June 17, 1930. H. B. BARKER 1,763,742

DISPLAY SIGN

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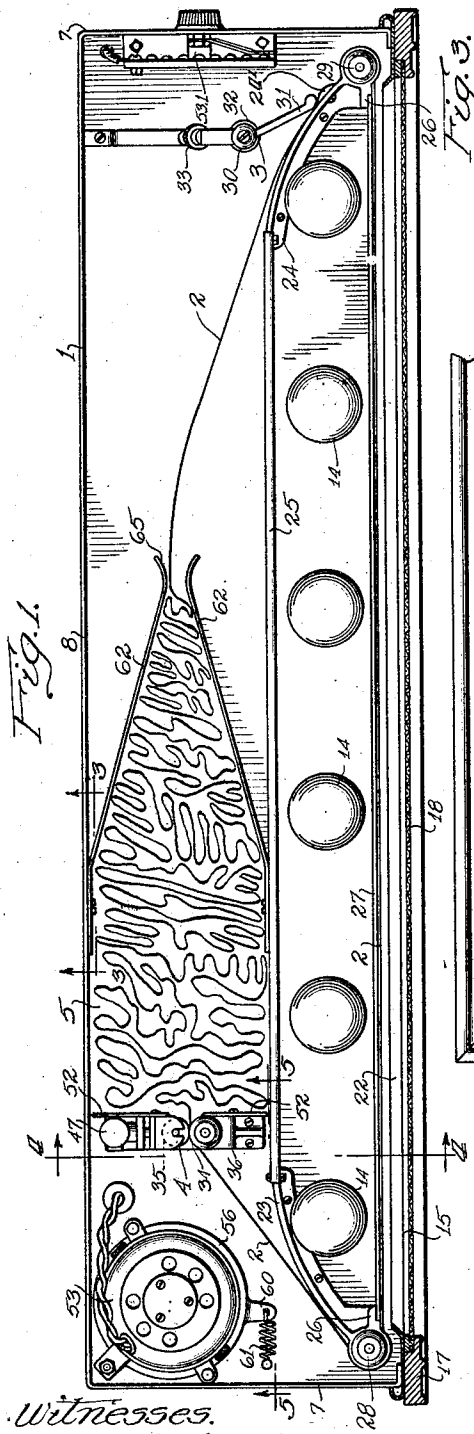


Fig. 1.

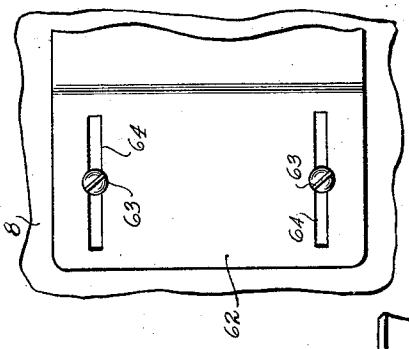


Fig. 3.

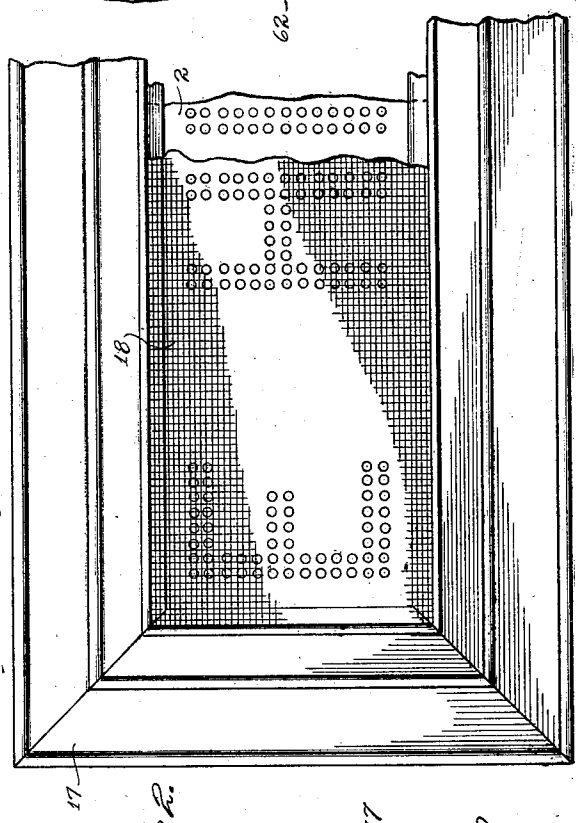


Fig. 2.

