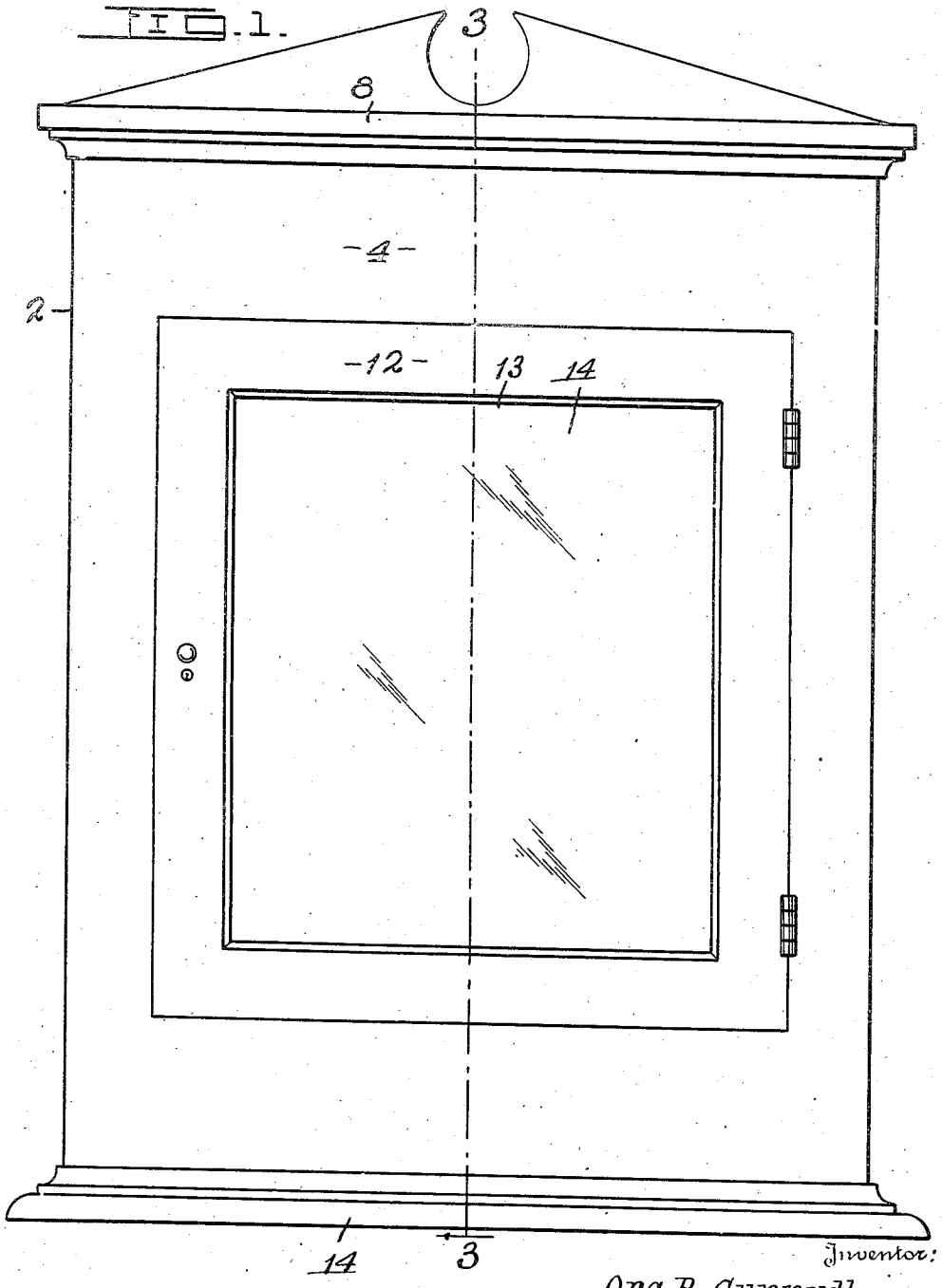
Oct. 16, 1945. O. R. CURNUTT 2,387,121

AUTOMATIC DISPLAY APPARATUS

Filed March 8, 1943 3 Sheets-Sheet 1

FIG. 1.



