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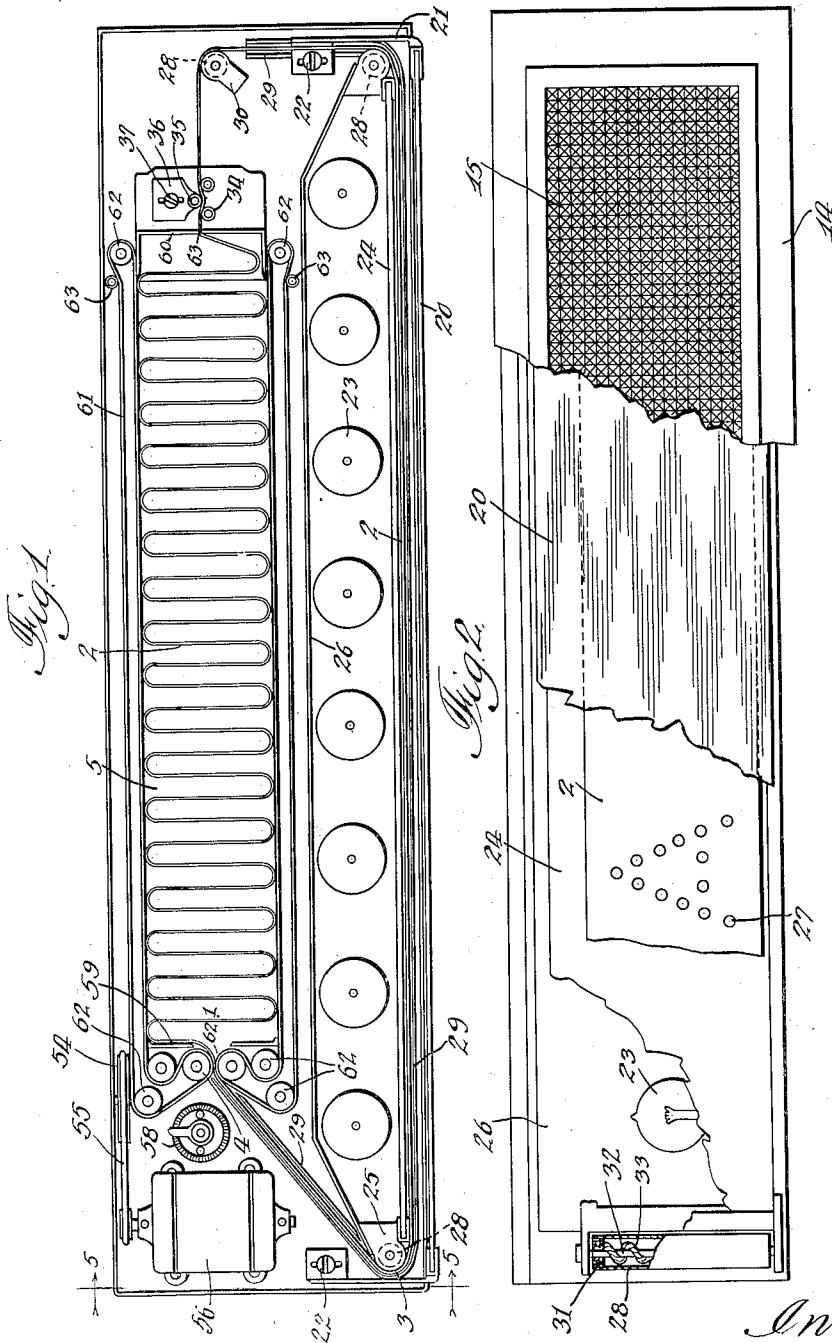
H. B. BARKER

