O. D. ZIEGLER.

SIGN FLASHER.

APPLICATION FILED MAR. 16, 1912.

1,183,418.

Patented May 16, 1916.

3 SHEETS—SHEET 1.

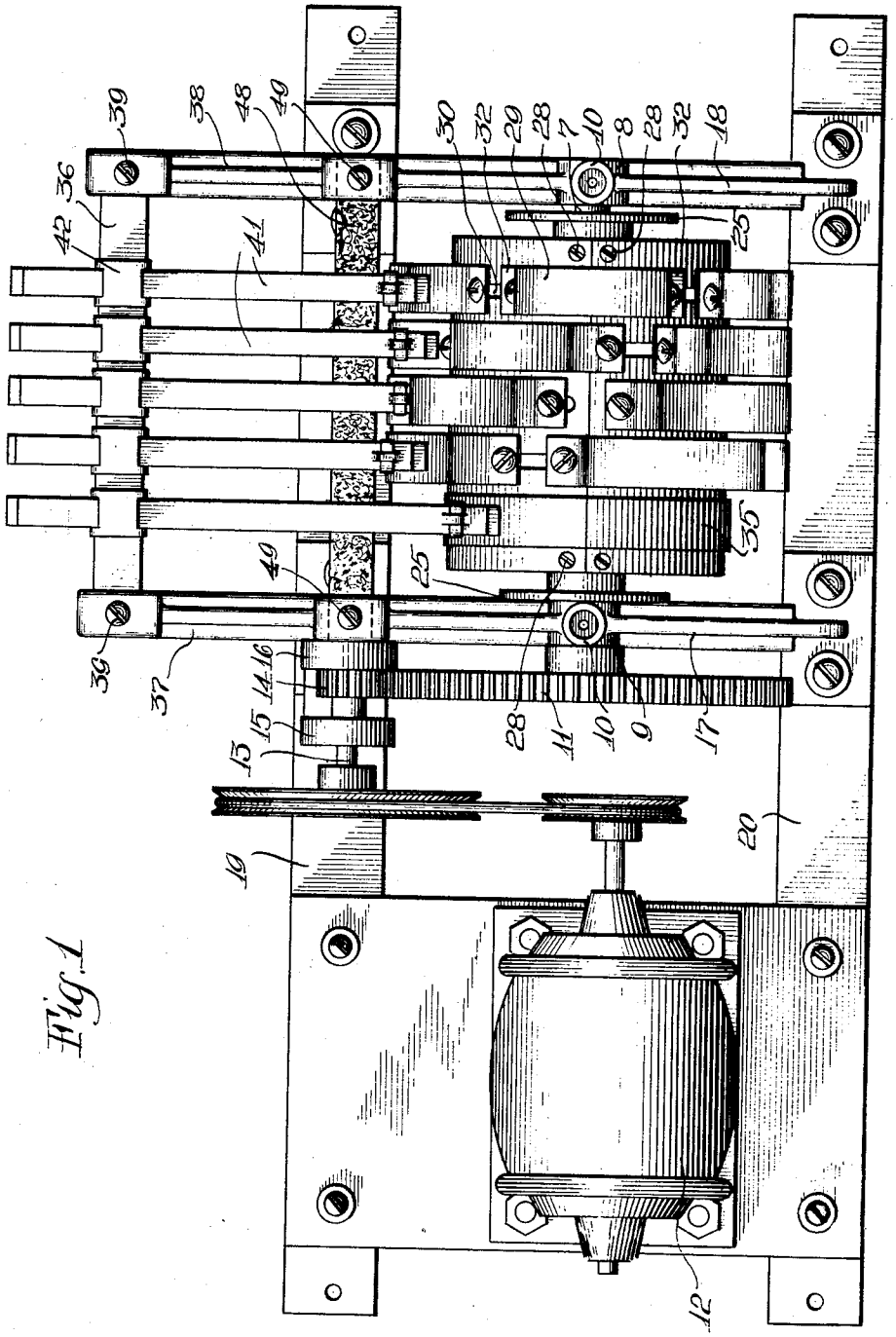


Fig. 1

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3 SHEETS—SHEET 2.

