P. C. SCOTT.

ADVERTISING MACHINE.

APPLICATION FILED MAY 12, 1916. RENEWED APR. 29, 1919.

1,306,975.

Patented June 17, 1919.

5 SHEETS—SHEET 1.

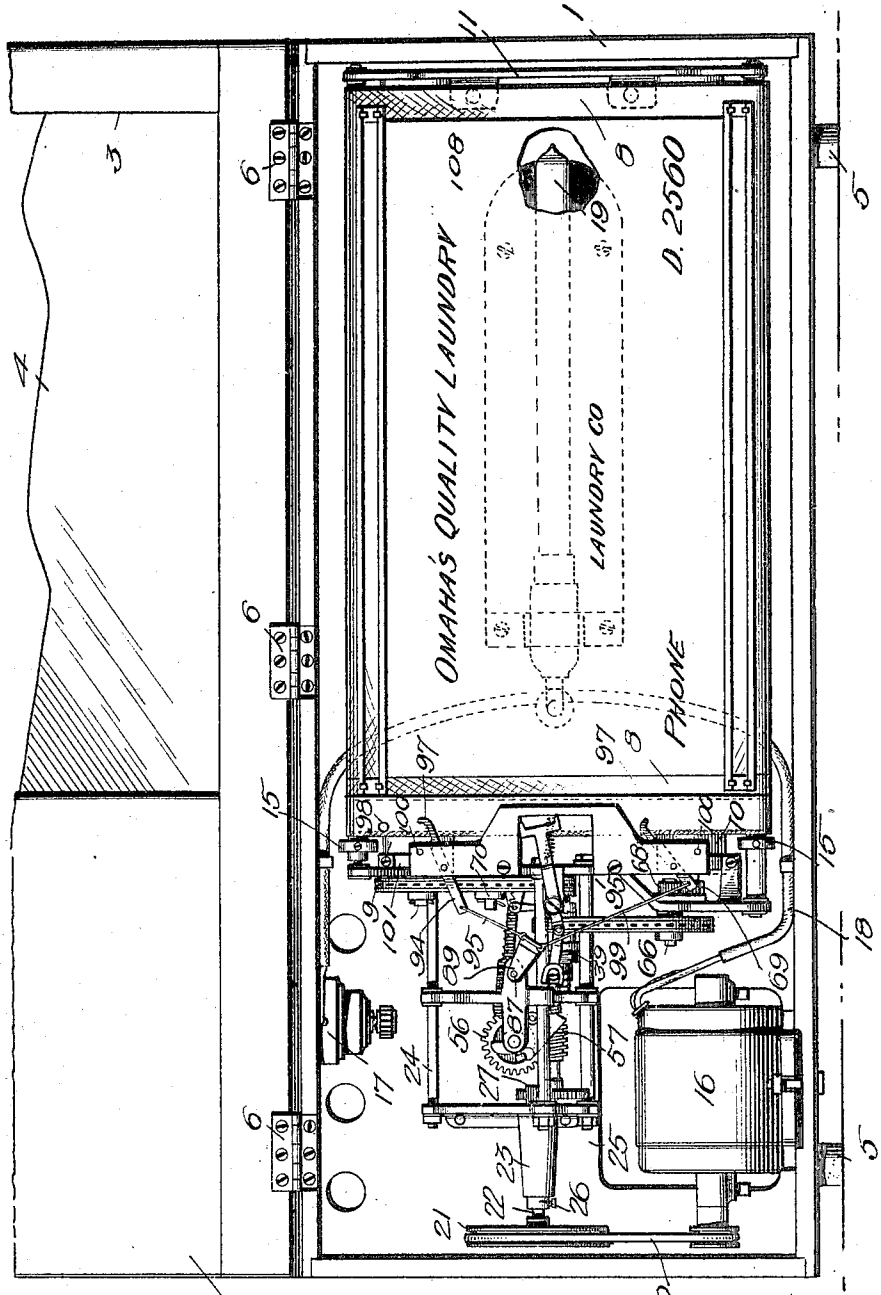


Fig. 1.

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5 SHEETS—SHEET 2.

Fig. 2.