Inventor:
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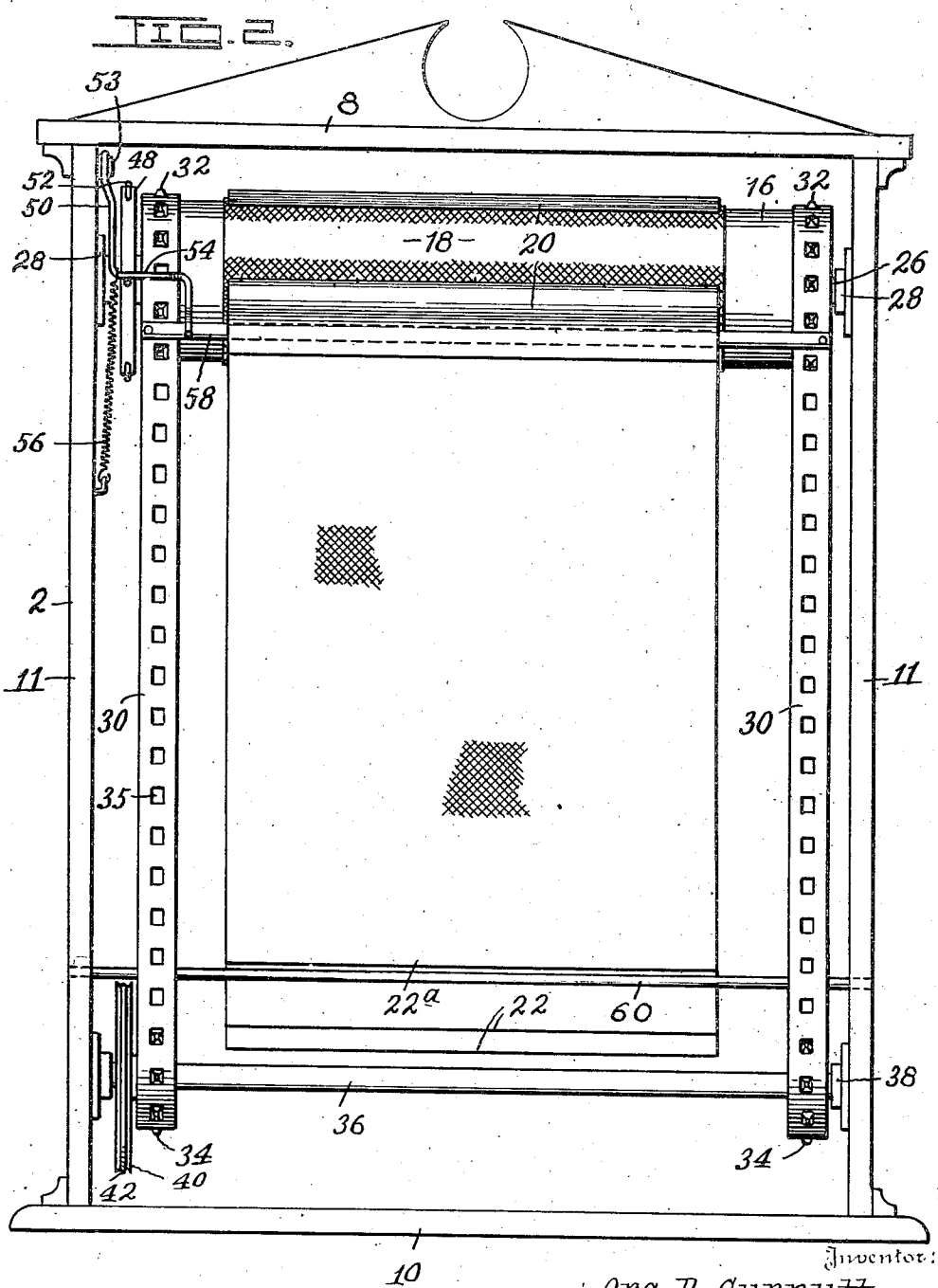
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AUTOMATIC DISPLAY APPARATUS

Filed March 8, 1943 3 Sheets-Sheet 2

FIG. 2.



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AUTOMATIC DISPLAY APPARATUS

Filed March 8, 1943 3 Sheets-Sheet 3

FIG. 3.

