

No. 675,377.

Patented June 4, 1901.

H. C. DODGE.

SIGNALING DEVICE FOR TELEPHONE SWITCHBOARDS.

(Application filed Dec. 21, 1900.)

(No Model.)

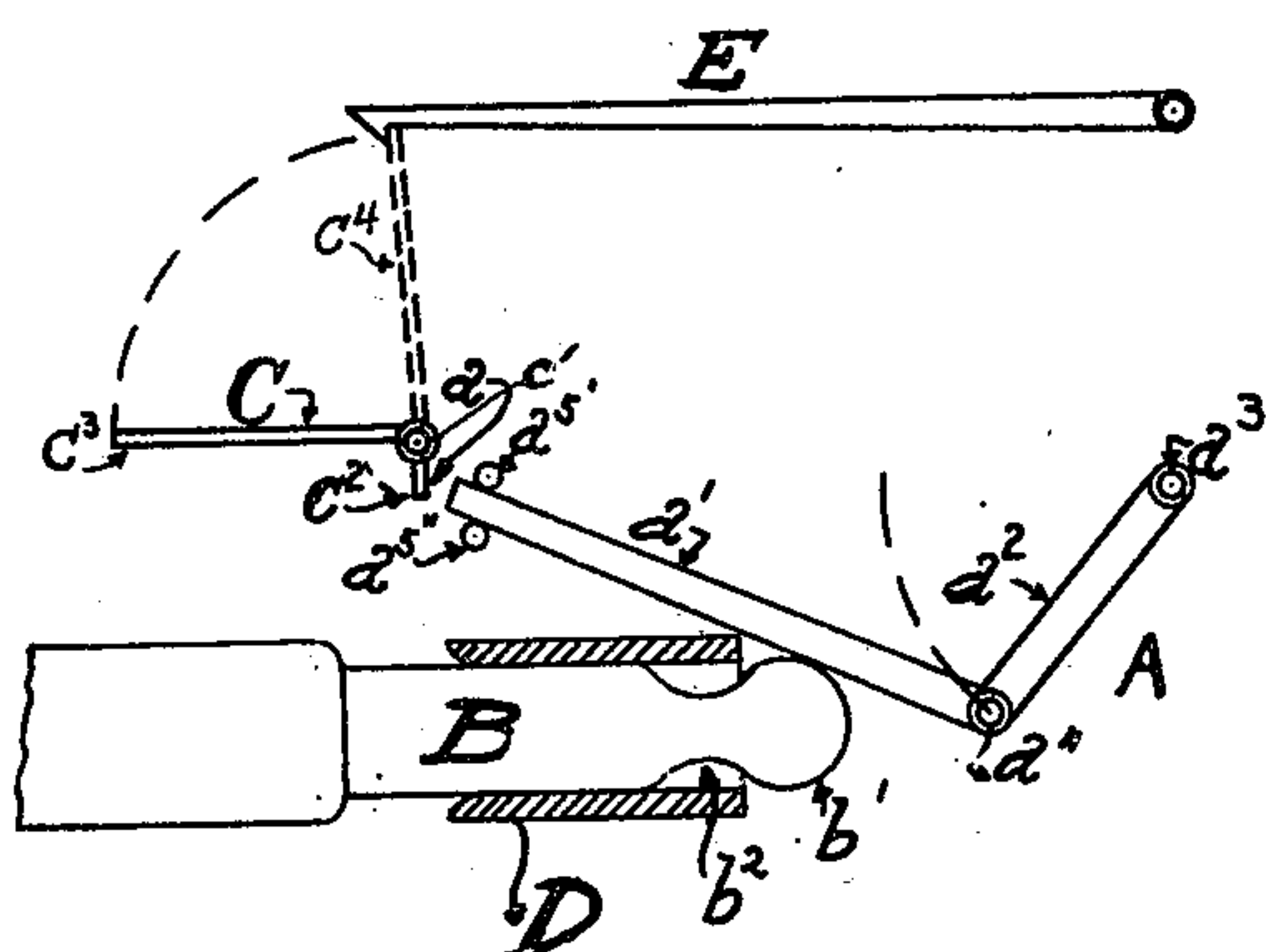


Fig. 1.

