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ABRASION TESTING MACHINE

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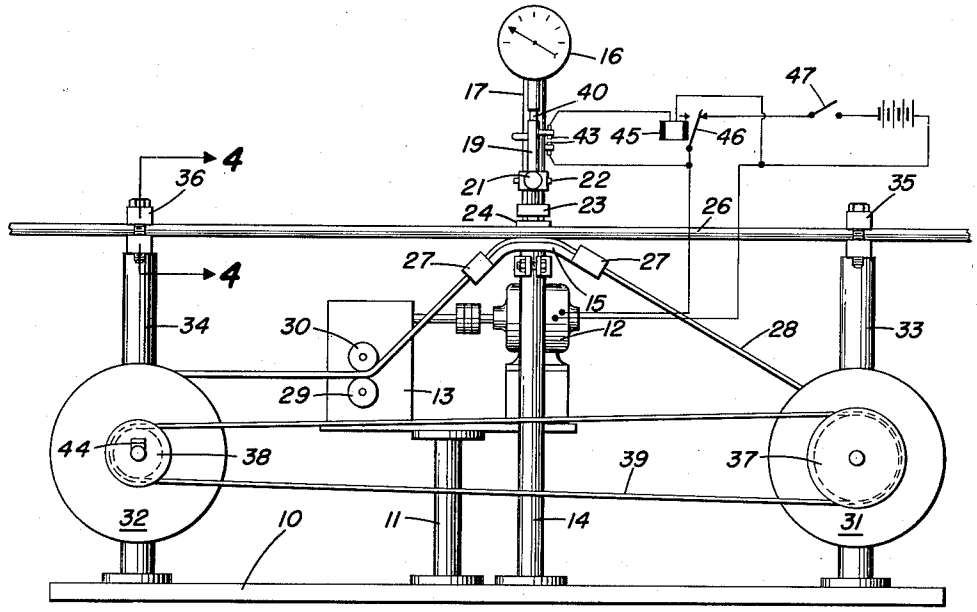


FIG. 1

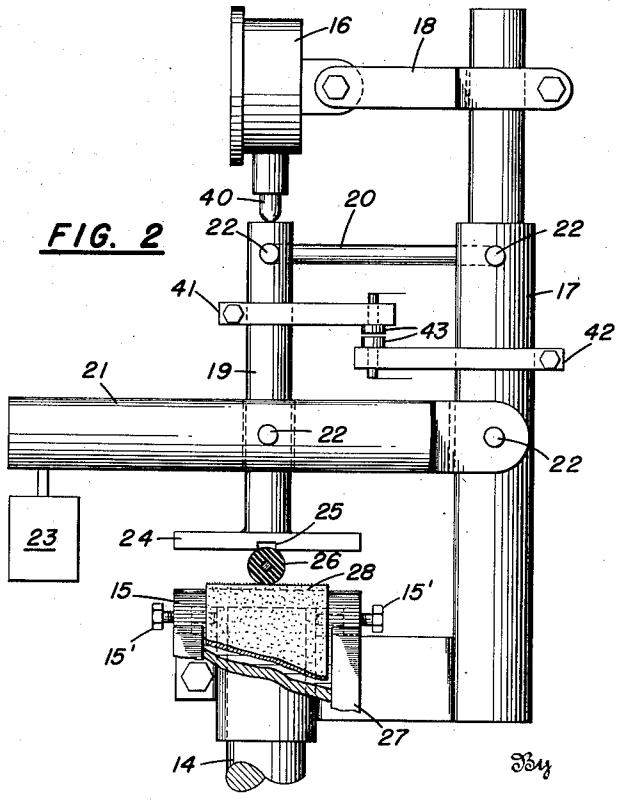


FIG. 2

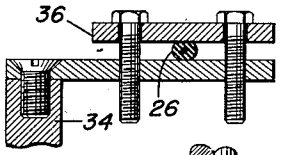


FIG. 4

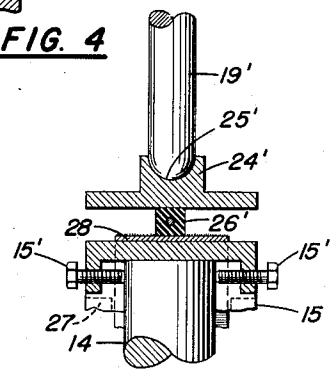


FIG. 3

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ABRASION TESTING MACHINE

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3 Claims. (Cl. 73—7)

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This invention relates to abrasion testing machines and in particular to a machine for testing the resistance to abrasion of the insulation or covering on electric wires and cables.

At present, abrasion testing machines employ abrasive wheels or sharp edges to wear away or penetrate the insulation or covering on cables. It has been found that knife edges rapidly become dull and abrasive wheels become clogged with the material as it is abraded away. In other machines, the load applied to the specimen wire is variable with the tension applied to the wire to hold it or draw it over the abrading surface.

