

(No Model.)

F. BLAKE.
SWITCH BOARD.

No. 295,223.

Patented Mar. 18, 1884.

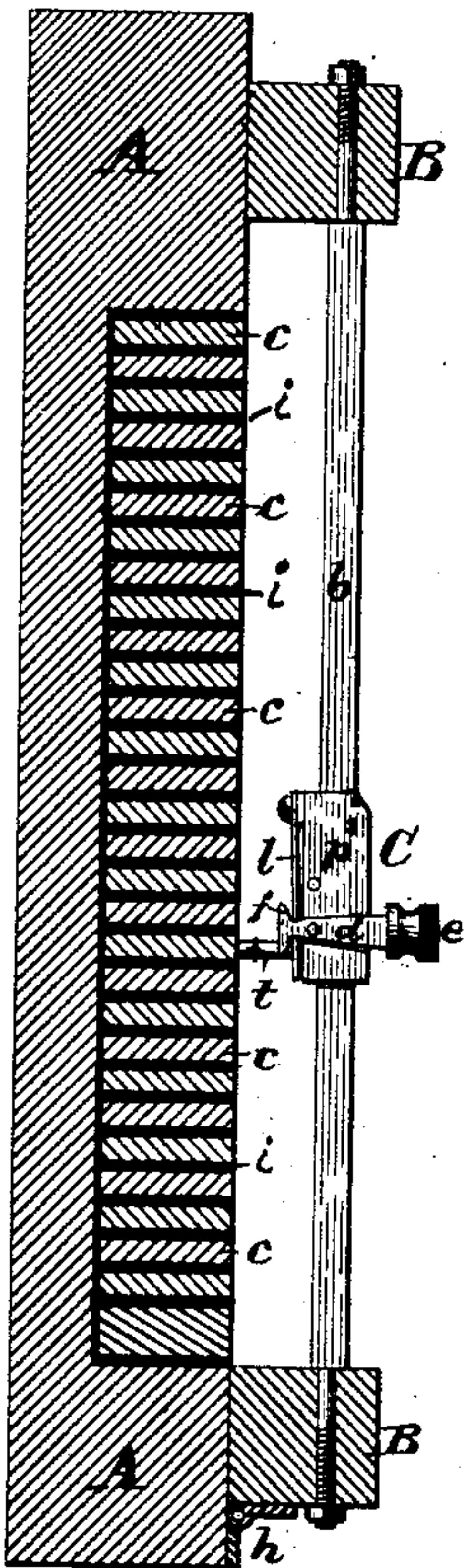


Fig. 2.

