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Patented Aug. 28, 1900.

J. STEINER & W. H. TUCK.

TELEPHONE SIGNALING APPLIANCE FOR PARTY TELEPHONE LINES.

(Application filed Jan. 8, 1900.)

(No Model.)

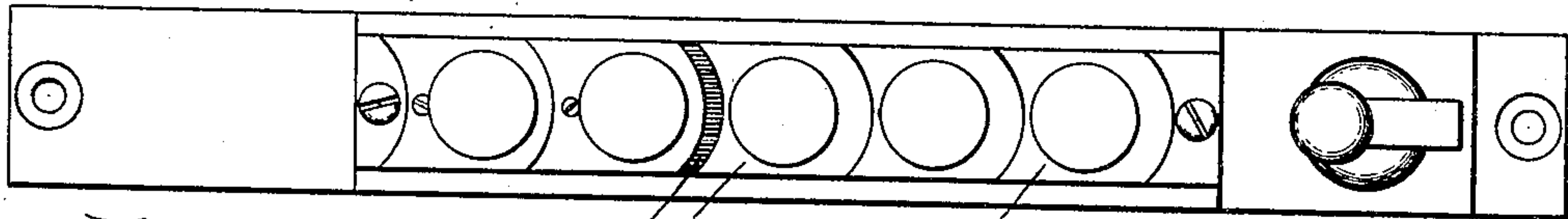


Fig. 1.