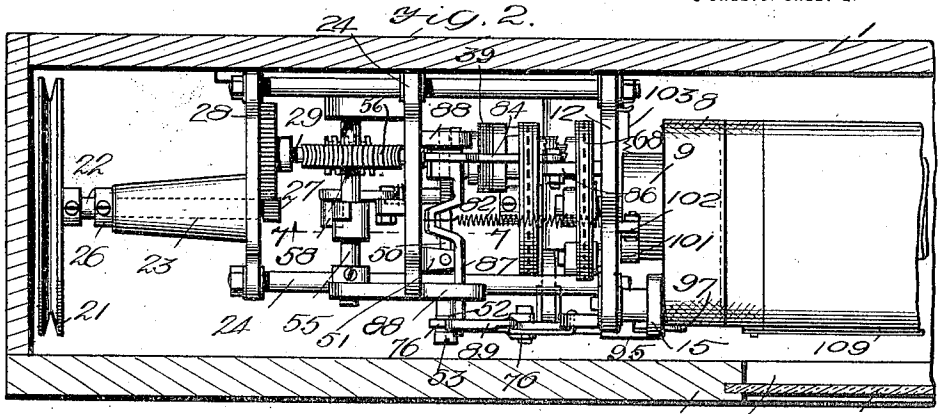
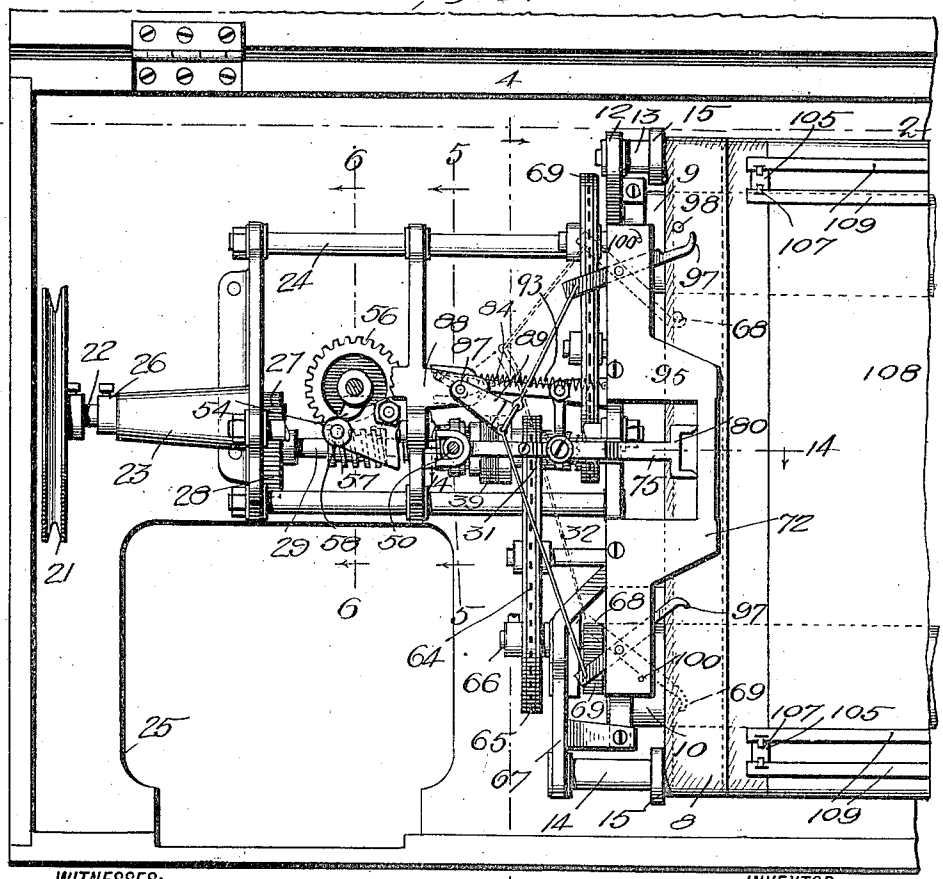


Fig. 3.



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5 SHEETS—SHEET 3.

Fig. 4.

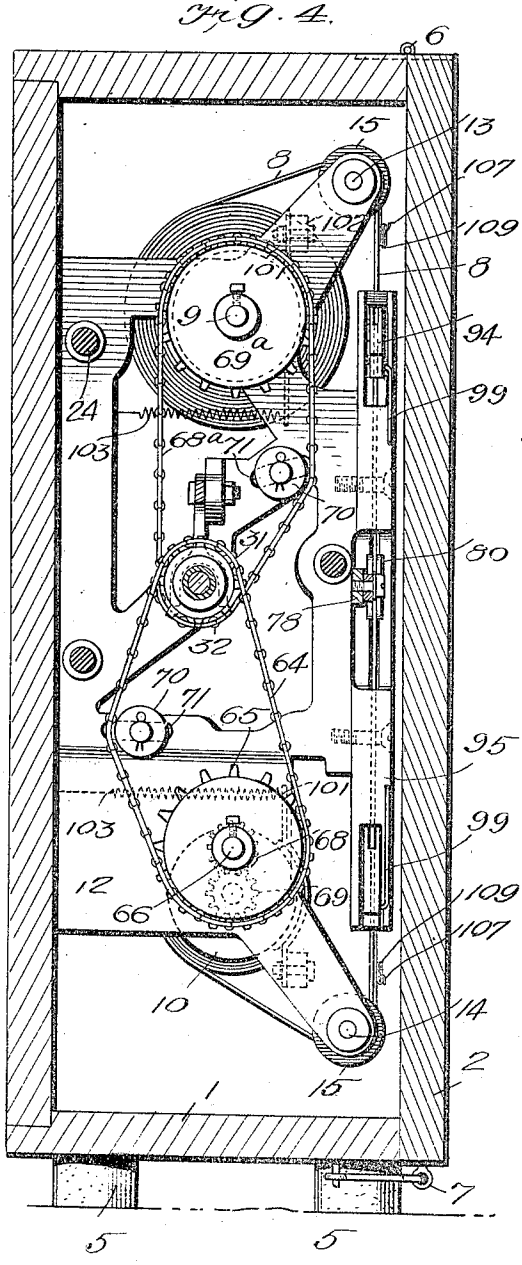


Fig. 5.

