

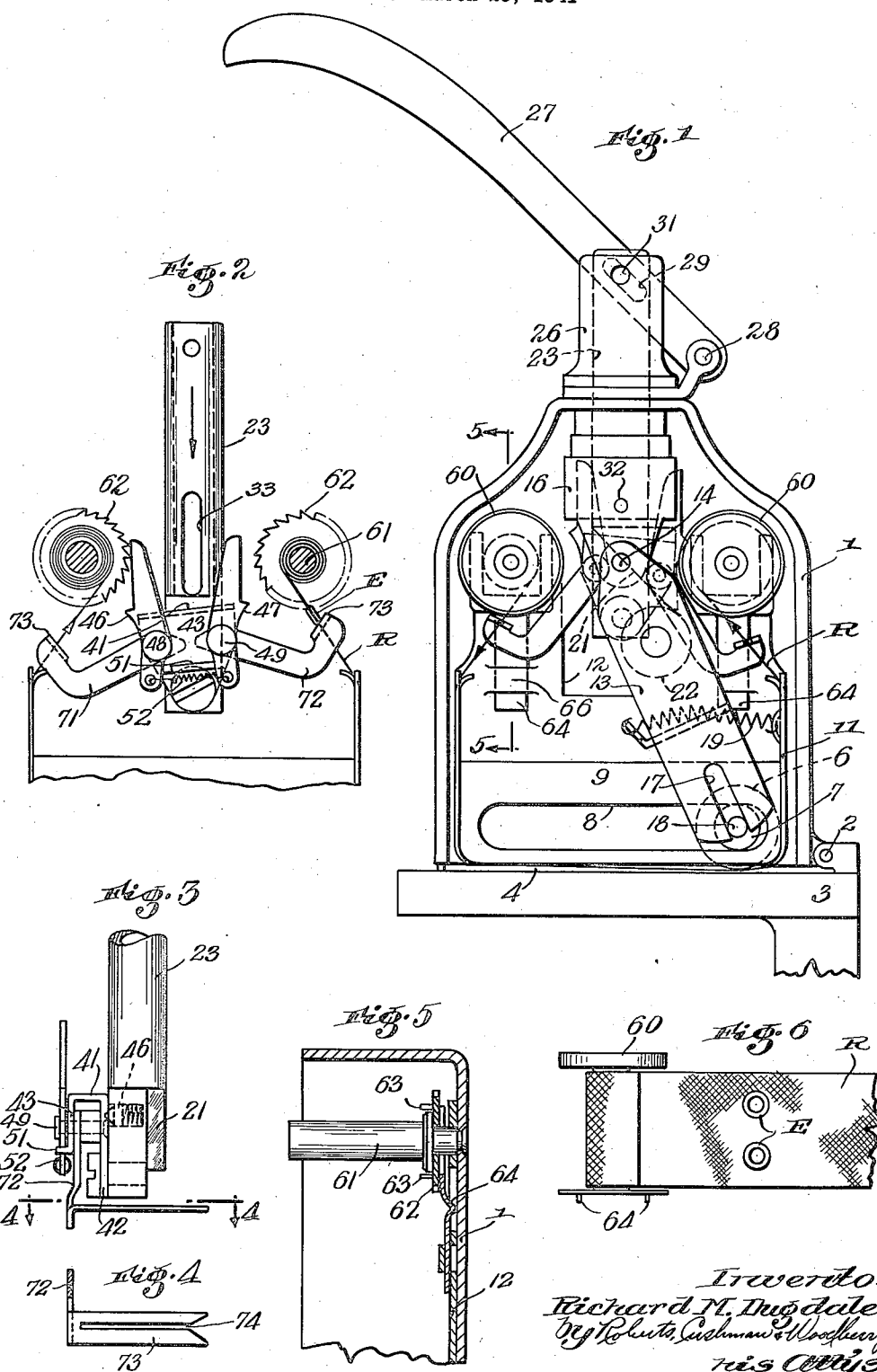
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PRINTING DEVICE

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PRINTING DEVICE

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This invention relates to printing devices having an inked ribbon which feeds from one reel to another and pawl and ratchet means for rotating the take-up reel and more particularly to devices for printing names and addresses on a sales slip or other sheet by pressing together, between an anvil and pressure means, the sheet to be printed and the ribbon and a printing plate, the invention constituting an improvement on the subject-matter of my prior Patents 1,829,586, 1,928,685 and 1,945,264.

In devices of the type referred to it is of course desirable to reverse the direction of ribbon feed after substantially all the ribbon has fed from one reel to the other and it is the object of the present invention to provide reversing means which is reliable and positive in action, which is simple and economical to produce and which is durable in use.