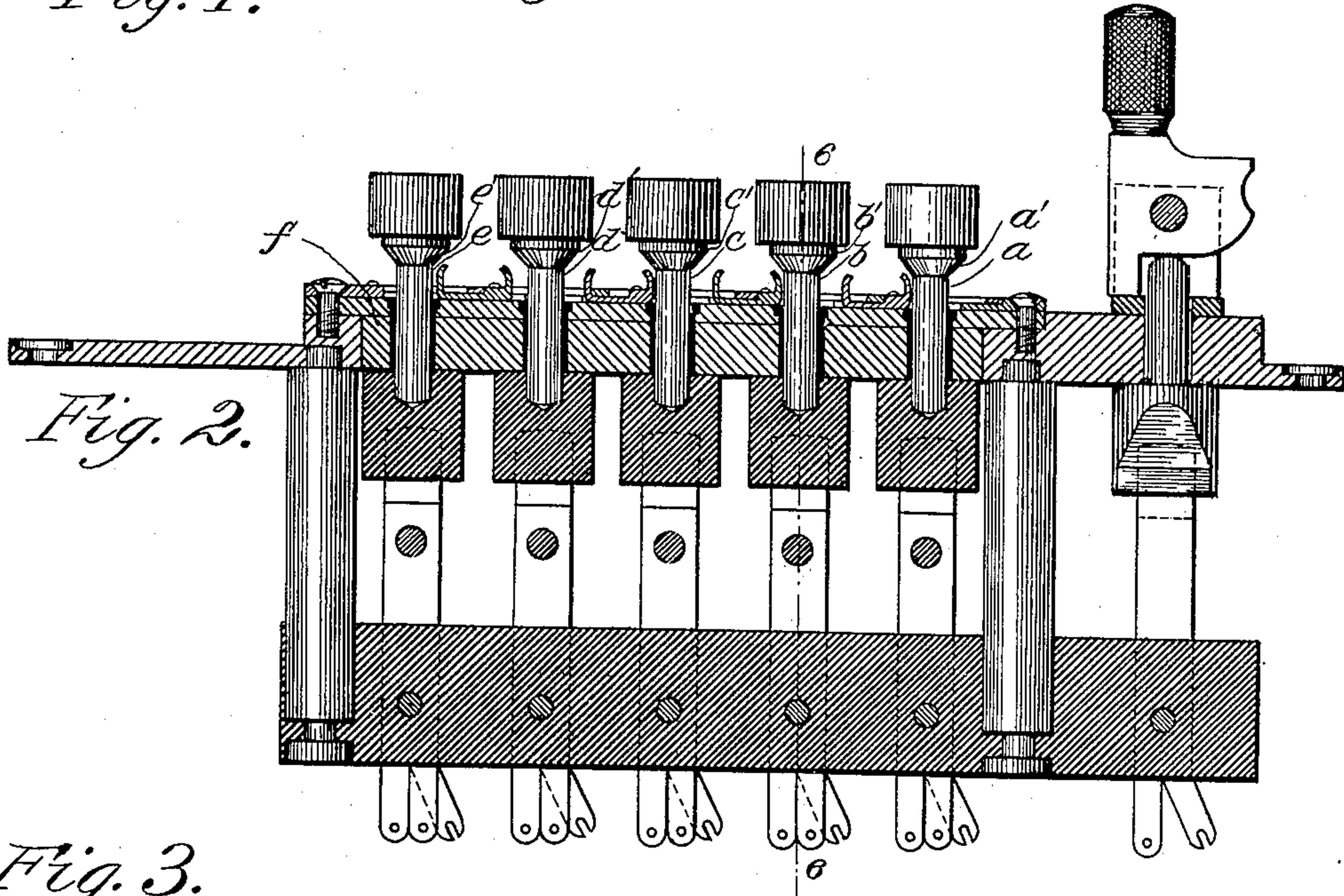


Fig. 2.

Fig. 3.