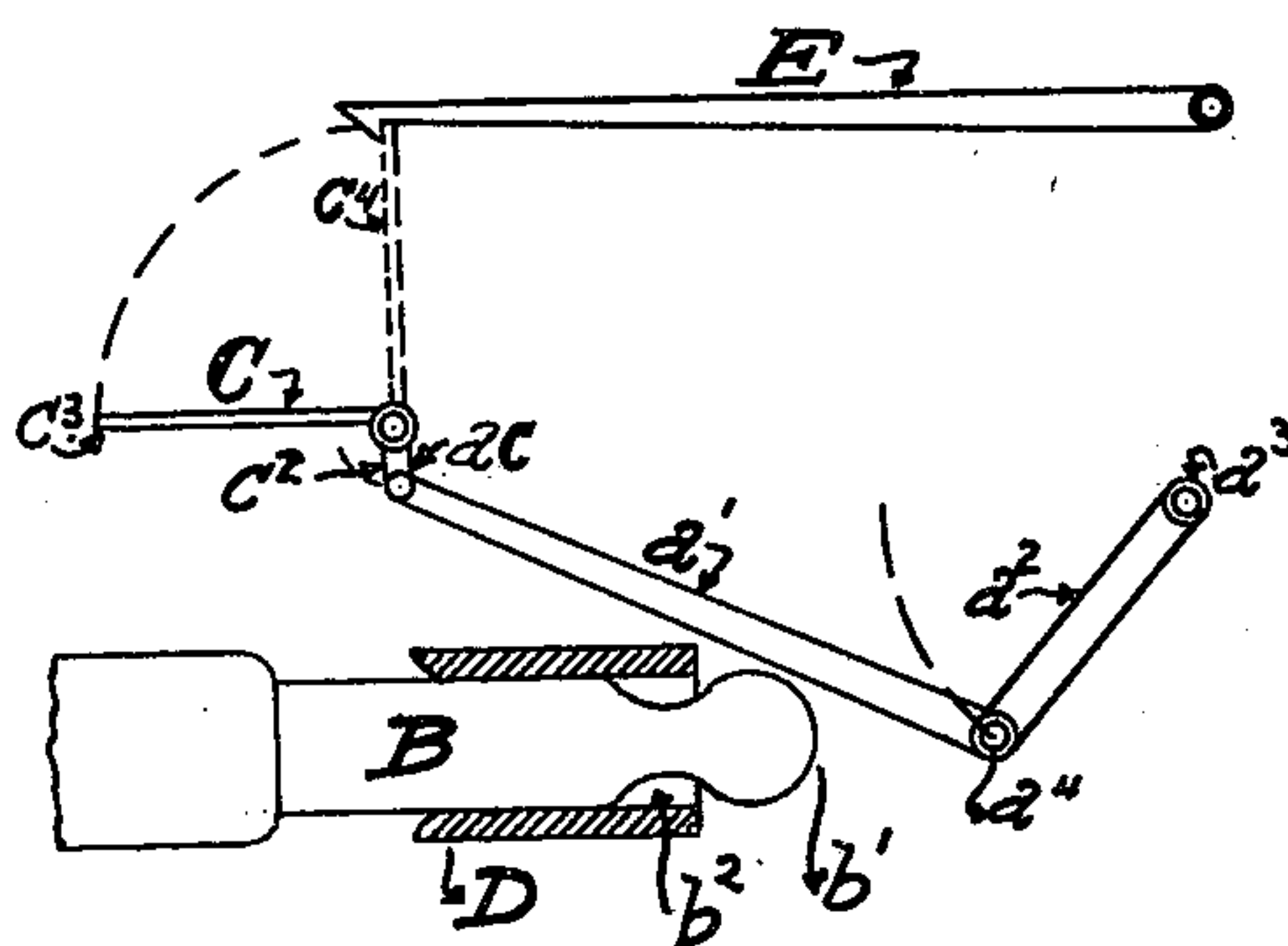


Fig. 2.