According to the present invention the aforesaid pressure means is operated by an actuator which moves up and down in the space between the two ribbon reels. Mounted on the actuator is a tumbler carrying pawls for actuating the ribbon reels through the medium of ratchet wheels. The tumbler is mounted on the actuator so as to move back and forth between two limited positions in each of which one pawl engages one ratchet wheel. The tumbler also carries means engageable with a stop on the ribbon for shifting the tumbler from one of said positions to the other after a predetermined amount of ribbon has fed from one reel to the other, thereby reversing the direction of ribbon feed. The reversing means preferably comprises two arms having slits through which the ribbon feeds in passing from one reel to the other, one arm being located adjacent one reel and the other arm adjacent the other reel. A convenient way of applying stops to the ribbon is to affix metallic eyelets through openings in the ribbon. An eyelet is applied near each end of the ribbon so that after substantially all of the ribbon has been fed from one reel the eyelet leaves the reel and engages its associated arm, and after substantially all of the ribbon has fed back in the reverse direction the other eyelet engages the other arm again to reverse the direction of feed.

For the purpose of illustration a typical embodiment of the invention is shown in the accompanying drawing in which

Fig. 1 is a rear view with the rear cover removed and the parts in idle position;

Fig. 2 is a front view with parts omitted and with the actuator depressed to lowermost position;

Fig. 3 is a side view of the actuator, tumbler, pawl and slitted arm;

Fig. 4 is a section on line 4—4 of Fig. 3;

Fig. 5 is a section on line 5—5 of Fig. 1; and

Fig. 6 is a plan view of one of the ribbon reels with a small portion of the end of the ribbon wound thereon.

The particular embodiment of the invention chosen for the purpose of illustration comprises a casing 1 pivotally mounted at 2 on an anvil 3 with a space 4 between the lower open end of the casing and the anvil to accommodate the printing plate and the paper to be printed, the printing plate being laid face upwardly on the anvil and the paper being laid over the plate. Inasmuch as the paper is located between the printing plate and the inked ribbon the letters on the printing plate are arranged in non-reverse order and they cause the paper to be printed on the side opposite the printing plate. Thus the printing plate is not soiled with ink because it does not come into contact with the inked ribbon. As shown in Figs. 1 and 5 the rear side of the casing is entirely open, but this opening is normally covered by a cover plate not shown.

The aforesaid pressure means comprises a roller 6 for compressing the inked ribbon, paper and printing plate together. The roller is provided at opposite ends with trunnions 7 projecting through slots 8 in a guide plate 9 which is U-shaped in cross-section with its open side directed downwardly and its ends secured to the rearwardly projecting flanges 11 of its front plate 12 spot welded to the flat front of the casing 1. The roller 6 is rolled back and forth over the inked ribbon R by a bifurcated arm 13 pivotally supported at 14 on a stationary collar 16, the lower ends of the two legs of the bifurcated arm being slotted at 17 to receive studs 18 projecting from opposite ends of the trunnions 7. The arm 13 is normally held in the position shown in Fig. 1 by means of a spring 19 and it is moved to the left-hand position by means of an actuator cam 21 engaging a roller 22 on the arm 13. The cam 21 is formed on the lower end of a plunger 23 which reciprocates vertically in a cylindrical opening in the sleeves 16 and 26 fast to the top of the casing. The plunger is actuated by a handle 27 pivoted to the casing at 28 and having a slot 29 to receive a pin 31 in the upper end of the plunger, both the plunger and the sleeve 26 being slotted to receive the handle. The sleeve 16 is made in two parts, the lower part telescoping over the upper part and being secured thereto by means of a pin 32; and the plunger is provided with a slot 33 to accommodate the pin 32. The plunger is made hollow to accommodate a coiled compression spring (not shown) which seats at its lower end against pin 32 and at its upper end against a pin 31.

The aforesaid tumbler comprises a U-shaped member 41 having inner and outer depending legs 42 and 43, the inner leg being somewhat longer than the outer leg (Fig. 3). The inner

leg is pivoted to the lower end of the plunger by means of a pivot pin 44. The tumbler is yieldingly held in one or the other of its two operative positions by means of a spring-pressed detent 46 engageable in recesses in the rear side of the inner leg 42. The reel actuating pawls 46 and 47 are pivotally mounted at 48 and 49 on the outer face of the outer leg 43 of the tumbler 41. The lower end of the leg 43 is turned outwardly to form a stop 51 for the pawls and the lower ends of the pawls are interconnected by a spring 52 which tends to pull the pawls against the opposite ends of the stop.