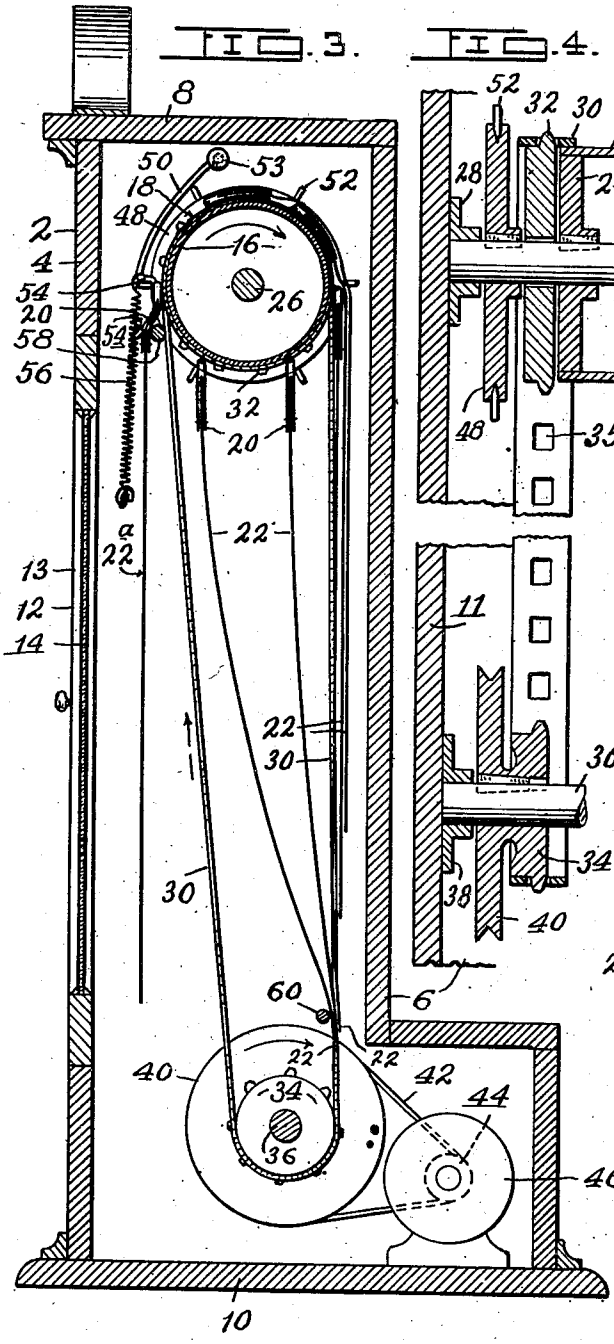


FIG. 4.

FIG. 5.

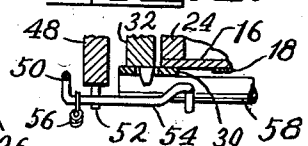


FIG. 6.

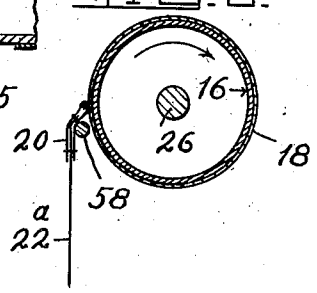
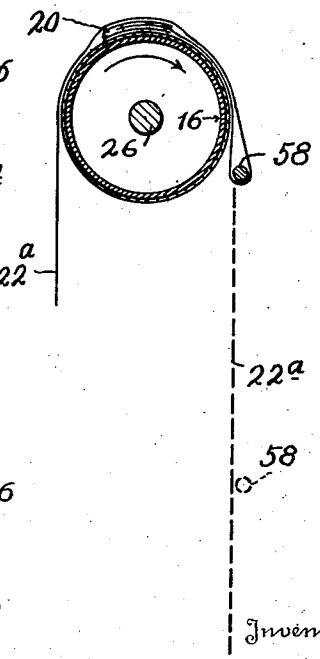


FIG. 7.



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Patented Oct. 16, 1945

2,387,121

UNITED STATES PATENT OFFICE

2,387,121

AUTOMATIC DISPLAY APPARATUS

Ora R. Curnutt, Lees Summit, Mo.

Application March 8, 1943, Serial No. 478,439

12 Claims. (Cl. 40—35)

My invention relates to display apparatus adapted for advantageously displaying signs, pictures, maps, etc., for either advertising or instructive purposes, as may be desired.

The general object of my invention is to provide a simple, inexpensive apparatus in which a series of display sheets are consecutively brought into view at a display opening and after being displayed for equal periods are carried back out of view preparatory to again being carried forward one by one to the display opening.

Other objects will hereinafter appear and in order that the invention may be fully understood reference will now be had to the accompanying drawings, in which:

Fig. 1 is a front elevation of the apparatus.