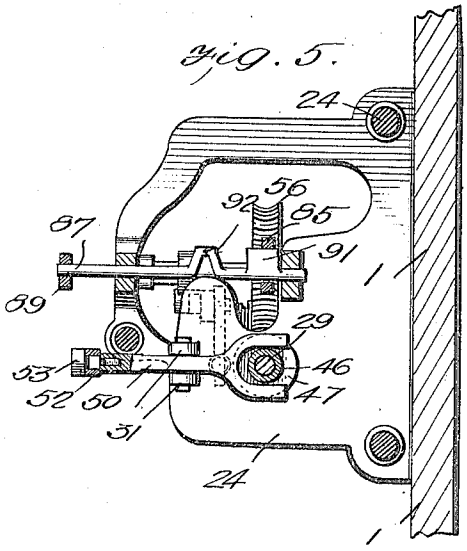
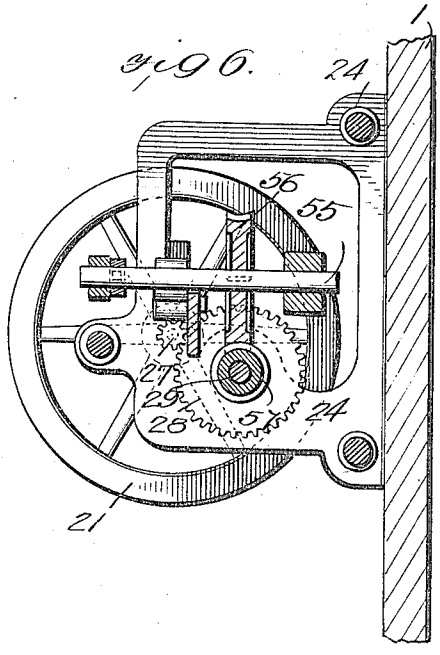


Fig 6.



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5 SHEETS—SHEET 4.

Fig. 7.

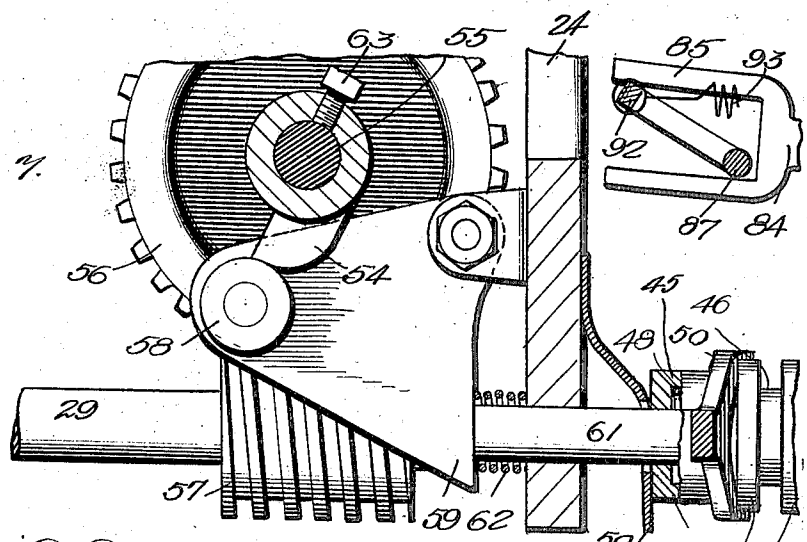


Fig. 8.

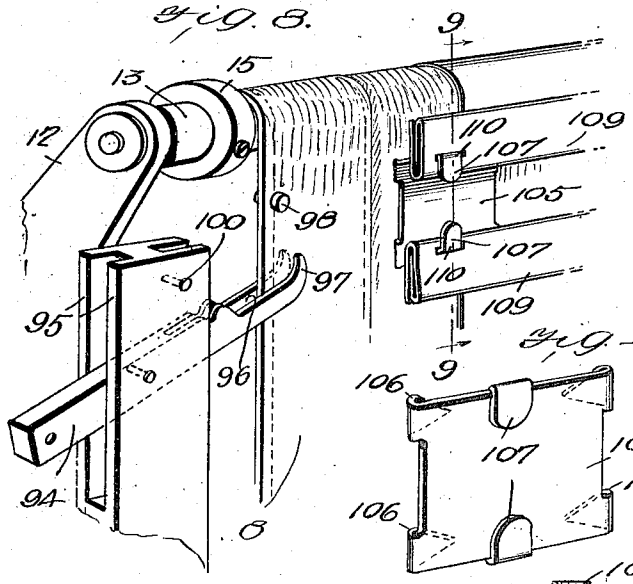


Fig. 10.

Fig. 9.

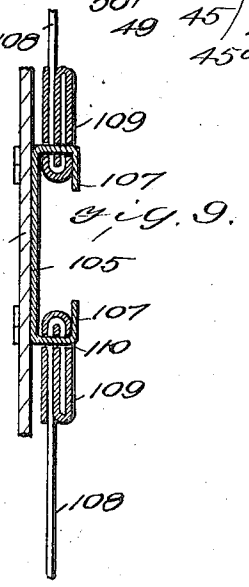
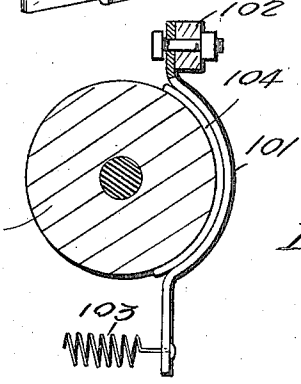


Fig. 11.



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5 SHEETS—SHEET 5.

Fig. 12.

