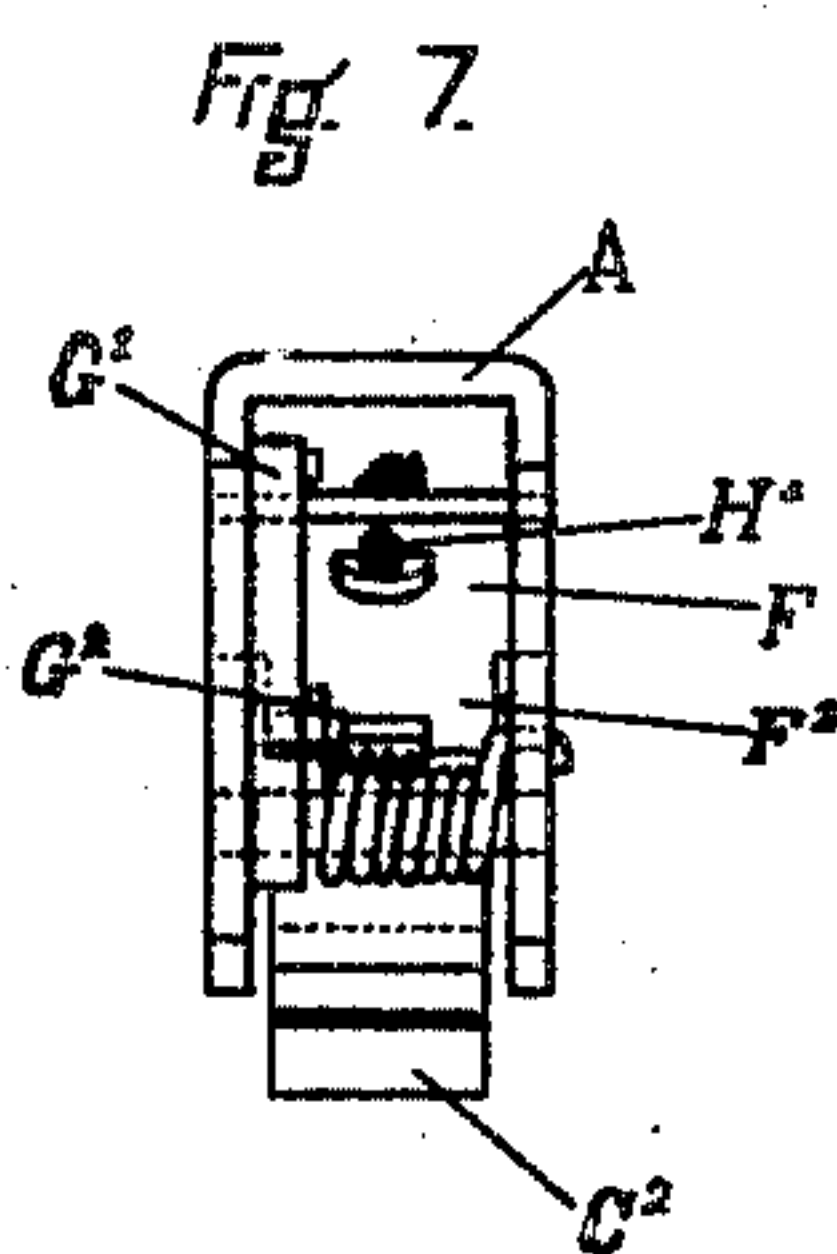
