Oct. 1, 1935. I. HOLSMAN 2,015,937

ILLUMINATED MOTOR DRIVEN ENDLESS BAND SIGN

Filed May 5, 1934 2 Sheets-Sheet 1

Fig. 1.

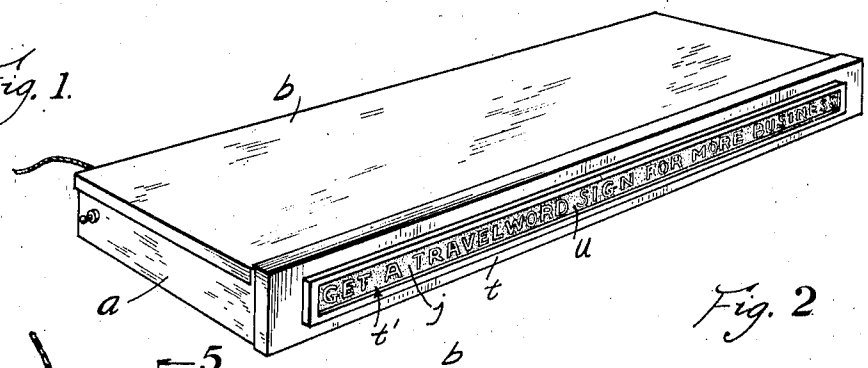
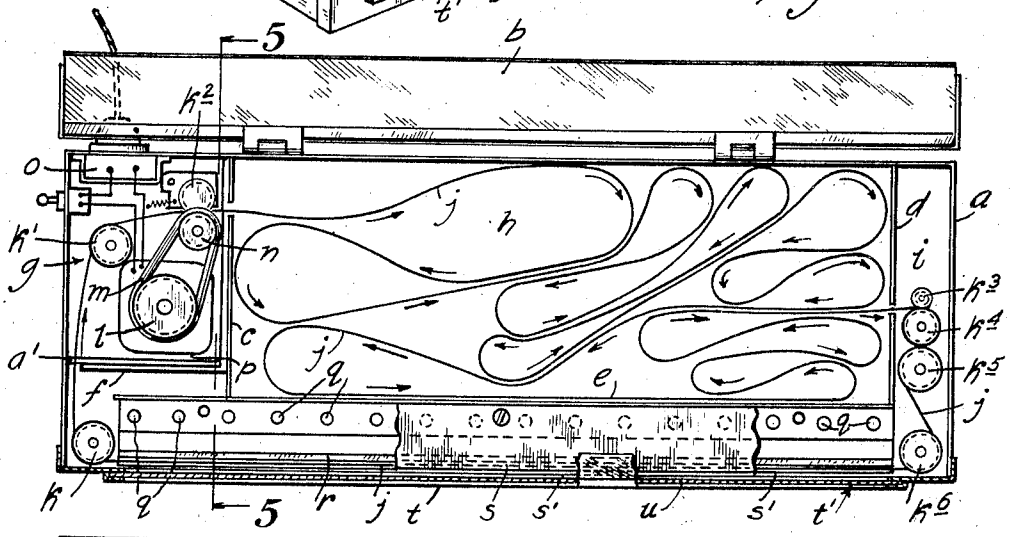


Fig. 2



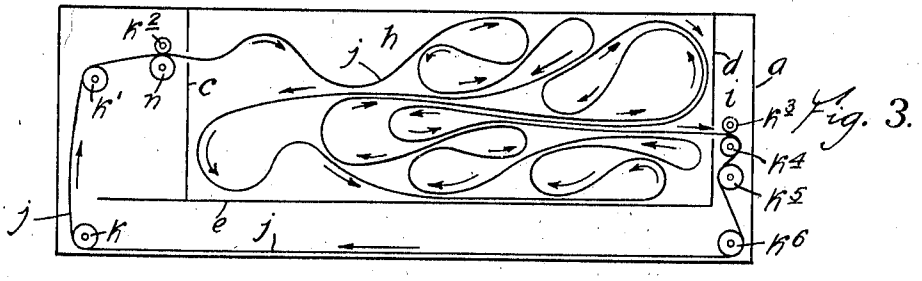


Fig. 3.

