

Sept. 18, 1928.

1,684,394

M. HAASE

SIGN CONTROLLER

Filed Feb. 10, 1927

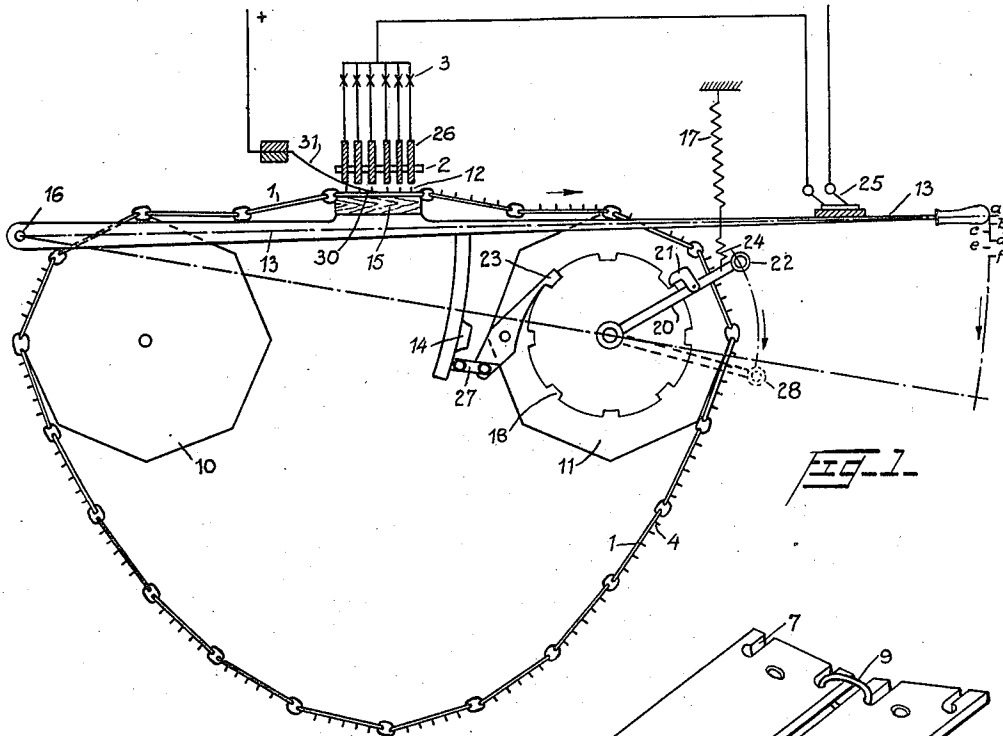


Fig. 1

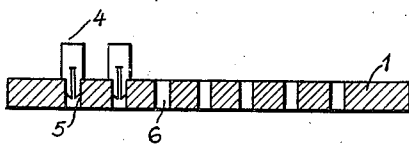


Fig. 2

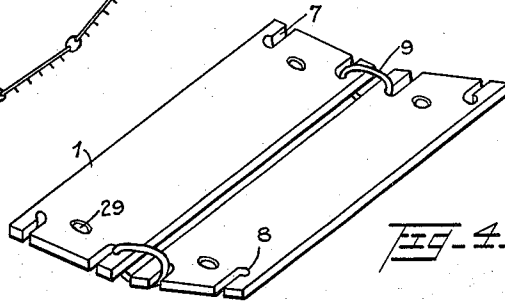


Fig. 4

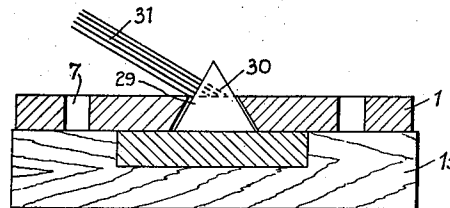


Fig. 5

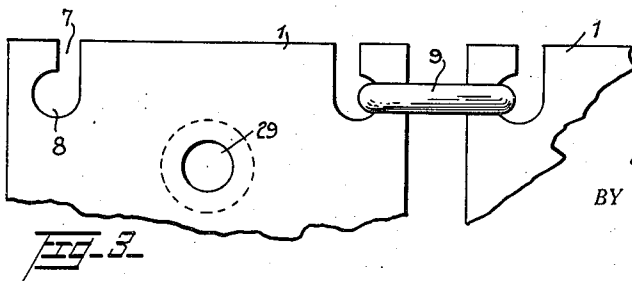


Fig. 3

INVENTOR.
Max Haase
BY *Arp*

ATTORNEY.

UNITED STATES PATENT OFFICE.

MAX HAASE, OF BUCHSCHLAG, GERMANY.

SIGN CONTROLLER.

Application filed February 10, 1927, Serial No 167,187, and in Germany December 24, 1925.

The boards for luminous advertising by means of changing written texts must comprise a great number of lamps, in order to satisfy the ever increasing requirements with regard to fine and many sided reproductions. The advertisers demand, that on the lamp boards written characters, trade marks and other pictures appear in perfect accuracy and legibility, a condition, which can be fulfilled only by an extraordinary increase of the number of lamps and by corresponding increase of the contacts in the contact apparatus. The manufacturers of such apparatus and the landlords ask, on the other hand, that the contact apparatus be of compact form, as it is often impossible, to accommodate large size apparatus in the garrets which are sometimes low and narrow.

