MOVABLE POSTER DISPLAY APPARATUS

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This invention relates to advertising apparatus in which a series of display cards or advertising posters are consecutively displayed at predetermined intervals and the object of this invention is to provide such an apparatus with an extremely simple operating mechanism for the movement of these display cards or advertising posters.

Another object of this invention is to so construct the apparatus that it may be made to operate both small and large signs or bill posters.

These and other objects and attendant advantages of this invention will become more readily apparent from the detailed description of one embodiment of the invention, reference being had to the accompanying drawings in which

Figure 1 is a front elevation of the apparatus.

Figure 2 is a horizontal sectional view of the apparatus.

Figure 3 is a detailed perspective view of a portion of the apparatus showing part of the mechanism for moving the signs or posters mounted therein.

In the several figures like reference numerals indicate like parts.

The apparatus forming the subject matter of our present invention incorporates a mechanism which makes the apparatus so simple in construction and operation that it requires practically no servicing except for the changing of the signs or posters. This permits the use of the apparatus at practically any location in which electric power is available to furnish the motive power for the operation of it.

As illustrated in the several figures of the drawings, the apparatus comprises a suitable frame work 1 which is surrounded by a casing having large sight openings in which the signs or posters are displayed. The signs or posters are mounted in frames 2, 2 and are removably fastened thereto so that they can be readily changed for others. Two of the signs or posters are displayed at a time on each side of the apparatus and two sets of frames are therefore arranged in the apparatus in a manner so that during the operation thereof the outermost frame from one set of frames is moved to the second set of frames on one side of the apparatus after which the innermost frame of the second set of frames is moved back to the first set at the other side of the apparatus. An odd number of frames is preferably used so that one set of frames will always have one more frame than the other set and on that account will present a frame that is readily selected for transfer without interference by the others, as will hereinafter be described.

The frames are located between the horizontal partitions 3 and 4 between which they slide back and forth during the movement from one set of frames to the other. Each partition has a flange in the form of an angle iron 5 attached to the front and back thereof and a similar flange 6 attached near each end thereof by which the frames are restricted in their lateral and endwise movements.

The endwise movement of the frames from one set to the other is caused by a pair of moving dogs 7 and 8 which simultaneously engage each frame near the top and bottom of it. Each of these dogs, as illustrated in Figure 3, comprises a short horizontal arm 9 located at one end of a vertical guide post 10. The other end of the vertical guide post is provided with the connecting arm 11 with which the dog is pivotally connected to one of the links 12 of the endless chain 13. The dog, illustrated in Figure 3, is the one which engages the frame near the upper end thereof, the dog, which engages the frame near the bottom, being identical thereto except that its position is reversed in that its guide post projects upwardly from the endless chain 14 on which it is pivotally anchored instead of projecting downwardly thereon as illustrated in Figure 3.

Two endless chains 13 and 14 thus move the frames from one end to the other by means of the dogs 7 and 8. These chains travel over two pair of sprockets 15, 15 and 16, 16 which are mounted to rotate on suitable studs 17, 17A and 18, 18A. Studs 17 and 18 are located at one end of the apparatus and are fixed, while studs 17A and 18A, located at the other end, are adjustable with the horizontal
slides 19 and 20 respectively on which they are mounted so that the sprockets, carried by them, can be moved laterally to tighten the chains.