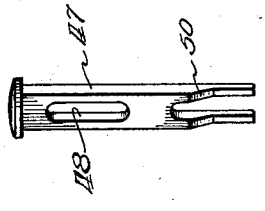


Fig. 7.

Witnesses.
Arthur M. Franke.
Ken E. Anderson.

Inventor.
Harry B. Barker,
By Rummler & Rummler,
Attys.

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Fig. 4.

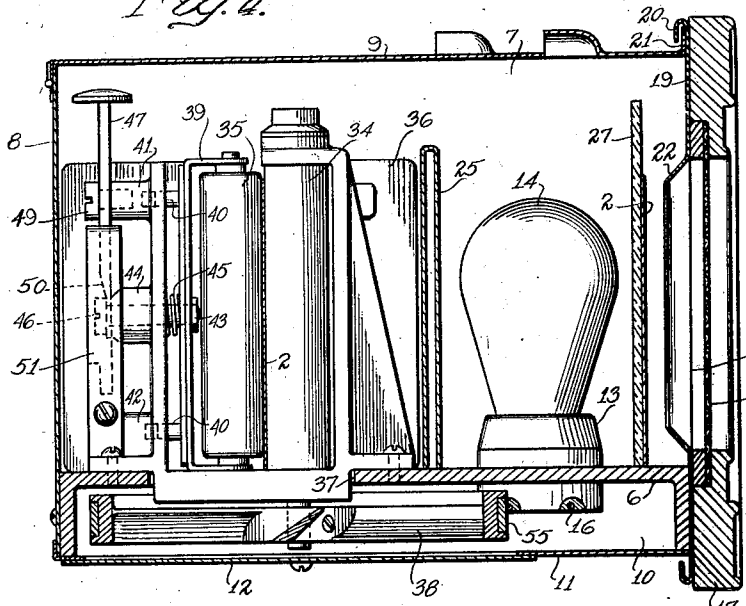


Fig. 8.

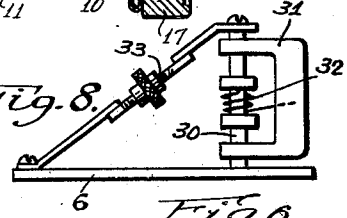


Fig. 5.

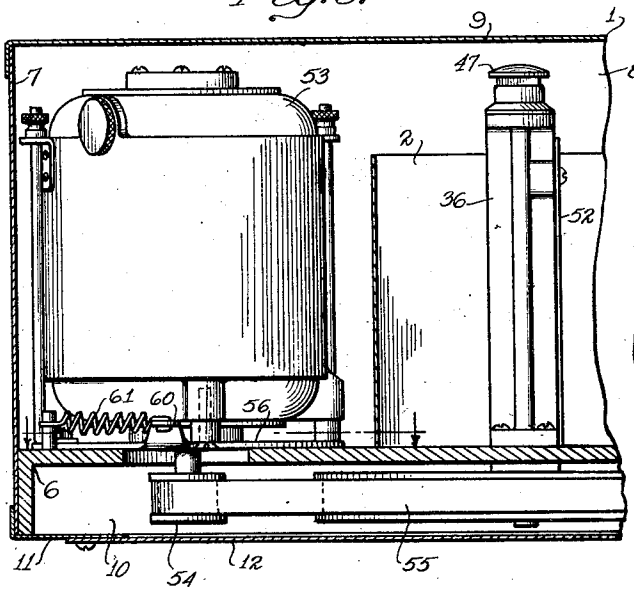
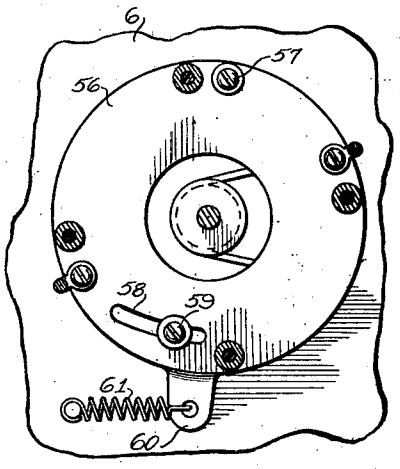


