

No. 611,971.

Patented Oct. 4, 1898.

H. LUTZ.

ELECTRICAL WIREMAN'S COMBINED GAGE AND CALCULATOR.

(Application filed Feb. 28, 1898.)

(No Model.)

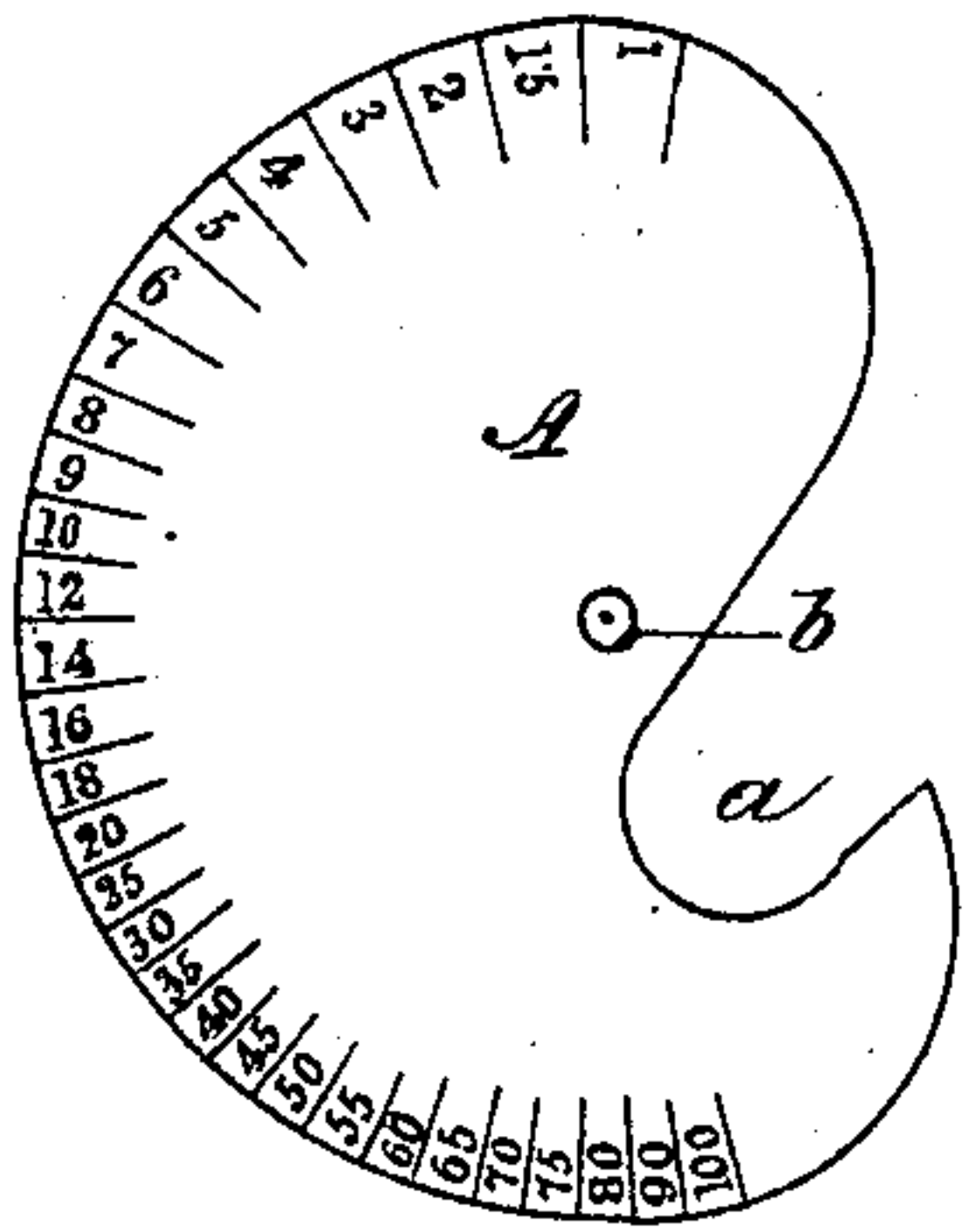


Fig. 1.

