Dec. 4, 1962 A. FRUH 3,067,400

PLUG AND SOCKET

Filed July 1, 1960 2 Sheets-Sheet 1

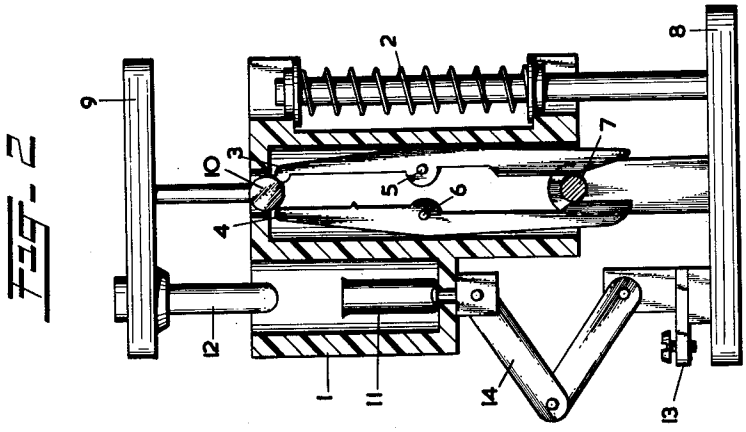


FIG. 2

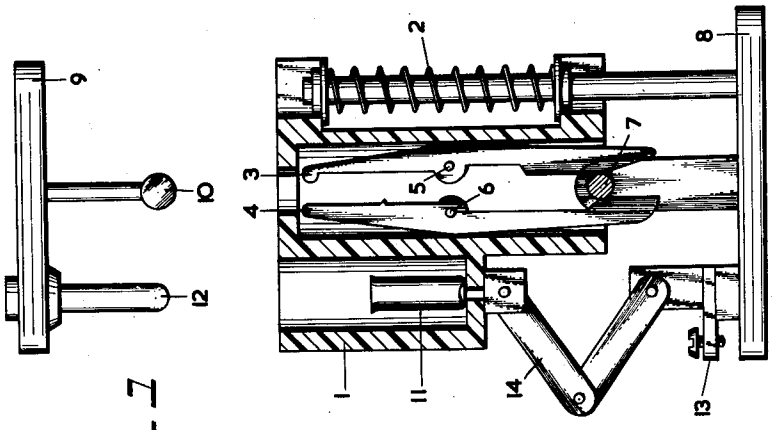


FIG. 1

INVENTOR

Albert Fruh

BY Watson, Cole, Grindle & Watson

ATTORNEYS

Dec. 4, 1962 A. FRUH 3,067,400

PLUG AND SOCKET

Filed July 1, 1960 2 Sheets-Sheet 2

FIG. 5

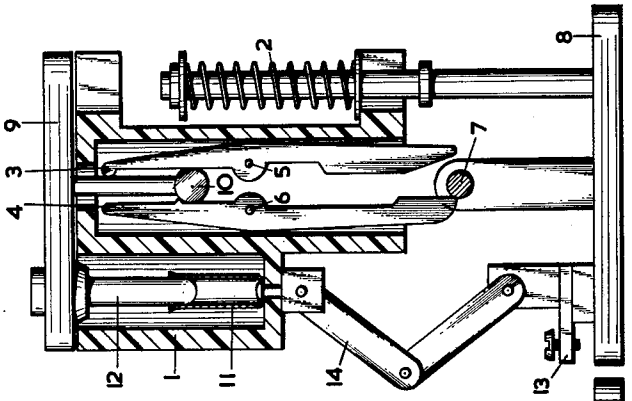


FIG. 4

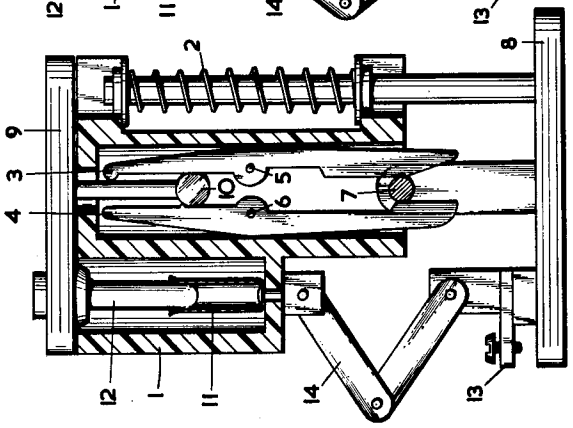
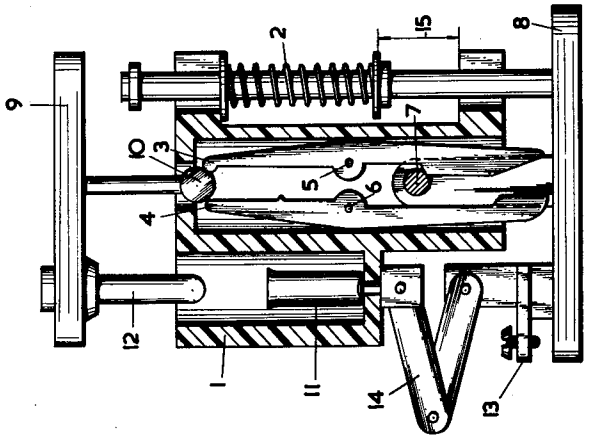


