March 26, 1940. G. F. JACKSON 2,195,173

CAN MARKING MACHINE

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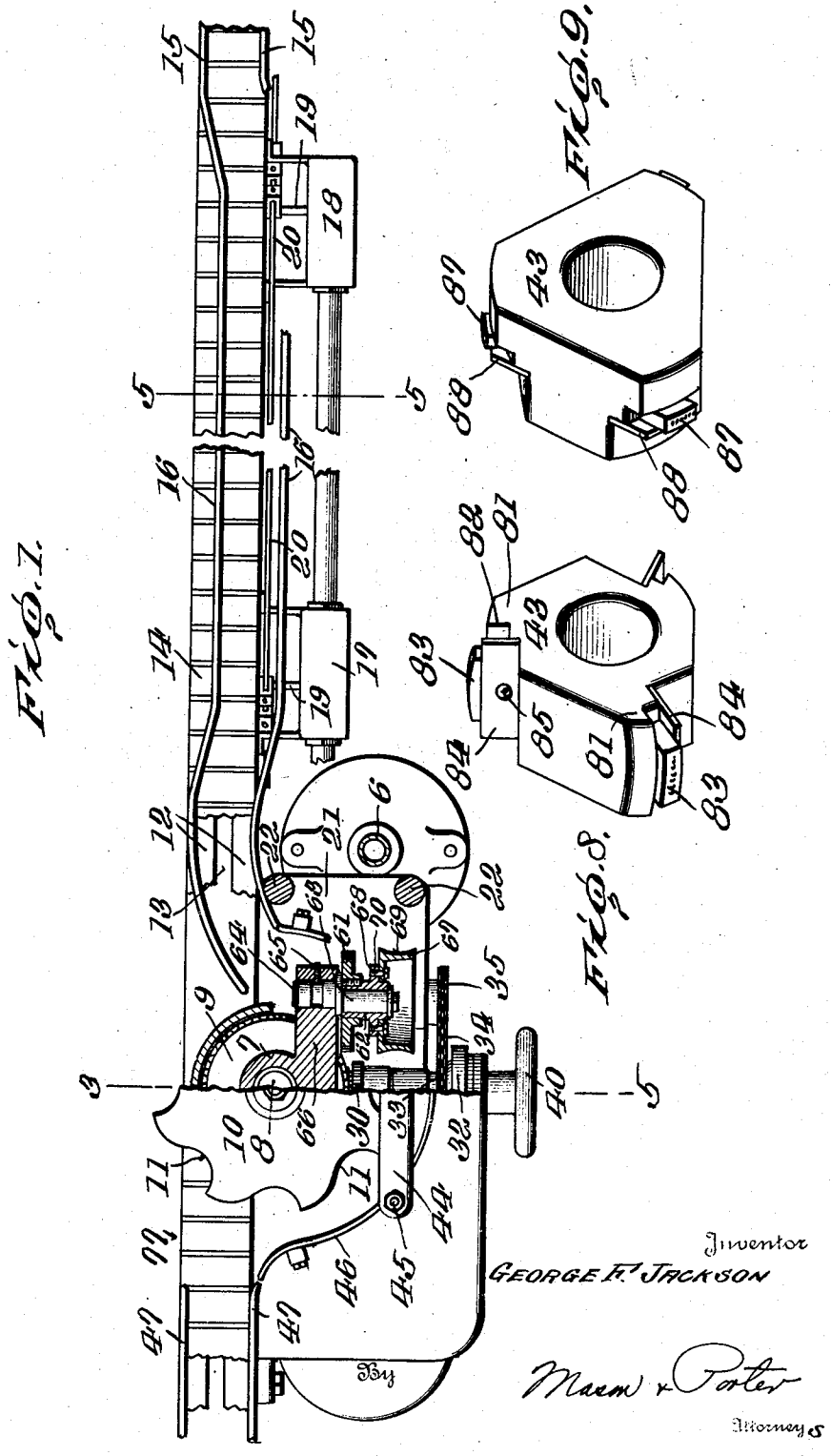


Fig. 7.

Fig. 9.

Fig. 8.

