

- [54] **INDICIA STAMPING MECHANISM**
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- [51] Int. Cl. **B41f 17/00, B41f 1/00**
- [58] Field of Search..... 101/35, 36, 37, 41-44, 101/316-321, 4, 8, 9, 11, 27, DIG. 3

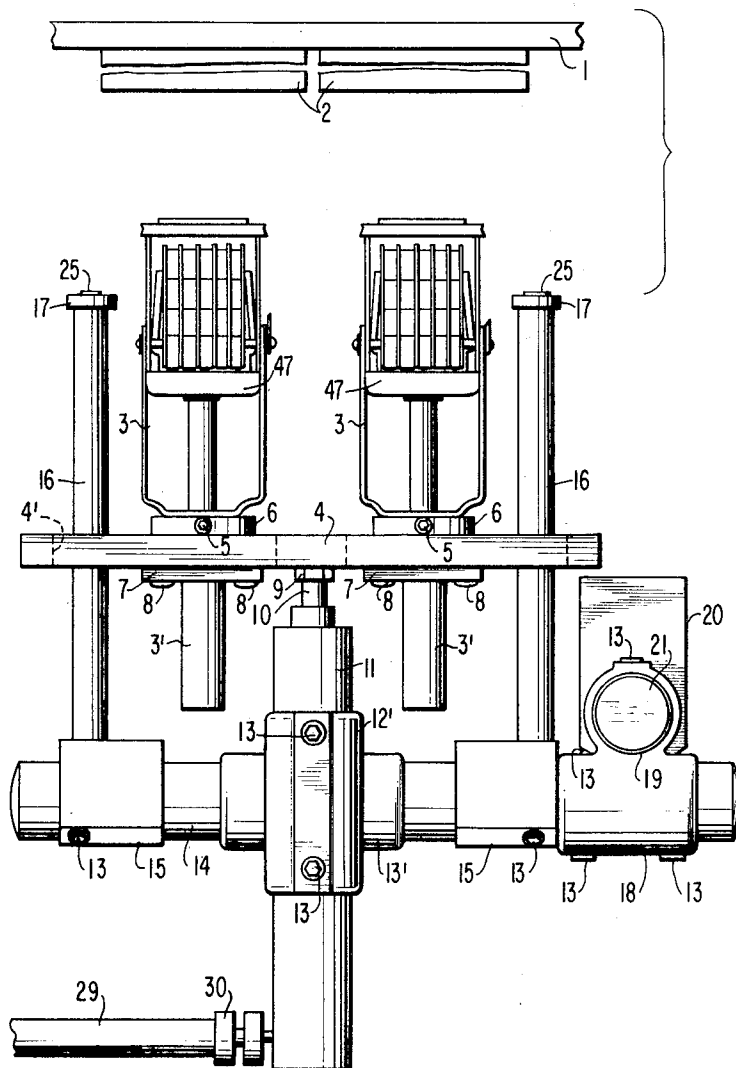
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[57] **ABSTRACT**

In synchronism with wrapper applying means on a packaging conveyor pneumatically operated ink stampers precisely apply price indicia in prescribed areas of wrapped finished products or packages. The indicia stamping mechanism is characterized by a full range of adjustments to achieve maximum flexibility of operation. The mechanism also possesses simplicity and durability in a self-contained unit with simplified controls.

