

(No Model.)

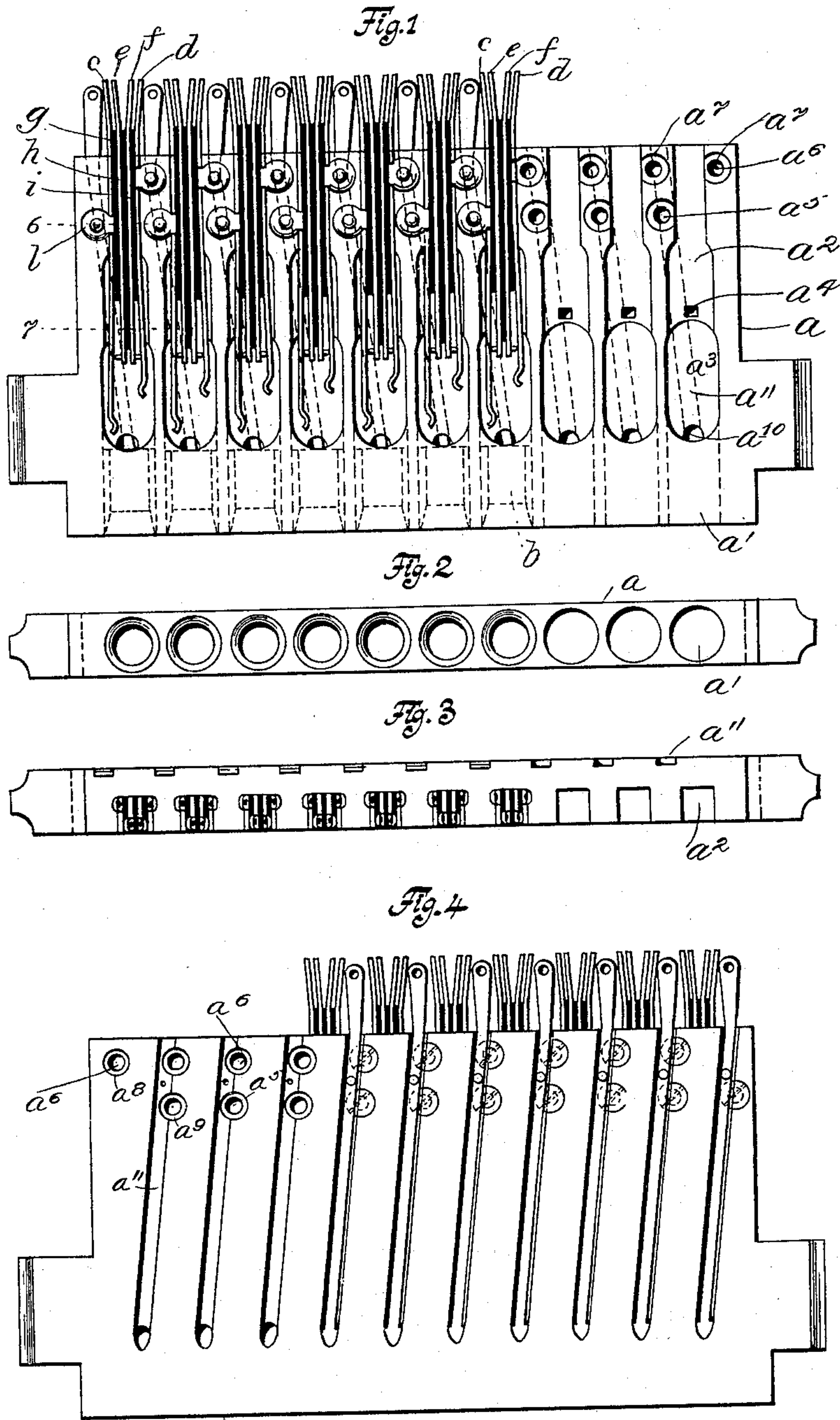
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C. E. SCRIBNER.

SPRING JACK FOR TELEPHONE SWITCHBOARDS.

No. 596,626.

Patented Jan. 4, 1898.



Witnesses:

D. M. Canner.
John H. Sinclair.

Inventor:

Charles E. Scribner.

By Bartow Brown
Attorneys.

(No Model.)