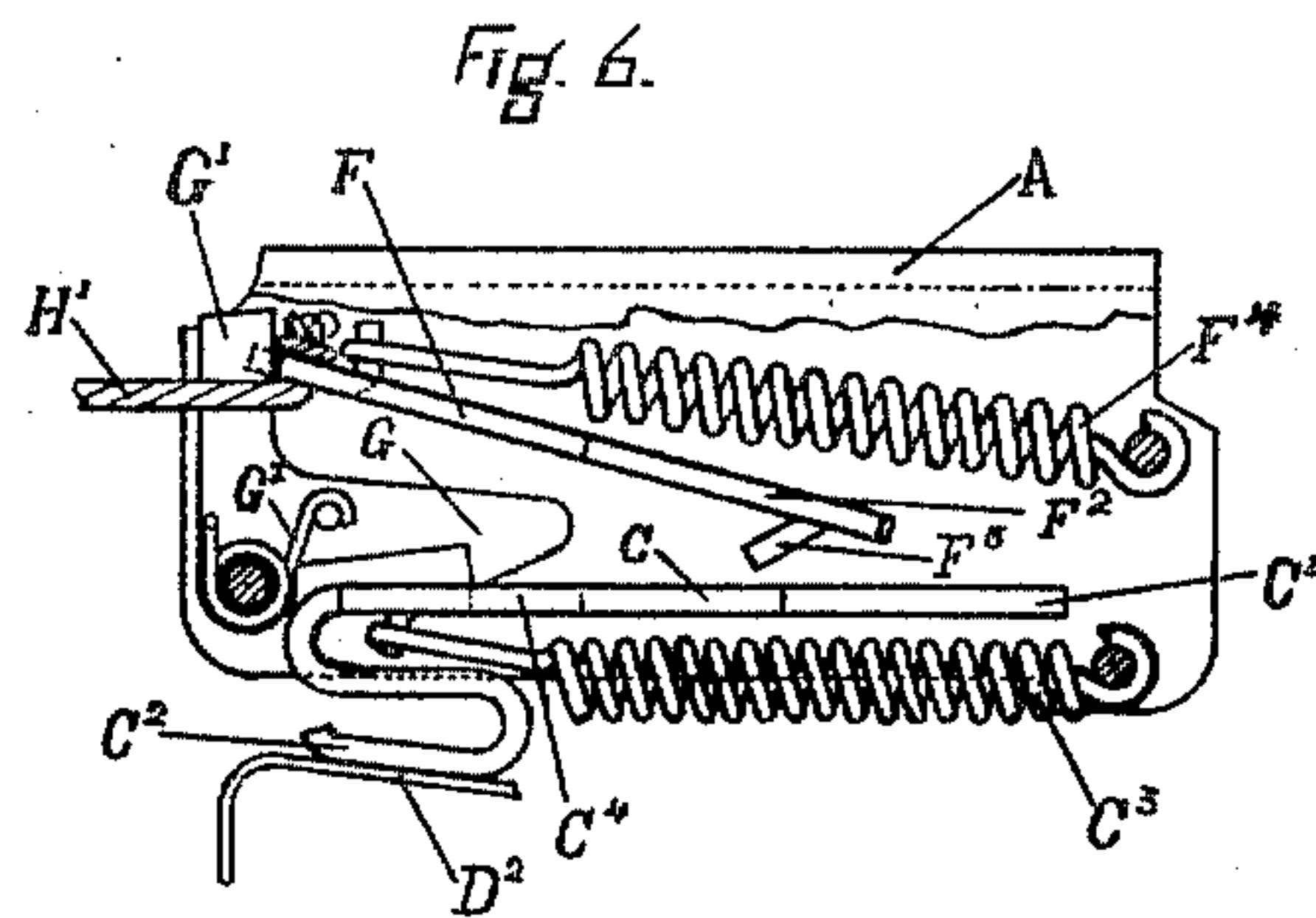
