

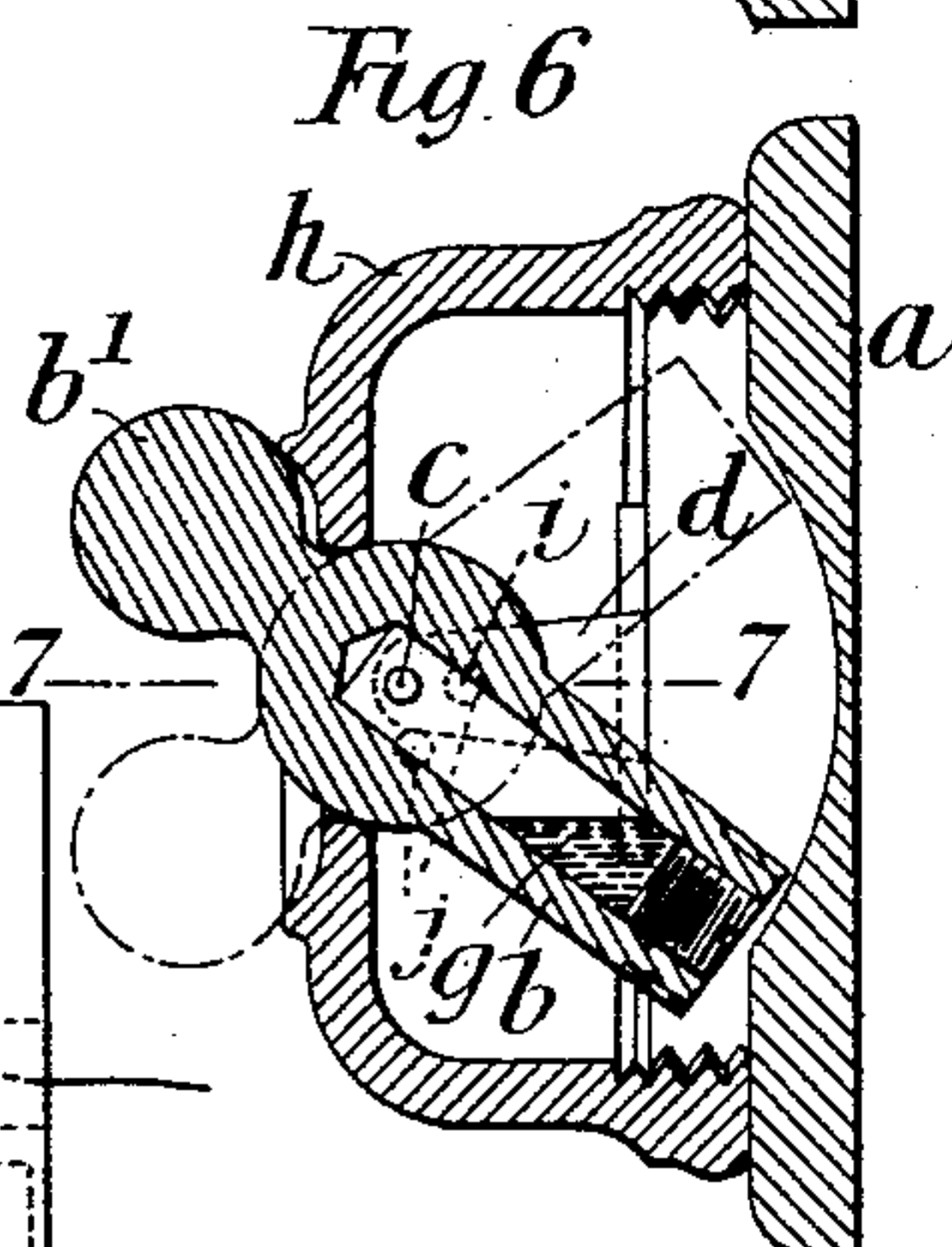
