Oct. 6, 1953 W. E. PHIPPS 2,654,312

ELECTRIC STAMPING SYSTEM

Filed Nov. 7, 1949 2 Sheets-Sheet 1

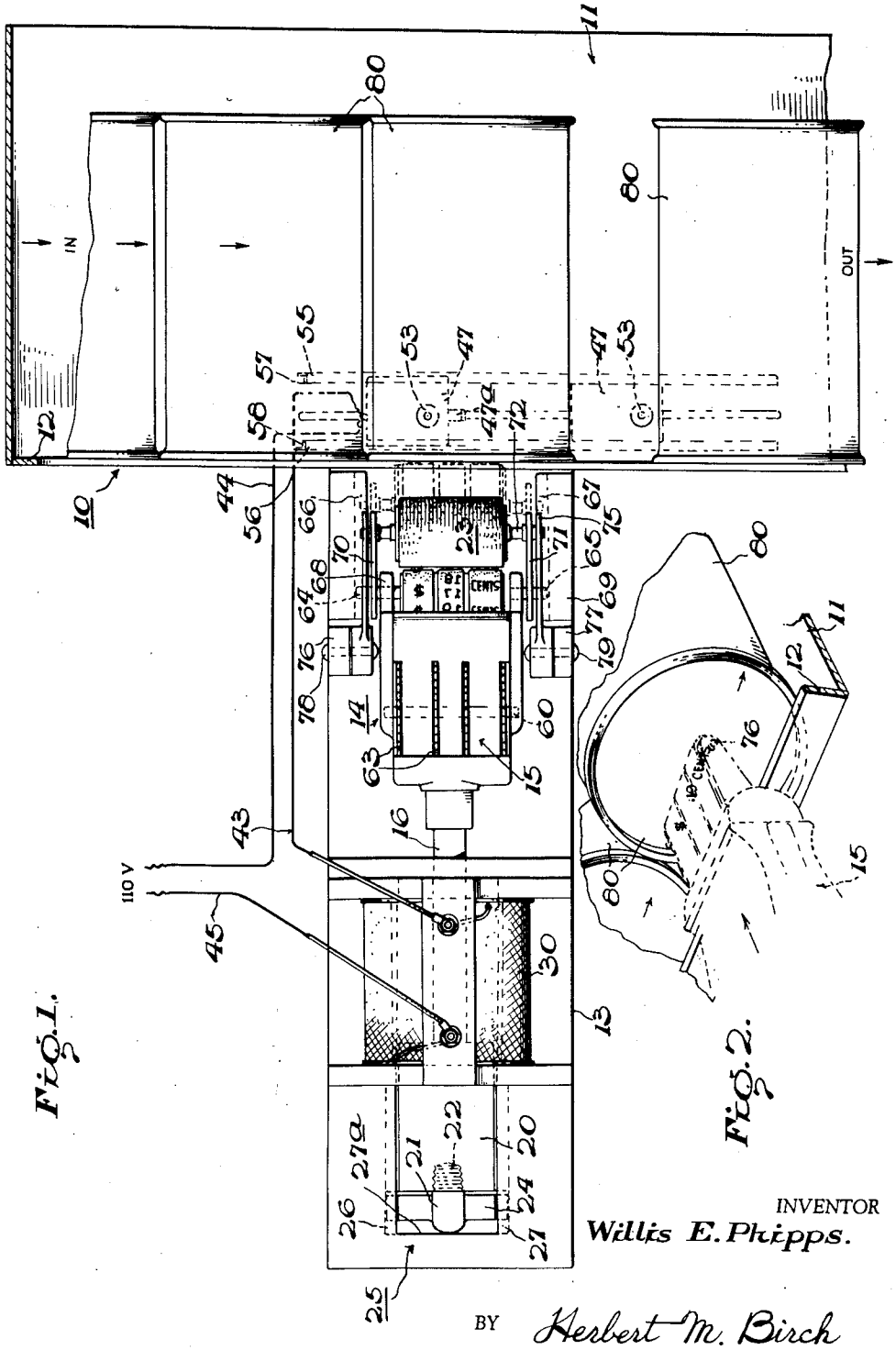

Fig. 1.

Fig. 2.

