R. T. YINGER.

PRINTING APPARATUS.

APPLICATION FILED MAR. 4, 1915.

1,285,884.

Patented Nov. 26, 1918.

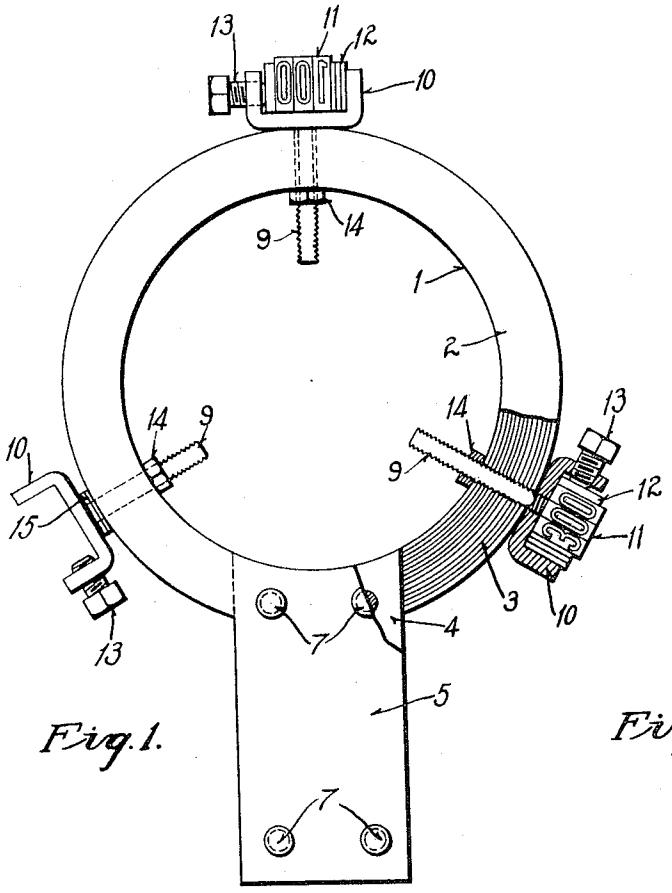

Fig. 1.

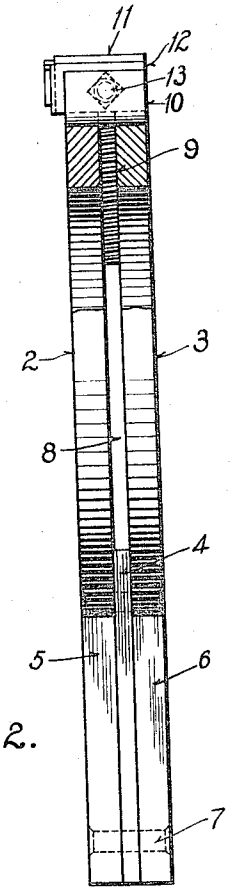

Fig. 2.