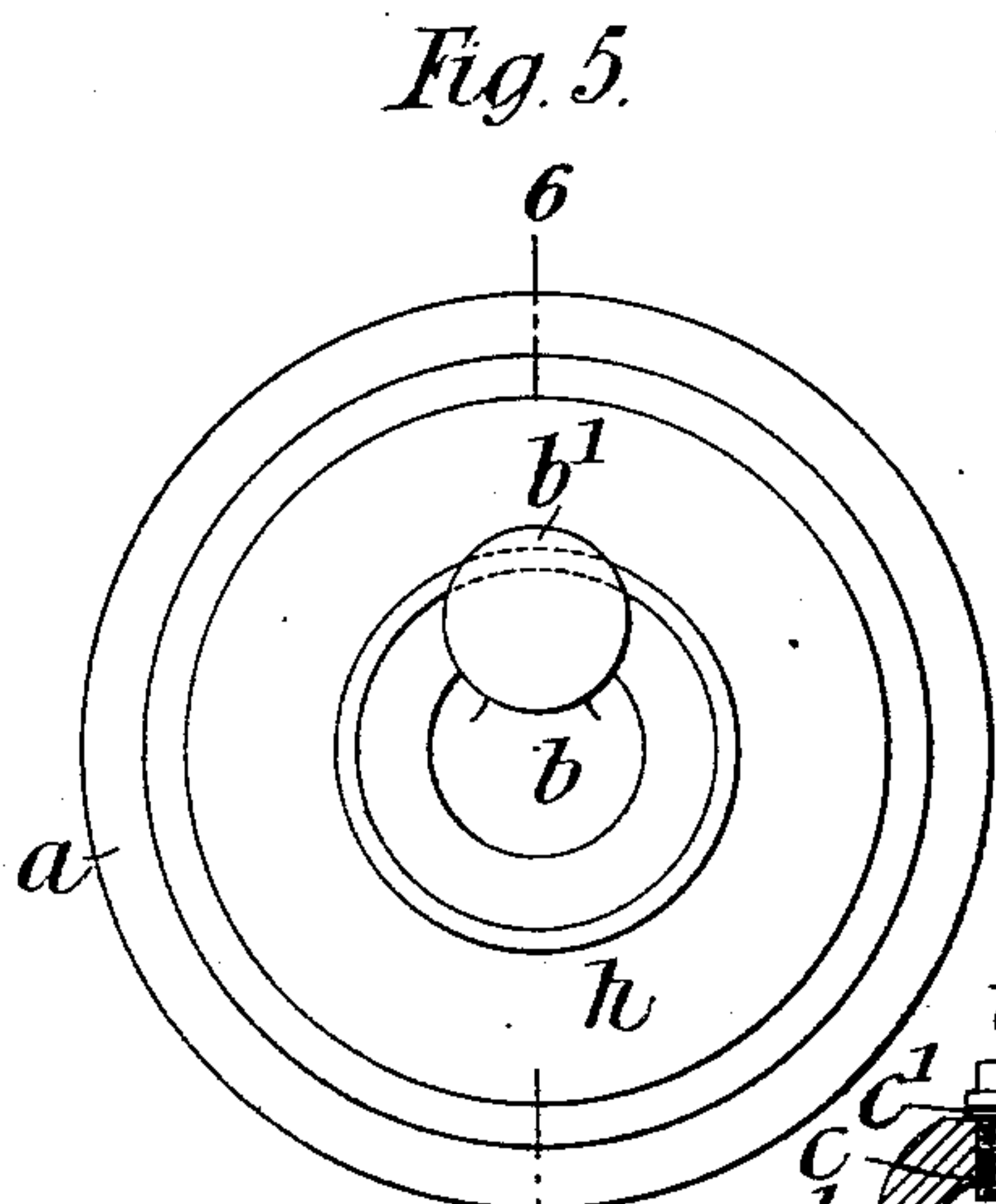