8 Claims, 9 Drawing Figures



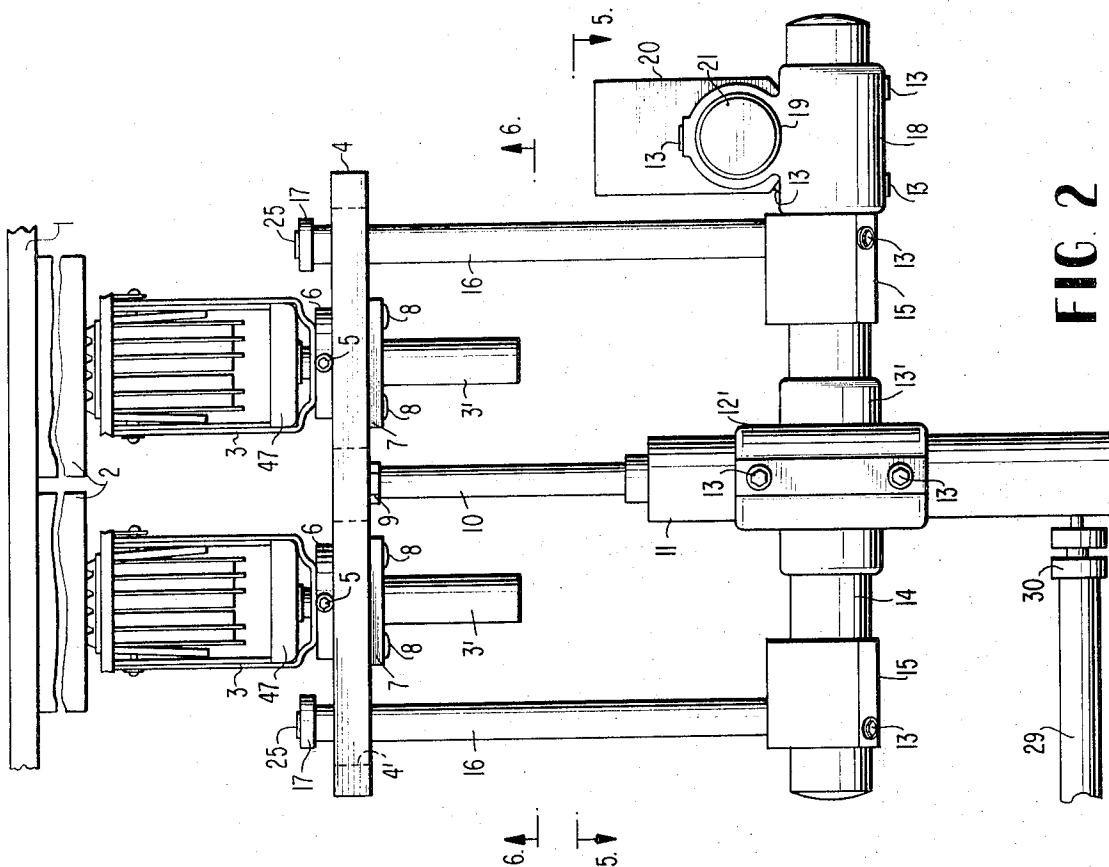


FIG. 2

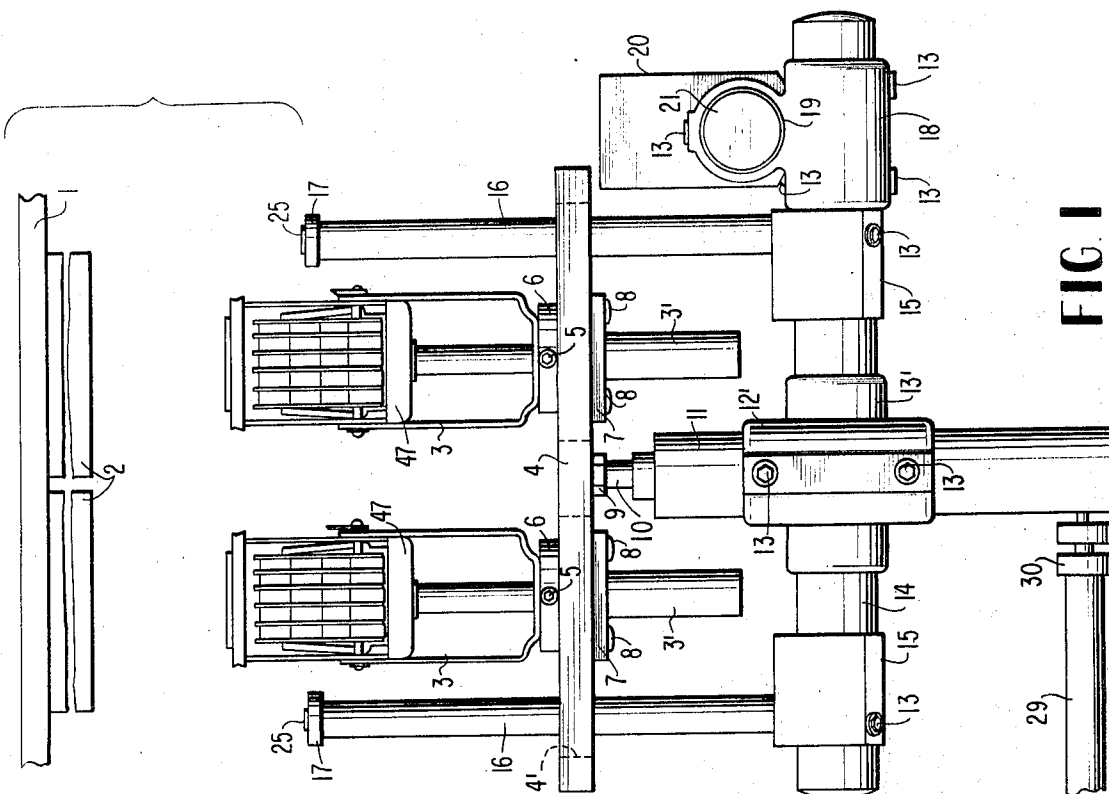


FIG. 1

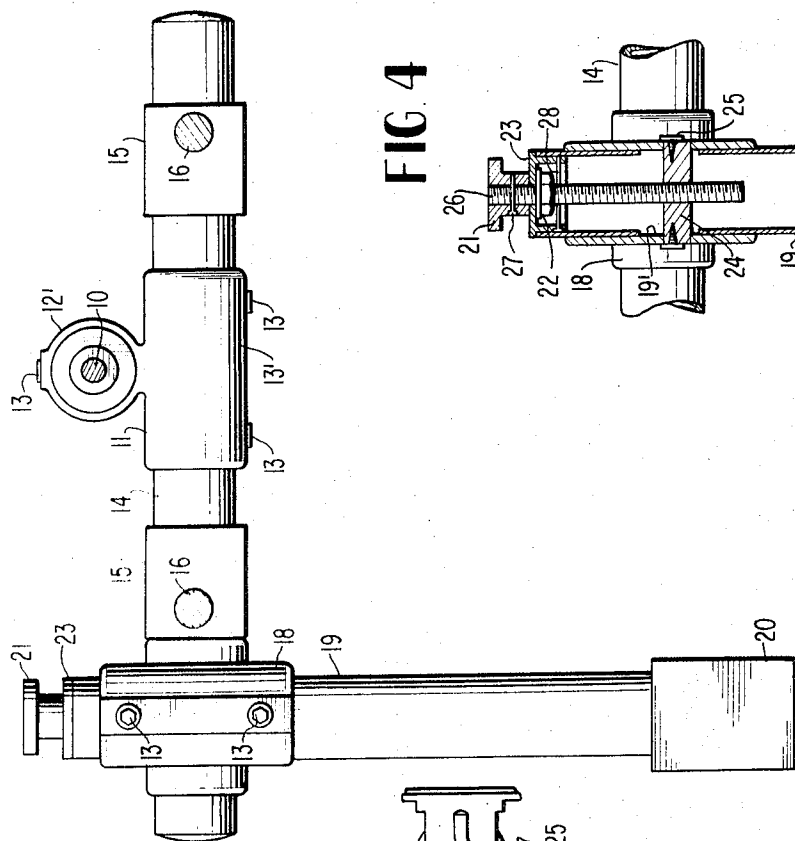


