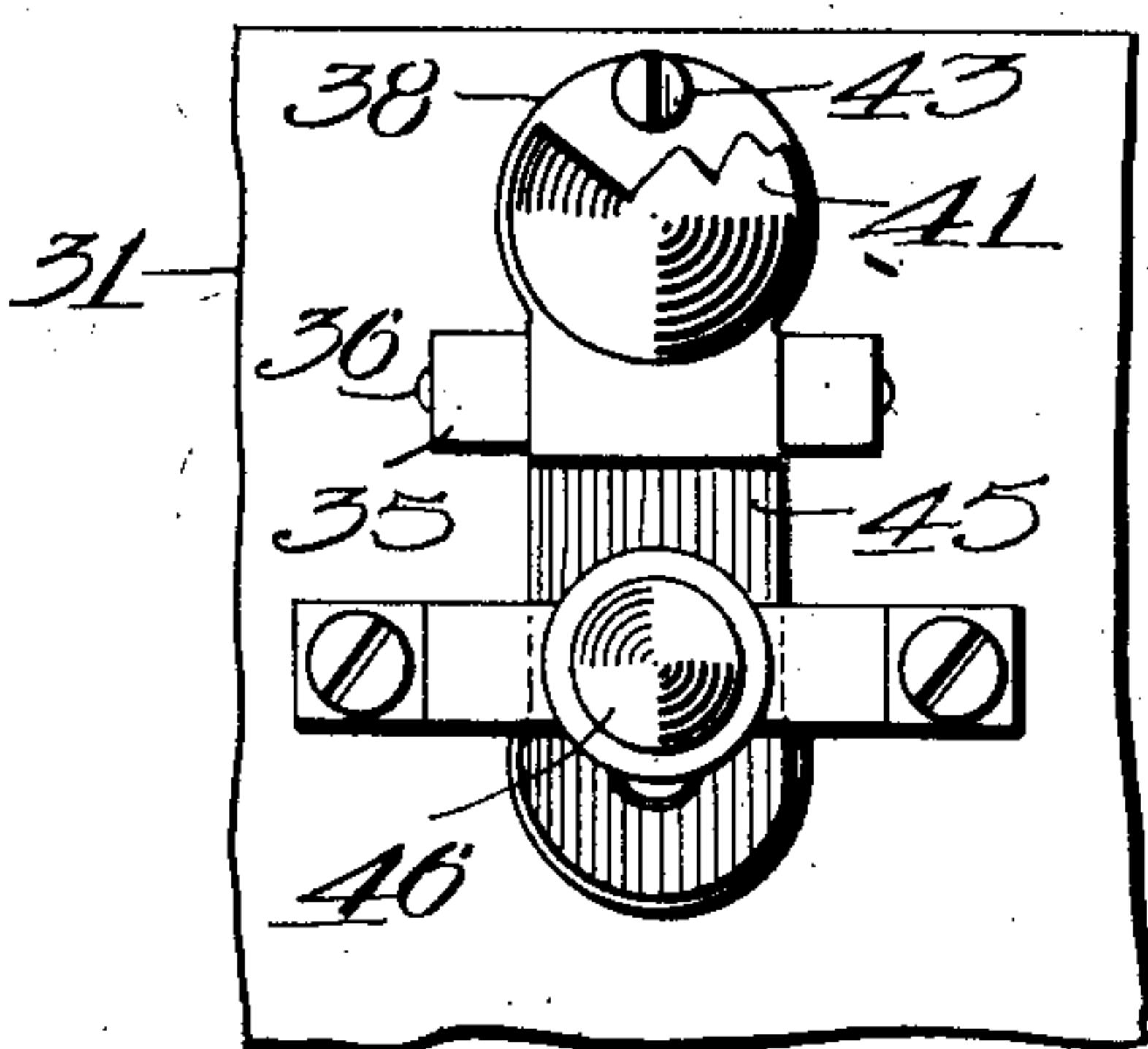
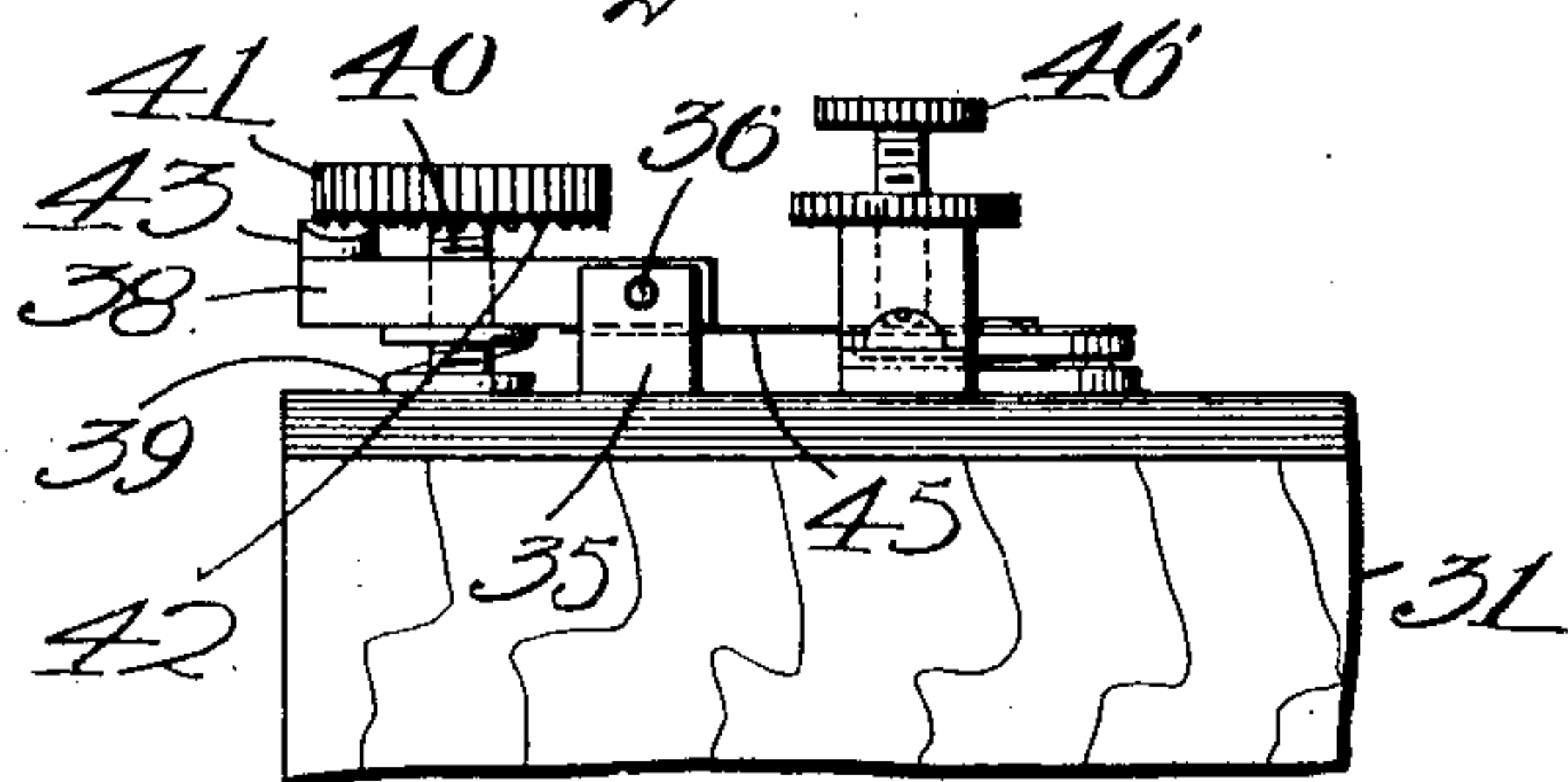