1,729,323

DISPLAY DEVICE

Filed April 1, 1927

3 Sheets-Sheet 1



Witness
Ed Anderson,

Inventor:
Harry B. Barker,
By: *Rummel & Rummel,*
Attys

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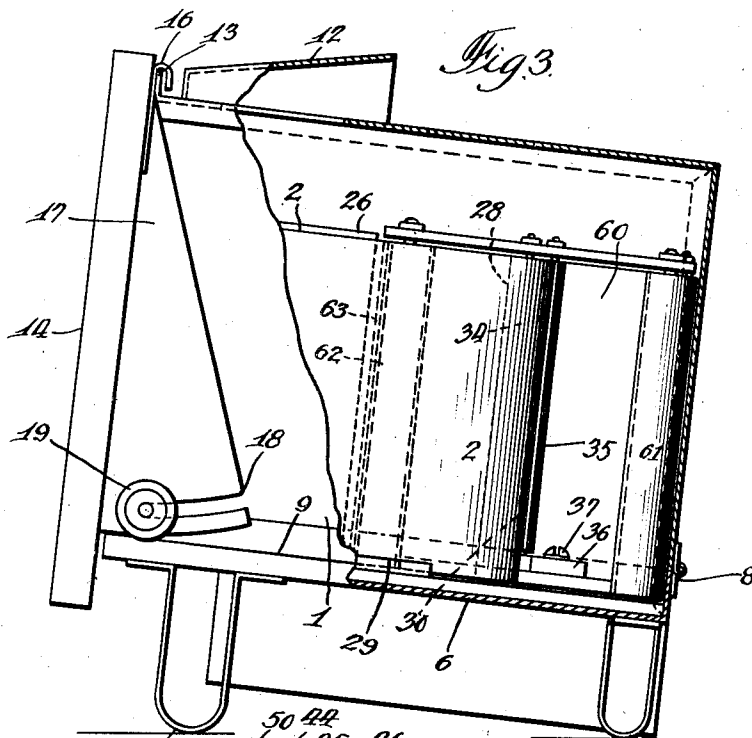
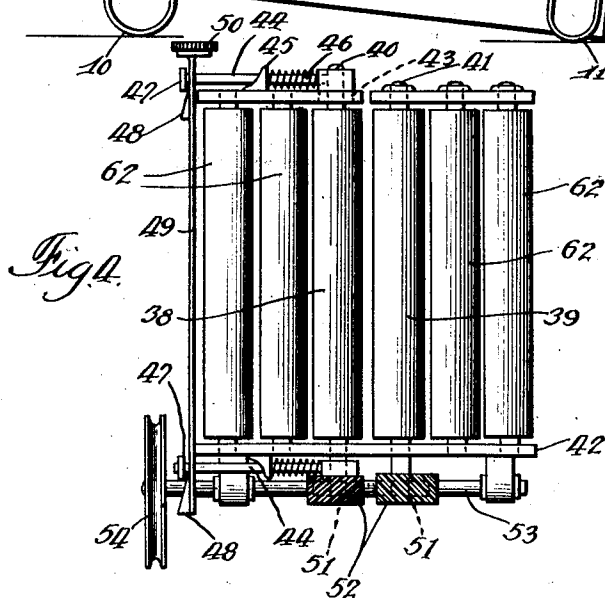
H. B. BARKER

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DISPLAY DEVICE

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3 Sheets-Sheet 2



Inventor.

Witness:
Wm. E. Anderson,

Harry B. Barker,
 By: *Hummel & Hummel*
 Attys.

Sept. 24, 1929.

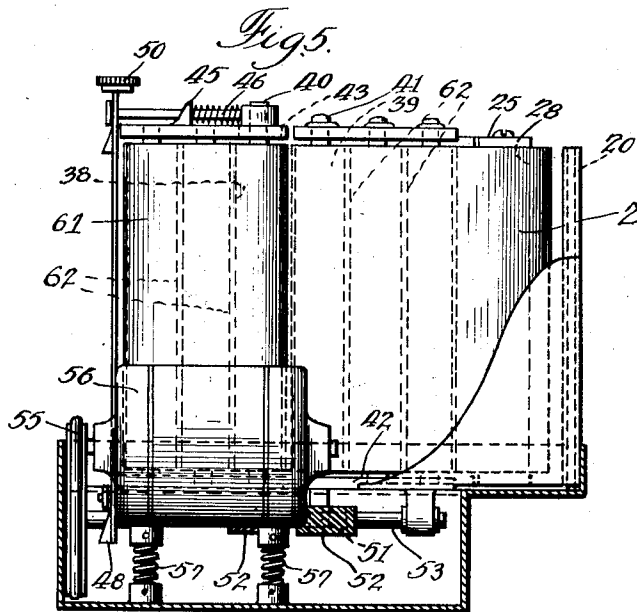
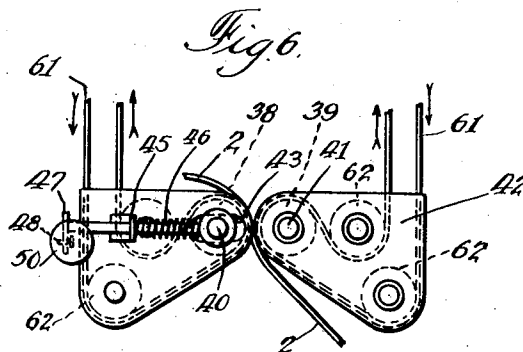
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3 Sheets-Sheet 3