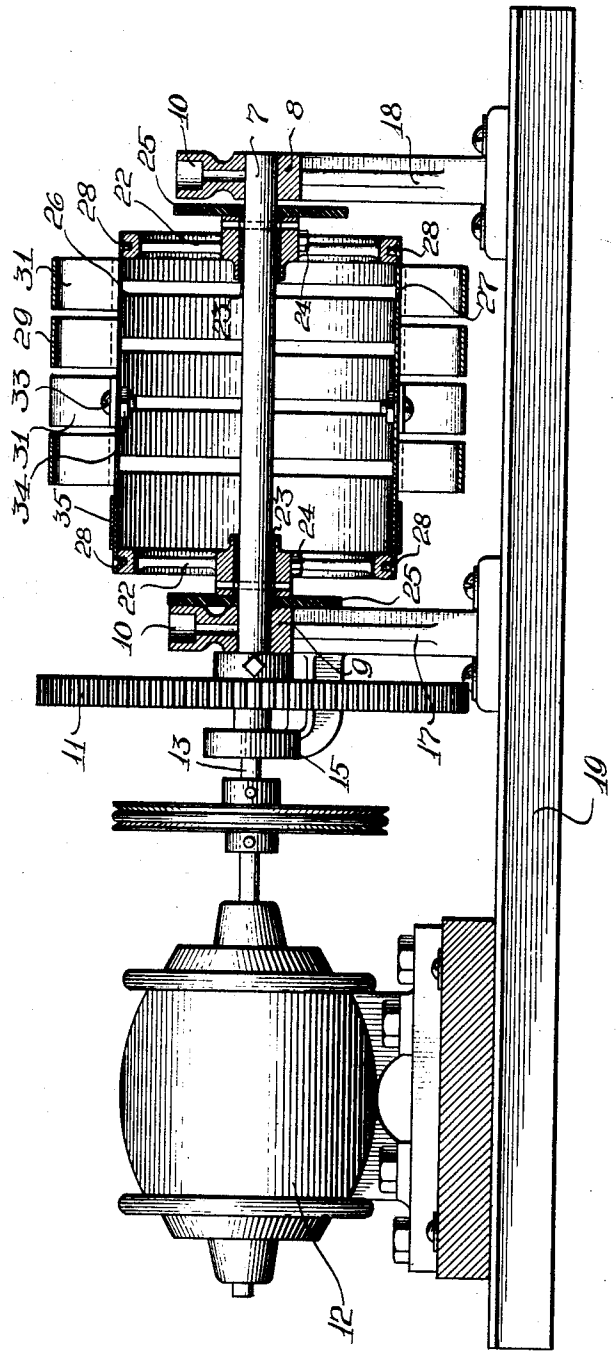


Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 3.

