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(64) **Reciprocable imprinting apparatus.**

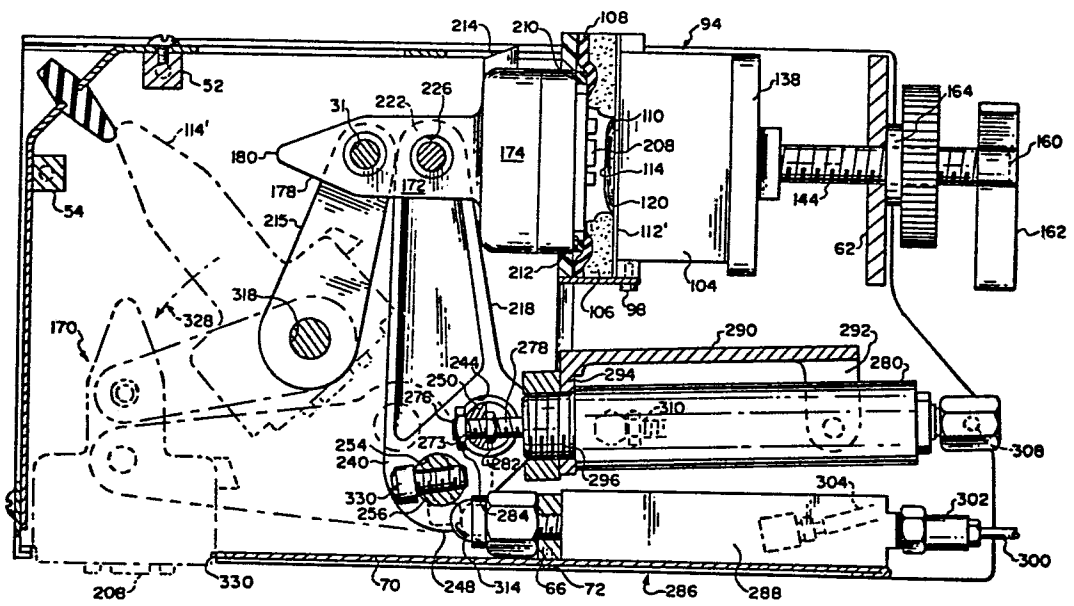
(57) An article marking apparatus of the reciprocable impact type wherein an imprinting head is driven from a rest condition in sealed engagement with an inking cartridge through a ninety degree rotation to impact upon the surface of a passing article whereby to imprint indicia information thereon by means of printing type carried by said imprinting head. The imprinting head is pivotally coupled to a pneumatic drive device by a linkage. A guide is provided to define the path taken by the head. In one embodiment, the coupling includes a folding linkage and the guide includes a resilient bumper intercepted by a portion of the head in its travel along the path.

A modified embodiment provides a guide in the form of a cam slot and follower arrangement. A cushioning member is provided to receive the impact of the imprinting head against the ink cartridge. A dished sealing plate also can be provided, along with a resilient gasket adhered to the imprinting head, whereby to achieve a seal between cartridge and imprinting head during the rest condition and to control the impact of the imprinting head upon the article during imprinting.

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FIG. 3



RECIPROCABLE IMPRINTING APPARATUS

This invention relates generally to article
imprinting apparatus for imprinting information upon
packages, cartons and the like as they travel successively
spaced along the reach of a conveyor. More particularly,
5 there is provided an improved impact type reciprocating
imprinting apparatus which is more durable and versatile
and less costly to fabricate, assemble and maintain than
prior devices, which enables the employment of pre-inked
ink cartridges and markedly increases the useful life
10 thereof by having means for effecting sealing off of
the cartridges during all but the actual imprinting
stroke of the apparatus.

In particular, the apparatus provided by the
invention includes an imprinting head carrying a biased
15 releasably mounted type holder on which type font can be
secured. An effective seal is established between the
imprinting head and a disposable inking cartridge to
prevent evaporative loss from the cartridge, except
during the momentary translation of the head along a
20 path leading to an angularly displaced imprinting location
whereat the imprinting is performed. Drive and guide (idler)
linkage means are provided to direct the imprinting head
along said path in an imprinting stroke and a return
stroke to resume the sealed engagement.