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Fig. 5

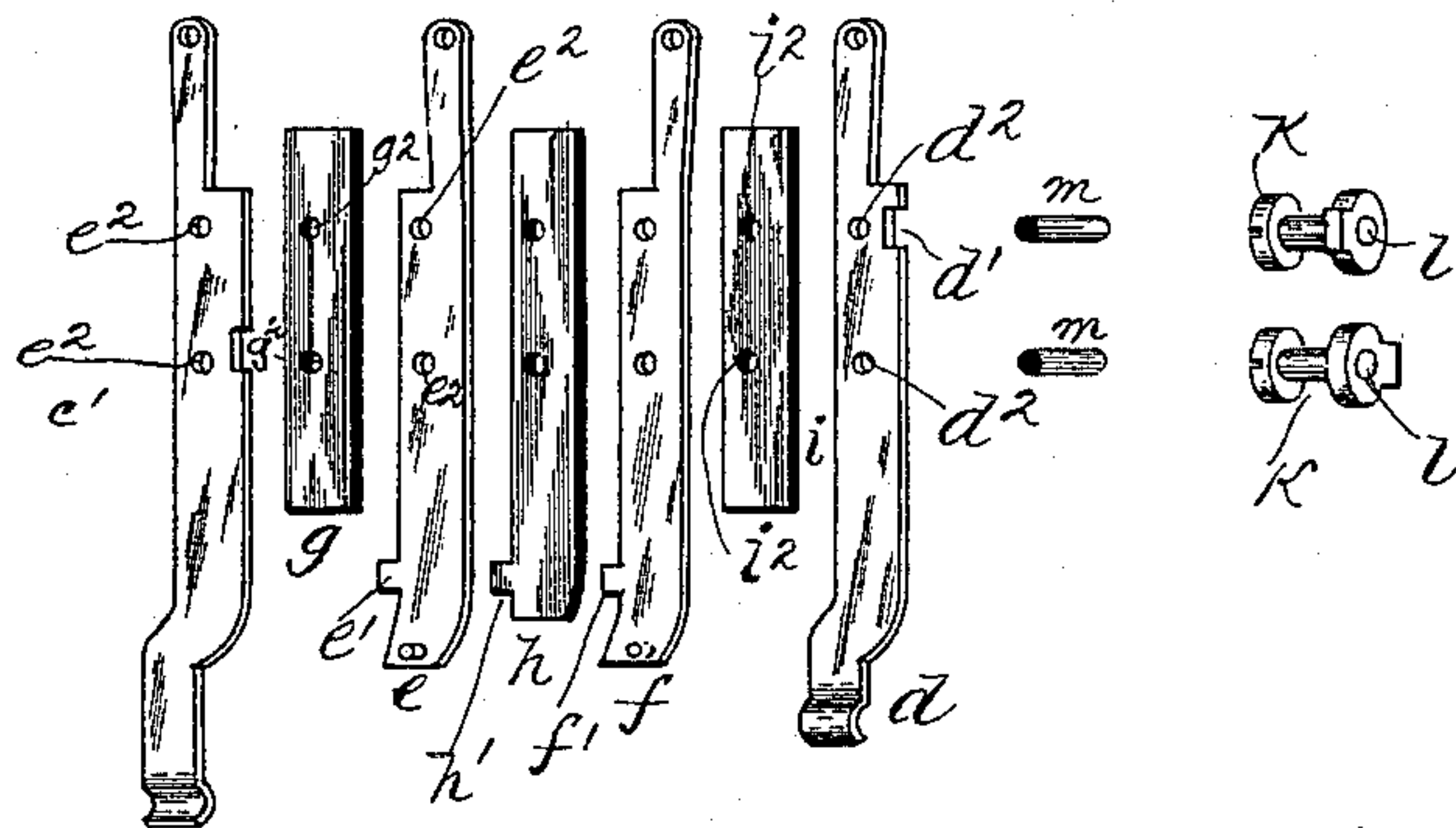


Fig. 6

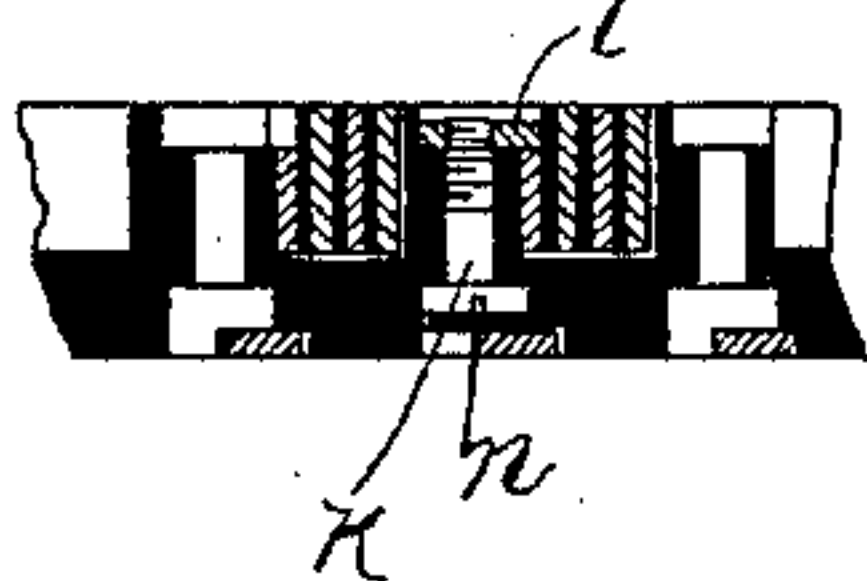


Fig. 7

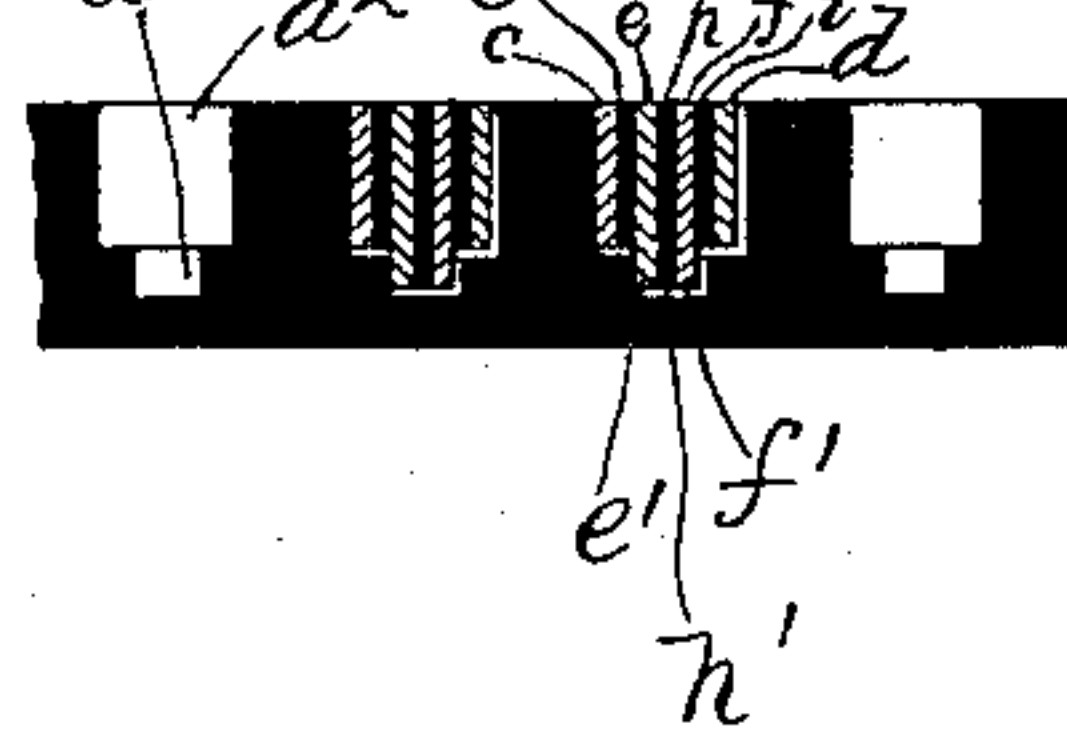


Fig. 8

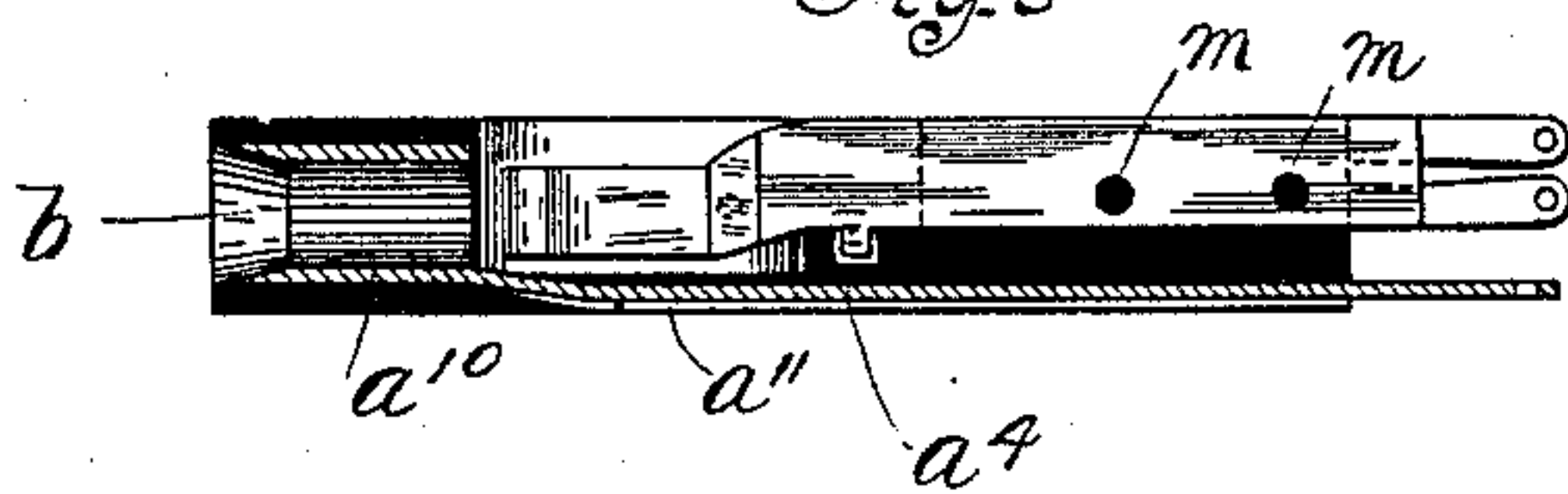
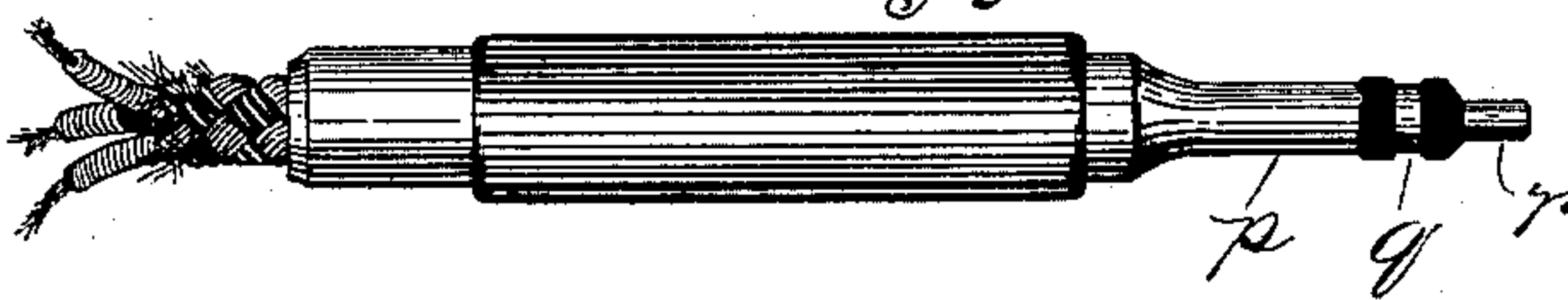


Fig. 9



Witnesses:

D. M. Danner,
John W. Sinclair

Inventor:

Charles E. Scribner,

by = Richard Brown his Atty.

UNITED STATES PATENT OFFICE.

CHARLES E. SCRIBNER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN ELECTRIC COMPANY, OF SAME PLACE.

SPRING-JACK FOR TELEPHONE-SWITCHBOARDS.

SPECIFICATION forming part of Letters Patent No. 596,626, dated January 4, 1898.

Application filed May 14, 1896. Serial No. 591,522. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SCRIBNER, 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 Spring-Jacks for Telephone-Switchboards, (Case No. 418,) 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 concerns the construction of spring-jack switches for switchboards of telephone-exchanges. It applies particularly to spring-jacks whose switch-springs and contact-straps are mounted edgewise in grooves formed in a plate or base of insulating material carrying a number of spring-jacks.