Other conditions are, that the contact apparatus be easily accessible, that the texts be interchangeable during the service, that the succession of the texts be easy to survey, and that the contact apparatus be adapted to produce several kinds of luminous writing, i. e., that one contact plate be capable to bring one text, i. e. suddenly and completely, the next following text plate having to bring, for instance, one part of the text in stationary writing and another part of the same in intermittent writing, the next following text plate having to bring, for instance, a text in italics which is gradually lighted in the same manner as the text is being written. All such variations of the writing could hitherto not be carried out in one and the same apparatus, as each contact apparatus was capable of producing only one kind of writing.

This invention relates to a small size contact apparatus for switching the text which must be instantaneously legible and adapted to be easily interchanged during the service, the writing being of any desired kind, either hand-writing or suddenly lighted writing, or intermittently lighted writing or writings of mixed kinds.

An embodiment of the invention is shown, by way of example, in the accompanying drawings, in which

Fig. 1 shows in side elevation the total arrangement of the contact apparatus for luminous changing writing.

Fig. 2 shows in cross section a metal plate designed to receive the contact pins.

Fig. 3 shows in top plan view and on

larger scale a portion of two adjacent metal plates connected the one with the other.

Fig. 4 shows in perspective view two adjacent metal plates pressed together so that one of the plates can be removed.

Fig. 5 shows the mechanism for pressing the metal plate upon the pressure plate.

As contact producing elements perforated metal plates 1 (text plates) are used, the perforations of which correspond accurately to the perforations in a contact receiving element 2. These corresponding perforations correspond again accurately to the lamps 3 arranged on the lamp board. Contact pins are to be inserted into the holes of the metal contact plates 1, said contact pins serving to form the desired text or the desired writing. The contact pins consist each of a split shaft 5 tightly fitting into the holes 6 of the metal plates 1 (Fig. 2) and held in the corresponding holes 6 by friction on the wall of said holes, each contact pin having a head 4, either spherical or flat, and forming the contact element proper. The head 4 or a portion of the same is made from tungsten, platinum or a similar, not easily fusible metal.

The metal plates 1 (Figs. 3 and 4) have in each longitudinal side a slot 7 which has a laterally directed enlargement 8 at the inner end. Rings 9 are designed to be inserted into said slots so that a number of plates 1 are connected to form a large endless chain.

This arrangement presents the advantage that the metal plates 1 can be easily interchanged during the service. With this object in view the metal plates 1 are pressed the one against the other, as shown in Fig. 4, so that the ring 9 comes out of engagement with the enlarged portions 8 and, engaging with the slots 7, can be easily removed. The metal plates 1 are guided over two drums 10 and 11, for instance of octagonal cross section. These drums are rotatably mounted. A pressure plate 15 is arranged between the two drums underneath the metal plate 1 which is in the position of use and designated by reference numeral 12, said pressure plate 15 resting upon the two parallel levers 13. The levers 13 are rigidly connected the one with the other and pivotably mounted on studs 16 so that they can easily pivot around the same, in order to lower and raise the plate 15. By means of a pull spring 17 the pressure plate 15 and with the same the metal

plate 12 is pressed onto the contact receiving element 2. The intermittent advancing of the metal plates 1 and their securing in the correct position with regard to the contact receiving element 2 is effected in the following manner:—

One of the two drums 10 and 11, for instance the drum 11, has eight notches 18. A lever 20 pivotably mounted on the axle 19 of the drum 11 carries a spring-controlled pawl 21 adapted to engage with one of said notches 18. When the levers 13 are depressed by hand or by motor, they strike against a roller 22 at the end of said lever 20 and depress this lever of a distance equal to $\frac{1}{8}$ of a rotation of drum 11, this drum being thus rotated by the pawl 21 through $\frac{1}{8}$ of a complete rotation, so that a fresh metal plate 1 is brought over the pressure plate 15. After termination of $\frac{1}{8}$ of the rotation the drum 11 is locked by a locking pawl 23 whereby the drum 11 and consequently the contact plate 1 are roughly adjusted. The lever 13 is then raised and the lever 20 is also pulled upward through the pull exerted by a spring 24. The fresh contact plate 12 is then pressed in upward direction and the current is switched in at switch 25.

When a fresh text plate 12 has to be inserted, the circuit is first interrupted by the beginning downward movement of lever 13 from the switching-in position *a* to the cutting-out position *b*. In the position *c* the lifting off of the text plate 12 from the contact receiving pins 26 is terminated, and in the position *d* a cam 14 rigid with the lever 13 begins to act upon the pawl lever 23 or upon the auxiliary lever 27 of this pawl lever. The pawl lever 23 is disengaged by the further downward movement of the cam 14, this movement being terminated when the lever 13 is in the position *e*. The drum 11 is then again ready for a fresh part rotation. This part rotation begins when the lever 13 is in the position *e*, i. e. at the moment at which the lever 13 touches the lever 20 or the roller 22 of the same, and takes the lever along to the extreme position 28 indicated in dash lines.