25 Known devices capable of imprinting information
upon surfaces of packages, cartons and the like conveyed
spaced along a given path along the reach of the conveyor
generally are of complex construction with accompanying
expense of manufacture, fabrication, assembly and maintenance.

Two major types of devices are employed in imprinting indicia on packages and the like. One type of device includes a rotary imprinting wheel on which the type font can be mounted for repeated inking by rotary ink transfer means to which ink is supplied from a source thereof, the imprinting wheel intercepting the article to be imprinted. The second major type of imprinting apparatus involves stamping or impacting inked type face means repeatedly upon successively arriving articles.

10 type face means is supplied with ink by impacting the type face means upon an ink saturated pad or the like, usually supplied by some storage means such as cartridge or the like, which include an ink impervious body having a window through which access to the ink impregnated
15 pad is enabled.

 The invention herein is concerned with the repeatable impact type imprinting apparatus involves substantial frequency of required maintenance, and particularly the short life of the inking means employed.
20 Frequent and time-consuming ink cartridge replacement is the rule. One reason for such short cartridge useful life may be attributed to the unusually fast drying character of the ink employed. These highly volatile inks evaporate rapidly, usually depleting the ink pad after
25 only a short time or leaving an inking surface which quickly becomes hard and dry, preventing the normal capillarity effect to resupply the surface of the pad. This phenomenon is encountered where the ink supply takes the form of an ink-saturated absorbent pad disposed



within a disposable cartridge having access window means to accommodate the printing head. Often, the skin formed by solvent evaporation is hard whereby ink is unevenly applied to the type font, or at least, is insufficient to effect uniform marking of the package, etc.

During the course of the operation of the imprinting apparatus, the imprinting head is disposed substantially longer at the rest condition, engaged against the inking pad surface. The translation of the imprinting head to the imprinting location and application of the imprint occupies minimal time and requires little exposure of the inking pad. Nevertheless, substantial reduction of the effectiveness of the inking means results since evaporation, etc. occurs while the type holder (carried by the imprinting head) is engaged with the inking pad of the ink storing cartridge.

Seals have been attempted with mixed results. Some attempts have interfered with the inking of the type font while others have been ineffective, failing to establish an effective seal.

It should be noted that the ink-saturated pad is generally resilient because of its saturated condition and the character of the ink absorbent material used to form the pad. The area of engagement of the imprinting head as well as the surface of the head engaging the pad is sometimes so resilient as to fail to establish an effective seal. The type holder seated on the imprinting head and effectively constituting same also is not well suited to make a proper seal with the

ink-saturated pad or its surrounding border defining lining member, where provided. Accordingly, rapid evaporation of the fast drying ink still materially reduces the useful life of available cartridges requiring
5 removal of the exhausted cartridge and replacement with a fresh cartridge. Often such premature disabling of the ink supply cartridges occurs many times during a normal (average) imprinting run regardless of the number of articles imprinted.

10 Another problem encountered with the employment of imprinting apparatus of the type described hereinabove involves the formation of a hard skin formed on the pad as a result of evaporation. The skin prevents transfer of ink from the pad, even though there is substantial
15 ink remanent within the impregnated storing pad. This results in premature removal and replacement of the cartridge long prior to depletion of the ink stored therein.

Still another difficulty encountered with a marking device such as described above involves the means
20 employed to effect the translation of the imprinting head to the imprinting position and return. It is known to employ pivotable arms and the like to mount an imprinting head for repeated movement. Ordinarily, these arms are coupled to a source of dynamic power, such as a fluid
25 operated hydraulic or pneumatic system coupled through a signalling device to a drive arm, in turn secured to an imprinting head and /or to the mounting therefor. Known drives cause the imprinting head to be translated from its rest condition to its angularly displaced position at the imprinting location, so that the imprinting

head assumes an orientation with its center line perpendicular to the surface upon which imprinting is to be effected.