The invention consists in certain details of construction of the spring-jack which may be enumerated, together with the particular object of each, as follows: a bolt passing through the base-plate, having its nut engaging one of the springs of the group constituting the contacts of a single spring-jack for the purpose of retaining the group of springs in the groove; the form of the said nut and the manner of its engagement with the spring, whereby a reliable bearing upon the spring is secured and whereby a simple and cheap process of manufacture is permitted; the countersinking of the head of said bolt in the insulating base-plate and the filling of the countersunk opening with a plug of insulating material for the purpose of maintaining a high insulation of the parts and of preventing access to the bolt after assemblage of parts, and the provision on certain of the switch-springs of downwardly-projecting lugs and apertures or recesses in the insulating-base to receive the said lugs, whereby when the springs are in place their longitudinal or lateral movement is prevented.

The construction of the parts and the manner of assembling them in the spring-jack may be more readily described with reference to the accompanying drawings.

In the drawings, Figure 1 is a plan of a strip of spring-jacks. Fig. 2 is a front elevation of the strip, and Fig. 3 is a rear elevation of the same. Fig. 4 is a view from be-

neath the strip. Fig. 5 is a perspective view of a group of springs and anvil-straps, together with two of the bolts, the parts being separated to display their form, but disposed so as to represent their relation to each other. Fig. 6 is a longitudinal section of the strip across one of the bolts on line 6 of Fig. 1. Fig. 7 is a longitudinal section of the strip, showing the lugs on the anvil-straps and the recesses in which they lie, the section being taken on line 7 of Fig. 1. Fig. 8 is a longitudinal central section of a single spring-jack. Fig. 9 is an elevation of a plug which may be used with this spring-jack.

In forming the base or supporting plate *a* of insulating material to receive the metallic parts transverse perforations *a'* are bored into the edge of the strip at suitable intervals, and grooves *a²* are milled into the upper face of the strip meeting these perforations to accommodate the groups of springs constituting the jacks. These grooves are displayed in Fig. 1, where a few of the spaces have been left vacant. The milled groove *a²* is narrowest at its rear portion. Throughout the greater part of its length it is made broader to permit free movement of the springs. The portion *a³* of the groove immediately at the rear of the opening *a'* is made deeper also. In the floor of the groove and on its center line a perforation or recess *a⁴* is formed. At each side of the narrow portion holes *a⁵ a⁶* are drilled through the plate to permit the passage of the bolts for holding the springs in place. On the upper face of the strip a countersunk opening *a⁷* is provided to receive each nut, of circular form, but with a lateral groove therefrom reaching to the groove *a²*. On the under face of the strip the openings *a⁵ a⁶* are countersunk at *a⁸ a⁹* to receive the heads of the bolts. From the lower portion of the transverse perforation *a'* a hole *a¹⁰* is drilled obliquely toward the under face of the strip, being met at its point of emergence by a transverse groove *a¹¹*, milled in the under surface of the strip.

The metallic contact portions of the spring-jack comprise a thimble *b*, a pair of switch-springs *c* and *d*, and their respective contact-anvils, with the straps *e* and *f* carrying the anvils. The springs are of the forms shown

in Fig. 5. The spring *c* has a rearwardly-projecting extension or lug to which a wire may be soldered. In its upper edge a small rectangular notch *c'* is cut. The forward extremity of the spring is formed with a downward curve in order that when the springs are laid in the groove *a*² the tip of the spring may lie in the same plane as the axis of the perforation *a'*. The spring *d* is of similar form, but is shorter, in order that its extremity may bear upon a different contact portion of the plug with which the spring-jack is adapted to be used; also the notch *d'* in its upper edge is in a different position to correspond with the different position of the bolt at that side of the spring-jack. Both springs are perforated near their rear extremities with openings *c*² and *d*², respectively.

The anvil-straps *e* and *f* are alike in form. Each has a rearward extension similar to that of the springs, but differently disposed, in order that the terminals of the spring-jack may not lie in the same line. At the under edges of the springs *e* and *f* are formed downwardly-projecting lugs *e'* and *f'*, respectively, in position to enter the recess *a*⁴ in the base-plate. These straps also have openings *e*² and *f*², corresponding in position to the openings *c*² and *d*² of the springs.

Tongues *g*, *h*, and *i*, of rubber or other flexible insulating material, are provided for separating the springs. These tongues are of the same general shape as the springs, but are shorter. They have perforations *g*², *h*², and *i*², respectively, corresponding to the perforations in the springs and anvil-straps. One of the tongues *h* has a downwardly-projecting lug *h'*, corresponding in position to the similar lugs on the anvil-straps.

