Dec. 24, 1929. E. E. BLAKE 1,741,092

MACHINE FOR DISPLAYING ADVERTISING MATTER

Filed May 25, 1927 2 Sheets-Sheet 1

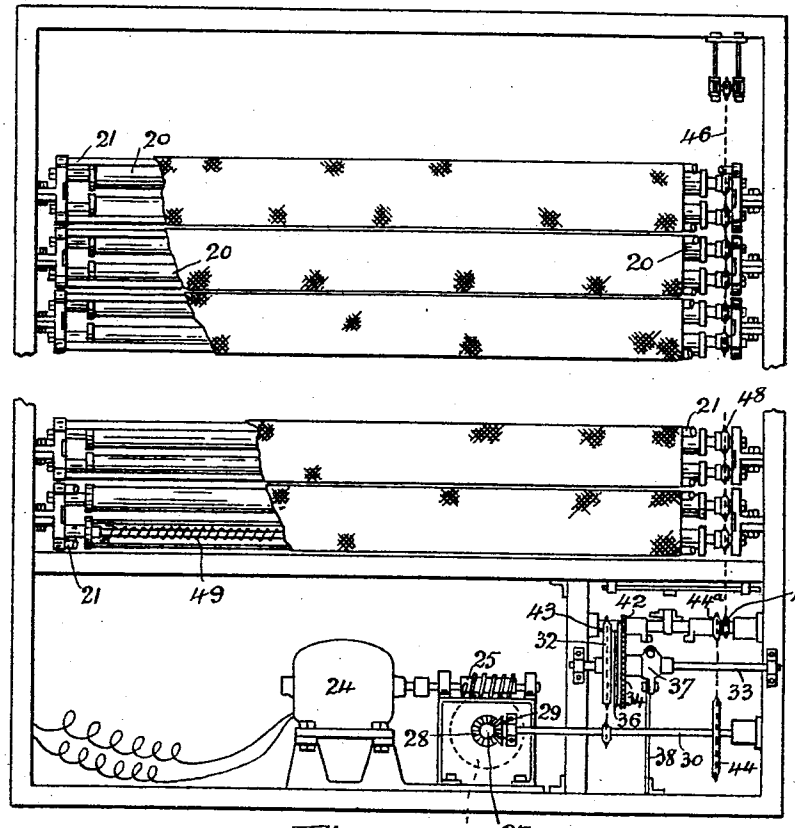


Fig. 1

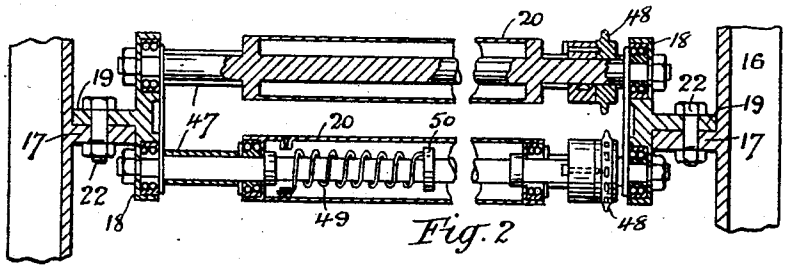


Fig. 2

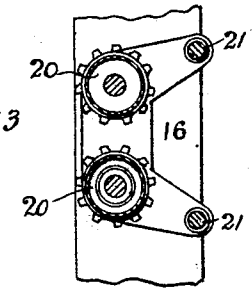


Fig. 3

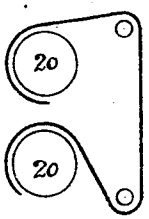


Fig. 4

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MACHINE FOR DISPLAYING ADVERTISING MATTER

Filed May 25, 1927 2 Sheets-Sheet 2

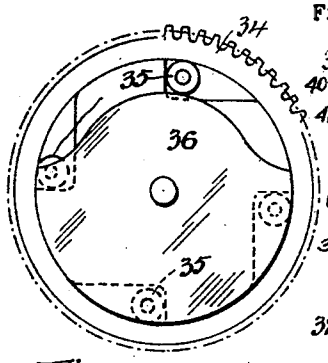


Fig. 6

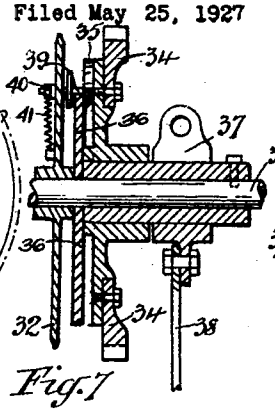


Fig. 7

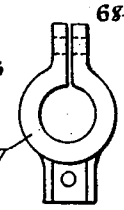


Fig. 8

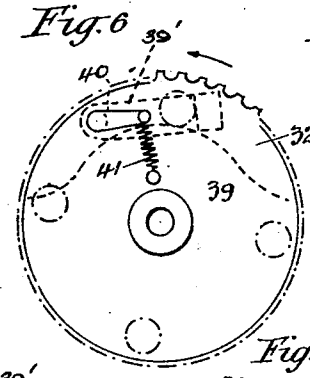


Fig. 9

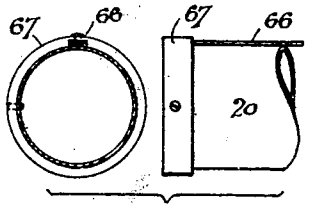


Fig. 11

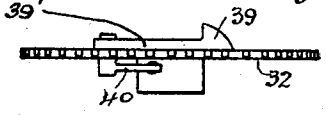


Fig. 10

Fig. 5

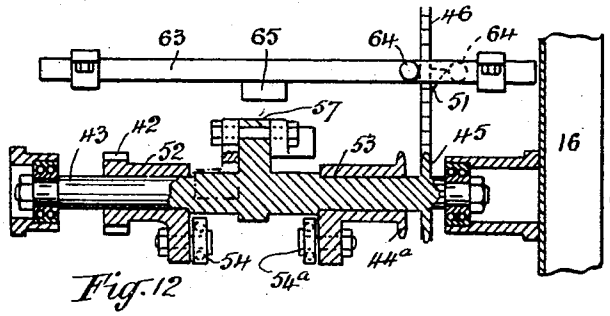


Fig. 12

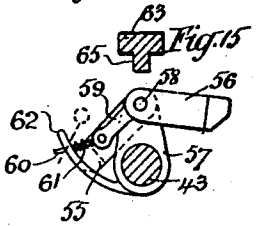


Fig. 16

Fig. 15

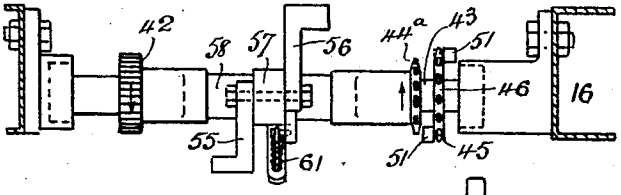


Fig. 13

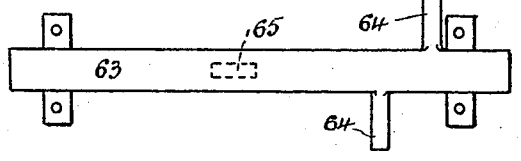


Fig. 14

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Patented Dec. 24, 1929 1,741,092

UNITED STATES PATENT OFFICE

ERNEST EDWARD BLAKE, OF COBURG, VICTORIA, AUSTRALIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ANIMATED-ADS (A/SIA) PROPRIETARY LIMITED, OF MELBOURNE, AUSTRALIA, A BODY CORPORATE OF VICTORIA

MACHINE FOR DISPLAYING ADVERTISING MATTER

Application filed May 25, 1927, Serial No. 194,190, and in Australia August 12, 1926.

This invention relates to machines wherein advertising matter is displayed by placing the same on strips of canvas or paper that are so disposed on rollers that when the same are rotated parts of the strips or strip will come to the front to display a whole picture. As the rollers are further rotated the picture will be dissolved and another presented.

In this present invention a machine has been designed with rollers so disposed that the box or container shall be shallow from front to back and therefore less unwieldy than machines hitherto in use.

One of the objects of this invention is the provision of a plurality of sets of rollers each set carrying a strip of canvas or paper that is attached to each main roller and passes over two frontal or guiding rollers. As the main rollers rotate the strip will be wound off one and on to the other.

