Oct. 5, 1954 W. S. WATTS 2,691,145

SNAP LATCH PLUG

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Fig. 1.

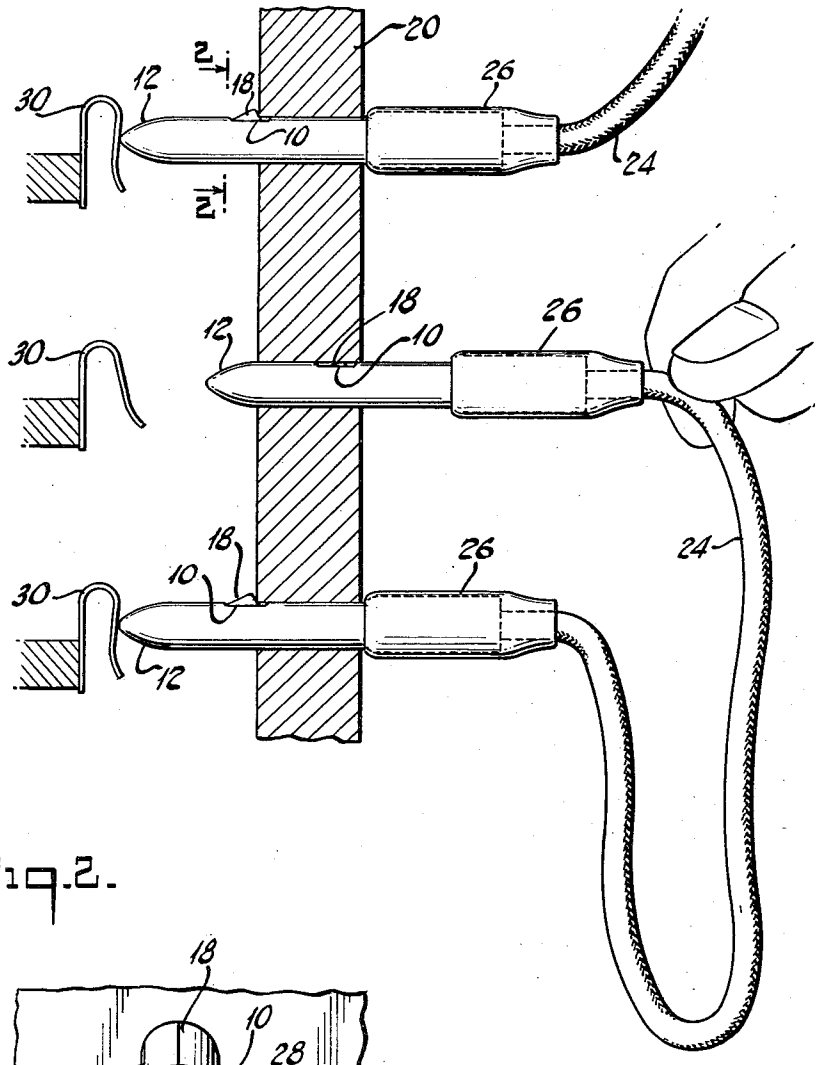
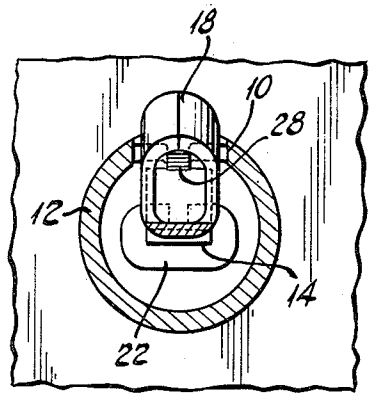


Fig. 2.



