

Oct. 26, 1937.

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2,097,148

MOVING DISPLAY APPARATUS

Filed May 22, 1936

2 Sheets-Sheet 1

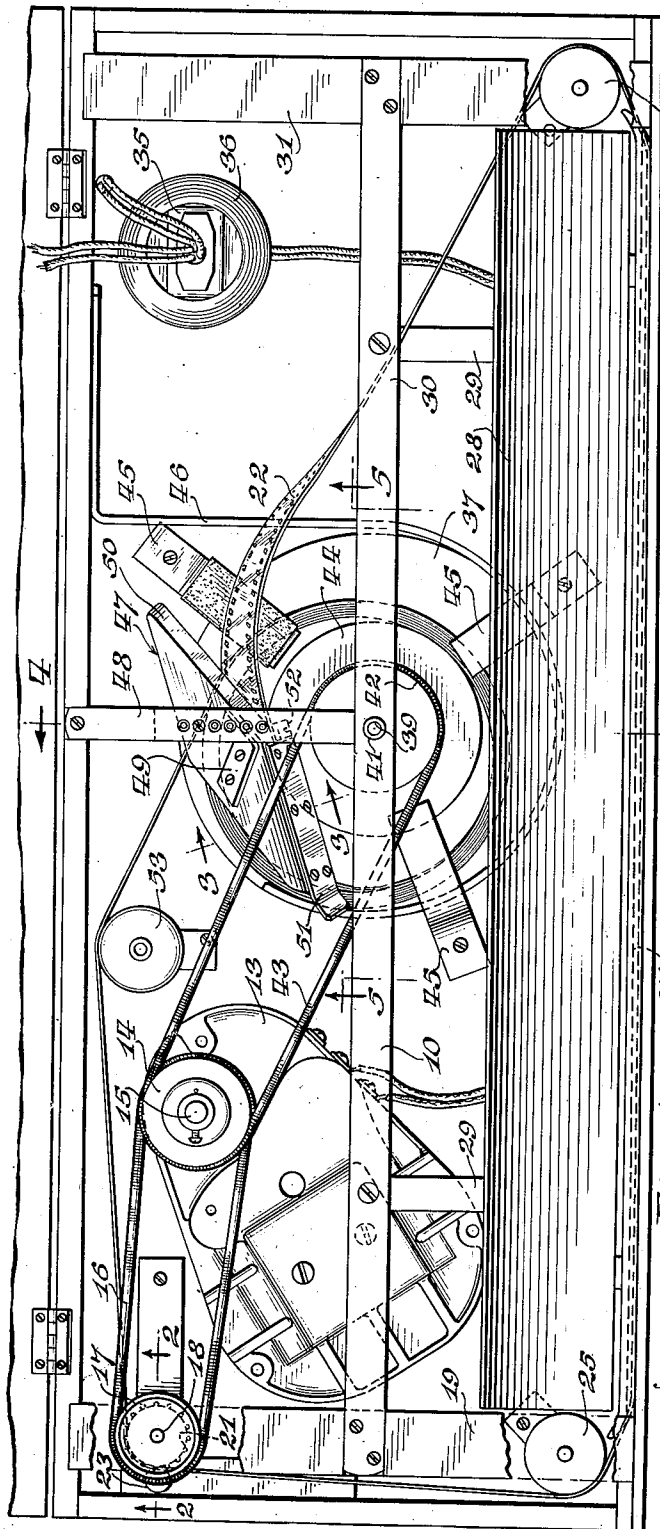


Fig. 1

Fig. 2

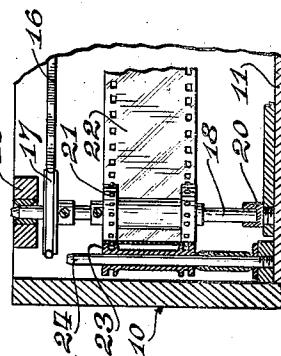
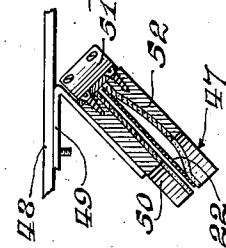