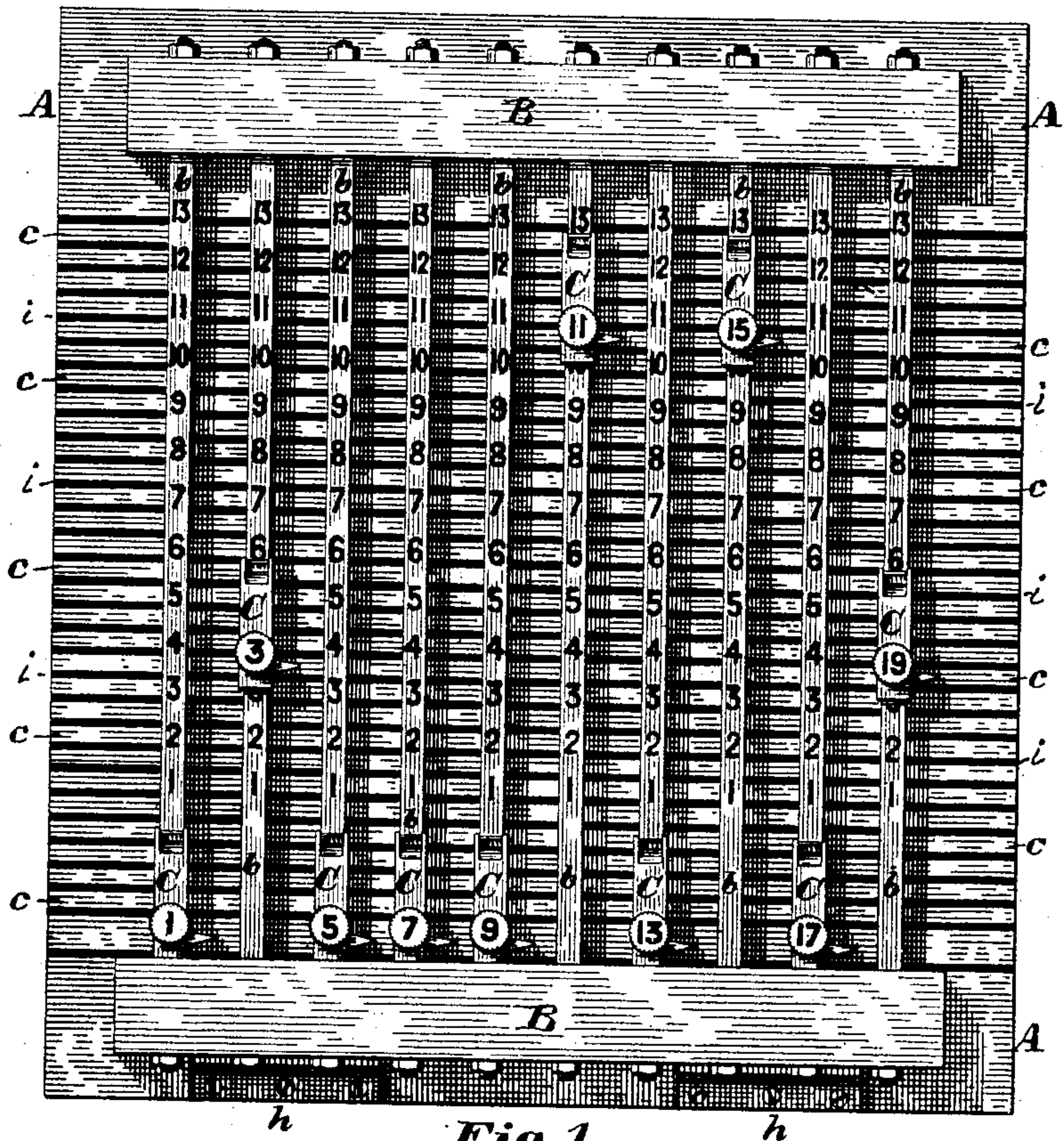


Fig. 1.

