This invention relates to improvements in automatic printing and dispensing machines for handling gummed tape.

The primary object of this invention is the provision of an improved machine, which will cooperatively moisten, dispense, and print advertising or other indicia upon gummed adhesive tape, with a single operating movement of a lever or handle.

A further object of this invention is the provision of an improved automatic tape strip printing and dispensing machine having improved means associated therewith for dispensing tape from a supply roll.

A further object of this invention is the provision of improved means for printing tape on the ungummed surface of gummed tape, during a tape dispensing operation.

Other objects and advantages of this invention will be apparent during the course of the following detailed description.

In the accompanying drawings, forming a part of this specification, and wherein similar reference characters designate corresponding parts throughout the several views,

Figure 1 is a side elevation of the improved machine.

Figure 2 is a plan view of the improved machine.

Figure 3 is a cross sectional view taken substantially on the line 3—3 of Figure 2.

Figure 4 is a fragmentary plan view of the improved machine, showing the type supporting frame in a different position than in Figure 3, on its way to the platen, and showing the type supporting frame against the platen in dotted lines. Figures 5 and 6 are sectional views taken substantially on their respective lines in Figure 2 of the drawings.

Figure 7 is a fragmentary view, partly in section, showing the motion in which the parts may be disassembled.

Figure 8 is a sectional view taken substantially on the line 8—8 of Figure 2.

Figure 9 is a transverse sectional view taken through the type supporting frame, substantially on the line 9—9 of Figure 8.

Figure 10 is a sectional view taken substantially on the line 10—10 of Figure 8.

In the drawings, wherein for the purpose of illustration is shown only a preferred embodiment of the invention, the letter A may generally designate the improved machine, which comprises a frame B having an operating shaft C rotatably supported thereby. Means D is provided for rotatably supporting a supply roll of gummed tape E on the frame B and cooperates in the dispensing and the unwinding movement of the gummed tape. Means F is associated with the operating shaft C for causing a dispensing of the tape intermittently in sections of desired length, and moving it over a moistening device G at the dispensing end of the machine. Printing apparatus H is cooperatively provided on the machine frame and in an operative relation with respect to the shaft C, for printing advertising or other indicia on the reverse or ungummed side of the gummed tape during the operation of dispensing a section of the tape.

The frame B preferably comprises a base 10 upon which side walls 11 and 12 are detachably connected, as shown at 13 in Figure 3 of the drawings. The front and rear end walls 14 and 15 are detachably connected as by screws 16 at the front and rear margins of the side walls 11 and 12, as shown in Figure 1. Inasmuch as the side, front and rear walls are preferably made of cast aluminum, or other material, they may be provided with openings of any approved nature, so as to suitably provide supporting rails and reinforcing parts for said walls, necessary to mount the operating details of the machine thereon, as shown in the drawings.

The shaft C rotatably bears in the side walls at the lower portions thereof between the ends, extending transversely across the space between the side walls of the frame, and at the outer side of the side wall 12, said shaft C is provided with an operating crank or handle 17, shown in Figure 2 of the drawings, and also in Figure 1. This handle may be detachably clamped as by a set screw 18 upon said shaft.

The supply roll of gummed tape E, is of course of the conventional type, having a hub insert on which the tape is spirally wound.
to any desired diameter, with the gummed surface facing inwardly. The means D for supporting the roll E is preferably located at the outer side of the rear wall 15, and preferably comprises a bracket arm 20, shown in Figure 2 of the drawings, integral or rigid with the rear end of the side wall 11, and extending beyond the plane of the end wall 15, and at its outer end having an inwardly extending hub 21, provided with a screw-threaded socket 22. A similar detachable bracket arm 23 is detachably connected at 24 and 25 at its upper and lower ends to the rear wall 15, as shown in Figure 1 of the drawings, and at its outer end it is provided with a hub portion 20 rotatably supporting the spindle portion 27 of a detachable bolt or screw 28 which is rotatably carried by the arms or brackets 20 and 23, in the relation shown in Figures 1 and 2 of the drawings.

