

R. C. GROUT.

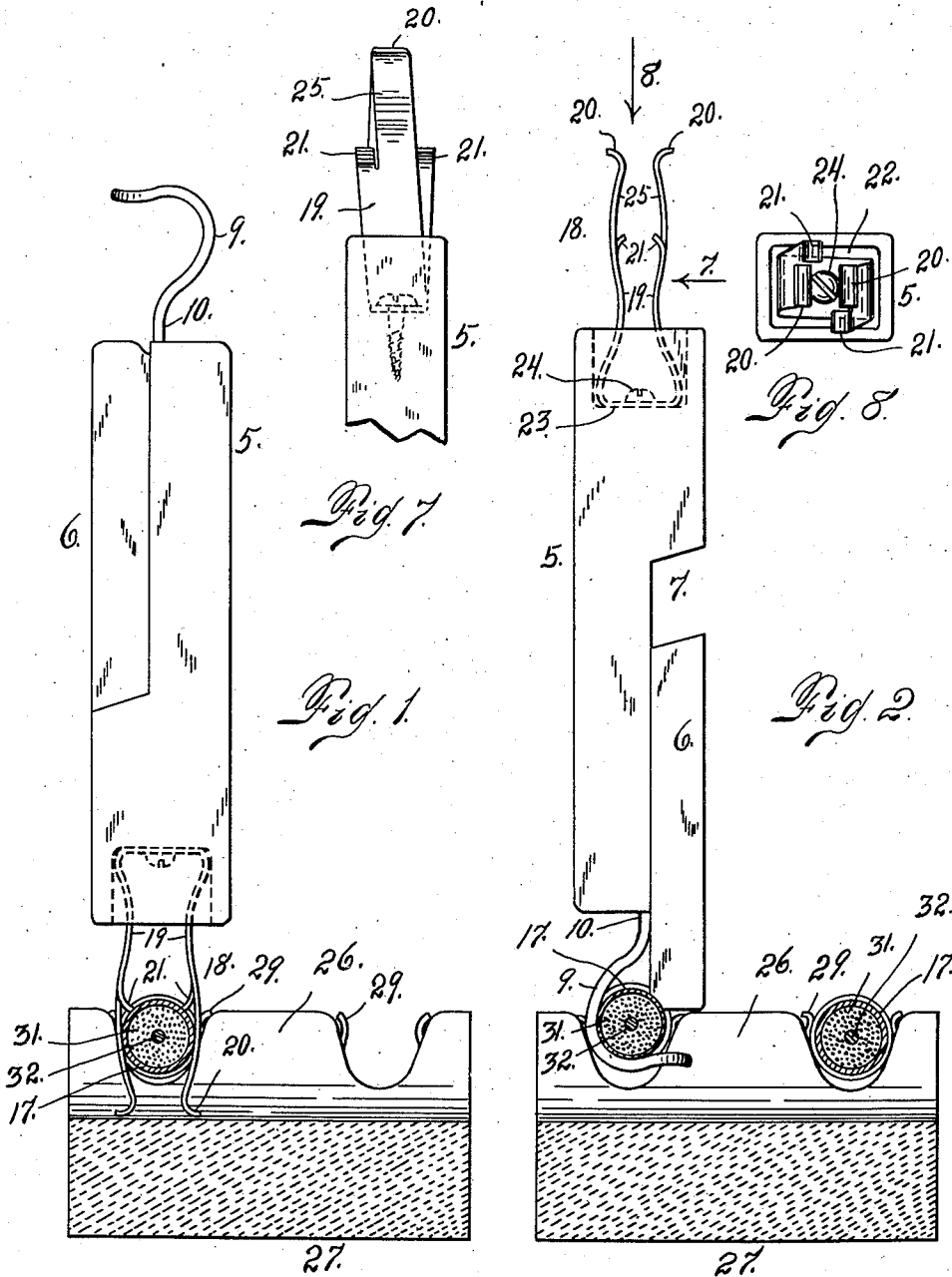
FUSE CHANGER.

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1,023,077.

Patented Apr. 9, 1912.

2 SHEETS-SHEET 1.



Witnesses

Otto E. Haddick.

C. H. Rossmore.

Inventor

Robt. C. Grout.

By A. J. O'Brien

Attorney

35 section on the line A—B of Fig. 1. Fig. 6
is a section on the line C—D of Fig. 1.

The hub *a* of the rear wheel is provided
with a brake wheel *b*, for a brake band *c*.

40 The brake lever *d* is secured to the rear
fork tube *e* by a clamp *f*, having a pin or
screw *u*, on which the lever *d* can turn when
elevated or depressed by the eccentric strap
g, to which it is suitably connected.