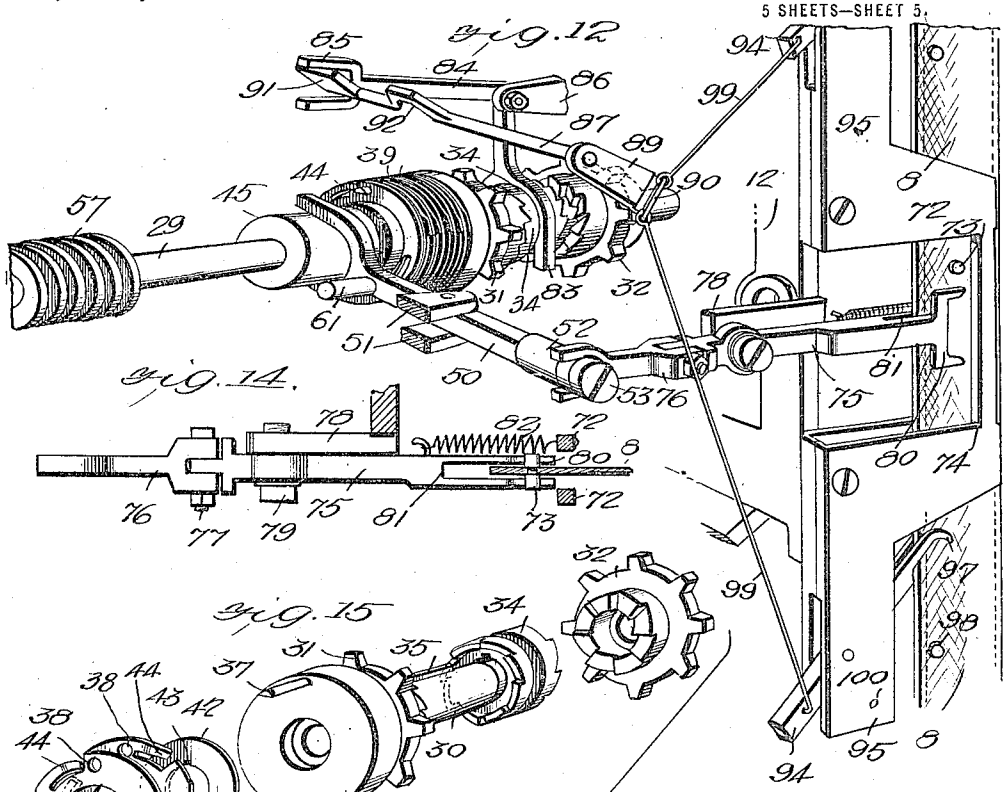


Fig. 14.

Fig. 15.

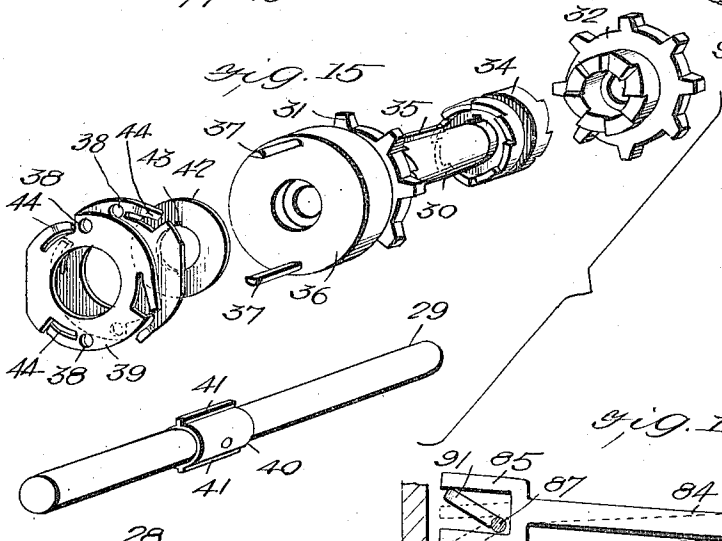


Fig. 13.

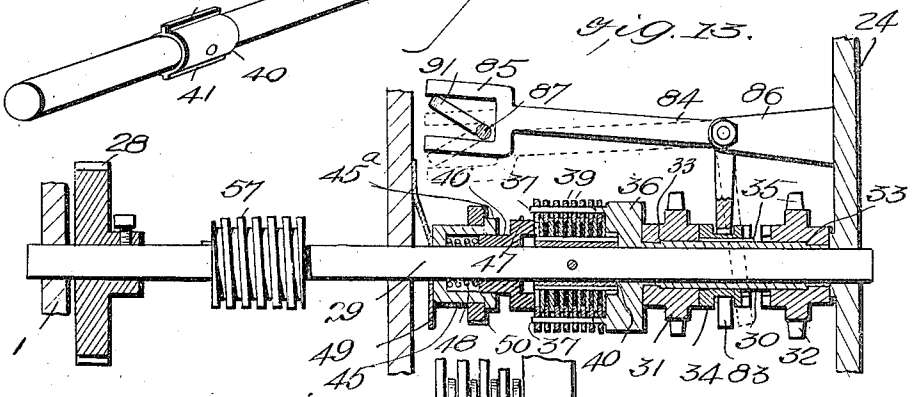
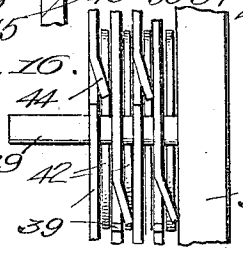


Fig. 10.



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UNITED STATES PATENT OFFICE.

PAUL C. SCOTT, OF OMAHA, NEBRASKA.

ADVERTISING-MACHINE.

1,306,975. Specification of Letters Patent. Patented June 17, 1919.

Application filed May 12, 1916, Serial No. 97,005. Renewed April 29, 1919. Serial No. 293,584.

To all whom it may concern:

Be it known that I, PAUL C. SCOTT, a citizen of the United States, and a resident of Omaha, in the county of Douglas and State of Nebraska, have invented a new and useful Improvement in Advertising-Machines, of which the following is a specification.

