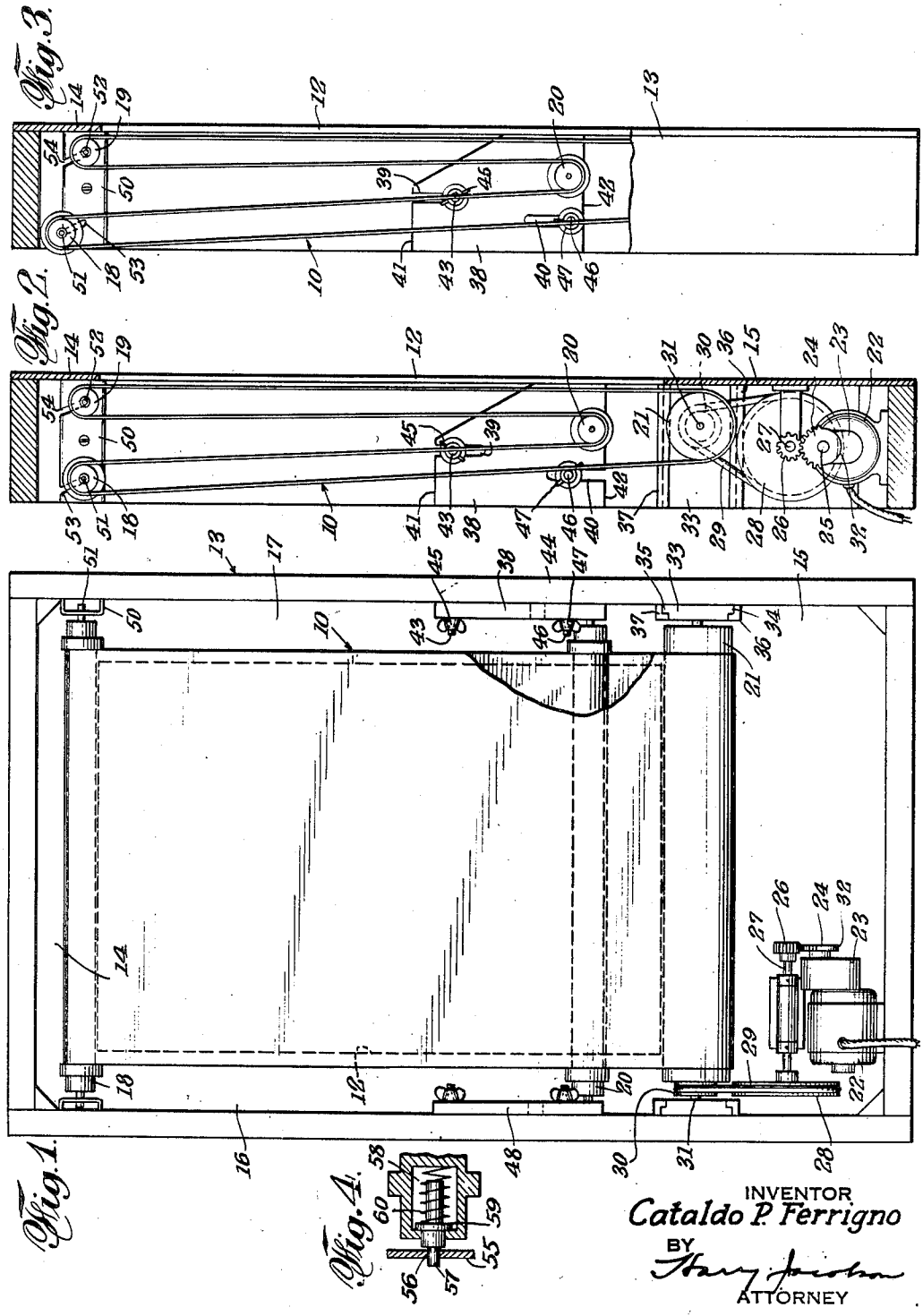
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CHANGEABLE SIGN

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CHANGEABLE SIGN

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9 Claims. (Cl. 40—32)

This invention relates to changeable signs, and particularly to that type wherein successive areas of a band are consecutively and visibly framed in an opening.

My invention contemplates the provision of simple, inexpensive but efficient means for removably and adjustably supporting a continuous band carrying a plurality of signs and for intermittently moving the band to present successive signs to view for a definite period.

My invention further contemplates the provision of simple removable means for supporting the band in such a manner that the band may quickly and easily be removed or replaced by another carrying different signs.