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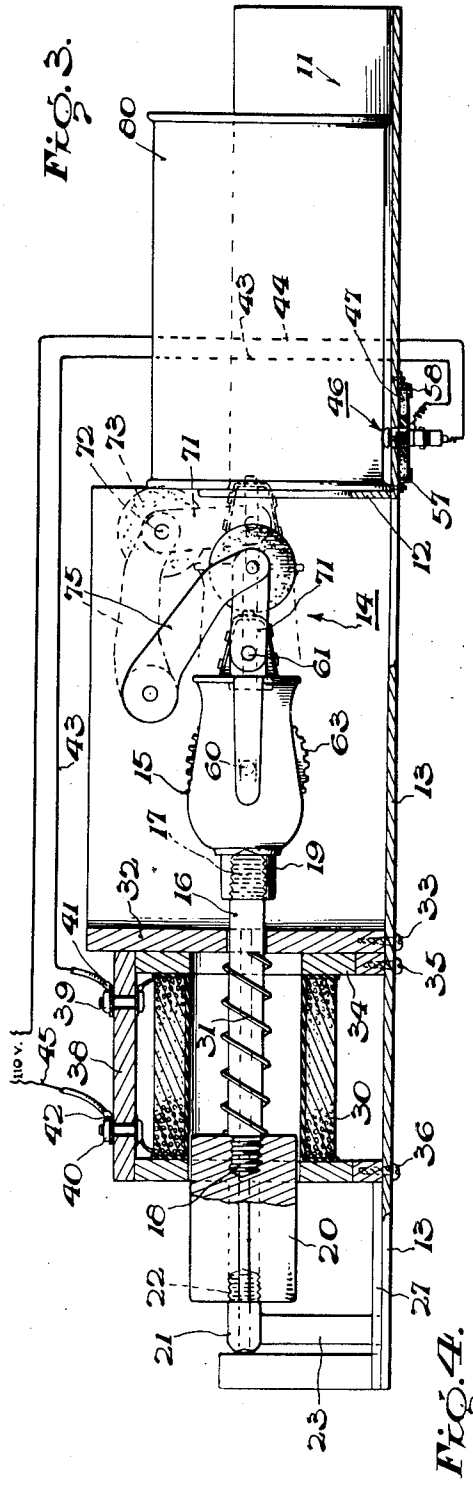

Fig. 3.

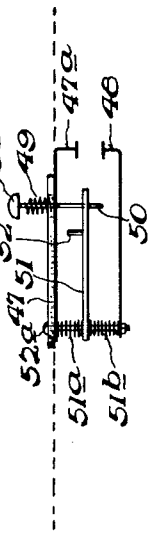

Fig. 5.

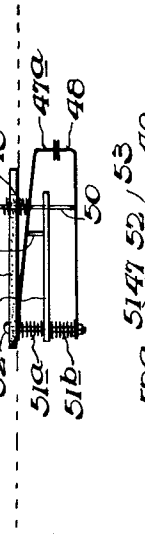

Fig. 6.

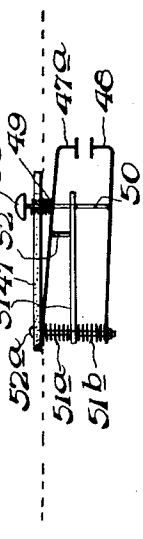

Fig. 7.

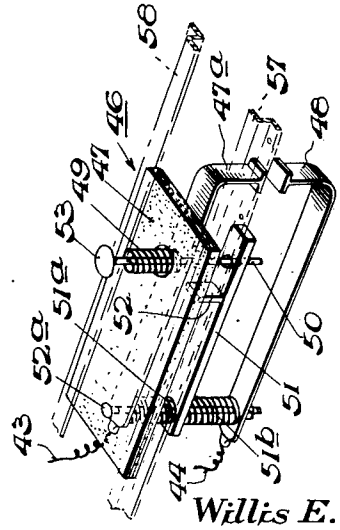

Fig. 4.

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ELECTRIC STAMPING SYSTEM

Willis E. Phipps, Mobile, Ala.

Application November 7, 1949, Serial No. 125,970

6 Claims. (Cl. 101—35)

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The present invention relates to marking containers and more particularly to automatic means for conveying and stamping prices on the exteriors of containers.

In large stores where packaged goods are handled and sold in large volume from store shelves, it is customary to stamp each package, can or the like, by hand with a price indication. Usually a hand stamp is used and it may take a store clerk several days to completely price mark a new supply of packaged or canned goods. This hand stamping takes away much useful working time from other equally important duties and accordingly the need of an automatic system for price marking containers to be sold from the store shelves has long been needed.

It is the principal object of the present invention to provide a completely automatic stamping system for marking containers, whereby the usual amount of work may be done more rapidly and efficiently by a single operator than heretofore possible by hand.