Fig. 3



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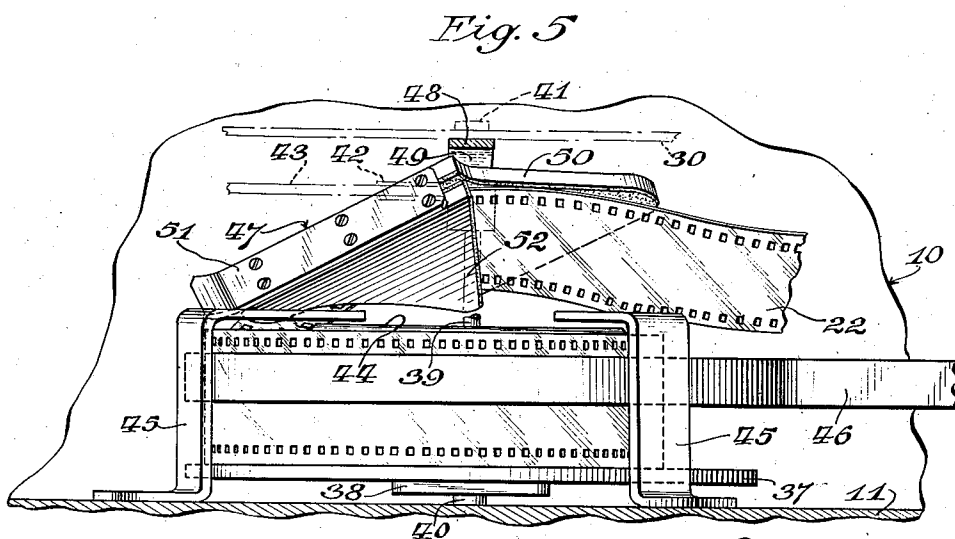
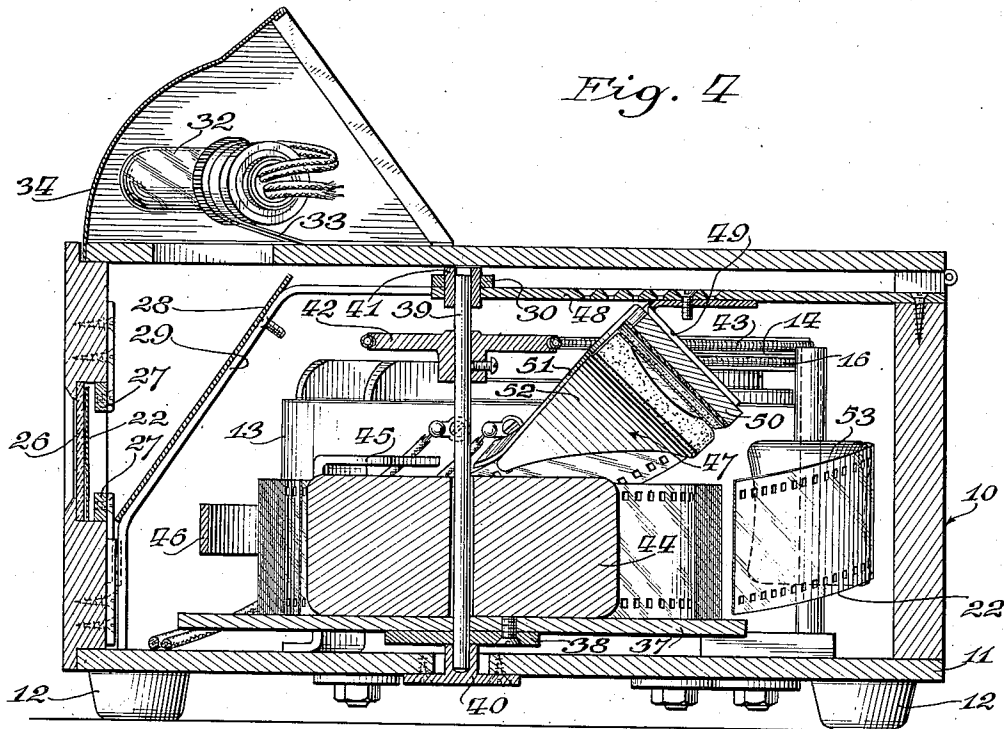
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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MOVING DISPLAY APPARATUS