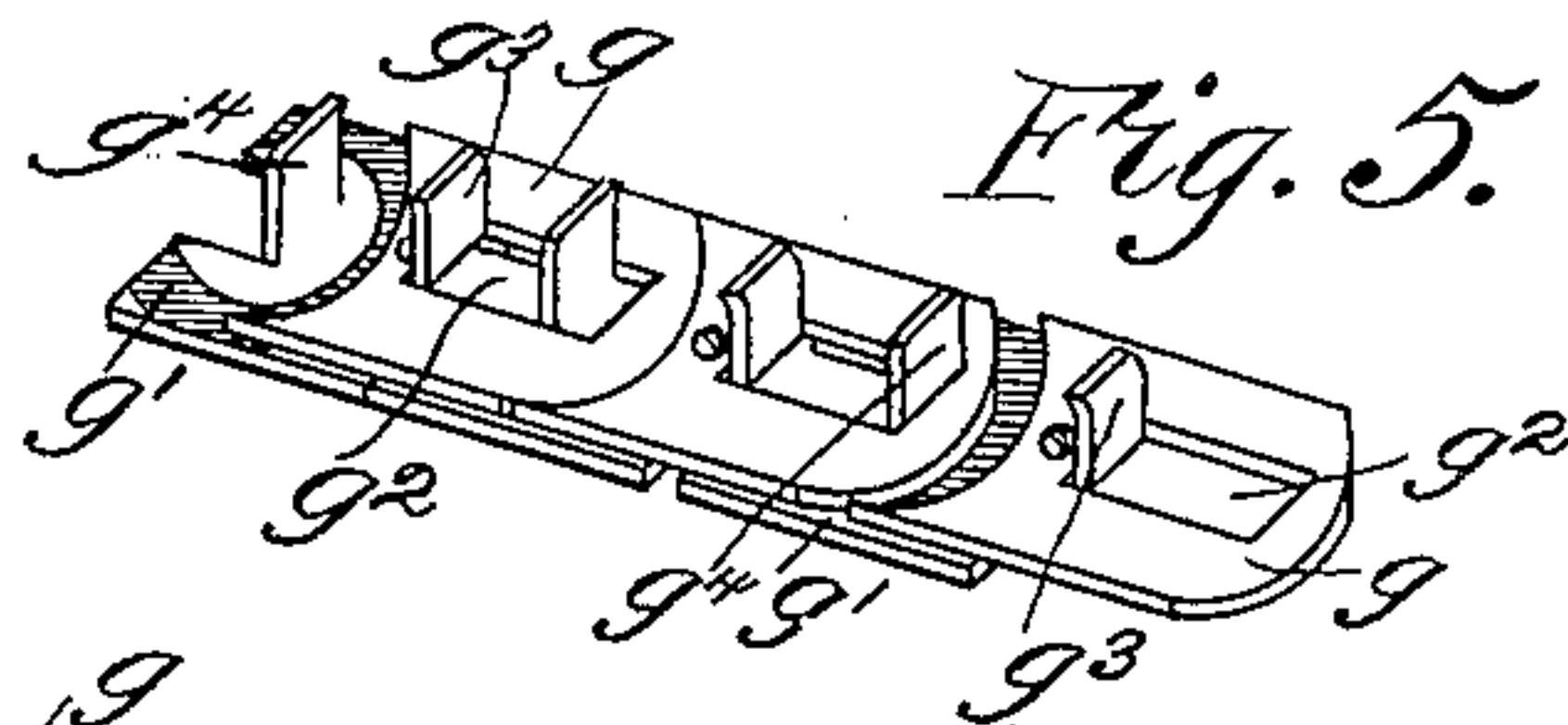
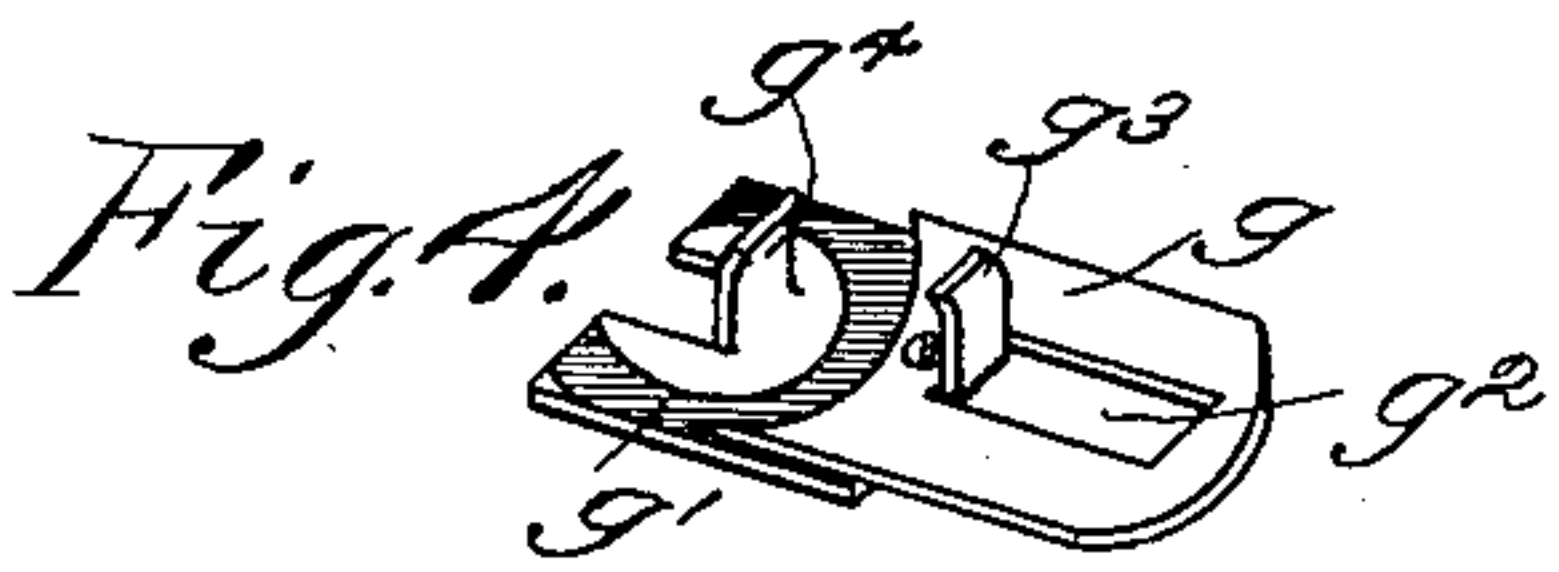