FIG. 5

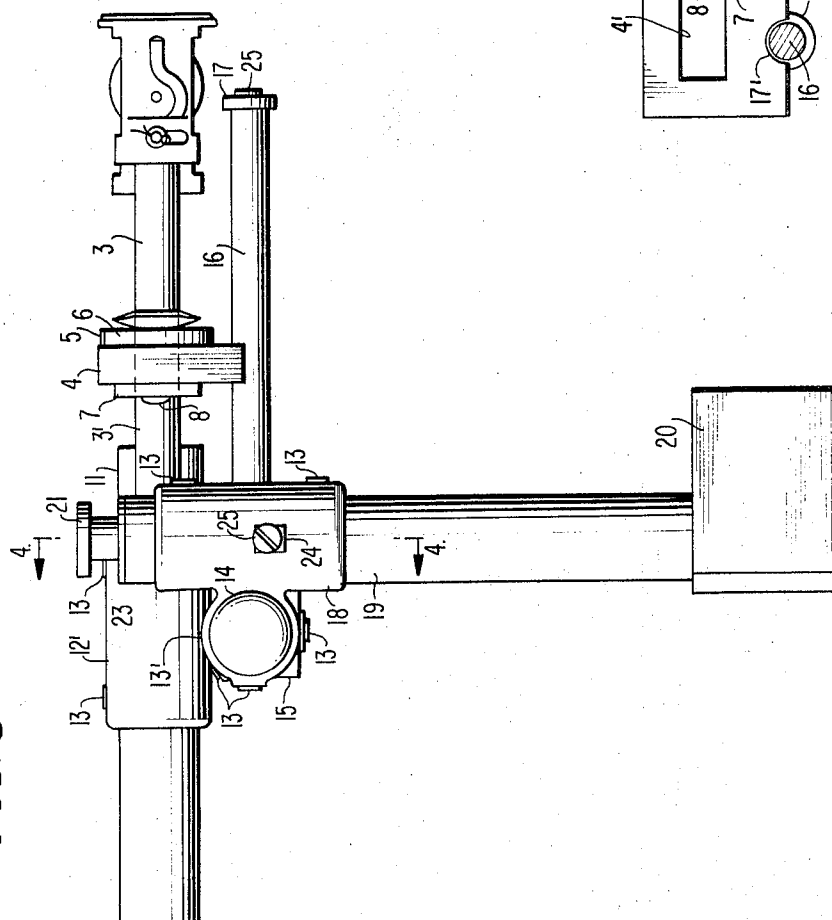


FIG. 3

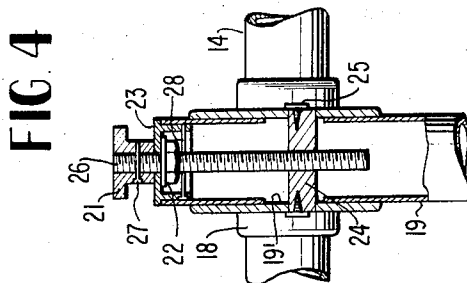


FIG. 4

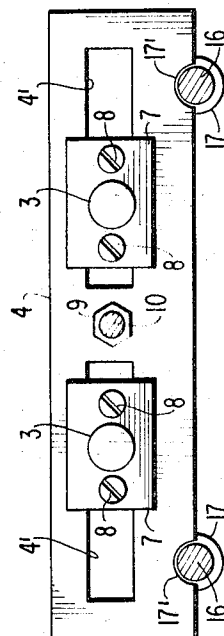