The spindle portion 27 rotatably receives the hub of the supply roll E thereon, in a manner which is obvious. If desired, thin ring-shaped washers 29 may be provided at opposite sides of the hub portion of the supply roll E, and a spider-like member 31, having resilient arms is placed between the hub portion 26, and the adjacent washer 29 to resist longitudinal movement of the supply roll upon the supporting bolt or pin 28.

As is shown in Figure 3 of the drawings, the rear wall 15 is provided with an opening through which the gummed paper or tape extends downwardly at an acute angle to the horizontal, and beneath a grooved wheel or pulley 35 which is rotatably carried upon a shaft bearing at its ends in the side walls 11 and 12 of the frame, below and a little to the rear of the operating shaft C. This wheel 35 has side flanges which retain the paper in position, and from the pulley the paper is adapted to extend forwardly and upwardly at an acute angle to the vertical, and over a raised edge or plate 37 which is freely connected to the side walls of the frame by screws 37, shown in Figure 1 of the drawings. A shaft 39, shown best in Figure 8 of the drawings, rotatably bears at the upper forward corner of the frame, in the side walls 11 and 12, and extends transversely across the space between said side walls, and has a frictional roller 40 keyed therewith, which indeed is part of the feed means F. The upper portion of this roller 40 lies above the top edge of the plate 37, so that the gummed tape or paper is disposed in a trained relation over the top of the roller 40, and is trained between upper and lower guide plates 41 and 42, which are connected to the front wall of the frame, as shown in Figure 3, and provide a long channel or space 43 therebetween, through which the paper or tape is guided, so that the lower gummed surface thereof may be moistened by the means G to be subsequently described. The supply roll, and the travel of the paper as above described, is located, and takes place at the right hand side of the frame, as can be seen from Figure 2 of the drawings.

An irregular cover plate is detachably provided for the top of the frame, having a forward end adapted to fit in a channel groove 46 in the upper portion of the front wall of the frame, as shown in Figure 3, and is held in position as shown in Figure 7, conforming to the upper configuration of the machine, and at its rear end being provided with an opening 48 through which a thumb nut 49 may be extended to clamp the rear end of the cover plate onto the machine, as shown in Figures 3 and 7. This prevents dust, dirt, and foreign materials from entering the working parts of the machine.

A spring pressed follower roller 50 is provided, having reduced ends 51 which seat within slots provided in bearing extensions or lugs which project rearwardly from the upper portion of the front wall 14, as shown at 52 in Figure 8 of the drawings. This roller 50 rests by gravity in such position in the bearing extension 52 that its peripheral surface will bear upon and hold the gummed paper against the roller 40 and insure the dispensing feed thereof. The follower roller 50 is provided with movable bearing portions 56, operating on the spindle 51 in each of the recesses of the extensions 52, having springs 57 acting on the top thereof, which springs lie in such position that the cover plate 47 will operate thereagainst and compress them so that the roller 50 will act in frictional engagement with the roller 40 or the gummed paper carried thereby, for a purpose which is obvious. To center the springs 57 it is preferred to provide lugs 58 on the other surfaces of the cover plate 47, as shown in Figure 7.

Referring further to the feed means F, a sleeve 60 is keyed at 61 on the operating shaft C, having a radial extension or socket 62 in which an arm 63 is detachably keyed in any approved manner. This arm 63, as shown in Figure 1, and elsewhere, has a rack bar 64 pivoted at its upper end by a pin 65, and the rack bar 64 is provided with a series of teeth 65 on the under surface thereof, which terminate at a location 66, for a purpose to be subsequently described. This arm 63 and the rack bar are normally held in a rearward position by a contractile spring 67, which is connected to said arm 63 and to the rear wall of the frame, as shown in Figure 1. This spring is also used to return the frame and the handle to a position where the dispensing operation may be repeated.