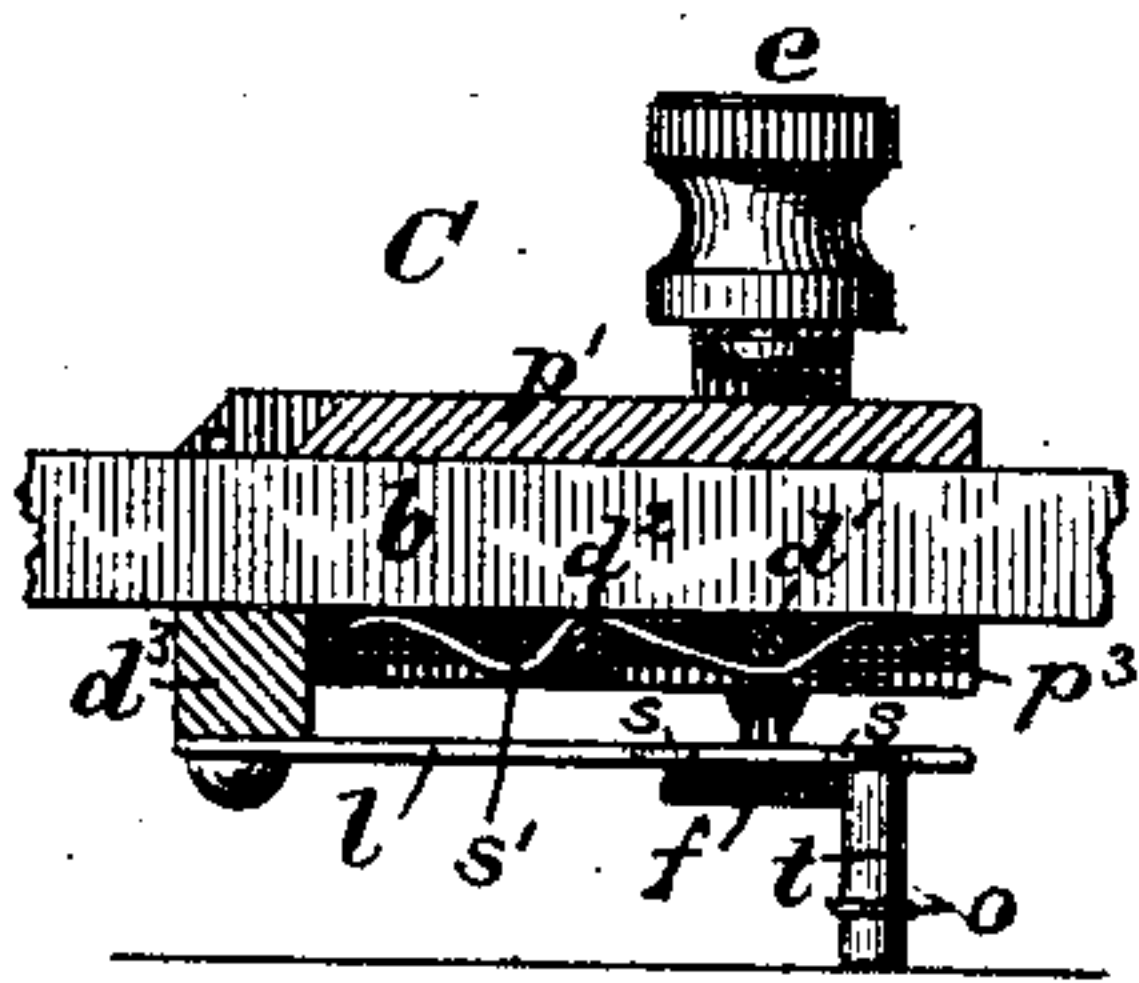


Fig. 4.