5 It is difficult to maintain the head in the proper path to prevent deviation therefrom during translation to and return from the imprinting location. There has been considerable difficulty in achieving the proper orientation of said imprinting head as well as in controlling the contact pressure exerted by the imprinting head both upon the package surface and upon the ink-
10 saturated pad. Where the contact pressure at impact is too great, smearing and/or other blurring of the imprint would be encountered. Often the imprinting head would be misoriented during its imprinting contact with the package surface, resulting in partial imprints, or
15 imprints carrying too much ink, notwithstanding the fast drying nature of the inks employed. The return stroke often strongly impacts in the relatively soft, yieldable surface of the ink-saturated pad whereby to cause splashing of ink
20 fouling the apparatus, the imprinting head and carrier therefor, and often causing ink to be thrown outward, fouling the ambient surroundings.

Accordingly, it would be highly desirable to prevent the above adverse occurrences in a relatively
25 simply constructed marking apparatus, and to include therein, means to prevent evaporative loss by establishing an effective sealed engagement between the ink cartridge and the printing head during all but the actual imprinting.

Another way of reducing ink loss is to control
30 the impact or contact pressure exercised by the imprinting

head (the type face carried thereby) upon the saturated inking pad. Often one had to elect between a contact pressure at impact sufficient to assure proper inking and reduction of contact pressure to prevent splashing of ink.

5

Control of the quantity of ink applied to the type font during each inking step has been found to be difficult. Too much ink applied to the type will result in smearing of the imprint. Applying too little ink will result in unsatisfactory faint imprints. Additionally, the force of impact upon the surface to be imprinted should be carefully controlled to assure proper clear and sharply defined imprints. Effecting of such controls as applied to the mechanical drive means is expensive and less than satisfactory.

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The translation of the imprinting head between the pair of angularly displaced operating positions should be effected by mechanisms which are relatively simple in construction and are effective to assure proper orientation of the type carried by the imprinting head both on the ink saturated pad during the rest condition, and during the time period when momentarily displaced therefrom to effect application of the imprint. Facility in servicing the imprinting apparatus also is a desirable feature not readily available with known imprinting devices of this type. Particularly, removability of both the inking cartridge and the type holder for replacement, change or reorientation would be highly desirable.

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In view of the relative complexity of available imprinting apparatus of the type described, there has been a considerable and long felt need to effect reductions in the costs of fabricating, assembly and maintenance without reduction in efficiency and with achieving increased versatility of the apparatus. It also would be highly desirable to provide a marking apparatus which is versatile and capable of being mounted for operation universally in a plurality of orientations with facility and with efficiency and a minimum of maintenance downtime.

In addition, it would be highly advantageous to provide an intermittent impact reciprocable type imprinting apparatus which is capable of operation at relatively high speed without loss in effectiveness.

Another improvement desired over the known apparatus is to provide for adjustment of the imprint distance relative to article being imprinted so that the installation (mounting) of the imprinting apparatus need not be changed (raised or lowered) to compensate for small changes in height of the articles.

Accordingly, the invention provides an article imprinting apparatus including an imprinting head carrying type font for applying an imprint to the surface of an object characterized by an inking cartridge having an exposed inking surface engageable by said type font during a rest condition, a drive for translating said imprinting head in an imprinting stroke and a return stroke between the rest condition and an imprinting position angularly displaced from the inking cartridge simultaneously rotating said imprinting head through approximately 90° of rotation, link members coupled between said drive and the imprinting head for effecting said translation, and

a guide defining a path of travel for said imprinting head from a vertically oriented condition engaged with said inking surface to a horizontally oriented condition at the imprinting position and return and assuring proper orientation of said imprinting head at said rest condition and at the imprinting position respectively.