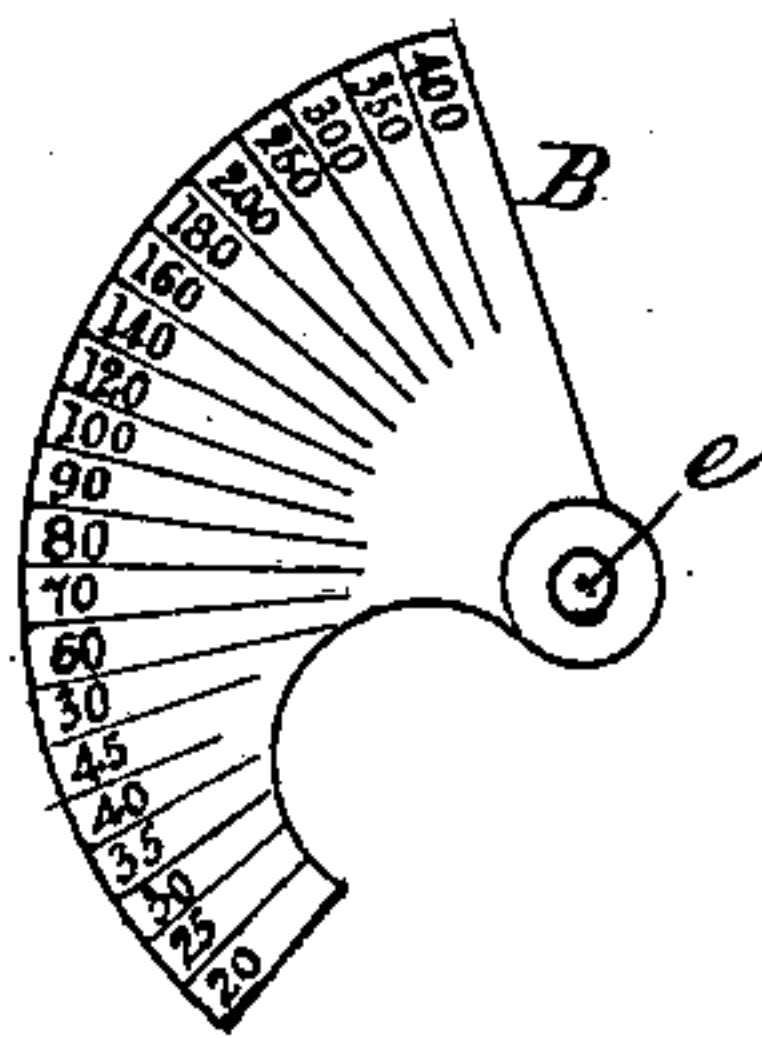


Fig. 2.