To compensate for the variation in peripheral speeds of the rollers as one fills with or gives back the strip one of the rollers is fitted with a tension spring that tends to regulate the movements of the roller as hereinafter explained and, furthermore, will keep the strip taut on the frontal rollers.

Another object of the invention is to provide an interrupted drive for the strips and for the reversal of the same when the last picture of a series has been displayed. After the reversal, means are provided for the forward movement of the parts in a self-acting way as hereinafter described.

Still another object is the provision of means for aligning the strips upon the main rollers and for securing same thereto, and to provide also for the safe and convenient mounting of each set of rollers in the machine frame.

But in order that the invention may be understood reference is now made to the accompanying drawings in which,

Fig. 1 is a front elevation of the machine showing some of the rollers mounted in frame and the driving means.

Fig. 2 shows in sectional detail a pair of main rollers mounted in frame.

Fig. 3 is an end sectional elevation of the same and the frontal rollers, and

Fig. 4 shows in diagrammatic form said rollers and disposition of the canvas strip.

Fig. 5 is a sectional elevation through the channel iron frame of the sprocket chain drive to the main rollers, the side iron being removed to clearly disclose the driven sprocket wheels,

Fig. 6 shows in side elevation the main driving pinion and the stop wheels and stationary cam that is on the pinion spindle.

Fig. 7 is a sectional elevation of the same and driving sprocket wheels to which a pawl is pivotally attached.

Fig. 8 illustrates an anchored split collar in end elevation used to maintain the cam in position.

Fig. 9 is a side elevation of the driving sprocket and pawl, and

Fig. 10 an edgewise plan of same and pawl,

Fig. 11 is a longitudinal elevation and section of a main roller fitted with strip alignment means,

Fig. 12 is a view in front elevation, partly in section, of the rollers driving shaft and means for reversing the same

Fig. 13 is a plan view of same.

Fig. 14 illustrates in plan view the reversing bar,

Fig. 15 is a cross sectional view of the reversing bar, and

Fig. 16 is a side elevation of the bell crank drive reversing means with its carrying or supporting shaft in section.

In a stout frame 16 are inwardly projecting brackets 17 while on a bearing member 18 at each end of a roller unit is a projection 19 that rests upon the parts 17 and are bolted thereto. In the member 18 are the bearings of the rollers 20 while the frontal rollers 21 are also provided with suitable bearings. There will be a number of units composed of the rollers 20 and 21 and each unit may be readily removed from the frame by loosening the bolts 22 and sliding away part 19 from the bracket 17.

The strip of canvas, paper or other convenient material 23 will be attached at each end to the rollers 20 and will pass over the frontal rollers 21, a number of units thus presenting

an ample front surface upon which to display an advertisement.

The motor 24 drives a worm 25 in mesh with a worm wheel 26 on a shaft 27. On this shaft is a mitre wheel 28 in gear with a like wheel 29 on the spindle 30. On the latter is a small sprocket 31 that drives by chain the larger sprocket 32 on the counter shaft 33 that does not rotate. Mounted on shaft 33 is a spur wheel 34 the latter being formed as a ring gear fixed to a plate 34′, and on the said plate, say at 90° intervals, are pegs or stops 35. Arranged over the wheel 34 is a fixed cam plate 36 that is part of a sleeve on the spindle 33 on which sleeve the spur wheel turns and is retained in place by a clamped collar 37 anchored to the machine frame by the rod 38. The sleeve is further retained in position by a set screw.

On the sprocket wheel 32 is a pivotally mounted pawl 39 having the part 39′, Fig. 10 riding on the cam plate 36 and on the pin mounting it on the other side of the wheel is a lever 40 attached to a tension spring 41 secured to the wheel normally keeping the pawl in contact with the cam plate. The wheel 34 is in gear with a spur wheel 42 that rotates freely on the rollers driving shaft 43 on which are also two sprocket wheels, one 44ª continuously driven by a sprocket 44 on shaft 30 and rotating freely on shaft 43 and the other 45 communicating motion through a chain 46 to the spindles 47 of the rollers 20. The parts on the revolvable shaft 43 are free to revolve thereon with the exception of the rollers driving sprocket 45 and a drive interrupting device hereinafter to be described that, as it revolves with the shaft 43, makes either the sprocket 44ª or the spur pinion 42 connect and drive the shaft. The rollers driving sprocket 45 will be driven by the pinion 42 in the ordinary forward drive of the rollers but when the same are to be reversed the interrupting device will operate to throw in the sprocket 44ª that is driven direct and continuously in an opposite direction from the sprocket 44 on shaft 30. On each roller spindle 47 is a sprocket wheel 48 over which the chain 46 passes in such a way as to drive each spindle of a pair in a unit in opposite directions. This provides for the strip 23 being wound on to one roller of a unit from off the other roller.

