

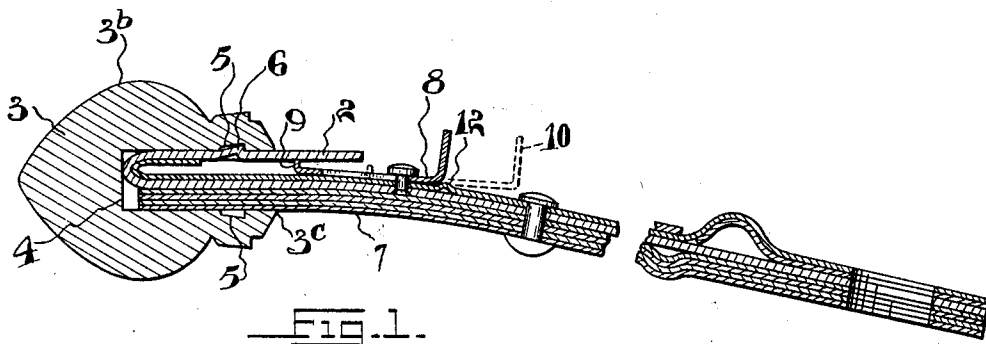
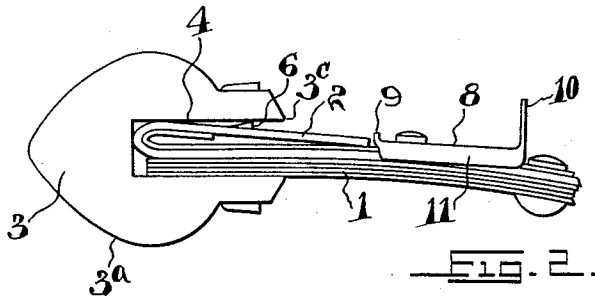
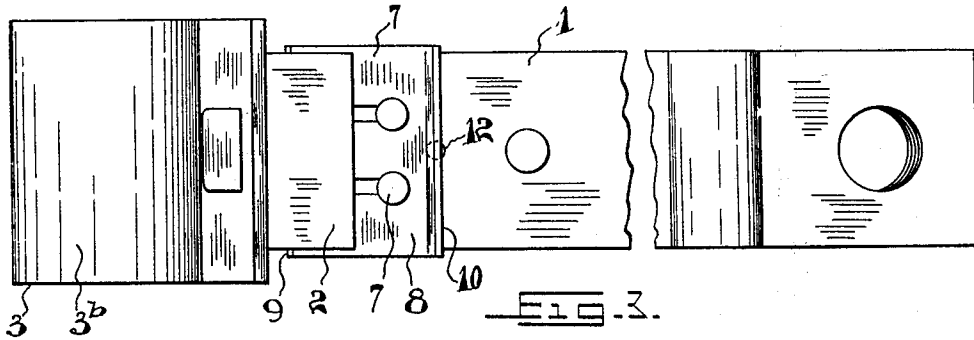
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CONTACT FINGER FOR ELECTRICAL CONTROLLERS AND SWITCHES

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UNITED STATES PATENT OFFICE

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CONTACT FINGER FOR ELECTRICAL CONTROLLERS AND SWITCHES

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This invention relates to contact fingers and more particularly to devices for releasably locking a contact tip on a contact finger of the type employed in electrical controllers and switches. Heretofore one end of each finger has been bent back to form a loop adapted to be received in a slightly smaller recess formed in the tip. Means for releasably locking the tip on the finger so that the tip could be reversed has also been provided. This has been accomplished by providing each wall of the tip recess with a depression, either of the depressions being adapted to engage a projection on the loop. The loop is formed of a resilient metal strip adapted, when the projection thereon is sprung into the depression, to make an electrical contact along both sides of the recess whereby arcing is eliminated. It has been found in practice that great difficulty is encountered in determining whether the tip is properly locked on the loop and that the loop will become so hot that it loses its resiliency and permits the projection to become disengaged from its depression whereby the tip falls off. The object of the present invention is to provide means for overcoming the above objectionable features.

I attain my object by mounting a slide or other suitable device on the finger so that it may be forced, when the projection on the loop has entered the depression in the tip, between the legs of the loop to force them into engagement with the walls of the tip recess. The slide is frictionally locked in its operative position by means of a projection or tongue which is formed by stamping or cutting the finger.

The constructions are hereinafter more fully described and are illustrated in the accompanying drawing in which

Fig. 1 is a longitudinal section, on an enlarged scale partly broken away, of a contact finger having its tip properly positioned and locked thereon and showing my device in its operative position;

Fig. 2 a detail in side elevation of the same showing the contact tip improperly positioned on the finger in which case my device cannot be moved to its operative position; and

Fig. 3 a plan view of Fig. 1.