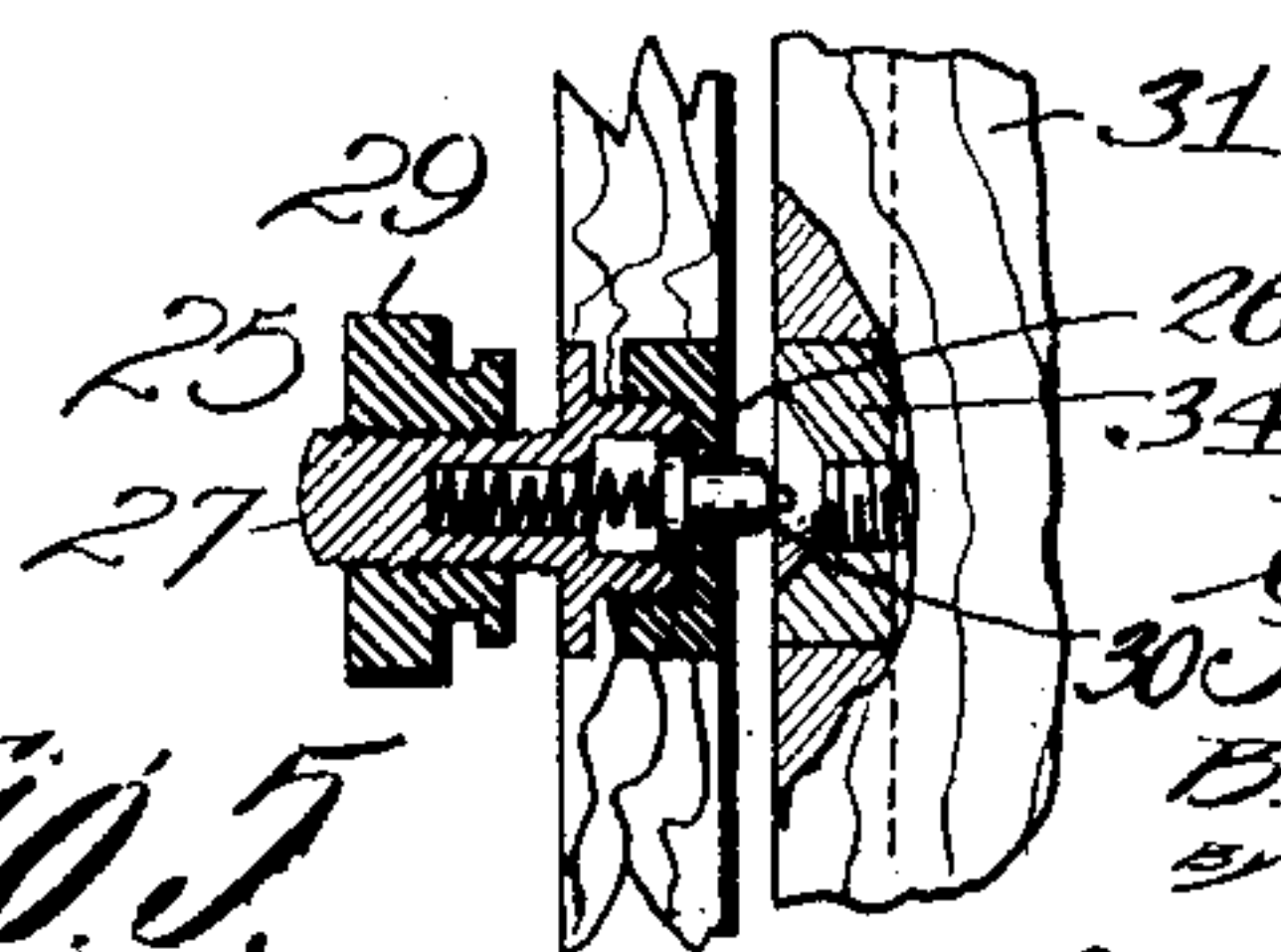
Fig. 4.