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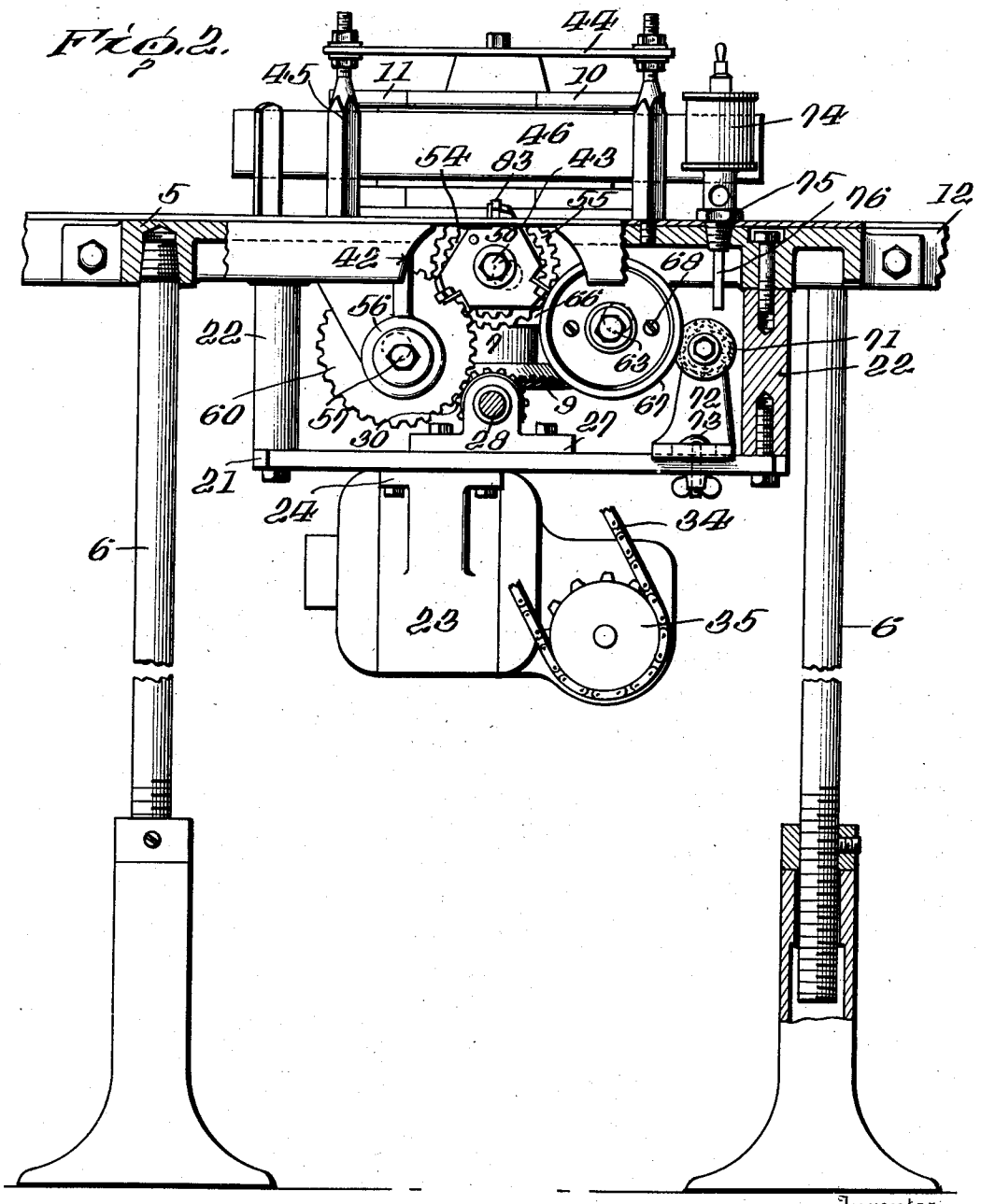
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CAN MARKING MACHINE

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FIG. 2.