FIG. 3



INVENTOR

Albert Fruh

BY Watson, Cole, Grindle & Watson

ATTORNEYS

United States Patent Office

3,067,400
Patented Dec. 4, 1962

3,067,400

PLUG AND SOCKET

Albert Fruh, Saint-Quentin, France, assignor to Appareillage Electrique Hazemeyer, Saint-Quentin, France, a corporation of France

Filed July 1, 1960, Ser. No. 40,258
Claims priority, application Netherlands July 1, 1959
2 Claims. (Cl. 339—46)

The invention relates to a quick-break plug and socket, of the general type disclosed in French patent specification No. 1,163,325.

According to the invention the coupling clamp hitherto used in such devices is replaced by a more efficient construction.

The operation of the conventional coupling clamp is based on the elasticity of the limbs of this clamp, which involves requirements difficult to satisfy as regards the relation between the elasticity of the clamp and the shape of the coupling pin and the clamp itself.

The invention furnishes a coupling clamp which need not be elastic to ensure its operation. The requisite locking and unlocking is achieved by a novel arrangement of components, an embodiment of which is shown by way of example in FIGURES 1–5 of the drawing.

FIGURE 1 shows the device in the position of rest, when the plug 9 is outside the socket 8. An insulating carrier 1, and along with it the whole of the movable section of the device, is kept in its position of rest by a spring 2. The movable section comprises a number of contact sleeves 11, which are connected to terminals 13 via flexible or hinged connectors 14. The carrier 1 comprises two lever members 3 and 4, which are adapted to pivot about pivots 5 and 6.

The socket 8 is provided with a control member 7, which serves to control the position of the lever members 3 and 4.

When the plug 9 is introduced into the socket 8 (FIGURE 2), the knob 10 of the coupling pin of the plug 9 strikes against the member 3. Owing to the presence of the control member 7, however, lever member 3 cannot yield to the force exerted upon it.

When the plug 9 is pushed further into the socket, a new position shown in FIGURE 3 is reached after the movable section has been translated a distance designated by arrow 15. At this moment lever member 3 escapes from the control member 7, and thus also from the knob 10. Under the influence of the spring 2, which is now compressed, the movable section 1 subsequently returns to its initial position, the sleeves 11 passing along the various pins 12 of the plug 9 in the way shown in FIGURE 4. By this means electric connections are established between the sleeves 11 and the pins 12, i.e. between the plug 9 and the socket 8.

In the operations performed up to this point lever member 4 has not yet played any part. This takes place now. The knob 10 is locked by the member 4 because of the position of member 4 relative to the member 7.

If the plug 9 is now pulled out, it will translate movable section 1, and the spring 2 is compressed, until it has

reached the position of FIGURE 5, in which position the locking action is discontinued by the lever member 4 escaping from control member 7. Because of this member 4 also escapes from the knob 10 and movable section 1 returns to the initial position of FIGURE 1 under the influence of the spring 2, suddenly breaking the electric connection between the sleeves 11 of socket 8 and the pins 12 of plug 9.

In order to balance the forces exerted, it is advisable for the members 3 and 4 not to be arranged as shown in the drawing, but for two members 3 to be arranged in one particular plane and two members 4 in another plane. It is also possible to arrange in one plane a member 3 to the left and a member 4 to the right, and in another plane a member 3 to the right and a member 4 to the left.

What I claim is:

1. A quick-break plug and socket, said plug having a coupling pin with a knob thereon, said socket comprising a stationary section, a movable section and a spring, both sections being kept in a particular position relative to each other by said spring which spring causes the quick-break between plug and socket both in coupling and decoupling the plug and socket, said movable section of the socket including a coupling member comprising at least one first and at least one second lever, said levers defining a pair of pincers, one end of said pair being opened to receive the knob of the coupling pin when the movable section has been translated a predetermined distance with respect to the stationary section, in which the rotation of the levers is controlled by a control member which is stationary with respect to the socket and placed between the levers at the other end of the pair of levers, which control member engages the levers in coupling and decoupling the plug and socket and prevents the rotation of the levers as long as the spring has not been stressed sufficiently.

2. A quick-break plug and socket according to claim 1, wherein one of the levers is provided with a cam positioned to engage the knob when coupling the plug and socket and wherein the other end of said one lever is provided with a cam, which in the position of rest of the movable section extends a predetermined length corresponding to said predetermined distance, and wherein said second lever is provided with a cam located at a certain distance from the end of said one lever for engaging the knob when decoupling the plug and socket and wherein the other end of said one lever is provided with a cam which, in the position of rest of the movable section, extends from the control member a certain distance corresponding to said predetermined distance.

References Cited in the file of this patent

UNITED STATES PATENTS

621,574	Kinsey	Mar. 21, 1899
2,863,200	Miller et al.	Dec. 9, 1958

FOREIGN PATENTS

25,335	Austria	Aug. 10, 1906
47,195	Austria	Mar. 27, 1911
1,163,325	France	Apr. 21, 1958