

(No Model.)

C. J. H. WOODBURY.

ELECTRIC TESTING APPARATUS.

No. 274,074.

Patented Mar. 13, 1883.

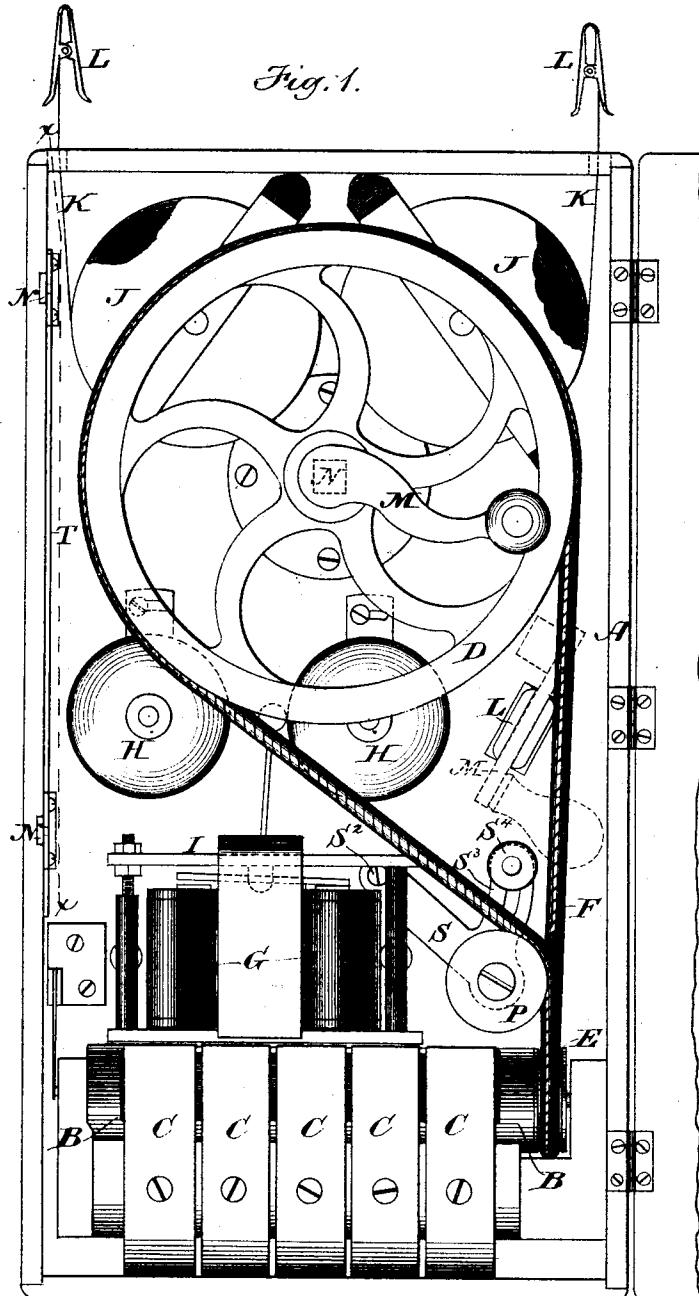


Fig. 1.

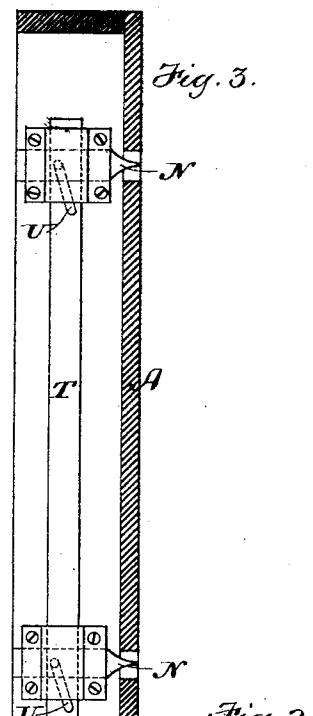


Fig. 2.

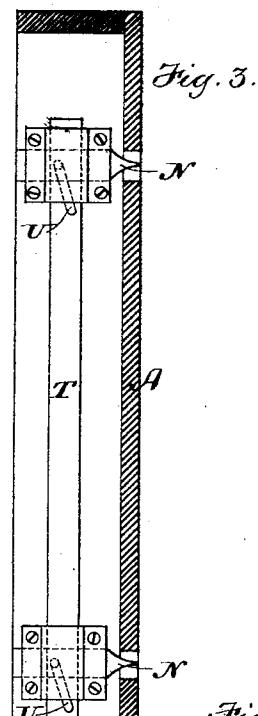


Fig. 3.

WITNESSES.

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CHARLES J. H. WOODBURY, OF LYNN, MASSACHUSETTS.

ELECTRIC TESTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 274,074, dated March 18, 1883.

Application filed November 20, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. H. WOODBURY, of Lynn, in the county of Essex and State of Massachusetts, have invented certain 5 Improvements in Electrical Testing Apparatus, of which the following is a specification.

This invention has for its object to provide a convenient, compact, and portable instrument for the purpose of finding the presence 10 or absence of earth contacts or other conductors in electric-light systems.

The invention consists in the details of construction and arrangement of parts hereinafter described, whereby an instrument is produced 15 of the suitable capacity and of such compact form as to enable it to be conveniently carried about by the operator engaged in making tests, as I will now proceed to describe and claim.