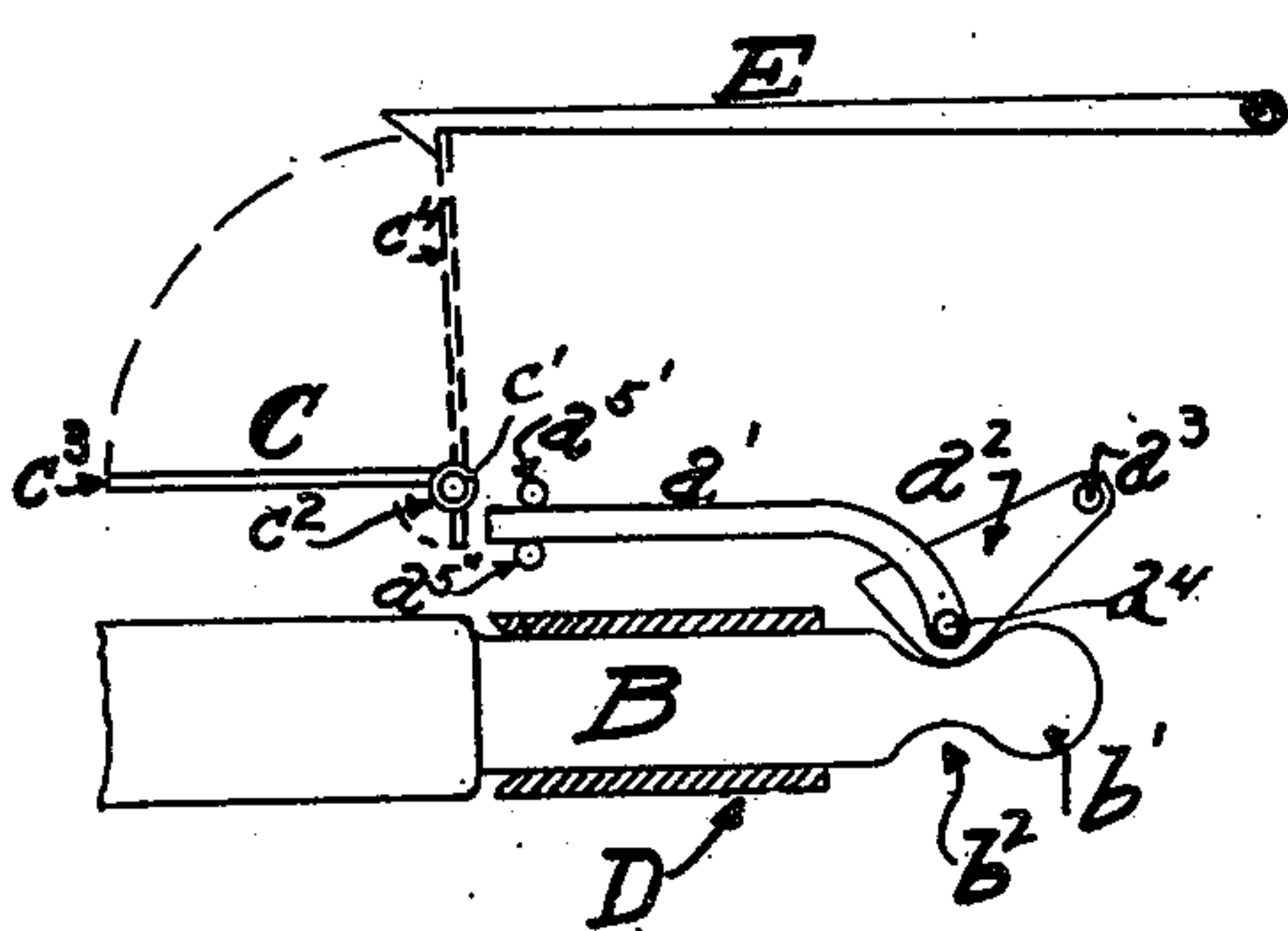


Fig. 3.