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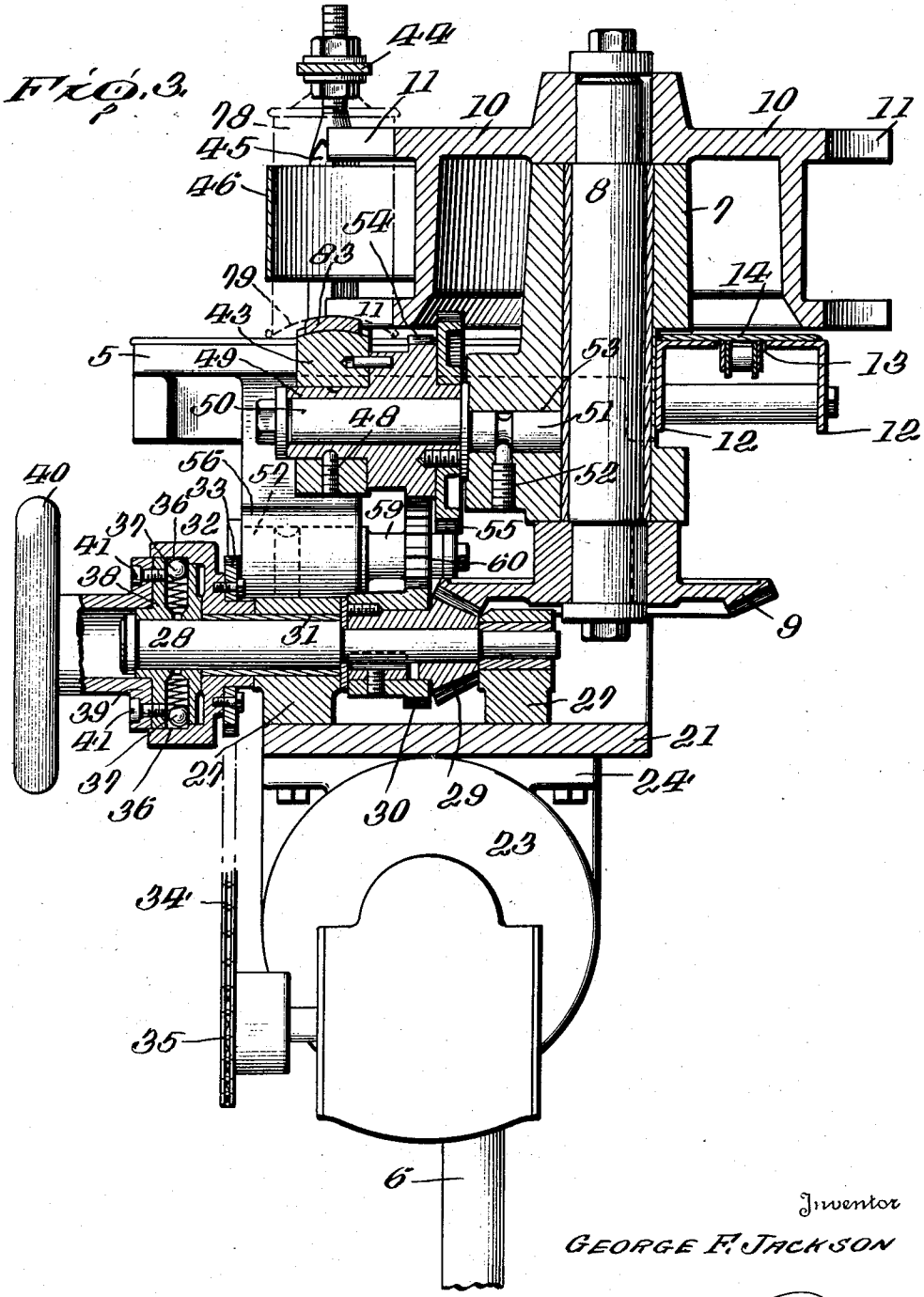
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CAN MARKING MACHINE

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FIG. 3.