Sprockets 15 and 16 have one of the gears 21 and 22 respectively attached thereto and each of these gears meshes with the pinion 23 or 24 carried on the vertical shaft 25. This shaft is driven by a worm and gear drive located in the housing 26 and this drive in turn is driven by the electric motor 27. The endless chains 13 and 14 are guided by the angle irons 28 which extend from one sprocket to the other and support the chains and guide them in a straight line from one sprocket to the other. Mounted parallel to the angle irons 28 but suitably spaced in front of them, are two pair of cam bars 29 and 30. Of these, cam bar 29 is adapted to hold the dogs out of engagement with the frames, while cam bar 30 holds the dogs in position to engage a frame. For this reason cam bar 29 is provided at each end with the inwardly angular extensions 29A and 29B, of which extension 29A operates to swing the dog outwardly out of engagement with the frames, while extension 29B permits the dog to again swing inwardly toward the endless chain to engage behind one of the frames after it has traveled around the sprocket and moves back toward the other sprocket. The cam bar 30 encircles the end of the endless chain and at the point where the angular extension 29A of the cam bar 29 extends inwardly, the end of the cam bar 30 flares outwardly to provide a space between the end of the cam bar 29 and the beginning of the cam bar 30 into which the dog can enter to pass thru the semi-circular passage formed between the sprocket and the cam bar 30. After the dog has traveled around the sprocket it is kept in its inward position and, as illustrated in dotted lines at the right of Figure 3, engages the end of the innermost frame and proceeds to move it to the left. The frame thus engaged by the dog is then moved from the right of the apparatus to the left thereof. When the latter position is reached by the frame the second cam bar 29 disengages the dog from the frame. For this purpose the cam bar 30 is flared out at 30B at the point where it overlaps the angular extension 29A of the cam bar 29. The dog, after being disengaged from the frame which it has moved from the right to the left of the apparatus, is held out of engagement with any frame until it has traveled around the sprocket at the left hand end of the apparatus and is again swung inwardly by its engagement with the second cam bar 29 in the same manner as described in connection with the first cam bar 30. After the dog has traveled around the second sprocket it engages the outermost frame at the left hand side of the front of the apparatus and moves this frame to the right hand side thereof in the same manner as described in connection with the frame which has been moved by the dog from the right hand side to the left hand side at the back of the apparatus.

The mechanism so far described operates to shift or move the signs or posters from left to right and back again, but in order that more than one frame may be moved in the apparatus in this manner, it is also necessary to shift the frames sideways from the front to the back and back again to the front. As heretofore pointed out, two sets of frames are located in the apparatus, one at the left and the other at the right of the middle thereof. The particular apparatus illustrated in the drawings is made to accommodate seven frames on each side, but only six frames are located on one side while seven frames are located in the other side. In this way the space in the apparatus taken up by the set of frames containing six frames will be able to receive the seventh frame of the other set as it is moved from one set of frames to the other.

The shifting of the frames from the front to the back and back to the front is done by a pair of levers 31 and 32 and a pair of cam slides 33 and 34. Both of these levers are pivoted in the middle of the apparatus at 35 and one end of the lever 32 is pivotally attached to the slide 33, while its other end projects into the semicircular passage formed between the cam bar 30 and the sprocket 17A at the right of the apparatus and normally obstructs the movement of the dog 7 there-through. Lever 31 has its right hand end pivotally attached to the cam slide 34, while its free left hand end projects into the semicircular passage formed between the cam bar 30 and the sprocket 17 to normally obstruct the passage of the dog there-through. Both of the cam slides have an angular cam surface provided at one end and the cam surface of cam slide 33 projects toward the front of the apparatus, while the cam surface of the cam slide 34 projects toward the rear thereof. With the free end of the levers 31 and 32 projecting into the semicircular passages formed between the cam bars 30 and the sprockets 17 and 17A, the cam slides are held by these levers in a position in which they do not project into the path of the moving dog. As the dog enters the semicircular passage at the end of the apparatus, it engages the lever end which projects into it and moves this end ahead of the dog until the end of the lever reaches a position approximately in line with the centerline of the apparatus, at which point the dog can slide over the end of the lever and proceed unobstructed in the remainder of the semicircular passage. In moving the end of lever 32, as above described, the lever is rocked so that its other end moves the slide 33 to have its angular cam surface project into the straight passage...
between the cam bar 30 and the endless chain at the left hand side of the apparatus and the front thereof. Similarly the moving of the lever end of lever 31 by the dog in moving thru the semicircular passage at the left hand end of the apparatus, causes this lever to move the slide 34 so that its angular cam projects into the straight passage between the cam bar and the endless chain at the right hand side of the machine at the rear thereof.