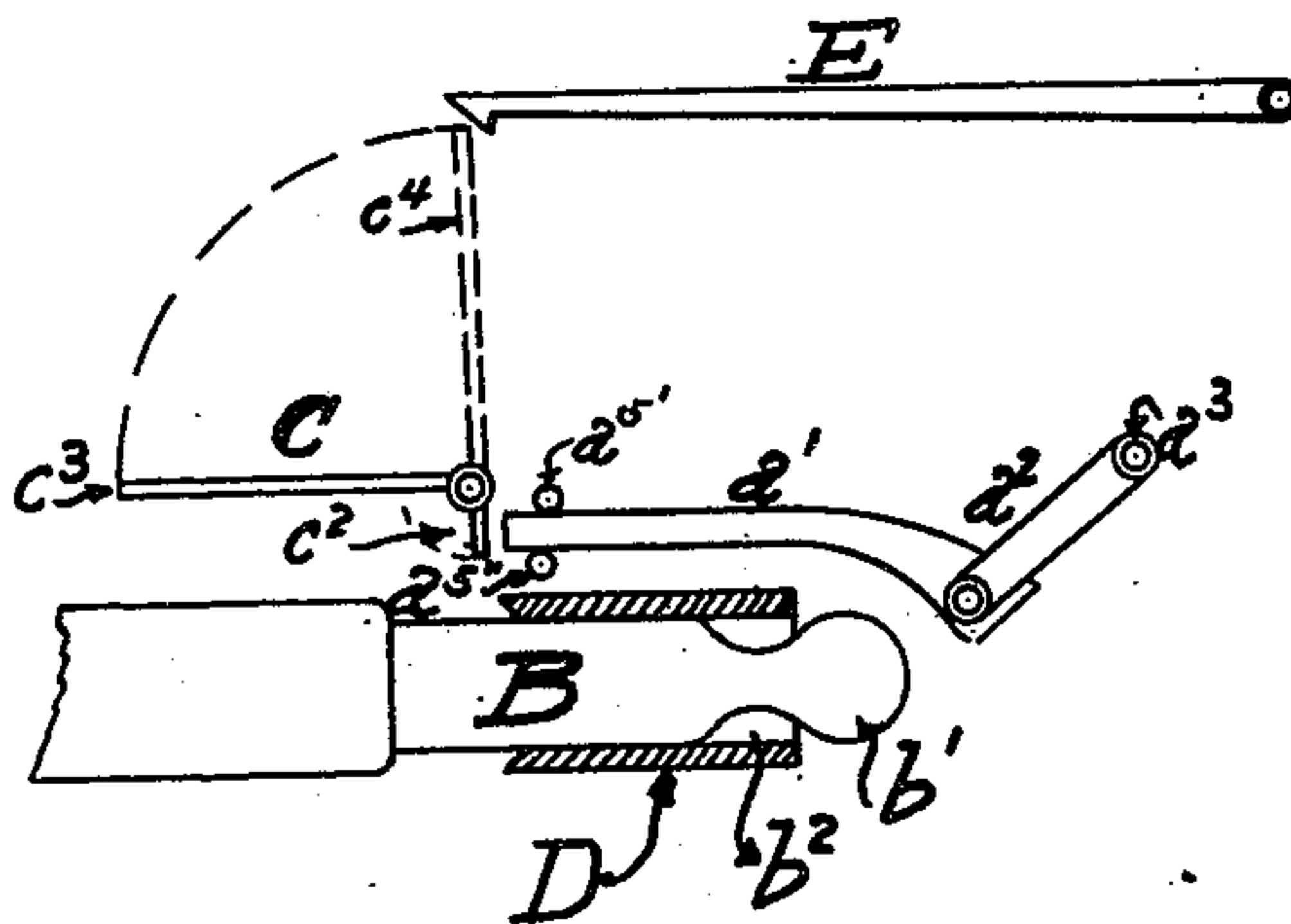


Fig. 4.