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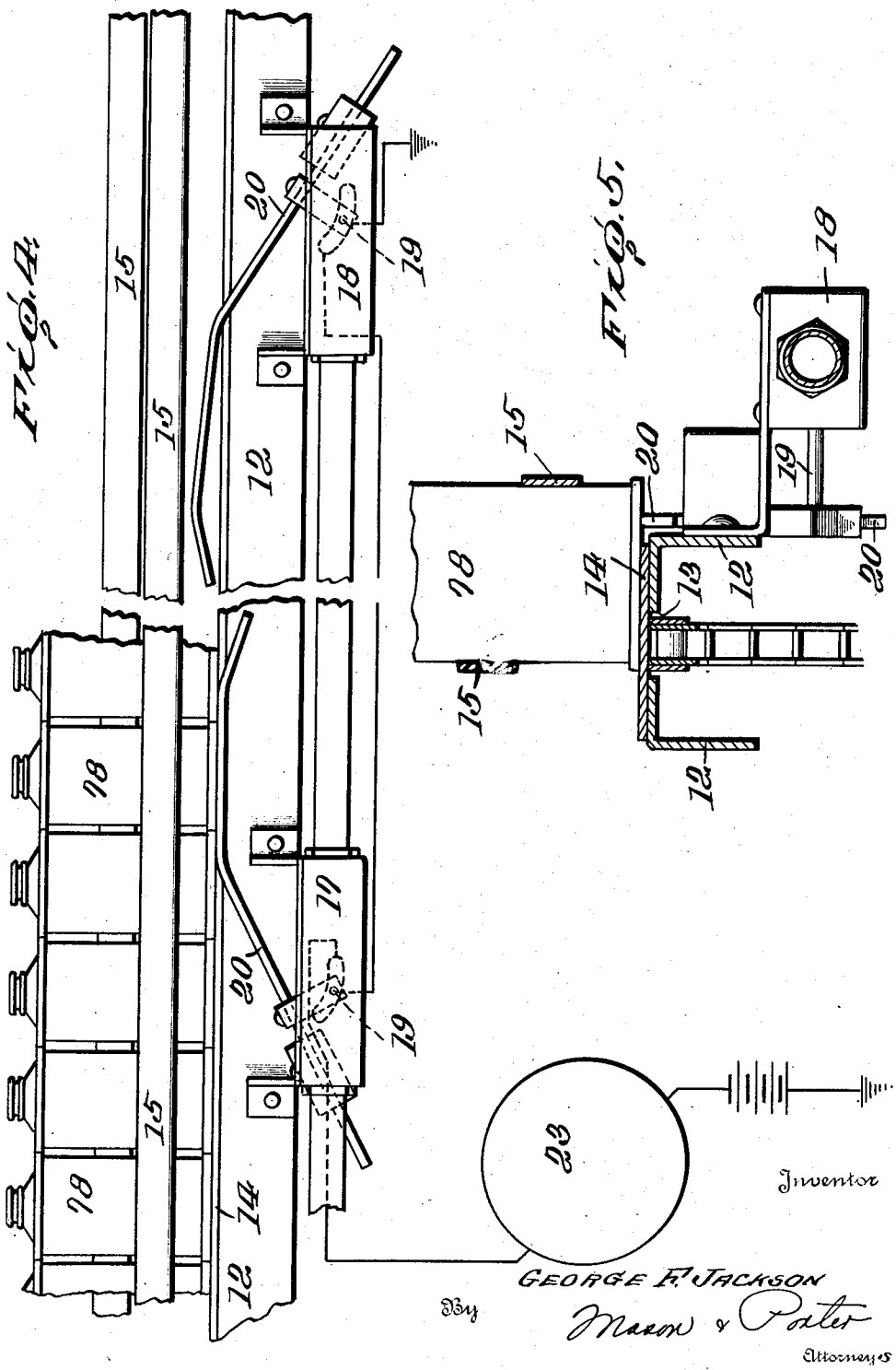
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CAN MARKING MACHINE