Each of the slides 33 and 34 carries a cross arm 36 and 37 respectively and at each end of these cross arms is carried a gravity operated latch 38. These latches are pivoted so as to swing in a vertical plane and each of the latches is provided with a lug or stop 39 which engages the top of the cross arm to limit its downward movement and hold the latch with a portion of the outturned edge 40 thereof parallel to the upper edges of the frames which the latch overhangs in one of its positions, as will hereinafter be described. The outturned edge 4 is inclined toward the direction from which the frames are received so that as the edge of one of the frames is moved against the latch it passes under this inclined outturned edge and rocks the latch so that the frame can move on while the latch slides over the top edge of it. This takes place when a frame is moved from one side to the other and the latch remains on top of the upper edge of the newly positioned frame until the dog, which has moved the frame, has traveled around the end of the apparatus to engage a frame on the opposite side. In moving this next frame the dog engages the angular cam surface of the cam slide by which the latch is carried and as this slide has been held to project into the path of the dog, the dog moves the slide inwardly so that the latches 38, carried on the opposite end thereof, are moved sideways over the top edge of the frame and drop over the front edge thereof as illustrated in Figure 3. The dog continues to move on after operating the slide and in doing so transfers the frame to the other side of the apparatus where the dog disengages itself from the frame and enters the semicircular passage at the opposite side of the apparatus.

As previously pointed out each of the slides has a lever pivotally attached thereto so that when a slide is moved, as above described, the lever, which is attached to it, is rocked and its opposite end is moved to project into the semicircular passage located in the side of the apparatus opposite to that in which the slide is mounted. The dog in its movement thru the semicircular passage then encounters the end of the lever and moves it until the dog can slide over it. The movement of the lever by the dog then moves the slide attached to the other end of the lever in the opposite direction. The movement of the slide by the lever that is attached to it also moves the set of frames because of the engagement of the latches with the set of frames located under the slide. The movement of the set of frames by the slide is small but is sufficient to make room for the next frame which will be added thereto by the dog as it continues to travel from one end of the apparatus to the other.

In this way the dog, in moving a frame from one side of the apparatus to the other, first engages one of the cam slides and moves it so that its latches engage behind the set of frames from which it is taking one away. This movement of the slide also sets the lever, which is attached thereto, so that its outer end projects into the semicircular passage located in the side of the apparatus thru which the dog will pass after having transferred the frame to the adjacent set of frames. The dog disengages itself from the transferred frame, as previously described, and then enters and passes thru the semicircular passage to move the lever which has its end projecting thereinto. In moving the lever, the slide attached to the end of it, moves the set of frames from which a frame has previously been transferred and thus makes room for a frame to be transferred from the set of frames to which one has been added. During this next transfer the second cam slide and its lever are operated so that by the time the dog has transferred the next frame and is ready to move another frame, it can do so without interference.

While only the pair of levers and cam slides located in the top of the apparatus have been described, it is pointed out that a duplicate pair of these levers and cam slides are located in the bottom of the apparatus and operate in unison therewith to move the set of frames sideways while the individual frames are transferred endways from one set of frames to the other. To prevent the levers 31 and 32 from rebounding when moved in one or the other direction, the spring fingers 30 and 31 are provided and engage the top of these levers to hold them yieldingly in place at the end of each movement thereof.

We claim:

1. In a movable poster display apparatus the combination of two sets of substantially vertical frames located adjacent to each other, an endless chain mounted to travel around the ends and sides of said frames, a dog carried by said endless chain and mounted to swing thereon, a vertical guide post projecting from said dog and overarching the edge of the frames, a horizontal arm on the end of said vertical guide post and projecting toward said frames; a fixed cam bar substantially parallel to said endless chain in front of one set of frames adapted to engage said guide post to hold said dog rigidly on said chain with said horizontal arm on said guide post engaging the edge of one of the frames of said set and move it in front of the adjacent
set of frames, a second cam bar substantially parallel to said endless chain in front of the adjacent set of frames to engage said guide post to swing said dog and move the horizontal arm on said guide post out of engagement and hold it out of engagement with the transferred frame.