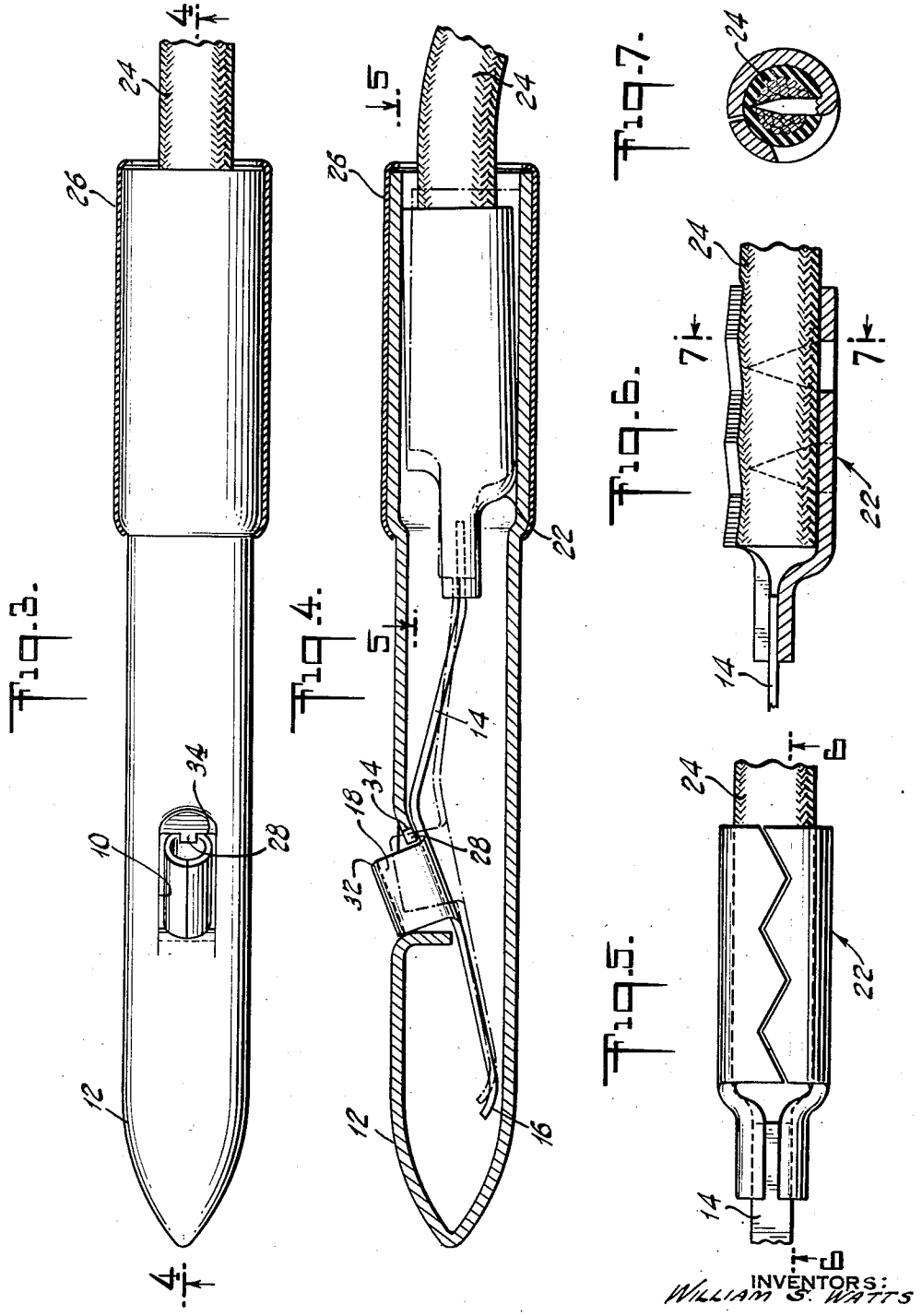
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SNAP LATCH PLUG

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3 Claims. (Cl. 339—217)

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This invention relates to electrical connector plugs and more particularly to spring latch hand plugs that hold against pressure on the head but are readily withdrawn by a pull from the rear.

A primary object of this invention is to provide in a latch plug of the type wherein a pull on the wire acts directly to withdraw the latch and allow removal of the plug, a more rugged and simpler latch mechanism than has heretofore been found most satisfactory. A further object is to provide a positively acting latch that will not damage the plug board or panel when being inserted and withdrawn, and which will not itself be damaged by force applied to the plug or the wire. Still further objects are to provide a superior spring latch plug that is simple, inexpensive and easy to mass produce. Other and further objects will become apparent during the course of the following description and from the appended claims.

