F. ARONSON.

WIRE TESTER.

APPLICATION FILED FEB. 6, 1912.

1,057,210. Patented Mar. 25, 1913.

Fig. 1.

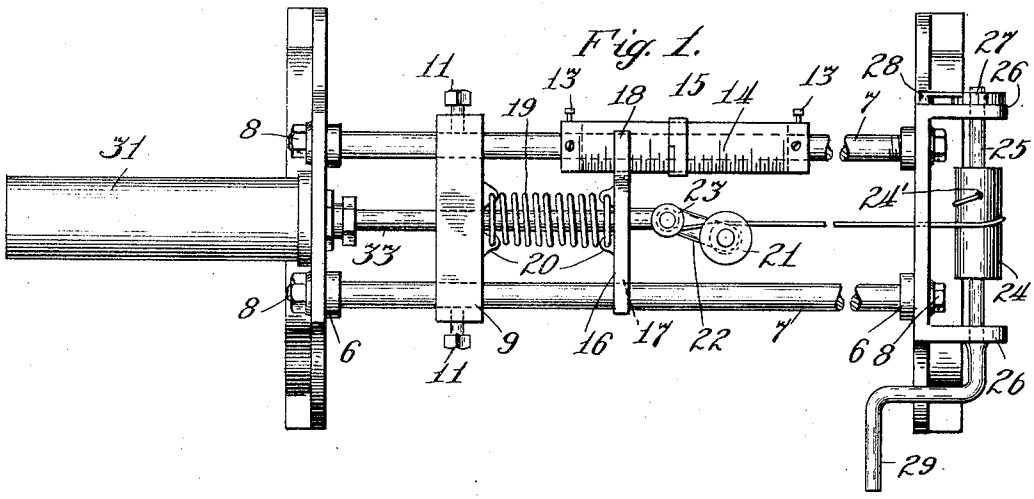


Fig. 2.

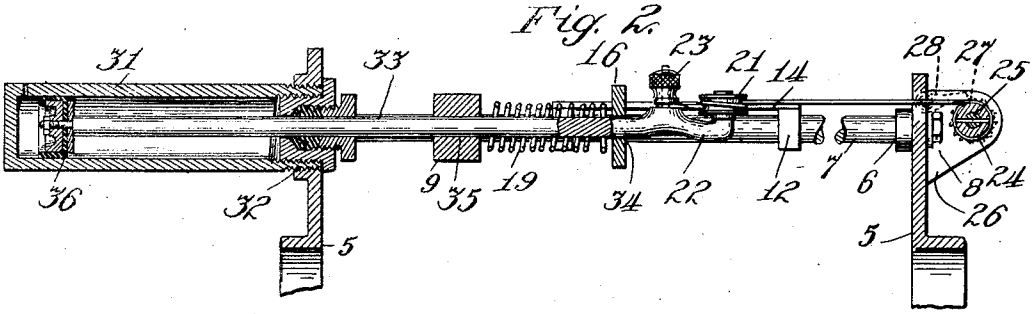


Fig. 3.

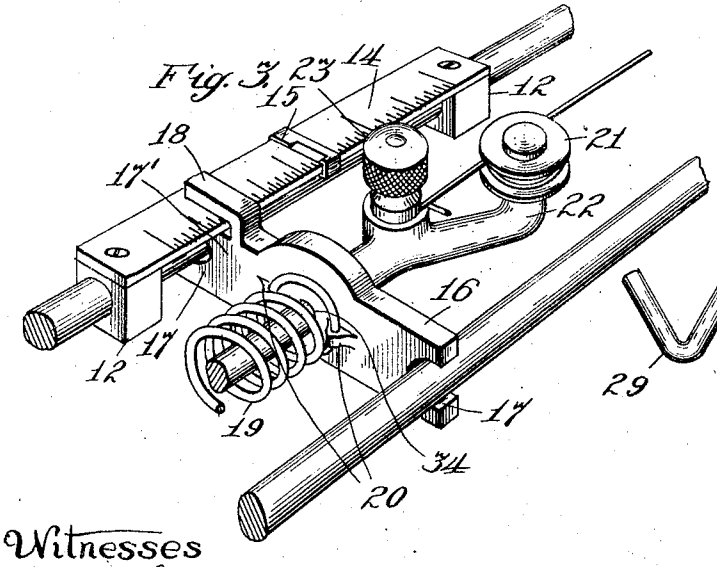
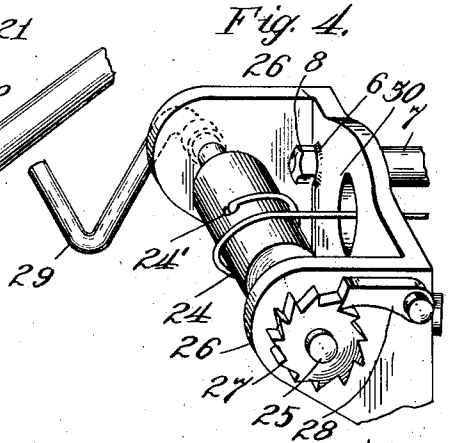


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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WIRE-TESTER.