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SIGNALING DEVICE FOR TELEPHONE-SWITCHBOARDS.

SPECIFICATION forming part of Letters Patent No. 675,377, dated June 4, 1901.

Application filed December 21, 1900. Serial No. 40,701. (No model.)

To all whom it may concern:

Be it known that I, HARRY C. DODGE, a citizen of the United States, residing in the city of Cleveland, Cuyahoga county, in the State of Ohio, have invented certain new and novel Improvements in Signaling Devices for Use in Telephone-Switchboards, which I wish to protect by United States Letters Patent.

The following specification, with the accompanying drawings, contains a full, clear, and concise description of my invention.

Like letters refer to like parts in all the figures.

My invention consists of certain new mechanical means whereby the drop on a telephone-switchboard which has displayed a signal may be restored automatically by inserting a suitable switchboard-plug in the proper spring-jack; also, mechanical means whereby a drop which is displaying a signal, while a switchboard-plug is in and the shutter associated with said drop, may be automatically restored to the normal position upon the withdrawal of said plug. The mechanical means which I make use of consists of a new and novel adaptation of the principle of the toggle system of levers and special conformations of the members of said toggle system, of the switchboard-plug with which the toggle coöperates, and of the drop.

In the drawings, Figure 1 represents, diagrammatically, the toggle system A, the switchboard-plug B, the drop C, and the spring-jack D. Fig. 2 shows a modification of the application of the toggle system shown in Fig. 1. A represents the toggle system; B, the switchboard-plug; C, the drop, and D the spring-jack. The modification consists in the pivoted joint a^3 , which is used instead of the form of joint shown at a^3 , Fig. 1. Fig. 3 is a detail view of the various parts, showing such conformations of the different members as I find advisable to use in practice. In Fig. 3, A designates the toggle system; B, the switchboard-plug; C, the drop, and D the jack.

In Fig. 1 is shown the drop C, pivoted at c^1 and having a continuation c^2 at a suitable angle. Beneath the drop is located the jack D to receive the switchboard-plug B to make the different connections with the telephone-

line to which the device is connected. The toggle system A consists of two members a^1 and a^2 . The member a^2 is pivoted at some suitable stationary point, as a^3 , and also to the member a^1 at some suitable point, as a^4 .

The member a^1 has the equivalent of a pivot at the point a^5 in the bearings $a^{5'}$ and $a^{5''}$. These members of the toggle system are made of such dimensions and so placed that the joint a^4 lies in the path of the switchboard-plug B. A detent E or other suitable device is arranged to retain the shutter C in its normal position. The operation of the arrangement shown in Fig. 1 is as follows: Let the drop C fall to the signal-displaying position c^3 . The operator seeing this inserts the switchboard-plug B in the jack D. When the plug B enters the jack far enough, the head b^1 meets the part of the toggle system a^4 which lies in its path. All surfaces being suitably formed, the plug traveling farther forces the part of the toggle system upward and out of the way. In doing this the members of the toggle system take up a position conforming nearer to a straight line than their former positions. Hence the distance between the point a^3 and the point a^6 is increased. The point a^3 being stationary, the point a^6 travels in the direction of the shutter. The parts of the mechanism are so proportioned that this movement is such that the point a^6 engages with the projection c^2 of the drop C and moves it through an arc great enough to cause the drop C to move from the position c^3 to the normal position c^4 . Thus the restoration of the drop is accomplished. The plug B has a recess b^2 formed in its body of such depth as to permit the toggle system when the plug has traveled far enough to drop therein and regain approximately its normal position. When the drop C is again caused to take the signaling position c^3 , the point a^6 does not interfere with the projection c^2 . Upon the withdrawal of the plug from the jack with the drop in this position the part a^4 of the toggle system is in the path of the head b^1 of the switchboard-plug B. Hence it is forced upward. The point a^6 is again caused to engage with the projection c^2 of the drop, as before described, and the drop C is restored to its normal position c^4 . In ways that are

obvious the members of the mechanism are so conformed and arranged that the above movements take place as described.