My invention further contemplates the provision of removable supporting and operating means for the band, which means are capable of easy and quick adjustment to maintain the band in a taut or stretched condition.

My invention further contemplates the provision of a self-contaned, portable, changeable sign of simple and inexpensive construction, in which the sign-carrying part is intermittently operated and is supported in an accessible manner for quick and easy removal thereof and adjustment or replacement.

The various objects of the invention will be clear from the description which follows and from the drawing, in which,

Fig. 1 is a rear elevation of my improved sign.

Fig. 2 is a vertical section of the same.

Fig. 3 is a similar fragmentary vertical section and partial side elevation of the same, showing the position into which certain parts are moved preparatory to removing the band.

Fig. 4 is a vertical section of a modified form of mounting for certain of the rollers.

In the practical embodiment of the invention which I have shown by way of example, the continuous band 10 of fabric or other suitable flexible material is mounted on a plurality of rollers and is moved intermittently to arrange successive predetermined areas thereof in the framed opening 12 of the supporting frame 13. Said frame is preferably, though not necessarily, made of wood, for purposes of economy and ornamental appearance. The back of the frame is left open, but the front is partly covered at the top by the transverse member 14 and the bottom by the transverse member 15, the side pieces 16 and 17 cooperating with said members 14 and 15 to form the opening 12 in which the various sign-carrying parts of the band are successively exposed.

On successive areas of the band each of the same size, are carried the signs intended to be exposed to view in the opening 12. Said signs may be printed or otherwise applied to paper or the like if desired and adhesively secured to the band, or may be otherwise applied to the band directly or indirectly by printing or by hand in a manner which is obvious and need not be described in detail.

The band is passed over a series of longitudinally and transversely spaced rollers as 18, 19, 20 and 21 in such a manner, that though the band is of comparatively great length compared to the size of the opening 12, it nevertheless occupies a comparatively small space within the frame when in use. Each of the rollers is mounted at its ends in a suitable bearing, which may, if desired, be an anti-friction bearing such as a ball bearing carried by removable adjustable or fixed bearing members later to be described. It will be noted that the rollers 18, 19 and 21 engage or contact with the inner face of the band 10, while the roller 20 similarly engages or contacts with the other face, that is, the outer face of the band. Therefore, to remove the band from the rollers, the roller 20 need not be withdrawn from the frame, as will be more fully explained hereinafter. Each of the rollers is provided with a pair of suitable flanges to maintain the band in its proper position thereon.

For intermittently operating the rollers and thereby moving the band so as to frame signs carried by the band successively in the opening 12, any suitable mechanism may be used which moves the band continuously until a sign is framed and then halts the band for a predetermined interval so that the sign remains stationary in the opening, and then continues the movement of the band until the next sign is framed and then repeats the above-described intermittent operation.

As shown, said mechanism comprises the electric motor 22, carried by the base of the frame and receiving current from any suitable source. The reduction gear unit 23 of any well-known type is operated by the motor and carries the segmental or mutilated gear 24 on the drive shaft 25 thereof. Meshing with the segmental gear 24 is the gear 26 on the pulley shaft 27, said shaft also carrying the pulley 28. The belt 29 passes about said pulley and also around the pulley 30 on the roller shaft 31, which shaft also carries the roller 21.

It will be seen that on the energization of the motor 22, the mutilated gear 24 is continuously

rotated at the proper speed and the roller 21 is also rotated for a sufficient time to frame a sign carried by the band 10. When the sign reaches its framed position in the opening 12, the mutilated portion 32 of the gear 24 becomes arranged adjacent the gear 26 and becomes inoperative to rotate said gear. Consequently, movement of the band 10 is halted and the sign in its framed position remains stationary in the opening 12 until the blank or mutilated part 32 of the gear 24 passes the gear 26, whereafter said gear 24 becomes effective to continue the rotation of the gear 26 and the vertical movement of the band across the opening until the next sign is framed in the opening. It will further be seen that successive signs are successively framed in the opening, each remaining stationary for a predetermined time in said opening dependent on the size of the mutilated part 32 of the gear 24.

The band 10 in its operative position passes under the roller 21 and extends past both sides thereof. One side of the band passes over the roller 18 and under the roller 20, while the other side of the band passes over the roller 19 and under the roller 20. It will be understood, however, that any number of rollers may be provided as may be found convenient or desirable, so that the band 10 may be of any desired length depending on the number of different signs it is desired to display or exhibit, and a plurality of rollers similar to the roller 20 may be used to contact the outer face of the band.