The present invention has for its object to provide a machine in which the load applied to the abrading surface may be held normal and constant at any desired value.

Another object of the invention is to provide a machine in which a new and unused section of an abrading surface may be used for each test.

Another object of the invention is to provide a machine which may be used to abrade either round, rectangular, or other shaped electric cables.

Other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the annexed drawings, which illustrate preferred embodiments, and wherein:

Fig. 1 shows an elevational view of the invention.

Fig. 2 shows a view in elevation of a portion of the invention.

Fig. 3 shows a partial view partly in section of another embodiment of the invention, and

Fig. 4 shows a view in section of a portion of the invention taken on line 4—4 of Fig. 1.

Referring in more particular to the drawing, in Fig. 1, a base 10 has secured to it a support 11 for holding electric motor 12 and reduction gear unit 13. Also secured to base 10 is post 14 having at its upper end a work plate 15 secured by set screws 15' and supporting a dial indicator gauge 16 by means of off-set bracket 17 and adjustable clamp 18, as seen in Fig. 2.

Positioned between the work plate 15 and the gauge 16 is a vertically movable post 19 pivotally connected to off-set bracket 17 by arms 20, 21 and pivot pins 22. Weight 23 is attached to arm 21 and provides downward pressure to post 19.

Post 19 has at its lower end press plate 24 secured to it by welding or other conventional means, and a channel 25 in the press plate 24 serves to center a round electric cable 26.

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In the embodiment shown in Fig. 3, press plate 24' is loosely joined to post 19' by a ball and socket joint 25' in order that other shaped cables 26' may be abraded.

Work plate 15 is adjustable on post 14 by means of set screws 15' and has guides 27 to guide the abrasive strip 28 as it is pulled by rollers 29 and 30 from reel 31 to take up reel 32, which are supported by posts 33 and 34 having clamps 35 and 36 at their upper ends respectively, as shown in detail in Fig. 4.

Reels 31 and 32 have pulleys 37 and 38 attached to their sides and are connected by belt 39. It will be seen that owing to the larger pulley 37 driving the smaller one 38, an amount of slippage is needed in order to apply no more than the proper tension to the abrasive strip 28 as it is wound on the take-up reel 32.

Pin 40 of the gauge 16 rests on the post 19 and actuates the gauge 16 to indicate the amount of insulation abraded from the wire 26 or 26'. A pair of clamps 41 and 42 are fixed to post 19 and bracket 17 respectively and have contacts 43 to complete an electrical circuit when a desired amount of insulation has been worn away.

Set screws 15' may be adjusted in order that the work plate 15 can be positioned on post 14 so that a fresh part of the abrasive strip 28 may be used for each rerun of the strip.

In operation, the wire 26 is held by clamps 35 and 36 and with the rollers 29 and 30 pulling the abrasive strip 28, the number of turns of the take-up reel 32 may be counted or recorded on a counter 44, and the contacts 43 may be in a circuit including a relay 45 to actuate a signal, or to stop the motor 12 by actuating switch 46 in the motor circuit to an open position, as shown in Fig. 1. A control switch 47 is shown in the motor circuit for manual operation.

It should be understood, of course, that the foregoing disclosure relates to only a preferred embodiment (or embodiments) of the invention and that numerous modifications or alterations may be made therein without departing from the spirit and the scope of the invention as set forth in the appended claims.

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.

What is claimed is:

1. An abrasion testing machine for insulated wires comprising a base, a pair of supports for

reels secured thereon, clamping means one on each of said supports adapted to secure a wire therebetween, a reel on each support, a laterally movable anvil secured to said base over which said wire is held, an abrasive tape wound on and between said reels and passing over said anvil under said wire, a motor and reduction gear on said base drivably connected to a pair of friction rollers having said tape drivably positioned therebetween, driving means connecting the one of said reels driven by the movement of said tape therefrom to the other or take-up reel, movable holding means on said base positioned over said anvil adapted to press said wire against said tape on said anvil, tape guiding means on said anvil, means for moving said anvil and said tape-guiding means laterally prior to a test so as to present an unused portion of said tape to said wire for successive tests, indicating means on said base for measuring the movement of said holding means toward said anvil resulting from the abrasion and removal of insulation from said wire, and contact means operable by the resultant movement of said holding means to deenergize said motor when a predetermined amount of insulation has been removed.

2. The device as set forth in claim 1 in which

the driving means connecting the driven reel to the take-up reel comprises a pair of pulleys secured one to each of said reels, and a slippable belt operable on said pulleys.

3. The device as set forth in claim 2 in which the pulley secured to the driven reel is relatively larger than the pulley secured to the take-up reel.

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