Fig. 2 is an exact duplicate of Fig. 1 in all respects, except that the member a' is pivoted to the projection c^2 at $a c$ instead of the equivalent of the pivot $a^{5'} a^{5''}$ shown in Fig. 1. As the operations of the various parts of this figure are identical with Fig. 1 and the operation of the pivot $a c$ is obvious from the drawings and the description of Fig. 1, I need not describe the figure in detail, as it is only intended to illustrate one of the possible modifications of the details in the application of my invention.

In Fig. 3 I show the different forms I give the members of my mechanism in reducing it to practice. A represents the toggle system, with the members a' and a^2 , the stationary pivot a^3 , the joint a^4 , the equivalent of a pivot in the bearings $a^{5'} a^{5''}$, the drop C, pivoted at c' , and the projection of drop C—namely, c^2 —the switchboard-plug B, and jack D. The member a^2 of the toggle system A is formed with inclined faces of such a pitch that as the member a^2 engages with the head b' of the plug B when the plug travels in either direction the member a^2 is forced out of the path of the said plug smoothly and without binding. The member a' is pivoted at a^4 to the member a^2 and so formed and placed that the member a^2 only engages with the plug. Hence the wear comes mostly on the member a^2 , which is suitably proportioned to withstand it.

It is obvious from Fig. 4 that the member a' may be given a cam-like form instead of the member a^2 without departing from the spirit of my invention. Hence I hold that it also comes within the scope of the claims I wish to secure. In all respects the operations of Figs. 3 and 4 are identical with those of Fig. 1. Hence the description of Fig. 1 applies to each of them.

Having thus described and shown my invention, what I claim as new, and wish to secure by Letters Patent, is—

1. In an appliance for use in telephone-

switchboards, the combination of a drop, a spring-jack, a plug adapted to enter said spring-jack and a toggle system of levers adapted to engage with said drop and to cooperate with said switchboard-plug to restore the said drop to its normal position substantially and shown and described.

2. In an appliance for use with telephone-lines the combination of a drop, a spring-jack, a plug adapted to enter said spring-jack and a toggle system of levers connected between a suitable point on the said drop and some suitable stationary point, said toggle system being suitably interposed in the path of said switchboard-plug, whereby said switchboard-plug cooperates with said toggle system to restore said drop to its normal position.

3. In an appliance for use with telephone-lines the combination of a drop, a spring-jack, a switchboard-plug to enter said spring-jack and a toggle system of levers adapted to engage with said drop and to cooperate with said switchboard-plug to restore said drop to its normal position, said switchboard-plug having a recess in the body thereof to permit the said toggle system of levers to recover their normal position whereby the drop may display a signal when suitably energized while said plug is in said spring-jack, the said switchboard-plug being adapted to cooperate with the toggle system of levers to restore the said drop upon the withdrawal of said plug.

4. In an appliance for use with telephone-lines the combination of a drop, a spring-jack, a switchboard-plug to enter said spring-jack, and a toggle system of levers adapted to engage with said drop and to cooperate with said switchboard-plug whereby said drop is restored to its normal position by means of said switchboard-plug, one of said levers being so formed to the better adapt it to cooperate with said switchboard-plug.

In testimony whereof I affix my signature in the presence of two witnesses.

HARRY C. DODGE.

Witnesses:

WALTER J. HAMILTON,
MINNIE E. CUMMINGS.