45 The eccentric *h* of the strap *g* receives its
motion by means of loose pawls or tongues *i*,
which engage with teeth *k* presented by a
member *m*. This latter is screwed into the

a band passing around the brake-wheel and
having its ends attached to the lever at two
points equidistant from its fulcrum; where-
by on back-pedaling the eccentric strap de- 85
presses the lever and causes the band to be
drawn tight upon its wheel both from above
and below; substantially as described.

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

FRANZ GOEBEL. [L. S.]

Witnesses:

HEINRICH WÖNNER,
F. G. WILHELM.

UNITED STATES PATENT OFFICE.

ROBERT C. GROUT, OF DENVER, COLORADO.

FUSE-CHANGER.

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To all whom it may concern:

Be it known that I, ROBERT C. GROUT, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Fuse-Changers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in fuse changers.

My improved instrument consists of a device adapted to facilitate the removal of cartridge or inclosed fuses from a cut-out box and replacing the same without danger of receiving a shock.

The device consists of a handle composed of suitable insulating material, as dry wood, fiber, porcelain, etc., to one extremity of which is secured a hook and a slidable part coöperating with the hook for removing the fuse from the cut-out box; while, at the opposite extremity, the handle member is equipped with a device for inserting a fuse in the cut-out box. This inserting or replacing part of the instrument is composed of a pair of spring jaws which are sufficiently separated to receive a cartridge fuse, the said jaws being equipped with relatively short inwardly bent lips forming stops to prevent the fuse from moving farther than is necessary between the jaws when inserted, these lips being separated as far as possible from each other, being cut from opposite edges of the two jaws, and the latter being bent slightly in a lateral direction for the purpose of bringing the extended portions of the coöperating jaws into alinement with each other.

It is evident that many modifications of the specific form of device illustrated in the drawing and hereinafter described may be employed.

Having briefly outlined my improved construction, I will proceed to describe one embodiment thereof, the same being illustrated in the drawing, in which:

Figure 1 is a side elevation of my improved tool shown in connection with a cut-out box, the latter, together with the cartridge fuse, with which the jaws of the re-

placing extremity of the tool are in contact, being shown in section. Fig. 2 is a similar view, illustrating the manner of using the tool for the purpose of removing a cartridge fuse from the cut-out box. Fig. 3 is a detail view of the tool shown with the fuse in place at the fuse-removing extremity of the tool, the fuse being in the position it occupies immediately after its removal from the cut-out box and illustrating the manner in which it is held in place by the tool until released by the rearward movement of the slidable member coöperating with the hook. Fig. 4 is a section, taken through the tool, on the line 4—4 of Fig. 3, the fuse, together with the hook, being shown in elevation. Fig. 5 is a section taken on the line 5—5 of Fig. 4, the hook and the fuse-replacing member of the tool being shown in elevation. Fig. 6 is a detail view of the slidable block arranged to coöperate with the fuse-removing hook. Fig. 7 is a detail side elevation of the tool, looking in the direction of arrow 7, Fig. 2. Fig. 8 is a detail end view of the device, looking in the direction of arrow 8, Fig. 2.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the body part of the handle of my improved fuse changer, the same being equipped with a part 6 slidably mounted on the body part and shaped to fit a recess 7 formed in one side of the handle, the part 6, when in one position, completely filling the said recess, but being adapted to be moved forwardly by the thumb of the hand, which grasps the tool, into coöperative relation with a hook 8, which may be made of a loop of wire, as illustrated in the drawing, or in any other suitable manner. As shown, the hook portion proper, which is designated by the numeral 9, constitutes the closed extremity of the loop, the latter being provided with two parallel rearwardly-extending parts which are embedded in grooves formed in the body member adjacent the recess 7, the inner extremities of these parts being bent at right angles to the parts 10 and inserted in openings 12 formed in the body member. The part 6 covers the parts 10 of the loop, and is itself secured in place by two screws 13, or other suitable fastening devices, which are passed through slots 14 formed in the part 6, the heads of the screws occupying elongated recesses 15 surrounding the slots

and sufficiently large to readily receive the screw heads, the latter being somewhat larger than the slots 14 for the purpose of retaining the block in place, the said screws 5 penetrating the body member of the handle, as shown at 16.

