United States Patent [19]

Patykula

[11] **3,863,565**

[45] **Feb. 4, 1975**

[54] **APPARATUS FOR IMPRINTING ON MOVING ARTICLES WITHOUT SMEARING THE IMPRINT**

[75] Inventor: **Thomas E. Patykula,** Elmira, N.Y.

[73] Assignee: **Corning Glass Works,** Corning, N.Y.

[22] Filed: **Dec. 10, 1973**

[21] Appl. No.: **423,550**

[52] **U.S. Cl.**..... **101/44,** 101/316, 101/DIG. 3

[51] **Int. Cl.**..... **B41f 17/00**

[58] **Field of Search**..... 101/35, 41, 42, 43, 44, 101/DIG. 3, 316

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Primary Examiner—Clifford D. Crowder

Attorney, Agent, or Firm—Charles W. Gregg; Clarence R. Patty, Jr.

[57] **ABSTRACT**

A modification of a stamping machine originally used for imprinting a distinctive mark or indicia on each of a series of similar articles sequentially delivered to and momentarily dwelling at or moving slowly through a selected location for application of an imprint thereto, apparatus for modifying the machine to imprint a desired distinctive mark or indicia on each of a series of similar and relatively small articles sequentially transported by a conveyor rapidly and continuously moving in a selected direction through a path of travel, the modified apparatus being located at an imprinting station in the path of travel of the articles to be imprinted and including a printing platen supporting a printing type and reciprocatively moveable in alignment with the path of travel of the articles, means, responsive to the passage of each of the articles through the imprinting station, for rapidly starting the printing platen from an initial position and accelerating the platen to substantially equal the speed of each respective article while actuating the platen to contact each article with the printing type to imprint the desired distinctive indicia on the article, and means operating, following each imprinting actuation of the printing platen, for rapidly returning the printing platen to its initial position in preparation for imprinting of the indicia on each next article of the series of articles sequentially transported through the imprinting station by the conveyor.