My invention is an improvement in advertising machines, and has for its object to provide a machine of the character specified, adapted to be arranged in public places, as for instance, in street cars, store windows, moving picture theaters, and the like, wherein a curtain or band is provided carrying a series of panels of displaying matter or advertisements on its face, the said panels being attached to the band in such manner that they may be removed and replaced, and wherein mechanism is provided for moving the band in either direction to display all the panels in sequence, and wherein mechanism is provided for connecting the winding rollers to the moving means in alternation, one roller directly and the other indirectly controlled by the band as it nears the end of its travel in either direction to reverse the direction of movement of the band, and wherein the moving means is normally disconnected from the band and is connected thereto at predetermined intervals, the connections being controlled by the moving means for the band, and wherein trip mechanism is provided for holding the moving means connected with the band, the said trip mechanism being tripped by the band at predetermined intervals to permit the individual panels to remain in display position a predetermined length of time.

In the drawings:—

Figure 1 is a front view of the machine with the door open,

Figs. 2, 4, 5, 6 and 14 are sections on the lines 2—2, 4—4, 5—5, 6—6, and 14—14, respectively, of Fig. 3, each view looking in the direction of the arrows adjacent to the line,

Fig. 3 is an enlarged front elevation of the controlling mechanism for the band,

Fig. 7 is a section on the line 7—7 of Fig. 2, looking in the direction of the arrow adjacent to the line,

Fig. 8 is a partial perspective view of a portion of the band showing the manner of connecting the panels,

Fig. 9 is a section on the line 9—9 of Fig. 8, looking in the direction of the arrows adjacent to the line,

Fig. 10 is a perspective view of one of the holding clips for the panels,

Fig. 11 is a section through one of the winding rollers showing the brake mechanism,

Fig. 12 is an enlarged perspective view of the controlling mechanism for the band,

Fig. 13 is a vertical section of the driving shaft showing the clutch connections,

Fig. 15 is a perspective view of the parts of the clutch mechansim disassociated, and

Fig. 16 is an enlarged detail of a portion of the multiple disk clutch.

The present embodiment of the invention is arranged within a case 1 of ordinary construction, having a lid or cover 2 for the front thereof, the said lid or cover having an opening 3 at the band to be later described, which is normally closed by a sheet 4 of transparent material, as for instance, glass or the like, in order that when the cover is closed the panels carrying the display matter supported by the band may be seen through the opening 3.

The case 1 is supported by feet 5 and the cover is connected to the case by hinges 6, and a hook 7 is provided for holding the cover in closed position. The display band is composed of a strip 8 of suitable material, and the said strip is connected to the display panels to hold them in proper spaced relation with respect to each other.

The completed band has its ends connected with winding rollers 9 and 10, respectively, the shafts of the said rollers being journaled at their ends in supports 11 and 12, secured to the rear wall of the case. From the winding rollers 9 and 10 the band passes over display rollers 13 and 14, journaled in the supports 11 and 12, adjacent to the rollers 9 and 10, the said rollers 13 and 14 having shafts which are journaled in extensions from the supports. These display rollers 13 and 14 are near the top and bottom of the case so that when the band passes from one winding roller to the other the panels to be later described, will be displayed in sequence before the opening 3.

The display rollers 13 and 14 have adjustable stops in the form of collars 15 at the end adjacent to the support 12 for engagement by the adjacent edge of the band to limit the movement of the band toward the support 12 and to hold it in proper display position. These collars are adjustable on the shafts of the rollers so that they may be

properly placed with respect to the band. The opening 3 and the band is at one end of the case, and a space is left at the other end of the case for the operating mechanism for the band and for the motor 16 which operates the operating mechanism, the said motor being in the present instance an electric motor. This motor is supplied with current from a suitable switch plug 17 connected to the top of the case, and connected to the motor by the usual conducting wires 18.

An electrical bulb 19 is arranged behind the opening 3 and mid-way between the display rollers, the said bulb being of a length corresponding approximately to the length of the panels, and the conducting wires 18 are connected with the bulb in such manner that when the motor is running the lamp will burn and will illuminate the panels supported by the strips 8. This bulb as shown, is connected with the case in any suitable manner, and the motor and the lamp may be connected with their circuit by means of the switch plug 17.

An endless belt 20 connects the motor with a pulley 21 on a shaft 22, which is journaled in a bearing sleeve 23, extending laterally from one end of a metallic supporting frame 24, which is secured to the rear wall of the case just above the motor 16. It will be noticed from an inspection of Figs. 1 and 3, that the rear of the case has an opening 25 at the motor for permitting access to the motor from the rear of the case, and the motor is preferably bolted to the case as indicated in Fig. 1. The shaft 22 has an adjustable collar 26 at the outer end of the bearing sleeve 23 to limit the longitudinal movement of the shaft, and the inner end of the shaft is provided with a pinion 27 which meshes with a gear wheel 28 on the driving shaft 29, the said shaft being journaled in the supporting frame 24, before mentioned.

A sleeve 30 is arranged loosely on the shaft 29 (Figs. 12. 13 and 15) and a pair of sprocket wheels 31 and 32 are journaled loosely on the sleeve. The sprocket wheels 31 and 32 are at the ends of the sleeve, and it will be noticed that each end of the sleeve is reduced annularly and that the bores of the sprocket wheels 31 and 32 are enlarged at this point to limit the movement of the sprocket wheels toward each other, and to hold the said wheels in place on the sleeve and on the shaft 29. This reducing of the sleeve forms annular shoulders 33 which are engaged by similar shoulders within the bores of the sprocket wheels. Each of these sprocket wheels 31 and 32 has clutch teeth on its inner end and the teeth are adapted to be engaged in alternation by similar teeth on a movable clutch section 34, which is feathered on the sleeve as indicated at 35, Figs. 13 and 15.