Another object is to provide a novel combination of an electrically operated marker with an adjacent conveyor for the containers to be marked, and, marker actuating switch means closed and opened by each of the containers on the conveyor as the same progress down the conveyor.

Another object is to provide an adjustable mounting on the container conveyor in the proximity of the marking station for the marker actuating switch, whereby the proper timing and/or synchronized operating of the marking stamp may be regulated to accommodate various sizes, shapes and forms of containers.

Another object is to provide a novel switch arrangement, whereby there is a timed or limited closing period for actuating the marking stamp, and an automatic opening period to permit any article stamped to dwell thereon.

Still another object is to provide a can and package marking system which is cheap to manufacture, durable and economical to operate and keep in good mechanical condition.

I attain the foregoing objects of the present invention by providing a portable device, which broadly includes an electro-magnetically operated stamp, a remotely positioned article closed switch for actuating the stamp, and a conveyor adjacent the stamp formed with means for slidably mounting the switch to permit movement of the same to various positions on the conveyor to regulate the operating of the stamp with respect to various sizes, shapes and forms of containers to be stamped or marked.

Other objects, advantages and uses of the present invention will appear more fully after reading the following detailed description together with reference to the accompanying

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drawings wherein one embodiment is shown. It is to be understood, however, that this embodiment is one example only of the apparatus and other arrangements and improvements which will now be apparent to others may be made without departing from the scope of the present invention.

In the drawings:

Figure 1 is a top plan view of the apparatus of the complete system, showing the conveyor cut away to conserve space.

Figure 2 is an end view in partial perspective of some canned goods being marked as they progress forward along the conveyor.

Figure 3 is a transverse view in cross-section of the apparatus.

Figure 4 is a fragmentary view in perspective of the novel switch and its mountings on the conveyor.

Figure 5 is a diagrammatic example of one form of the switch used when it is in open position.

Figure 6 shows the switch of Figure 5 closed.

Figure 7 shows a third position of the switch, which is open even though the can or package may still dwell thereon.

Referring in detail to several figures and first with particular reference to Figure 1, there is shown a ramp or conveyor 10 formed with a container supporting surface 11 bounded along one longitudinal edge by an upstanding guide flange 12. As broadly shown this conveyor 10 is mounted at an incline from a place of container supply, not shown, and the degree of slope or incline may be regulated in any suitable manner, such as by an adjustable support for the conveyor, not shown, depending upon the type of container being fed by gravity downward along the conveyor or ramp surface 11. Formed from the conveyor 10 or secured thereto at a medial point and extending at substantially right angles from the guide flange side, is a base plate 13, which supports the automatic marking apparatus.

The automatic marking apparatus comprises a reciprocatable marking stamp 14, having a stamp head 15, and a power shaft, or solenoid plunger rod, 16, secured thereto. The plunger rod power shaft 16 may be formed at each end with exterior threads 17 and 18. For example, the threaded end 17 is threadedly engaged in a socket 19 formed from the head 15 of the marking stamp 14, and the threaded end 18 is coupled to an iron plunger 20.

The plunger 20 at the opposite end from the connection with the plunger rod 16 is formed with a combination guide and bumper 21. This guide 21 may be threaded into the body of the plunger by means of an exteriorly threaded nipple 22 and comprises an elongated bar 23 extending downwardly to the base plate 13. The

bottom of the guide 21 is formed with a transverse base or foot 24, see Fig. 1, which foot 24 is slidable in a track 25 comprised of side guide flanges 26 and 27 overlapping each end edge of the transverse foot 24.

At the extreme end of the plate 13 is a stop plate 27a against which the guide 21 strikes and stops when it is retracted following each stamping operation, as hereinafter to be explained. The plunger 20 is held retracted from the confines of a solenoid coil 30 by a coiled spring 31, see Fig. 3. This spring is coiled around the solenoid plunger rod 16, so that one end convolution seats against the end of the plunger 20 and the other end convolution thereof, seats against an upright wall or partition 32 secured to the base plate 13 by suitable means, such as screws 33.

A wall 34 of a solenoid housing is mounted against the partition 32 and the housing is secured to the base plate 13 by screws 35 and 36. Each opposite side wall of the solenoid housing is centrally open to permit the plunger 20 and the plunger rod 16 to be reciprocated to and from the coil 30 by the energization of the coil and the counteraction of the spring 31, which is loaded when the coil is energized and unloads when the coil becomes de-energized. Also, the partition 32 is centrally apertured to permit passage of the shaft 16 to connect with the marker head 15.