The invention further provides the apparatus characterized in that said link members comprise a drive linkage pivotally secured to the imprinting head and to a fluid pressure operated plunger, an idler link having first and second ends, said first end being pivotally secured to said imprinting head at a location adjacent the securement of said drive linkage, a stationary mounting within the apparatus for pivotally securing the second end of the idler link and secondary pivot mounting coupled to said drive linkage offset from the pivotal coupling of said drive linkage to said plunger, said drive linkage being actuatable by said plunger for effecting pivotal movement about said secondary pivot simultaneously with pivotal movement of the idler link.

Still further, the invention provides the apparatus characterized by said guide comprising a cam and follower defining a path for the imprinting head strokes which will cause said head to move at a substantially constant angular acceleration through the midpath of the strokes, the rate of rotation being maximum at the midpaths of the strokes, the rate of rotation being maximum at the midpaths of the strokes and minimum adjacent the ends of the strokes.

The preferred embodiments of this invention now will be described, by way of example, with reference to the drawings accompanying this specification in which:

FIGURE 1 is a top perspective view of the article imprinting apparatus constructed in accordance with the invention and viewed installed on a conveyor frame in proximity to articles to be imprinted;

5 FIGURE 2 is an exploded top perspective view of the article imprinting apparatus illustrated in FIGURE 1 shown disassembled from the conveyor and in the process of being loaded with an inking cartridge, portions of the apparatus being broken away to show
10 interior detail;

FIGURE 3 is an enlarged elevational view of the imprinting apparatus of FIGURE 1 with portions deleted and shown partially in section, to show interior details;

15 FIGURE 4 is a bottom perspective view of the imprinting apparatus illustrated in FIGURE 2, portions of same being deleted to show interior detail;

FIGURE 5 is a top plan view of the article imprinting apparatus of FIGURE 1, portions being broken
20 away to show interior detail;

FIGURE 6 is a sectional detail taken along lines 6-6 of FIGURE 5 viewed in the direction indicated;

FIGURE 7 is a sectional detail similar to that of FIGURE 6 but illustrating a modified embodiment of the
25 invention; and

FIGURE 8 is a perspective exploded detail representative of the imprinting head and type carrier holder according to the invention illustrating the novel mounting of the holder and the manner of disassembly, thereof.

FIGURE 9 is a top perspective view of the article imprinting apparatus constructed in accordance with the invention and viewed installed on a conveyor frame in proximity to articles to be imprinted;

FIGURE 10 is an exploded top perspective view of the article imprinting apparatus illustrated in FIGURE 9 shown disassembled from the conveyor and in the process of being loaded with an inking cartridge, portions of the apparatus being broken away to show interior detail;

FIGURE 11 is a bottom perspective view of the imprinting apparatus illustrated in FIGURE 10, portions of same being deleted to show interior detail;

FIGURE 12 is an enlarged elevational view of the imprinting apparatus of FIGURE 9 with portions deleted and shown partially in section, to show interior details.

The invention herein provides an intermittent impact type imprinting apparatus for applying imprint information upon a facing surface of packages, cartons, and the like conveyed spaced along a given path along the reach of a conveyor.

An imprinting head is positioned adjustably for intermittent translation between a rest condition sealingly engaged with the surface of an ink saturated medium in the form of a removable pre-inked ink storing cartridge and an angularly spaced imprinting position effected by a signal-controlled pressurized fluid operated drive system so that the imprinting head contacts the surface of the article to be imprinted.

The imprinting head is translated between these two positions by a drive linkage coupled to said fluid operated system and is guided by a secondary linkage functioning as an idler linkage. Both linkages are independently pivotally journalled with the imprinting head to define a folding linkage. The imprinting head includes a shuttle arm carrying shaft means to which the linkages are coupled. The shuttle has a cam-shaped free end and an enlarged head carrying the type means. The free end is adapted to engage an intercepting guide member for assuring that the folding relationship of the link members of the folded linkage is such as to cause the center line of the shuttle to assume a vertically normal orientation ninety degrees from its orientation in the rest condition with the enlarged head end facing the imprinting location.