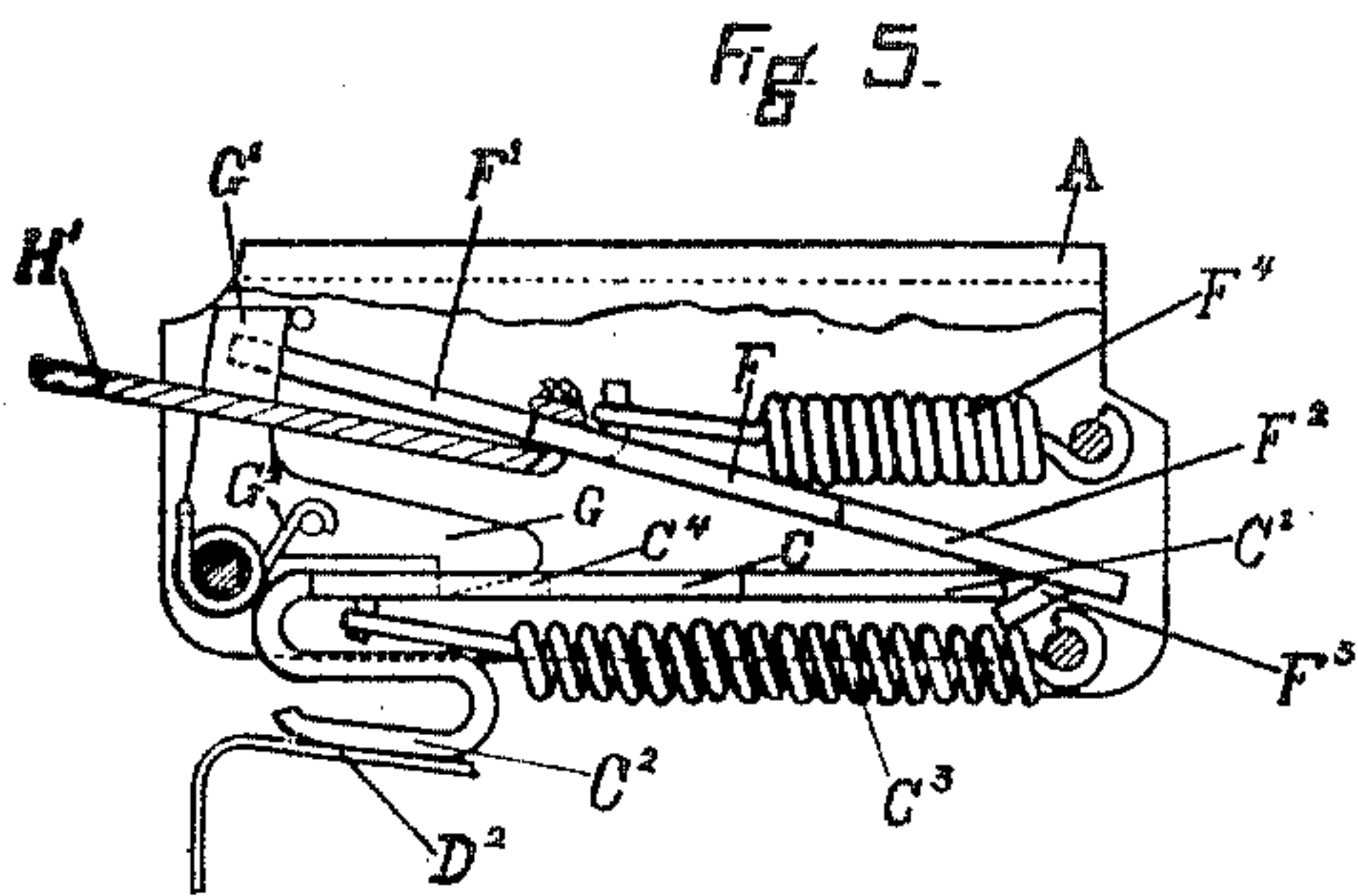
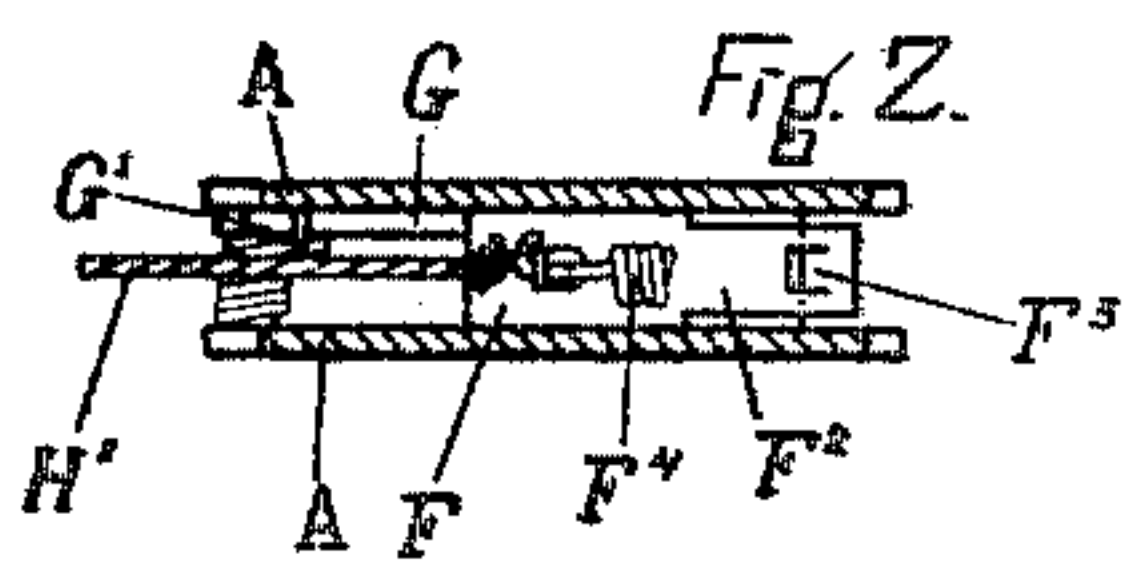