FIG. 6

FIG 8

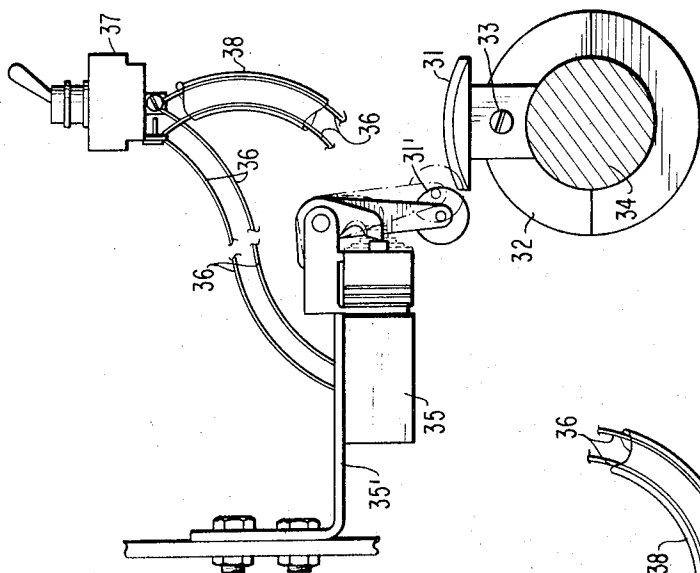
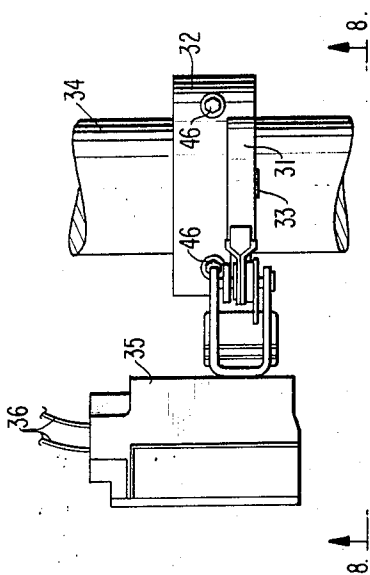
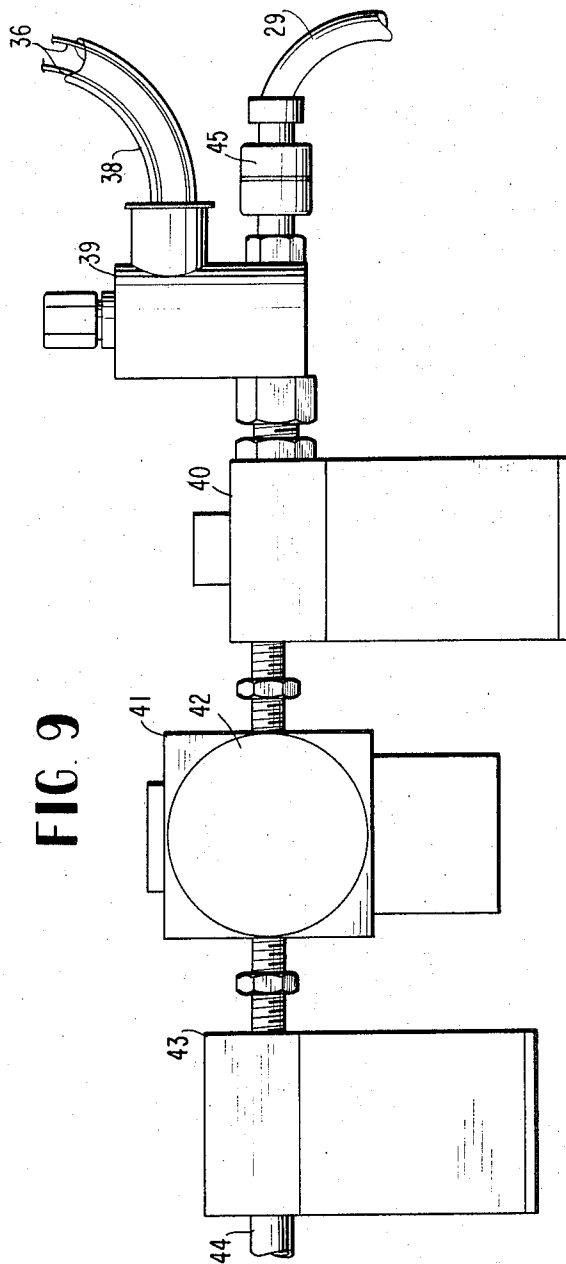