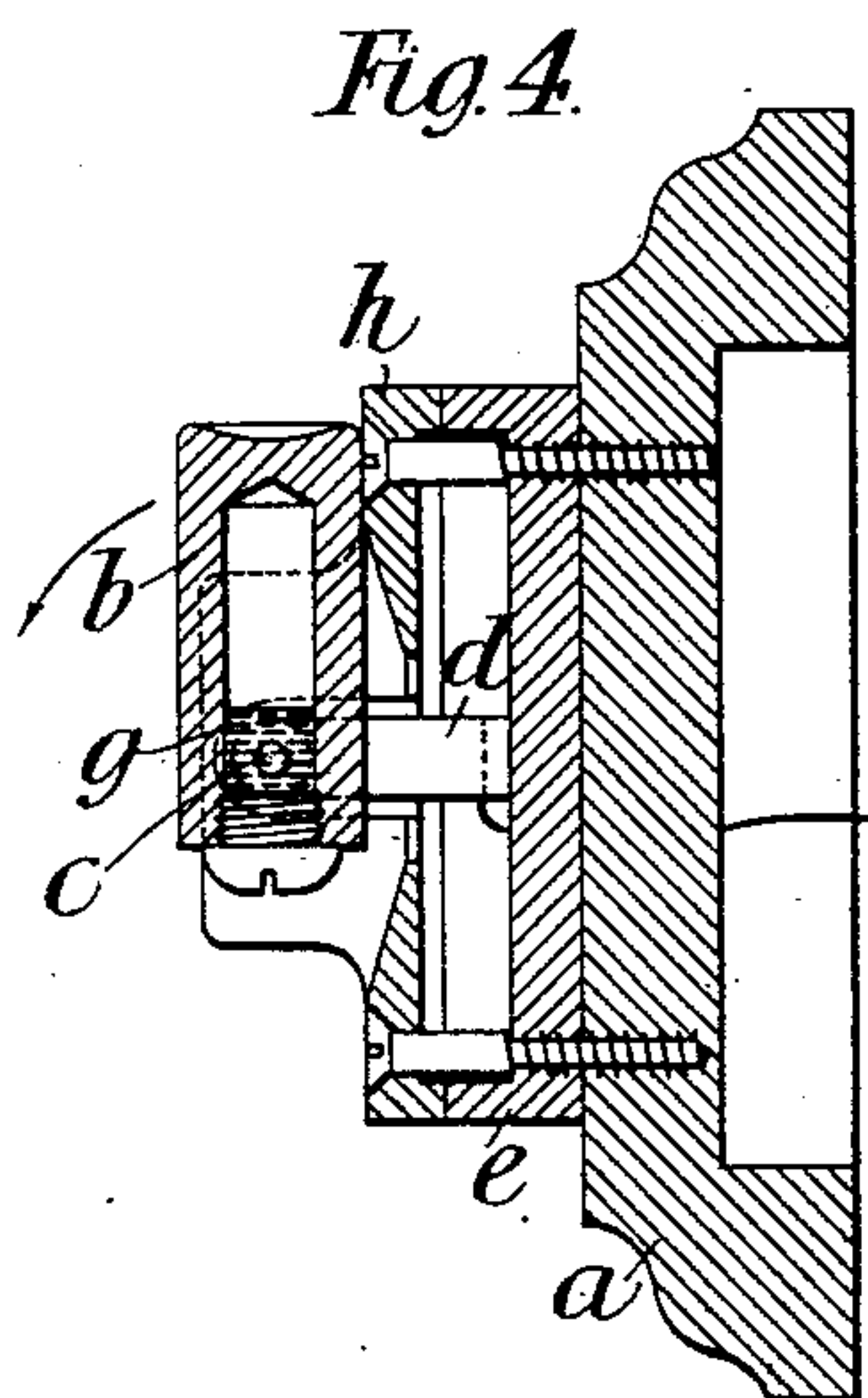
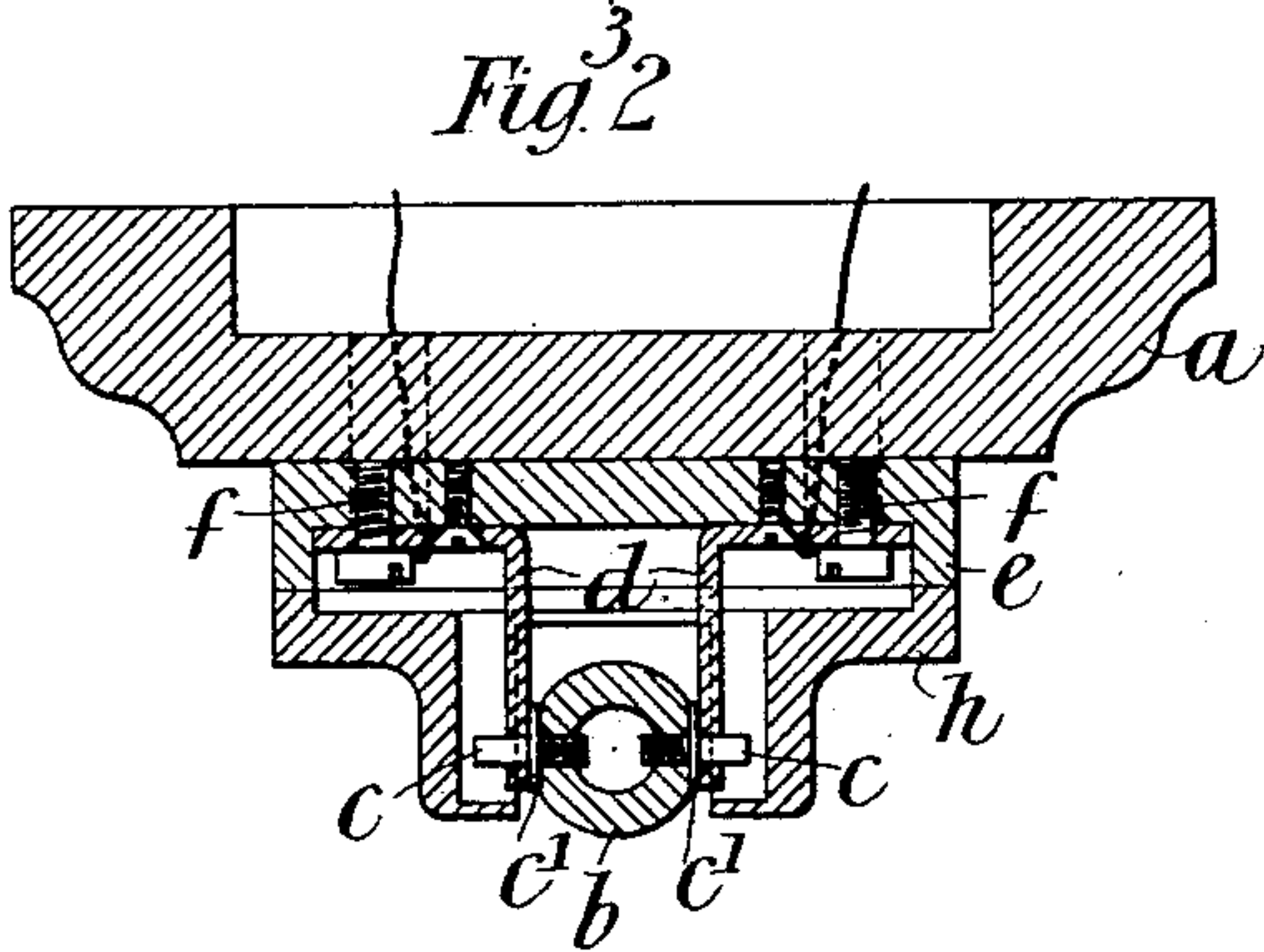