Inventor:

Harry B. Barker,
By: Rummel & Rummel
Attys.

Witness:
W. E. Anderson,

UNITED STATES PATENT OFFICE

HARRY B. BARKER, OF CHICAGO, ILLINOIS, ASSIGNOR TO MOTOGRAPH CORPORATION OF AMERICA, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

DISPLAY DEVICE

Application filed April 1, 1927. Serial No. 180,138.

This invention relates to display devices and particularly to display devices of the illuminated type involving an endless belt or conveyer which is movable in front of a source of light for displaying the signs or other indicia usually forming a part of the belt.

The main objects of this invention are to provide a display device of this kind wherein only that portion of the belt in the display zone is kept taut and the remainder thereof is permitted to accumulate in folds to conserve space for a belt of considerable length; to provide improved means for driving the belt; to provide an improved form of magazine for storing the folded portion of the belt; to provide a magazine of this kind having improved means for feeding the folded portion of the belt through the magazine to prevent jamming of the belt adjacent the driving means; to provide improved means for guiding the taut portion of the belt; to provide improved means for tensioning the belt; to provide an improved form and arrangement of mountings for supporting windows in front of the displayed portion of the belt; and to provide an improved housing for a display device of this kind.

An illustrative embodiment of this invention is shown in the accompanying drawing, wherein:—

Fig. 1 is a top plan of an improved display device with the cover of the casing and the hinged screen removed.

Fig. 2 is a front elevation of the same, portions being broken away for the sake of clearness, and part of the angularly adjustable screen being also shown.

Fig. 3 is an end view of the display device, with portions broken away, and showing the improved mounting for the outer window.

Fig. 4 is a detail in elevation of the belt driving and feeding means.

Fig. 5 is an end elevation of the device, taken from the left of Fig. 1, and with the cover of the housing removed.

Fig. 6 is a top plan of the friction feed mechanism.

In the specific form herein shown, the display device comprising a housing in which is

located an endless belt on which the signs or other indicia are displayed by perforations or in any other suitable manner. Supported in the front part of the housing are a plurality of windows through which a portion of the traveling belt is visible. An improved form of friction drive is provided for moving the belt past the windows. The greater portion of the belt is permitted to accumulate in folds in an improved form of magazine, which is provided with movable walls for feeding the folded portion of the belt away from the friction driving rollers. Located adjacent the outlet end of the magazine is an improved form of tensioning device for tensioning that portion of the belt which is being displayed. Located behind the displayed portion of the belt, is a source of light including an improved form of reflector.

In the specific construction herein illustrated, the improved display device comprises a casing or housing 1, in which is located a display panel in the form of traveling endless belt or strip 2, supported on edge and having a portion thereof held taut by guiding means 3, and driven by an improved friction drive 4. The greater portion of the belt accumulates in folds in a magazine 5, which is adapted to feed the folded portion of the belt away from the friction drive 4.

The housing 1 is preferably made of sheet metal and comprises a base 6, to which is hinged a hood or cover 7 by means of hinges 8.

The base 6 is provided with a peripheral flange 9 and foot portions 10 and 11. The foot portions are constructed so as to give a slight forward and upward tilt to the device as shown in Fig. 3.