FIG 7

FIG 9



INDICIA STAMPING MECHANISM

BACKGROUND OF THE INVENTION

The principal objective of the invention is to satisfy a recognized need of the packaging industry for an efficient, easily adjustable and economical ink stamping mechanism for rapidly and uniformly applying price indicia or the like to finished wrapped packages and products on a packaging conveyor.

To successfully satisfy this need of the packaging industry, the indicia stamping mechanism must be simple and also rugged and durable. It must possess a wide range of adjustments in all directions for the ink stamping elements so that the same may be precisely positioned adjacent to the conveyor mechanism for cyclically applying printed indicia to prescribed small areas on the sides or tops of articles or packages on the conveyor. The mechanism must also possess simple controls for its power actuating system, such as a pneumatic power system, and the controls must be compatible with existing conventional packaging or wrapping conveyors commonly used in the industry. In the present invention, a simple rotary cam applied to a rotary shaft of the conveyor conventional wrapper mechanism forms the basic means to time and synchronize the operation of the indicia stamping mechanism with the movements and dwell intervals of the conveyor, so that each article or package may have a price or other similar indicia stamped thereon in a precise and uniform area while such article or package is at rest.

Additionally, the invention features ease of installation adjacent to any commercial wrapping conveyor apparatus and requires little or no maintenance after proper adjustment in conjunction with a given product. The simplicity of the mechanism and its adjustments allows the use of relatively unskilled personnel for setting up and adjusting operations. The mechanism is essentially a self-contained unit which may be mounted at any desired location relative to the packaging conveyor. The unit, for example, can be installed to stamp indicia on the vertical sides of wrapped packages or on the tops thereof simply by relocating the support for the main mounting block of the indicia stamping assembly or unit.

While the device is intended primarily to be used in conjunction with a packaging conveyor or the like, it also has utility in any situation where it is desired to stamp price indicia or the like rapidly on a multitude of articles which are successively positioned at an indicia stamping station and brought to rest momentarily at that station to receive the printed indicia produced by the power-operated stamping mechanism embodying the invention.

Other features and advantages of the invention will become apparent during the course of the following description, taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF DRAWING FIGURES

FIG. 1 is a plan view of an indicia stamping mechanism embodying the invention with the stamping elements fully retracted.

FIG. 2 is a similar plan view of the mechanism showing the stamping elements extended to their active use positions relative to products on a conveyor means.

FIG. 3 is a side elevational view of the indicia stamping mechanism.

FIG. 4 is a fragmentary vertical section taken on line 4—4 of FIG. 3.

FIG. 5 is a vertical section taken on line 5—5 of FIG. 2.

FIG. 6 is a similar section taken on line 6—6 of FIG. 2.

FIG. 7 is a fragmentary plan view of electromechanical control means for the mechanism.

FIG. 8 is a vertical section taken substantially on line 8—8 of FIG. 7.