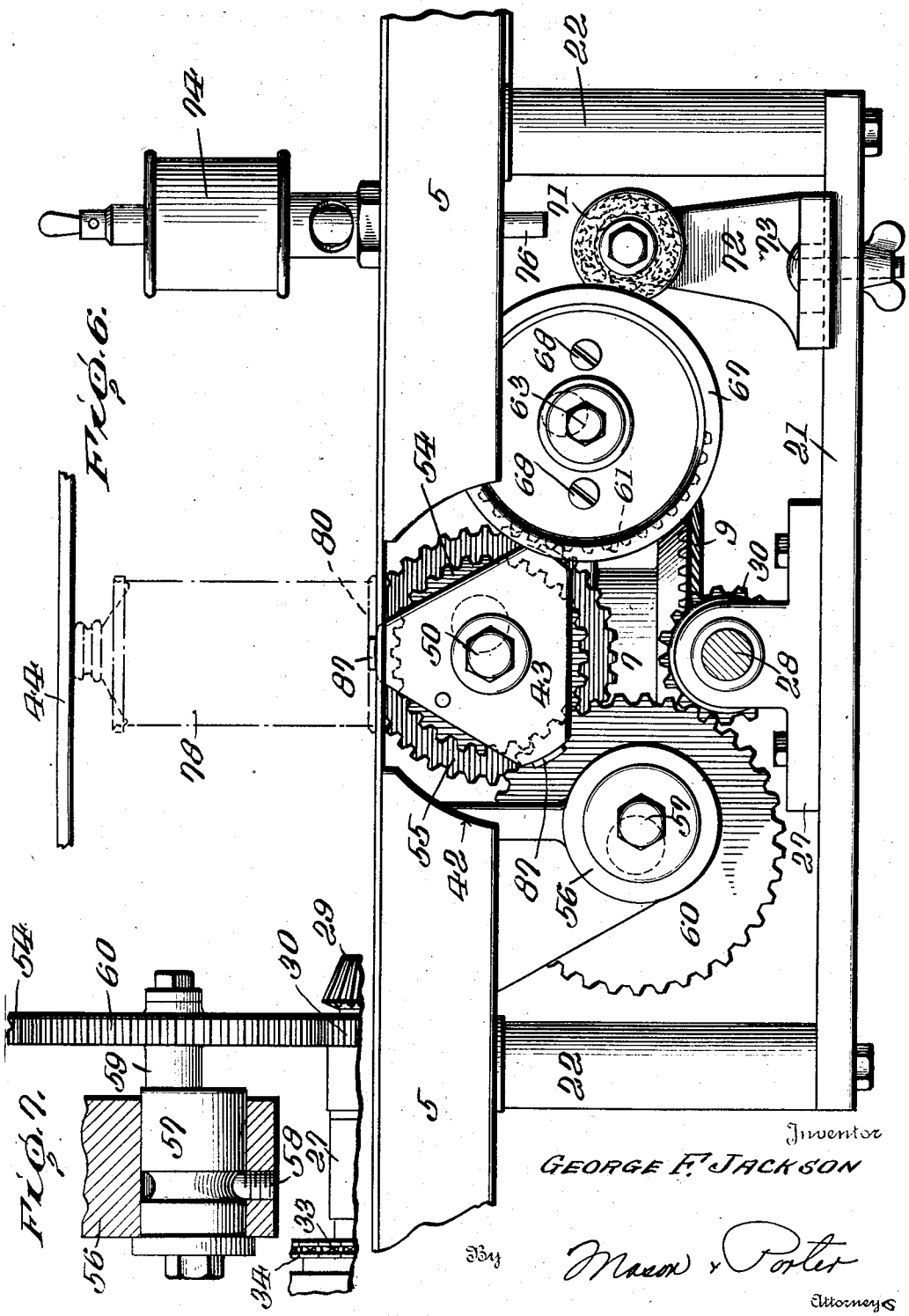
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CAN MARKING MACHINE

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Patented Mar. 26, 1940 2,195,173

UNITED STATES PATENT OFFICE

2,195,173

CAN MARKING MACHINE

George F. Jackson, Baltimore, Md., assignor to Continental Can Company, Inc., New York, N. Y., a corporation of New York

Application May 9, 1938, Serial No. 206,889

2 Claims. (Cl. 101—35)

The invention relates generally to identification stamping machines and primarily seeks to provide a novel machine for ink-stamping identifying characters upon the ends of cans being fed through the machine.