Fig. 2 is a front elevation of the apparatus with the front wall containing the display opening removed to show some of the display sheets and the interior mechanism.

Fig. 3 is a vertical cross section on line 3—3 of Fig. 1.

Fig. 4 is a slightly enlarged fragmentary vertical section turned at right angles to Fig. 3.

Fig. 5 is a fragmentary plan view of some of the parts.

Figs. 6 and 7 are fragmentary diagrammatic views.

Referring in detail to the different parts, 2 designates a housing in which the operating mechanism is installed. Said housing may be of any appropriate construction. In the present instance it comprises a front wall 4, a rear wall 6, a top 8, a bottom 10, and side walls 11. Preferably the front wall 4 includes a door 12, so that access may be readily had to the interior mechanism, also that the display sheets hereinbefore referred to can be readily changed for others when desired. The door contains a display opening 13 with a glass panel 14 through which the display sheets may be viewed as they consecutively appear at said opening.

Referring now more particularly to the display sheets and the interior mechanism within the housing 2, 16 designates a drum covered almost throughout its length with a fabric sleeve 18, to which are attached a plurality of appropriate display sheet suspension means consisting, in the present instance, of equally spaced flaps 20 which extend approximately the full length of the sleeve, each being doubled for insertion of the upper end of a respective display sheet 22 which is detachably secured in place with pins or other suitable fastening means. Closed ends 24 of the drum 16 are keyed or otherwise fixed upon a rotary shaft 26 journaled at its ends in bearings 28 secured to the side walls 11 of the housing.

The drum 16 is intermittently driven by a conveyor comprising a pair of belts 30 which overlap the respective ends of the drum to frictionally engage and drive the latter. Each belt 30 travels around upper and lower sprocket wheels 32 and 34, respectively, the belts having spaced apertures 35 for reception of the sprocket teeth. The upper sprocket wheels 32 are loosely mounted upon the shaft 26 so that they may continuously rotate with the belts 30 while the drum 16 rotates only intermittently to display each sheet for a predetermined period at the display opening 13.

The lower sprocket wheels 34 are fixed upon a drive shaft 36 mounted at its ends in bearings 38 secured to the side walls 11 of the housing. The drive shaft 36 is equipped with a pulley 40 driven by an endless band 42, running around a pulley 44, driven by a suitable motor 46 located in the lower rear portion of the housing. The foregoing drive pulleys and sprocket wheels are so proportioned that the drum 16 will travel at a much lower speed than the motor 46, to avoid damaging the display sheets and the shifting mechanism. Intermittent driving of the drum 16 is effected by an escape mechanism consisting of a wheel 48 and a detent 50. During each pause of the drum 16 the belts 30 continue to travel and thus slip upon the drum until the latter is released by the escape mechanism, as will hereinafter appear.

The escape wheel 48 is located beside one of the upper sprocket wheels 32 and keyed or otherwise fixed upon the shaft 26. Equally spaced teeth 52 project from the periphery of the escape wheel 48 and are equal in number to the display sheets 22. The detent 50 is mounted on a pivot 53 projecting from the adjacent side wall 11 of the housing and said detent is provided at its lower portion with a transverse arm 54 yieldably held in the path of the teeth 52 by a coil spring 56.

A portion of the detent arm 54 is arranged in the path of sheet shifting and folding means 58, consisting preferably of a transverse rod secured at its ends to the respective belts 30. Retarding means consisting in the present instance of a rod 60, secured at its ends to the lower portion of the side walls 11 is provided for retarding the forward movement of the lower ends of the display sheets, for a purpose which will hereinafter appear.