Formed on the top of the hood 7, is a ventilator 12. The forward edge of the top of the hood is bent upwardly to provide a supporting ledge or flange 13 for supporting a window frame 14, in which is mounted a translucent or transparent screen 15. The screen 15 may be of any desired color or construction in order to produce the desired screen effects. Extending along the upper edge of the frame 14, is an inverted channel 16, which loosely fits over the flange 13 to provide a

limited hinge connection which enables the lower end of the window frame 14 to be adjusted relative to the display belt. This angular adjustment of the screen 15 permits a large variety of pleasing screen effects which are not attainable by holding the screen 15 parallel to the moving belt. Mounted on the ends of the frame 14, are brackets 17 having slots 18 to receive the posts of adjusting screws 19, mounted on the side walls of the hood 7.

Located behind the screen 15, is a second screen 20 arranged substantially parallel to the belt 2 and supported at its ends in a pair of brackets 21, which are adjustably secured to the base 6 of the housing by adjusting screws 22, so as to permit the screen 20 to be adjusted toward and away from the display belt. The screen 20 may be colored to produce the desired coloring effects and it may be a diffusion screen so as to diffuse the signs or other illuminated indicia.

Located behind the display portion of the belt, is a source of light comprising a battery of incandescent lamps 23, from which light is projected through the display portion of the belt 2.

Located between the lamps 23 and the belt 2, is a third screen 24, disposed upright and supported at its ends in a pair of fixed brackets 25 mounted on the base 6. The screen 24 may be colored any desired color and it is constructed preferably to diffuse the light so as to avoid sharp outlines of the lamps on the belt.

Located behind the incandescent lamps 23, is a reflector plate 26 having its ends secured to the fixed brackets 25.

The strip of webbing 2 may be made of any suitable material and in any desirable width. The signs or other indicia may be applied to the belt in any suitable manner. In the form shown, the belt is made of opaque material which is perforated to outline the display characters, as shown at 27.

In the construction illustrated, the guiding means 3 comprises a plurality of guide rollers 28 and a trough 29. A guide roller 28 is journaled in each of the brackets 25 and a third roller 28 is supported in a bracket 30 adjacent the outlet end of the magazine 5. Each of the rollers 28 comprises a hollow shell having ball bearings 31 at the ends thereof engaging a spindle 32. Embracing the spindle 32, is a wick 33 adapted to feed a lubricant in the shell to the bearings 31.

Located between the bracket 30 and the outlet of the magazine 5, is an improved tensioning device comprising a pair of rollers 34 engaging one side of the belt and a pressure element 35 engaging the opposite side of the belt at a point located between the rollers 34. In order to permit adjustment of the tension, the pressure element 35 is supported on a

bracket 36, which is adjustably secured to the base 6 by an adjusting screw 37.

The improved driving means 4, as herein illustrated, comprises a pair of upright friction rollers 38 and 39 rotated in respectively opposite directions for feeding the belt 2, which passes between them. The rollers 38 and 39 have spindles 40 and 41 respectively which are supported in a frame 42. In order to permit removal of the belt 2, the roller 38 is shiftable away from the roller 39 and for this purpose the spindle 40 engages slots 43 in the frame 42. Secured to the ends of the spindle 40, are horizontal rods 44 axially shiftable in lugs 45. Embracing the rods 44, are springs 46 which bear between the lugs 45 and spindle 40 for normally urging the roller 38 toward the roller 39. Mounted on the outer ends of the rods 44, are shoulders 47, which are adapted to engage cams 48 on a vertically movable rod 49 for retracting the roller 38. A knob 50 is mounted on the upper end of the rod 49 to facilitate lifting of the rod.

Fixed on the lower ends of the spindles 38 and 39 are worm gears 51 engaging gears 52 fixed on a horizontal drive shaft 53. Mounted on the shaft 53, is a pulley 54 driven by a belt 55 connected to a suitable electric motor 56. The motor 56 is mounted on springs 57 which enable the motor to be tilted laterally to a limited extent for tensioning the driving belt 55. The motor 56 is controlled by a rheostat 58.