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2 Claims. (Cl. 40—32)

Moving-display apparatus can be used for the display of a series of pictures or a message of considerable length, for advertising and other purposes. Since the moving band bearing the images to be displayed must be fed through the mechanism hour after hour and day after day, it is important that the mechanism be so constructed that interruptions in its operation cannot occur. The chief difficulty to be avoided is binding and snarling of the moving band.

The principal object of the invention is to provide an efficiently-operating and reliable moving-display apparatus. More specific objects and advantages are apparent from the description in which reference is had to the accompanying drawings illustrating a preferred embodiment of the invention.

Figure 1 is a plan view of the apparatus with the cover thrown back;

Figure 2 is a fragmentary vertical section on the line 2—2 of Figure 1;

Figure 3 is a fragmentary vertical section on the line 3—3 of Figure 1;

Figure 4 is a vertical section of the apparatus taken on the line 4—4 of Figure 1; and

Figure 5 is a fragmentary vertical section taken on the line 5—5 of Figure 1.

These specific drawings and the specific description that follows are to disclose and illustrate the invention and are not to impose limitations upon the claims.

In general the apparatus comprises a device for propelling the display band and a device for receiving a coil of the band that has passed a propelling means, the latter device being rotated at such a speed that the linear speed of the portion thereof in contact with the band as it enters the device is greater than the speed at which the propelling device moves the band. The coil receiving device is preferably a rotatable platform having a roller mounted rotatably upon the central portion thereof.

Since the coil receiving device tends to move the band faster than it is fed by the propelling device, the band must necessarily slip where it contacts the receiving device or platform. It is kept stretched tightly between the propelling and receiving devices however, and any slack that occurs between these devices is quickly taken up. The roller keeps the coil from being pulled out of proper position on the platform by the tension that exists between the coil and the propelling device and a retaining bar encircling the coil may be provided as an additional precaution.

In order to prevent the band from being fed

from the receiving device faster than it is fed by the propelling device, a guide may be used for leading the band away from the coil that provides sufficient friction to prevent the band from being fed from the coil when there is no tension on the part of the band that has passed the guide. Then if the display band is endless it may be propelled by a sprocket or other positively gripping device that draws it through the guide from the coil.

The apparatus illustrated in the drawings is contained in a wooden housing 10 mounted upon a base 11 (see Figure 4) that is supported by rubber feet 12 screwed to the base. The top of the housing is hinged to the rear wall thereof. Upon the base 11 is bolted a driving unit 13 containing a motor and reduction gearing, which drive a double pulley 14 fixed on a shaft 15 that extends from the top of the driving unit 13. One belt 16 driven by the double pulley 14 is passed around a single pulley 17 (see Figure 2) that is fixed upon a vertical shaft 18 having its upper end journaled in a bearing pressed into a wooden cross piece 19 that bridges the top of the housing, and its lower end journaled in a step bearing 20 secured to the base 11.

Fixed on the vertical shaft 18 is a double sprocket 21 for driving an endless film 22 that constitutes the display band. A guide roller 23, journaled on a vertical spindle 24 fixed to the base 11, is used to hold the film 22 against the double sprocket 21. At the front corners of the housing the film passes around rollers 25 journaled upon vertical pins identical with the spindle 24 that carries the guide roller 23. As it passes between the rollers 25 the film 22 travels over a glass window 26 (see Figure 4) that extends across the front of the housing. To hold the film 22 in place behind the window 26, a pair of guide bars 27 are provided extending the length of the window and secured to the inside of the housing.