Briefly the operation of the apparatus is as

follows: The display sheet 22*a* to be initially placed in view at the opening 14 is adjusted approximately to the position shown by Fig. 3, while the rod 58 is located near the upper portion of the rear strands of the belts 30. The motor 46 is then started to effect continuous operation of the belts 30 through the medium of the driving mechanism in the lower portion of the housing, including the pulley 40, the drive shaft 36 and the lower sprockets 34. In the meantime the drum 16 is held stationary by the escape wheel 48 and the detent 50 until the rod 58 is carried downward by the belts 30 around the lower sprocket wheels 34 and upward into engagement with the under portions of the front flaps 20. Thus the initial sheet 22*a* will remain in view a substantial period of time. As the rod 58 passes beneath the flaps of the initial sheet, as stated, said rod engages and lifts the detent 50 out of the path of the engaged tooth on the escape wheel 48, thereby permitting the escape wheel 48 and drum 16 to be turned one step by the belts 30, when they are checked by the detent 50 which drops into the path of the following tooth. The belts 30, however, continue to travel and carry the rod 58 over the drum 16, thereby causing the rod 58 to shift the initial sheet 22*a* from display position to the rear of the other sheets. The shifting movement is accelerated by the rod 58 folding the initial sheet 22*a* over the drum, Fig. 7, thereby causing the free end of the sheet to travel twice as fast as the rod, so as to quickly expose the second sheet to view. As the rod 58 continues its downward travel with the rear strands of the belts 30 while the drum 16 remains stationary, the rod 58 will unfold the initial sheet 22*a*, see dotted lines, Fig. 7, so that the initial sheet 22*a* will drop behind the other sheets suspended from the drum, Fig. 3. When the drum 16 is turned one step from the position shown by Figs. 3 and 6, to that shown by Fig. 7, it carries the second display sheet forward and upward to the display position formerly occupied by the initial sheet 22*a*, where said second sheet will be in position to be shifted by the rod 58 to the rear of the other sheets.

The front strands of the belts 30 incline downward and rearward, Fig. 3, to prevent the rod 58, in its upward travel, from passing in front of the sheet on display, while the lower portions of the remaining sheets of the group are prevented from swinging forward in front of the rod 58 by a transverse retaining rod 60, which is secured to the walls 11, and holds the lower ends of the sheets back until the sheets are successively shifted to the display position.

The foregoing operations will be repeated and the sheets 22 and 22*a*, will be successively displayed at the opening 14, so long as the motor 46 remains in operation.

If desired the housing 2 may be provided with means for illuminating the display sheets as they successively appear at the opening 14, but since this feature is well known in the art I do not consider it necessary to show it in the drawings.

From the foregoing description, taken in connection with the drawings, it is apparent that I have provided a display apparatus well adapted for the purpose intended, and while I have shown the preferred construction of the apparatus I reserve all rights to such changes and modifications thereof as properly fall within the scope of the invention as claimed.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is:

1. A display apparatus comprising a constantly driven endless conveyer, a rotary drum driven by frictional engagement with said conveyer, escapement means for periodically checking said drum during each revolution, display sheets attached at spaced intervals to the drum and successively brought thereby into display position, and means carried by the conveyer for cooperating with the drum in shifting each sheet from display position to the rear of the other sheets and for accelerating the shifting movement by folding each sheet over the drum, said means also acting to periodically release the escapement means, thereby permitting the drum to successively carry the sheets into display position.

2. A display apparatus comprising a constantly driven endless conveyer, a rotary drum driven by frictional engagement with said conveyer, escapement means for periodically checking said drum during each revolution, display sheets attached at their upper ends to the drum at spaced intervals and successively carried by the drum into display position, means carried by the conveyer for cooperating with the drum in shifting each sheet from display position to the rear of the other sheets and for accelerating the shifting movement by folding each sheet over the drum, said means also acting to periodically release the escapement means, thereby permitting the drum to successively carry the sheets into display position, and means arranged in front of the rear sheets to prevent their lower ends from moving forward with the upper ends of the sheets until the shifting means has passed around said lower ends and upward behind the sheet in display position.

3. A display apparatus comprising a pair of constantly driven belts, a rotary drum driven by frictional engagement with said belts, escapement means for periodically checking said drum, display sheets attached at spaced intervals to the drum and successively brought thereby into display position, and means carried by the belts for cooperating with the drum in shifting each sheet from display position to the rear of the other sheets and for accelerating the shifting movement by folding each sheet over the drum, said means also acting to periodically release the escapement means, thereby permitting the drum to successively carry the sheets into display position.

4. A display apparatus comprising a pair of constantly driven belts, upper and lower sprocket wheels which carry said belts, means for driving the lower sprocket wheels, a rotary drum driven by frictional engagement with said belts, escapement means for periodically checking said drum, display sheets attached at spaced intervals to the drum and successively brought thereby into display position, and means carried by the belts for cooperating with the drum in shifting each sheet from display position to the rear of the other sheets and for accelerating the shifting movement by folding each sheet over the drum, said means also acting to periodically release the escapement means, thereby permitting the drum to successively carry the sheets into display position.