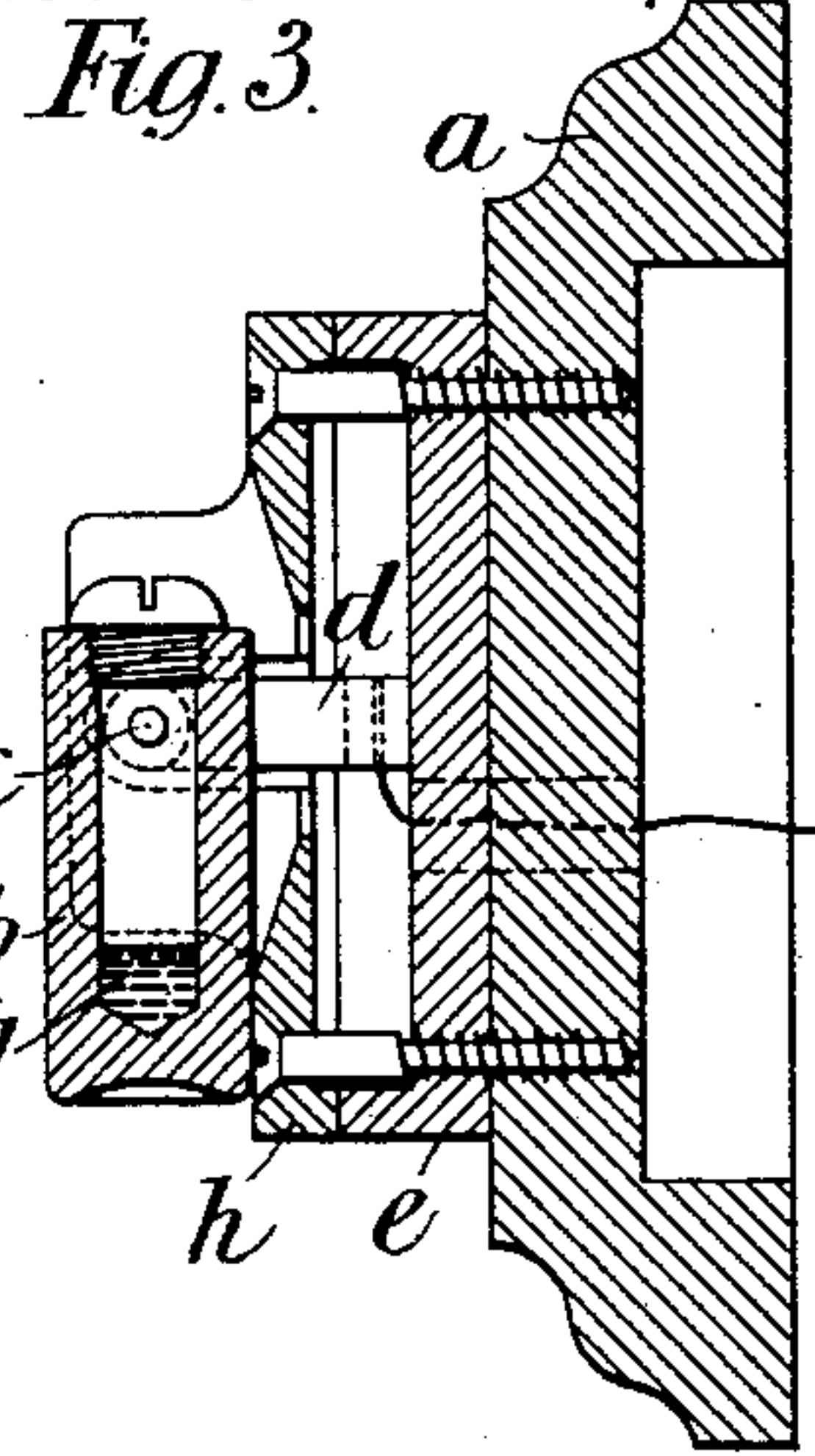
