Nov. 30, 1948. A. R. MARLER 2,454,878

FUSE PULLER

Filed Aug. 12, 1943

Fig. 1.

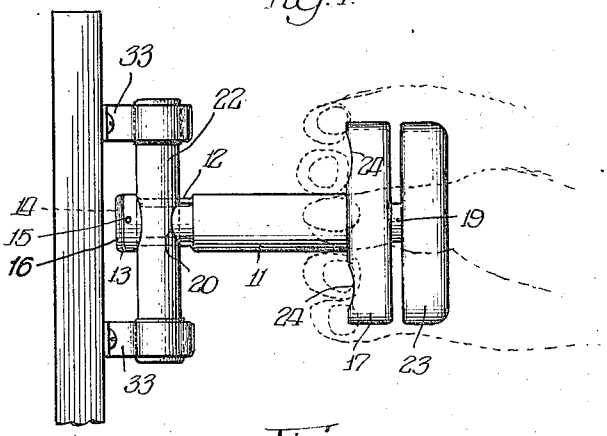



Fig. 5.

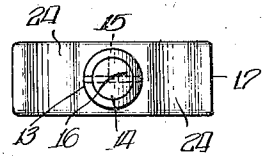



Fig. 4.

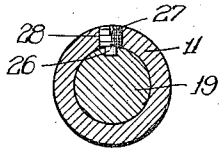



Fig. 2.

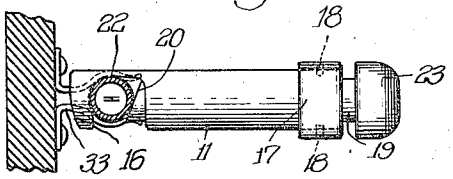



Fig. 3.

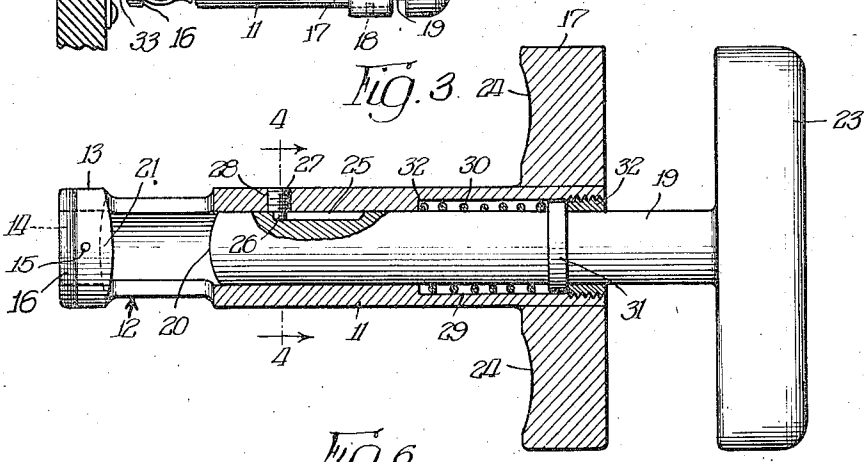
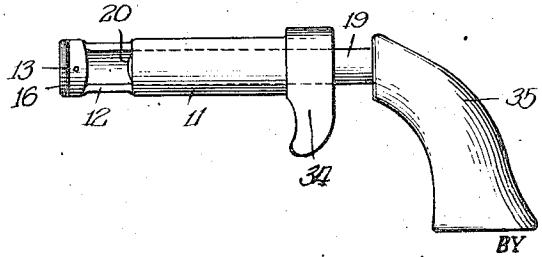



Fig. 6.




INVENTOR.
Albert R. Marler,
BY
Spencer Marzall Johnston & Cook
ATTYS.

Patented Nov. 30, 1948

2,454,878

# UNITED STATES PATENT OFFICE

2,454,878

## FUSE PULLER

Albert R. Marler, Forest Park, Ill., assignor to Carl C. Sittler, Chicago, Ill.