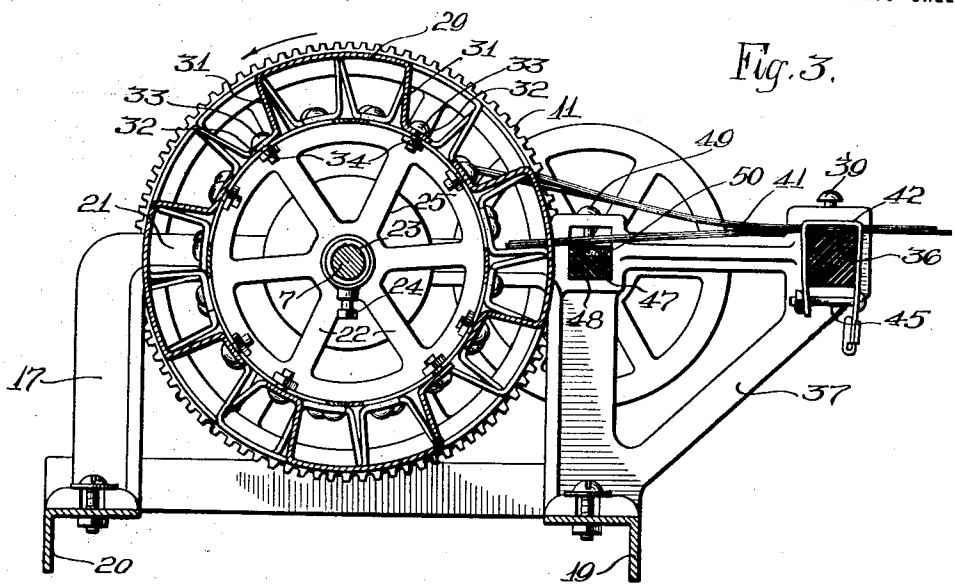


Fig. 4.

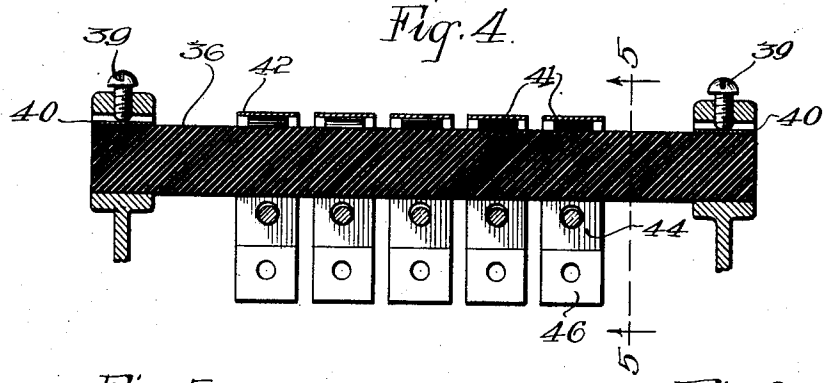


Fig. 5.

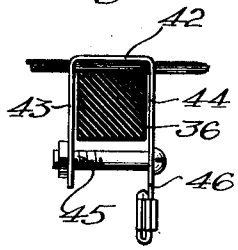
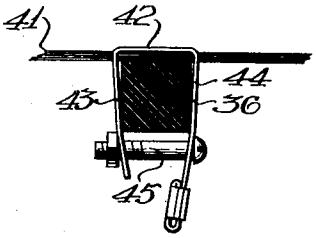


Fig. 6.



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UNITED STATES PATENT OFFICE.

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SIGN-FLASHER.

1,183,418. Specification of Letters Patent. Patented May 16, 1916.

Application filed March 16, 1912. Serial No. 684,230.

To all whom it may concern:

Be it known that I, OLIVER D. ZIEGLER, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Sign-Flashers, of which the following is a specification.

The present invention relates to a sign flasher of the form intended for intermittently closing one or more electrical circuits. These circuits will ordinarily be electric circuits which convey current to or from electric light signs, although manifestly the device of the present invention might be used to energize or intermittently close electric circuits for other purposes.

The invention relates more particularly to a sign flasher of the continuously rotating drum type—that is, the type in which a drum or a like element is continuously rotated by means of a motor or other like device.

The main objects of the invention are to provide a construction in which the moving contacts may be easily adjusted or changed for the purpose of adjusting or changing the order in which several circuits will be opened and closed, or to change the interval during which they remain opened or closed. More particularly it is intended to provide a permanent drum or the like on which the several contacts are mounted, and then to provide a construction such that these several contacts can be easily adjusted on the drum or replaced by new contacts of the same or different lengths.

Another object of the invention is to form the contacts and brushes in such a manner that each circuit will close with a large and perfect contact, thereby lessening the tendency to burn and wear by reason of the fact that a greater cooling area is presented, being an area of such size that any sparking will be broken up into a large number of relatively small arcs; and for a similar purpose to construct the parts in such a way that each circuit will be quickly and perfectly broken with a long break. This is a particularly desirable result to attain so as to prevent burning and arcing.