FIG. 9 is a partly diagrammatic view of a compressed air supply system and valve means associated with the electromechanical controls and the indicia stamping mechanism.

DETAILED DESCRIPTION

Referring to the drawings in detail, wherein like numerals designate like parts, FIGS. 1, 2 and 3 illustrate conventional self-inking variable indicia stampers or markers which are capable of imprinting price markings or similar indicia on wrapped packages or the like when the stamping mechanism is activated. The details of construction of the self-inking markers 3, being conventional and well-known, it is unnecessary to further describe the same herein.

In the embodiment of the mechanism shown, a pair of the markers 3 in side-by-side spaced relation are bodily mounted upon a rigid crosshead 4 which is slotted at 4' to receive parallel cylindrical shanks or shafts 3' of the markers so that the same may be adjusted laterally to vary their spacing so that the mechanism will be able to accommodate variably spaced articles or packages 2 on a package wrapping conveyor 1. As will be further described, the markers 3 are also adjustable forwardly and rearwardly on the crosshead 4.

Referring to FIGS. 1, 2 and 6, the marker shafts 3' are received movably through collars 6 at the forward side of crosshead 4 and through coating clamp plates 7 at the rear face of the crosshead. Set screws 5 in the collars 6 lock the shafts of the markers in the selected fore and aft adjusted positions. Bolts 8 interconnecting the collars 6 and clamp plates 7 are loosened to allow lateral adjustment of the markers in the slots 4' and are tightened to securely lock the markers in selected laterally spaced positions on the crosshead 4.

The crosshead 4 and markers 3 are shifted forwardly toward the active position illustrated in FIG. 2 by a reciprocating piston rod 10 having a screw-threaded connection with the crosshead 4 at the center thereof and locked to the crosshead by a lock nut 9. A preferably pneumatic cylinder 11 receives the piston, not shown, of the rod 10 and propels the piston and rod forwardly at prescribed times. The rod and crosshead are retracted automatically to the inactive position of FIG. 1 by a conventional spring means in the cylinder 11.

The pneumatic cylinder 11 is clamped and bodily supported by the upper portion 12' of a two-section right angular pipe coupling having a lower section 13' at right angles to the upper section and formed integral therewith. The cylinder 11 is adjustable forwardly and rearwardly in the coupling section 12' and after adjustment is locked by set screws 13. The lower right angular section 13' of the coupling is mounted adjustably on a horizontally disposed cylindrical bar or tube 14 and

is locked thereto after proper adjustment by additional set screws 13 provided for this purpose.

A pair of laterally spaced parallel guide rods 16 for the crosshead 4 have their rear ends threaded into mounting blocks 15 or sleeves, also adjustably mounted on the horizontal bar 14 and locked thereto after proper adjustment by locking set screws 13. The two guide rods 16 are thus arranged adjustably on opposite sides of the power cylinder 11 and the two ink stamping devices or markers 3. The guide rods 16 engage slidably in semicircular notches 17' formed in the lower edge of the crosshead 4 near the opposite ends thereof. In this manner, the rods 16 form a guideway and a bearing support for the crosshead and the markers 3 carried thereby. At their forward ends, the guide rods 16 have limit stops 17 for the crosshead 4 secured thereto by screws 25 or the like.

The horizontal support bar 14 is coupled near one end to a vertical tube or post 19 by another two-section right angular type pipe connector or coupling 18. The horizontal bar 14 is adjustable in one section of the right angular coupling 18 and is lockable by set screws 13 while the vertical post 19 is adjustable in the vertical part of the coupling 18 and is lockable by additional set screws 13. The lower end of the vertical post 19 is suitably anchored to a base mounting block 20 which may be fixedly anchored by any convenient means to a fixed structure near the conveyor 1.

It may be noted at this point in the description that the indicia stamping mechanism constitutes a self-contained unit which is bodily mounted on a single base mounting block 20 which may be fixedly attached to a structure in any convenient manner to position the markers 3 advantageously with respect to the packages 2 which are to be stamped on their sides or on their tops. Thus, the simple indicia stamping mechanism is highly versatile in its mounting capabilities, in addition to having a wide range of adjustments as described to bring the markers 3 into precise positions relative to the work. The markers 3 are laterally adjustable on the crosshead 4 and adjustable forwardly and rearwardly and may also be turned if need be on the axes of their shafts 3 prior to locking with the set screws 5 and bolts 8. The guide bars 16 are fully adjustable on the horizontal support bar 14 and the pneumatic cylinder 11 is adjustable and lockable in the coupling section 12'. The horizontal bar 14 is similarly adjustable relative to the coupling section 13' and the vertical post 19 is adjustable relative to the horizontal bar 14 through the right angular coupling 18.