Fig. 6.



Witnesses.
Arthur M. Franke
H. E. Anderson

Inventor.
Harry B. Barker,
By Kummler & Kummler.
Attys.

Patented June 17, 1930 1,763,742

UNITED STATES PATENT OFFICE

HARRY B. BARKER, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CHARLES W. RAYNOR, OF NEW YORK, N. Y.

DISPLAY SIGN

Application filed February 23, 1929. Serial No. 342,052.

This invention relates to display devices wherein the words or other characters to be displayed are carried by an endless belt and, more particularly, to a device of this kind wherein the greater portion of the belt is accumulated in folds within a magazine or storage chamber through which it is fed in order to conserve space for a display belt of considerable length.

The main objects of this invention are to provide a display device of this kind having improved means for driving the display belt; to provide an improved form of support for a motor connected to said driving means; to provide a motor support which is adjustable for tensioning the connection between said driving means and motor; to provide improved guide means for unfolding the belt as it leaves the magazine; to provide improved means for tensioning that portion of the belt passing through the display zone; to provide an improved form of screen through which the display portion of the belt is visible; and to provide an improved housing for a display device of this kind.

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

Figure 1 is a top plan of an improved display device; the cover being removed and the window frame being shown in section.

Fig. 2 is an enlarged fragmentary front elevation of the device.

Fig. 3 is a detail showing a portion of the guiding means for unfolding the belt; the view being taken on the line 3—3 of Fig. 1.

Fig. 4 is an enlarged transverse section taken on the line 4—4 of Fig. 1.

Fig. 5 is an enlarged fragmentary section of the device, taken on the line 5—5 of Fig. 1.

Fig. 6 is a horizontal section taken on the line 6—6 of Fig. 5 and showing the motor support.

Fig. 7 is a perspective of the plunger which releases one of the feed rollers.

Fig. 8 is a detail in side elevation showing the belt tensioning device.

In the construction herein shown, the improved display device comprises a housing 1, in which is located a traveling endless belt 2, a portion of which is adapted to be held taut, while passing through the display zone, by means of an improved tensioning device 3 and driving means 4. The greater portion of the belt 2 is adapted to accumulate in folds within an improved magazine or storage chamber 5.

The housing 1 is preferably made of metal and, in the form shown, it includes a base 6 on which is mounted a plate which is bent to form end walls 7, and a rear wall 8 to which is hinged a cover 9.

The lower side of the base 6 is grooved to provide a recess 10 for housing the electrical conductors and certain parts of the driving means 4. A bottom plate 11 extends across the recess 10 and is provided with a removable gate 12 providing access to the parts housed within the recess 10.

Mounted adjacent the forward edge of the base 6, is a row of sockets 13 for supporting a battery of incandescent bulbs 14 which are located directly behind a window 15 in the front part of the housing 1. The sockets 13 are connected to conductors 16 located in the recess 10 of the base.

Extending across the open front part of the housing, is a frame 17, which supports an open mesh wire screen 18 located directly in front of the window 15 for filtering the rays which project forwardly through the display belt 2.

In display devices heretofore in use, glass window panes have been used but they were objectionable because they frequently caused a glare. The improved open mesh screen herein described produced the desired effect without the objectionable glare.

Mounted on the rear face of the frame 17, is a plate 19 having its upper edge bent inwardly to provide a channel 20 which fits over a flange 21 formed on the forward edge of the cover 9.