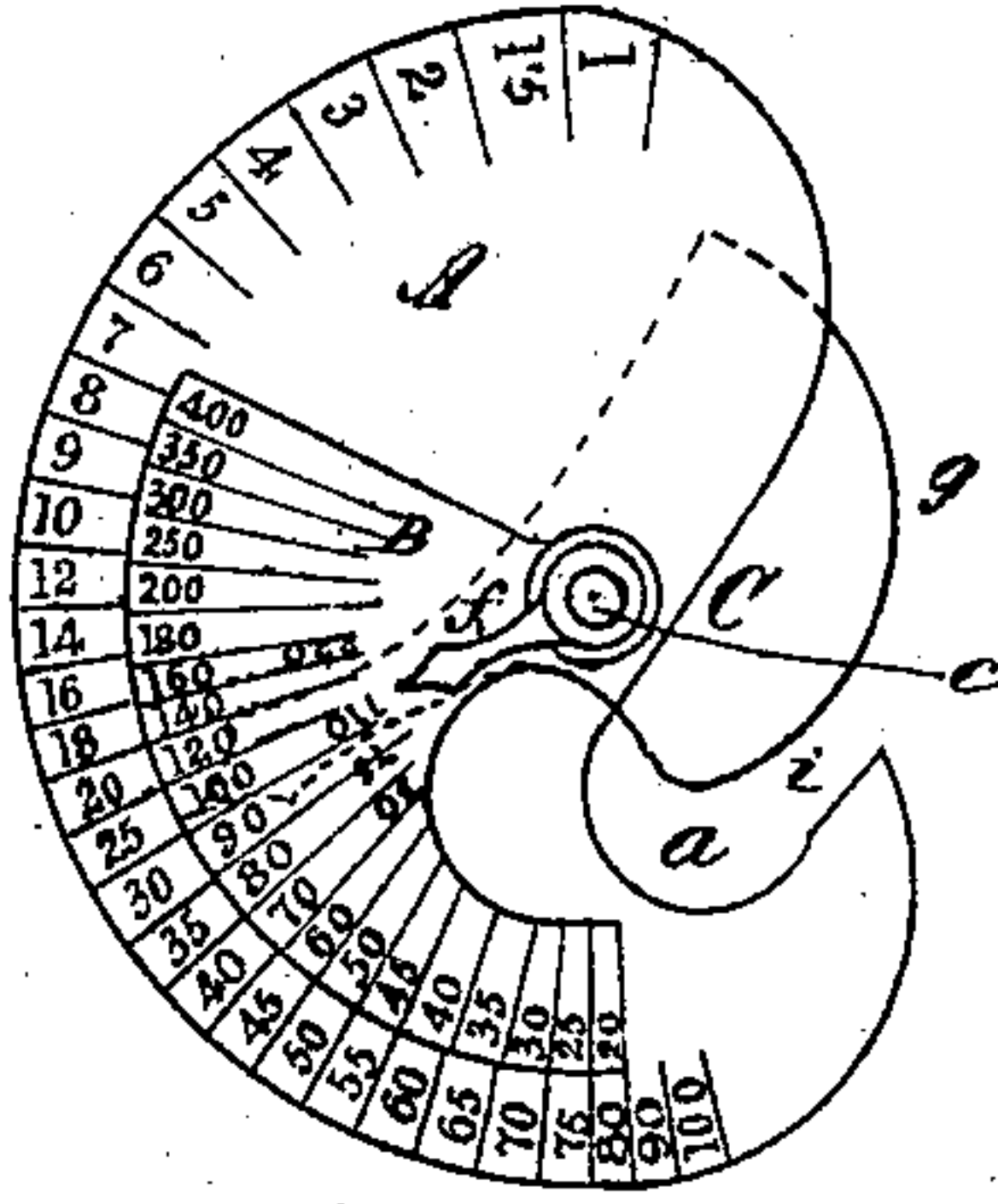


Fig. 5.