The rack bar 64 operates upon a toothed wheel 67, which is freely rotatable on the shaft 39. With the handle in the position...
shown in Figure 1, by pressing downwardly thereon, the shaft C will be rotated and the arm 63 thrown forwardly, which also projects the rack bar 64 forwardly thru a suitable opening provided in the front wall of the frame, and operates the rack bar over the toothed wheel 67. This causes a spring urged pawl 171 pivoted at 172 on an extension 173 of the wheel 67 to engage the teeth of a ratchet wheel 170 which is keyed to the shaft 59, for rotating the latter. The gummed paper being frictionally held between the rollers 40 and 50 will, of course, upon rotation of the roller 40, be fed forwardly through the guide plates at the dispensing end of the machine, over the moistener G, in a manner which is apparent. The rack bar 64 is held from jumping off the toothed wheel by means of a retaining extension 70, shown in Figure 8.

Referring to the printing apparatus H, a type supporting table 80 is provided, which inwardly from the lower end thereof is provided with a passageway 81 adapted to receive the reduced spindle 82 of an arm 83 which is radially and rigidly connected upon the sleeve portion 60 of the shaft C above mentioned, and as shown in Figure 5 of the drawings. This type supporting plate or frame 80 is oscillative about the axis of the spindle 82, and at the type supporting face thereof it is provided with a lower type retaining flange 84, shown in Figure 5 of the drawings, and at opposite sides thereof it is provided with retaining flanges 86 and 87, shown in Figure 9 of the drawings. The rows of type 88 are supported between these flanges, and a follower 89 engages against the same and is urged by clamping screws 90 to hold the type in position; the screws 90 being threaded in the retaining flange 86, as shown in Figure 9.

The type supporting frame is turned thru an angle of 180° during the dispensing operation of the shaft C, between the ink pad 91 and the platen 37; said pad 91 and platen 37 being disposed in a V-shaped relation downwardly converging towards the shaft C, and being relatively disposed at opposite sides of a vertical plane to the axis of the shaft C, as shown in Figure 3. The ink pad 91 is preferably detachable, and held in place on suitable cross beams 93 detachably connected at 94 upon the side walls; the ink pad 91 being itself detachably connected between retaining flanges on these cross bars, by means of adjusting screws 95, so that the pad thereof faces towards the platen in position to be engaged by the type when the spring 67a has pulled the operating parts back to their normal position.

Novel means is provided for guiding and reversing the type supporting plate or frame between the ink pad and platen, in a cooperative action with the dispensing of the tape, to print on the ungummed surface of the latter with an advertisement or other indicia arranged upon the type carrying frame. This means preferably consists of an arcuate bar 100, shown in Figure 7 of the drawings, which is relatively thin, and at the forward end thereof is laterally provided with an extension 101, shown best in Figure 6 of the drawings, into which is detachably threaded a pivot screw 102 which is pivotally carried by the side wall 11 of the frame B. This enables the actuate bar 100 to be swung outwardly, upon removal of the cover plate 47, as shown in Figure 7 of the drawings, so that easy access may be had to the type supporting plane and other details for arrangement of the type, and detachment of the type supporting plate. However, normally, the arcuated type plate containing bar 100 is rigid with the frame B, and at its rear end it is provided with a socket 104 adapted to receive a screw 105, which is threaded into a screw threaded socket 106 in the upper portion of the plate or cross bar 33 which carries the pad 91. The bar 100 when in this position is of course concentric with the axis of the shaft C.

The construction of the bar 100 may best be seen from Figures 2 and 4 of the drawings, wherein it is shown that the same is narrowed at an intermediate portion 108, and the end portions thereof are relatively wide and provided with front and rear slots 109 and 110 respectively, which open in facing relation at the narrow portion 108; the latter portion being disposed to the right side of the aligning slots 109 and 110. This construction provides the front and rear portions of the bar with fingers 111 and 112, to the left sides of the slots 109 and 110 respectively, which are free at the facing open ends of the slots, and provided with arcuate cam edges 115, for a purpose to be subsequently described. The free ends of said fingers 111 and 112 are reinforced by raised cross braces 117, shown in various figures of the drawings. On the narrow portion 108 of the bar 100 is disposed a plurality of rack teeth 120, which project into the extended line of the slots 109 and 110, for a purpose to be described.