In order to keep the strip taut upon the frontal rollers of a unit, one roller is connected to the spindle through an encircling tension spring 49 that is attached at one end to the roller and at the other end to a collar 50 on the spindle 47. While each roller rotates with its spindle the upper roller of a pair (Fig. 2) is driven directly by the spindle but the lower roller will be rotated through the medium of the spring, that moves with it. At the same time the spring will be always in tension but the quantum of tension may vary as the roller winds or unwinds a strip. The function of the spring 49 is thus to accelerate or retard the peripheral speed of the roller according to the amount of strip upon it. Referring to the reversing gear illustrated in Figs. 12 to 16 inclusive and hereinbefore referred to, the pinion 42 is integral with a sleeve 52 free to rotate on revolvable shaft 43 and the sprocket 44ª is likewise integral and free with a similar sleeve 53. The sleeves 52 and 53 have right angular projections arranged a certain distance apart and facing one another, are opposite and each is fitted with a roller 54 and 54ª respectively while on the shaft is a bell crank with members 55 and 56. These parts are mounted on a boss 57 on shaft 43 and the members 55 and 56 are pivotally mounted on a bolt 58 on the boss. Also adapted to swing about the bolt with the arms 55 and 56 of the bell crank is a lever 59 connected to a finger 60 about which is a compression spring 61. The pin projects through a horn like member 62 on the boss 57 and serves with the spring to retain the arms 55 and 56 in the positions in which same are placed.

Above the revolvable shaft 43 is a bar 63 adapted to be moved laterally and on which are pins 64 one being placed on each side the chain 46, and a depending lug 65. As the chain 46 continues to move over the roller sprockets 48 and when a whole series of pictures has been displayed, a trip 51 on the chain will contact with a pin 64 to push the bar sideways and bring the part 65 over one of the arms 55 or 56. As the rollers are driven forwards the part 54 on the sleeve of the spur wheel 42 will be in contact with the turned out end of the arm 55 but as the bar 63 is moved sideways the part 65 will impinge against the arm 56 to push it down and cant the bell crank, thus freeing the part 54 from 55 and, on the shaft continuing to revolve, to bring the opposite part 54ª into contact with the outwardly turned arm 56. When this occurs the sprocket 44ª, will carry the shaft in a reverse direction the sprocket being constantly driven by the sprocket 44 on shaft 30. On the reverse motion of the system of rollers being completed, a trip 51 on the chain will contact with a like pin 64 to return the bar 63 sideways when the part 65 will knock down or cant the other part 55 of the lever that will immediately engage with the end of the sleeve of pinion 42 that will then assume the drive of the rollers through shaft 43 and sprocket 45. It should be understood that the arms 55 and 56 are in one piece as a bell crank and that when one arm is up the other must be down.

This forward movement of the rollers is then repeated but is not continuous like the reverse movement as an interval must be allowed for viewing each picture after it has been formed. Referring to the cam plate 36

and the pawl 39, as the main sprocket driving wheel 32 rotates it will carry round with it the pawl 39 which, while so moving, will traverse the periphery of the cam plate 36. The latter is in a fixed and adjusted position close to the face of the spur wheel 34 on which are the stops 35 before mentioned. Reference to Fig. 6 shows the wheel 34 with stops 35 and cam over the wheel. When the pawl 39, moving with the sprocket 32, passes onto the cam it will engage a stop and carry the wheel 34 round for a quarter of a revolution, thus driving the pinion 42 and rotating shaft 43 to rotate the rollers 20. As the pawl approaches the other side of the cam it will rise enough to ride over the stop, that is fitted with a roller to facilitate the movement, when the motion of the wheels will cease and will so remain until the pawl, which has been brought against the periphery of the cam plate by the spring 41, again gets on to the cam and engages another stop 35.