The enlarged head includes an outwardly opening socket which includes the cavity for receiving the type holder to enable limited biased movement thereof therein. The type holder includes a base lock arrangement for
5 securely holding type elements therein. A resilient gasket may be secured, preferably by adhesive material, to the outer rim of the type holder for cooperating with sealing means surrounding the ink-saturated surface of the inking cartridge whereby to establish a sealing engagement therewith
10 during the period while the imprinting head is at rest position. Means are provided to seat the ink cartridge within the apparatus and adjustably to lock the same there-within and to exert a controlled adjustable force thereupon.

The seal between the imprinting head and the ink
15 cartridge also can be effected by providing a dished sealing plate or mask assembled with the ink cartridge in the imprinting apparatus. The sealing mask has a window formed therein which is surrounded by an inner rim. The mask is positioned with the inner rim seated closely
20 proximate the exterior facing inking surface of the ink-saturated pad of the cartridge. The type holder that is preferably, the gasket secured to the end of the type holder, engages the inner rim to establish the sealed engagement for the duration the imprinting head is at the rest
25 position(condition)so that no evaporative loss of ink occurs. Effectively, a sealed chamber is formed wherein there is a solvent rich atmosphere about the type enabling the type to remain thereat for a considerable duration without loss due to evaporation. The inking of the type
30 is improved considerably as a result.

The type holder is biased to enable the type holder to fly out inertially from the imprinting head when the latter is stopped in its translation to the rest condition by impacting upon the frame of the ink cartridge assembly, whereby to impact upon the ink saturated surface of the cartridge. Where the sealing mask is employed, the sealing gasket impacts against the inner rim of the mask. The type font elements carried by the base lock means provided on the type holder extend a fraction outward of the sealing surface so that the end surfaces of the type font are coated with sufficient ink yet overloading of the type font with ink is prevented. In addition, splashing of ink upon impact is materially reduced, if not prevented altogether.

Referring now to the drawings for details, the article imprinting apparatus constructed in accordance with the invention herein is designated generally by reference character 10 and is illustrated in FIGURE 1, mounted on the frame 12 of a conveyor 14 along which articles 16 travel in a direction indicated by the arrow 18 past said apparatus 10 to enable single imprinting of each with informational indicia.

The apparatus 10 is illustrated mounted on the horizontally oriented arm 20 of bent rod 22, with the vertically oriented arm 24 secured to the frame 12 by clamp 26. Releasable clamp 30 effects the securement of the apparatus 10 to the arm 20 in operating condition and includes a clamping bracket 32 having a pair of generally parallel spaced arms 34 and 36, each including arcuate facing portions 38 to receive the rod arm 20 therebetween.

The arms 34 and 36 are capable of being urged together
by a capped bolt 40. A captive flat wrench 42 is retained
on the capped bolt 40 by a washer 40' and snap ring 40"
secured inward of the capped bolt 40. The wrench 42
5 functions as a lever which can be utilized to release
the rod arm 20 or to clamp same at a location assuring
proper location of apparatus 10 for application of an
imprint upon the surface 43 of the article 16.

The desired height at which the apparatus 10
10 is disposed can be fixed by manipulation of the
relationship of the rod arm 22 and clamp 26. Rod arm 22
also can carry an actuating lever 44 extending into the
path of the article 16 in position to be tripped by the
passage of the leading end of the article therepast. The
15 lever 44 is a one-shot actuator as will be described
hereinafter and only initiates the imprinting operation,
a return switch being incorporated within the apparatus.

The apparatus 10 comprises a housing 46 formed
of a pair of mounting plates 48 and 50 which are arranged
20 side by side, spaced apart and connected by transverse
corner braces 52 and 54 seated in aligned apertures 56, 58
formed in said plates 48 and 50 and secured thereto by
screws 60. End wall 62 is secured in position between
plates 48 and 50 by screws 64. Transverse brace 66 is
25 secured between said plates 48 and 50 by screws 68 and
bottom plate 70 is secured to the brace 66 by screw 72
whereby to define the housing 46.

