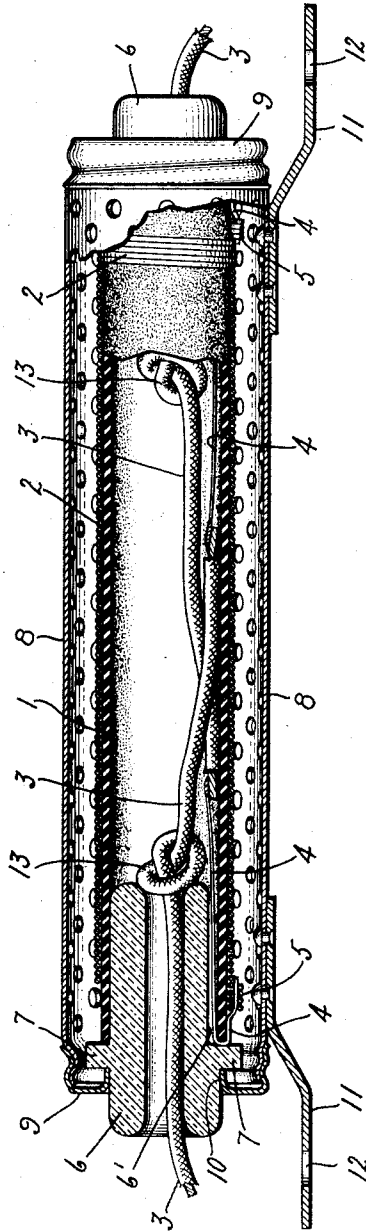


W. J. LLOYD.
RESISTANCE UNIT.
APPLICATION FILED AUG. 6, 1910.

1,011,825.

Patented Dec. 12, 1911.



Witnesses:

George H. Tilden
J. Ellis

Inventor:

William J. Lloyd,

by *Alfred H. Davis*
His Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM J. LLOYD, OF LYNN, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

RESISTANCE UNIT.

1,011,825.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed August 6, 1910. Serial No. 575,964.

To all whom it may concern:

Be it known that I, WILLIAM J. LLOYD, a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Resistance Units, of which the following is a specification.

My invention relates to a resistance unit particularly adapted for use in electric meters.

In electric meter construction compactness and light weight are highly desirable features, and in fact are frequently essential to the commercial success of measuring instruments, but these characteristics are incorporated with difficulty in resistance units by reason of the fact that they are usually diametrically opposed to good heat radiation and good insulation.

I propose by my invention to design a unit that is characterized both by its compactness and light weight and its good heat radiation and insulation.

Further advantages of my invention consist in the construction and assembly of a resistance unit in such a manner that it is inexpensive to manufacture and easily assembled or disassembled, and is rigid in construction.

For a better understanding of the novelty and advantages of my invention, reference may be had to the accompanying drawing and the description of the same.

The drawing shows my novel resistance unit partly in section and partly in elevation.

A tube 1, which may be of any suitable insulating material, such as fiber, has coiled therearound resistance wire 2, the two ends of this resistance being electrically connected, respectively, to flexible conductors 3, 3 by means of two strips 4, 4 of a suitable conducting material. These strips 4, 4 are fastened, respectively, to the two ends of resistance 2 at 5, 5 in any well known manner, and passing around the end surfaces of the tube 1 to the interior thereof are soldered to the ends of the conductors 3, 3. The tube 1 is mounted upon two bushings 6, 6 of a suitable insulating material, such as porcelain, with its end surfaces resting against shoulders 7 (only one of which is visible in the drawing) integrally formed on the outer surfaces of said bushings. The conductors 3, 3 pass into the interior of the

tube 1 through the central longitudinal openings of bushings 6, 6 and these openings have flaring or bell-shaped mouths so as not to abrade the insulation of said conductors. On the outer surfaces of bushings 6, 6 are formed longitudinal serrations 6' (only one of which is shown) extending backwardly from shoulders 7, to the ends of the bushings for the passage therethrough of conducting strips 4, 4 to the interior of the tube. An outer casing 8, preferably perforated to permit of ventilation, surrounds the resistance tube 1 and is slightly longer and of a larger diameter than the same but is maintained concentric therewith by means of suitable heads both of which are preferably removable, such as the screw heads 9, 9 which screw on the ends of said casing and have central openings for fitting snugly over the outer ends of bushings 6, 6, as shown. Around the circumferences of these central openings are formed integrally therewith sleeves 10 (only one of which is visible) which frictionally engage with shoulders 7 when the heads are screwed on casing 8, the bushings 6, 6 thereby being held securely in position with their shoulders 7 resting against the ends of the tube 1.

The whole unit is supported by bent arms 11 which are secured to the casing 8 by rivets, as shown, and at their free ends have holes 12 in order that they may be secured to the meter framework. Knots 13 are formed in the conductors 3, 3 inside the tube in such a manner that they cannot pass through the openings in bushings 6, 6 but rest against the inner end surfaces of said bushings, thereby preventing mechanical strain upon the soldered joints between conductors 3, 3 and strips 4, 4.

To disassemble this resistance unit, it is only necessary to unscrew one head from the casing; the casing, being larger in diameter than the tube and bushings, will pass longitudinally over them. After the heads are removed, the bushings 6, 6 may be taken out of the tube and access had to the inner part of the latter.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. A resistance unit comprising an insulating tube having resistance wire coiled therearound, an insulating bushing in each end of said tube for supporting the same, an outer perforated casing of larger diam-

eter than said tube, and means for holding said casing concentric therewith comprising heads shaped to fit the outer surface of said bushings, and removably secured to the ends of said outer casing.

2. A resistance unit comprising an insulating tube having resistance wire coiled therearound, an insulating bushing in each end of said tube for supporting the same having a shoulder of larger diameter than said tube, and an outer perforated casing held concentric with said tube by means of heads removably secured to the ends of said casing, said heads frictionally engaging with said shoulders and locking said bushings in position.

3. A resistance unit comprising an insulating tube having resistance wire coiled therearound, an insulating bushing in each end of said tube for supporting the same having a shoulder of larger diameter than said tube, an outer cylindrical perforated casing held concentric with said tube by means of screw heads screwing on the ends of said casing and frictionally engaging with said shoulders so as to lock said bushings in position, and flexible conductors for passing through said bushings to the interior of said tube and having knots formed

therein resting against the inner end surfaces of said bushings for the purpose set forth.

4. A resistance unit comprising an insulating tube having resistance wire coiled therearound, an insulating bushing in each end of said tube for supporting the same having a shoulder of larger diameter than said tube, an outer cylindrical perforated casing held concentric with said tube by means of screw heads screwing on the ends of said casing and frictionally engaging with said shoulders so as to lock said bushings in position, flexible conducting strips secured to said resistance terminals and passing around the end surfaces of said tube to the interior thereof through serrations on the outer surfaces of said bushings, and flexible conductors passing through said bushings for connecting on the ends of said strips and having knots formed therein resting against the inner ends of said bushings.

In witness whereof, I have hereunto set my hand this fourth day of August, 1910.

WILLIAM J. LLOYD.

Witnesses:

DUGALD MCK. MCKILLOP,
CHARLES A. BARNARD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."