It is customary to apply to beverage containers, such as beer cans, suitable identifying markings, and these markings commonly take the form of numerals and are applied to the bottoms of the cans. In its more detailed nature, therefore, the invention seeks to provide a novel machine, continuously operating and connected with suitable delivery and discharge means for feeding cans to and from the machine, and embodying means for applying the markings to the cans while they are being continuously fed through the machine.

Another object of the invention is to provide novel ink-stamping and can moving devices operated from a common motor, and a novel switch control arrangement for discontinuing operation of the motor whenever less than a predetermined volume of cans-to-be-marked are accumulated for presentation to the ink-stamping devices.

Another object of the invention is to provide, in a machine of the character stated, a single can conveyor movable to and past the ink-stamping devices, and a novel turret structure rotatable in a horizontal plane and positioned to receive unmarked cans from the conveyor, continuously feed said cans past the ink-stamping devices, and return the marked cans to said conveyor to be conveyed away from the machine.

Another object of the invention is to provide novel ink-stamping devices and driving connections therefor, all adjustable to adapt the devices for operation in the marking of cans of the flat or concave bottom types.

Another object of the invention is to provide novel driving connections for the ink-stamping connections for the ink-stamping devices including a novel overload release clutch effective to free the driven parts in the event of a jam in the operation of the machine.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more fully understood by following the detailed description, the appended claims, and the several views illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a plan view and part horizontal section of a machine embodying the invention;

Fig. 2 is a side elevation, parts being broken away and in section;

Fig. 3 is a vertical cross section taken on the line 3—3 on Fig. 1;

Fig. 4 is a diagrammatic view illustrating the cooperative arrangement of the motor and the control switches;

Fig. 5 is a detail vertical cross section taken on the line 5—5 on Fig. 1;

Fig. 6 is an enlarged detail side elevation illustrating the ink-marking means and the driving devices adjusted for marking flat bottom cans;

Fig. 7 is a detail sectional view illustrating the adjustable mounting of the driver and driven gear;

Fig. 8 is a detail perspective view of the ink-stamping rotor shown in Figs. 2 and 3;

Fig. 9 is a detail perspective view of the ink-stamping rotor shown in Fig. 6.

My improved can marking machine includes a table 5 supported on vertically adjustable standards 6 and having a vertically disposed bearing 7. A shaft 8 is rotatably mounted in the bearing 7 and extends from the upper and lower ends of the bearing, being equipped at its lower end with a beveled driving gear 9, and having a turret 10 secured to the upper end thereof. Thus mounted, the turret rotates in a horizontal plane, and it is equipped with equidistantly spaced peripheral notches 11 forming can moving or conveying pockets.

Arranged along one side of the table, just beneath one side of the turret, is a pair of spaced track angles 12. The angles are arranged with their horizontal flanges directed inwardly and are mounted in spaced relation, as indicated at 13. The tracks 12 support a straight line conveyor 14, preferably of the slotted type, and which forms a continuous line conveyor for feeding unmarked cans to the marking devices, and marked cans from the marking devices. See Figs. 1 and 3.

Guide bars 15 guide the cans in upright position on the conveyor 14 as they are being fed to the marking devices, and these guide bars include laterally bent portions 16 for deflecting the cans laterally so that the bottom ends thereof will project partially beyond one side of the conveyor, as illustrated in Figs. 1 and 5 of the drawings.

Between the longitudinal limits of the laterally bent guide bar portions 16 is mounted a pair of mercoid switches respectively designated 17 and 18. The rock shaft 19 projecting laterally from each switch carries a weight poised lever 20 positioned as shown in Figs. 1, 4 and 5 of the drawings for being engaged and depressed by the overhanging portions of cans deflected by the guide

bars 16. The purpose of these switches and the lateral deflection of the cans will soon be described.

A sub-table 21 is supported in spaced relation beneath the table 5 by corner columns 22, and an electric motor 23 is supported as at 24 beneath the sub-table. The motor is connected in series with the mercoid switches 17 and 18, as shown in Fig. 4.