9 Claims, 7 Drawing Figures

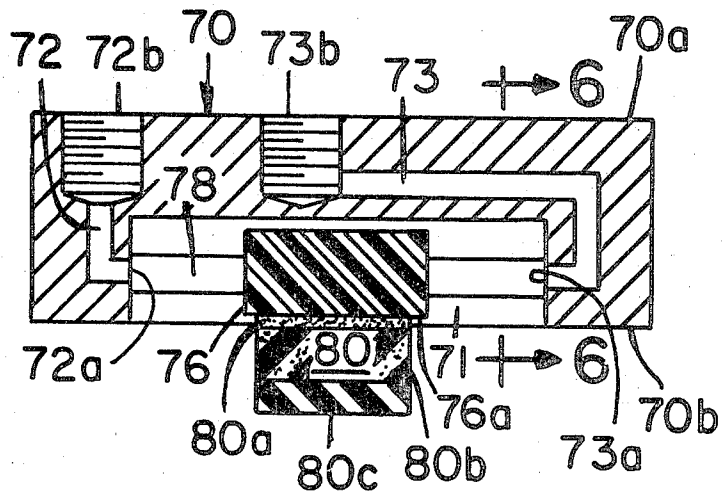


Fig. 1

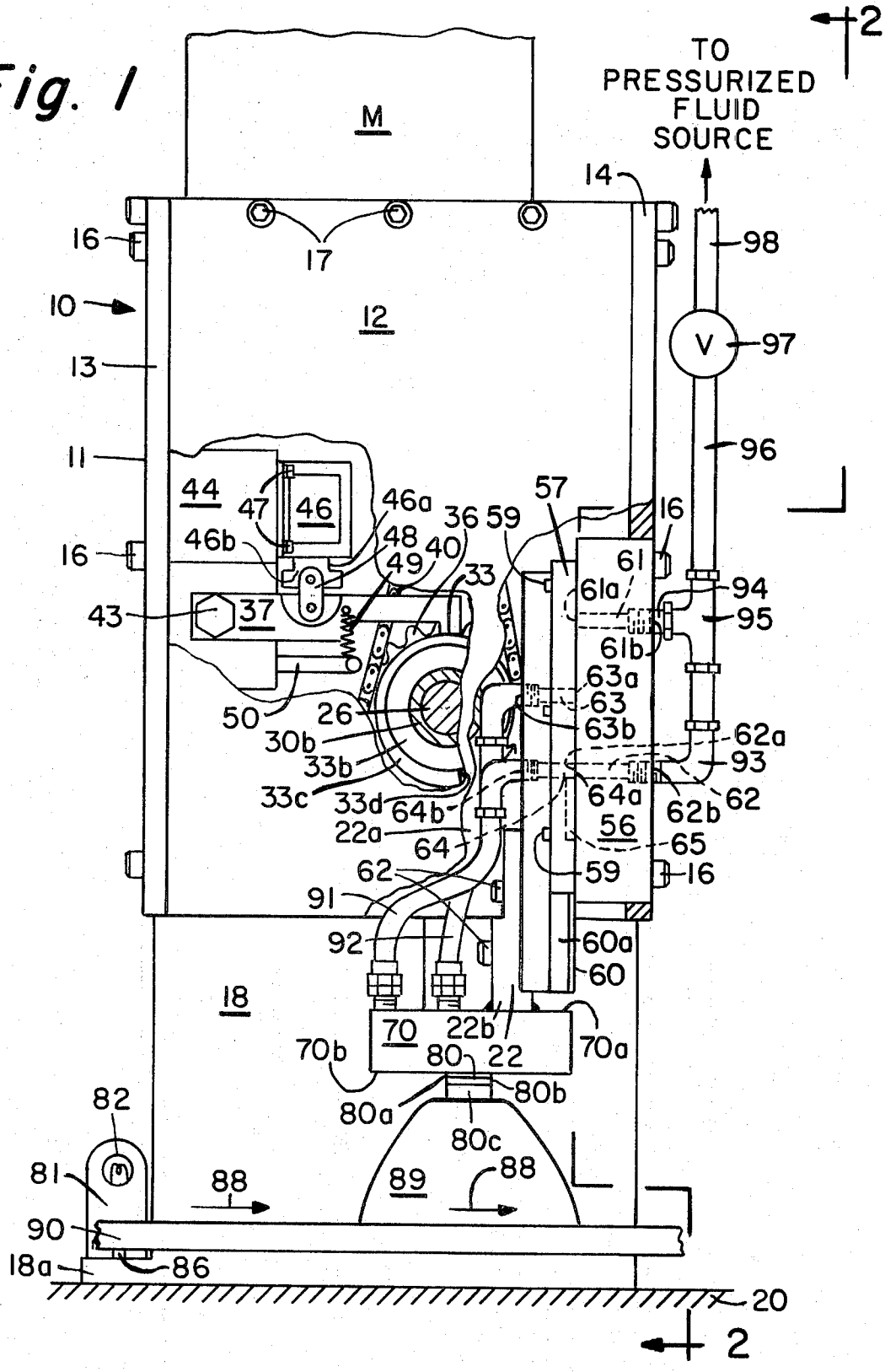
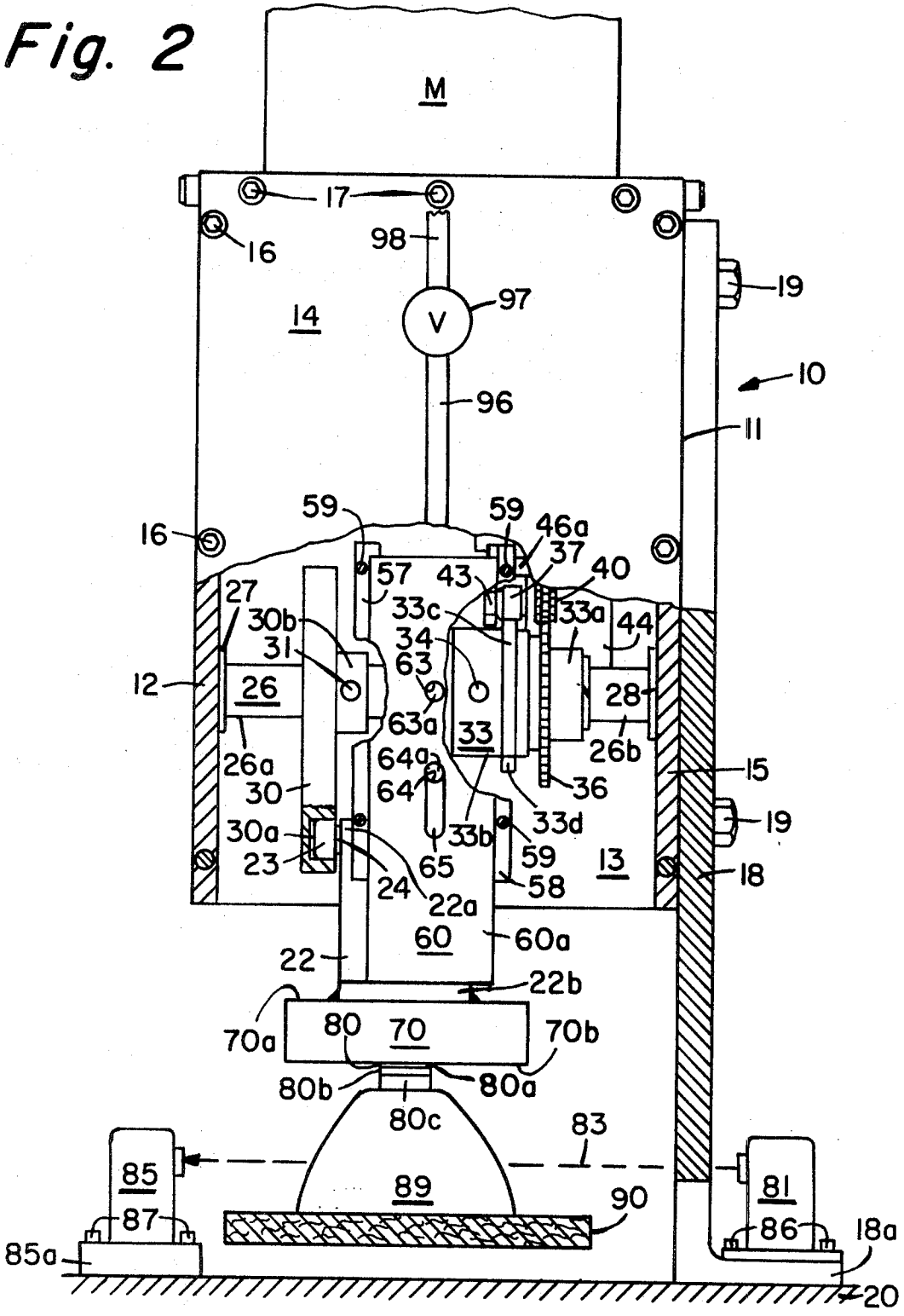

TO PRESSURIZED FLUID SOURCE
M
12
18
89
V
2
2
10
11
13
14
16
17
18a
20
22
22a
22b
26
30b
33
33b
33c
33d
36
37
40
43
44
46
46a
46b
47
48
49
50
56
57
59
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60a
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61a
61b
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63b
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64a
64b
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70a
70b
80
80a
80b
80c
81
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86
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90
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92
93
94
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96
97
98

Fig. 2


M
17
16
98
97
V
14
19
10
96
11
59
59
46a
37
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57
43
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30b
33c
33a
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31
34
63
12
26
28
63a
33
26b
26a
64a
15
30
64
36
33d
19
30a
33b
59
13
23
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24
58
18
22a
60
60a
22
22b
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90
86
18a
85a
20