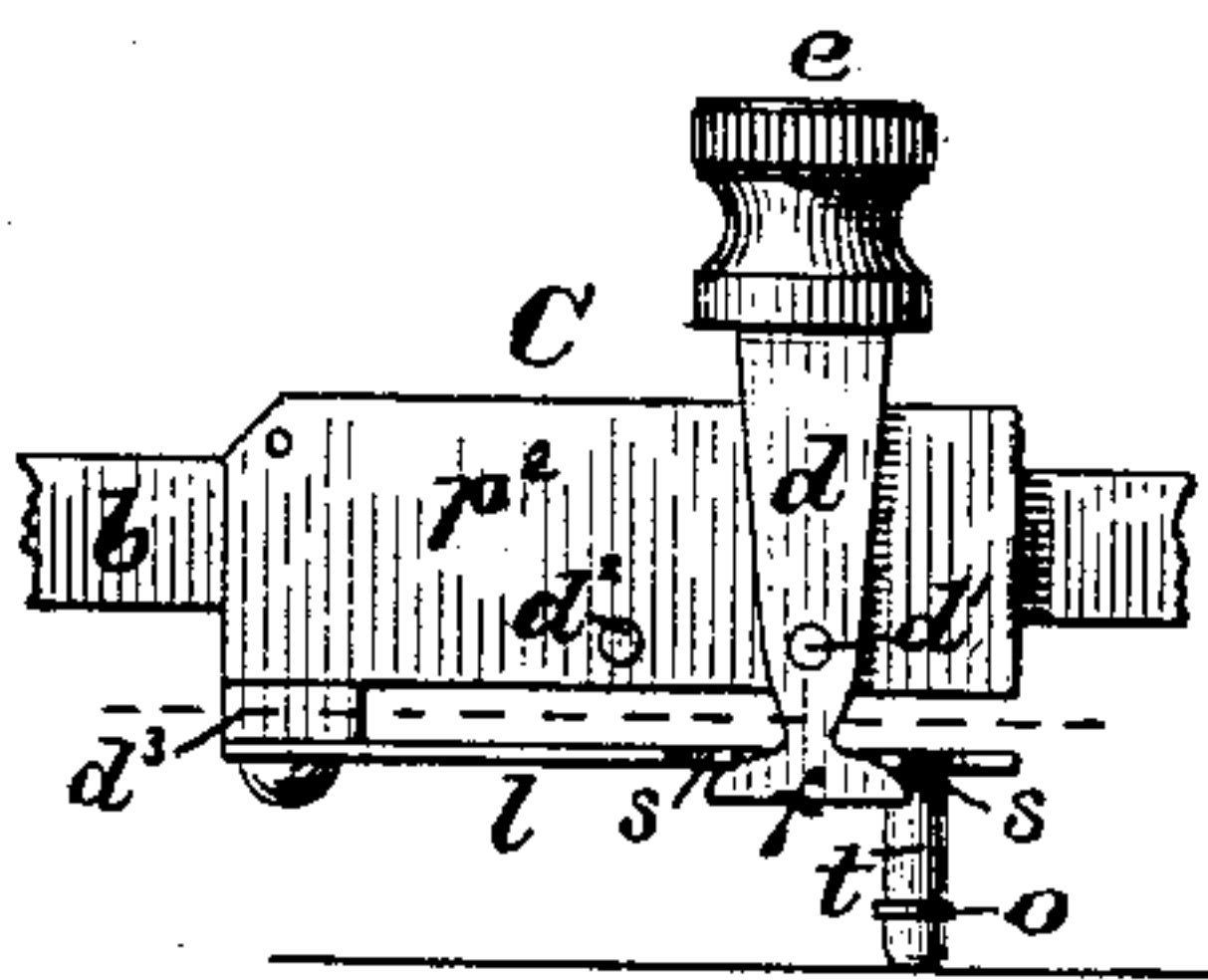


Fig. 3.