The top wall 38 is apertured to mount a pair of double terminal connections 39 and 40. For example, the ends of the coil 30 connect to one side of each of the terminals within the solenoid housing and the exterior side of each terminal connection connects to taps 41 and 42 in a power circuit made up of lead wires 43, 44 and 45 connected to an electric power source, see Figure 3.

The lead wires 43 and 44 are connected through the contact arms of a container depressed switch 46. The switch 46 is a structural unit slidably mounted on an individual base 47 of rigid insulation material. To the under side of the base 47 are mounted a pair of superimposed upper and lower spring contact arms 47a and 48, the former of which supports the lower end of a coil spring 49 secured to and coiling around a switch button shaft 50 above the spring contact arm 47a. This spring is compressible between the anchor point on shaft 50 and the top of the upper contact arm 47a, see Figures 5, 6 and 7 for these details. The switch shaft 50 is floating and held raised by the spring 49 reacting against arm 47a. For example, each contact arm 47a and a spring equalized plate 51 are formed with aligned openings through which the shaft projects. The plate 51 includes a stop lug 52 to aid the double action of the spring 49 as hereinafter explained.

The equalizing springs 51a and 51b are coiled in alignment on each side of plate 51 around a pin 52a secured to the base 47 and by each bearing with its outer end against arms 47a and 48 respectively urge the contacts thereof apart. The lug 52 serves to regulate the amount of compression of the spring 49 to an initial switch closing position. The switch 46 after the initial closing thereof by the compression of the spring 49 caused by depression of the spring connected floating button shaft 50, is subsequently opened by the extended free end of shaft 50 as it pushes downward through the openings in arm 47a and plate 51 against lower contact arm 48. This initial operation to close the circuit, energizes the solenoid and operates the marking stamp, but almost the instant the circuit is closed the extended free end of the button shaft 50 depresses the lower contact arm 48 and parts the contacts even though the container remains or dwells on the switch button 53, as shown in Fig. 6. Then when the container moves from the button 53, the switch arms 47a and 48 due to the inherent yieldable resiliency return to normal position ready for the marking operation on the next container.

A switch of this operating principle is necessary to stamp an object or package that lingers or dwells on the treadle button 53, such as boxes and cartons. For example, the article to be stamped approaches and presses the button, Fig. 6, and makes contact, but an instant later the shaft 50 forces contact 48 downward, see Fig. 7, and opens the switch to de-energize the solenoid. The object has thus been stamped by the marking stamp, but may remain on the switch button 53 as long as it takes it to pass over, whereby the contact arms spring back into the neutral position shown in Fig. 5.

The switch in order to properly function regardless of size and form of the containers to be marked is mounted to move along a trackway composed of spaced parallel flanged rails 55 and 56, secured to the underside of the conveyor ramp 10 on each side of an elongated longitudinally extending slot. The button shaft 50 of the switch extends through the slot and the base 47 of insulation material slides along under the flanges 57 and 58, respectively, of the said track rails. Thus, the button head 53 may be moved to any required position along the length of the track and slot of the conveyor to provide for large and small containers and thereby make certain that they are marked properly by the marking stamp 14.

The marking stamp includes the head 15 in the form of a yoke between and transverse which extend shafts 60 and 61. On the shafts are mounted drums or rollers around which are endless webs, 62, formed with marking numerals and/or letters. These webs may be turned to obtain any desired combination of numerals or letters by means of the hand wheels 63.

The shaft 61 extends beyond each side of the yoke arms and the free ends 64 and 65, see Fig. 1, extend under guide flanges 66 and 67, respectively, of bearing blocks 68 and 69. Thus, energization of the solenoid attracts the iron plunger 20, compresses the spring 31 and moves the yoke head 15 forward into marking position as shown in the dotted lines in Figures 1 and 3. The flanges 66 and 67 serve to hold the marker head in line for accurate marking.

Pivoted to the forward ends of the stamp head yoke arms are links 70 and 71 formed with a pin opening in each of their respective ends. For example, one end of each link swings on shaft 61, extending through the said pin openings outside the spread of the yoke arms and their respective opposite ends hold the axle 72 of an inking roller 73. Also, on each side of the ends of the inking roller 73 pivoted on the axle 72, are arms 74 and 75 formed with curved ends, see Fig. 3. These arms extend upwardly and rearwardly to side supporting blocks 76 and 77 on the base plate 13 and are pivoted thereto by transverse pins 78 and 79, respectively.