It will be evident from the description that when the clutch section 34 is moved in one direction the sprocket wheel 31 will be clutched to the sleeve while when the said section is moved in the opposite direction the sprocket wheel 31 will be released from the sleeve and the sprocket wheel 32 will be clutched thereto. That end of the sleeve 30 adjacent to the sprocket wheel 31 has an annular enlargement 36, and from the face of the enlargement remote from the sprocket wheel a pair of pins 37 extend laterally. These pins are oppositely arranged and they engage openings 38 in disks 39, which are mounted loosely on a sleeve 40, pinned to the shaft 29 at the enlargement or head 36, the said sleeve having oppositely extending keys or feathers 41 as shown.

The disks 39 constitute a part of a multiple disk clutch, the clutch being completed by other disks 42, which alternate with the disks 39. The bore or opening of the disks 39 is of a size such that the keys 41 may rotate in such bores or openings but the disks 42 fit the sleeve closely having keyways 43 for receiving the keys 41. Thus the disks 42 are constrained to rotate with the shaft 29, while the disks 39 must rotate with the head 36, and whenever these disks are forced into frictional engagement the head 36 and the sleeve 30 must turn with the shaft 29, while when the disks are not clamped upon each other the parts are free.

Each of the disks 39 has three struck-up resilient tongues 44 at its periphery, the said tongues being bent laterally as shown more particularly in Fig. 16 and in the same direction and in such manner that when the disks are not compressed the tongues will tend to separate the disks as shown in Fig. 16. It will be noticed that the openings 38 are so arranged that the tongues 44 of adjacent disks will be staggered. When the disks are forced together the tongues will be moved into the planes of the disks to which they pertain, permitting the disks 39 to clamp upon the disks 42 to lock the sleeve to the shaft 29.

A drum 45 is journaled on the shaft adjacent to that end of the sleeve 40 remote from the head 36 and this drum has the inner end of its bore enlarged to receive a sleeve 46 arranged loosely on the shaft 29, and having a head 47 at the end remote from the drum. A coil spring 48 is arranged within the enlargement of the bore of the drum, the spring engaging the adjacent end of the sleeve or collar 46 and normally tending to press the said sleeve or collar away from the drum 45.

A flat spring 49 secured at one end to the supporting frame 24 normally presses the drum toward the collar, and the operating means for the multiple disk clutch engages a flange 45ª of the drum.

A lever 50 is provided for operating the multiple disk clutch, the said lever being pivoted intermediate its ends between laterally extending lugs 51 from the supporting frame 24. This lever has a fork at its inner end which engages the flange 45ª and a roller 52 is journaled on the opposite end of the lever, the roller being held in place by an axial screw 53. It will be evident from the description that when the roller end of the lever is moved in one direction, the multiple disk clutch will be operated to clutch the sleeve 30 to the shaft 29, and that when the lever is released the resiliency of the clutch disk 39 will release the clutch. The coil spring 48 prevents shock or jar to the parts during the movement of the lever 50, thus cushioning the movement of the lever in either direction.

Means is provided controlled by the movement of the driving shaft 29 for operating the multiple disk clutch at predetermined intervals. The said mechanism comprises a cam 54 adjustably mounted on a counter shaft 55, which is journaled transversely of the driving shaft above the same. This shaft is provided with a worm wheel 56, which engages a worm 57 on the shaft 29 to drive the countershaft, and the cam engages a roller 58 at the apex of a substantially triangular cam plate or lever 59, which is pivoted by its upper inner corner to the supporting frame 24. The lower inner corner of the cam plate or lever engages a pin 61 extending laterally from the lever 50 adjacent to the fork, and the said pin passes through an opening in the supporting frame 24 into position to be engaged by the cam lever or plate.

A coil spring 62 encircles the pin between the frame and the cam plate or lever, and the said spring acts normally to return the plate or lever and hold it in engagement with the cam 54. It will be noticed from an inspection of Fig. 7 that the cam is adjustable on the shaft, being held in adjusted position by a set screw 63. The lever 50 will be moved to operate the multiple disk clutch once during each complete rotation of the shaft 55, and the said shaft may be connected to the shaft 29 to move at any predetermined relative speed with respect to the shaft 29. Thus the multiple disk clutch may be arranged to be operated at intervals of any desired length.

Whenever the driving shaft 29 is connected with the operating sleeve 30 for the winding rollers the band will be moved in one direction or the other depending upon which sprocket wheel 31 or 32 is connected to its winding roller. The sprocket wheel 31 is connected by means of a chain 64 with a sprocket wheel 65 on a stub shaft 66 mounted in a bracket arm 67 connected with the support 12, and the lower end of this arm also supports the extended end of the display roller 14. The inner end of the stub shaft has a pinion 68, which meshes with a similar pinion 69 on the shaft of the winding roller 10 and it will be obvious that when the sprocket wheel 31 is connected to the driving shaft 29 the winding roller 10 will be driven in the opposite direction to the shaft 29.

The sprocket wheel 32 is connected by a chain 68ª with a sprocket wheel 69ª on the shaft of the winding roller 9, and when the shaft 29 is connected with the sprocket wheel 32 the winding roller 9 will be driven in the same direction as the shaft 29. Idlers 70 are provided for tensioning the chains 64 and 68ª, and the said idlers are journaled on stub shafts which are mounted in slots 71 on the support 12, the slots being so arranged that the rollers may be moved toward and from the adjacent run of the sprocket chain to tension the said chain.

At the side edge adjacent to the operating mechanism the edge of the band passes between substantially U-shaped guards 72, the said guards being formed from plates which are secured together at one edge and to the edge of the support 12, and the said plates extend on opposite sides of the band as shown more particularly in Figs. 3 and 12, and the edge of the band extends into the opening between the arms and the body of the guards. At suitable intervals depending upon the position of the panels to be later described, the strip 8 which is adjacent to the guard 72 is provided with buttons or stops 73, and these buttons or stops move through the opening 74 formed between the arms and the body of the guards.