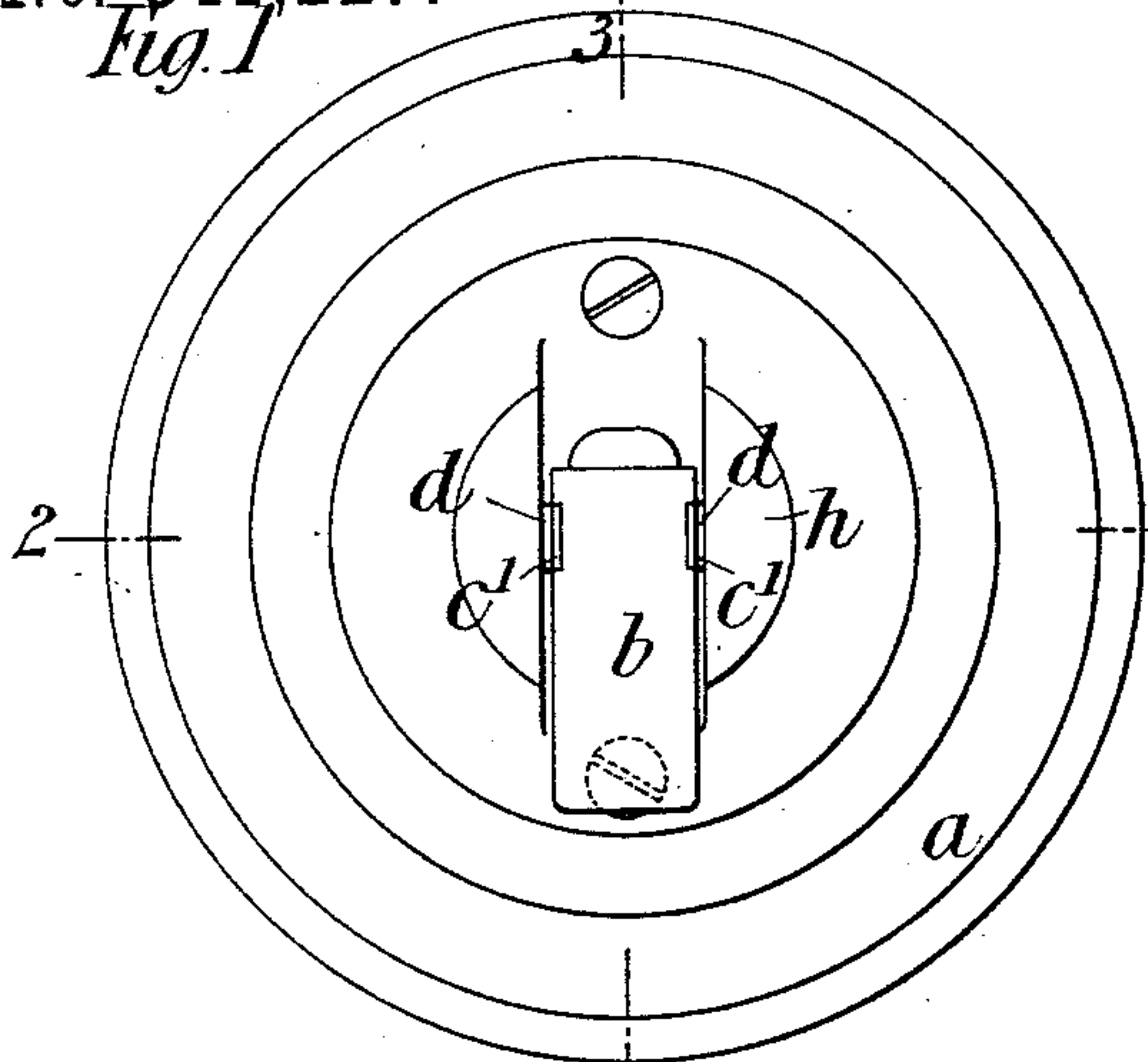
(No Model.)