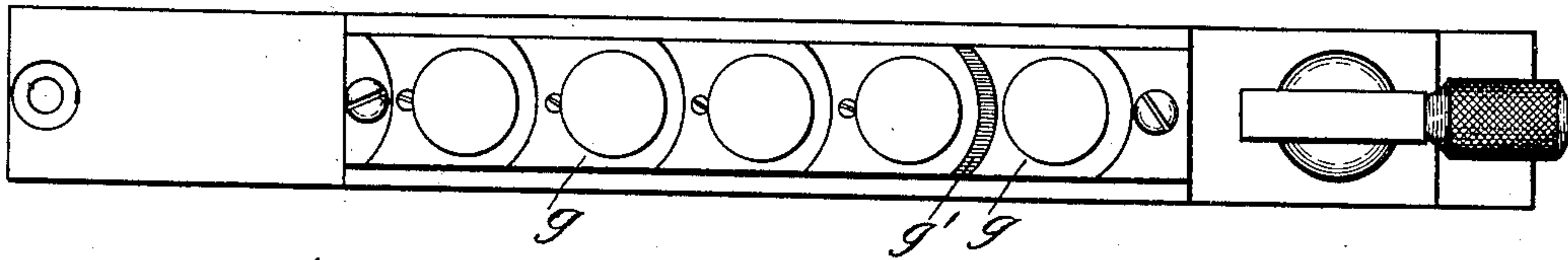
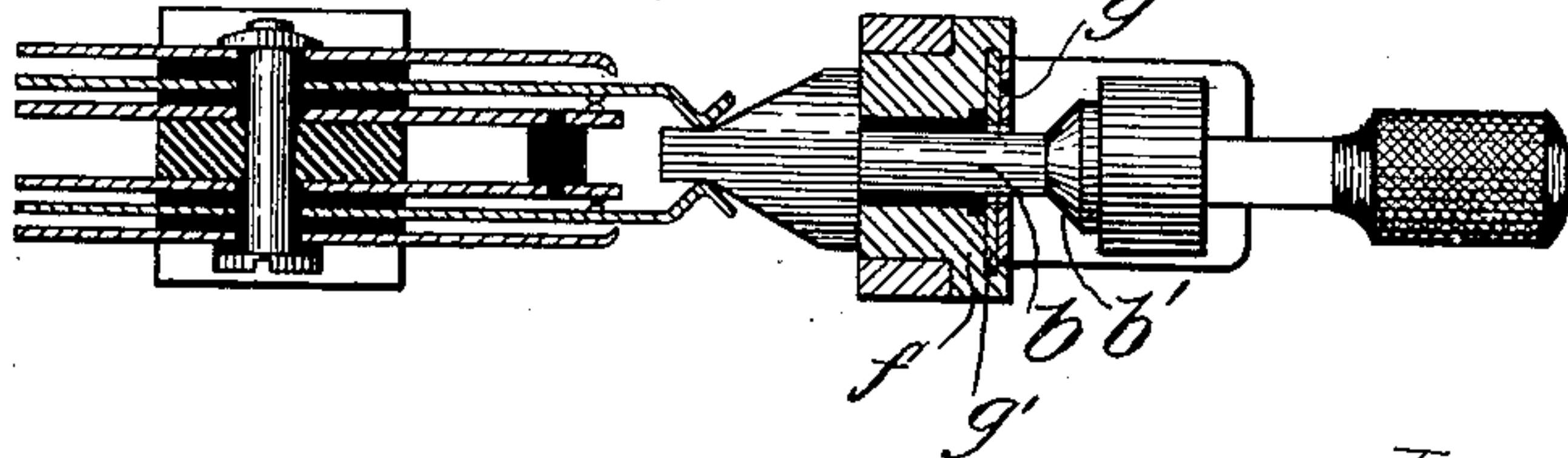