Another object of the invention is to provide a novel form of support for the brushes or other contacting devices whereby a perfect insulation of the parts is secured and whereby a solid and firm support is provided. Also whereby the several brushes or contacting devices can be removed simultaneously from the frame of the machine.

Other objects and uses will appear from a detailed description of the invention which consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 shows a plan view of a flasher embodying the features of my invention and provided with four sets of contacts for intermittently supplying four circuits; Fig. 2 shows a vertical section through the drum and contacts of the machine of Fig. 1; Fig. 3 shows a cross-section through the machine of Fig. 1; Fig. 4 shows a detail section of the brush holder; Fig. 5 shows an enlarged detail of the gripping member whereby each brush is secured to the insulating block, the gripping member being loosened; and Fig. 6, shows a view similar to that of Fig. 5, the gripping member being tightened.

In the drawings, a main shaft 7 is mounted to rotate freely in bearings 8 and 9 of the frame. These may be properly lubricated as by means of oil cups 10. The shaft has secured to it the main gear 11 which may be driven in any suitable manner, as by means of the motor 12 driving a jack-shaft 13 which carries a pinion 14 meshing with the main gear. This jack-shaft carrying the pinion 14 is mounted to rotate freely in bearings 15 and 16 of the frame.

The frame comprises a bearing of end pieces 17 and 18 which are supported on angles 19 and 20 in the construction illustrated. A cross-piece 21 on each end of the frame, best shown in Fig. 3, provides the bearings 8 and 9 for the main shaft 7.

Between the bearings and mounted on the main shaft are a pair of webs, or spiders, 22, which are insulated from the shaft by insulating sleeves 23 and are secured to the shaft by means of set screws 24 which press down onto the insulating sleeves so as to press them against the shaft. In this manner a solid and firm connection is established between the webs, or spiders, and shaft, but at the same time they are insulated from the shaft. A pair of insulating disks 25 are placed on the shaft between the webs, or spiders, and the bearings of the frame. These prevent any electrical contact between the webs, or spiders, and the frame, so that the webs, or spiders, are perfectly insulated from every portion of the frame.

The webs, or spiders, carry a perforated drum which, in the construction illustrated, comprises two semi-circular halves 26 and 27, each of which is secured to the webs, or spiders, at a number of points by means of countersunk screws or the like 28. The drum has secured to its periphery a number of contacts 29 which line up with the corresponding brushes of the electrical circuits which are to be controlled. These contacts are adjustably mounted on the drum so that they can be shifted angularly over its surface. For accomplishing this result, I have illustrated one construction. To this end the drum is provided with peripheral slots 30 through which may be passed screws or the like which secure the contacts to the drum. As a simple means of securing this connection, and for a reason to be presently disclosed, each contact is preferably U-shaped, as shown in Fig. 3. It has the radial legs 31, the lower ends of which are flanged out as at 32 to receive the tap screws or the like, 33. These tap screws extend through the corresponding slot 30 and receive the nuts 34 on their inner ends. By means of this construction a screw-driver may be engaged into the tap screws, which have their heads on the exterior of the drum, so that they can be very readily reached for purposes of adjustment and the like. Obviously, to adjust anyone of the contacts, either forward or back, on the drum, it is only necessary to loosen up the corresponding tap screws and then slide the drum in the one direction or the other. In case it were desired to substitute a new contact either for replacement or repair, or for the purpose of making use of a longer or shorter contactor, then the tap screws could be completely unthreaded from their respective nuts and thus disengaged from the drum. As a matter of construction, the slots 30 do not completely encircle the drum, as that would sever it into a number of sections. It is only necessary that the slots should partly encircle the drum, leaving connecting webs in the drum between the consecutive portions of each circular slot.

In order to supply current to the drum, I provide one contact 35 which completely encircles it. This contact is adapted to make electrical connection with the brush which supplies current to the drum, and thus to electrify the drum contactors.