A trip lever is mounted at this point, the said lever consisting of portions 75 and 76, which are pivoted together as indicated at 77. The portion 75 of the lever is pivoted to an arm 78 extending laterally from the support 12 by means of a bolt 79 which passes through a bearing in the lever and through the arm. The free end of the portion 76 of the lever has a fork whose arms embrace the roller 52. The free end of the portion 75 of the lever is forked as indicated at 80, and the said end is split vertically as shown at 81 to receive the adjacent edge of the strip 8 of the band. Thus a fork is provided on each side of the strip at front and rear thereof, and the arms of the forks are adapted to be engaged by the pins 73, before mentioned.

The lever 75—76 is normally held with the parts in alinement by a coil spring 82, which is connected at one end to the rear guard 72 and at the other to a hook on the portion 75 of the lever. When the parts of the lever are in alinement as shown in Figs. 12 and 14, the lever 50 will be held with the multiple disk clutch clutching the sleeve 30

to the shaft 29. When, however, one of the pins 73 engages the forks 80 from either above or below, the portions of the lever 75 and 76 will be moved out of alinement and the lever 50 will be free to permit the clutch to expand and release the shaft from the sleeve. So long as the parts of the lever are in alinement, and they will be normally held in such position by the spring, the multiple disk clutch will be operated. The pins 73 are arranged at the panels and in such manner that as soon as the panel is in display position regardless of the direction in which the band, as a whole, is moving, a pin 73 will engage the fork 80 and will trip the lever to release the multiple disk clutch to disconnect the winding rollers from the driving shaft.

The clutch section 34 has an annular groove which is engaged by the arms of a fork 83 on one of the arms of an angle lever 84. The other arm of the angle lever has a fork 85 and the lever is pivoted at the junction of the arms to a bearing lug 86, on the frame 24. A crank shaft 87 is journaled in bearing lugs 88 on the frame 24 just above the shaft 29 and transversely thereof. The crank 89 of the shaft has a link or loop 90 at its outer end and the opposite end of the shaft is provided with a vane 91, which is received between the arms of the fork 85. This vane which is a species of cam will swing the elbow lever 84 in opposite directions when the shaft 87 is oscillated to cause the outer edge of the vane to engage the upper or lower arm.

The shaft 87 is provided intermediate its ends with an upwardly offset portion 92, and a coil spring 93 is connected at one end with this portion, the other end being connected with the support 12. The spring tends to hold the shaft with the elbow lever in either position, that is, with the clutch section 34 in engagement with the sprocket wheel 31 or 32. As soon as the offset portion 92 passes the dead center, the spring will assist the shaft in swinging the elbow lever 84. The offset portion 92 extends in the same direction as the vane.

Reversing levers 94 are pivoted between the extended ends 95 of the guides 72, and the inner end of each lever is forked as shown at 96 for receiving the edge of the adjacent strip 8 between the arms of the fork. The arms of the fork are bent laterally as shown at 97 to form a species of hook, and these hooks are adapted to be engaged by buttons or stops 98 on the strip 8.

It will be noticed from an inspection of Fig. 12 that the stops 98 are nearer the edge of the strip than the stops 73, and two of the stops 98 are provided, one near each end of the band. The hooks 97 of the reversing levers are turned in opposite directions (Fig. 3), and when the band is almost unwound from the roller 13 the pin 98 at the said end will engage the uppermost reversing lever and will swing the same. When the band is almost unwound from the roller 14 the lowermost reversing lever will be engaged by the pin 98 adjacent to the end of the band connected with the roller 14. Each lever 94 is connected by means of a link 99 with the loop 90 before mentioned, and a stop 100 is provided for limiting the swinging movement of each lever when it is operated by the other lever, that is, when the uppermost lever is operated by the pin 98, the swinging movement of the two levers will be limited by the stop 100 for the lowermost lever.

The operation of the device as a whole, is as follows:—

The strips 8 are connected by the panels which contain the advertising matter, and the panels and the strips form a band which winds upon the roller 9 at one end and upon the roller 10 at the other end. At the beginning of the operation of the device, assuming that the band is wound upon the roller 9 at the top, when the motor 16 is set into operation, the shaft 22 will be driven, and will drive the shaft 29 at a lower rate of speed. Once during each complete rotation of the shaft 55 the cam 54 will engage the roller 58 and will swing the lever 59 to cause the pin 61 to swing the lever 50 to operate the multiple disk clutch and to connect the sleeve 30 to the shaft 29. The trip lever 75—76 will be straightened by the spring 82, and will hold the lever 50 with the clutch in operative position.

At this moment the reversing levers are in the position shown in full lines in Fig. 3, and the clutch section 34 is clutched to the sprocket wheel 31. The roller 10 will be driven in the direction to wind up the band and to withdraw the same from the roller 9. As each panel comes into position behind the opening 3 as shown in Fig. 1, a pin 73 will engage the upper arms of the fork 80 of the trip lever, and will break the joint between the portions of the lever, releasing the lever 50 and permitting the multiple disk clutch to release itself.

The operating shaft 29 is now disconnected from the roller 10, and the panel will remain behind the opening 3 until the cam 54 again operates the lever 50 to operate the clutch. One of the pins 73 is arranged adjacent to each panel, and each panel will be held for a time at the opening 3, the length of time depending upon the relation between the worm wheel 56 and the worm 57. The lever 50 is held by the cam 54 in a position to make the clutch operative long enough to permit each pin 73 to move past the arms of the fork 80 and to permit the spring 82 to straighten the lever before the lever 50 is released. That is, the lever 50 is

held with the clutch in operative position by the cam until the trip lever is in condition to hold the lever 50.