In the drawing like numerals of reference indicate corresponding parts in the different figures.

A contact finger 1 of ordinary laminated construction and shape has one of its ends bent back to form a loop 2. On this end of the finger is carried a contact tip 3 which is provided with a recess 4 adapted to tightly embrace the loop 2. The walls of the recess have depressions 5 formed therein, either of which is adapted to be engaged by a projection 6 formed on or carried by the loop 2 whereby the tip may be releasably locked with either of its surfaces 3^a, 3^b in position for use. The above constructions are well known in the art and therefore they are only briefly described.

On the finger 1 is guided, by means of pin and slot connections 7, a slide 8 having a nose 9, a hand grip 10 and depending sides 11 adapted to overlies the sides of the finger. When the tip 3 is properly positioned on the finger 1, in which case the projection 6 engages one of the depressions 5 as shown in Fig. 1, the nose 9 is adapted to pass between the legs of the loop to maintain the engagement between the projection and depression and also to maintain an electrical connection along the contacting surfaces of the finger 1 and recess 4.

In practice a plurality of fingers 1 are connected with a contact base (not shown) of a controller or switch which is enclosed by a casing having a door. In reversing or replacing a tip the operator makes the necessary changes without removing the finger which oftentimes results in the tip being improperly positioned on the finger. This is illustrated in Fig. 2 in which the tip requires to be moved transversely of the finger to permit the projection 6 to enter its depression 5. All improper positioning of the parts results in the free leg of the loop 2 being engaged with or directed towards the other leg of the loop which prevents the nose 9 of the slide 8 from being moved to its operative position between the legs of the loop. The slide is thus adapted to detect all cases in

which the tip is improperly positioned on the finger.

Heretofore if the tip were properly installed on the finger, the continued engagement between the projection 6 and depression 5, depended entirely on the resiliency of the strip material of the loop 2. These loops in practice soon become so hot that they lose their resiliency. Any tendency of the projection becoming disengaged from its depression is overcome by the slide 8. The latter also prevents the loop, if its resiliency be weakened, from dropping away from the inner edges 3° of the tip to form arcs.

A projection or tongue 12 formed by stamping or cutting the finger 1 is adapted to engage the inner end of the slide 8 to frictionally lock it in its operative position.

What I claim is:

1. The combination with a contact finger having one of its ends bent back to form a loop, and a contact tip removably carried on said loop, of means movably mounted on said finger for preventing the legs of the loop from disengaging the tip.

2. The combination with a contact finger having one of its ends bent back to form a loop, and a contact tip having a recess adapted to embrace the loop, of a slide adapted to force the loop legs into engagement with the recess.

3. The combination with a contact finger having one of its ends bent back to form a loop, a contact tip having a recess adapted to embrace the loop, of a slide adapted to force the loop edges into engagement with the recess, and means for locking the slide in its operative position.

4. The combination with a contact finger having one of its ends bent back to form a loop, an outwardly extending projection on said loop, and a contact tip having a recess adapted to embrace said loop, the wall of the recess being provided with a depression adapted to be engaged by the projection, of a slide adapted to pass between the legs of the loop, when the projection has entered the depression, to maintain the engagement between the projection and depression and between the finger and the recess.

5. An electrical contact finger comprising a strap having one end thereof bent upon itself to form a loop, a tip having a slot formed therein for engagement with said loop, and means for expanding said loop into frictional engagement with the walls of said slot to maintain said tip against displacement from said loop and to insure an electrical contact therebetween.

6. An electrical contact finger comprising a strap having one end thereof bent upon itself to form a loop, a tip having a slot formed therein for engagement with said loop, and a member movably mounted on said strap and adapted to enter between the legs

of said loop and force the same into frictional engagement with the walls of said slot to maintain said tip against displacement from said loop and to insure an electrical contact therebetween.

7. A contact finger comprising a spring having a body and a rearwardly bent portion at the front end of the body, a tip detachably connected with the front end of said spring, and a retaining shim movable into and out of the space between the body portion and the rearwardly bent portion of said spring while said tip is mounted on said spring.

8. A contact finger comprising a spring having a body and a rearwardly bent portion at the front end of the body, a tip detachably connected with the front end of said spring, and a retaining shim movable into and out of the space between the body portion and the rearwardly bent portion of said spring while said tip is mounted on said spring, and interlocking with said spring.

Signed at St. Catharines, Ont., this 23 day June, A. D. 1928.

GEORGE ELLIS.