Application August 12, 1943, Serial No. 498,270

1 Claim. (Cl. 81—3.8)

1

This invention relates in general to apparatus for inserting and for pulling or extracting electrical fuses, and particularly to means for removing such fuses from or inserting them in a high tension line.

An object of this invention is to provide safe, simple, and efficient means for gripping a fuse plug of the cartridge type and holding it securely while inserting it in or removing it from a conventional clamp or fuse holding means in a high tension line.

An important object of the invention is the provision of a new and improved insulated device which can be manipulated readily and quickly by the user to remove or insert a fuse without danger of coming into contact with the voltage in the fuse box, thereby rendering the use of the device safe to the user or operator.

Other objects of this invention include the provision of novel means of dielectric material, with spring means for maintaining the parts in readily operable position, together with means for limiting displacement of the parts, whereby a fuse may be readily gripped, held and manipulated and safely and quickly installed in and removed from a high tension line by the use of one hand, at a desired distance from the person and with a minimum of risk and inconvenience. Additional objects, advantages and capabilities inherent in this invention will become readily apparent from the description thereof which follows.

This invention further resides in the combination, construction and arrangement of parts illustrated in the accompanying drawings, and while there is shown therein the preferred embodiments of the invention, it is to be understood that the same are susceptible of modification and change without departing from the spirit of the invention.

The accompanying drawings illustrate a selected embodiment of the invention and the views therein are as follows:

Fig. 1 is a side elevation of the invention with the parts in operative position so as to grip a fuse plug mounted in a spring clamp of conventional type, with the fingers of a workman's hand indicated in dotted lines in gripping position about the hand pieces of the device;

Fig. 2 is a plan view of the device shown in Fig. 1, with the fuse plug and means for mounting the same shown partially in section.

Fig. 3 is an enlarged view of the device shown in Fig. 1 partially in section.

2

Fig. 4 is a sectional view along the line 4—4 of Fig. 3;

Fig. 5 is an end elevation of the device shown in Fig. 1 looking to the right; and

Fig. 6 is a side elevation of an alternate form of the invention.

The particular device herein disclosed for the purpose of illustrating the invention comprises a hollow, generally cylindrical body member 11 having a cut-away portion 12 spaced from one end thereof by an end portion 13. The cut-away portion 12 is suitably shaped and arranged to receive the body of a fuse of the cartridge type in transverse position, as illustrated in Fig. 1. A plug 14 is fitted within the interior of the end portion 13 and secured therein by means of a pin 15 extending through the plug and the adjacent portions of the walls of the end portion 13. The end portion 13 may be beveled as indicated at 16, or otherwise suitably shaped to facilitate manipulation of the device about a fuse, as indicated in Figs. 2 and 5. A finger piece 17 is rigidly secured to the body member 11 adjacent its opposite, open end, as by means of pins 18. A generally cylindrical member or plunger 19 having a diameter slightly less than the internal diameter of the member 11 is so arranged within the member 11 as to be freely slidable longitudinally therein. The inner end of the member 19 may be tapered as at 20 in Fig. 2, or otherwise suitably shaped to provide a jaw to cooperate with the inner curved surface 21 of the end portion 13 of the member 11 for gripping a fuse 22. A palm or hand piece 23 is rigidly mounted on the opposite end of the member 19 in a manner similar to the mounting of the hand piece 17 upon the body member 11. The member 17 may be provided with finger recesses 24 for convenience in gripping it.

In order to maintain the hand pieces 17 and 23 in convenient alignment and to limit the stroke or movement of the plunger 19, a pin and slot arrangement is provided. This includes a longitudinally extending slot 25 of suitable length in the plunger 19 near the inner end thereof, and a cooperating pin 26 having an end portion adapted to engage said slot, and a threaded portion 27 adapted to be screwed into a threaded opening 28 in a wall of the member 11.

It is desirable that the plunger 19 be normally maintained in retracted or non-gripping position. To this end the member 11 is provided with an interior portion 29 of enlarged diameter adjacent the hand piece 17. This portion of enlarged diameter is arranged to receive a helical spring 30 circumferentially arranged on the plunger 19.