Fig. 6.



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UNITED STATES PATENT OFFICE.

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TELEPHONE SIGNALING APPLIANCE FOR PARTY TELEPHONE-LINES.

SPECIFICATION forming part of Letters Patent No. 656,907, dated August 28, 1900.

Application filed January 8, 1900. Serial No. 666. (No model.)

To all whom it may concern:

Be it known that we, JOSEF STEINER and WILLIAM H. TUCK, citizens of the United States, residing at New York, (Brooklyn,) Kings county, and State of New York, have invented a certain new and useful Improvement in Selective Signaling Appliances for Party Telephone-Lines, (Cases Nos. 11 and 1,) of which the following is a full, clear, concise, and exact description.

Our invention relates to a selective signaling appliance for party telephone-lines, and has for its object to provide improved means for recording or noting the identity of a party-line station which has been called or signaled from the central office after the completion of a connection therewith initiated at some other line, so that a second signal may be transmitted to the same station in case the called subscriber should fail to respond to the first signal.

In a party-line telephone system where a number of substation instruments are connected to the same line-circuit there is usually provided at the central office an appliance known as a "party-line ringing-key," associated with each pair of plugs and their plug-circuit, for selectively signaling any station on the line to the exclusion of the other stations. This party-line ringing-key ordinarily consists of a number of plungers which are adapted to be manually depressed by the operator, each plunger serving to actuate a circuit-changing switch. Each of the circuit-changing switches when actuated is adapted to connect with the plug-circuit and so with the telephone-line a source of signaling or calling current of suitable character to operate the signal-bell at a particular substation on the line to the exclusion of the bells at the other substations. In accordance with our invention the plungers are mounted one behind another in a row, and a number of target-concealing shields are associated with the row of plungers, being mounted one behind another in a row, one shield for each plunger. These shields are adapted to slide to and fro for a limited space in a suitable bed-plate, and means are provided whereby each plunger as it is depressed opens the row of shields at an adjacent point, pushing the

shields to one side or the other to make the opening. The gap thus created in the row of shields displays a target underneath, so that this target remains set until another key is depressed to close the gap thus made and open another one adjacent to itself. It will be understood that the target thus displayed serves to indicate to the operator the identity of the last key which has been depressed, so that if she should have occasion to transmit a second signal, as in the case where the called subscriber does not respond to the first signal, she will know at a glance which key she previously depressed—that is to say, which station was signaled—without necessitating any effort of memory on her part. The target which is displayed whenever two adjacent shields are separated preferably consists of an extension of one of the shields passing underneath the other shield and colored to distinguish it from the face of the shield—that is to say, preferably the shields overlap one another and each is provided with a colored target portion which is normally concealed by an adjacent shield, but which is displayed when the plunger of such other shield is depressed.

Our invention will be more particularly explained and further features thereof set forth by reference to the accompanying drawings, wherein—

Figure 1 is a plan view of a ringing-key equipped with the indicators of our invention. Fig. 2 is a sectional view thereof in longitudinal elevation. Fig. 3 is a plan view similar to Fig. 1, except that a different key is depressed and the row of shields thus separated at a new point and the opening therein shown in Fig. 1 now closed. Fig. 4 is a detail perspective view of one of the shields. Fig. 5 is a detail perspective view showing three shields in a row to illustrate clearly the manner in which they are associated with one another, and Fig. 6 is a cross-section on line 6 6 of Fig. 2.

The same parts are indicated by the same reference-letters wherever they are shown.

The drawings illustrate a listening-key and a ringing-key having five buttons or plungers, all mounted upon a single support, forming a unit or self-contained key set for a plug-cir-

cuit, which is adapted to be placed in the switchboard as a unit. The five plungers $a b c d e$ are mounted in a frame f , one behind another in a row. Each plunger has a circuit-changing switch associated therewith operated by the depression of the plunger, and each plunger has a button on top by which it may be manually depressed.

We have not considered it necessary to illustrate in the drawings the electric circuits of a party-line telephone system and the sources of current connected with the several circuit-changing switches, since such a system is well known in the art, and our invention is concerned only with the means for visually indicating to the operator the identity of the button which has last been pressed.

A bed is formed in the framework of the appliance underneath the row of push-buttons, in which bed a number of indicating-shields are adapted to slide to and fro. There are five of these shields, one for each of the push-buttons or plungers, of which the four at the right are mounted to slide to and fro in the bed-plate and the one at the left-hand end is stationarily mounted. Each plunger or push-button is adapted when depressed to open the row of shields at a point adjacent thereto, pushing the shields along and making a gap in the row. Targets are provided which may be seen through the opening in the row of shields wherever that opening may be made, so that when each key is depressed it displays a target adjacent to itself, which may be seen in the opening or gap which has been made in the row by the depression of that button, thus serving to indicate to the operator which of the keys has been depressed.