Each of the ribbon reels comprises a hollow core fitting over a stationary stud 61 fast to the front wall of the casing 1. Surrounding a reduced portion of the stud 61 is a ratchet wheel 62 having rearwardly projecting fingers 63 engageable with corresponding fingers 64 on the ribbon reel 69. The ratchet wheel 62 is freely rotatable on the stationary spindle 61 and is yieldingly held against a shoulder on the stud by means of a bifurcated spring 64 mounted on the front plate 12 at 65. When the reels are placed on the studs the cover of the casing holds the teeth 63 and 64 in engagement with each other. As shown in Figs. 2 and 6 the aforesaid stops are in the form of eyelets E crimped over the edges of openings in the ribbon R near each end of the ribbon.

The mechanism for shifting the pawl tumbler from one limited position to the other comprises arms 71 and 72 pivoted on the pins 48 and 49 respectively, each arm having a lateral extension 73 provided with a slit 74 which is wide enough to receive the ribbon R but which is not wide enough to permit the passage of the eyelets E.

In the normal operation of the device the up and down movement of the plunger 23 between the uppermost position shown in Fig. 1 and the lowermost position shown in Fig. 2 merely causes the arms 71 and 72 to slide up and down along the ribbon between the limiting positions shown in these two figures. However when almost all of the ribbon has been unwound from one of the reels the eyelets E adjacent the end of the ribbon come into the path of the horizontal extension 73 of the adjacent arm as shown in Fig. 2. Then, when the plunger moves upwardly, the eyelets E obstruct the upward movement of the arm, thereby pulling the tumbler past dead-center position. The spring 52 then snaps the tumbler to the opposite position, whereupon further actuation of the plunger feeds the ribbon in the opposite direction.

I claim:

1. A device for printing names and addresses or other indicia on sales slips or the like comprising a pair of ribbon reels with a space therebetween, a ratchet wheel associated with each reel, an actuator movable back and forth in the region of said space, a pawl for each ratchet wheel, and a tumbler mounted on the actuator for moving the pawls relatively to the ratchet wheels respectively as the actuator moves back and forth, the tumbler being movable between two limited positions in each of which one pawl engages one ratchet wheel, and means on the tumbler engageable with said stops for shifting the tumbler from one of said positions to the other after a predetermined amount

of ribbon has fed from one reel to the other, whereby the direction of ribbon feed is reversed.

2. A device for printing names and addresses or other indicia on sales slips or the like comprising a pair of ribbon reels with a space therebetween, a ratchet wheel associated with each reel, an actuator movable back and forth in the region of said space, a pawl for each ratchet wheel, and a tumbler mounted on the actuator for moving the pawls relatively to the ratchet wheels respectively as the actuator moves back and forth, the tumbler being movable between two limited positions in each of which one pawl engages one ratchet wheel, and means on the tumbler engageable with a stop on the ribbon for shifting the tumbler from one of said positions to the other after a predetermined amount of ribbon has fed from one reel to the other, said means including an arm having a slit through which the ribbon feeds in passing from one reel to the other, whereby the direction of ribbon feed is reversed.

3. A device for printing names and addresses or other indicia on sales slips or the like comprising a pair of ribbon reels with a vertical space therebetween, a ratchet wheel associated with each reel, an actuator movable up and down in said space, a pawl for each ratchet wheel, and a tumbler mounted on the actuator for moving the pawls relatively to the ratchet wheels respectively as the actuator moves back and forth, the tumbler being movable past a dead-center position between two limited positions in each of which one pawl engages one ratchet wheel, a spring for snapping the tumbler from its dead-center position to either of its limited positions, and means on the tumbler engageable with a stop on the ribbon for shifting the tumbler from one of said limited positions past said dead-center position after a predetermined amount of ribbon has fed from one reel to the other, said means including two arms extending into proximity to the ribbon adjacent the two reels respectively, each arm being connected to the tumbler so as to move the tumbler past dead-center position when engaged by a stop on the ribbon, said spring then snapping the tumbler to its limited position in which the ribbon feed is reversed.

4. A device for printing names and addresses or other indicia on sales slips or the like comprising a pair of ribbon reels with a space therebetween, a ribbon having its opposite ends wound on said reels respectively and having a stop near each end, a ratchet wheel associated with each reel, an actuator movable back and forth in the region of said space, a pawl for each ratchet wheel, and a tumbler mounted on the actuator for moving the pawls relatively to the ratchet wheels respectively as the actuator moves back and forth, the tumbler being movable between two limited positions in each of which one pawl engages one ratchet wheel, and means on the tumbler engageable with said stops for shifting the tumbler from one of said positions to the other after a predetermined amount of ribbon has fed from one reel to the other, said means including a pair of arms having slits through which the ribbon feeds in passing from one reel to the other, said stops being too large to pass through said slits.

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