When the hook extremity of the tool is employed for removing a fuse from a cut-out box, the slidable member 6 is moved forwardly into engagement with the fuse 17,—(see Fig. 3),—whereby the fuse is clamped between the hook 9 and the slidable block. By virtue of this construction, it becomes practicable to pull the fuse out of the box without danger of receiving a shock, since the hand employed is in contact at all times with insulating material only, and since both the parts 5 and 6 are composed of some suitable insulating material and all the metal parts of the device are in such position that the hand grasping the handle, as is necessary in using the tool, will not need to come in contact with any metal part. In any event, the fastening screws 13 are embedded entirely in insulating material, so that, if the hand should by any possibility touch one of these screw-heads, the user would not receive a shock. The opposite extremity of the tool is equipped with a fuse-replacing member 18, composed of two cooperating spring jaws 19, whose outer extremities are outwardly curved, as shown at 20, to facilitate the insertion of a cartridge fuse 17 by pressing the fuse against the outwardly-curved extremities. Slight pressure upon the fuse, when in engagement with these curved ends, will cause the jaws to open and allow the fuse to enter until it comes in contact with the inwardly-projecting separated lips 21, which form stops to prevent the fuse from passing farther inwardly between the two jaws than is necessary. It is essential to have these jaws of reasonable length in order to give them the desired elasticity or yielding capacity. Hence, it is desirable that the jaws project farther from the handle than the length between the lips 21 and their outer ends, and, by employing the lips 21 as stops, it becomes practicable to give the jaws any desired length.

As illustrated in the drawing, the two jaws are formed from an integral piece of spring metal, constituting a sort of loop, whose closed extremity is inserted in a socket 22 formed in one extremity of the body member 5 of the handle, this closed extremity of the loop being made flat, as shown at 23, and shaped to fit the bottom of the recess or socket, the loop being held in place by a screw 24 passed through an opening in a part 23 and threaded into the body member of the handle.

In order to separate the lips 21 sufficiently to form a good bearing for the fuse in-

serted therein, the lips are formed on the opposite edges of the two jaws and the jaw members are bent laterally in an edgewise direction to bring the outer portions 25 of the two jaws into alinement, this bending of the jaws in an endwise direction serving to further separate the two lips 21, thereby forming a relatively long bearing for the fuse when in place between the jaws.

From the foregoing description, the use of my improved device will be readily understood. In removing a fuse, the hook end 9, at one extremity of the tool, is passed underneath the central portion of a fuse, the cut-out box being grooved, as shown at 26. The slidable part 6 is then moved forwardly by the pressure of the thumb to the position illustrated in Fig. 2, or until it engages the cartridge fuse 17 on the opposite side from the hook. An outward pull upon the handle of the tool will result in the removal of the fuse, which will then be held in place between the hook and the part 6, as shown in Fig. 3, making it practicable to retain the fuse in place until it can be deposited in any desired location or receptacle. It is only necessary to move the part 6 rearwardly in order to drop the fuse. In inserting another fuse, the latter is placed in position between the two jaws of the member 18, as shown by dotted lines in Fig. 4, and by full lines in Fig. 5. The fuse is then inserted in the cut-out 27 by pressing it into place, so that its metal extremities 28 engage the spring contacts 29 of the box.

The portion 30 of the fuse, intermediate the metal parts 28, is composed of insulating material, this insulating part being composed of an outer shell of fiber or other suitable insulating material filled with a dry powder 31, constituting a good insulation, this powder coming in direct contact with the fuse proper 32, which forms a conductor for the electric current, but which is destroyed when the current becomes too great for the circuit to carry without danger of injuring the dynamo and motors, as well as concealed circuit parts which are not readily accessible for purposes of repair.

Having thus described my invention, what I claim is:

1. A device of the class described, consisting of a handle composed of insulating material, equipped at one extremity with a cartridge fuse-placing device, substantially as described.

2. A device of the class described, comprising a handle member equipped at one extremity with a pair of spring jaws, whose outer extremities are outwardly-curved, the jaws being provided at a suitable distance from their curved extremities with stops cut therefrom and adapted to be engaged by a fuse when inserted between the jaws, substantially as described.

3. A device of the character described, comprising a handle member equipped at one extremity with a pair of spring jaws, provided intermediate their extremities with inwardly bent lips forming stops to engage a cartridge fuse inserted between the jaws, substantially as described.

4. A tool of the class described, equipped at one extremity with a pair of spring jaws, whose free extremities are outwardly curved, the jaws being provided at a suitable distance beyond their curved extremities with inwardly bent lips located adjacent the opposite edges of the jaws.

5. A device of the class described, comprising a handle member equipped at one extremity with a pair of spring jaws, whose free extremities are outwardly-curved, the jaws being equipped intermediate their extremities with lips offset from the opposite edges of the jaws, the latter being bent edge-wise in opposite directions to bring the two

jaw parts into coöperative alinement, substantially as described.

6. A device of the class described, comprising an insulating handle, equipped at one extremity with a pair of spring jaws formed from an integral piece of spring metal, constituting a loop, whose closed extremity is inserted and secured in a socket formed in one extremity of the handle member, the free extremities of the jaws being outwardly curved and the jaws being equipped at a suitable distance beyond said extremities with stops arranged to limit the travel of the fuse inwardly toward the handle, substantially as described.

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

ROBERT C. GROUT.

Witnesses:

T. E. BOWEN,
JNO. G. POWELL.