June 28, 1949. E. BURRELL 2,474,463

WIRING PENCIL

Filed Jan. 13, 1944

FIG. 1

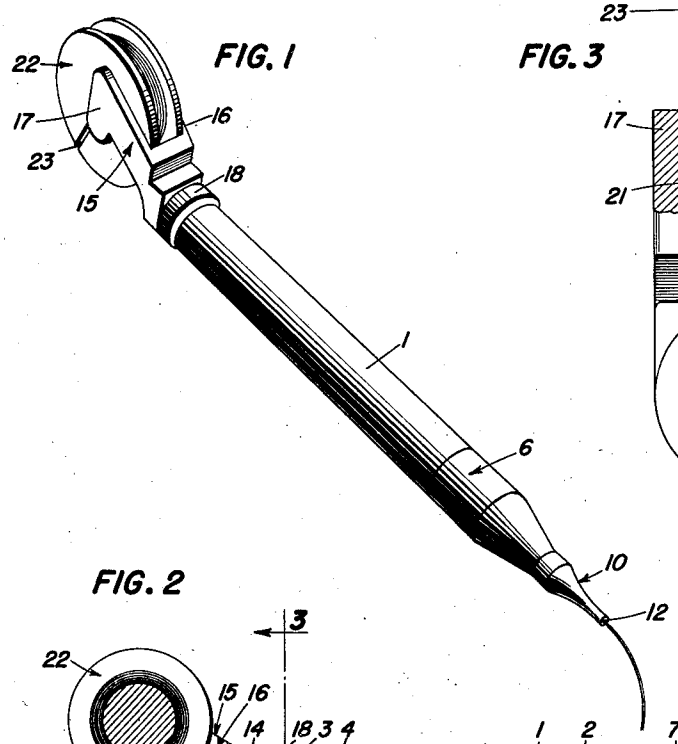


FIG. 3

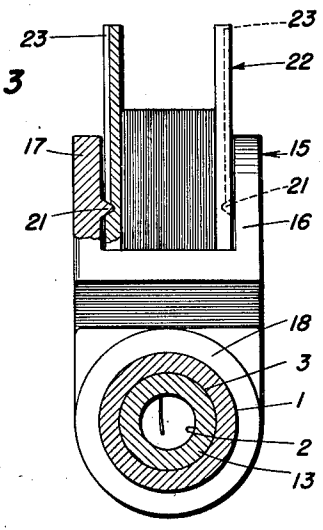


FIG. 2

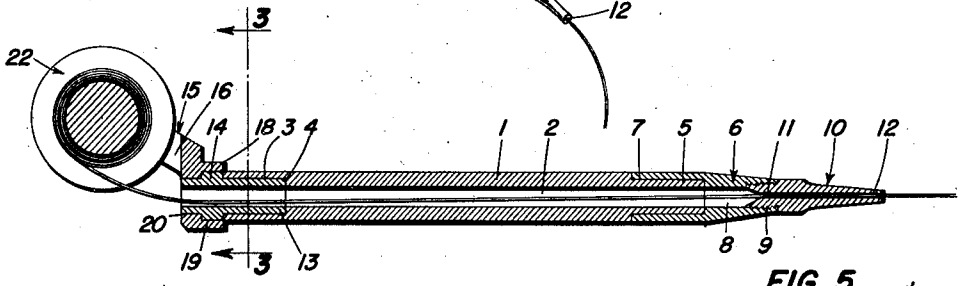


FIG. 5

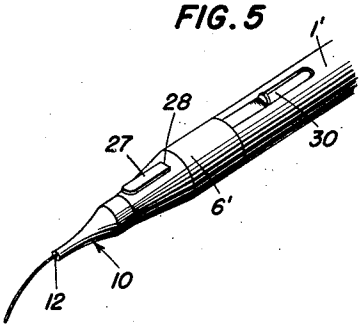
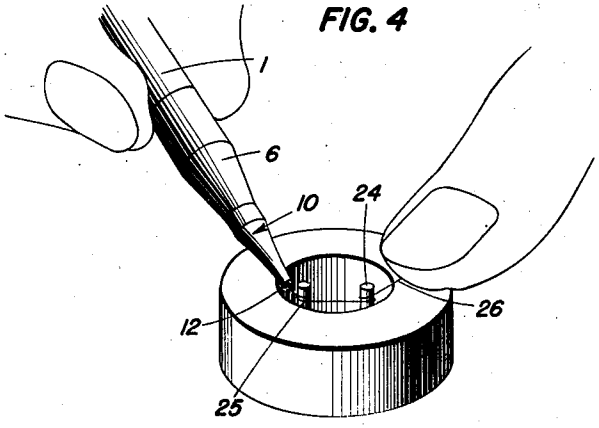


FIG. 4



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WIRING PENCIL

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3 Claims. (Cl. 242—130)

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This invention relates generally to wire feeding devices and more particularly to an improved wiring pencil which is adapted for use for wiring the unshorter of an electrical fuze.

Up to the present time a great deal of difficulty has been experienced and time has been lost in wiring the unshorter blocks used with electrically operated explosive projectiles. This has been due to the fact that the unshorting wire is usually very small in diameter, usually .005", and the terminals for said wire have been mounted in a cavity or recess.

One of the objects of the invention, therefore, is to provide a wiring pencil by the use of which it will be possible to mount bridging or unshorting wires in restricted spaces.

Another object of the invention is to provide a device of this character which may be easily constructed and which will be efficient in operation.

A further object of the invention is to provide a wiring pencil which is of such size that it may be conveniently held in the hand.

Still another object of the invention is to provide a wiring device of this character wherein means is employed for supporting a roll of wire and wherein means is also employed for retaining the wire under proper tension so that unnecessary unreeling thereof will not take place.