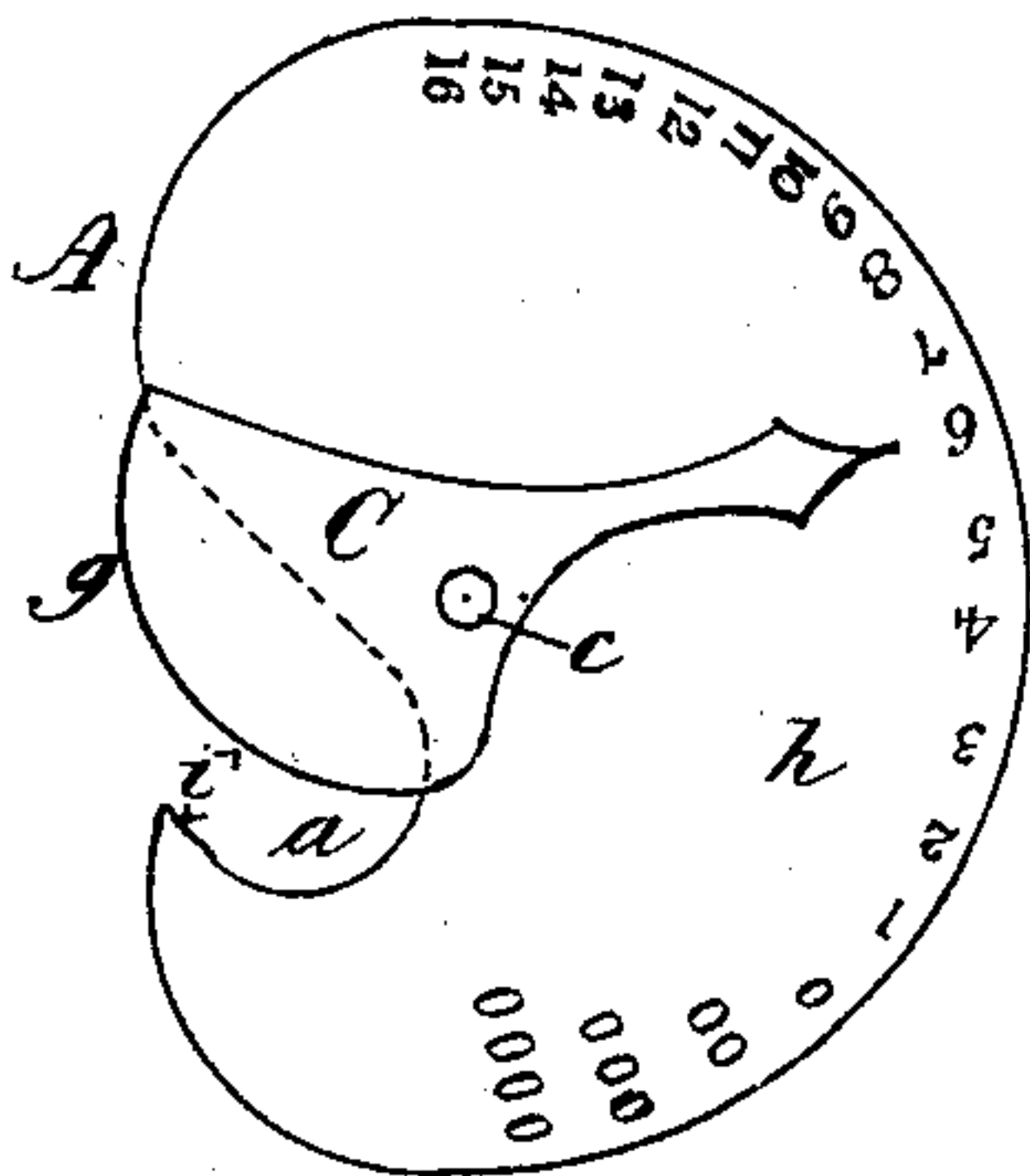


Fig. 6.



Fig. 3.