The inner edges of the plate 19 are flared inwardly adjacent the window 15, as shown at 22, to prevent the light above and below the belt 2 from passing through the screen 18.

Mounted on the base 6 at respectively opposite ends of the housing 1, is a pair of brackets 23 and 24 to which is secured an upright

partition 25 located behind the light bulbs 14.

Formed in the brackets 23 and 24 are vertical guides 26 which support a diffusion plate 27 located between the bulbs 14 and the window 15.

Journaled in the brackets 23 and 24, is a pair of guide rollers 28 and 29 respectively which support the display belt 2 while it travels across the window 15 or display zone. The bracket 24 is provided with a projecting lug 24' which prevents the web 2 from climbing on the roller 29.

The display belt 2 may be made of any suitable flexible material, but it preferably comprises an opaque strip having the display characters formed therein by means of perforations.

In the form shown, the improved tensioning device 3 includes an upright post 30, having hinged thereto a tensioning blade 31 which is yieldingly urged into frictional contact with the belt 2 by a helical spring 32 embracing the post 30. Extending between the base 6 and the upper end of the post 30, is a turnbuckle 33, whereby the upper end of the post may be shifted for adjusting the tension of the blade 31.

In the embodiment illustrated, the driving means 4 includes a pair of upright rollers 34 and 35 arranged on respectively opposite sides of the belt 2 in position to grip the belt and feed it endwise.

The roller 34 is journaled in a substantially U-shaped bracket 36 having its base part seated in an opening 37 formed in the base 6. Fixed on the lower end of the roller 34, is a pulley 38 which is located in the recess 10 of the base.

The roller 35 is journaled in a yoke 39 having pins 40 which are slidable horizontally in bearings 41 and 42 formed on the bracket 36.

Secured to the yoke 39, is a centrally located stud 43 which extends through a bearing part 44 on the bracket 36. Embracing the stud 43, is a spring 45 which is adapted to normally urge the roller 35 into frictional contact with the belt 2.

Mounted on the outer end of the stud 43, is a head 46 adapted to engage a vertically movable plunger 47.

The plunger 47 has a slot 48 which receives a pin 49 mounted on the bearing member 41. The lower end of the plunger 47 is bifurcated so as to be adapted to straddle the stud 43 and it is slightly tapered to form a cam surface 50 which is adapted to engage the head 46 for moving the roller 35 away from the belt 2 when the plunger is depressed.

A friction blade 51 is mounted on the bracket 36 in position to frictionally engage the plunger 47 for securing it against accidental movement.

Secured to the inner side of the bracket 36, is a pair of blades 52 which serve as scrapers for cleaning the rollers 34 and 35 and also prevent the belt 2 from following the rollers.

The drive rollers are adapted to be driven by an electric motor 53 having a pulley 54 located in the recess 10 and connected to the pulley 38 by a belt 55. The motor 53 is controlled by a rheostat 53.1.

In the form shown, the motor 53 is rigidly mounted on an annular plate 56, which is pivotally secured to the base 6 by a pin 57. Formed in the plate 56, diametrically opposite the pin 57, is an arcuate guide slot 58, which receives a pin 59 mounted on the base 6.

Extending outwardly from the plate 56, at a point adjacent the slot 58, is a lug 60 which is secured to one end of a spring 61. The other end of the spring 61 is secured to the base 6. With this improved construction and arrangement of parts, the motor 53 is yieldingly urged away from the drive rollers 34 and 35 thereby tensioning the drive belt 55.

In the embodiment illustrated, the magazine 5 is defined by the base 6, rear wall 8, partition 25 and the plates 52.

In order to unfold the belt before it reaches the tensioning device 3, a pair of yielding arms 62 are located in the magazine in position to yieldingly engage respectively opposite sides of the belt.

Mounted on the rear wall 8 and partition 25, are screws 63 which engage longitudinally disposed slots 64 formed in the arms 62 for permitting adjustment of the arms longitudinally of the magazine 5 so as to accommodate display belts of various lengths.