And another object is to provide a wiring pencil by the use of which it will be possible to set an unshorter wire at the proper tension so that it will neither break prematurely nor fail to break because of too much slack.

Further and more specific objects will become apparent in the course of the following description, accompanied by the drawing, in which:

Fig. 1 is a perspective view of the wiring pencil of this invention,

Fig. 2 shows a longitudinal section of the wiring pencil,

Fig. 3 shows a transverse section taken on line 3—3 of Fig. 2,

Fig. 4 is a perspective view illustrating the use of the device, and

Fig. 5 is a perspective view of a modification.

In the drawings, the numeral 1 indicates generally the barrel of this improved wiring pencil. The barrel may be made of a hard fibre or other suitable material and is of such size that it will conveniently fit in the hand. The barrel 1 is formed with an axial bore 2 which extends throughout its length, said bore being enlarged near one end to define a counterbore 3 which forms a shoulder 4. At its opposite end, the

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outer surface of the barrel is reduced to define a neck 5. Normally fitted about the neck 5 is a ferrule 6. This ferrule 6 has its outer surface lying flush with the outer surface of the barrel but is tapered toward its forward end. Also, said ferrule 6 is formed with a counterbore 7 which receives the neck 5, and communicating between the counterbore 7 and the forward portion of the ferrule 6 is a bore 8 which is internally threaded at 9. Obviously, ferrule 6 could be integral with barrel 1.

As seen in Fig. 2, a wire feed nipple 10 is mounted in the free end of the ferrule 6. This wire feed nipple 10 includes a reduced threaded shank 11 which is screwed in the threads 9 of the ferrule 6. The nipple 10 is tapered towards its forward end and is formed with a feed opening 12 which extends axially throughout its length.

Fitted in the counterbore 3 at the rear end of the barrel 1 is a guide tube 13, enlarged near its rear end to define a flange 14. Tightly fitted on the rear end portion of the tube 13 is a yoke 15 which includes arms 16 and 17 and a connecting hub 18, which hub is counterbored at 19 to receive the flange 14. The rear end portion of the tube 13 projects through an axial opening 20 in the hub 18. Of course, tube 13 could be integral with either barrel 1 or hub 18.

The arms 16 and 17 of the yoke 15 are formed with opposed projections which define trunnions 21. Normally positioned between the arms 16 and 17 and rotatable on the trunnions 21 is a spool 22, the side walls of which are provided with radial grooves 23 which extend from the axis to the rims of the walls. The grooves 23 will function to guide the spool into operative position between the arms 16 and 17 of the yoke 15.

The device is loaded by placing a spool of wire 22 between the arms 16 and 17 of the yoke and training the free end of the wire through the tube 13, the bore 2 of the barrel 1, the bore 8 of the ferrule 6, and the feed opening 12 of nipple 10, to project from the forward end thereof.

In operation let it be assumed that it is desired to wire an unshorter of the type used with electrically detonated projectiles. Such an unshorter is shown generally in Fig. 4 and includes spaced terminals 24 and 25. The free end of the wire, shown at 26, is either held between the thumb and forefinger of one hand or is held down on the body of the unshorter at a point near one of the terminals as 24. The pencil is then moved by the other hand for winding the wire about the terminal 24, extending the wire between said ter-

minals 24 and 25, and then winding the wire about the terminal 25. The wire may then be cut, by any suitable tool, and the portions thereof wound about the terminals may be held in place by a drop of solder or in some other suitable manner. A wire cutting tool 27 is shown in Fig. 5 as extending through a slot 28 in ferrule 6' of the wiring pencil, and is retractable within a groove 30 of the barrel 1'.

It will be seen that, by the use of this improved wiring pencil, it will be possible to do wiring jobs in restricted places. In this connection, it should be understood that this device may be used for any wiring which must be carried out in a space that is not easily accessible.

It is desired to call particular attention to the fact that the guide tube 13 forming part of the barrel and the restricted nipple 10 forming the feed point will serve to retain the wire under sufficient tension to prevent it from unreeling freely. Due to the resiliency of the wire and the comparatively long bore of the barrel, the wire by frictionally contacting with the inner wall of the barrel, is subject to a braking action, and in addition the frictional contact of the resilient wire with the restricted bore of the nipple also aids in this braking action. Also, the arms 16 and 17 of the yoke 15 with the trunnions thereon exert enough pressure on the spool 22 to prevent its free rotation and to provide proper tension on the wire while being used. As pointed out in the objects, the pencil will enable the tensioning of an unshortened wire in such a manner that it will neither break prematurely nor fail to break because of too much slack.

Other modifications and changes in the number and arrangement of the parts may be made by those skilled in the art without departing from the nature of the invention, within the scope of what is hereinafter claimed.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

I claim:

1. A wiring pencil including an open-end barrel having a comparatively long, straight inner bore and a nipple having an axially alined restricted bore, a wire-supporting spool journaled at the rear end of the barrel, and means mounted on the nipple adapted to engage and sever a portion of wire.

2. A wiring pencil including an open end barrel having a comparatively long, straight inner bore, said barrel having a front feed nipple including a restricted inner bore axially alined with the barrel-bore, a yoke mounted at the rear open end of the barrel, opposed trunnions on adjoining faces of the yoke, and a wire-supporting spool having a pair of radially extending grooves terminating in central axially arranged bearings for the trunnions.

3. As a new article of manufacture, a wiring tool including a barrel, a yoke mounted at the rear end of the barrel, a wire-supporting spool carried by the yoke, a ferrule carried at the front-end of the barrel, an elongated feed point carried by the ferrule and a resilient wire trained about the spool and passing through the barrel and frictionally feeding through the feed point.

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