

June 9, 1931.

E. C. MUELLER

1,808,902

TELEPHONE PLUG

Filed May 17, 1930

FIG. 1

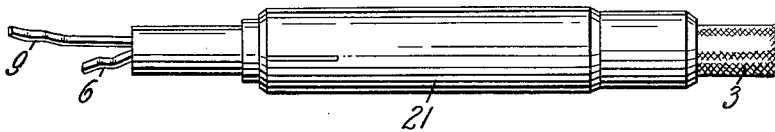


FIG. 2

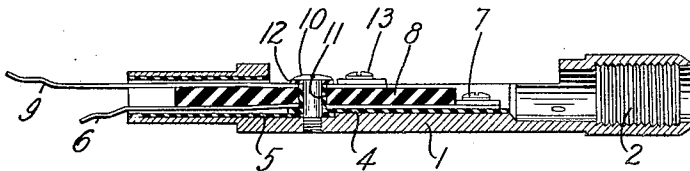
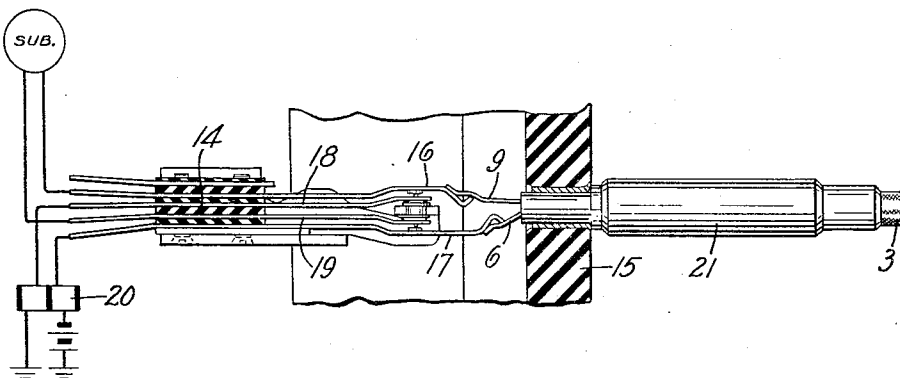


FIG. 3



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TELEPHONE PLUG

Application filed May 17, 1930. Serial No. 453,176.

This invention relates to test plugs for spring jacks of the type known as cut-off spring jacks. Such spring jacks are so called due to their being provided with cut-off springs which are operated by the insertion of the cord circuit plug to disconnect the line relay and battery supply from the line. It is essential that the line relay be disconnected upon the insertion of either the answering or calling plug by the operator, that is, either in answering a call or in calling a line, since the line relay which is connected to battery must be disconnected from the finally completed telephone circuit, battery for talking purposes being fed from the cord circuit.

It is the present practice in service observing and testing operations to use test plugs having flat springs which are intended to make contact on the inner surfaces (crimps) of the tip and ring springs of the jack. The contact springs of the plug must be made from very light material, so that upon being inserted in the jack by a tester or observer they will not operate the cut-off springs. This is necessary in service observing and testing operations. This requirement permits only a comparatively light pressure between the test plug and the jack springs which if dust is present either fails to make contact or makes a high resistance contact.

The use of such light material for the plug contact springs makes it necessary to handle the test plugs very carefully to avoid putting them out of adjustment. When such plugs are dropped, or when they are inserted in the jack hastily in such a way as to catch one of the springs on the face of the jack mounting, they are in many cases distorted or bent, and require straightening. After a few such straightening operations, the plug springs break. On the other hand, these springs cannot be made heavier because this would cause them to operate the cut-off springs of the jack.

In other words, in the plug now used which enters between the jack springs, the plug springs have to be light enough not to open the cut-off contacts of the jack and heavy enough to make a satisfactory contact and stand up in service. Moreover, the cut-off

springs of the jack cannot be depended upon to lessen this liability of false opening by any follow-up motion between them and the tip and ring springs because the cut-off springs are fixed. Furthermore, in service observing operations the supervising operators who use these plugs have to work quickly to get in on calls to observe the waiting time, and therefore, the plugging-in act is performed very quickly and at times the plug is not properly positioned with the result that these light material springs crumple up.

It is the object of this invention to produce a construction wherein heavier stock may be used for the plug springs, and still insure that the cut-off springs of the jack will not be opened by the insertion of the test plug.

In accordance with this invention a special form of test plug is provided which makes contact with the outer surfaces of the tip and ring springs of the jack instead of passing between the springs as the present test plug does. By virtue of this invention the tip and ring springs of the jack, instead of being partially or wholly lifted from contact with the cut-off springs by the test plug, are pressed more firmly against them. With this construction it is possible to double the thickness of the plug springs, thereby materially increasing the life of the test plug, without introducing any objectionable features into the operation of the jack.

Referring to the drawings,

Fig. 1 is a view of the plug of this invention including the insulating casing;

Fig. 2 is a longitudinal section without the casing; and

Fig. 3 is a view of the plug inserted in a spring jack.

The body 1 of the plug is made of hard brass and terminates at its rear end in a tubular threaded portion 2 for the insertion and securing of the conductor cord 3. Mounted on the body 1 is a fibre insulating strip 4 and fibre tube 5 which support the ring spring 6 which is flat in form and made of spring metal, for example, phosphor bronze. This spring is provided at its rear end with a terminal screw 7. The spring 6 and the fibre pieces are secured to the body

1 by a fibre strip 8 on the top of which the tip spring 9 is mounted. The securing means for parts 4, 5, 8, 6 and 9 is a screw 10 which passes through these parts and into the body

5 1. An insulating bushing 11 and washer 12 insulate the screw from the springs. The tip spring is also provided with a terminal screw 13. A fibre tube 21 encloses the middle portion of the plug.

10 Referring now to Fig. 3 which shows the subscriber's line and line relay 20 and the test plug of this invention in place in a jack 14 located on switchboard 15, it will be noted that the crimped portions of the tip and ring

15 springs 6 and 9 of plug engage the outside surfaces of the corresponding springs 16 and 17 of the jack and tend to press these jack springs more firmly against the jack cut-off springs 18 and 19 instead of tending to separate them as in plugs of the prior art.

20 What is claimed is:

1. In a test plug for spring jacks of the type wherein a pair of cut-off springs normally engage the inner surfaces of the tip

25 and ring springs of the spring jacks, in combination, a holder, and a pair of contact springs mounted thereon and adapted when inserted in said spring jack to engage said tip and ring springs on the outer surfaces

30 of said springs to press these springs firmly against the inside cut-off springs.

2. In a test plug for cut-off spring jacks, in combination, a handle, a pair of flat contact springs mounted thereon and projecting

35 therefrom, the free ends of said springs being bent to engage the jack tip and ring springs on their outer faces and thus press them firmly against the inside cut-off springs of the jack.

40 In witness whereof, I hereunto subscribe my name this 16th day of May, 1930.

EMIL C. MUELLER.

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