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RIBBON MECHANISM FOR STAMPING MACHINES

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2 Sheets-Sheet 1

*Fig. 1.*

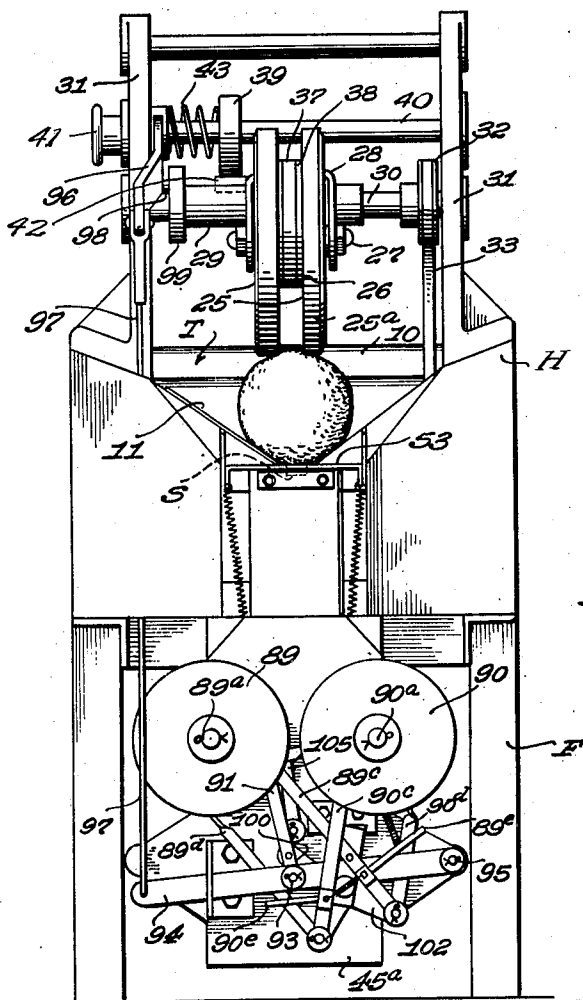
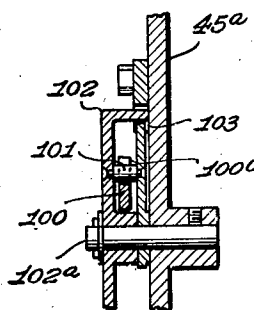


*Fig. 3.*



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RIBBON MECHANISM FOR STAMPING  
MACHINES

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340,111. Divided and this application January  
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4 Claims. (Cl. 101—336)

The present invention is a marking machine for marking trade names, grade marks or other indicia on the surface of spherical objects, such as oranges, grapefruit, tangerines, apples, lemons, limes, cantaloupes, etc., but it is to be understood that the use of the invention is not to be restricted to these named articles as it is susceptible of use with a wide range of objects.

The general advantage of the machine of the present invention over existing machines is the speed of operation thus requiring a mechanism which will function perfectly and stamp each article or fruit as fast as the fruit can roll from the machine.

The present application is a division of our co-pending application Serial No. 340,111, filed June 12, 1940, and is directed particularly to the ribbon inking means actuated by each article or fruit passing over the marking device and which means in turn actuates the ribbon step by step; and further to means for automatically reversing the movement for the inking ribbon at predetermined points in its length, patentable invention being claimed for this construction herein shown and described by reasons of its unique organization, simplicity and construction and thorough reliableness of its functions and operations for the purpose for which it is used.

With the above and other objects in view, the invention consists in whatever is shown and described therein.

In the drawings which illustrate, by way of example, the present commercial embodiment of the invention:

Figure 1 is a front elevation of the machine equipped with the present invention;

Figure 2 is a fragmentary enlarged view of a portion of the machine shown in Figure 1, the present invention being shown in elevation and the stamping mechanism being shown in section so as to illustrate the relationship of the parts and the manner in which the ribbon is threaded in the machine; and

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

Throughout the specification and drawings like characters denote similar and like parts.

All the mechanism of the machine of the present invention is mounted upon a frame F consisting of appropriate structural members supporting a V-shaped trough T, and the actuating mechanism of the machine. It is preferred to enclose by a sheet metal housing H as much of the actuating mechanism as is conveniently possible for the obvious reasons of

keeping the same clean, prevention of accidental injury thereto and provide safety for the attendant. The housing H is mounted upon the frame F and provides the top, side and end covering walls of the machine; and its top wall is formed to also provide the V-shaped trough T extending longitudinally of the machine more particularly shown in detail in the above mentioned co-pending application. This trough is of a length sufficient to gather and arrange the fruit in single file as it passes from one end of the trough to the other, in commercial practice the length of the trough being about four or five feet.