In addition to these major adjustments, a fine adjustment in the vertical direction is provided in the manner shown in FIG. 4 for precisely positioning the markers 3 vertically relative to the articles or packages 2. This fine adjusting means comprises a screw shaft 26 having a turning knob 21 secured thereto by a cross pin 27 bearing on a cap 23 and secured by a lock nut 22 and flat washer against the lower face of the cap 23. The screw shaft 26 has threaded engagement with a square cross section bar 24 whose ends engage within similarly shaped openings in the vertical part of right angular coupling 18. A pair of eccentrically mounted screws 25 in the ends of the square bar 24 prevent endwise movement of this bar relative to the coupling 18. The vertical post or tube 19 is slotted vertically at 19' to allow the square bar 24 to travel upwardly or downwardly relative to the fixed post 19 and to carry with it the cou-

pling 18 and the horizontal bar 14. Another cross pin 28 anchors the cap 23 to the top of vertical post 19, as shown in FIG. 4. The arrangement is such that a very fine and accurate adjustment of the vertical height of the coupling 18 and consequently the height of the bar 14 and markers 3 may be achieved by loosening the set screws 13 of coupling 18, FIGS. 3 and 5, followed by turning the knob 21 and screw shaft 26 to raise or to lower the square bar 24 with the coupling 18 relative to the stationary post 19. At the completion of this vernier adjustment, the two set screws 13 of coupling 18 visible in FIG. 5 are tightened to lock the mechanism at the selected elevation.

Referring now to FIGS. 7 to 9 primarily, the pneumatic system for pressurizing the power cylinder 11 and suitable control means for the cycle of operation of the mechanism are shown. In connection with the latter, it should be pointed out that a variety of control or timing means for the power operation of the markers 3 may be utilized and the means illustrated in FIGS. 7 and 8 are illustrative only and form one example of what may be utilized.

FIGS. 7 and 8 show a rotary cam 31 secured to a split collar 32 by a screw 33 so that the cam will revolve with the collar. The split collar is clamped adjustably by screws 46, FIG. 7, to a rotary shaft 34 which is preferably the wrapper film registration shaft of the wrapping conveyor 1. In any case, the cam 31 will be applied to a rotary element on the wrapper conveyor mechanism which will cyclically move the cam into contact with an actuator roller 31' of a microswitch 35 secured by a bracket means 35' to any convenient fixed support. An off and on switch 37 is wired at 36 to the microswitch 35 and to the solenoid coil of a solenoid-operated valve 39, the cable wiring 36 being preferably closed by waterproof plastic tubing 38.

As shown in FIG. 9, the valve 39 is connected through a quick release coupling 45 with a delivery hose 29 leading to the back of pneumatic cylinder 11 and connected therewith by a suitable fitting 30. The pneumatic cylinder 11 has approximately a three inch stroke forwardly from its retracted position of FIG. 1 to its full active position of FIG. 2. A spring means in the cylinder 11 retracts or returns the piston rod 10 automatically to the inactive position of the mechanism upon completion of a stamping or marking stroke.

Continuing to refer to FIG. 9, compressed air for any source is delivered through a main air line 44 to a filter 43 and then through a pressure regulator 41 having an integral pressure gage 42 to a lubricator 40 where air at the appropriate pressure usually approximately 20 p.s.i. picks up sufficient oil to lubricate the power cylinder 11. From the lubricator 40, the compressed air is delivered to the valve 39 which cyclically delivers air through delivery hose 29 to the power cylinder under control of the rotary timing cam 31 and associated electrical components.

In essence, when the wrapped packages 2 on the conveyor apparatus 1 are at a dwell point, the cam 31 will trip the switch 35 and activate the solenoid valve 39 to admit pressure to the cylinder 11 and thrust the markers 3 forwardly to stamp the price or other indicia at a precise predetermined area on the packages or articles 2, immediately followed by automatic retraction of the markers 3 by the spring means in the pneumatic cylinder. The above mode of operation of the mechanism is cyclical and repetitive and upon each successive posi-

tioning of packages at the price marking station, the power-operated markers will quickly advance and mark the price indicia on the packages, retract and again advance when the next articles move into position at the marking station.

It is believed to be self-evident that the indicia marking or stamping mechanism is versatile in operation to meet a variety of situations which may be encountered in connection with a packaging conveyor and the various products being handled thereby. The mechanism is characterized by simplicity, ruggedness and durability, ease of installation, adjustment and maintenance, and a substantially fool-proof mode of operation.