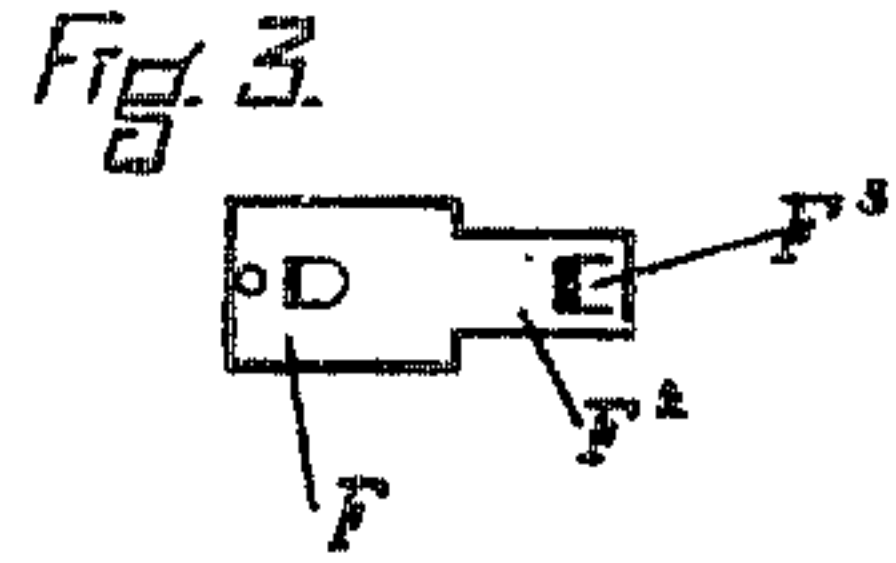