As the band nears the end of its movement toward the roller 10 the pin 98 at the end adjacent to the roller 9 will strike the hooked arms 97 of the adjacent reversing lever 94, and will swing the said lever as indicated in dotted lines in Fig. 3. The shaft 87 will be oscillated, and the vane 91 will swing the elbow lever 44 to move the clutch section 34 from out of engagement with the sprocket wheel 31 and into engagement with the sprocket wheel 32. Thus the band will be moved past the opening 3, displaying each panel for a predetermined length of time at the said opening, and when all of the panels have been displayed the direction of movement of the band will be reversed automatically and the band will travel in the opposite direction displaying the panels in turn but in reverse order. The lamp 19 will illuminate the panels which are preferably of transparent material, as for instance, paper, and it is only necessary to turn on the current, that is, to start the machine in order that it may operate continuously stopping each panel at the opening 3 for a predetermined length of time and reversing the band at the end of its movement in each direction.

Each roller 9 and 10 is provided with brake mechanism or the like shown for the roller 9 in Fig. 11 for preventing over-unwinding of the band and to steady the movement of the same when it is drawn off of either roller by the other. This mechanism as shown, comprises an arc-shaped brake bar 101, each of the said bands being connected at one end to a lug 102 on the support 12, and the intermediate portion of each bar is curved to approximately the periphery of the roller. At the other end each bar has connected therewith a coil spring 103, which acts normally to draw the bar toward the roller, and the concave face of the bar is provided with a lining 104 of material having a high coefficient of friction. The brakes make just enough pressure to prevent over-running of the winding rollers and to insure a steady uniform tension of the band.

The method of mounting and attaching the panels is shown in Figs. 8 and 9. Each strip 8 is provided at predetermined intervals with attaching clips shown in Figs. 9 and 10. Each of these clips is a plate 105, having at its corners pointed spurs or lugs 106, and having it its intermediate opposite side edges a pair of overlying tongues 107, the points of the tongues being parallel with the bodies of the plates but spaced apart therefrom. The clips are fastened to the strips by pushing the spurs or lugs 106 through the material of the strips and clutching them on the rear faces of the strips as shown in Fig. 9.

The plates of the strips register and holding bars are connected with the upper and lower side edges of the sheets 108 which contain the advertising matter, and the said bars have openings at their ends for receiving the tongues of the holding clips. Each of these holding bars 109 is composed of a strip of metal bent upon itself to form three substantially parallel portions lying in spaced relation, and the material of the sheets 108 is folded in between these folds. Each strip forming a holding bar is first doubled over the edge of the sheet in substantially U-shape, but with one side wall of greater width than the other, and the longer side wall is then folded over upon the opposite side wall, as shown in Fig. 9. Thus the edge of the sheet is firmly held in the holding bar and the ends of the bars have transverse slots 110 for receiving the tongues 107. Thus the panels may be detached from the holding clips and from the strips, and they are interchangeable and replaceable. It is intended in use to rent or lease the space on the band as a whole, and the display may be changed whenever desired.

I claim:—

1. In a machine of the character specified, the combination with a band, and winding rollers upon which the band winds at its ends, of a continuously rotating driving shaft, means for alternately connecting said shaft with one winding roller to cause it to rotate in the same direction as the shaft and with the other roller to cause it to rotate in the reverse direction, means operated by the band near the end of its travel in each direction for controlling the said means, means operated by the driving shaft at predetermined intervals for connecting the said connecting means to the driving shaft, a normally operative means for releasing the driving shaft from the said connecting means, trip mechanism for restraining the operation of the releasing means, and means controlled by the movement of the band for tripping the trip mechanism at a predetermined interval, said mechanism comprising a lever consisting of pivotally connected sections, one of the sections being pivoted intermediate its ends to a fixed support, a spring normally acting to hold the parts in alinement, and stops on the band for swinging the pivotally mounted sections.

2. In a machine of the character specified, the combination with a band and winding rollers upon which the band winds at its ends, of a continually rotating driving shaft, means operated by the driving shaft for connecting the shaft with one of the winding rollers to move the band, normally operative means for releasing the driving shaft from the said roller, trip mechanism

for restraining the operation of the releasing means, and means controlled by the movement of the band for tripping the trip mechanism at predetermined intervals, said mechanism comprising a lever consisting of pivotally connected sections, one of the sections being pivoted intermediate its ends to a fixed support, a spring normally acting to hold the parts in alinement, and stops on the band for swinging the pivotally mounted sections.

3. A display band comprising a pair of strips, each having supporting clips arranged in spaced relation and in alinement with the clips of the other strip, and holding bars for the display sheets and connected with opposite edges of the sheets, the clips having tongues and the bars having slots for engaging the tongues, said bars connecting the strips.

4. In a machine of the character specified, the combination with a band, winding rollers upon which the band winds at its ends, a driving shaft, clutch mechanism on the driving shaft for alternately connecting the shaft with the rollers to cause them to rotate in opposite directions, reversing levers pivoted at opposite sides of the driving shaft, the band having pins near its ends for engaging the levers, an elbow lever for operating the clutch, one of the arms of the lever engaging the clutch and the other having a fork, a shaft having a cam arranged between the arms of the fork for moving the lever in opposite directions, said shaft having a crank at one end, and a connection between the crank and each reversing lever.

PAUL C. SCOTT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."