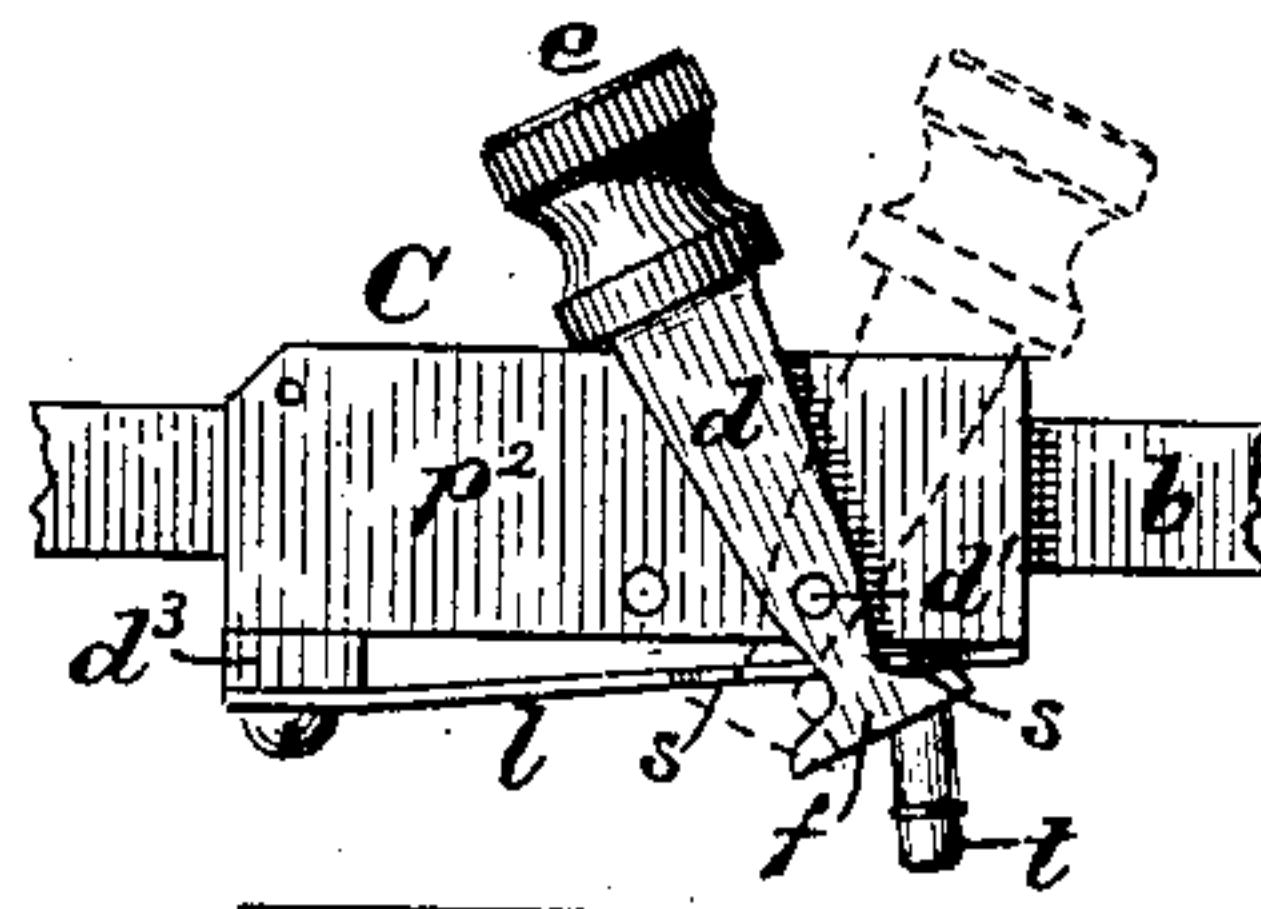


Fig. 6.

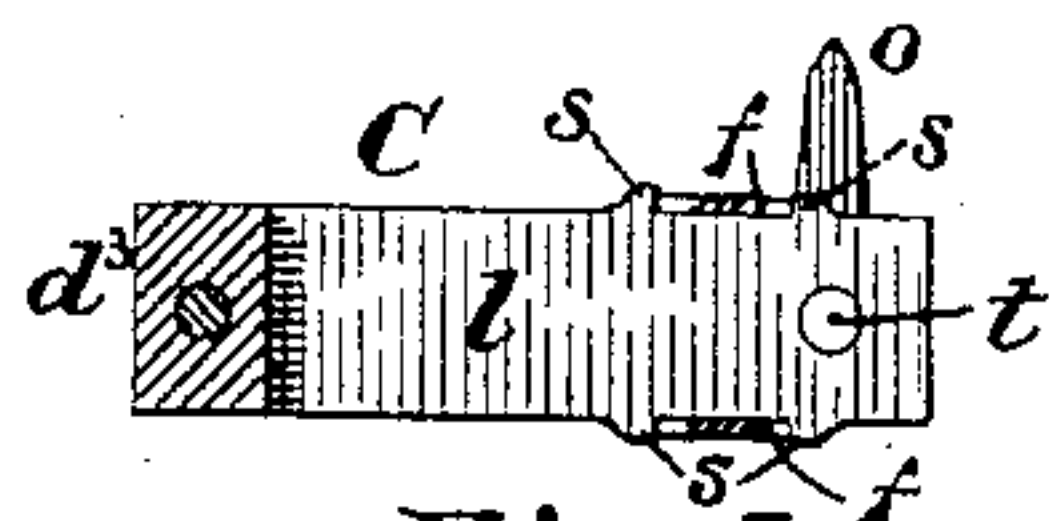


Fig. 5.

Witnesses:

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FRANCIS BLAKE, OF WESTON, MASSACHUSETTS.

SWITCH-BOARD.

SPECIFICATION forming part of Letters Patent No. 295,223, dated March 18, 1884.

Application filed August 6, 1883. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS BLAKE, of Weston, in the State of Massachusetts, have invented an Improvement in Switch-Boards, of which the following is a specification.

The invention relates to that form of switch-board which consists, essentially, of two series of fixed conducting-rods, insulated each rod from every other, while each rod of one series crosses every rod of the other series, and is provided with a sliding contact-pin or other similar device, by which electrical connection may be made between it and any rod of the other series. In switch-boards of this description as heretofore constructed, each contact-pin or similar device has remained at all times in contact with the rod on which it travels, and provision has been made that it might also be held or locked in electrical contact with any rod which it might cross in its sliding movement. All this is true of my improved board; but in former boards the sliding device has been liable in its sliding movement on its own rod to rub against the rods of the crossed series, or it has been necessary, either at the beginning or at the end of the sliding movement, as the case might be, to break or make a contact between said device and one of the crossed series by a movement of the hand of the operator separate and distinct from that movement of his hand which gives to the said device its sliding or longitudinal movement on its own rod, thus occasioning a loss of time, while in the use of my improved board no such rubbing occurs, and no such separate movement of the hand of the operator is required. On the contrary, in the practical operation of a switch-board embodying my present invention, the force of the hand of the operator may be exerted at once to move the contact device longitudinally in either direction upon its own rod from one crossed rod to another, and when the force is so directed it causes the contact device to clear the intervening crossed rods.