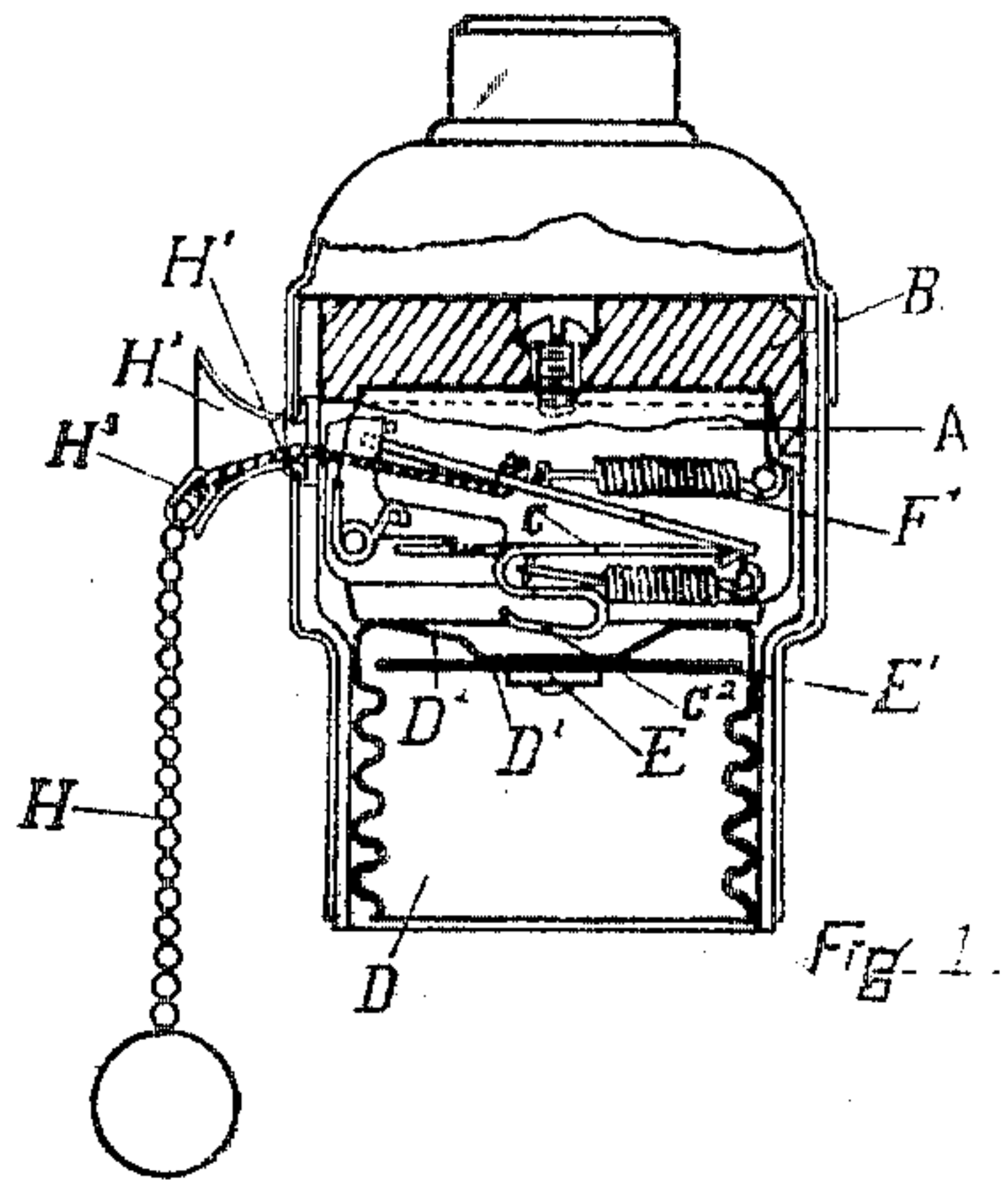