The trough T at one end of the machine (which may be termed the "rear end") is shaped to provide an upwardly inclined transversely extending chute 10 which is to be placed against the discharge end of a conveying means, which is part of the usual processing or handling mechanism, so that the fruit or other objects may be delivered onto the chute 10 and into the trough T.

To insure that the fruit will be arranged in single file in the trough before it reaches the marking mechanism S and to position the fruit in the trough so that the side thereof will be presented to the marking mechanism, as well as to insure its rapid movement through the trough an endless belt conveyor 11 is provided which in effect forms a moving wall on one side of the V-shaped trough T.

At the forward or discharge end of the machine and immediately beyond the belt 11, a stamp S is provided over which the fruit passes to receive a suitable impression of indicia or other design desired. In order to insure the proper marking of the fruit, a pressure wheel 25 is mounted to overlie the marker S and to engage the top of the fruit as it passes thereunder to press the same against the marker.

As at present devised, the pressure wheel 25 comprises two concentric and spaced wheels having a pulley 26 disposed between them, the wheels and the pulley being in close juxtaposition so as, in effect, to provide a pressure wheel with a broad peripheral surface. This wheel assembly is disposed between the arms of a U-shaped yoke 28 and journaled on a spindle 27 carried by the free ends of the yoke. The other or closed end of the yoke has rigidly connected therewith a laterally extending sleeve 29 through which extends a shaft 30 journaled at its end portions in upstanding brackets 31 extending upwardly from opposite sides of the top of the housing H.

A pulley 32 is keyed on one end portion of the shaft 30 (see Figure 1) and is driven by a belt 33 actuated from the power source of the machine. The wheel 25 is likewise driven by a belt 37 trained over the pulley 26 and a pulley, not shown, fast on the shaft 30 and disposed between the arms of the yoke 28. The direction and speed of rotation of the wheel 25 is sufficient to quickly draw each piece of fruit in contact with its under-surface away from the remaining fruit in the trough T and discharge it from the machine; and, since the yoke arm 28 horizontally offsets the wheel from the shaft 30, the pressure of the wheel against the fruit moving thereunder is sufficient to bring it into contact with the marker S so as to receive an impression therefrom. The periphery of the wheel 25 may be covered with a soft yieldable material 25a, such as rubber, felt and the like, to avoid hard surfaces and cutting edges from injuring the fruit.

The wheel 25 may be swung about the shaft 30 to raise and lower it to generally adjust its height sufficiently to enable it to contact with the fruit passing thereunder; and this may be accomplished by the provision of a cam 39 keyed on a shaft 40 journaled at its ends in the brackets 31 and being provided at one end with a hand wheel 41. This cam or eccentric 39 contacts with a shoe 42 rigid with the sleeve 29 and extending in a direction opposite to the arms of the yoke 28. Thus, by turning the hand wheel 41, the cam 39 will depress the shoe 42 or allow it to rise, under the weight of the wheel 25 and the arm, so as to raise and lower the wheel 25 for general adjustment. It has been found that the cam 39 may be held in manually adjusted positions by a simple frictional device comprising a compression spring 43 (Figure 1) interposed between the cam 39 and the adjacent stationary bracket 31 and bearing against the same, respectively.

It will thus be seen that as fruit is delivered in rather scattered fashion onto the chute 10, it moves downwardly to the trough T where it begins to assume a single file arrangement. This single filing is accelerated by the moving belt 11, and, since the marker S is positioned at the bottom or apex of the trough T, presents the most desirable side surface of the fruit to the marker so as to receive the impression therefrom.

By virtue of the fact that it is desirable to mark the fruit with ink, it is necessary that the marker S be inked; but as the fruit has a more or less rolling action over the marker, it is impractical in some situations to employ a ribbon moving over a stationary marker or in other conditions to employ moving inking devices, which will periodically ink a stationary marker because of the steady unbroken flow of fruit over the marker. Consequently, to meet all conditions of use, the specific marking mechanism (here generally illustrated in Figure 2 and more fully shown in our copending application) is actuated from stamping position to a point where it is inked and then returned to stamping position.