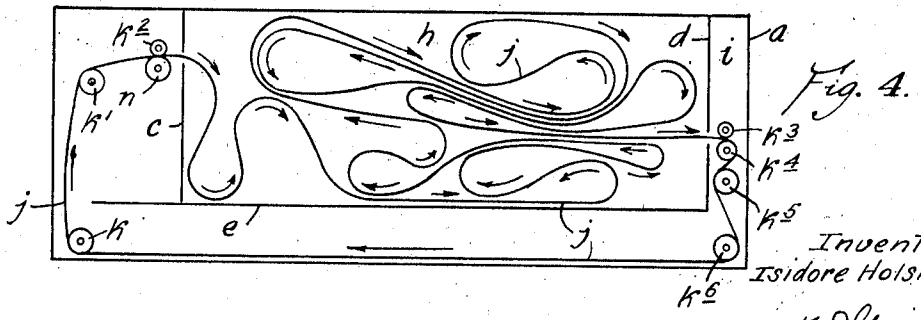


Fig. 4.

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ILLUMINATED MOTOR DRIVEN ENDLESS BAND SIGN

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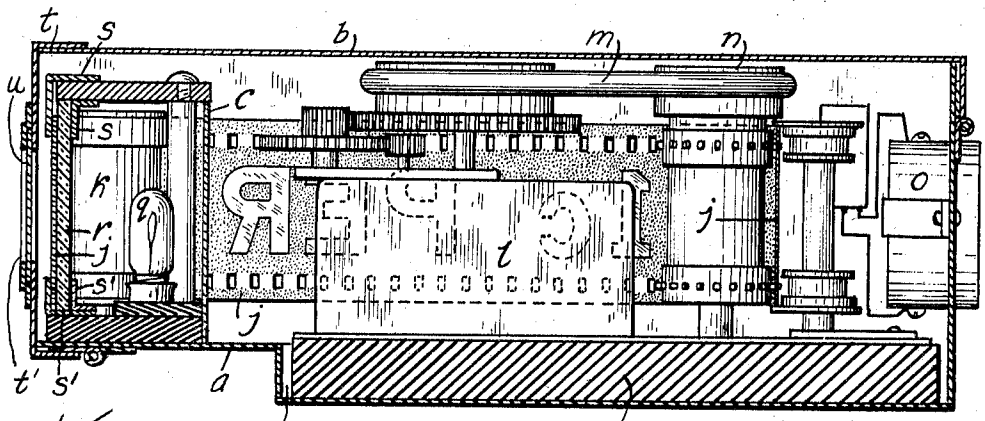


Fig. 5.

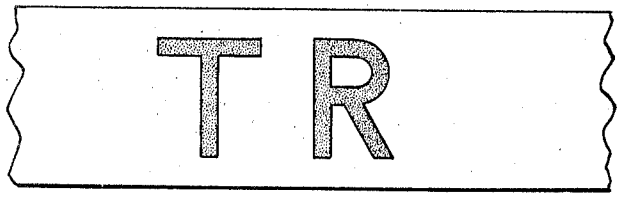


Fig. 6.

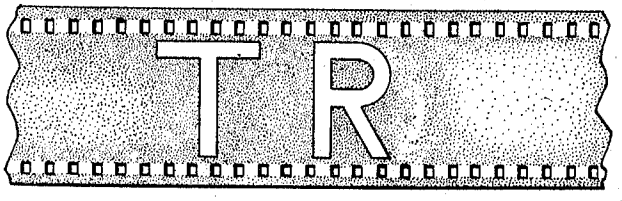


Fig. 7.

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Patented Oct. 1, 1935 2,015,937

UNITED STATES PATENT OFFICE

2,015,937

ILLUMINATED MOTOR DRIVEN ENDLESS BAND SIGN

Isidore Holsman, Portland, Oreg.

Application May 5, 1934, Serial No. 724,100

3 Claims. (Cl. 40—32)

The object of my invention is to provide an illuminated, animated sign, which may be made of portable size, and consisting of simple devices; and the color of whose display characters may be readily changed as desired.

It has heretofore been known that in such sign an endless traveling band bearing the characters to be displayed is the most desirable, but in the construction of these signs, as known to me, the band element was impracticable with regard to the material from which it was made. Furthermore, the band material was such that the display characters, letters and the like, were not clearly cut, and the effect produced was dim and indistinct. The reason of this was the band was made of a material which, if the band is made of any length, would fold into a compact mass, which had to be untangled, as it were, by pulling one end of the band from its massed portion. Such pulling out, however, tended to be resisted, and thus, by preventing the movement of the band, rendered the continued operation of the sign unreliable. In order to make a sign of the character described practical, the band element must travel freely continuously, must not at any time become wedged in a compact mass, and the band must be adapted to be kept in motion by a relatively small electric motor.