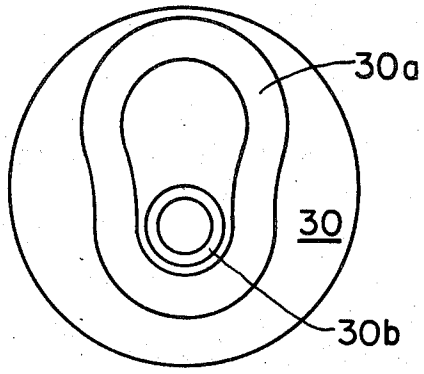


Fig. 3

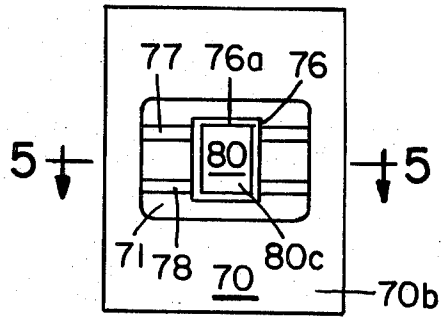


Fig. 4

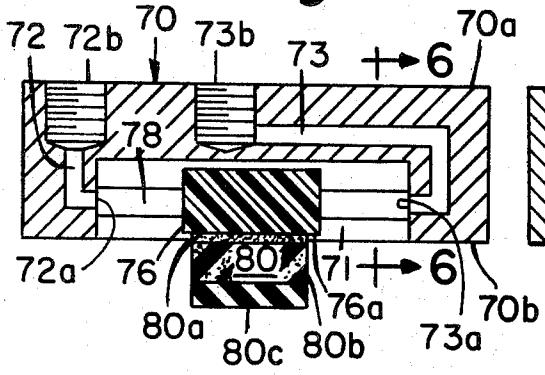


Fig. 5

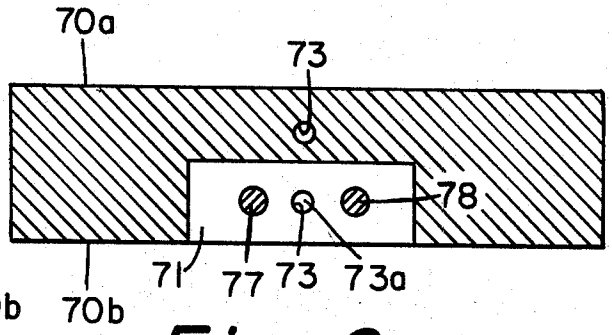


Fig. 6

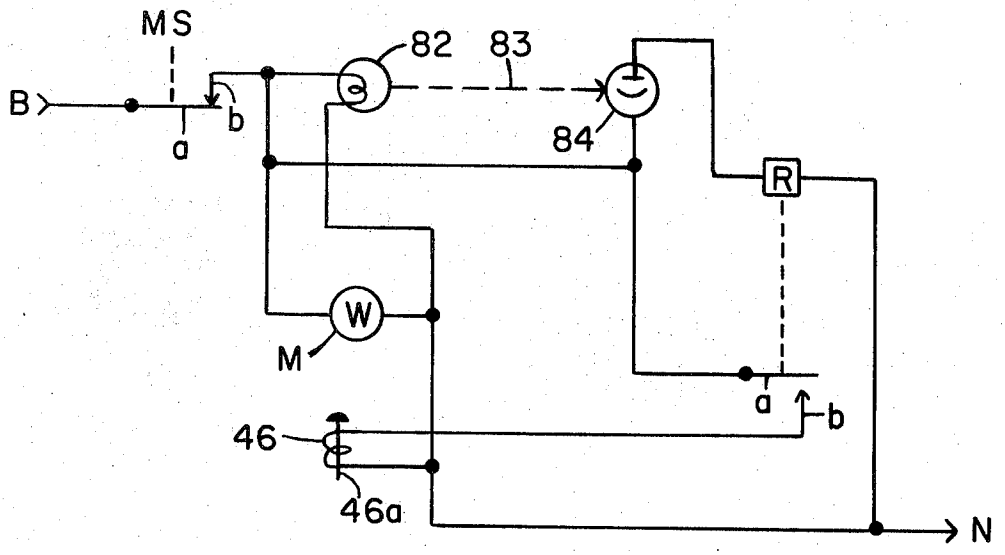


Fig. 7

APPARATUS FOR IMPRINTING ON MOVING ARTICLES WITHOUT SMEARING THE IMPRINT

BACKGROUND OF THE INVENTION

In the imprinting of a distinctive mark or indicia on each of a series of articles sequentially delivered to and momentarily dwelling at or slowly moving through a selected location, a conventional stamping machine is often used for the imprinting, the imprinting actuation of such a machine being triggered by a workman depressing a foot switch or operating another similar and suitable device. However, when such a stamping machine was located at a position adjacent a path of travel of a conveyor continuously transporting articles at a relatively high rate of speed and it was attempted to use such machine for imprinting a distinctive mark or indicia on the transported articles, it was found that, regardless of the speed of an imprinting actuation of the stamping machine, the desired indicia or marks were intolerably smeared when imprinted on the moving articles. Furthermore, it was exceedingly difficult or almost impossible for a workman to trigger an imprinting actuation of the machine in proper synchronism with the rapid passage or transport of the articles past the location or position of the machine adjacent the path of travel of the conveyor. This was especially true when the articles were of relatively small dimensions or when the area of the article surface on which it was desired to make the imprint was of a small areal expanse as, for example, when it was desired to make an imprint on the bottom of a teacup or small bowl. It is, accordingly, an object of the present invention to modify a conventional stamping machine of the type mentioned so that it may be used for stamping or stamp imprinting desired distinctive marks or indicia on each of a series of rapidly moving or transported articles.

It is another object of the present invention to adapt a stamping machine of the type mentioned to automatic operation, that is, to a system of operation of the machine such that the imprinting actuations thereof are triggered by each of the articles which are to be stamped or stamp imprinted, approaching or passing the modified machine.

Other objects and characteristic features of the invention will become apparent as the description proceeds.

SUMMARY OF THE INVENTION

The invention is believed to be adequately summarized in the foregoing abstract of the disclosure and, therefore, to avoid repetition and redundancy and undue length of the application, no further brief summary will be given nor is any believed to be necessary.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. **1** is a front elevational view of a machine embodying the apparatus comprising the invention with parts of the housing of such machine broken away to show details thereof;

FIG. **2** is a side elevational view of the machine of FIG. **1**, such view being taken generally along line **2—2** of FIG. **1** with internal parts of the machine being partially broken away to illustrate details thereof;

FIG. **3** comprises an elevational view of a cam or cam wheel employed in the machine of FIGS. **1** and **2**;

FIG. **4** comprises a bottom plan view of a part of the apparatus of the invention and illustrating details of such part;

FIG. **5** is an enlarged cross-sectional elevational view of the part of the apparatus illustrated in FIG. **4**, such view being taken generally along line **5—5** of FIG. **4**;

FIG. **6** is a view similar to FIG. **5**, such view being taken generally along line **6—6** of FIG. **5**; and

FIG. **7** is a schematic wiring diagram of electrical circuitry employed in the apparatus of the invention.