5. A display apparatus comprising a constantly driven endless conveyer, a rotary drum driven by frictional engagement with said conveyer, a rotary escape wheel for periodically checking said drum, a detent for checking said escape wheel at spaced intervals, display sheets attached at spaced intervals to the drum and successively brought thereby into display position, and means carried by the conveyer for cooperating with the drum

in shifting each sheet from display position to the rear of the other sheets and for accelerating the shifting movement by folding each sheet over the drum, said means also acting to periodically release the escapement means, thereby permitting the drum to successively carry the sheets into display position.

6. A display apparatus comprising a pair of constantly driven upwardly extending belts, sprocket wheels at the upper portion of said belts and around which the belts travel, a shaft upon which said sprocket wheels are freely mounted, a drum fixed to said shaft and driven by frictional engagement with the belts, a rotary escape wheel fixed to the shaft and provided with equally spaced peripheral teeth to intermittently check the drum, a detent yieldably held in the path of said teeth to cooperate therewith in intermittently checking said escape wheel, display elements attached to the drum and successively carried thereby into display position, and means carried by the belts for cooperating with the drum in shifting each display element from display position to the rear of the other display elements, said means also acting on each circuit of the belts to disengage the detent from the escape wheel so that the drum can carry a display element into display position.

7. A display apparatus comprising a housing having a display opening, an endless conveyer operably mounted in said housing, means for operating said conveyer, a drum around which said conveyer travels and drives the drum through frictional engagement therewith, an escapement for checking said drum at spaced intervals, display elements attached at spaced intervals to said drum and successively carried thereby to the display opening, and means carried by the conveyer for cooperating with the drum in shifting each display element from the display opening to the rear of the other display elements, said means also acting to release the escapement each time the conveyer completes a circuit, thereby permitting the drum to successively carry the display elements to the display opening.

8. A display apparatus comprising a housing having a display opening, an endless conveyer operably mounted in said housing, means for operating said conveyer, a drum around which said conveyer travels and drives the drum through frictional engagement therewith, an escapement for checking said drum at spaced intervals, display elements attached at spaced intervals to said drum and successively carried thereby to the display opening, a rod carried by the conveyer for cooperating with the drum in shifting each display element from the display opening to the rear of the other display elements, said rod also acting to release the escapement each time the conveyer completes a circuit, thereby permitting the drum to successively carry the display elements to the display opening.

9. A display apparatus comprising a housing having a display opening, an endless conveyer operably mounted in said housing, means for operating said conveyer, a drum driven by frictional engagement with said conveyer, an escapement including an escape wheel for checking said drum at spaced intervals during each revolution, a rotary shaft upon which the drum and the escape wheel are fixed and upon which the upper portion of the conveyer is freely mounted, display elements having their upper ends attached at spaced intervals to said drum and successively carried thereby to the display opening, means carried by the conveyer for cooperating with the drum in shifting each display element from the display opening to the rear of the other display elements, said means also acting to release the escapement each time the conveyer completes a circuit, thereby permitting the drum to successively carry the display elements to the display opening, and a rod in the housing arranged in front of the display elements to prevent their lower ends from moving forward with their upper ends until the shifting means has passed beneath said lower ends and forward and upward behind the display element at the display opening.

10. In a display apparatus, a rotary shaft, sprocket wheels freely mounted upon said shaft, belts carried by said sprocket wheels, means for constantly driving said belts, a drum fixed upon the shaft and driven by frictional engagement with the belts, an escape wheel fixed to the shaft to check the same and the drum at spaced intervals, a detent for checking said escape wheel at spaced intervals, and display means associated with the drum to be carried thereby into and out of display position.

11. In a display apparatus, a rotatable drum, means for periodically checking said drum, a display sheet associated with and adapted to be carried over said drum to display position, a member for folding and unfolding the display sheet as it passes over the drum, and continuously operated endless means adapted to carry said member in a circuit around the drum and to frictionally engage and drive the drum.

12. In a display apparatus, a rotatable drum, a plurality of display sheets attached to and adapted to be carried around the drum to display position, an escapement associated with the drum to periodically check the same, a member cooperating with the drum for successively folding and unfolding the display sheets as they are carried around the drum, said member being also adapted to periodically release the escapement, and endless means adapted to carry said member in a circuit around the drum and also drive the drum by frictional engagement therewith.

ORA R. CURNUTT.