No. 797,699.

PATENTED AUG. 22, 1905.

N. MARSHALL.
INCANDESCENT LAMP SOCKET.
APPLICATION FILED JAN. 21, 1904.



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INCANDESCENT-LAMP SOCKET.

No 797,699.

Specification of Letters Patent.

Patented Aug. 22, 1905.

Application filed January 21, 1904. Serial No. 190,021.

To all whom it may concern:

Be it known that I, NORMAN MARSHALL, of Newton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Incandescent-Lamp Sockets, of which the following is a specification.

The invention relates to a mechanism which is well adapted for opening and closing the circuit in that type of sockets known as "pull-sockets." In this type of sockets the current is turned either on or off by pulling on a depending cord or other flexible device, and the switch mechanism of the socket should be so constructed that a pull on the cord when the circuit is closed will open the circuit and the next succeeding pull will again close the circuit.

In practicing the present invention the operating cord, chain, or other depending device is connected with an operating member mounted in the socket, which during every alternate operating movement moves an operated member into a position where it is held by a holding device and during the succeeding operating movement operates the holding device to cause the return of the operated member to its former position. The movement of the operated member from one position to the other causes the opening or closing of the circuit, as the case may be, the circuit being open when the operated member is in one of its two positions and being closed when said member is in the other of its positions. In embodying this feature of the invention in a simple and efficient construction which is well adapted for use in pull-sockets I have employed certain further features of invention, which, as well as the feature already referred to, may be employed in other devices or machines where, for instance, it is desirable that successive forward movements of one part shall cause a forward and then return movement of another part. These features, as well as the further features which will be set forth in the claims, will be understood from the following detailed description of the mechanism in which I have embodied them and which is shown in the accompanying drawings.

In the drawings, Figure 1 shows a sectional elevation of an incandescent-lamp socket provided with the present improvements. Fig. 2 is a horizontal section through the upper part of the frame carrying the mechanism for opening and closing the circuit. Figs. 3 and 4 are details showing the two plates embodied

in said mechanism. Fig. 5 is a sectional elevation showing the mechanism for opening and closing the circuit upon an enlarged scale to more clearly illustrate the construction. Fig. 6 is a similar view showing the parts in another position. Fig. 7 is an end view looking toward the right in Fig. 6.

In the embodiment of the features of invention shown in the drawings the various parts of the mechanism are supported in a U-shaped frame A. In case the mechanism is to be employed for opening and closing the circuit in an incandescent-lamp socket the frame A and the parts carried thereby are of such a size that they will fit within a recess formed in the porcelain base B of the socket, as indicated in Fig. 1.

The circuit is opened or closed by the movement of a plate C, mounted to slide in grooves C', formed in the sides of the frame A. This plate carries a contact-piece C² at its forward end, which for the sake of simplicity in construction and cheapness in the manufacture is formed by bending the forward end of the plate in a reverse curve, as indicated in the drawings. This contact-piece C² is arranged to be engaged and disengaged from the upper end of the metallic screw-shell D of the socket by the movement of the plate C. The upper end of the screw-shell D is depressed at D', so that the contact-piece C² is out of contact with the shell when the plate C is retracted, as indicated in Fig. 1. When the plate C is advanced into the position indicated in Fig. 5, however, the contact-piece C² engages the portion D² of the metallic shell D, thus closing the circuit through the lamp held in the screw-shell D. The terminal E for engaging the central terminal of the lamp is separated from the end D' of the metallic shell D by an insulating-disk E', of mica or other insulating material, so that the terminal E cannot be forced into engagement with the depressed portion of the shell D, and thus short-circuit the socket. One of the line-wires is connected with the terminal E in the usual manner, and the other line-wire is connected by a suitable binding-screw (not shown) with the frame A, so that the contact-piece C² is in electrical connection with the line-wire.

The plate C is held in retracted position by means of a spring C³, connected with the plate and with a pin secured in the frame A. The plate C is advanced to close the circuit by means of an operating-plate F, guided in

grooves F' , formed in the sides of the frame A at an inclination to the grooves C' , in which the plate C is guided.