Similar reference characters refer to similar parts in each of the FIGS. of the drawings.

PREFERRED EMBODIMENT OF THE INVENTION

Referring to FIGS. **1** and **2** of the drawings in detail, there is shown a stamping machine **10** for imprinting or stamp imprinting distinctive marks or indicia on articles to or on which it is desired that such marks or indicia be applied or imprinted. Machine **10** comprises a housing or combined housing and support structure **11** including a front plate **12**, two side plates **13** and **14**, and a back plate **15**, such plates being secured to each other as by allen screws or bolts such as **16**. A gear motor M is fastened at the top of housing **11** as by allen screws or bolts such as **17**. Housing **11** is secured to a suitable upright support plate **18** as by such plate being bolted to back plate **15** of the housing by bolts such as **19**. Support plate **18** includes a foot portion **18***a* by which such plate and, thereby, machine **10** can be mounted on a suitable platform or table designated **20**.

A rotatable axle or shaft **26** is rotatably supported within housing **11** with first and second ends **26***a* and **26***b* of such shaft extending into suitable bearings **27** and **28**, respectively, suitably disposed and secured in the walls of sides **12** and **15** of housing or support structure **11**. The previously mentioned cam (FIGS. **2** and **3**) is a face plate cam **30** embodying in a face thereof a cam track or groove **30***a*, such cam also including a hub **30***b*. Axle or shaft **26** extends through cam **30** and hub **30***b* thereof and there is provided in hub **30***b* a tapered pin **31** to suitably key cam **30** to axle or shaft **26** near said first end **26***a* of such shaft by extending into a suitably fitting hole provided in the shaft. Shaft **26** further extends through a single revolution clutch **33** including a driving sleeve **33***a* and an intermittently driven hub **33***b* which is also suitably keyed to shaft **26** by a tapered pin **34**. A sprocket wheel **36** is secured to driving sleeve **33***a* of clutch **33** and a first end of a trip lever **37** (right hand end viewing FIG. **1**) rides on the outer periphery of clutch trip or release cam **33***c* of clutch **33** and normally contacts the step or stop **33***d* on such release cam to maintain the clutch released. However, trip lever **37** is not shown in FIGS. **1** and **2** as contacting or in contact with stop **33***d* of release cam **33***c* since the apparatus is shown in such drawings as in the course of an imprinting actuation or operation as hereinafter discussed in an operational example of the invention.

A drive chain **40** loops about the teeth of sprocket wheel **36** in the manner well known in the art, there being only a part of such chain shown in FIG. **2** for purposes of simplification of such drawing. Chain **40** is driven by a second sprocket wheel (not shown) but which is rotatably driven by gear motor M by suitable means also not shown in the drawings since such means, per se, are not a part of the present invention. As hereinafter further discussed, chain **40** rotates

sprocket wheel **36** in a counterclockwise direction (viewing FIG. **1**) and shaft **26** is periodically correspondingly rotated.

The second end of above mentioned trip lever **37** (FIG. **1**) is pivotally connected as by a bolt **43** to one side of a support block **44** secured to side **13** of housing **11**. A solenoid **46** including a movable core or plunger **46***a* is attached to the face of support block **44** as by allen screws or bolts such as **47** and a lower or protruding end **46***b* of core or plunger **46***a* is pivotally connected to one end of a link member **48** whose second end is pivotally connected to trip lever **37**. One end of a tension spring **49** is also connected to lever **37** and the second end of such spring is connected to the otherwise free end of a relatively long pin or peg **50** whose other end is supported or secured in support block **44**. It is believed apparent that, by such arrangement, said first end of trip lever **37** is urged or biased by spring **49** into continuous contact with the outer periphery of clutch trip or release cam **33***c* as previously mentioned.

A platen carrier **22** has a first or upper end **22***a* disposed within housing **11** and a second or lower end **22***b* extending out of the housing. A cam follower **23** (FIG. **2**) is rotatably mounted on a short axle or shaft **24** extending from the side of first end **22***a* of platen carrier **22** and such cam follower extends into the previously mentioned cam track or groove **30***a* of cam **30**. Platen carrier **22** is thus arranged to be reciprocatively moved or actuated between an initial or substantially retracted position within housing **11** or a second imprinting position thereof shown in FIGS. **1** and **2** and as hereinafter further discussed, such actuation of the platen carrier being performed by intermittent or periodic rotation of cam **30** by gear motor M and the resultant following of cam groove **30***a* of cam **30** by cam follower **23**. This will also be further discussed hereinafter.

The apparatus thus far described is included in the orginal machine which is modified by the apparatus of the present invention as previously mentioned and discussed below. Such original machine is a Model 202D-1 MARKEM printing machine which is manufactured and sold by Markem Corporation whose address is 150 Congress St., Keene, N.H., such machine being illustrated in a machine manual published by such company.

Referring further to FIG. **1** of the drawings, there is shown embodied in and extending through the wall of side **14** of housing **11** of machine **10** a generally rectangular rail support member **56** having secured to the face or surface of such member which is in the interior of housing **11** a pair of spaced-apart and parallel rail members **57** and **58** (see also FIG. **2**) which are fastened to said face of member **56** adjacent the front and rear edges of such face (viewing FIG. **1**) by a plurality of allen screws or bolts such as **59**. A slide member **60** includes a dovetail shaped portion **60***a* which has edges which are beveled or slant inwardly towards the remainder of the slide member such beveled edges being disposed between the aforesaid left hand face of support member **56** and said rail members **57** and **58**, the inner edges of such rail members being beveled or slanted at angles corresponding to the beveled or slanted edges of portion **60***a* of slide member **60** and being complemental or complementary to such edges. Slide member **60** is thus snugly but slidably supported between rail members **57** and **58**, such a sliding arrangement being a well known expedient.