As has been hereinbefore indicated, means are provided for so supporting the rollers 18, 19 and 21 that they may be removed entirely from the device or adjusted to maintain the band 10 in a taut or stretched condition. For this purpose, each end of the roller shaft 31 for the roller 21 is removably mounted in a suitable preferably anti-friction bearing carried by the slide 33. Said slide is provided with edge tongues as 34, 35 sliding in the laterally extending L-shaped guides 36 and 37, respectively, which are secured to the frame. The slide and guides for both ends of the roller shaft being identical in construction and operation, the description of one will suffice for both. It will be seen that after the belt 29 has been removed from the pulley 28, the roller 21 and the slide blocks 33 may be moved laterally as a unit in the guides 36 and 37 to adjust said roller 21 or to remove it completely from the frame and from the band so that the band may be removed and replaced with another one.

The roller 20 is mounted in such a manner that it is vertically adjustable. For this purpose, the bearing block 38 is provided with a pair of oppositely extending preferably vertical slots 39 and 40, respectively. Said slots are preferably parallel to each other, the slot 39 extending longitudinally and inwardly from the edge 41 while the slot 40 extends longitudinally and inwardly toward the other slot from the edge 42. A suitable bolt as 43 is secured to and extends inwardly from the side member 44 of the frame and passes through the slot 39, the wing nut 45 being threaded to the inner end of the bolt. Similarly, the preferably fixed bolt 46 projects inwardly from the frame side 44 through the slot 40 and carries at its inner end the wing nut 47. It will be seen that when the wing nuts 45 and 47 are tightened against the inner surface of the block 38 or against a suitable washer thereon, said block is fixed in the position in which it has been adjusted.

Carried by the block 38 is a suitable bearing for removably engaging the shaft of the roller 20. A similar block 48, similarly adjustably held in place by similar bolts and wing nuts, supports the other end of the shaft for said roller. It will be understood that when the wing nuts for the blocks are loosened, the blocks 38 and 48 may be shifted longitudinally thereby to move the roller 20 downwardly or upwardly and to loosen or tighten the band 10.

For revolubly and removably supporting the rollers 18 and 19, any suitable means may be employed. As shown, a pair of U-shaped bearing members as 50 is provided for the shafts 51 and 52 of said rollers. One of said members is provided with the inclined slot 53 into which the shaft 51 may be inserted, said shaft resting at the bottom of said slot or in a suitable bearing at the bottom of the slot when in its operative position. Similarly, the slot 54 in the member 50 is provided for the shaft 52. It will be noted that on tightening the band by the downward movement of the roller 20, said band operates to pull the rollers 18 and 19 to the bottom of the respective slots 53 and 54, and also tightens the band into its proper stretched position.

If desired, however, the slots 53 and 54 may be eliminated, and a spring mounting provided instead on the ends of the rollers. As shown in Fig. 4, the support member 55 has an opening 56 therein for the reception of the spring pressed shaft 57 at one end of the roller. The inner portion of said shaft is inserted in the hollow space 58 of the roller 18 or 19, the collar 59 thereof limiting the outward movement of the shaft. A spring 60 in the space 58 urges the shaft outwardly and normally maintains the outer end thereof in the bearings 56. To remove the roller, the shaft 57 is pressed inwardly against the action of the spring 60, until the outer end leaves the support member 55, whereafter the roller is lifted and the other end removed from its support.

In order to remove the band 10, and replace it with another band carrying different signs, the wing nuts 45 and 47 are loosened and the blocks 38 and 48 moved upwardly into the position shown in Fig. 3 thereby loosening the band 10. The roller 18 may now be moved upwardly out of the slot 53, or its spring mounting retracted, and the roller freed and drawn out of the band in the direction of the length of the roller. The slides 33 are now moved rearwardly out of the guides 36 and 37, whereupon the roller 21 is freed and may also be removed so that the entire band 10 may be removed from the device. It will be noted that the roller 20 need not be removed since it does not interfere with the withdrawal of the band. In order to insert a different band, the above-described operation is reversed. That is, the roller 21 is first arranged inside of the band and is then inserted in the slides 33 which are then moved in the guides 36 and 37 toward the front of the machine. One side of the band is then passed over the roller 18 and another part of the band passed over the roller 19, the central portion of the band being under the roller 20. When the rollers 18 and 19 are inserted into their supports, the band is arranged in its correct position in the frame, after which the blocks 38 and 48 are moved downwardly until the band is properly stretched. The wing nuts 45 and 47 are then tightened to maintain the parts in their proper positions. On rearranging the belt 29 on the roller 28, the device is ready for operation.