In the construction illustrated, the improved magazine 5, in which the major portion of the webbing accumulates in folds, comprises a pair of fixed end walls 59 and 60 and a pair of movable side walls 61. The walls 59 and 60 are mounted on the base 6 and are provided with central openings 62 and 63 respectively through which the belt 2 travels.

The side walls 61 comprise endless traveling belts of substantially the same width as the display belt 2. The belts 61 extend around idlers 62 and also around the driving rollers 38 and 39 by which they are fed in the direction of the belt 2. The idlers 62 are substantially similar in construction to the guide rollers 28. Idlers 63 engage the outer portions of the belts 61 for keeping them taut. With this improved form of magazine, the folds of the belt 2 are constantly fed toward the outlet 63 which prevents jamming of the belt at the feed rollers 38 and 39.

In operation, the belt 2 is continuously driven at a speed which will enable the observer to readily read the characters on the belt. The light from the lamps 23 is colored or diffused by the screen 24 and is then projected through the perforations in the belt 2. The illuminated characters are projected from the moving belt onto the screen 20 by which they may be further diffused or colored. The screens 20 and 15 may be used together

or separately, depending upon the effects which it is desired to obtain.

Although but one specific embodiment of this invention has been herein shown and described, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claims.

10 I claim:

1. A device for moving a strip of material comprising a frame, a pair of coaxing rollers having spindles journaled in said frame, gearing for positively rotating said spindles, 15 a pair of axially movable rods mounted on said frame and secured at one end to one of said spindles, springs embracing said rods and arranged to normally urge the roller on said one spindle toward the other roller, and 20 an operating element adapted to retract said rods against the action of said springs for moving said one roller away from the other roller.

2. A display device comprising a housing 25 having a base, a hood hinged to said base and having an opening in one side thereof, an upstanding flange on said hood adjacent said opening, a diffusion screen located in said opening and having a groove engaging said 30 flange to form a hinge permitting angular adjustment of said screen, a bracket on one side of said screen, a set screw on said hood engaging said bracket, a source of light in said housing, and a display panel arranged 35 between said source of light and screen.

3. A display device comprising a housing having an opening in one side thereof, a source of light in said housing, a display panel located between said opening and 40 source of light, a stationary screen located between said source of light and panel, a second screen located in said opening and hinged to said housing so as to be adjustable angularly relative to said panel, and a third 45 screen located between said panel and second screen and movable toward and away from said panel, said first mentioned screen and third screen being substantially parallel to said panel.

50 4. In a device of the class described, a display belt, a magazine for storing the major portion of said belt, a plurality of rollers, a pair of said rollers being journaled at one end of said magazine and co-operating to form 55 drive rollers, a pair of endless belts supported on said rollers and driven by said drive rollers, said endless belts forming movable side walls for said magazine, said display belt being disposed between said drive rollers, and means for resiliently urging one of 60 said drive rollers toward the other drive roller so as to cause said endless belts to frictionally engage and drive said display belt.

5. In a device of the class described, a magazine having an end wall provided with an

inlet opening for receiving a traveling belt, and a pair of rollers located outside of said magazine adjacent said opening for engaging the belt as it enters said opening, the edges of said magazine end adjacent said 70 opening being arranged to form guards disposed in substantially the same plane for securing the belt against backward movement around said rollers.

6. In a device of the class described, a magazine for receiving a traveling belt, a pair of drive rollers journaled adjacent one end of said magazine for feeding the traveling belt thereinto, and an end wall disposed in a single plane and positioned closely adjacent 80 one of said drive rollers for closing the end of the magazine and for guiding the incoming traveling belt away from said drive roller.

7. In a device of the class described, a magazine for receiving a traveling belt, a pair of drive rollers journaled adjacent one end of said magazine for feeding the traveling belt 85 thereinto, and a pair of inwardly extending end walls disposed in substantially the same plane and having their inner ends positioned closely adjacent said drive rollers for closing the end of said magazine and for guiding the incoming traveling belt away from said 90 rollers.

Signed at Chicago this 29th day of March, 1927.

HARRY B. BARKER.

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