2. In a movable poster display apparatus the combination of two sets of substantially vertical frames located adjacent to each other, an endless chain mounted to travel around the ends and sides of said frames, a dog carried by said endless chain and mounted to swing thereon, a fixed cam bar substantially parallel to said endless chain in front of one set of frames adapted to hold said dog rigid on said chain and engage the edge of one of the frames of said set and move it in front of the adjacent set of frames, a second cam bar substantially parallel to said endless chain in front of the adjacent set of frames to move said dog out of engagement and hold it out of engagement with the transferred frame, a pair of levers mounted to have one end thereof project into the path of said dog carried by said endless chain, said dog operating to move said levers and a latch carried by each of said levers to engage behind each set of said frames and shift said sets bodily and consecutively in opposite directions on the movement of said levers by said dog.

3. In a movable poster display apparatus the combination of two stationary horizontal partitions, two sets of frames located between said partitions adjacent to each other, an endless chain encircling the ends of said two sets of frames, a swinging dog carried by said endless chain, successive fixed cam means supported by said horizontal partitions in line with each other to swing said dog alternately in and out during its travel with said chain to engage a frame and move it from one set to the second set at the front thereof and engage a frame of the second set and move it back to the first set at the back thereof, a pair of levers mounted to swing centrally of one of said partitions and projecting in opposite directions in the path of said dog at each end of said partition, a cam slide pivotally connected to each of said levers and adapted to move at right angles to the movement of said dog, a cam surface at one end of said slides, a latch carried at the other end of each of said slides, said dogs operating to engage said cam surfaces of said slides to move said slides in one direction on said partition and have said latches engage behind the set of frames during part of the movement of said dog by said endless chain, said dog operating to engage said levers during another part of its movement and move said slides in the opposite direction to bodily shift said set of frames between said partitions.

4. In a movable poster display apparatus the combination of two stationary horizontal partitions, two sets of frames located adjacent to each other and adapted to have an individual frame slide from one of said sets to the other on said partitions and have said sets slide collectively sideways on said partitions, a pair of levers, a latch carried by each of said levers to engage the top one of said frames and permit its endwise movement underneath the latch with the lever located in one position, said latch automatically engaging the side of one of said frames with the lever located in another position, an endless chain encircling said two sets of frames, a dog mounted on said endless chain and means for causing said dog to engage said frame and move said levers to have said latches carried by said levers shift the frame with which it has been brought into engagement on the side thereof.

5. In a movable poster display apparatus having a plurality of movable frames the combination of an endless chain, a dog mounted on said chain and adapted to swing in and out relatively thereto, fixed semicircular cam means at each end of said chain and uniformly spaced therefrom to provide a semicircular passage between said ends of said chain and said cam means, a pair of levers, said levers being mounted to swing and project into said semicircular passage at one end of their swinging movement and held withdrawn from said semicircular passage at the other end of their swinging movement, said dog operating to move said levers from the one position to the other on its movement.

6. In a movable poster display apparatus having a plurality of movable frames the combination of an endless chain, a dog mounted on said chain and adapted to swing in and out relatively thereto, fixed semicircular cam means at each end of said chain and uniformly spaced therefrom to provide a semicircular passage between said ends of said chain and said cam means, a pair of levers, said levers being mounted to swing and project into said semicircular passage at one end of their swinging movement and held withdrawn from said semicircular passage at the other end of their swinging movement, said dog operating to move said levers from the one position to the other on its movement by said chain thru said semicircular passage, said dog operating to move one of said frames endways and said levers operating to move one of said frames side ways, a yielding spring finger engaging each of said levers to hold said levers yieldingly in their end positions.  

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