We preferably construct the shields as shown in detail in Figs. 4 and 5. Each shield has an upper portion g , which is adapted to engage closely with its neighbor on both sides and has in addition a target portion, which consists of an extension g' passing under the shield next ahead of it. In other words, the shields overlap one another, and they normally overlap to such an extent as to cover up all the target portions except one, the selection of the one which is uncovered being determined by the depression of the plungers. Each shield has a slot g^2 therein through which the rod of a plunger passes. Each shield has two tongues $g^3 g^4$ formed thereon, one of which tongues, g^3 , is adapted to be engaged by a wedge-shaped portion of the push-button or plunger whose rod passes through it. The other tongue, g^4 , of each shield is formed on the end of the extension or target portion thereof and projects up through the slot g^2 of the shield next ahead of it and is adapted to be engaged by the plunger or push-button associated with the last-mentioned shield. The forward tongue g^4 is adapted to slide to and fro in the slot g^2 of the shield next ahead and normally occupies a position some distance from the extremity of the slot in such forward shield. The target

portion of each shield is thus associated with the push-button next ahead of it, and when that push-button is depressed the tongue g^4 of the shield is engaged and pushed rearwardly (to the right as shown in the drawings) toward the extremity of the slot, thus moving the shield backward and causing its target to be uncovered in the gap created between the upper edges of the two shields.

The bed in which the row of shields is adapted to slide is just long enough so that the target on some shield must always be uncovered, the target selected being determined by the key which is depressed.

To recapitulate, there are a number of movable shields arranged in a row and adapted to slide to and fro in the bed-plate. Each of the plungers is adapted, when depressed, to make an opening in the row of shields and cause an underlying target to be uncovered. This target is preferably a colored forward extension of the shield next behind and is normally covered by the overlapping rear portion of the shield through which the plunger passes. The movement of the shields is caused by the engagement of wedge-shaped portions $a' b' c' d' e'$, respectively, of the plungers with the tongues $g^3 g^4$ carried by the shields.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination with a plurality of keys or plungers disposed one behind the other, of a row of target-concealing shields $g g$ and a bed wherein said shields are adapted to slide, underlying targets normally covered by said shields, and means, operated by each plunger when depressed, for opening the row of shields at a point adjacent to the depressed plunger, whereby the underlying target is displayed, substantially as set forth.

2. A party-line ringing appliance for telephone-switchboards, comprising a series of keys or plungers disposed one behind the other in a row, of switches operated by said plungers when depressed, a bed-plate and a series of shields adapted to slide to and fro in said bed-plate, each plunger passing through one of said shields, and means, operated by each plunger when depressed, for moving the shields apart and causing a gap or opening to be made in the row of shields, to indicate the identity of the plunger which has been depressed, substantially as set forth.

3. The combination with a plurality of keys or plungers disposed one behind the other and adapted to be manually depressed, of a frame wherein said plungers are mounted, said frame having a bed formed therein in which the plungers are disposed in a row, a series of target-concealing shields, one for each plunger, adapted to slide to and fro in said bed, each of the plungers passing through an opening in the shield associated therewith, and tongues carried by said shield adapted to be engaged by wedge-shaped portions of said

plungers, whereby said shields may be moved to and fro in the bed, each of said plungers being adapted, when depressed, to separate the shields at a point adjacent thereto, creating an opening or gap which serves to indicate the identity of the plunger which has been depressed, substantially as set forth.

4. The combination with a plurality of keys or plungers disposed one behind another in a row, and adapted to be manually depressed, of a row of shields *g g* and a bed wherein the same are adapted to slide to and fro, each of said shields having an underlying target portion normally overlapped or concealed by the

rear of the shield next ahead in the series, and means, operated by each plunger when depressed, for moving two adjacent shields apart to display the underlying target portion of one of them, substantially as and for the purpose set forth.

In witness whereof we hereunto subscribe our names this 17th day of October, A. D. 1899.

JOSEF STEINER.

WILLIAM H. TUCK.

Witnesses:

JOSEPH STEINER, Jr.,

J. W. BANCKER.