By oscillating the shaft 44, the stamps 24a and 24b of the set selected for the stamping operation are alternately moved from inking position to stamping position, and conversely, and this operation may be accomplished by any suitable means 53, which may include pitman rods or the equivalent elements 49b and 50b, respectively, to a crank pin 51 on a crank extension, not shown, on the shaft 44. When either pitman rod is to rotate the shaft 44 one stamp of the selected set

is moved from stamping position to a position where it is inked and at the same time moves the other stamp of the set from its inking position to stamping position at the bottom of the trough and directly under the wheel 25.

The inking means I comprises a pair of horizontal bars a and a' arranged on opposite sides of the stamp carrying sleeve 24. These bars carry a pad b and b', respectively, and are mounted on the distal ends of a vertically disposed arm c and c', respectively, pivotally supported at their lower end portions on spindle pins d and d', respectively, mounted on the casting 45. The pads b and b' are maintained out of contact with the stamps on the sleeve 24 by tension spring e attached at its opposite ends, respectively, to projecting portions of the arms c and c', which extend below the spindle pins d and d'. Adjusting screws f and f' are threaded, respectively, in lugs g and g' and engage the casting 45 for limiting the effective separating action of the spring e and, thus, the movement of the pads b and b' away from the stamp on the sleeve 24.

When either one of the rods 49b or 50b is actuated to rotate the shaft 44, this movement is utilized to bring the pad b or b' into contact with the stamp (either 24a or 24b) which has been moved from marking position to inking position. Thus with particular reference to Figure 2, the parts are shown in a position wherein the rod 50b has been so actuated and an abutment 49c on rod 49a, arranged in alignment with an extended portion of the bar a, is brought into contact with the latter and moves the pad b carried thereby against the tension of the spring e into compressing contact with the stamp 24b of the selected operating pair or set which has been moved into inking position. When the rod 49b has likewise been so actuated the reverse operation takes place, wherein the abutment 50c engages an extension of the bar a'.

When the pads b and b' of the inking mechanism are inked by an ink-ribbon R, a ribbon advancing and reversing mechanism, particularly adapted to the present machine, is necessitated in practical operation. As has been explained above, each successive piece of fruit passing under the pressure wheel 25 raises and lowers this wheel and this movement is availed of to advance the ribbon over the pads b and b'.

Suitably supported, from the frame F' and under the inking mechanism and the marking mechanism S at the forward end of the machine, are two ribbon spools 89 and 90 removably keyed on spindles 89a and 90a, respectively, journaled at one of their ends in a downwardly extending plate-like casting 45a. The ribbon R is reeled off one spool and wound upon the other, and conversely, while being passed over the inking pads b and b'; and, to this end, the ribbon is trained under an idler wheel 55 underlying the stamp-carrying sleeve 24, then upwardly over outer faces of the inking pads b and b', then over and around the arms a and a' and downwardly over the pivot rod d and d', which also serves as guide for the ribbon to and from the spools 89 and 90.

In order to rotate the spindles 89a and 90a to feed the ribbon through the inking mechanism I, the spindle 89a has fast thereon a toothed wheel 89b and a similar toothed wheel 90b is fast on the spindle 90a. A shiftable arm 91 carries a dog 92 designed to engage with either one of the toothed wheels 89b or 90b according to the position of the arm 91 to rotate spool 89 in an anti-clockwise di-

rection (Figure 2) to wind the ribbon thereon or to rotate the spool 90 in a clockwise direction to wind the ribbon thereon as the case may be. In the drawings (as seen particularly in Figure 2), the ribbon is being drawn from the spool 90 and being wound on spool 89; the dog 92 being in cooperative engagement with the wheel 89b. The arm 91 is pivotally mounted, preferably at its lower end as at 93, to an intermediate portion of an actuating lever 94 arranged in a general horizontal position and pivoted at one end, as at 95, to the casting 45a and is connected to a lever 96 by a vertical connecting rod 97. (See Figures 1 and 2.) The lever 96 is rotatably mounted on the shaft 40 and is engaged by a pin 98 carried by a collar 99 fast on the end of the sleeve 29 surrounding the shaft 30, which sleeve is connected to and movable with the arm 28 supporting the pressure wheel 25. The pin 98 is, of course, off center on the collar 99 and is positioned to engage under the lever arm 96 and move through an arc, thereby lifting and lowering the lever arm 96 as the wheel 25 is raised and lowered by the fruit or other spherical objects moving thereunder. This movement of the lever arm 96 is transmitted through the rod 97 to the lever 94 which causes the dog 92 to raise and lower, while in contact with the teeth of the wheel 89b, thus rotating the spool 89 to wind the ribbon thereupon.