Witnesses:

C. F. Messer.  
E. M. Allen.

Fig. 5.



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# UNITED STATES PATENT OFFICE.

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## SPARK-COIL.

998,892.

Specification of Letters Patent.

Patented July 25, 1911.

Original application filed November 6, 1908, Serial No. 461,308. Divided and this application filed August 30, 1909. Serial No. 515,133.

### *To all whom it may concern:*

Be it known that we, ALBERT J. GIFFORD, JAMES J. BURNS, and BENJAMIN S. T. BISHOP, citizens of the United States, all residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Spark-Coil, of which the following is a specification.

This is a division of our Letters-Patent No. 933,246 granted on the seventh day of September, 1909, for an ignition device for gas engines and this case relates to a spark coil.

The principal objects of the invention are to provide simple and convenient means whereby one of the sets of terminals of a spark coil can be located along the front wall of the receptacle therefor between it and its support, as for example, the dash of an automobile, thus protecting them and removing them as far as possible from the other terminals and avoiding the danger from short-circuiting which is always present in cases where the terminals are near each other, and providing a more convenient location for the terminals and for the contacts in the box; and to provide an improved construction of unit with finely adjustable means for regulating the length of spark and holding the same accurately after it is once adjusted, even when the vehicle is subjected to rough usage.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which,

Figure 1 is a side elevation of a spark coil receptacle in accordance with this invention, parts appearing in section. Fig. 2 is a front view of one end thereof partly broken away to show interior construction. Fig. 3 is a plan of part thereof. Fig. 4 is a side elevation of the top portion thereof, and, Fig. 5 is a sectional view of one of the terminals which is located at the front of the receptacle.