The free ends of the arms 62 extend inwardly so as to define a narrow outlet passage 65 through which the belt is withdrawn.

In operation, the belt 2 is driven at a speed which will enable the observer to readily read the characters on the belt. The light from the lamps 14 is diffused by the screen 27 and is then projected through the belt 2, window 15 and open mesh screen 18.

The portion of the belt being displayed is held taut by the improved tensioning device 3 and driving means 4 and the greater portion of the belt accumulates in folds within the magazine 5. When the belt passes out of the magazine, it is unfolded by the improved arms 62.

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.

I claim:

1. A display device comprising a housing, a magazine located in said housing, an endless display belt movable endwise through said magazine, said belt being adapted to accumulate in folds within said magazine, and

a pair of yieldable arms mounted in said magazine in position to engage respectively opposite sides of said belt for unfolding said belt as it travels from said magazine, said yieldable arms being adjustable longitudinally of said magazine.

2. A display device comprising a housing, an elongated magazine located in said housing and having inlet and outlet openings, an endless display belt movable on edge through said magazine and adapted to accumulate therein in folds, and a pair of resilient arms located in said magazine on respectively opposite sides of said belt, one end of each of said arms being secured to said magazine, the other end of each of said arms extending inwardly toward the outlet of said magazine for unfolding the belt as it is withdrawn from said magazine.

3. A display device comprising a base, guides mounted above said base, an endless display member supported on said guides, driving means located above said base for moving said member endwise, a pulley located below said base and connected to said means, a motor located above said base and having a pulley disposed below said base, a belt connecting said pulleys, a support for said motor pivotally secured to said base, and a spring normally urging said support away from said driving means for tensioning said belt.

4. A display device comprising a base, guides mounted on said base, an endless traveling belt supported edgewise by said guides, an upright post mounted on said base, a tensioning element hinged on said post and normally urged into frictional contact with said belt, and means for adjusting the upper end of said post toward and away from said belt.

5. A display device comprising a base, guides mounted on said base, an endless traveling belt supported edgewise by said guides, an upright post mounted on said base, a tensioning element hinged on said post and normally urged into frictional contact with said belt, and a turnbuckle connected to said base and to the upper end of said post for adjusting the position of said tensioning element relative to said belt.

6. A display device comprising a base, an endless display belt movable endwise on said base, a pair of feed rollers arranged on respectively opposite sides of said belt, means for driving one of said rollers, a yoke supporting the other of said rollers, a bracket mounted on said base, a stud mounted on said yoke and slidably engaging said bracket, a longitudinally movable plunger on said bracket, and a cam on said plunger adapted to engage said stud for moving said other roller away from said belt.

7. A display device comprising a base, guides on said base, an endless belt supported edgewise on said guides, a pair of upright feed rollers arranged on respectively opposite sides of said belt, means for driving one of said rollers, a yoke supporting the other of said rollers, a bracket on said base, a horizontally disposed stud mounted on said yoke and slidably engaging said bracket, a head on said stud a spring embracing said stud and bearing between said bracket and said yoke for normally urging said other roller into frictional contact with said belt, a vertically movable plunger on said bracket, said plunger having a bifurcated portion straddling said stud, and a cam on said plunger adapted to engage said head for moving said other roller away from said belt.

8. A display device comprising a base, guides on said base, an endless belt supported edgewise on said guides, a pair of upright feed rollers arranged on respectively opposite sides of said belt, means for driving one of said rollers, a yoke supporting the other of said rollers, a bracket on said base, a horizontally disposed stud mounted on said yoke and slidably engaging said bracket, a head on said stud, a spring embracing said stud and bearing between said bracket and said yoke for normally urging said other roller into frictional contact with said belt, a vertically movable plunger on said bracket, said plunger having a bifurcated portion straddling said stud, a friction element engaging one side of said plunger, and a cam on said plunger adapted to engage said head for moving said other roller away from said belt.

Signed at Chicago this 21st day of February, 1929.

HARRY B. BARKER.