The dog arm 91 is shifted from its position shown in Figure 2 to the dotted line position where the dog 92 will engage the wheel 90b, by means of a floating dog shifting cam member 100 having one end pivotally connected to an intermediate portion of the dog arm 91 above its pivot 93 and its other end held by a tension spring 100a against a cam follower or pin 101 carried on reversing member 102 where operation is controlled by ribbon feeler 89c for the spool 89 and feeler 90c for the spool 90. The reversing member 102 may be in the form of an intermediately pivoted lever pivoted at 102a and oscillatable between stops 103 and 103a, one arm carrying the cam follower 101 and its other end portion being pivotally connected to the feelers 89c and 90c. The feelers are yieldably held against the wound ribbon on their spools by any suitable means, such as by a tension spring 104 connecting the feelers. Two reversing pawls in the form of elongated push-bars 89d and 90d are employed for engaging the spool driving toothed wheels 89b and 90b, respectively. The reversing pawl 89d is pivotally mounted on an arm of the reversing lever 102, preferably at the same point or on the same axis with the feeler 90c, and is rendered operative or inoperative by the movement of the latter while the reversing pawl 90d is preferably similarly mounted, on the same axis as the feeler 89c, and controlled by the latter.

The pawl ends of reversing pawl members 89d and 90d are arranged relative to their respective toothed wheels to engage the same in opposition to its winding rotation caused by the dog 92 so that each pawl member may be pushed longitudinally by the winding rotation when its feeler by which it is controlled, has moved to a predetermined position of its associated spool. For instance, as shown, when the ribbon spool 90 has been nearly unwound therefrom, the feeler 90c—following the diminishing diameter of the ribbon of the spool—will have raised or moved the pawl 89d into engagement with the toothed wheel 89b of spool 89, this being accomplished by a link 89e rigidly and adjustably pro-

jecting from the feeler 90c to provide a stirrup with which the pawl 89d freely engages. Similarly, a link 89e is carried by the feeler 89c to move the pawl 90d with the wheel 90b. Consequently, with the pawl 89d in engagement with the wheel 89b, the next upward movement of the actuating lever 94 will bring the dog 92 into engagement with the teeth of the wheel 89b to rotate the same counter-clockwise, which movement of the wheel pushes the pawl 89d to move the reversing lever 102 about its pivot 102a (counter-clockwise in Figure 2), thereby causing the follower 101 to ride up one side of the inverted V-shaped cam 100c on dog shifting member 100 and at the same time depressing the member 100 against the tension of the spring 100a. After the follower passes the apex of the cam 100c, the spring 100a causes the other side of the cam to move against the follower, whose movement about pivot 102a has been arrested by stop 103, thus resulting in the member 100 being shifted to the right and swinging dog arm 91 to the right about its pivot 93 to bring the dog 92 in cooperative relation with the toothed wheel 90b of spool 90. Now, the ribbon advancing means is in position to rotate the toothed wheel 90b clockwise for winding the ribbon R upon spool 90 from spool 89, pawl 90d having been permitted to move (by gravity) out of contact with the wheel 90b by movement of the feeler 89c on increasing diameter of the ribbon on spool 89, which movement of the feeler has moved the link 89e out of contact with the pawl 90d. Of course, any suitable means may be employed for biasing the pawls 89d and 90d out of contact with their respective wheels 89b and 90b.

The cam 100c on the dog shifting member 100 which yieldably contacts the follower 101 by virtue of the spring 100a provides for a shifting of the dog arm 91 without having a dead center during the shifting movement and, since the follower 101 always engages one side or the other of the cam 100c, the dog arm 91 is maintained yieldably by the spring 100a in its cooperative position with either toothed wheel 89b or 90b according to the position of the shifting member 100.

When the ribbon on the spool 89 has almost been depleted the feeler 89c will have moved the link 89e which in turn brings the pawl 90d into contact with the toothed wheel 90b so that upon the next movement of the actuating lever 94 the dog 92, through the wheel 90b, will push the pawl 90d to move the reversing member 102 clockwise on its pivot 102a, resulting in the reverse of the operation above described and the shifting of the dog arm 91 to its full line position shown in Figure 2 so that the ribbon will be wound onto the spool 89 from the spool 90.