A reflecting sheet of metal 28, which may be of any desired color, is supported at an angle to the front of the housing 10 upon two brackets 29 that are screwed at their lower ends to the housing 10, and at their upper ends to a center bar 30 extending across the top of the housing and between the cross piece 19 and a similar cross piece 31 at the other end. Electric lamps 32, supported by means of brackets 33 over a slot that extends along the top of the housing above the reflecting sheet 28, are used to illuminate the film. The light is thrown downward from the lamps by means of a reflector 34, which also

projects light backward upon objects resting on top of the housing. An electrical plug 35 and socket 36 are used to connect both the lamps and the driving motor with the supply line.

5 A platform 37 for receiving the coil of film is made of hard rubber or other suitable material and is screwed to a metal backing plate 38 fixed upon a vertical shaft 39. A step bearing 40
10 for the shaft 39 extends upward through an aperture in the base 11 and is screwed to the bottom of the base, and the upper bearing 41 for the shaft is pressed into the center bar 30. Fixed on the shaft is a single pulley 42 driven by means of a belt 43 from the double pulley 14. A wooden
15 roller 44 of substantial diameter rests upon the platform 37 and fits loosely around the vertical shaft 39.

To hold the coil of film in place upright brackets 45 are screwed to the base 11 and extend over the coil, and a curved retaining bar 46 is screwed to the rear wall of the housing and encircles the coil. The guide 47 for leading the film out of the coil is adjustably secured to a cross bar 48 extending between the center bar 30 and the rear wall of the housing. The
25 supporting bracket 49 (see Figures 3 and 5) for the guide 47 is screwed to the upper wooden guide piece 50. A metal cover plate 51 extends along the upper edge of the upper guide piece 50, and is screwed to the upper guide piece and to a lower wooden guide piece 52 parallel thereto. The intermediate portion of the guiding surface of the lower guide piece 52 is hollowed out as shown in Figure 3, and the guiding surfaces of
30 both pieces are covered with felt to protect the film. As the film leaves the guide 47, it is supported by the upper arm of one of the vertical brackets 45, which is likewise covered with felt. Between the sprocket 21 and the platform 37
40 a roller 53 is provided to guide the film which is identical with the rollers 25.

In the operation of the apparatus the driving unit 13 rotates the sprocket 21 and platform

37 by means of the belts and pulleys. As the film is fed forward by the sprocket, it is drawn forward to the platform by reason of the rotation thereof, the linear speed of the platform immediately below the periphery of the roller 44
5 being greater than the linear speed of the teeth on the sprocket 21. Since the outer turns of film in the coil tend to travel at a greater linear speed than the inner turns, the coil is kept expanded upon the platform. If considerable
10 slack develops between the platform and the first roller 25, the friction provided by the guide 47 prevents the film from being fed out of the coil until the slack has been taken up. In the meantime, the coil keeps itself expanded to its
15 maximum possible diameter and there is no binding caused by tightening of the coil.

Changes may be made in the illustrated apparatus and various devices embodying the substance of the invention may be constructed to
20 meet various requirements.

I claim:

1. In an apparatus of the class described, in combination, a display band, means for propelling the band, a platform to receive a coil of
25 the band that has passed the propelling means, means for rotating the platform at such a rate that the linear speed of the portion of the platform that contacts the entering band is greater than the speed with which the propelling means
30 moves the band, a roller of substantial diameter in relation to the width of the band, rotatably mounted on the platform inside the coil, and a retaining bar encircling the coil on the platform.
35

2. In an apparatus of the class described, in combination, a tilted guide bracket for a display band, comprising a cover plate, an upper guide piece, and a lower guide piece, arranged parallel to the upper guide piece and having the intermediate portion of its guiding surface
40 hollowed out.

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