Previously mentioned platen carrier **22** is secured, as by bolts such as **62** to the left hand face (viewing FIG. **1**) of slide member **60** and, as carrier **22** is actuated between its aforesaid initial and imprinting positions by cam follower **23** as previously discussed, slide member **60** is correspondingly actuated and guided in a sliding movement by rail members **57** and **58**. It is apparent therefore that slide member **60** also provides for guiding of platen carrier **22** between its said positions while such platen carrier imparts said sliding movement to slide member **60**.

The parts just discussed and including support member **56**, rails **57** and **58**, and slide member **60**, as well as platen carrier **22**, are shaped similar to and are actuated the same as the corresponding parts used in the orginal machine mentioned above. However in the modification of said machine by the invention disclosed, the following changes, substitutions, and additions are made.

A modified rail support member **56** is provided, such member embodying a pair of first and second fluid passages **61** and **62** extending through the support member and having first ends **61***a* and **62***a* opening through the left hand face of member **56** (viewing FIG. **1**) such face being a very smooth planar surface for purposes hereinafter discussed. Said first ends of said passages **61** and **62** are spaced apart a distance substantially equal to twice the distance of the aforesaid movement of platen carrier **22** between its initial and imprinting positions. A modified slide member **60** is also provided, portion **60***a* of such slide member having a smooth planar surface (right hand surface viewing FIG. **1**) which slidably contacts said smooth planar surface of member **56** with a substantially hermetic relationship between such surfaces. Slide member **60** embodies a pair of first and second spaced-apart fluid passages **63** and **64** extending through such slide member and having first ends **63***a* and **64***a* opening through said smooth planar surface of portion **60***a* of the slide member and spaced-apart a distance substantially equal to said distance of said movement of platen carrier **22**. Said first ends **61***a* and **63***a* of passages **61** and **63** in support member **56** and said slide member **60**, respectively, are embodied or located in their respective members to face or communicate with each other when said platen carrier **22** is in its aforesaid initial position. Similarly said first ends **62***a* and **64***a* of passages **62** and **64** in members **56** and **60**, respectively, are embodied or located in their respective members so as to face or communicate with each other when platen carrier **22** is in its second or imprinting position. There is also embodied in said smooth planar surface of portion **60***a* of slide member **60** a channel **65** for providing fluid communication between said first ends **62***a* and **64***a* of said second passages during movement of platen carrier **22** between a position near to said initial position thereof and said second or imprinting position thereof.

A generally flat printing platen support member **70** (FIGS. **1, 2, 4, 5** and **6**) having a pair of first and second opposite and generally planar surfaces **70***a* and **70***b* is provided, end **22***b* of carrier **22** contacting surface **70***a* of member **70** normal thereto and such end of carrier **22** being secured to member **70** as by being welded to such contacted surface. Platen support member **70** embodies a longitudinal and relatively wide hole **71** (FIGS. **4, 5** and **6**) such hole opening through at least the second surface **70***b* of said opposite surfaces **70***a*

and 70*b* of support member 70. Member 70 further embodies a pair of first and second fluid passages 72 and 73 (FIG. 5) which extend through such member and have first ends 72*a* and 73*a* opening through the walls defining the limits of the first and second ends, respectively, of said hole 71 at substantially the centers of such ends.

A generally rectangular printing platen 76 of a substantially smaller length than the length of hole 71 in platen support member 70 is supported for sliding movement within such hole, and between said first and second ends of the hole with the centers of the first and second ends of the platen in general alignment with the aforesaid centers of such first and second ends of the hole. Platen 76 is so supported within hole 71 by a pair of parallel rods 77 and 78 which extend through the platen and are affixed in the end walls of hole 71 as best illustrated in FIG. 6.

A three-layer laminated printing element 80 includes a contact adhesive layer 80*a*, a compressible sponge rubber layer 80*b* and a conventional rubber printing type layer 80*c*. The otherwise exposed surface of contact adhesive layer 80*a* of element 80 is pressed firmly into contact with surface 76*a* of printing platen 76 and attaches the printing element to such platen with the printing surface of printing type layer 80*c* exposed. That is to say, with the type of the indicia to be imprinted exposed. Sponge rubber layer 80*b* of the printing element compresses during the imprinting contact of the printing surface or type of printing type layer 80*c* with an article being imprinted.

A first flexible fluid conduit 91 (FIG. 1) connects the second end 64*b* of previously discussed passage 64 in slide member 60 with the second end 72*b* (FIG. 5) of passage 72 in platen support member 70. A second flexible fluid conduit 92 connects the second end 73*b* of passage 73 in platen support member 70 with the second end 63*b* of passage 63 in slide member 60. A first end of a fluid conduit 93 connects with the second end 62*b* of passage 62 in support member 56 and a first end of a fluid conduit 94 connects with the second end 61*b* of passage 61 in support member 56. The second ends of fluid conduits 93 and 94 connect with each other through a suitable T connection 95 and a fluid conduit or pipe 96 extends from such connection to one side of a manually actuated valve 97 whose second side connects with a first end of a pipe or conduit 98. The second end of pipe or conduit 98 connects with a suitable source of pressurized fluid such as compressed air, for example. However, such source is not shown in the drawings for purposes of simplification thereof.

There is shown in FIGS. 1 and 2 a light source 81 including an electric lamp 82 (FIG. 7) from which a beam of light, as indicated by the broken line arrow designated 83 (FIGS. 2 and 7) is projected across the path of travel of an article to be imprinted, such beam normally being received by or impinging upon a photosensitive device such as photoelectric cell 84 (FIG. 7) provided in a suitable housing or case 85 (FIG. 2). Light source 81 is attached to foot portion 18*a* of support plate 18 as by allen screws or bolts such as 86 (FIGS. 1 and 2). The base 85*a* of housing 85 for photosensitive device 84 is attached to previously mentioned table or platform 20 as by allen screws or bolts such as 87 (FIG. 2).