It will be seen that I have provided a simple

but comparatively inexpensive and efficient device for operating an endless band to intermittently frame predetermined areas of a band and thereby to exhibit signs in an economical manner and that I have provided a structure well designed to meet the severe requirements of practical use.

While I have shown and described certain specific embodiments of my invention, I do not wish to be understood as limiting myself thereto, but intend to claim the invention as broadly as may be permitted by the state of the prior art and the scope of the appended claims.

I claim:

1. In a changeable sign, a sign-carrying band, rollers for the band, one of said rollers engaging one face of the band, others of said rollers engaging the other face of the band, means for adjustably supporting said one of the rollers, means for removably supporting said others of said rollers, and means for rotating the rollers.

2. In a changeable sign, a frame having an opening at the front thereof, an endless band movable vertically across and rearwardly of the opening, a plurality of band-supporting rollers, means on the frame for removably supporting the rollers, and means on the frame for intermittently rotating one of said rollers and thereby intermittently moving the band across the opening.

3. A self-contained, portable, changeable sign comprising a frame having an opening in its front face, an endless band within the frame movable across said opening, revoluble means removably carried by the frame for supporting the band including a roller, a pair of bearing slides engaging the ends of the roller and means on the frame for slidably supporting the slides, and means for rotating the roller.

4. In a changeable sign, an endless sign-carrying band, spaced apart revoluble rollers supporting the band, means for intermittently rotating a first one of said rollers, means adjustable longitudinally of the frame for revolubly supporting a second one of said rollers, a pair of bearing slides revolubly supporting said first roller, and means on the frame for removably supporting said slides.

5. In a changeable sign, an endless movable band, a plurality of band-supporting and operating rollers, one of said rollers engaging one face of the band and the remaining rollers engaging the other face of the band, means for adjusting said one of the rollers to tighten and loosen the band, means for supporting the remaining rollers for withdrawal from the band, and means for rotating one of said rollers.

6. In a changeable sign, a sign-carrying band, a plurality of rollers engaging the band, means for removably supporting all but one of said rollers, and means for adjustably supporting said one of said rollers for movement in either direction to loosen and tighten the band comprising a pair of slotted bearing members revolubly supporting the ends of said one of the rollers, fixed bolts passing through the slots of said members, and nuts on the bolts adapted to engage the members when tightened on the bolts.

7. In a changeable sign, a sign-carrying band, a plurality of rollers engaging the band, means for removably supporting all but one of said rollers, said means including a pair of bearing slides engaging and revolubly supporting the ends of another of the rollers and guides for slidably supporting the slides, and means for adjustably supporting said one of the rollers including a pair of slotted bearing members revolubly supporting the ends of said one of the rollers and fastener elements in the slots of the members adapted to be tightened to removably fix the members in the adjusted positions thereof.

8. In a changeable sign, a frame having an opening therein, an endless sign-carrying band having a portion thereof exposed in said opening, means for moving said band to expose successively different portions of the band of the same area in said opening, said means being operative to halt each of said portions at said opening for a predetermined time, said means including a plurality of rollers for said band, slotted means removably carried by the frame for adjustably supporting one of said rollers, means on the frame for removably and revolubly supporting a second one of said rollers, a pair of laterally movable slides revolubly supporting a third one of said rollers, and guides on the frames for said slides.

9. A self-contained, portable, changeable sign comprising a frame having a front opening therein, an endless sign-carrying band arranged within the frame with a predetermined portion thereof arranged at the opening, a plurality of rollers for the band within the frame, at least one of said rollers engaging one face of the band and others of said rollers engaging the other face of the band, means on the frame for removably supporting said others of the rollers, said means including a pair of bearing slides revolubly supporting the ends of a roller and guides on the frame slidably supporting the slides for removal from the frame, means on the frame for adjustably supporting said one of the rollers comprising a pair of slotted bearing members, bearings in said members for said one of the rollers, bolts fixed to the frame and passing through the slots of the members and nuts on the bolts adapted to engage the members when tightened on the bolts, and means for intermittently rotating the rollers.

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