1,057,210. Specification of Letters Patent. Patented Mar. 25, 1913.

Application filed February 6, 1912. Serial No. 675,725.

To all whom it may concern:

Be it known that I, FRANK ARONSON, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Wire-Testers, of which the following is a specification.

My invention relates to improvements in wire testers, and more particularly to devices for ascertaining the tensile strength of wires.

One of the objects of my invention is to provide a simple device wherein the indication may be read with maximum ease and accuracy.

Another object of my invention is to provide for ready adjustment of the parts, and generally to improve the structure of devices of the character described, so that they may be cheaply constructed, and may be durable and convenient in use.

Other objects of my invention will become apparent to those skilled in the art from a consideration of the following description taken in conjunction with the accompanying drawing, wherein—

Figure 1 is a plan view of a wire tester constructed in accordance with my invention; Fig. 2 is a longitudinal central section thereof; Fig. 3 is an enlarged, fragmentary, perspective view of the slide and associated parts; and Fig. 4 is a perspective view of the take-up cylinder.

In the drawing, 5—5 indicate end frames, which may be of any suitable construction, each end frame having perforations 6 to receive the ends of two parallel guide-rails 7—7, the rails and frames being secured together as by nuts 8 engaging the screw-threaded ends of the rails. Upon these rails I mount, preferably adjustably, the indicating parts of the device.

9 indicates a head block having near its ends perforations so that it may be placed upon the rails and secured in any desired position between the end frames by set screws 11. Upon one of the rails, a scale member is mounted, the scale member herein shown comprising perforated blocks 12, provided with set screws 13 and connected by a scale beam 14, graduated in a suitable manner. Upon the graduated beam 14 I mount a marker 15 adapted to be moved over the scale by a slide to be described, said marker 15 embracing the scale 14 to be self-retained, but slidable, on the scale. The slide 16 is shaped to be guided between the rails 7—7, its ends being notched as at 17 to embrace the rails. The end portion 17′ of the slide, between the rail and scale beam, and the finger 18, extending from the slide above the scale, constitute means for coaction with the marker to slide it over the scale 14 when slide member 16 is moved. The slide 16 is intended for movement along the rails through the agency of the wire to be tested and against the resistance of a spring. To this end, I provide between the head block and the slide a coiled spring 19, secured to the block and slide by lugs 20, and upon the other side of the slide I arrange suitable wire-engaging means. The wire-engaging means may take the form of a cleat 21, large enough in diameter to prevent breakage of the wire due to its being curled around the cleat, and mounted upon an arm 22 which projects forwardly from the slide. Upon the arm 22, somewhat in rear of the cleat, a thumb nut 23 may be provided firmly to grip the wire as it passes backwardly from the cleat. Preferably, the end of the arm 22 in front of the portion on which the thumb nut is mounted is deflected laterally and depressed to bring the wire-receiving periphery of the cleat in a line between the thumb nut and a wire-pulling means to be described.

Any means may be provided for pulling the wire, the construction shown in the drawing involving a drum or wire-take-up cylinder 24, of suitable diameter, having a wire-receiving perforation 24′ and mounted upon the shaft 25 which has bearing in lugs 26 on the end frame 5. At one end the shaft 25 has mounted thereon a ratchet 27 with which a gravity pawl 28 is adapted to engage, and on the other end the shaft 25 is provided with a handle 29 by which the drum may be rotated. The end frame is provided with a perforation 30 for passage of a wire therethrough from the slide to the drum, so that a wire which has been secured to the slide 16 by means of cleat 21 and thumb nut 23 may be drawn outwardly by rotation of the cylinder to cause movement of the slide away from the block 9 against the resistance of spring 19.

To prevent jar from too rapid return of the slide upon rupture of the wire to be tested, I provide a dash pot 31 secured in

a suitable perforation 32 in the end frame, and having its piston suitably connected for movement with the slide. Thus, the arm 22 may be provided with a stem 33, passing through and secured in a central perforation 34 in the slide, extending thence backwardly within the spring 19 and through a perforation 35 in the head block 9, to the interior of the dash pot where its end has the piston cup 36 connected thereto.