Referring further to FIG. 7, there is schematically shown a master switch MS including a pair of contacts *a–b*, winding W of motor M, a relay R including a pair of normally open contacts *a–b*, solenoid 46 including core or plunger 46*a* thereof, and the previously mentioned electric lamp 82 and photosensitive device 84. A suitable source of electrical current of sufficient voltage and capacity for energization of the components shown in FIG. 7 is provided. However, such source, per se, is not shown in the drawings for purposes of simplification thereof but the opposite terminals of such source are designated in FIG. 7 as B and N, respectively.

With further reference to FIG. 7, lamp 82 and winding W of motor M have energizing circuits which extend from terminal B of said current source over contacts *a–b* of master switch MS in their actuated or closed condition and thence through W and 82 to terminal N of the current source. Relay R has an energizing circuit which extends from said terminal B of the current source over said contacts *a–b* of switch MS and thence through photosensitive device 84 (when such device is conducting) to one side of the winding of the relay and through such winding to terminal N of the current source. Solenoid 46 has an energizing circuit which extends from said terminal B of the current source over contacts *a–b* of switch MS, contacts *a–b* of relay R, when such contacts are closed as hereinafter discussed, and thence through solenoid 46 to terminal N of the current source.

OPERATIONAL EXAMPLE OF THE INVENTION

For purposes of an operational example of the invention, it is assumed that the modified machine 10 embodying the invention is disposed at a selected location, hereinafter often termed an imprinting station, in the path of travel of a continuously and rapidly moving conveyor such as a conveyor belt 90 shown in FIGS. 1 and 2 of the drawings. Machine 10 is disposed or positioned at the imprinting station so that the center of printing platen support 70 is above the center of the width of conveyor belt 90 which, as indicated in FIG. 1 by the arrows such as 88, is assumed to be moving in the right hand direction (viewing FIG. 1). Belt 90 is assumed to be used for sequentially conveying or transporting a series of pieces of dinnerware, such as the bowl 89 shown in FIGS. 1 and 2, and which are carried on belt 90 in an inverted position, that is, with the rims or brims of the bowls resting on the upper surface of belt 90.

Machine 10 is shown in FIGS. 1 and 2 as being in an actuated condition, that is, in the positions that the apparatus of the machine occupies at the instant that a desired mark or indicia is being imprinted on the bottom of a bowl such as 89. In the unactuated condition of the machine, cam 30 occupies a rotational position such as shown in FIG. 3 and such that cam follower 23 extends into cam track 30*a* of cam 30 at the lower part of such cam track when referring to FIG. 3. At such time platen carrier 22 and, therefore, platen support member 70, platen 76 and printing element 80 are all in raised, non-imprinting, or normal or initial conditions, as is also slide member 60. When slide member 60 is in its raised position, passage 63 in such slide member is in communication or connects with passage 61 in support member 56 as previously mentioned while passage 64 and groove 65 in said slide member are out of communication or do not connect with passage 62 in support member 56. Prior to the initiation of

the movement of conveyor **90** to transport a sequence of bowls such as **89** past the imprinting machine, the following described operations are performed.

Master switch MS (FIG. 7) is actuated to close contacts *a–b* thereof and thereby energize lamp **82**, and winding W of gear motor M. At such time, solenoid **46** may be momentarily energized and initiate one or more operations of machine **10** in the manner hereinafter described, but such operations at such time perform no imprinting functions of the machine since there are no articles or bowls such as **89** being transported by conveyor **90**. The beam of light **83** from light source **82** actuates or activates photosensitive unit or device **84** to its conducting state and relay R is energized to open its contacts *a–b* to interrupt energization of solenoid **46**, and trip lever **37** (FIG. 1) is thereby actuated downwardly by spring **49** so that the right hand end of such lever (viewing FIG. 1) contacts step or stop **33***d* of release cam **33***c* of clutch **33** when such step or stop is rotated to its upward position by the rotation of release cam **33***c*. This will be further discussed hereinafter.

The previously mentioned pressurized fluid source is now activated, valve **97** is opened and the fluid, such as compressed air, flows from such source through the valve to conduit **94** and thence through passages **61** and **63** in support member **56** and slide member **60**, respectively, to conduit **92**, through passage **73** in platen support member **70** (FIG. 5) and out of end **73***a* of passage **73** to impinge against the right hand end of printing platen **76** and cause such platen to slide along its support rods **77** and **78** until the left hand end of the platen (viewing FIG. 5) comes to rest against the right hand end of hole **71** in platen support **70**. Machine **10** is now in an initial condition in preparation for a series of imprinting operations.

It will now be assumed that the previously mentioned continuous and rapid movement of conveyor belt **90** is started and that such belt is conveying or transporting a sequence or series of bowls such as **89** to and through the imprinting station, that is, to and through the location of machine **10**. As a bowl such as **89** passes between light source **82** and photosensitive device **84**, light beam **83** is interrupted and relay R (FIG. 7) is thereby released to close its contacts *a–b* and momentarily energize solenoid **46** and cause the retraction of core or plunger **46***a* within the solenoid and thereby raise, through link member **48**, trip lever **37** against the tension of spring **49**. Such raising of trip lever **37** moves the right hand end of such lever (FIG. 1) from out of contact with step or stop **33***d* of release cam **33***c* of clutch **33** and such clutch becomes engaged so that hub **33***b* of the clutch is rotated counterclockwise (viewing FIG. 1) by the rotation of sprocket **36** and driving sleeve **33***a* of the clutch. Such counterclockwise rotation of hub **33***b* correspondingly rotates shaft **26**. Release cam **33***c* is also correspondingly rotated at such time to move stop **33***d* thereof past the end of trip arm **37**.

The above-mentioned rotation of shaft **26** rotates cam **30** and cam follower **23** (FIG. 2) follows cam track or groove **30***a* of cam **30** during the rotation of such cam and such cam follower is moved toward its position shown in FIG. 2, that is, in a downward direction when viewing FIG. 2.