2 Sheets—Sheet 1.

C. P. ELIESON.
ELECTRIC SWITCH.

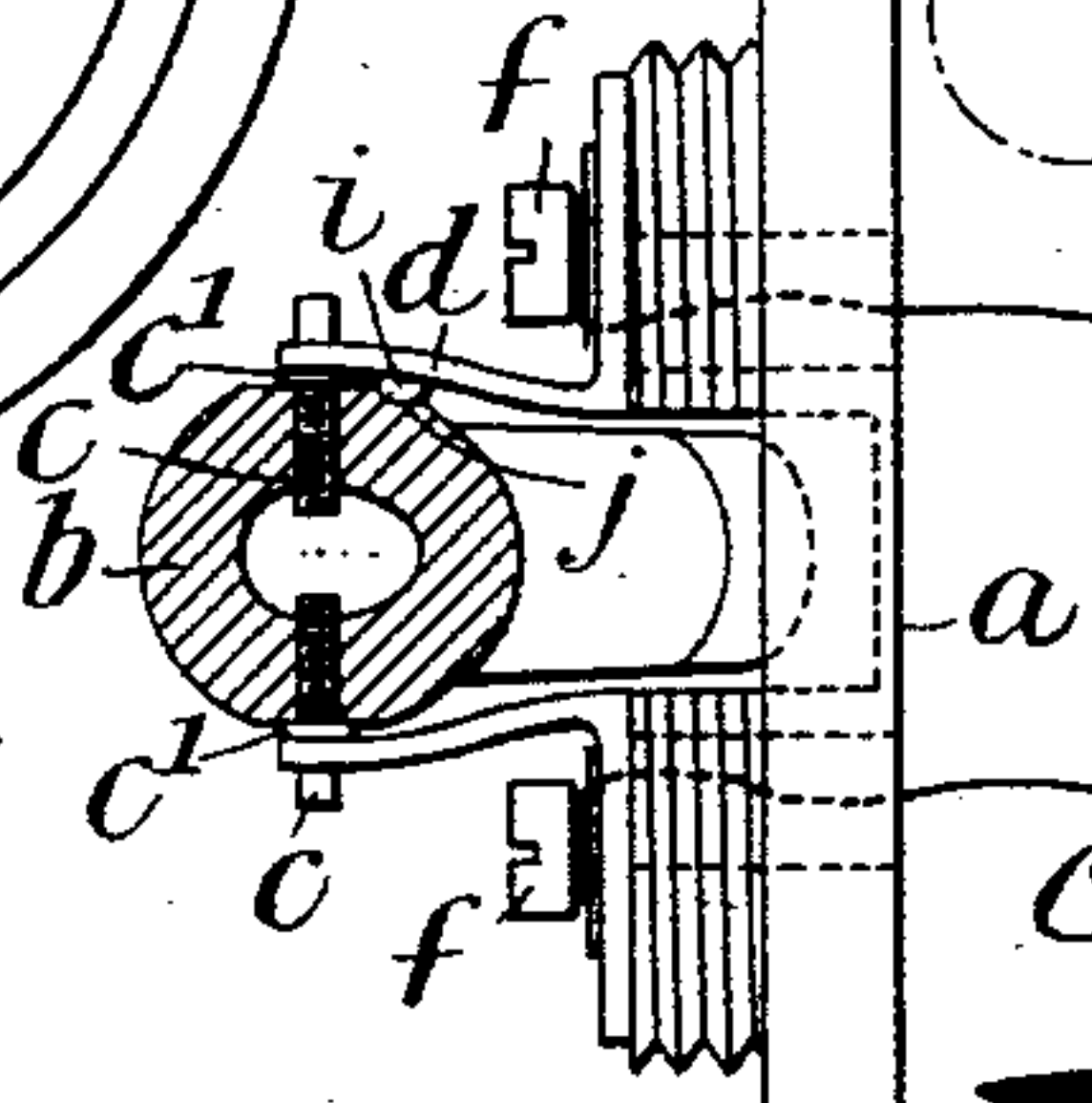
No. 541,227.

Patented June 18, 1895.



Witnesses
G. H. Kierfer
John E. Dousfield.

Fig. 7



Inventor.

C. P. Elieson

(No Model.)