Alined bearings 27 are secured upon the sub-table 21 and serve to rotatably support a countershaft 28 to which is secured a driver gear assembly including a beveled pinion 29 meshing with and driving the turret pinion 9, and a spur pinion 30, the purpose of which will later be described.

The shaft 28 is rotatable in a sleeve 31 supported in one of the bearings 27, and mounted on the sleeve in a cup-like outer clutch head 32 having a sprocket 33 secured thereto and to which rotation is imparted by a chain 34 from the driver sprocket 35 driven, through suitable power transmitting connections, from the motor 33.

The head 32 includes ball seats 36 for receiving the yieldably pressed balls 37 carried by an inner clutch head 38 keyed on the shaft 28 and held in place on the shaft by an overhanging end plate 39. A handwheel 40 is secured as at 41 to the clutch head 39 so that the head and the shaft 28 may be manually moved.

The clutch head equipments 32, 37, 38 provide an overload release clutch effective to permit relative movement of driven parts in the event of jamming of portions of the mechanism, thus avoiding breakage.

At the side thereof opposite the conveyor 14, the table 5 is provided with an opening 42 alined with the turret pockets 11 and providing an ink-stamping station.

The peripheral portions of the ink-stamping rotor 43 project upwardly through the table opening 42 for engagement with the exposed ends of cans being continuously moved by the turret 10, and an abutment bar 44 secured upon standards 45 is opposed to the table opening and serves to abut the upper ends of the cans and prevent lifting of the cans during the ink-stamping operations.

A can confining wall 46 is disposed peripherally about and in concentric relation with the turret, and the delivery portion of the conveyor 14, onto which marked cans are deposited by the turret 10, is lined by suitable confining walls 47. See Fig. 1.

The rotor 43 is removably secured as at 48 on a sleeve 49 rotatable about a stud 50 projecting from and bearing eccentric relation to a mounting shaft 51. The mounting shaft 51 is adjustably secured as at 52 in a bore 53 formed in the table portion, and by adjustment of this shaft about its axis the position of the eccentric stud 50 can be changed so as to project the rotor 43 a greater or lesser distance through the table opening 42. The sleeve 49 carries a driven gear 54 and a driver gear 55, as shown in Fig. 3 of the drawings.

A bearing hub 56 depends from the table 5, and in this hub a mounting shaft 57 is adjustably secured as at 58. The shaft includes a longitudinally and eccentrically extended bearing stud 59 which carries a pinion 60 enmeshed with the pinion 54 for the purpose of driving the same. The pinion 55, rotatable with the driving pinion 54, meshes with and imparts rotation to a pinion 61 carried by a sleeve 62 rotatable about the bearing stud 63 which projects eccentrically from the mounting shaft 64 adjustably secured as at 65 in an extension 66 of the table bearing portion.

An applicator roll 67 is removably secured as at 68 on the sleeve 62, and when cans having concave bottoms are being marked, this roll is equipped with a concave periphery 69. The sleeve 62 is held on the stud 63 by an overhanging plate 70 removably secured to the stud. The roll 67 is engaged by a sponge rubber inking roller 71 which is idly rotatable about a stud 72 mounted as at 73 for adjustment toward and from the roll 67, as illustrated in Fig. 2 of the drawings. An ink fountain or reservoir 74, in the form of a sight feed liquid feeder, is secured as at 75 in a hole in the table and includes a drip nozzle 76 from which ink is deposited, drop by drop, onto the inking roller 71.

It will be observed by reference to Fig. 1 of the drawings that at the point at which marked cans are discharged from the turret onto the conveyor 14, the outside guide rail 47 is provided with an open or removed portion 77 to permit free egress of cans in case of a jam in the off-take line.

In the drawings the cans are generally designated 78 and it will be obvious that they are fed along the conveyor 14 and about the turret in the upright position with their lower ends exposed to the ink stamping devices as they pass the marking station or table opening 42. Some cans, particularly those adapted to contain beer, are provided with concave bottoms, as indicated at 79 in Fig. 3, whereas others have flat bottoms as indicated at 80 in Fig. 6.