In the use of a device constructed as above described, the wire to be tested is inserted through perforation 24', wound around the cylinder 24, thence passed through perforation 30 in the end frame, wound once around cleat 21, and engaged under thumb nut 23. The handle 29 is now operated to turn the cylinder, so pulling the wire and, through it, the slide against the resistance of the spring, backward rotation of the cylinder due to the pull of the spring being prevented by engagement of pawl 28 upon ratchet 27. The resistance of the spring, increasing progressively as the slide is moved forwardly, finally becomes great enough to overcome the tensile strength of the wire, which therefore ruptures. The spring 19 now operates to draw the slide 9 back to normal position, such movement being retarded by the dash pot acting through stem 33. The marker thus stands in the position on the scale to which it has been pushed by the portion 17' of the slide and the finger 18, so leaving an indication of the tensile strength of the wire after the slide has returned to normal position. When the indication is read, the marker may be slid back on the scale into contact with finger 19 of the slide and the broken strands of wire removed from cleat 21 and take-up cylinder 24, leaving the device ready for use again.

It will be observed that the device herein shown is susceptible of easy adjustment, the head block 9 being adjustable relatively to the adjacent end frame 5, and the scale being in turn adjustable relatively to the head block so that the device may readily be set for work of various kinds.

While I have herein described in some detail a specific embodiment of my invention, it will be apparent to those skilled in the art that changes may be made therein without departure from the spirit of the invention and within the scope of the appended claims.

What I claim is:

1. In a wire tester, a frame including a pair of guide rails, a scale provided with separated rail-engaging parts and a graduated member therebetween, said rail-engaging parts being adjustable along the rail, a member movable along the rails between said rail-engaging parts of the scale by a wire to be tested, a spring resisting such movements, and a marker carried by said adjustable scale movable with respect to the scale by said member to indicate on the scale the extent of forward movement of said movable member.

2. In a wire tester, a frame including guide rails, a member movable along said rails, a part stationary with respect to said frame mounted upon said rails, a spring secured between said movable member and said stationary part, means upon the frame to engage a wire and through it move the movable member against the resistance of the spring, a scale upon one of said guide rails, said movable member provided with an extension for coaction with said scale, and a marker movable along said scale by said extension of the movable member, said scale and stationary spring-engaging part being adjustable along the rail.

3. In a wire tester, a frame including guide rails, a slide movable along the rails, a head block adjustable upon the rails, a spring between the slide and block normally holding the slide a given distance from the head block, means upon the frame to engage and pull a wire, means upon the slide to engage the wire for movement of the slide by the wire against the resistance of the spring, and a scale, adjustable upon one of the rails and associated with the slide to indicate movement of the slide beyond the normal position thereof determined by the adjustment of the head block.

4. In a wire tester, end frames, rails extending between said frames, a spring, a slide on the rails movable through the agency of the wire to be tested against the resistance of the spring and returnable by the spring upon rupture of the wire, means mounted upon the exterior of one of said end frames to move said slide through the agency of the wire to be tested, and retarding means upon the exterior of the other of said end frames associated with said slide to check the return movement thereof.

5. In a wire tester, a frame including parallel guide rails, a slide movable upon the rails through the agency of the wire to be tested, a coiled spring resisting such movement, said spring adapted to return the slide upon rupture of the wire, a stem attached to the slide and extending back within the spring, and a dash pot mounted on the frame the piston whereof is associated with the free end of the stem to retard the spring-return of said slide.

6. In a wire tester, a frame comprising end frames and parallel connecting guide rails, said end frames being perforated between said rails; a cylinder upon one frame, a dash pot upon the opposite frame; a slide movable upon the rails; a spring associated with the slide; wire engaging means upon the slide; and means to rotate said cylinder, whereby a wire may be wound upon said

cylinder, extended through the perforation in the end frame, and secured to the slide to move the slide against the resistance of the spring; the stem of said dash pot being extended through the perforation in the adjacent end frame and secured to the slide.

7. In a wire tester, parallel guide rods, a slide having end portions for engagement respectively above and below said guide rods, a scale mounted upon one of said guide rods above one of said end portions of the slide, said slide provided with an extension above the scale, and a marker on the scale adapted to be engaged by said end portion and extension.

8. In a wire tester, a frame including end frames and parallel connecting rods, a movable member upon said rails, a stem extending through and secured to said movable member, wire engaging means upon one end of said stem, return retarding means on the other end of said stem, means to indicate movement of said movable member through the agency of a wire engaged by said wire-engaging means, and a spring resisting said movement and tending to return the member extending backwardly from a point of connection to said movable member, around said stem, to a point of connection to a part stationary with respect to said frame.

9. In a wire tester, end frames and parallel guide rails therebetween, a head block adjustable upon said guide rails and having a central perforation, a movable member upon said guide rails having a central perforation, the end frame beyond said head block having a perforation registering with the perforations in the block and movable member, a stem member extending loosely through the perforations of the end frame and the head block and secured in the perforation in the movable member, a spring surrounding said stem between said head block and movable member, and secured to each thereof, wire engaging means upon the inner end of said stem and retarding means associated with the other end of said stem.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

FRANK ARONSON.

In the presence of—
W. LINN ALLEN,
MARY F. ALLEN.