To provide an illuminated and animated sign embodying said essential band feature is the primary object of my invention.

I have discovered, by extensive experiments, that a band made of celluloid of the thickness generally employed for motion picture films possesses the inherent qualities of combined stiffness and resiliency which permits the use of a long band arranged to travel on its edge and confined, by a series of convolutions, in its main portion, to a relatively small sized magazine or compartment, since no matter how compactly this convoluted portion may become it will resist massing, and will free itself, so that the forwardly moving section of the band will readily pass thru a slot in the adjacent wall of the housing, and may be pulled thru such slot by a relatively small sized motor.

Further, by the proper treatment of this celluloid band, it may be made to show transparent characters standing out upon an opaque background, so that the characters borne by the band will be clearly and boldly brought out by the source of illumination placed behind it; and besides, in consequence of the characters themselves being transparent and the background being opaque, the characters may be given different colors, by merely placing a transparent colored strip in front of the display opening of the sign.

I attain the objects of my invention by the device embodying the elements hereinafter fully described and diagrammatically illustrated by the accompanying drawings, in which:

Fig. 1 shows an exterior perspective view of my illuminated, animated sign;

Fig. 2 shows the top view of my sign with the cover opened and illustrates one position taken by the endless celluloid display band of my sign, the guideway therefor, the compartment or magazine in which the convoluted portion of the band is contained, and the motor and the driving means for the display band of my sign;

Figs. 3 and 4 illustrate, respectively, other positions taken by the band while traveling;

Fig. 5 is a cross section on the line 5—5 of Fig. 2 looking in the direction indicated by the arrows;

Fig. 6 shows a section of a negative prepared in accordance with my invention for producing the display band of my sign; and

Fig. 7 shows a section of a positive band illustrating the display characters as transparent with the background of the band opaque.

In accordance with my invention, the band with its transparent characters is best produced by making first a negative, which may be made by printing or painting, by hand, or by special mechanical printing devices provided for that purpose, the characters on a strip of material having the same degree of transparency as celluloid, thus producing black or opaque characters on a transparent background, then using for the display band of my sign a strip of celluloid coated with a sensitized film and photographically reproducing on such strip the characters from said negative. As a result, I obtain a band having an opaque background with the characters boldly standing out transparent in their entirety. The characters borne by the display band, constituting wording or representing pictorial matter, must extend lengthwise of the negative. After the negative band of film has been made, the ends of the band are then fastened together to form an endless band or film which is driven in constant travel from right to left in its housing by suitable propelling devices operated by a small motor. The film face of the display band may be treated by a transparent coating to protect it against abrasion while traveling due to frictional contact of portions upon itself or by the motion imparting and guiding devices.

Describing now the details of my sign, it consists of a case *a* provided with a hinged cover *b*. The interior of the case is divided by partitions *c*, *d*, *e* and *f* into a motor compartment *g*, band holding compartment or magazine *h*, and return band guiding compartment *i*. *j* designates the endless band or film which is arranged over and guided by guide spools *k*, *k'*, *aa*, *k3*, *k4*, *k5* and *k6*. *l* indicates a motor which, by a belt *m*, drives a sprocket *n* secured to spool *aa*. *o* represents a switch box adapted to be connected with the

source of electricity for energizing the motor *l*. The partitions *c*, *f* and *d* are provided with slots thru which the band or film *j* may travel. The motor *l* is preferably set on a rubber base *p* loosely set in a depression *a'* of the case *a*. The face of the partition *e* registering with the display opening *t'* is provided with a reflector surface; in front of said reflector surface are installed a series of electric lights *q*. In front of the source of illumination, such as the lights *q*, is a translucent, preferably opalescent, glass plate *r*. Angular plates *s* and *s'*, disposed respectively along the top and bottom of the glass plate *r*, serve as guideways for the film *j* as it is moved in front of the glass plate *r*. These guides serve to prevent sagging, or other vertical movement of the film with respect to the glass plate, and serve to maintain it in edgewise standing position along the plate. By provision of the guides or guideways *s* and *s'*, it is unnecessary to provide any tension for the film or band *j*. This is because of the fact that the film or band *j* is of material which is inherently stiff and yet resilient and because of the fact that it is guided in front of the glass plate *r*, and maintained in contact therewith, by the guideways s and s'. In this fashion the characters, letters and the like on the film or band *j* are clearly and distinctly illuminated by the light source thus providing a traveling sign in which all of the characters on the traveling band or film *j* are at all times clear and distinct.