In order to lock the toothed wheels 89b and 90b against reverse movement to that imparted by the dog 92, when the dog 92 is operating upon either of said wheels, a shiftable latch member 105 is provided, carrying a dog 92a similar to the dog 92. This latch member is pivoted at one end and is yieldably connected by a spring 106 to the distal end of the dog arm 91. Thus it will be seen that as the dog arm 91 shifts from toothed wheel 89b to toothed wheel 90b, and conversely, the latch member 105 will be correspondingly shifted and be yieldably held in contact with such wheel as is being operated by the dog 92.

It will be observed that with the present de-

vice the shifting of the dog or pawl 92 from one spool ratchet to the other is accomplished by the feeler member cooperating with the spool being unwound, so that ribbons of varying lengths may be employed without requiring adjustment of the mechanism as would be the case if the mechanism depended upon a maximum number of convolutions of ribbon on the spool being wound; and, also, that the reversing mechanism which comprises the pawls in the form of the push-rods 89d and 90d are positively actuated from the ratchet of the spool being wound by the spool actuating mechanism, thus relieving from the ribbon all tension or stress incident to shifting of the dog or pawl 92.

From the foregoing it will thus be obvious that great speed is possible as a result of the design and combination of parts of the present machine and that single fruit passing over the machine causes every part to function so that the speed of operation is directly proportional to the speed at which the fruit is fed to the machine. It will also be obvious that the machine offers many advantages over others now in existence, principally due to its speed of operation. By actual tests it has been found possible to handle an excess of 300 units of fruit a minute over a single line and to produce a perfect mark on 98% of this fruit.

While the above describes the machine as at present devised, it is to be understood that certain changes in construction, combination, and arrangement may be made without departing from the spirit of the invention, particularly as pointed out in the appended claims.

What is claimed is:

1. In a ribbon advancing and reversing mechanism for inking devices, a ribbon advancing means comprising two spools upon which the ribbon is wound and unwound, and a single member alternately shiftable into cooperative relation with one or the other of said spools for rotating the spool to be wound, an intermittently actuated means, an operative connection between said intermittently actuated means and said member, and reversing means for transferring said member from cooperative position with one spool to cooperative position to actuate the other of said spools and including means controlled by the amount of ribbon on one of said spools for conditioning said reversing means to effect said transfer, said reversing means being positively operated by the movement of the spool being wound to cause said transfer of the shiftable member at a point in the conditioning of said reversing means, thereby relieving the ribbon of pull, stress or strain to effect said transfer.

2. In a ribbon advancing and reversing mechanism

for inking devices, a ribbon advancing means comprising two spools upon which the ribbon is wound and unwound, a ratchet wheel for each spool and operatively connected therewith, a pawl shiftable mounted to move into engagement with either of said ratchet wheels for winding their associated spools, an intermittent operating means connected with said pawl mechanism for reciprocating said pawl to advance said ratchets according to the position of said pawl, ribbon feeler members one associated with each of said spools, and means operatively connected with each feeler member and positively actuated by the ratchet of the spool then being operated by the pawl for shifting said pawl to cooperative relation with the ratchet wheel of the other spool when the ribbon on the last mentioned spool has assumed a predetermined diameter.

3. In a machine as set forth in claim 2 wherein the means connected with each feeler member comprises two push-rods, one for each feeler and actuated thereby into and out of engagement with the ratchet wheel of the other spool according to the diameter of the ribbon on the spool of its feeler member, respectively; and a linkage between said push-rods and said pawl for shifting said pawl, when the feeler member of the unwinding spool has assumed a predetermined position and has moved its push-rod in engagement with the ratchet wheel of the winding spool, whereby the next movement of the last mentioned ratchet wheel will operate its associated push-rod to actuate said linkage and shift the pawl to the other ratchet wheel.

4. In a machine as set forth in claim 2 wherein the means connected with each feeler member comprises two push-rods, one for each feeler and actuated thereby into and out of engagement with the ratchet wheel of the other spool according to the diameter of the ribbon on the spool of its feeler members; and a linkage between said push-rods and said pawl for shifting said pawl, when the feeler member of the unwinding spool has assumed a predetermined position and has moved its push-rod in engagement with the ratchet wheel of the winding spool, whereby the next movement of the last mentioned ratchet wheel will operate its associated push-rod to actuate said linkage and shift the pawl to the other ratchet wheel, said linkage including a cam and follower therefor, and spring means for maintaining the cam and follower in contact and said pawl in contact with the ratchet wheel to which it is shifted.

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