The contact plates 1, when united to form an endless chain, have a slight play and they are brought, by special precise adjusting, accurately into that position which the several contact pins 4 must occupy in order to come into proper contact with the contact receiving pins 26. This precise adjusting is obtained with the aid of a hole 29 at each end of the plate 1 said holes 29 being bored according to stencils. The pressure plate 15 carries at each end a cone-shaped pin 30 which accurately fits into the holes 29 of the plate 1. The precise-adjusting pins 30 and the holes 29 are conical, as shown in Fig. 5. At the feeding the pin 30 engages first only approximately with the corresponding hole 29

of the text plate. Above the text plate 1 a spring 31 is arranged (Fig. 5), which exerts a pressure in downward direction upon the plate 1 so that the pin 30 engages completely with the hole 29 and the plate 1 is perfectly pressed upon the pressure plate 15. The axis of the hole 29 and the axis of the corresponding pin 30 coincide in this position. Only after the termination of this proceeding the contact plate 15 is lifted and pressed, together with the accurately adjusted text plate 12, onto the contact receiving element 2 with the contact pins 26.

The apparatus works in the following manner:—

Under the action of the spring 17 the pressure plate 15 and with the same the text plate 1, which is in the operative position and designated by the reference numeral 12, is pressed against the contact receiving element 2 and the contact pins 26, the switch 25 being switched-in, so that the lamps are lighted which represent the text in question. When a fresh text plate has to be inserted, the lever 13 is to be depressed. When this lever 13 is moving from position *a* into position *b*, the circuit is interrupted in the switch 25. When the lever 13 is moving from position *b* to position *c* the text plate 12 is withdrawn from the contact receiving pins 26, this movement being terminated when the lever 13 arrives in the position *c*. When the lever 13 is moving from position *c* to position *d* the pin 30 for precise adjusting is withdrawn from the hole in the text plate 12, and when the lever 13 arrives at the position *d* the inclined surface of cam 14 begins to act upon the pawl 27. The disengaging of pawl 23 is terminated when the lever 13 arrives in the position *f*. The drum 11 is then liberated for a further part rotation. When the lever 13 arrives in the position *f* it abuts against the lever 20 which is drawn along by the lever 13 which continues to descend, and the drum 11 is rotated through $\frac{1}{8}$ of a complete rotation by the spring-controlled pawl 21. The pawl 23 disengages from the notch 18 when the drum 11 arrives in the end-position, and the feeding of the chain of metal plates 1 is terminated. The levers 13 and 20 are returned into the initial positions by the pull springs 17 and 24, and the accurate-adjusting pin 30 begins to act. The fresh text plate 12 is then pressed onto the contact receiving pins 26, whereupon the switch 25 is switched in.

The pressure plate 15 is adapted to be adjusted by means of adjusting screws in such a manner, that the contact pins 4 can be pressed onto the contact pins 26 according to requirement in different successions. When, for instance, the writing has to be lighted on the lamp board in the direction from below upward, the corresponding pins 4 will be pressed onto the pins 26 from below upward.

When, for instance the lighting-up of the writing on the lamp board has to proceed from left to right, the pins 4 are raised in the desired succession owing to the accordingly inclined position of the pressure plate 15.

Contact pins 4 having heads of two different lengths may be used. The contact pins 4 having a longer head come first into touch with the contact pins 26, so that one portion of the writing is lighted up sooner than the other portion. The second portion of the writing can be made to disappear and to appear at will during the lighting up of the first portion of the writing, owing to a slight descending movement of the lever 13. In order to enable these proceedings the switch 25 must be yieldable.

I claim:—

1. In an apparatus of the kind described, the combination with two rotatable drums of polygonal cross-section, of an endless chain composed of single elements hingedly connected together allowing for play between said elements, said elements being adapted to pass successively over said drums and provided with holes arranged in certain sequences, contact pins frictionally held in said holes, pivoted members, a plate carried by said members intermediate said drums, a system of lamp contacts disposed opposite said

plate, a switch, means acting on said pivoted members to normally close said switch and move said plate toward said lamp contacts, and means adapted to be operated by said pivoted members to impart to one of said drums a partial rotation at any desired time intervals, the arrangement being such that upon the initial movement of said pivoted members to rotate one of said drums, said switch is opened, and said plate is withdrawn from said lamp contacts, so as to release the element supported by said plate.

2. The combination as specified in claim 1, in which said elements are provided at both ends with open slots enlarged at their inner ends, including loops adapted to be inserted into the slots of two adjacent elements, so as to detachably connect said elements permitting their being spaced apart.

3. The combination as specified in claim 1, in which said elements are provided at their ends with a conical opening, the said plate being provided with correspondingly shaped conical pins adapted to enter said openings, so as to properly position each element on said plate, including a spring for maintaining the element in position on said plate.

In testimony whereof I affix my signature.

MAX HAASE.