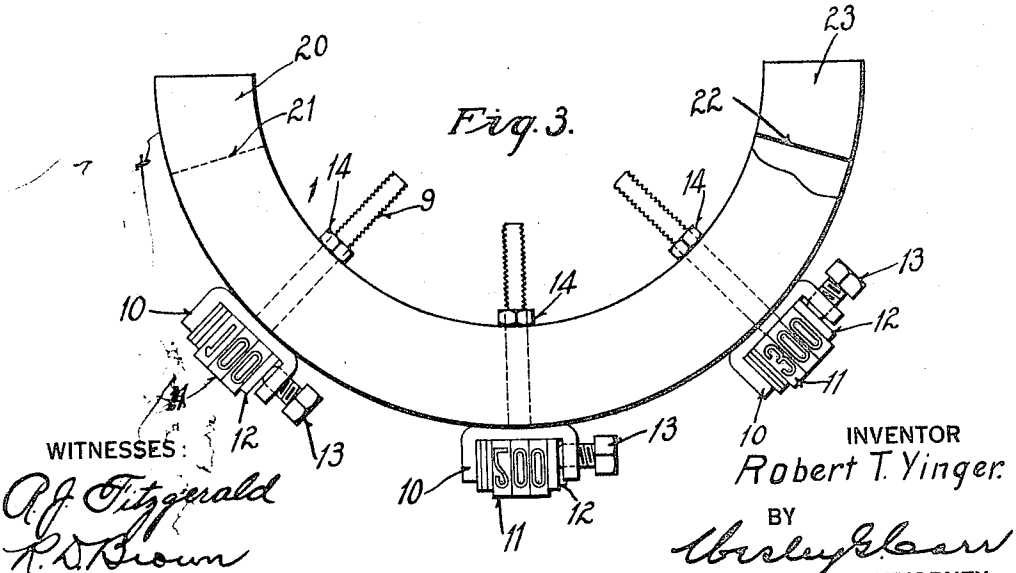

Fig. 3.

WITNESSES:

R. J. Fitzgerald

R. D. Brown

INVENTOR

Robert T. Yinger.

BY

Morsey & Gloor

ATTORNEY

UNITED STATES PATENT OFFICE.

ROBERT T. YINGER, OF SWISSVALE, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

PRINTING APPARATUS.

1,285,884. Specification of Letters Patent. Patented Nov. 26, 1918.

Application filed March 4, 1915. Serial No. 12,066.

To all whom it may concern:

Be it known that I, ROBERT T. YINGER, a citizen of the United States, and a resident of Swissvale, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Printing Apparatus, of which the following is a specification.

My invention relates to printing apparatus and particularly to devices for printing series of characters in non-rectilinear relation, and it has special reference to such devices as are adapted to apply characters to instrument dials and the like.

The object of my invention is to provide a device of the above-indicated character which shall be simple and durable in construction, efficient in operation and capable of printing series of characters which may be widely varied in number and relative position.

More particularly, the object of my invention is to provide a device for printing characters upon dials for meters, clocks and other instruments which shall embody means for supporting a plurality of separate type holders in non-rectilinear relative relation, together with means for adjusting the several type holders in a plurality of directions, whereby dials of many styles and sizes may be printed by means of a single device.

In the accompanying drawing, Figure 1 is a front elevational view, with parts shown in section, of a printing device constructed in accordance with my invention. Fig. 2 is a side elevational view, with parts shown in section, of the device shown in Fig. 1, and Fig. 3 is a front elevational view of a modified form of the device.

The dials of electrical measuring instruments, such as volt meters, ammeters and the like, are commonly provided with indicating numerals arranged in a curve which may either be a small arc of a circle or nearly a complete circle. It has heretofore been customary to provide a separate printing form for each size and style of dial, and, since such instruments are made in a large number of styles and also in a great variety of sizes, a complete equipment for printing them has heretofore been both expensive and inconvenient.

According to my present invention, I provide an impression member having adjustable type holders which may be readily adjusted to print characters upon curves of widely varying angular magnitude and degree of curvature. It consists essentially of a curved or circular frame adapted to be locked in an ordinary printing chase and provided with radially adjustable type holders which may also be laterally adjusted in a slot provided in the frame.

Referring to Figs. 1 and 2 of the drawing, the device therein shown consists of a substantially circular frame 1 which may be composed, as shown, of two metallic rings 2 and 3 that are maintained a short distance apart by means of a spacing block 4. The rings 2 and 3 are cut away adjacent to the block 4 to receive members 5 and 6 of generally rectangular form, which are held together by any suitable means, such as screws 7, and thereby serve to clamp together the rings 2 and 3 and the spacing block 4. The members 4, 5 and 6 together constitute a rectangular extension of the rings 2 and 3, this extension being useful in locking the device in a printing form or chase, the usual furniture being employed.

Disposed in the slot 8 between the rings 2 and 3 are screw-threaded pins 9 which are preferably flattened on opposite sides in order to prevent them from rotating in the slot 8. Secured to the outer end of each of the pins 9 is a type holder which may comprise a U-shaped frame 10 adapted to receive types 11 and spacing slugs 12, the types and slugs being maintained rigidly in the type holders by means of screws 13. Nuts 14 are applied to the pins 9 in order to secure the pins and the type holders in any adjusted positions in the slot 8. Any desired number of the type-holding devices may be employed, depending upon the style of impression to be printed and the size of the frame 1. In order to adjust the positions of the type holders radially as well as laterally in the slots 8, spacing washers 15 may be interposed between the U-shaped members 10 and the rings 2 and 3, as shown at the left of Fig. 1. The permissible length of the pins 9, and the consequent range through which such radial adjustment may be effected, are limited only by the diameter of the rings 2 and 3.