Of the accompanying drawings, forming a 20 part of this specification, Figure 1 represents a top plan view of an instrument or apparatus embodying my improvements. Fig. 2 represents a rear or bottom view of one end of the same; and Fig. 3 represents a section on line 25 *xx*, Fig. 1.

The same letters of reference indicate the same parts in all the figures.

In the drawings, A represents a box or case containing the mechanism to be described, said 30 box being in the present instance four inches wide, one inch deep, and eight inches long. To the bottom of the case is attached a magneto-generator composed of a Siemens armature, B, placed between the poles of a battery 35 of permanent magnets, C.

D represents a grooved driving-wheel journaled in the bottom of the box, and arranged 40 in a plane substantially at right angles to the plane of the pulley E of the Siemens armature, and connected to the latter by a quarter-turn belt, F, which passes over an adjustable binder-pulley, P, whereby the belt is guided 45 and kept under the proper degree of tension, said pulley being journaled on a stud supported by a plate, S, which is pivoted at *S*² to the bottom of the box, and has a slotted arm, *S*³, which is clamped against the bottom of the box by a nut, *S*⁴, on a stem projecting upwardly through the slot in the arm *S*³.

50 The generator has no commutator, and the alternating current generated by the rotation

of the armature excites an electro-magnet, G, which vibrates a striker between two small gong-bells, H H, in the usual manner.

I represents a polarizer over the electro-magnet G to remove any residual magnetism in the electro-magnets.

In the external circuit are two reels, J J, journaled on studs suitably attached to the bottom of the box, and each wound with a suitable flexible conductor, K, preferably steel tape, each conductor having a spring-clamp, L, at its outer end. The conductors are in the present instance each about forty feet long.

The driving-pulley is rotated by a detachable crank, M, fitted to a square dowel or shank, N, on said pulley. The reels J J have similar dowels or shanks, K K, projecting into openings in the bottom of the box, so that the same crank can be employed to rotate the reels for 65 the purpose of winding up the conductors.

When the instrument is not in use the crank is held in the box by a spring-clip, L, attached to the bottom of the box, the position of the crank, when so held, being indicated by 70 dotted lines in Fig. 1.

N N represent spurs adapted to slide through openings in the bottom of the box and prevent the latter from slipping easily on the surface on which it rests when in use. Said spurs are 80 projected and retracted by means of a bar, T, adapted to slide lengthwise in guides attached to the side of the box, and provided with diagonal slots U, into which project studs on the bar T. Any desired number of spurs N may 85 be employed.

The operation of the instrument is based upon the principle that when the external circuit is electrically complete within a certain electrical resistance the magneto can generate 90 an alternating current of electricity, which causes the bells to ring.

One of the chief uses of its practical application has been to ascertain the presence of ground-conductors in electric-lighting systems, 95 the method of use being to attach the spring-clamp at the end of one of the flexible conductors to the system and the spring-clamp at the end of the other conductor to some good earth-conductor. If there is any other conductor of electricity connecting the earth with the electric-light system, the circuit will be 100

completed, and on revolving the armature an electric current will be generated and the bells will ring. On the other hand, the bells will not ring if there is no connection which permits the generation of a current.

It will be seen that the described arrangement of the driving-pulley with relation to the pulley of the Siemens armature, involving a quarter-turn in the connecting-belt, enables the apparatus to be contained in a very shallow box. The guide-pulley P causes the belt to run evenly on the pulley E of the armature, and the adjustability of said guide-pulley enables the belt to be kept tight. The detachability of the crank M and the provision of the spring-clip or holder within the box are also factors which contribute to the compactness of arrangement when the instrument is not in use. The adaptation of the same key to rotate the reels as well as the driving-pulley enhances the convenience of the apparatus. The flexible conductors enable the apparatus to be connected to points at considerable distances apart, and the reels enable the conductors to be quickly reduced to compact form.

If desired, the spurs N N may be projected and retracted singly, each by a cam or other suitable device.

It will be seen that the spurs N prevent the apparatus from slipping about, and thus accidentally ringing the bell when the apparatus is in use. The lateral pressure exerted on the crank would be liable to move the apparatus laterally and cause the hammer to strike the bells, thus misleading the operator and leading him to suppose that the bell was rung electrically.

I claim—

1. The improved electrical testing apparatus composed of the shallow box or case A, the magneto-generator having its driving-pulley arranged in a plane substantially parallel with the bottom or supporting surface of the box, and substantially at right angles with the plane of the driven armature-pulley, and the journaled reels J J, arranged in a plane substantially parallel with the bottom of the box, and provided with the flexible conductors H H, as set forth.

2. The improved electrical testing apparatus composed of the shallow box or case A, the magneto-generator having its driving-pulley arranged in a plane substantially parallel with the bottom or supporting surface of the box, and provided with a square shank or dowel on its arbor, the journaled conductor-supporting reels J J, arranged in a plane substantially parallel with the bottom of the box, and provided with square dowels projecting into holes in the bottom of the casing, and a removable crank adapted to fit either of said dowels, and thus operate either the generator or the reels, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 18th day of November, 1882.

CHARLES J. H. WOODBURY.

Witnesses:

JOHN M. TUOHAY,
C. F. BROWN.