The principles of the invention will be more readily perceived in connection with the following detailed description of a specific illustrative embodiment and from the accompanying drawings in which:

Figure 1 is a sectional view of a typical installation showing a plug latched in place against the spring pressure and one partly withdrawn;

Figure 2 is a sectional view along line 2—2 of Figure 1 showing the latch detail;

Figure 3 is a plan view of the plug assembly;

Figure 4 is a sectional view along line 4—4 of Figure 3.

Figure 5 is a plan view of the segment 5—5 of Figure 4;

Figure 6 is a section along line 6—6 of Figure 5;

Figure 7 is a section along line 7—7 of Figure 6.

According to the present invention a small approximately rectangular opening 10 is cut in the side of a bullet shaped plug shell 12. An actuating spring 14 (Figure 4) with tail 16 is positioned within the shell so that latch 18, which is formed as an integral part of said spring, will project through opening 10 to engage the panel board 20 (Figure 1), or other receptacle through which the plug is to be inserted. Spring 14 is secured (Figures 5 and 6) to one end of a terminal 22, e. g., by crimping the terminal thereon. The other end of the terminal is crimped to wire 24 to engage and make electrical connection therewith. An insulation sleeve 26 is shown but is not essential to this invention. A prong 28 is

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provided to engage latch 18 when it is withdrawn to prevent the entire spring and latch from being freed from the plug shell.

The top of the latch is beveled (32, Figure 4) to facilitate withdrawal and insertion of the plug.

In operation, on inserting the plug, latch 18 is readily depressed by cam action of its sloping outer face, yet it snaps back out so that normally it projects through opening 10 sufficiently to engage the border of the receptacle in the plug board (as shown in Figure 1). Latch 18 acts as a short compression member between point 15 on the plug shell and the corner of the hole in the receptacle board and prevents the plug being forced out by pressure from contact spring 30. The embodiment shown will stand up to 50 pounds pressure on its head without releasing or damaging the plug or latch. To release, the latch wire 24 is pulled, which pulls the actuating spring, tending to bring it to a straight line between the end of terminal 22 and the edge 34 of the opening 10 which, together with the camming action of the latch itself against the receptacle, withdraws the latch to the dotted position shown in Figure 4. The latch now clears the plug board and the plug may be removed.

As the latch is withdrawn it engages prong 28 since it is of an inverted U or tubular shape. This prevents the spring and wire from being pulled down into the plug entirely.

Various arrangements and applications of the invention will suggest themselves to those skilled in the art and such arrangements and applications as fall within the spirit of the invention are intended to be covered by the appended claims.

I claim:

1. A spring latch plug comprising a plug shell having an opening in the side thereof, a terminal slidably mounted in said shell and adapted to engage and make electrical connection with a wire, a flexible actuating spring extending longitudinally within said shell secured to said terminal, a latch carried by said spring and projecting through said opening, and an extension on said spring extending beyond said latch into engagement with the side of said plug shell opposite said latch to provide a forward support for said spring and latch assembly.

2. A latch plug comprising a shell, an opening therein, a latch projecting therethrough, a curved actuating spring connected to said latch and extending laterally as well as longitudinally from

both ends of said latch, means for pulling said spring in a direction parallel to the axis of the plug so as to withdraw said latch laterally toward the center and allow removal of said plug, said pulling means also comprising means for making electrical contact with said plug.

3. An apparatus as described in claim 2 wherein said means comprise a sleeve in the open end of said shell, crimped to said spring and adapted to be connected to a wire so that a pull on said wire will withdraw said latch.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,864,989	Maag-Eckenfelder	June 28, 1932
2,111,118	Lake	Mar. 15, 1938
2,427,297	Modrey	Sept. 9, 1947

FOREIGN PATENTS

Number	Country	Date
174,787	Switzerland	Apr. 16, 1935
220,574	Switzerland	Feb. 16, 1943