

Nov. 11, 1947.

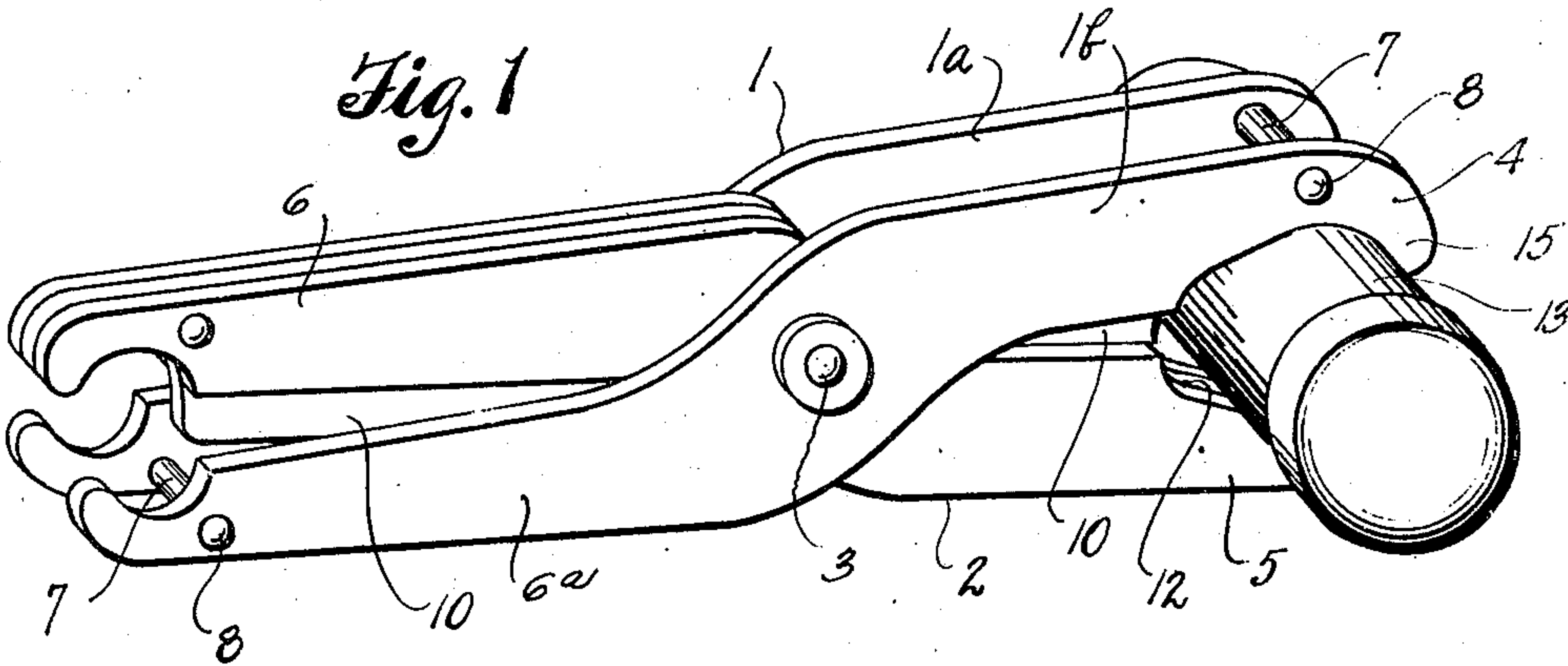
R. E. WALKER

2,430,544

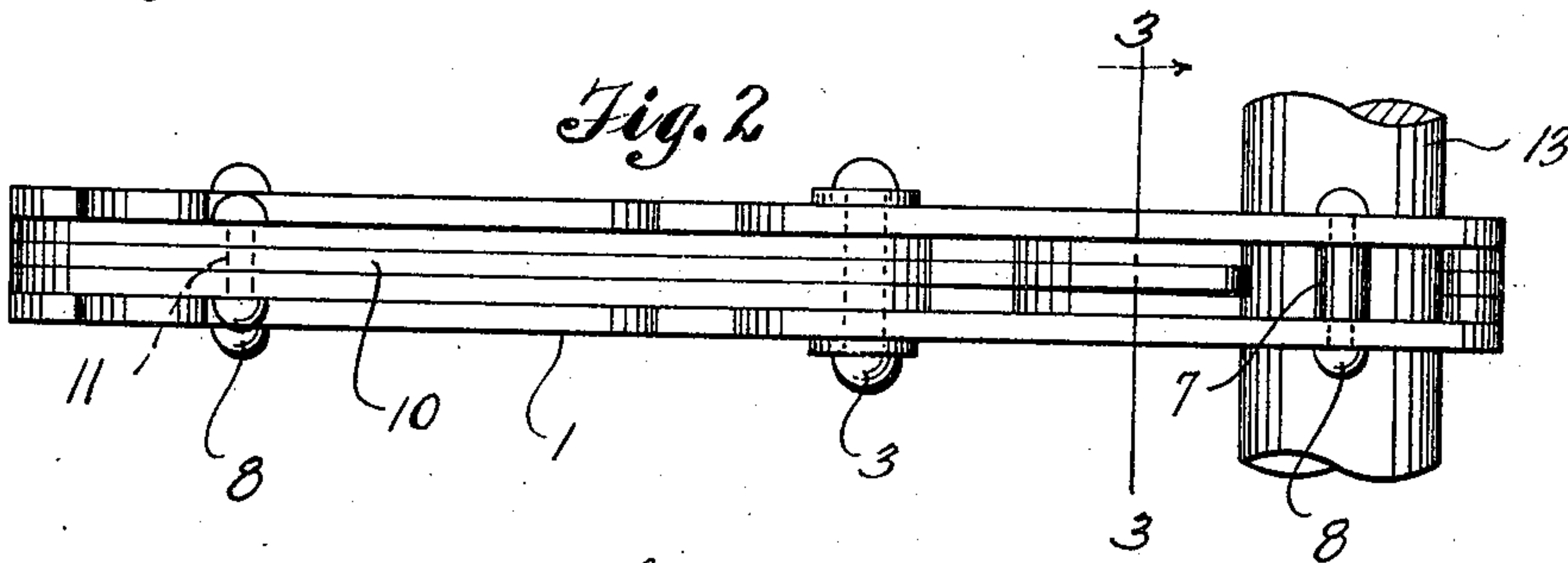
FUSE PULLER

Filed May 5, 1945

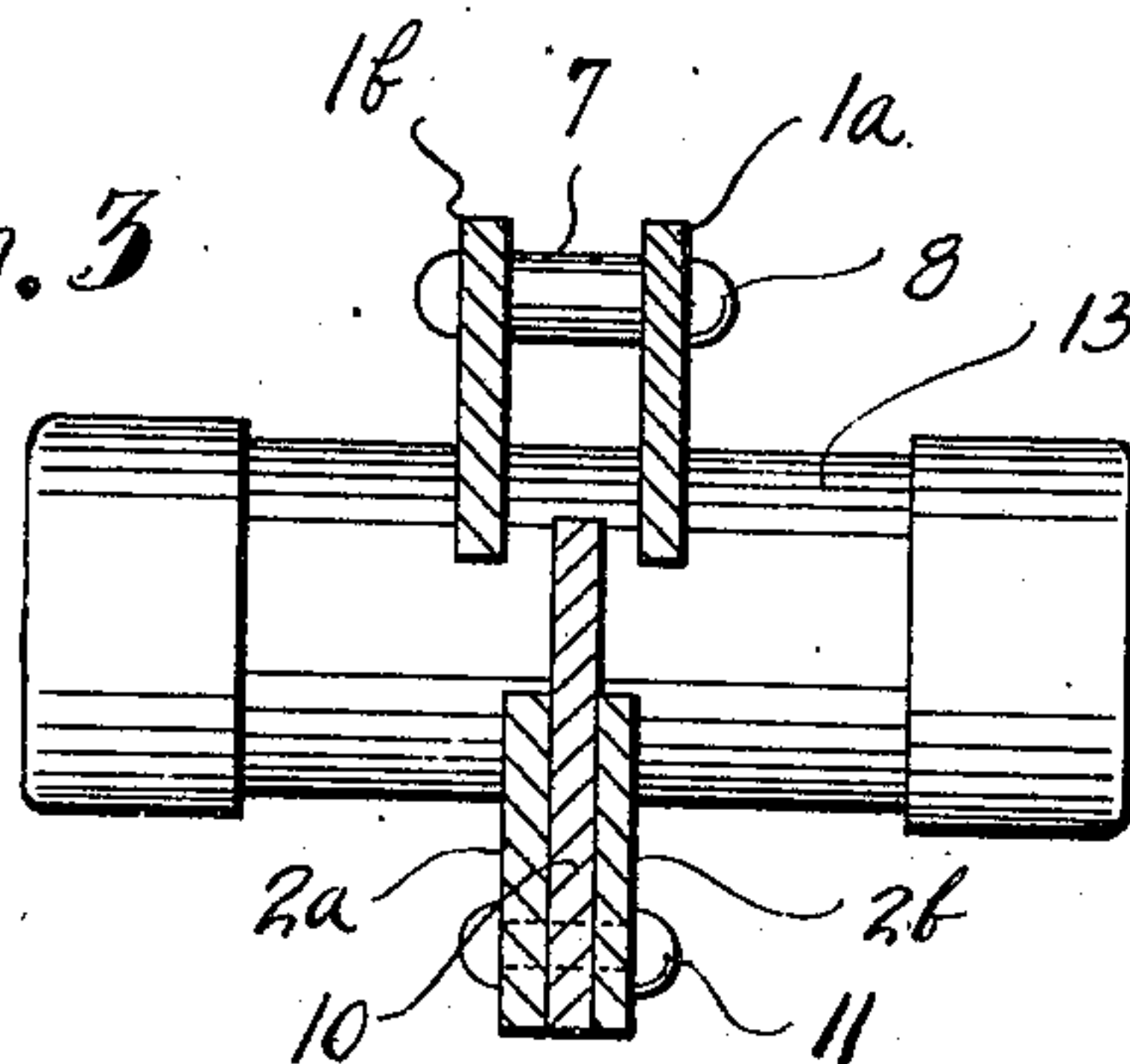
*Fig. 1*



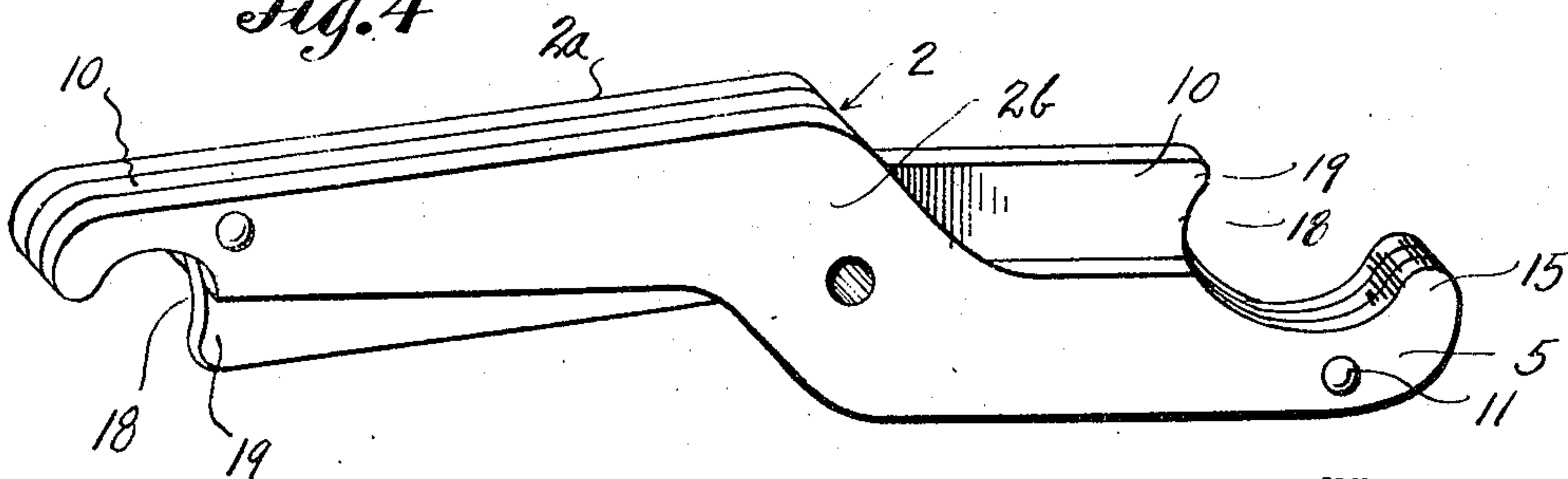
*Fig. 2*



*Fig. 3*



*Fig. 4*



INVENTOR.

RALPH E. WALKER

BY

*Cook & Robinson*

ATTORNEYS



# UNITED STATES PATENT OFFICE

2,430,544

## FUSE PULLER

Ralph E. Walker, Silverdale, Wash.

Application May 5, 1945, Serial No. 592,176

2 Claims. (Cl. 81—3.8)

1

This invention relates to tools or devices commonly known as "fuse pullers," and it has reference more particularly to improvements in those devices made substantially in the form of and used after the fashion of a pair of pliers to grip and securely hold a fuse for its application to or removal from fuse clips.

It is the principal object of this invention to provide improvements in fuse pullers of the kind above stated, that will overcome the tendency of the fuse gripping jaws of the device to be spread apart when pressure is applied there-through to the fuse for its application to its holding clips.