The plate F is provided with a rearwardly-projecting arm F^2 , having a depending finger F^3 , which lies back of the plate C when both the plates C and F are in their retracted position, as indicated in Fig. 1. The plate F is held normally in its retracted position by a spring F^4 , connected to the plate and to a pin secured in the frame A. When both of the plates F and C are in their retracted position and the plate F is advanced, the finger F^3 will engage the rear end of the plate C, thus connecting the two plates together, so that the plate C will advance with the plate F. This advance movement of the plate C will bring the contact-piece C^2 into engagement with the part D^2 of the shell D, thus closing the circuit. As the plate C advances it passes under the end of a spring-pressed catch G, which yields and rides along the top of the plate until the recess C^4 is brought into position to be engaged by the catch, when the catch drops into the recess and holds the plate C in its advance position, as indicated in Fig. 5. The forward movement of the plate F in advancing the plate C is arrested by the engagement of the forward end of the plate C with the end of the slot C' , the end of the slot thus forming a stop for limiting the movement of the plate F when connected with the plate C. Now when the plate F is retracted by the spring F^4 the plate C is held in its advanced position, so that the plate F moves backward independently of the plate C, and thus becomes disconnected therefrom. On the next forward movement of the plate F the finger F^3 passes by the rear end of the plate C without engaging it. The movement of the plate F is not, therefore, arrested as it was when connected with the plate C, and it may move forward a greater distance. This forward movement of the plate F is employed to operate the catch G, and thus cause the return of the plate C to its retracted position under the influence of the spring C^3 . The means for operating the catch G through the movement of the plate F consists of an arm G' , projecting upward from the catch G into the path of the plate F. As the plate F is advanced independently of the plate C, it strikes the arm G' , lifting the catch G against the action of its spring G^2 , as indicated in Fig. 6, thus disengaging the catch from the plate C, which is immediately returned to normal position by the spring C^3 . When the plate F returns to its retracted position after operating the catch G, the finger F^3 strikes the top of the plate C and the arm F^2 yields to allow the finger F^3 to pass along the upper face of the plate and then springs downward into its normal position to carry the finger F^3 back of the plate C as the finger passes beyond the rear end of the plate.

In case the plate F is formed from thin sheet metal, as is the case in the construction shown in the drawings, the resiliency of the arm F^2 will allow the finger F^3 to move rearwardly over the plate C and then will act to bring the finger into position to engage the rear end of the plate, and this arm will in this construction act as a spring-catch for connecting the two plates together. This arm F^2 will also yield as the plates F and C move forward together in paths which are inclined to each other and will spring back into normal position when the finger F^3 moves back away from the rear end of the plate C, so that the finger F^3 will pass over the end of the plate C on the succeeding forward movement of the plate F.

With the construction described the movement of the plate F will cause the circuit to be closed in case it is open by moving the plate C into engagement with the contact D^2 or will cause the circuit to be open in case it is closed by operating the catch G, and thus causing the contact C^2 to be disengaged from the contact D^2 . In this construction the plate F is one form of operating member and the plate C is one form of operated member which is moved by the operating member and the catch G is one form of holding device which holds the operated member in position when moved by the operating member and is operated to cause the return of the operated member during the next succeeding movement of the operating member.

The construction and arrangement of the operating and operated members and of the holding device shown and described are of importance in contributing to the simplicity of the mechanism and to the convenience and cheapness of its manufacture, but are non-essential so far as the broad features of the invention are concerned. The construction and arrangement shown is simple and compact and the form of parts shown are well adapted for manufacture from sheet metal and by the employment of automatic machinery, so that they may be produced at the minimum expense.

The forward or operating movements of the plate F to either open or close the circuit, as the case may be, are given to said plate by means of a pull H, connected with the plate F and depending from the socket. It is customary in pull-sockets to employ a pull in the form of a metal bead-chain, such as indicated in the drawings. It has been customary heretofore when a metallic pull is employed to insulate that part of the switch mechanism to which the pull is connected, so that there shall be no electrical connection between the pull and the current-carrying parts of the switch mechanism. This has involved more or less complication in the construction of the switch mechanism. In practicing the present invention I avoid the necessity for any special construction of the switch mechanism, and thus

simplify the construction by providing a flexible connection of insulating material between the end of the metallic pull and the switch mechanism. This flexible connection may be in the form of a cord H', which may be readily connected to the switch mechanism. This cord extends to the outside of the socket-shell and is connected to the end of the metallic pull H just beyond the wall of the shell and within the guide-tube H² for the pull. The flexible connection does not, therefore, appear outside of the socket and still forms an effective insulation between the outside metallic pull and the switch mechanism.