I provide a brush or the like for each electrical circuit which is to be controlled by the flasher. In the construction illustrated, these brushes are of flexible material, such as copper leaves, backed up with a strip of bronze or the like. They are supported on an insulating block 36 which is carried by the outstanding arms 37 and 38 of the end pieces of the frame. For this purpose these arms are provided with holes which receive the ends of the insulating block, and set screws 39 may be forced against the block or metal sheets 40 for securing a firm mechanical connection. Each of the brushes 41 rests across the face of the insulating block and is secured to the same by a U-shaped clamp 42. The latter has its downwardly depending arms 43 and 44 perforated so that the brush can be slipped through them and said arms extend down by the sides of the insulating block. A screw or the like 45 draws the arms together below the block as is shown in Fig. 6. It is found by experience that when the arms are tightly clamped together in this manner they will tend to pull down so as to firmly press the brushes down against the upper surface of the insulating block. Therefore, this form of clamp performs two functions in that it clamps the brush down against the upper surface of the insulating block, and in that it firmly grips the block so as to prevent a sidewise movement thereon. The electric conductor which leads to the circuit being controlled by any given brush may be secured to the lower end 46 of the downwardly depending arm 44 of the corresponding clamp.

From the construction just described, it will be seen that the entire set of brushes can be removed from the flasher by simply loosening up the set screws 39 and then slipping the insulating block endwise until one end can be disengaged from the corresponding arm of the frame.

I have provided means for limiting the return movement of the brushes under their spring action. For this purpose I have provided a cross block 47 of insulating material which extends through holes, or openings, in the end pieces of the frame at a point below the brushes. A layer of felt or the like, 48, may be provided along the upper surface of the block 47 to form a cushion against which the brushes will fall under their spring action. Set screws 49 acting on metal blocks 50 serve to clamp the insulating block and felt layer in place. Now, it was previously stated that there was an additional reason for forming each contactor with the radial legs 31. This is for the purpose of securing a better contact between each brush and its contactors at the instant of closing the circuit. The insulating blocks 36 and 47 are so mounted that when the brushes lie in their natural position the radial legs of the contactors will make a flat and even contact with the under surface of the brushes as the drum rotates over in the direction of the arrow in Fig. 3. Thus a very perfect contact is made, and burning is reduced to a minimum. The burning is reduced, among other reasons, because of the fact that a large cooling area is provided, so that whatever heat may be

generated by an arc at the instant of contact will be rapidly dissipated. Furthermore, the radial legs 31 sustain the brushes at such a distance from the drum during the interval of electric contact that at the instant each contactor rides from beneath its brush the latter can drop a considerable distance before arrested by the cross-piece 47, thus providing a large and instantaneous break.

I do not limit myself to the construction herein shown and described, except as called for in the claims, but I include within the scope of my invention any equivalent construction or constructions for accomplishing similar or like results.

I claim:

1. In a device of the class described, the combination of a rotary member, a contactor outstanding from the periphery of the member and having its forward end substantially flat, and a brush flexibly mounted in position to squarely engage the flat end of said contactor as the member rotates, substantially as described.

2. In a device of the class described, the combination of a rotary member, a contactor outstanding from the periphery of the member and having a substantially flat forward contacting surface, a brush flexibly mounted adjacent the member, and a stop for positioning said brush to lie in position in advance of the contactor such that the flat forward surface of the contactor squarely engages the brush, substantially as described.

3. In a device of the class described, the combination of a rotary metallic electric conductor drum member provided with a plurality of circumferential slots in the periphery thereof, means for rotatably supporting said drum member, a plurality of segmental metallic contactors mounted on and outstanding with respect to the periphery of and in electrical contact with the drum member, means for adjustably securing said segmental contactors in engagement with the circumferentially slotted portion of the said rotary drum member, brushes mounted in position to engage the contactors, each of said brushes being in contact with a metallic member of an electric circuit, and a metallic electrical conductor operatively connected with the metallic drum member and adapted to be connected with a source of electric supply.