2 Sheets—Sheet 2.

C. P. ELIESON.
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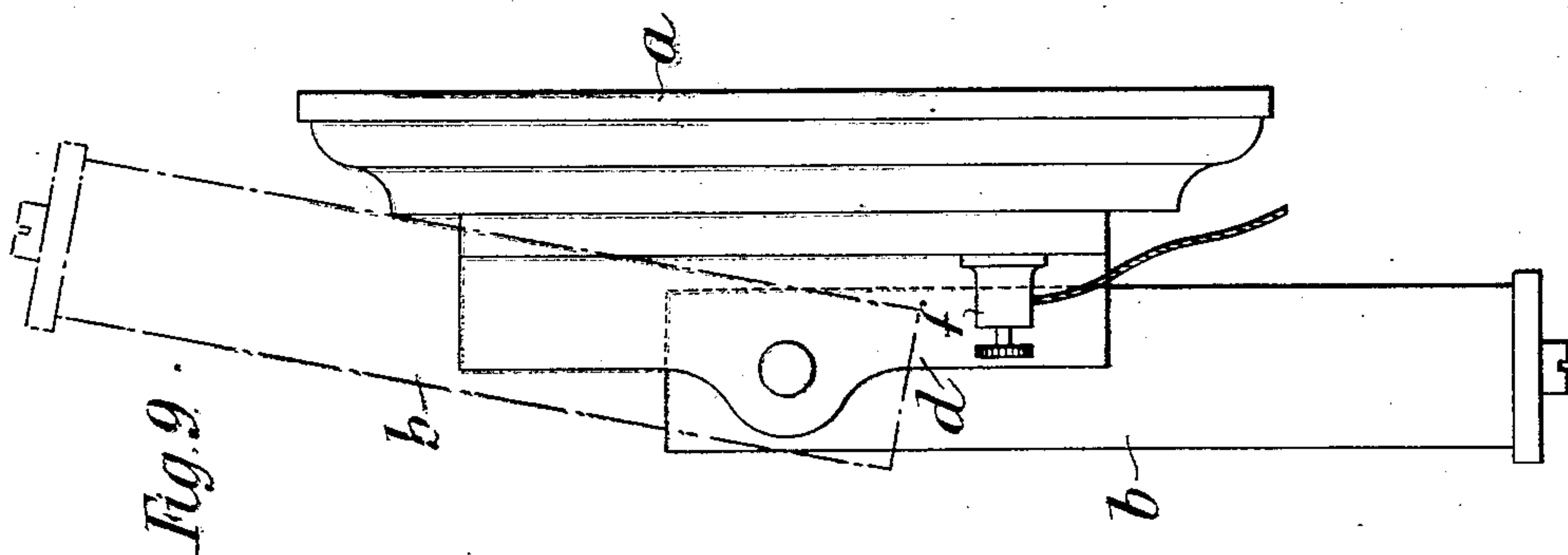
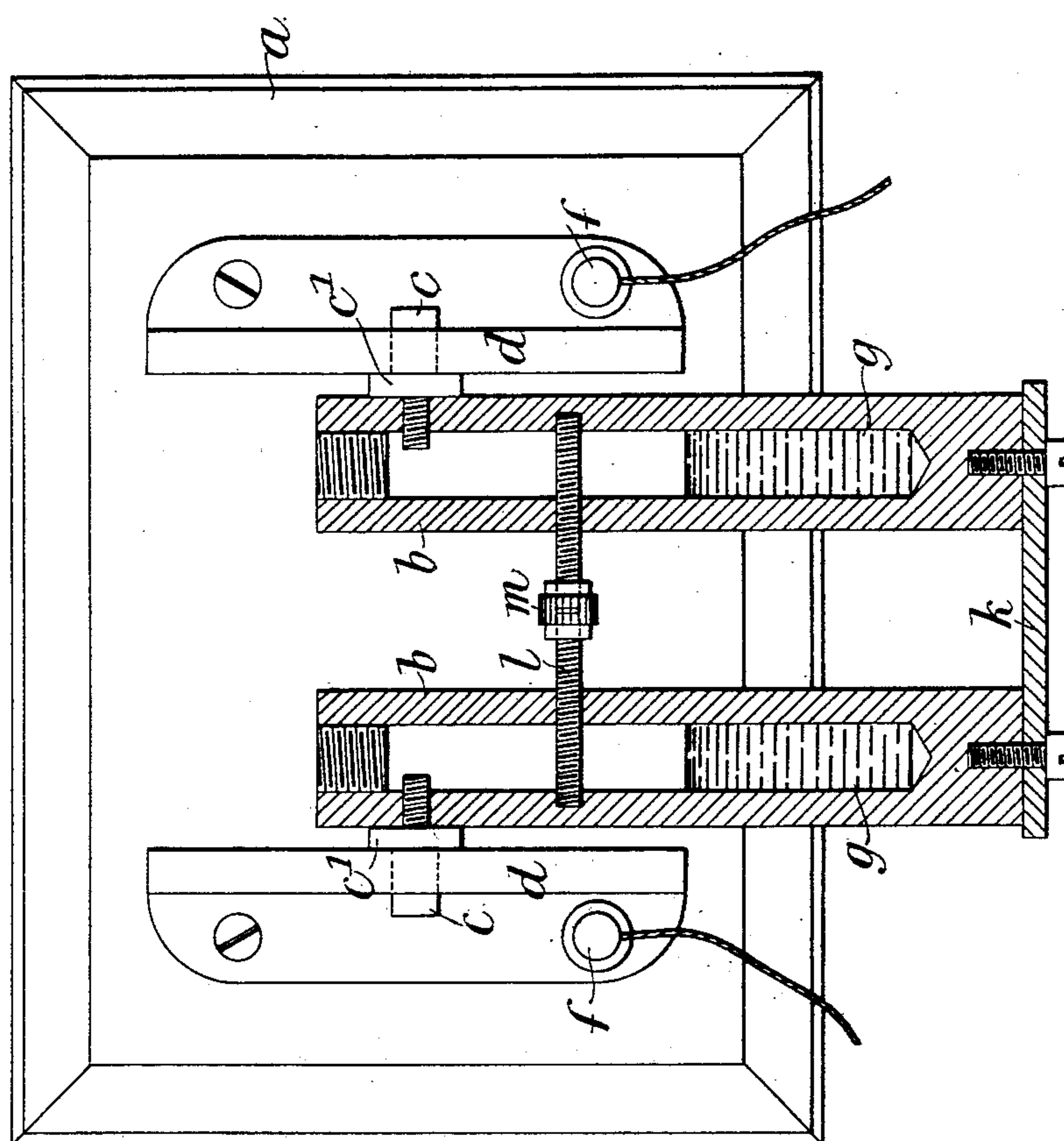


Fig. 8.



Witnesses.

John E. Dousfield.

Inventor.

C. P. Elieson

UNITED STATES PATENT OFFICE.

CHAIMSONOVITZ PROSPER ELIESON, OF LONDON, ENGLAND.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 541,227, dated June 18, 1895.

Application filed July 16, 1894. Serial No. 517,699. (No model.)

To all whom it may concern:

Be it known that I, CHAIMSONOVITZ PROSPER ELIESON, a subject of the Queen of Great Britain, residing at London, England, have invented a new and Improved Electric Switch, of which the following is a specification.

My invention relates to an improved electric switch.

In carrying out my invention I provide a tube or container of suitable non-conducting material closed at the ends, the lower end working on metal pivots in suitable bearings, each metallicly connected to a terminal or binding-screw, such pivots extending to the interior of the tube. In order to complete the circuit I introduce into the tube a quantity of mercury so that when the tube is in a vertical position the mercury will drop to the bottom of the tube and the circuit will be completed; and when it is required to break the circuit it is only necessary to reverse the position of the tube when the mercury will fall to the other end thereof. It will be obvious that I can employ more than one tube, in which case the tubes are suitably connected.