The wall of the case overlying the glass plate *r*, is provided with a wall *t* having a display opening *t'* in it and along this opening are provided guides *u* for holding in place a strip of colored material such as celluloid.

k2 is an idler roller cooperating with the spool *aa* for maintaining the film or band *j* in surface contact with the spool *aa* so that rotation of the spool *aa* will drive the film and move it across the glass plate *r*.

Operation

The motor *l* put in circuit by operation of the switch *o*, the display film *j* will travel as indicated by the arrows in Figs. 2, 3 and 4. Due to the inherent stiffness and yet resiliency of the celluloid display band or film, it will at no time become arranged into a compact mass but will automatically arrange itself consecutively in different convolutions as illustrated by Figs. 2, 3 and 4, and at no time will such convolutions of its main portions impose any resistance to the travel of the film, so that a small sized motor as *l*, will be sufficient to move the display band as mentioned; the band being guided in its travel by the guide spools *k*, *k'*, *aa*, *k3*, *k4*, *k5* and *k6*, and the guideway composed of the angular plates *s*, *s'*, as mentioned. I have found it convenient to use for the making of my display band, a celluloid strip such as used in making film of moving pictures and to employ a sprocket or spool *aa* for driving the display band, but other means of propelling the band may, of course, be employed. The electric lights, due to the reflecting surface borne by the wall *e* and *a* transfusion of the light by the opalescent glass plate *r*, will uniformly and entirely illuminate all characters of the display band as they appear before the display opening of the case so that the characters may be readily seen, observed or read. And in order to make the characters appear in color, different colored strips as *u* may be placed before them in the holder therefor provided on the frame *t*.

The display band *j* may be provided with marginal slots engaged by a sprocket wheel *aa* driven by belt *m* from motor *l*, as the means for moving the display band, but other means may, of course, be employed for the same purpose if preferred.

In order to assure that the friction imposed on the display band while traveling over the floor of the magazine or compartment *h* is reduced to a minimum, I deem it advisable to place in the interior of compartment *h* sheets of celluloid or film covering the floor and inner faces of side walls of said compartment.

The size and shape of my animated sign case not only constitute a convenience in moving the sign about and setting it up in any desirable place, but the flat surface of the top may be used as a display counter for exhibiting, for instance, the goods advertised by the animated, illuminated words of the sign. The present application is a continuation in part of applicant's application Serial No. 710,135.

I claim:

1. An illuminated sign comprising a low, flat casing having an opening in one of its side walls; means forming guides along the top and bottom of said opening; a strip of colored celluloid or like material removably inserted in said guides; a translucent plate supported within said casing parallel to and inwardly spaced from said one side wall; means providing top and bottom film guides along the face of said plate adjacent said opening; an endless film provided with display matter movable along said plate with its margins supported throughout its travel along said plate by said film guide means; means within said casing for moving the film along said plate; a light source within said casing and disposed inwardly of said plate; and a reflector behind said light source for directing light rays from said source through said plate, film and colored strip.

2. In a sign of the class described, a source of illumination, a glass plate in front of said source, a movable endless inherently stiff and resilient film adapted to be moved in edgewise standing position along and outside of said plate, means for moving said film, and means extending along the top and bottom of said plate for guiding the margins of said film in its movement in front of said plate to prevent vertical movement of said film with respect to said plate and to eliminate the need of maintaining tension on said film while being moved.

3. An illuminated sign comprising a low, flat casing having an opening in one of its side walls; a translucent plate supported within said casing parallel to and inwardly spaced from said one side wall; an endless film provided with display matter movable in edgewise standing position along and against the outside face of said plate; means receiving the top and bottom margins of said film for supporting the margins thereof throughout the length of said plate; said film having driving apertures along its margins; a driving roller within said casing having projections for entering said apertures to move the film; an idler roller for cooperating with said driving roller to cause the driving engagement of said projections with said apertures; and means within said casing for actuating said driving roller to move said film.

ISIDORE HOLSMAN.