The type supporting frame or plate 80, at the upper end thereof, has a passageway 122, axially aligning with the passageway 81, into which detachably fits a stub extension 123, of a plate 124; the extension 123 being keyed by a set screw 125 rigid with the type carrying frame or plate 80, as shown in Figure 5. The plate 124, as best shown in Figures 4 and 5 of the drawings, is provided with a segmental arrangement of teeth 128 thereon, through 180°, at one end of the plate 124; said teeth being arranged concentric with the axis of the extension 123, that is, the axis of oscillation of the type supporting plate. On the upper surface of the plate 124, spaced
from the teeth 128 and at the opposite side of the axis of oscillation of the type supporting frame with respect to said teeth, is disposed an extension 130 which is adapted to slide back and forth in the slots 109 and 110 of the arcuated guide and controlling bar 100 above described.

Referring to the operation of the printing details, it is to be noted that the normal inoperative position of the type supporting plate 80 is shown in Figure 2 of the drawings, with the type thereof against the ink pad 91, and in this position of parts the guide extension pin 130 which is rigid with the type supporting plate or frame is positioned in the rear slot 110 of the arcuated bar 100, rearwardly of the segmentally arranged teeth 120, the latter facing forwardly in the line of the slots 109 and 110, as shown in Figure 2 of the drawings. Upon downward movement of the operating lever 17, the type carrying plate 80 will be moved forwardly and will be guided against turning from its pad facing position, by the pin 130, which is disposed eccentric in the slot 110, with respect to the axis of rotation of the type supporting plate or frame 80. As the lever is moved downwardly the segmentally arranged teeth 128 will ride into engagement with the rack teeth 120 which are rigid on the bar 100, held in position by arm 125 engaging the wall 11. At this same instant the pin 130 rides out of the slot 110, and the lever being moved downwardly will cause the type supporting plate or frame 80 to rotate on the spindle 82, shown in Figure 5 of the drawings, for 180°; swinging the guiding pin 130 forwardly of the segmentally arranged teeth 128, so that as the operation is continued the segmentally arranged teeth 128 ride off of the rack teeth 120 and the pin 130 enters the forward slot 109. The type of the type supporting plate 80 is now face towards the platen 37, and as the operation is continued the type engage on the ungummed face of the tape or strip disposed over the platen 37 and impress the indicia thereon which it is desired that the ungummed surface of the tape shall receive. In connection with this printing operation, it is to be noted, that from the time the lever is moved to move the type plate off the ink pad, until just shortly before the type engage on the tape at the platen, the type is being dispensed at the front of the machine, as above described. However, just before the type engage on the tape over the platen 37, the rack teeth 65 of the bar 64 will have ridden off the toothed wheel 67, at the location 66, so that the paper is no longer moved over the platen, but is held stationary while the printing thereon is taking place. Of course, upon release of the operating lever the spring 67 will return the parts to normal position above described.

The moistening apparatus G preferably consists of a liquid receiving can or container 150, carried by a bracket 151 on the front wall 14 of the frame, and which container 150 is provided with a preferably detachable top 153 upon the upper surface of which is exposed a wick 154 which is bent into a substantially U-shaped formation, with the ends depending into the liquid in the container, and the light of the wick projecting above the cover 153 and in the path of the gummed surface of the tape which is being dispensed; the guide plate at its forward portion insuring that the tape will ride lightly over the moistened surface of the wick, as shown in Figure 3 of the drawings. A cutting plate 160 is detachably connected at 161 on the frame B, having teeth 162 on the forward edge thereof in position just forwardly of the moistening location of the wick, so that the tape may be severed.

Attention is called to the fact that the throw of the lever will dispense a length of gummed tape, at a single operation, having one complete printed impression thereon; said impression being that which was made at the immediate preceding operation, as will be quite apparent. Of course, any number of the sections dispensed by successive throws or operations of the lever may be maintained in a continuous strip, without cutting upon the knife 160, as will be quite apparent.