More specifically stated, the objects of this invention are found in the provision of a fuse applying and pulling device, which is in the nature of a pair of pliers in that it comprises pivotally joined, cross levers, having paired jaw portions equipped with oppositely related recess forming seats for receiving and gripping a fuse and having a shoulder on one jaw designed to serve as an abutment for the fuse when inserting pressure is applied thereto, thus to eliminate the tendency of the fuse to ride inwardly along the recesses and cause spreading of the jaws apart and the incident releasing of the fuse from the jaw seats.

It is also an object of the invention to provide devices of the above character that are reversible end for end, and are made in various sizes and so designed that they may be manufactured and sold at a relatively small cost.

In accomplishing the above stated and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein—

Fig. 1 is a perspective view of a fuse puller embodying the present invention, showing a fuse gripped thereby.

Fig. 2 is an edge view of the same.

Fig. 3 is a cross section on line 3—3 in Fig. 2.

Fig. 4 is a perspective view of the shouldered jaw lever.

Referring more in detail to the drawings—

As matter explanatory to the objects of the present invention, and to better explain the advantages that result from the present improvement, it will be stated that tools of this character as heretofore and now generally in use, are of a character similar to my design in that they comprise a pair of pivotally joined, crossed levers with oppositely related jaws for gripping a fuse between them, and the jaws are formed with re-

2

cesses to provide seats for the fuse. The jaws terminate in hook shaped ends to better hold the fuse. However, the base surfaces of the recesses incline toward the hook ends for some reason, and this inclination is such that when pressure is applied directly against the fuse to insert it, there is a tendency for the fuse to ride along the inclined base surfaces toward the jaw pivot and thus to cause the jaws to be spread apart and the fuse or tool to slip, with possible injury to the user.

The present improvement resides in the provision of a fuse abutment at the inner end of the seat or recess, to be positively engaged by the fuse to overcome its tendency to cause spreading of the jaws.

The invention anticipates the application of the abutment to tools already in use, or to those to be manufactured.

In its present preferred form of construction, the fuse puller comprises the paired crossed levers, designated generally at 1 and 2, joined pivotally by a pivot pin or bolt 3 that is extended through the crossed portions of the levers. In this assembly of parts, corresponding ends of the levers, at one side of the pivot, comprise the paired jaws 4 and 5, and the other ends constitute the handle portions 6 and 6a.