As cam follower **23** moves downwardly, platen carrier **22** and slide member **60** are correspondingly moved downwardly. Such movement of slide member **60** breaks communication or connection between passages **63** and **61** in slide member **60** and support member **56**, respectively, and the pressurized fluid supplied through the end **73***a* of passage **73** in platen support **70** is interrupted and, of course, no longer impinges against the right hand end of printing platen **76**. As slide member **60** is moved further downwardly, groove or channel **65** in such member is moved into communication or connection with end **62***a* of passage **62** in support member **56** (FIG. 1) and pressurized fluid then flows through groove or channel **65** into passage **64** in slide member **60**, and thence to conduit **91** and into passage **72** in platen support member **70** to flow out of end **72***a* of such passage (FIG. 5) and impinge against the left hand end of platen **76** (viewing FIG. 5). Such impingement of the pressurized fluid against the end of platen **76** overcomes the inertia of the platen and printing element **80** attached thereto and such platen and printing element are moved in the same direction as bowl **89** and are accelerated to a speed such that, when the type of the indicia of printing type layer **80***c* of printing element **80** contacts the bottom of bowl **89**, such element is moving at substantially the same speed as that of the bowl and the indicia or desired distinctive mark is imprinted on the bowl bottom without smearing of the mark or indicia. During such imprinting, sponge rubber layer **80***b* is somewhat compressed but imparts sufficient pressing pressure to layer **80***c* to obtain a satisfactory imprint on the bottom of the bowl. The acceleration of printing platen **76** and element **80** can be adjusted to some extent by manual adjustment or regulation of fluid flow control valve **97**.

Following the imprinting of the indicia or mark on the bottom of bowl **89**, cam follower **23** (FIG. 2) is moved toward its initial or starting position by and in cam groove **30***a* in cam **30** and the apparatus including slide member **60**, platen carrier **22**, platen support member **70**, platen **76** and printing element **80** are correspondingly moved towards their initial or starting positions. Towards the end of the return movement of slide member **60**, communication or connection between channel or groove **65** in such slide member and passage **62** in support member **56** is interrupted, and communication or connection between passage **63** in the slide member and passage **61** in member **56** is reestablished. The pressurized fluid then again flows through passage **73** in platen support **70** to impinge against the right hand end of platen **76** and return it to its initial or starting position within hole **71** in support **70** in preparation for imprinting the indicia or mark on the bottom of the next succeeding bowl of a sequence of such bowls passing or being transported past the imprinting station, the passage of such next succeeding bowl, and each successive bowl thereafter, each causing an electric triggering impulse to be supplied to solenoid **46** of machine **10** to initiate an imprinting operation of the machine, that is, an imprinting actuation of platen carrier **22** and the associated parts between a first initial position and a second imprinting position of such apparatus. In other words light source **82** (FIGS. 1 and 7) beaming the light beam indicated by the broken line arrow designated **83** to photosensitive device **84** provide means, which are responsive to the passage of each bowl such as **89** as they are respectively transported through the imprinting station, for supplying an electric triggering impulse to machine **10** or, specifically, to solenoid **46** of such machine and thus initiate

an imprinting operation of the machine. When cam follower **23** reaches the lowermost part of cam groove **30***a* in cam **30** (viewing FIG. **3**) during the rotation of such cam, the stop or step **33***d* on the release cam **33***c* of clutch **33** again contacts the end of trip lever **37**, and further rotation of driven hub **33***b* of clutch **33** and, thereby, of axle **26** and cam **30** is interrupted. The imprinting apparatus or machine is then in its initial position in preparation for another imprinting actuation thereof.

It should be pointed out that the original machine such as **10** also includes a means or apparatus for the inking of the type of the indicia of a printing type layer such as **80***c* of a printing element such as **80.** However, since such inking means do not, per se, form part of the present invention, they are omitted from the drawings and description for purposes of simplification thereof.

It is also pointed out that if or when the appatus disclosed is used for imprinting indicia or distinctive marks on the bottoms of articles such as relatively flat dishes transported by a conveyor belt such as **90,** machine **10** would be positioned closer to the upper surface of the conveyor belt and the light source such as **82** and the photosensitive device such as **84** would be correspondingly located at positions closer to the upper surface of the conveyor belt so that the light beam such as **83** would be beamed across such upper surface sufficiently close thereto to be interrupted by the passage of each of the relatively flat dishes then transported by the conveyor. Furthermore, the apparatus or machine embodying the invention can be disposed, relative to a conveyor, in positions or attitudes other than above or over the conveyor as shown and described herein. For example, the apparatus or machine can be located alongside a path of travel of a conveyor sequentially transporting a series of packages along such path at a continuous and relatively rapid rate, and the apparatus or machine can be positioned, rather than in an upright attitude as shown in the drawings herein, in a reclining attitude, that is, lying on one of its sides for imprinting on one of the sides of each package being so transported past the apparatus or machine. The machine or apparatus of the invention could also be disposed in an inverted attitude or position to imprint on the bottom of each of a series of articles depending from a rapidly and continuously moving overhead conveyor and being sequentially transported, by such conveyor, past the location of the machine or apparatus.

It is also desired to point out that, if found desirable or expedient to do so for better control of the apparatus of the invention, gear motor M could be a variable speed motor and a variable electric resistance unit, such as a potentiometer, could be used in the energizing circuit for the gear motor to provide for adjustment or regulation of the speed of the operation of the imprinting apparatus of the invention, along with valve **97** providing for adjustment or regulation of the acceleration and speed of movement of printing platen **76** within hole **71** in platen support **70.**

Although there is herein shown and described in detail only one form of apparatus embodying the invention and providing for adapting a known machine to the purposes mentioned, it will be understood that various changes and modifications may be made in the apparatus of the invention within the purview of the appended claims without departing from the spirit and scope thereof.