From the foregoing description of this invention it is apparent that a novel gummed tape dispensing and printing machine has been provided, which is relatively compact, and the multiple operations of which are performed by a single movement of an operating lever. The operations are automatic and the printed impressions will be clear and not blurred, as would result if cylindrical type rollers were used. In this machine the tape is stationary during the impressing of the type.

Various changes in the shape, size, and arrangement of parts may be made to the form of invention herein shown and described, without departing from the spirit of the invention or the scope of the claims.

I claim:

1. In a machine of the class described the combination of a frame, means for supporting a supply roll of strip material on the frame, means to enable the strip material to be dispensed from the frame, a platen on the frame over which the material moves as it is dispensed from the frame, an ink pad supported on the frame in facing relation with the platen, an operating shaft mounted on the frame on a fixed axis, a radial arm fixed with the operating shaft, a type supporting plate oscillatively mounted on the arm in the space between the platen and pad, and means for oscillating the type supporting plate on the axis of its supporting arm as the shaft is moved, to cause the type face of the type sup.
porting plate to engage the pad and platen as it respectively approaches the pad or platen.

2. In a machine of the class described a frame, an operating shaft rotatable on the frame, a pad, a platen, the pad and platen being supported by the frame in a convergent relation towards the operating shaft, a type supporting plate, means for mounting the type supporting plate for bodily rotation on an axis transverse to the shaft and between the pad and platen, and means for moving the type supporting plate bodily through a horizontal angle of 180°, whereby to face the type face of the type supporting plate against the pad or platen whichever it respectively approaches.

3. In a printing machine of the class described the combination of a frame, an operating shaft, means on the frame for supporting a supply of gummed tape, means connected with the shaft for dispensing tape from the roll and frame, a platen, an ink pad, the platen and ink pad being connected with the frame at opposite sides of the shaft, the tape being so supported on the frame that it will pass over the platen on its way to be dispensed from the frame, a type supporting frame, an arm radially connected with the shaft for movement therewith, the type supporting frame being supported on the arm for rotation thereof, whereby a type plate thereof may be faced either against the ink pad or against the platen or tape upon the platen, and means for rotating the type supporting frame as it moves between the ink pad and platen so that the type face thereof will face against the ink pad or platen whichever it respectively approaches.

4. In a printing machine of the class described the combination of a frame, an operating shaft, means on the frame for supporting a supply of gummed tape, means connected with the shaft for dispensing tape from the roll and frame, a platen, an ink pad, the platen and ink pad being connected with the frame at opposite sides of the shaft, the tape being so supported on the frame that it will pass over the platen on its way to be dispensed from the frame, a type supporting frame, an arm radially connected with the shaft for movement therewith, the type supporting frame being supported on the arm for rotation thereof, whereby a type plate thereof may be faced either against the ink pad or against the platen or tape upon the platen, and means for rotating the type supporting frame as it moves between the ink pad and platen so that the type face thereof will face against the ink pad or platen whichever it respectively approaches, said last mentioned means consisting of a rack carried by the frame and a toothed gear carried by the type supporting frame and operable over the rack as the type supporting frame moves between the pad and platen.

5. In a printing machine of the class described the combination of a frame, an operating shaft, means on the frame for supporting a supply of gummed tape, means connected with the shaft for dispensing tape from the roll and frame, a platen, an ink pad, the platen and ink pad being connected with the frame at opposite sides of the shaft, the tape being so supported on the frame that it will pass over the platen on its way to be dispensed from the frame, a type supporting frame, an arm radially connected with the shaft for movement therewith, the type supporting frame being supported on the arm for rotation thereof, whereby a type plate thereof may be faced either against the ink pad or against the platen or tape upon the platen, and means for positively guiding the movement of the type supporting frame so that the plane of the type face thereof squarely faces either the ink pad or the platen whichever it respectively approaches.

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