Accordingly, my improvement may be said to consist in the combination, with the two series of conducting-rods in a switch-board, of contact devices attached, one contact device to each of the rods in one of the series, and each of said contact devices having a double movement under the force of the hand of the

operator exerted in substantially the longitudinal direction of its rod.

Another distinct improvement consists in mounting the two series of rods in two frames and hinging one frame to the other, whereby either series may be more easily kept in order or more easily repaired.

Both these improvements are represented in the accompanying drawings. It should be observed, however, that the term "rods" in this specification, including the claims, is used as comprehending any kind of conductors employed in series on switch-boards.

Figure 1 is a plan of a switch-board embodying my said improvements. Fig. 2 is a section of the same. Figs. 3, 4, 5, and 6 represent details, as will hereinafter appear.

A is a table or frame of insulating material, to which are secured, in any proper manner, a number of conducting strips or plates, *c*, and a number of non-conducting strips or plates, *i*, put together alternately in a mass, face against face, substantially as described in my Patent No. 276,216. B B are two bars of insulating material, in which are secured a number of metallic bars or rods, *b*. The two bars of insulating material, B B, although held together by the metallic bars *b*, may be regarded as a frame for said metallic bars. One of them is hinged to the frame or table A by hinges *h*, as shown. The hinged frame carrying the *b* bars may be swung on its hinges up or back from the other frame, to allow the removal of dust or other matter interfering with the insulation of the *a* bars. It may be locked to the other by any suitable device when the board is operated. The bars or plates *c* form one series of conductors, or "conducting-rods," as they are herein termed, and the bars *b* a second series. By a slight change in working details, either series may be used as line-rods; but in using the apparatus shown I put the rods *b* in the lines and use the rods *c* as connectors, making connection between any two *b* rods by any *c* rod.

C C are the contact devices. One is appropriated to each *b* rod. Each is wholly of metal, and constructed as follows: First three plates, *p*¹, *p*², and *p*³, are pinned together in the form of a saddle, closely fitting and riding one of the *b* bars. To a cross-bar, *d*³, uniting the side plates, *p*² and *p*³, is secured a

spring-lever, *l*, having on each of its edges a pair of shoulders or projections, *s s*. The tendency of this spring-lever *l* is away from its supports, and consequently away from its
 5 *b* bar toward the *c* bars. It carries the connecting-pin proper, *t*. A forked lever, *d*, is pivoted at *d'* astride the before-mentioned saddle, and carries the finger-piece *e*. The legs of the forked lever *d* extend upon either side
 10 of the spring-lever *l* between the two before-mentioned shoulders *s s* of that side, and each leg carries a cam-shaped foot, *f*, which, when the forked lever is tilted, acts upon one or the other of the said shoulders *s* to raise the spring-
 15 lever *l*, and with it the contact-pin proper, *t*. A spring, *s'*, bearing against the line-bar *b* and a pin, *d²*, between the side plates, *p²* and *p³*, keeps the saddle-piece on the *b* bar and regulates its friction. The index, as shown, is at
 20 the forward end of the saddle-piece, a little in advance of the contact-pin proper, *t*, and accordingly the numerals or other suitable characters on the rod to which the contact device

is attached are in advance of the corresponding crossed rods. A pointer, *o*, also shows 25 the position of the contact-point proper.

No further description of the mode of operation is necessary than to say that a slight tilt is given to the forked lever *d* whenever the finger-piece *e* is moved along its rod. 30

I do not limit myself to the precise form of mechanism shown and above described; but

I claim—

1. The combination, with two series of conducting-rods in a switch-board, one series 35 crossing the other, of contact-pins sliding and tilting, one on each of the rods of one of the series, substantially as described, for the purpose specified.

2. The combination of two series of conduct- 40 ing-rods in a switch-board, one series hinged to the other, substantially as described.

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Witnesses:

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