In order to enable my invention to be fully understood I will describe the same by reference to the accompanying drawings, in which—

Figure 1 is a front elevation of an electric switch constructed according to my invention, the parts being in their normal positions—that is to say, when the circuit is open. Figs. 2 and 3 are respectively sections on the lines 2 2 and 3 3, Fig. 1. Fig. 4 is a similar view to Fig. 3, but showing the parts in the position when the circuit is closed. Fig. 5 is a similar view to Fig. 1 of a somewhat modified form of switch; and Fig. 6 is a vertical section on the line 6 6, Fig. 5. Fig. 7 is a sectional plan of part of the said switch, the section being taken on the line 7 7, Fig. 6. Fig. 8 is a front sectional elevation of a switch having two tubes or containers. Fig. 9 is a side elevation of the same.

Similar letters of reference indicate similar or corresponding parts in the drawings.

a is an ordinary block or rose for carrying the switch mechanism and by which it is fixed in position in the usual manner.

b is my tube or container made of suitable non-conducting material such as ivory, vulcanite, bone or the like.

c, c are the metal pivots or trunnions arranged in bearings *d* attached to the body *e* of the switch as shown, the said pivots projecting slightly into the interior of the container *b* as clearly shown at Fig. 2. The said pivots are shown provided with collars *c'* and the bearings *d* are arranged to spring so as to bear with pressure on the said collars in order to maintain a good rubbing contact.

f are the terminals or binding-screws which in this case pass through the bearings *d* into the body of the switch.

g represents the mercury which I place in the container *b*.

The operation is as follows: When the parts of the switch are in the position shown in Figs. 1, 2 and 3, that is to say, with the container *b* turned down, the mercury *g* will be in what is then the lower end of the container *b* and the circuit will be open by reason of there being no connection between the inner ends of the pivots *c, c*. To close the circuit it is simply necessary to move the container *b* up into the position shown in Fig. 4, when the mercury covering the inwardly projecting ends of the pivots *c, c* will form the required connection to close the circuit. To open the circuit it will be obvious that it is only necessary to move back the container *b* to the position shown in Figs. 1, 2 and 3.

h is a cap for covering the metal bearings or connections.

The arrangement shown in Figs. 5, 6 and 7 is substantially the same as that shown in Figs. 1 to 4 except that one end of the container is in the form of a knob *b'* so as to allow it to project through the cap or cover *h*. The operation being the same as in the arrangement hereinbefore described needs no further description.

i is a catch on one of the bearings *d* adapted to take into holes *j* on the container corresponding with its open and closed positions for the purpose of holding the container in either of such positions.

Figs. 8 and 9 show the arrangement where two containers are employed, the said containers being advantageously connected by a cross-bar or plate *k*. In this arrangement in order that when the containers are turned in the proper position, as shown by dotted lines in Fig. 9, to close the circuit, the mercury shall establish connection between the two pivots

c, c. I provide a metal rod *l* which passes into the interior of the tubes *b, b*. This rod is advantageously formed in two parts connected together by a screwed socket *m*. The operation will be understood without further description, it being the same as hereinbefore described. This arrangement of switch is very suitable for electric currents of high potential.

- 10 In order to prevent as far as possible any injurious sparking which might take place while the mercury is passing from one end of the tube or container to the other (which sparking might have the effect of oxidizing
15 mercury) I may introduce into the container a non-conducting liquid, such, for example, as glycerine, whereby when the container is moved to break the circuit the mercury in falling will force up the glycerine; or I may introduce a non-oxidizing fluid such as carbonic
20 acid gas; or I may let the atmospheric air remain in the tube and the oxygen thereof in time becoming used up or combined. If the tube is sealed there will remain a non-oxidizing gas therein. In practice I find this works
25 perfectly well.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed
30 I declare that I am aware that mercury has been used in various ways for the purpose of making or breaking electric circuits, but

What I claim is—

1. A circuit controlling switch comprising
35 among its members, a receptacle composed of

non-conducting material, supporting pivots therefor, engaging said receptacle adjacent to one end thereof extending within the same, and forming circuit terminals and a movable conducting body within said receptacle, substantially as described. 40

2. A circuit controlling switch comprising among its members, a receptacle composed of non-conducting material, supporting pivots therefor, engaging said receptacle adjacent to one end thereof, extending within the same, and provided with broad bearing surfaces outside of said receptacle said pivots forming circuit terminals, spring supporting arms engaging said pivots and said broad bearing surfaces and a movable metallic body within said receptacle for making contact between said pivots, substantially as described. 45 50

3. A circuit controlling switch comprising among its members, a receptacle composed of non-conducting material provided with retaining notches, supporting pivots engaging said receptacle adjacent to one end extending within the same, and forming circuit terminals a movable conducting body within the receptacle for making circuit between the ends of said pivots, and a spring arm for engaging the retaining notches in said receptacle, for holding said receptacle in different positions, substantially as described. 55 60

CHAIMSONOVITZ PROSPER ELIASON.

Witnesses:

G. J. REDFERN,
JOHN E. BOUSFIELD.