The lever 1 comprises two opposite side portions 1a and 1b of like size and shape. These are assembled in a coextensive relationship and held spaced apart by spacers 7 located between their opposite end portions. Rivets 8 pass through the said end portions and spacers and secure the parts constituting this lever together. Likewise, the lever 2 comprises two coextensive opposite side plates 2a and 2b, of like form and size, between which a spacer plate 10 is applied and held by rivets 11 passed through the end portions of the plates and the spacer.

As observed in Fig. 1, the paired jaws of the tool are formed with substantially straight inside edges formed therealong with depressions 12 providing seats that receive the opposite sides of a fuse therein; such a fuse being designated in Fig. 1 by numeral 13. The outer ends of the jaws terminate in hook shaped portions 15 that form the outer ends of the seats and serve as means to retain the fuse in the seats, when the tool is being used to pull them from their holding clips. The base surfaces of the recesses slope gradually toward the inside edge of the jaw plate, and without the provision of the present improvement, later explained, affords no particular stop for the



3

fuse in an application of pressure for seating it in its holding clips.

It is the function of the inserted spacer plate 10 in lever 2 to overcome this objection and to make this possible, the ends of the spacer have a definite shape and are in a definite relationship to the fuse holding seats 12.

At its end that is adjacent the recesses in the jaw portions of lever 2, the plate end 10 is formed with a rounded seat 18 and a projecting shoulder 19. The seat 18 is in effect a continuation of the jaw recess 12 and in its cooperation therewith, it provides a seat that faces directly toward the jaw end. Thus, with a fuse gripped between the jaws, should pressure be applied directly against the fuse, to press it into fuse clips, the pressure is sustained against the seat 18 and the tendency to spread the jaws, by the fuse riding inwardly on the inclined or sloping surfaces of the recesses 12, is overcome, as is the liability of the tool or fuse slipping with incident damage or injury to the user.

In the present instance, I have shown the tool as being reversible, end for end. This is by reason of equipping the handle portions with the fuse gripping seats like, and in the same relationship of those in the jaws. In each instance, the lever ends at one side of the pivot 3 serve as jaws and the other ends serve as handles. As illustrated, the longer lever ends are formed with the smaller seats for fuse engaging purposes.

Such tools as these may be made in various sizes, and of any suitable materials, and they may be made in the reversible form shown or equipped at one end only for the gripping action.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent is:

1. A fuse puller comprising a pair of crossed levers, pivotally joined to provide at one end a pair of gripping jaws and at the other end, a pair of handles for the jaws; the first of said levers

4

comprising coextensive spaced side sections, and the second of said levers being contained therebetween; said jaw portions of both levers having the opposed gripping edges thereof recessed to form seats to receive a fuse therein for its application to or its removal from fuse holding clips, and the jaw portion of the said second lever having opposite side portions between which a spacer is interposed and secured and which spacer has an end portion forming an abutment adjacent the seats in said jaw portions to sustain pressure against the fuse in seating it in holding clips.

2. A fuse puller comprising a pair of crossed levers, a pivot member joining the levers medially of their ends, the first of said levers comprising coextensive spaced side sections and the second of said levers being contained between the spaced sections of the first lever; the opposite end portions of the paired levers being interchangeably used as jaw or handle portions, and each being provided near its ends in its gripping edges with seats to cooperatively seat a fuse therein for its application or removal from holding clips; the second of said levers comprising coextensive, opposite side sections and a spacer bar fixed therebetween and having its end portions terminating adjacent the said seats therein and forming extending abutments to sustain direct pressure against the fuse in seating it in its holding clips.

RALPH E. WALKER.

#### REFERENCES CITED

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

#### UNITED STATES PATENTS

Number	Name	Date
1,023,077	Grout	Apr. 9, 1912
1,539,302	Curtis	May 26, 1925
1,561,082	Jung	Nov. 10, 1925
2,236,941	Foley	Apr. 1, 1941