The conventional self-inking stamps or markers 3 automatically reink their printing elements at each retraction of the mechanism, FIG. 1, wherein the printing elements are moved into contact with inking pads 47. When the markers are driven forwardly to their active printing positions, FIG. 2, the marking elements rotate away from the pads 47 and project forwardly as in FIG. 2 to directly engage the packages 2 or the side wall of a single package, as the case may be.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of the invention or scope of the subjoined claims.

I claim:

1. An indicia stamping mechanism for applying price indicia or the like to articles on a conveyor at a stamping station adjacent to the conveyor, said mechanism comprising an upright member adapted to be anchored at a point near said conveyor, a horizontal support member connected with the upright member and extending beyond at least one side thereof, fine adjusting means interconnecting the horizontal support member and upright member in such a way that the elevation of the horizontal support member may be changed in minute degrees upwardly or downwardly on the upright member, a fluid pressure operated cylinder on said horizontal member extending at right angles thereto and having an extensible and retractable piston rod, a crosshead secured to said piston rod and extending on opposite sides thereof, guideway and bearing support means for the crosshead secured to said horizontal support member and extending beyond one side thereof, at least one indicia stamping device secured to said crosshead and being adjustable laterally of the crosshead and forwardly and rearwardly thereon and being lockable in the selected adjusted position relative to the crosshead, the indicia stamping device extending forwardly of the crosshead for direct engagement with articles when the crosshead is extended with said piston rod, a fluid pressure supply system for said cylinder including a control valve, and cyclically operable means connected with the control valve to regulate its operation and the operation of said cylinder and being driven by a moving component of said conveyor.

2. An indicia stamping mechanism for use with a packaging conveyor or the like comprising a primary support member attachable to a fixed structural member, a right angular support member coupled with the primary support member, screw-threaded means operable to effect a fine adjustment of said right angular member along the axis of the primary member, a power actuator on the right angular member extending trans-

versely thereof, a crosshead carried by the power actuator and shiftable thereby away from and toward the right angular member while the crosshead is in substantial parallel relation to the right angular member, a pair of guide and support rods for the crosshead secured to the right angular member in parallel spaced relation and projecting beyond one side of the right angular member, a pair of self-inking indicia stamping devices on the crosshead and movable therewith under influence of the power actuator, means coupling said stamping devices adjustably to the crosshead so that the stamping devices may be adjusted laterally of the crosshead and longitudinally at right angles to the crosshead and then locked in selected adjusted positions, and cyclically timed control means for the power actuator to extend and retract the crosshead with the stamping devices at prescribed intervals.

3. The structure of claim 2, and said power actuator being an extensible and retractable fluid pressure operated cylinder-piston unit adjustably mounted on said right angular support member.

4. The structure of claim 2, and said screw-threaded means comprising a coupling member common to said primary support member and right angular support member and slidable relative to the primary support member, a screw shaft rotatably mounted upon the primary support member, a threaded cross bar attached to the coupling member and having threaded engagement with the screw shaft, and said primary support member having a slot formed therein receiving the ends of the cross bar so that the latter may be shifted with the coupling member and right angular support member relative to the primary support member minute distances.

5. The structure of claim 2, and said means coupling said stamping devices adjustably to the crosshead comprising a pair of elongate slots in the crosshead on opposite sides of the power actuator, shaft extensions on the stamping devices extending through said slots and being turnable and shiftable laterally and axially relative to the slots, and pairs of clamping plate members on opposite sides of the crosshead having aligned openings receiving the shaft extensions, bolt means for clampingly securing said plate members to the crosshead in selected laterally adjusted positions, and a locking set screw on at least one of the plate members of each pair engageable with the shaft extension of the associated stamping device to lock the shaft extension.

6. The structure of claim 2, and a pair of limit stop elements for said crosshead on the leading ends of said guide and support rods, said crosshead having spaced recesses in its lower edge slidably receiving the tops of the guide and support rods.

7. The structure of claim 2, and said cyclically timed control means for the power actuator including a rotary element, and an electro-mechanical control means including an element in the path of movement of said rotary element and operated thereby to cyclically initiate the operation of the power actuator.

8. The structure of claim 7, and said power actuator comprises a pneumatically operated expansible and retractable cylinder-piston unit, and said control means includes a valve connected in a compressed air supply system for the pneumatic cylinder-piston unit and responding to the cyclical actuation of said electro-mechanical control means.

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