4. In a device of the class described, the combination of a rotary metallic electric conductor drum member provided with a plurality of circumferential peripheral slots, means for rotatably supporting said drum member, a plurality of segmental metallic contactors mounted on and outstanding with respect to the periphery of and in electrical contact with the drum member, securing members in engagement with the segmental contactors and extending into the adjacent circumferential slot in the drum member, for adjustably securing said segmental contactors in engagement with the circumferentially slotted portion of the rotary drum member, brushes mounted in position to engage the segmental contactors, each of said brushes being in contact with a metallic member of an electric circuit, and a metallic electrical conductor connected with the rotary metallic drum member and adapted to be connected with a source of electric supply.

5. The combination of a rotary electric conductor member provided with a circumferential slot in the periphery thereof, means for rotatively supporting said rotary electric conductor member, a segmental metallic conductor mounted on and outstanding with respect to the periphery of and in electrical contact with said rotary conductor member, means for adjustably securing said segmental contactor in engagement with the peripherally slotted portion of said rotary conductor member, a brush mounted in position to engage the contactor and in contact with a metallic member of an electric circuit, a metallic electric conductor in electrical contact with the rotary electric conductor member and adapted to be connected with a source of electric supply and insulating means interposed between said slotted rotary electric conductor member and its support.

6. In a device of the class described, the combination of a drum, a contactor outstanding from the periphery of the same, and having substantially radial forward and rear surfaces, the forward surface constituting a contacting surface, a brush flexibly mounted adjacent the drum, and a stop for determining the initial position of said brush and for limiting its return movement, whereby contact is initially established on the radial forward surface of the contactor, and whereby a quick break is secured when the contactor leaves the brush, substantially as described.

7. In a device of the class described, the combination of a drum, a contactor adjustably mounted on the periphery of the same and having a substantially flat forward contacting surface, a brush flexibly mounted adjacent the drum, and means for supporting the end of the brush in a given position, whereby the flat forward surface of the contactor squarely engages the brush regardless of the position of the contactor on the periphery of the drum, substantially as described.

8. In a sign flasher, the combination of a drum mounted for rotation about its axis, there being a plurality of peripheral slots in the surface of the drum, a plurality of U-shaped contactors mounted on the drum

in sets, each U-shaped contactor having a forward contacting surface, the contactors of each set lying in the same plane, means extending through the slots for securing each contactor in desired radial position, a leaf brush mounted in position to engage each set of contactors, means for limiting the returning movement of the brushes under their spring tension, and a suitable connection to each brush, substantially as described.

9. In a sign flasher, the combination of a drum mounted for rotation, a contactor having a substantially flat forward contacting face, means for securing the contactor to the drum and for shifting it into desired angular positions, a spring leaf brush mounted in position to engage the contactor, and means for limiting the spring leaf in its returning movement, whereby it normally stands in such position that the forward face of the contactor will squarely engage the lower surface of the brush, substantially as described.

10. In a sign flasher, the combination of a drum mounted for rotation about its axis, there being a plurality of annular slots in the surface of the drum, a plurality of U-shaped contactors mounted on the drum in sets, each set lying in the same plane, and each contactor having a forward contacting surface, means extended through the slots for securing each contactor to the periphery of the drum, whereby each contactor can be adjusted angularly on the drum, a plurality of spring leaf brushes mounted in position to engage the several sets of contactors, and means for limiting the said brushes in their restoring movement, whereby they all normally lie with their forward ends in substantially the same horizontal plane, and whereby each brush is raised by the contacting of a corresponding contactor against its lower face, substantially as described.

11. In a sign flasher, the combination of a shaft mounted for rotation, a pair of spiders mounted on said shaft, insulation interposed between each spider and the shaft, a cylindrical drum secured to the spiders, there being a plurality of annular slots in the periphery of the drum, a plurality of contactors mounted on the drum in sets, means extended through the slots for securing the several contactors in position on the drum, a brush for establishing electrical connection from an outside source with the body of the drum, and a plurality of leaf brushes mounted in position to engage the several sets of contactors for temporarily establishing electrical connection between each of said brushes and the drum, substantially as described.

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