When the machine is being used for marking cans with concave bottoms, the rotor 43 preferably includes three equidistantly spaced convex projections 81, each of which is recessed as at 82 to form a seat for the type or inking dies 83, the latter being disposed transversely of the can with respect to the direction of travel thereof at the moment of contact, and the marking type or dies engage the continuously moving can bodies with a rolling contact. The projections 81 are additionally recessed to receive clamp plates 84 for clamping the dies in place, said plates being secured by screws 85. In Figs 1, 2 and 3 of the drawings, the machine parts are designed and adjusted for marking cans having concave bottoms 79.

In Fig. 6 of the drawings, I have shown the machine parts adjusted for marking cans of the type having flat bottoms 80. For marking such cans it is not necessary to have the rotor 43 project as far through the table opening 42 as in the arrangement shown in Figs. 1, 2 and 3. It is desirable, of course, to have the dies engage the can bodies in rolling contact, but in this adaptation of the stamping devices, the dies need not be transversely convex. The rotor applicable to the flat bottom cans employs a type 87 having an arcuate edge directed in the plane of rotation of the rotor, instead of transversely, and these dies are secured by clamp plates 88 and screws 89 similar to those previously described but differently positioned.

When it is desired to adjust the machine for marking cans of the flat bottom type, the mounting shaft 51 is adjusted about its axis to suitably alter the position of the rotor 43, and when this adjustment is made, similar adjustments of the shafts 64 and 57 likewise must be made so as to retain the proper cooperative relation of the gear trains. These adjustments also require a readjustment of the inking roller 71.

In the operation of the machine, unmarked cans are fed along the conveyor 14, being deflected laterally by the guide bar portions 16 so

that the cans will engage and depress the switch levers 20, 20. As previously stated, the switches 17 and 18 are connected in series with the motor 23 common to the turret 10 and the ink stamping devices, and unless both switch levers 20 are depressed by an accumulation of cans upon the conveyor the source of power to the motor will be cut off and operation of the turret and ink stamping devices discontinued. In other words, unless a predetermined minimum accumulation of unmarked cans is maintained the turret 10 and the ink stamping devices will not be operated.

As the unmarked cans are continuously fed over the table 5 by the turret 10, successively exposing the lower ends of the cans over the table opening 42, the equidistantly spaced inking dies of the rotor supplied with ink from the inking roll 71 and applicator roll 67, will individually engage successive can ends and ink-stamp identifying marks on the bottoms thereof. During the stamping of each can the upward pressure of the respective die is opposed by contact of the abutment bar 44 with the neck of the respective can.

Should a jam occur during the ink stamping operation, the slip clutch 32, 38 would function to prevent breakage of parts, and should a jam occur in the off-take line 14, 47, cans could pass freely out of the outlet portion 77 without occasioning breakage of parts.

It is of course to be understood that the details of structure and arrangement of parts may be variously changed and modified without departing from the spirit and scope of my invention.

What I claim is:

1. In a can marking machine, an ink-marking station, means for continuously moving cans past the station with an end of each can exposed at said station, an ink-stamping rotor having equidistantly spaced marking dies thereon engageable in rolling contact with the exposed ends of the cans as they pass the station for ink-stamping identifying marks thereon, an applicator roll engaged with said rotor, means for supplying ink to said roll, and means for adjustably mounting the rotor and the roll to adapt them for cooperation in ink-stamping cans of the flat or concave types, said last named means comprising a mounting shaft for each of the rotor and the roll adjustable about its axis and including a longitudinally extended eccentrically disposed stud for rotatably supporting the respective rotor or roll.

2. In a can marking machine having a marking station, means for continuously moving cans past the station with an end of each can exposed at said station, a stamping rotor engageable in rolling contact with the exposed ends of the cans as they pass the station for stamping identifying marks thereon, an applicator roll coacting with said rotor, and means for adjustably mounting the rotor and the roll to adapt them for cooperation in stamping cans of different types, said last named means comprising a mounting shaft for each of the rotor and the roll adjustable about its axis and including a longitudinally extended eccentrically disposed stud for rotatably supporting the respective rotor or roll.

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