The invention is shown as applied to a box or receptacle having one series of terminals 25 on the front between the box and the dash board 20 of an automobile or other support therefor. This is shown in this instance as being accomplished by providing the rear wall with a perforation counter-sunk on both sides and locating a series of

bushings 26 on the inside of the front wall of the box or receptacle and screwing a plug 27 into each so as to project on the outer side of the front wall where, on account of the space preferably left between the receptacle and the support, (as shown in our above mentioned patent), it can be contained between the brackets on which the receptacle is supported and entirely concealed from view thereby, the wires passing down at the front of the box. This location of these terminals is a matter of considerable importance, as it removes them as far as possible from the high tension terminals 28, and thus reduces the chance of short-circuiting either by the crossing of the wires or by accidentally getting any piece of metal between the terminals. It also removes one set of terminals from a part of the receptacle which is visible, and puts them in a position where neither they nor the wires can be injured by any ordinary accident. Any terminals can be used in this place, but it is preferred to add a binding screw 29 to the plug 27, and place a spring-pressed plunger 30 in the plug so as to project inwardly.

The receptacle is shown as provided with unit coils 31 which may be of ordinary construction. Each unit coil is shown as being held in position by a spring 33 and as being provided with the necessary contact piece 34 for making the electrical connection with the plunger 30. The vibrator of the unit coil is also improved for the purpose of securing a finer adjustment and accurately holding the parts in position. For this purpose a stationary member or frame 35 is mounted on the top of the unit coil and provided with a horizontal pivot 36. On the latter is swingingly mounted a rigid member 38 normally held up by a spring 39 and adapted to be adjusted downwardly by a screw 40 having a knurled head 41 provided with a circumferential series of downwardly projecting teeth 42 of fine pitch. On top of the member 38 is a pointed projection 43 adapted to engage the teeth from below, so that the screw can be adjusted readily, and yet the resistance of the projection 43 due to the spring 39 will be sufficient to avoid any necessity of using excessive care in turning the screw and to hold the screw securely when it has been adjusted. In this way the screw can be turned in such a way as to se-



cure practically a micrometer adjustment of the member 38. This member is provided with the usual resilient contact member 45 and adjusting screw 46 therefor.

5 While we have illustrated and described certain preferred embodiments of the invention, we are aware that many modifications can be made therein by any person skilled in the art without departing from  
10 the scope of the invention as expressed in the claims. Therefore, we do not wish to be limited to all the details of construction shown, but

What we do claim is:—

15 1. In a device of the character described, the combination of a support, a hollow plug secured thereto and projecting therefrom on one side, a plunger extending from said plug through the support and projecting  
20 from the opposite side thereof, a spring in the plug for normally forcing the plunger toward said opposite side, and a binding nut on the projecting portion of the plug.

2. As an article of manufacture, a receptacle for spark coils and the like, having a bushing set into its wall, a flanged plug set into the other side of said wall and screwing into said bushing, a binding nut or screw on the plug, and a spring-pressed plunger  
30 extending through the bushing.

3. As an article of manufacture, a receptacle for spark coils and the like, having a perforation in its wall countersunk on both sides, a bushing set into one countersink, a  
35 flanged plug set into the other countersink and screwing into said bushing, whereby the bushing and plug are held firmly against the wall, a binding nut or screw on the plug, and a spring-pressed plunger extending  
40 through the bushing.

4. In a spark coil, the combination of a rigid member mounted to swing on a horizontal pivot, resilient means for moving said pivoted member in one direction, a  
45 screw mounted independently of said rigid member for moving it in the other direction, said screw having a surface provided with teeth thereon, projecting toward the

rigid member and said pivoted member having a rigid projection adapted to engage  
50 said teeth, whereby the position of the screw can be adjusted to a fine adjustment, and a spring contact member extending from the pivoted member.

5. In a spark coil, the combination of a  
55 support, a horizontal pivot thereon, a rigid member mounted on said pivot and extending therefrom, a spring for forcing said rigid member upwardly, a screw carried by said support and passing freely through  
60 said member and through the spring for forcing it downwardly, said screw having a head provided on the bottom thereof with a circumferential series of downwardly projecting teeth, a fixed pointed projection on  
65 the other end of the upper surface of the pivoted member for engaging said teeth, whereby the turning of the screw to adjust the position of the pivoted member can be regulated within fine limits, a resilient vi-  
70 brator projecting from said pivoted member past the opposite side of said pivot, and means for regulating the vibrations thereof.

6. The combination with a spark coil receptacle, a support therefor at the front  
75 thereof and an electrical terminal mounted between the top and bottom of the vertical front wall of the receptacle between the receptacle and support and having a yielding contact member inside said wall extending  
80 horizontally therethrough, and having a binding screw on the outside, of a coil unit adapted to be held vertically in the receptacle, having a contact piece on a vertical  
85 face thereof for engaging said contact member.

In testimony whereof we have hereunto set our hands, in the presence of two subscribing witnesses.

ALBERT J. GIFFORD.  
JAMES J. BURNS.  
BENJ. S. T. BISHOP.

Witnesses:

CHARLES H. SIBLEY,  
CARL M. BLAIR.