What I claim, and desire to secure by Letters Patent, is—

1. An electric switch mechanism having in combination a member the movement of which opens or closes the circuit, an operating member, a device for holding the former member when advanced by the operating member and arranged to be operated by the operating member when advanced independently, substantially as described.

2. An electric switch mechanism having in combination a contact-plate, an actuating-plate, a device for holding the contact-plate when advanced by the actuating-plate and arranged to be operated by the actuating-plate when advanced independently of the contact-plate, substantially as described.

3. An electric switch mechanism having in combination, an operating-plate and an operated plate guided in diverging paths, a contact moved to open or close the circuit by movement of the operated plate, a device for connecting said plates when both are retracted, a device for holding the operated plate in advanced position, and a device operated by the operating slide when advanced independently for operating the holding device, substantially as described.

4. An electric switch mechanism having in combination, an operating-plate and an operated plate guided in diverging paths, a contact moved to open or close the circuit by movement of the operated plate, a device for connecting the plate when both are retracted, a stop for limiting the simultaneous forward movement of the plates, a device in the path of the operating-plate when advanced independently for causing the return of the operated plate, substantially as described.

5. An electric switch mechanism having in combination a plate C, a contact C² connected therewith, an operating-plate F guided in a diverging path, a spring-catch for connecting said plates, a catch G operated by the plate F when advanced independently of plate C, substantially as described.

6. An electric switch mechanism having in combination a plate C, a contact C² connected therewith, a plate F, springs for retracting said plates, a spring-catch for connecting said plates, a stop for limiting the advance of plate

C, a catch G and an arm G' connected therewith and arranged in the path of plate F, substantially as described.

7. An incandescent socket having in combination, a contact-moving member, a device for holding said member in one position, a spring for returning said member, a pull depending from the socket, and means operated by the pull for advancing the contact member into position to be operated on by the holding member and for operating the holding device on the succeeding operation of the pull, substantially as described.

8. The combination of operating and operated members moving in diverging paths, a device for connecting the members, a stop for limiting the simultaneous advance of the members, and a device operated by the independent advance movement of the operating member to cause the return of the operated member, substantially as described.

9. The combination of two members arranged to move in diverging paths, means for connecting said members to move forward together, a device for retaining one of said members in its advanced position and arranged to be operated by the succeeding advance movement of the other member, substantially as described.

10. The combination of an operating and an operated slide arranged to move in diverging paths, a device for connecting the slides when both are retracted, a device for holding the operated slide advanced arranged in the path of the operating-slide when advanced independently, substantially as described.

11. The combination of an operating member, an operated member moved thereby, a device holding the operated member when moved and operated to cause the return of the operated member by the succeeding movement of the operating member in the same direction, substantially as described.

12. The combination of an operating member, an operated member, means for connecting said members when both are in retracted position, a holding device for the operated member, operated by the operating member when advanced independently, substantially as described.

13. The combination of a slide C, an operating-slide F guided in a diverging path, a spring-catch for connecting said slides, a catch G for holding the slide C operated by the independent advance of slide F, substantially as described.

14. The combination of a slide C, an operating-slide F guided in a diverging path, a device for connecting the slides to move forward together, a stop for limiting the simultaneous advance of the slides, and a catch G operated by the slide F when advanced independently of the slide C, substantially as described.

15. An incandescent-lamp socket having in

combination, a switch mechanism for opening and closing the circuit, a metallic pull outside the socket-shell for operating said mechanism, and a flexible insulating connection within the socket-shell connecting the end of the metallic pull with the switch mechanism, substantially as described.

16. An incandescent-lamp socket having in combination, a switch mechanism, an insulating-cord extending from the switch mech-

anism to the outside of the socket-shell and a metallic pull secured to the end of the cord adjacent to the wall of the socket-shell, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

NORMAN MARSHALL.

Witnesses:

IRA L. FISH,

KATHARINE A. DUGAN.