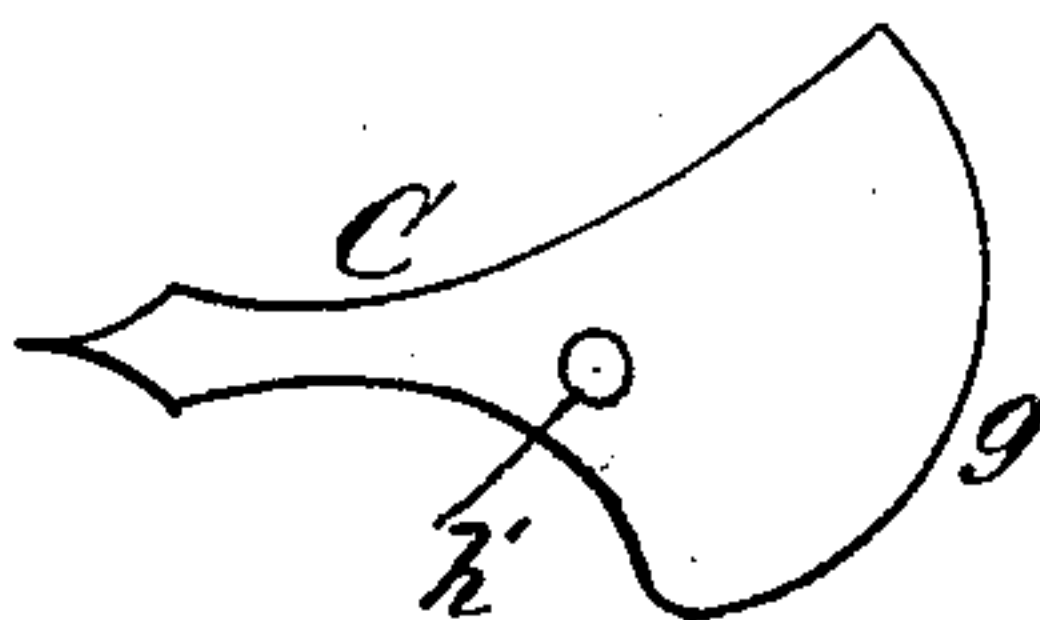


Fig. 4.

Witnesses
John Gadsby
C. Flynn

Inventor

Herbert Lutz
By *W. Bruce*
Atty

UNITED STATES PATENT OFFICE.

HERBERT LUTZ, OF HAMILTON, CANADA.

ELECTRICAL WIREMAN'S COMBINED GAGE AND CALCULATOR.

SPECIFICATION forming part of Letters Patent No. 611,971, dated October 4, 1898.

Application filed February 28, 1898. Serial No. 671,900. (No model.)

To all whom it may concern:

Be it known that I, HERBERT LUTZ, a citizen of the Dominion of Canada, residing at the city of Hamilton, in the county of Wentworth, in the Province of Ontario, Canada, have invented a certain new and useful Electrical Wireman's Combined Gage and Calculator; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same.

The device relates to a very handy and convenient pocket instrument for instantly calculating from a given voltage the required amperes for a certain number of feet to wire a building for electric light and give the correct gage of the wire to be used for conveying the electricity.

The device consists, first, of an oval-shaped metal plate about two and a half inches long and one and three-quarters of an inch wide, having stamped or engraved on the upper side a series of lines from the outer edge inward at unequal distances apart and the spaces between the lines numbered from "1" to "100," which indicate amperes; second, a smaller movable plate pivoted to the larger one and on the upper side having engraved thereon a series of lines at equal distances apart and the spaces being numbered from "20" to "400," which indicate running-foot measure, and in rear of the above numbers are a series of figures—viz., "50," "75," "110," and "220"—which indicate voltages; third, a pointer or indicator is attached on the front face to the pivot-pin, which holds the plates together and is for the purpose of pointing to the voltage-number required; fourth, at the rear end of the large plate is pivoted to the central pivot-pin a hand or indicator the rear portion of which is formed eccentric-shaped, and the outer margin of the back of the large plate has a series of figures from "16" to "0000," which indicate the sizes of wire. As the pointer points to the figures on the margin the gage shows the number or size of the wire required for a certain given number of amperes and feet.

A circular-shaped recess is cut out of the main plate, and the eccentric portion of the indicator, with the recess, forms the wire-gage and indicates the required size for a cer-

tain number of feet and amperes from a given voltage.

Reference being made to the accompanying drawings, Figure 1 represents the face of the large or main plate. Fig. 2 represents a plan view of the smaller plate detached from the large one. Fig. 3 represents a plan view of the upper pointer or indicator detached. Fig. 4 represents the gage-pointer detached. Fig. 5 represents all the parts united together. Fig. 6 represents the back of the plate with gage-numbers and gage-indicator.