What is claimed is:

1. In a stamping machine for imprinting a distinctive mark on each of a series of articles sequentially delivered to and briefly dwelling at a selected location, such machine including a platen carrier actuated between a first initial position and a second imprinting position in response to each of a series of electric triggering impulses supplied to the machine, apparatus for modifying said machine to imprint a distinctive mark on each of a series of similar articles sequentially transported by a rapidly and continuously moving conveyor in a selected direction through a path of travel including an imprinting station in such path, such apparatus comprising, in combination;

I. a printing platen support member having a generally planar surface and embodying a longitudinal and relatively wide hole which opens through said surface;

II. a generally rectangular printing platen including a generally planar surface and of a substantially smaller length than the length of said hole in said platen support member;

III. means for supporting said printing platen within said hole in said platen support member for longitudinal sliding movement of such platen between first and second ends of such hole and with said planar surface of the platen paralleling said planar surface of the platen support member;

IV. a printing element having a first surface secured to said planar surface of said printing platen and a second opposite surface including thereon a printing type of a mark to be printed, such second surface extending beyond said planar surface of said platen support member;

V. means for supporting said machine at said imprinting station and adjacent said conveyor with said planar surface of said printing platen and said printing type of said printing element facing said path of travel of said articles and with the direction of said sliding movement of said printing platen within said hole in said platen support member being in alignment with said path of travel;

VI. means, responsive to the passage of each of said articles as they are respectively transported through said imprinting station, for supplying an electric triggering impulse to said machine;

VII. means, operating when said platen carrier is in its said initial position, for impinging pressurized fluid against a first end of said printing platen to move such platen in a first direction within said hole in said platen support member, such first direction of movement being opposite to said selected direction of transport of said articles by said conveyor; and

VII. means, operating during actuation of said platen carrier between its said initial position and its said second imprinting position, for impinging pressurized fluid against a second end of said printing platen to move such platen in a second direction within said hole in said platen support member, such second direction of movement corresponding to said selected direction of transport of said articles by said conveyor.

2. The apparatus in accordance with claim **1** and in which each of said series of articles is a piece of dinnerware which is transported in an inverted position by

said conveyor and said machine is mounted above such conveyor with said printing type facing downwardly.

3. The apparatus in accordance with claim **2** and in which said conveyor is a belt.

4. The apparatus in accordance with claim **3** and in which said means for supplying an electric triggering impulse comprises a photosensitive device positioned to normally receive a beam of light from a light source, such beam being momentarily interrupted by the passage of each of said articles.

5. The apparatus in accordance with claim **2** and in which said means for supplying an electric triggering impulse comprises a photosensitive device positioned to normally receive a beam of light from a light source, such beam being momentarily interrupted by the passage of each of said articles.

6. The apparatus in accordance with claim **1** and in which said conveyor is a belt.

7. The apparatus in accordance with claim **6** and in which said means for supplying an electric triggering impulse comprises a photosensitive device positioned to normally receive a beam of light from a light source, such beam being momentarily interrupted by the passage of each of said articles.

8. The apparatus in accordance with claim **1** and in which said means for supplying an electric triggering impulse comprises a photosensitive device positioned to normally receive a beam of light from a light source, such beam being momentarily interrupted by the passage of each of said articles.

9. In a stamping machine adapted for imprinting indicia on each of a series of articles sequentially delivered to and briefly dwelling at a selected location, such apparatus comprising;

A. a housing and apparatus support structure,

B. a platen carrier having a first end disposed within said housing and a second end extending out of the housing, such carrier movable between an initial position and a second imprinting position, and

C. drive means in said housing and including a motor coupled with said carrier for periodic reciprocative movement of such carrier between said positions in response to an electric triggering impulse supplied to said drive means;

D. apparatus for modifying said machine to imprint indicia on each of a series of similar articles sequentially transported by a rapidly and continuously moving conveyor through a path of travel including an imprinting station in such path, such apparatus comprising, in combination;

I. a generally rectangular rail support member secured in one wall of said housing and embodying a pair of first and second fluid passages extending through such support member and having first ends spaced apart a distance substantially equal to twice the distance of said movement of said platen carrier between said initial and second imprinting positions. Such first ends opening through a smooth planar surface of said rail support member within the interior of said housing;

II. a pair of spaced-apart and parallel rail members secured to said planar surface;

III. a slide member secured to said platen carrier for movement therewith, such slide member snugly and slidably supported between said rail members and having a smooth planar surface slidably contacting said smooth planar surface of said rail support member with a substantially hermetic relationship between such surfaces, such slide member also embodying a pair of first and second spaced-apart fluid passages extending through such slide member and having first ends opening through said smooth planar surface of the slide member and spaced-apart a distance substantially equal to the distance of said movement of said platen carrier between said initial and said imprinting positions, said first ends of said first passages in said support member and said slide member being located to face each other when said platen carrier is in its said initial position, and said first ends of said second passages in the support member and the slide member being located to face each other when such platen carrier is in its said second position, and at least one of said members embodying a channel for providing fluid communication between said first ends of said second passages during movement of said platen carrier between a position near to said initial position of the carrier and said second position thereof;

IV. a generally flat printing platen support member having a pair of first and second opposite and generally planar surfaces, such support member carried by said platen carrier with said second end of such carrier contacting said first planar surface of said platen support member normal thereto, such platen support member embodying a longitudinal and relatively wide hole which opens through at least the second of said opposite surfaces of the member and a pair of first and second fluid passages extending through the member and having first ends opening through the walls defining the limits of the first and second ends, respectively, of said hole at substantially the centers of such ends;

V. a generally rectangular printing platen of a substantially smaller length than the length of said hole in said platen support member;

VI. means for supporting said printing platen in said hole in said platen support member for sliding movement of such platen between said first and second ends of such hole and with substantially the centers of the first and second ends of the platen in generally alignment with said centers of the first and second ends of the hole, respectively;

VII. a printing element having a first surface including thereon a printing type of indicia to be printed and a second opposite surface secured to the surface of said printing platen which is opposite said first opposite surface of said platen support member, said printing type extending beyond said second opposite surface of such support member;

VIII. a first pair of first and second fluid conduits having first ends connected with the second ends of said first and second passages, respectively, embodied in said rail support member and second ends connected with a source of pressurized fluid;

IX. a second pair of flexible first and second fluid conduits having first ends connected with the second ends of said first and second passages, respectively, embodied in said slide member and second ends connected with the second ends of said first and second passages, respectively embodied in said printing platen support member;

X. means for mounting said housing at said imprinting station with said first end of said printing platen facing in the direction of transport of said articles by said conveyor and said indicia on said printing element facing said path of travel of said articles normal to such path; and

XI. means, responsive to the passage of each of said articles as they are respectively transported through said imprinting station, for supplying an electric triggering impulse to said drive means.

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