The modified device shown in Fig. 3 differs from that shown in Figs. 1 and 2 in that the frame 20 which supports the type

holders is substantially semi-circular and has no supporting projection such as the projection 5 shown in the first modification. The frame 20 is provided with a slot which may conveniently extend from the line 21 to the line 22, as shown in Fig. 3, and may be composed of two similar half rings separated at their ends by spacing blocks, one of which is shown at 23.

Instead of being composed of separate rings or half rings separated by spacing blocks, the type-holding frame may be made of a single piece of metal having the necessary slot cut laterally through it. If the form of frame shown in Figs. 1 and 2 is so made of one piece of metal, the rectangular projection 5 may also be formed integral with the frame.

It will be evident that the form member which I have shown and described is capable of printing impressions composed of many different numbers and arrangements of characters, and it will also be evident that my device may be variously modified in its structural details and proportions without departing from the spirit and scope of my invention. It is therefore to be understood that my invention comprehends all such modifications as fall within the scope of the appended claims.

I claim as my invention:

1. A form member for printing series of characters comprising a frame, a type holder carried by the frame and adjustable, both radially and circumferentially, with respect to the frame and means for securing the type holder in adjusted position.

2. A form member for printing series of characters comprising an arcuate frame, and a plurality of type holders carried by the frame and independently adjustable, both radially and circumferentially, with respect to the frame.

3. A plane-printing form member for printing apparatus comprising a frame provided with a slot having walls substantially parallel to the printing plane of the form member, and a type holder secured in the said slot and adjustable in a plurality of directions therein.

4. A plane-printing form member for printing series of characters comprising a frame provided with a slot having walls substantially parallel to the printing plane of the form member, and a plurality of type holders secured in the said slot and adjustable in a plurality of directions therein.

5. A plane-printing form member for printing series of characters comprising a curved frame provided with a slot extending transversely to the axis of the said frame and having walls substantially parallel to the printing plane of the form member, and a plurality of type holders secured in the said slot and adjustable both radially and lengthwise of the said slot.

6. A form member for printing series of characters comprising a curved frame provided with a slot extending transversely to the axis of the said frame, a plurality of flattened screw-threaded pins disposed in the said slot, type holders attached to the outer ends of the said pins, and means for securing the said pins in radially and circumferentially adjusted positions in the said frame.

7. A form member for printing series of characters comprising a substantially semi-circular frame provided with a slot extending transversely to the axis of the said frame, a plurality of pins disposed in the said slot, type holders attached to the ends of the said pins, and means for securing the said pins in adjusted positions in the said frame.

8. A form member for printing series of characters comprising a substantially circular frame provided with a slot extending transversely to the axis of the said frame, a plurality of pins disposed in the said slot, type-holders attached to the said pins, and means for securing the said pins in radially and circumferentially adjusted positions in the said frame.

9. A form member for printing series of characters comprising a substantially circular frame provided with a slot extending nearly around the said frame, a plurality of flattened pins disposed in the said slot, type holders secured to the outer ends of the said pins, and means for securing the said pins in radially and circumferentially adjusted positions in the said frame.

10. A form member for printing series of characters comprising a substantially circular frame provided with a rectangular projection and also provided with a slot extending nearly around the said frame, a plurality of flattened screw-threaded pins disposed in the said slots, type holders secured to the outer ends of the said pins, spacing washers interposed between the said type holders and the said frame, and nuts disposed on the said pins within the said frame for securing the said type holders in adjusted positions.

In testimony whereof, I have hereunto subscribed my name this 20th day of Feb. 1915.

ROBERT T. YINGER.

Witnesses:
R. B. COONS,
B. B. HINES.