In the drawings, A represents the main plate of a somewhat irregular shape, preferably of steel, and having a half-circular recess *a* cut out of the rear edge of it, the use of which will be shown hereinafter. The margin of the upper face of said plate has a series of lines cut, engraved, or stamped upon it, dividing it into a number of spaces, indicated from the top from "1" to "100," which figures represent amperes.

b is a small opening in the rear portion of the said plate to receive the pivot-pin when the smaller irregular-shaped steel plate B is pivoted to the large plate A by a pivot-pin C. The outer curved margin of the said plate B has also a series of lines cut, engraved, or stamped upon it, forming spaces of about one-eighth of an inch between them, which are marked with figures from "20" on the lower end, increasing by fives to "100" and from "100" increasing by twenties to "200," and from "200" increasing by fifties to "400." These figures represent the running feet to the center of electrical distribution. *e* is a small opening in said plate for the pivot-pin *d* to pass through. There are a series of figures cut or stamped on the inner portion of the said plate B—viz., "50," "75," "110," and "220"—which represent standard voltages. The two said plates A and B are pivoted together snugly by a pivot-pin *c*, but easy enough to allow the top plate B to move on the large plate A.

f is the small pointer or indicator attached to the pivot-pin *c* on the front or upper side of the plates A and B and is for the purpose of setting the said pointer at the figures "50," "75," "110," or "220," marked as voltages on the smaller top plate B.

C is the large pointer or indicator fastened rigidly to the opposite or rear end of the pin *c* and moves correspondingly with the hand or pointer *f* on the front dial-plates. *h'* is a hole through it for the passage of the pin *c* to hold it, and the rear portion is constructed with an eccentric-shaped margin *g* to act in conjunction with the recess *a* in the large plate A to indicate the size of wire required for a given number of feet, amperes, and volts.

The rear side *h* of the plate A has figures cut upon its margin from "16" to "0000," as shown at Fig. 6, which figures represent the size number of wire that the wire-gage portion *i* (the open space between the eccentric *g* and the margin of the recess *a* of the plate A) indicates.

The practical operation of the device is as follows: Suppose the problem to solve is: Given a certain voltage and required amperes for a known number of feet to wire a building for electric light with a limited loss, the question is what size of wire should be used and the same to be indicated instantly by a simple instrument without going into long calculations. For example, set the pointer *f* at number "110" on the inner side of the plate B, which indicates volts or pressure. Then turn the said plate B until the number "40" on it (feet) comes in alignment with the number "60" (amperes) on the face of large plate A. Then reverse the instrument and notice that the hand or indicator C on the under side is pointing to the figure "6," which indicates size number of wire to be used for the said one hundred and ten volts forty feet from center of distribution and sixty amperes, the gage *i* (the space between the eccentric end *g* of the pointer C and the recessed end of the plate A) showing the standard gage.

Having thus described my device and its advantages, what I claim as my invention, and desire to secure by Letters Patent, is—

1. A combined wireman's gage and calculator, consisting of a plate upon the face of

which is marked with a series of numbered spaces, indicating amperes, a smaller plate pivoted to the large one, having a series of marginal numbered spaces indicating running feet, and interior figures representing voltages, a pointer or indicator attached to the pivot-pin to point to numbered voltages on the smaller plate, a corresponding pointer or gage-indicator attached to the rear or opposite end of the pivot-pin, having its outer end formed eccentric-shaped, a recess cut out of the rear side of the large plate for the eccentric to coöperate with to form a wire-gage, the size number of which is indicated by the said indicator pointing to marginal figures cut on the rear margin of the large plate, all constructed substantially as and for the purpose specified.

2. The combination of the plate A, provided with numbered marginal spaces indicating amperes, and a recess *a*, cut out of it for one-half of a gage, the plate B, having numbered marginal spaces indicating running feet, and also numbers engraved on the said plate indicating voltages, the two plates A and B being pivoted together, an indicator or pointer *f*, attached to the pivot-pin *c*, to point to voltages, and a second indicator or pointer with an eccentric end, attached to the pivot-pin *c*, on the under side of the plate A, and made to point correspondingly with the top pointer *f*, to marginal figures on the rear side of the plate to give the desired number of wire, while the space *i*, between the eccentric *g* and the point *h*, on the recess *a*, gives the standard gage of wire, required without calculation, substantially as and for the purpose specified.

Dated at Hamilton, Ontario, this 12th day of February, 1898.

HERBERT LUTZ.

In presence of—

W. BRUCE,

FRED. CLARK.