The bolt for securing the springs in place comprises a screw *k*, preferably with a broad slotted head, and a nut *l*. This nut corresponds in diameter with the countersunk opening *a*⁷ and has a lateral projection of a breadth equal to that of the lateral groove of the countersunk opening and is of such a length that when placed in the opening aforesaid it shall project into the groove *a*².

The contact-piece *b* is a thimble adapted to fit the perforation *a'*. It is provided with an extension formed to lie in the duct *a*¹⁰, and the groove *a*¹¹, leading to that duct on the under surface of the strip.

In assembling this spring-jack the spring *c*, tongue *g*, anvil-strap *e*, tongue *h*, anvil-strap *f*, tongue *i*, and spring *d* are placed together in the order named. Two tightly-fitting pins *m*, of hard rubber, are then thrust through the openings *c*² *g*² *e*² *h*² *f*² *i*² *d*², whereby the parts are bound together. The bundle of springs and tongues is then forced into the groove *a*², the rear part fitting tightly into the narrowest portion of that groove. The lugs *e'* and *f'* of the anvil-straps, with the lug *h'* of the tongue *h* between them, are then forced into the recess or opening *a*⁴, which should be of such size as to fit them tightly.

Then the nuts *l* are placed in the countersunk openings *a*⁷, their lateral extensions resting in the notches *c'* and *d'* of the springs *c* and *d*, respectively. The screws *k* are screwed into these nuts from beneath, whereby the bundle of parts is drawn tightly into the groove *a*². When the bolts are in place, plugs *n*, of insulating material, are driven into the countersunk openings *a*⁸ and *a*⁹ above the bolt-heads. Finally the thimble *b* is forced into the perforation *a'*, the extension *b'* being led through the duct and the groove, as has been already described, to the rear of the spring-jack. The thimble may be held in place by a pin extending through a portion of the plate into it. When the parts are thus assembled, they are securely held in place and all unnecessary play of parts is prevented. The bundle of springs cannot move either transversely or longitudinally, the outer springs being held by the nuts, while the anvil-straps are held both by the pins engaging the outer springs and the tongues entering the recess *a*⁴. These tongues or lugs also prevent any lateral motion of the anvils in response to the varying pressure of their respective springs upon them during the insertion of a plug into the spring-jack. Further, the parts by means of which the contact-springs are retained in place are inaccessible after the completion of the spring-jack, so that the spring-jack cannot be tampered with and injured by attempts to adjust or replace parts.

The spring-jack herein shown is adapted for use with the triple plug represented in Fig. 9. This plug has the usual three contact-surfaces *p*, *q*, and *r*, which are adapted to register with the thimble *b*, the longer spring *c*, and the shorter spring *d*, respectively, of the spring-jack. Obviously, however, the details of construction which constitute the present invention may be applied to many other forms of spring-jack adapted for different plugs or having different dispositions of contact-surfaces.

I claim as my invention—

1. The combination with a switch-spring lying on edge in a groove in a base-plate, of a bolt through the said base-plate having a nut of disk-like form with a lateral extension, said nut lying in a countersunk opening of the base-plate, and said lateral extension being in engagement with a recess in the switch-spring, substantially as described.

2. The combination, in a spring-jack, of a base-plate of insulating material having a groove formed therein, a switch-spring and its anvil-strap lying on edge in said groove, a lateral extension or lug on said anvil-strap, and a recess in the base-plate adapted to receive the said lug, whereby transverse movement of the anvil-strap is prevented.

3. In a spring-jack; the combination with a base-plate of insulating material having a groove milled therein, of a group of switch-springs and intermediate anvil-straps lying on edge in said groove, lateral extensions from

the said anvil-straps near the contact-anvils, and a recess adapted to receive the said extensions, substantially as described.

4. In a spring-jack, the combination with
5 a base-plate of insulating material having a transverse groove formed therein, of a group of line-springs and anvil-straps, with interposed tongues of insulating material, lying on
10 the anvil-straps and from the tongue between

them, near the anvils of the straps, and a recess in the floor of the groove adapted to receive and fit tightly the said extensions, substantially as described.

In witness whereof I hereunto subscribe my name this 7th day of April, A. D. 1896.

CHARLES E. SCRIBNER.

Witnesses:

ELLA EDLER,
LUCILE RUSSELL.