This arrangement of the arms with the downward curved ends and the links from the inking roller axle constitutes a toggle linkage on each side of the yoke, so that when the marking stamp head is projected forward by excitation of the

solenoid the roller **73** is raised by the toggle action of the linkage and rolled over the markers on the stamp end to the dotted line position, shown in Fig. 3.

Each of the several parts of the apparatus have now been given a reference numeral and as illustrated, for example, there are shown a plurality of cans **80** in the process of being price marked.

Operation

To price mark the cans **80**, illustrated in Figures 1, 2 and 3, the conveyor ramp surface **11** is slightly inclined so that the cans will roll down the same by gravity over the switch button **53**, pass the marking stamp station.

With the first pressure of a can **80** on the switch button **53**, the switch arms **47** and **48** are closed, see Fig. 6, and the circuit is completed from the 110 volt power source supplied by lead **45**, illustrated to energize the solenoid coil through the switch and leads **43** and **44**. Such energization draws the solenoid plunger **20** forward and pushes the stamp into marking position against the end of the can **80** depressing the switch button **53**. This continues intermittently as each can rolls over the switch button.

Now assuming instead of cans, it is desired to stamp or pricemark packages. It is then best to increase the incline of the conveyor ramp by adjusting the rear support elevation of the ramp as the sides of the packages offer frictional resistance to the surface of the ramp and are thus braked. Also, the switch is preferably moved downwardly to the dotted line position shown in Fig. 1 to allow for the greater surface area of the side of the package to be stamped and the longer dwell period. If the switch were not thus moved then the operation would be too slow.

To avoid stamping the same package two or more times, the switch is made so as to permit a dwell period for each package on the switch button after the initial solenoid energization. This dwell period as hereinbefore explained is made possible by the action of the switch shaft **50** and the cooperating switch springs, which open the switch after initial actuation, even though the package is still over the button **53**.

Without further description, it is believed that the foregoing amply describes the present novel arrangement and combination of parts which make up the structure of the present invention, and it is to be expressly understood that various changes now likely to occur to others, such as the use of endless belt conveyors instead of an inclined ramp and the like, may be made without departing from the scope of this invention. Reference should be had to the appended claims to determine the scope of my invention.

What I claim is:

1. In an electric stamping apparatus the combination comprising a base, means on the base feeding by gravity containers to be stamped along a path, stamping means on the base reciprocatable laterally of said path, spring means on the base urging the stamping means away from said path, electromagnetic means on the base and when energized moving the stamping means toward the path to stamp a container thereon, switch means adjustably movable on the feeding means along said path and connected to the circuit of the electromagnetic means and including a switch operating shaft projecting above the plane of the feeding means and depressable by a container, the switch means also including a pair of contacts urged to open position, and means acted upon by the operating shaft in the first part of its downward motion which close the contacts, the continued motion of the said shaft opening said contacts.

2. The combination according to claim 1 and wherein the switch means is adjustably movable on the feeding means in a slot thereof.

3. The combination according to claim 1 and wherein the stamping means include endless webs each carrying marking indicia.

4. The combination according to claim 1 and also comprising inking means operable by the motion of the stamping means to stamping position.

5. The combination according to claim 1 and wherein the switch means comprise a pin, a plate on the middle pin portion and extending laterally thereof, a pair of springs coiled on the pin and each disposed to one side of the plate, the plate having a lug and a hole, a pair of spring arms each extending laterally of the pin and engaged by the outer end of one of said springs, the switch operating shaft being in the form of one of the spring arms having a hole registering with the plate hole, a headed shaft passing through the plate hole and spring arm hole, and a third spring coiled around the shaft and at one end fixed thereto and at the other end engaging the spring arm with the hole.

6. In an electric stamping apparatus the combination comprising a base, means on the base feeding by gravity containers to be stamped along a path, stamping means on the base reciprocatable laterally of said path, spring means on the base urging the stamping means away from said path, electromagnetic means on the base and when energized moving the stamping means toward the path to stamp a container thereon, switch means adjustably movable on the feeding means along said path and connected to the circuit of the electromagnetic means and including a switch operating shaft projecting above the plane of the feeding means and depressable by a container, the switch means also including a pair of contacts urged to open position, means acted upon by the operating shaft in the first part of its downward motion which close the contacts, the continued motion of said shaft opening said contacts, and inking means comprising a roller rotatably mounted on a central axle adjacent said stamping means, and a pair of mounting arms each being pivotally connected at one end to an opposite end of said axle and the opposite end of each of said arms being connected to the said base at aligned opposite positions.

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