A collar 31 is fixedly mounted on the plunger 19 in spaced relation with the hand piece 23. The outer diameter of this collar is such as to permit it to slide freely within the recess 29 of the member 11. A sleeve 32 having an internal diameter slightly greater than the diameter of the plunger 19 is threaded into the end of the member 11 adjacent the hand piece 17. This sleeve is of such length that its inner end will abut the collar 31 and provide a stop for the plunger 19 so as to limit outward movement of the plunger at a suitable point. The spring 30 is arranged intermediate the collar 31 and the shoulder 32 provided by the cut-away portion 29 of the member 11, and normally maintains the plunger 19 in open or retracted position, as shown in Fig. 3.

The members 11 and 19 and the hand pieces 17 and 23 are preferably made of plastic or other dielectric material. The body member 11 and the plunger 19 are generally of a length sufficient to permit the insertion and removal of a fuse at a safe distance from the person of the operator.

The selected form of the device operates in the following manner. A fuse 22 being mounted in a spring clip 33, and the plunger 19 being in retracted position, as shown in Fig. 3, the operator takes hold of the device by placing one hand about the hand pieces 17 and 23 and positions the cut-away portion 12 of the member 11 about the fuse as shown in Fig. 1. The hand pieces 17 and 23 are then gripped and pulled together to the position and in the manner indicated in Fig. 1. When the tapered end 20 of the plunger 19 is tightly pressed against the fuse 22 in cooperation with the inner surface 21, pull may be exerted on the device to remove the fuse from the spring clip 33. Upon release of the grip on the hand pieces 17 and 23, the spring 30 will act against the collar 31 to return the plunger 19 to the position shown in Fig. 3, whereupon the fuse will become disassociated from the device.

In an alternative form of the device shown in Fig. 6, the members 17 and 23 are provided in the form of a finger piece or trigger member 34 and a palm or handle 35 of pistol style.

Changes may be made in the form, construction and arrangement of the parts without departing from the spirit of the invention or sacrificing any of its advantages, and the right is hereby reserved to make all such changes as



fairly fall within the scope of the following claim.

The invention is hereby claimed as follows:

A fuse puller formed of insulated material for pulling elongated cartridge fuses from the electric contact elements with which the fuses normally are associated comprising a tubular body portion terminating at one end in a hook-shaped member, a fuse seat on the hook-shaped member, a stem movable longitudinally in said tubular body, a transversely curved end forming a fuse seat at the end of the stem lying opposite to the seat on the hook-shaped member and in position to cooperate with the seat on the hook-shaped member in engaging and holding a fuse on said first named seat, a pin extending radially inwardly on said tubular body portion, an elongated slot in said stem adapted to receive and cooperate with said pin to thereby prevent rotation of said stem and maintain the fuse seats on said stem and hook-shaped member in proper relation to snugly engage the opposing sides of the curved portion of a fuse, means normally maintaining said stem in position to urge the stem in a predetermined direction whereby the seat on the stem is normally positioned away from the seat on the hook-shaped member, a handle member on the stem, a handle member on the body whereby the seat on the stem is moved toward holding position with respect to the other seat when an urging action toward each other is applied to the two handles.

ALBERT R. MARLER.


REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 172,520 | Sullings | Jan. 18, 1876 |
| 400,273 | Valiquet | Mar. 26, 1889 |
| 1,181,654 | Eifel | May 2, 1916 |
| 1,232,488 | Brooks | July 10, 1917 |
| 1,363,515 | Knoss | Dec. 28, 1920 |
| 1,633,237 | Whillow | June 21, 1927 |
| 1,724,435 | Studwell | Aug. 13, 1929 |
| 1,927,528 | Nilsson | Sept. 19, 1933 |
| 2,082,669 | Voigt | June 1, 1937 |
| 2,243,305 | Adler | May 27, 1941 |