It is of prime importance that the strips 23 be attached to the rollers correctly so as to avoid errors in alignment of the strip as it is wound upon a roller. To this end thin metal flexible straps 66 are laid upon the rollers and attached to the strip ends. The straps are secured at each end to a collar 67 which is on each end of and attached to a roller by a set screw or other means. To align the strip the collars are loosened on the roller and one or other turned about same until the alignment of the strip is effected, when the collars are again secured.

To take up slack in the sprocket chain 46, same passes over a sprocket wheel 68 that is in a frame 69 suspended on bolts hung from the main frame 16. When necessary, the position of the frame 69 may be altered by adjusting the nuts.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In a machine of the class described, a frame, a pair of main rollers, arranged to be driven in opposite directions, a pair of frontal free rollers, a strip of material upon which is a fragment of an advertisement, attached to said main rollers and passing over the frontal rollers, said strip being arranged relative to said main rollers to be simultaneously wound from one upon the other, a box bearing in which the main rollers are mounted, and opposite right angular projections from said frame, supporting said bearings.

2. In a machine of the class described including a frame, two main rollers and two freely running frontal rollers, a strip of material on which is a fragment of an advertisement attached to the main rollers and so arranged as to be simultaneously wound from one upon the other after passing over the frontal rollers, a flexible strap resting longitudinally on each main roller to which strap said strip is attached, loose collars at each end of said rollers to which said strap is attached, and means for locking each collar to a roller.

3. In a machine of the class described, a plurality of rollers having spindles, a strip adapted to be wound from one roller to another, sprocket wheels on each roller spindle, a revoluble shaft, a sprocket wheel and a spur pinion on said shaft, a chain drive between said sprocket wheels, a stationary shaft, a driving wheel loosely mounted upon said stationary shaft and adapted to be driven from a prime mover, a spur wheel on the said stationary shaft, and a fixed cam plate between the sprocket and the spur wheel, a pawl on said driving wheel engageable with said cam and means on said spur wheel engageable by said pawl in certain positions of the latter determined by said cam for moving said spur wheel through intermittent steps of rotation.

4. In a machine of the class described, a plurality of rollers, a strip adapted to be wound from one roller onto another roller, a revoluble shaft, a spur pinion and a sprocket wheel thereon through which said rollers are driven, a continuously driven second sprocket on said shaft having connection with said rollers, said first sprocket and the spur pinion being freely mounted on the shaft, and a bell crank mounted on said shaft between said pinion and sprocket and revolving with said shaft, said bell crank having arms adapted to be engaged alternatively by said pinion or said sprocket upon reversal in a direction of movement of said shaft, and means for imparting to said shaft a forward intermittent movement and a continuously reverse movement.

5. In a machine of the class described, a plurality of rollers, a strip adapted to be wound from one roller onto another roller, spindles for said rollers, sprocket wheels on said spindles, a revoluble shaft, a sprocket wheel and a spur pinion thereon, a stationary shaft adapted to be driven from a prime mover, a large sprocket and a pawl thereon, a spur wheel on said stationary shaft, stops arranged at intervals on said spur wheel, a fixed cam plate between said large sprocket and spur wheel, said spur wheel being in mesh with said spur pinion, a bar above and parallel with the revoluble shaft adapted to be moved laterally, trips at intervals on the driving chain for the roller sprockets for engaging and moving said bar, and a central lug thereon, said pawl engaging with the stops on said spur wheel for moving it intermittently through angular steps of rotation.

6. In a machine of the class described, a revoluble shaft having intermittent forward motion, a spur pinion and a sprocket wheel free on said shaft, sleeves on said pinion and sprocket having right angular projections, and a bell crank fixed to said shaft having arms extending longitudinally of said shaft

in opposite directions adapted to engage with either the projection of said pinion or that of the sprocket, a boss on which the bell crank is mounted, a lever on said bell crank moving therewith, a pin on said lever, a horn on the boss through which the pin projects at a point out of line with said lever when an arm of the bell crank is in uppermost or lowermost positions, and a compression spring mounted on said pin.

In testimony whereof I affix my signature.

ERNEST EDWARD BLAKE.