The inner surfaces 74 and 76 of plates 48 and
50 carry coextensive, aligned, matching, horizontally
30 oriented, facing grooves 78 and 80 parallel and adjacent

the upper edges 82 and 84 of said plates 48, 50 and
extending about two thirds of the total length of said
edges. Grooves 74 and 76 open to end 86 of the respective
plates 48 and 50 slidably to receive the edges of
5 cover plate 88.

A pair of matching, facing, vertically oriented
grooves 90 and 92 are formed in plate surfaces 74 and 76
opening to the upper edges 82 and 84 of said plates 48
and 50. The inking cartridge assembly 94 is received
10 within the housing 46 in chamber 96 defined between the
grooves 90 and 92 and the end wall 62 by sliding the
assembly 94 in grooves 90 and 92 until the inking cartridge
assembly 94 seats on facing stop pins 98 set into said
plate surfaces 74 and 76.

15 The inking cartridge assembly 94 comprises a
holding frame 100, a sponge-like rectangular gasket 102
and an ink storing container 104, which is pre-inked and
is commercially available. Gasket 102 preferably is formed
of a layer 106 formed of spongy material such as a closed-
20 cell foam rubber or the like, and a thin layer 108 formed
of ink impervious rubber-like sheet material adhered to
layer 106. The container 104 comprises a plastic molded,
thin-walled, somewhat resilient, box 109 having an entrance
110 and an outer rim 112 coextensive with said entrance 110
25 and surrounding same, and an inner rim 112'.

An ink-saturated pad 114 is disposed within the
interior 116 of the box 108, preferably fully occupying the
interior 116 thereof. A sheet liner 118 generally is
included across the top of the box to shield and seal off
30 the entrance 110 preventing access to the interior pad 114

until assembly thereof into the cartridge unit 94 is desired. The liner 118 usually is provided with a scored area, removal of which defines a window 120 to enable access to be gained to said ink-saturated pad surface but leaving a bordering portion between the inner rim 112' and the ink-saturated pad 114. The window 120 may be of rectangular, circular or even ovalular configuration, depending upon the perimetric configuration of the imprint to be applied to the surface 44 of article 16 or the overall size and/or configuration of the particular surface 43 say, if the surface comprises a bottle cap or the like (not shown).

The gasket 102 is engaged upon the outer rim 112 of the container 104 and together, slidably are engaged within the frame 100 in the channel 122 defined by inner rim 124 and flanges 126 of said frame, as indicated by the broken line 128. The cartridge assembly 94 now is complete and ready for installation into chamber 96.

Preferably, referring to FIGURE 6, a thin plate or mask 130 of generally rectangular dish-shaped configuration is installed along with the cartridge assembly 94 functioning as supplementary sealing means for establishing a sealed engagement between the imprinting head of the apparatus 10 and the ink saturated pad 114 of the cartridge 94.

Mask 130 carries a central recessed floor and a window 134 is formed in the recessed floor, leaving inwardly directed rim portion 132. The mask 130 is seated on the frame holder 100 with the rim portion 132 engaged on the liner portion 118 closely adjacent the ink-saturated

pad 114 and coextensively aligned with the window 120. Where the mask 130 is used, it is fitted on the cartridge assembly 94 and both are introduced simultaneously into the chamber 96 by sliding the rim portion 132 and frame 100
5 into the grooves 90 and 92.

A holding structure 136 for retaining the cartridge assembly 94 in place within the chamber 96 is provided. The holding structure 136 comprises a plate member 138 of generally rectangular configuration
10 carrying a central recess 140 and an aperture 142 formed therewithin. The plate 138 is smaller in area than the end wall 62 and is arranged parallel to the end plate 62. An elongate threaded bolt 144 is received through aperture 142. Washer 146 is placed at the free end 148 of bolt 144
15 and locked in place by lockwasher 150. A retaining nut 152 is seated on the bolt 144 at the opposite side of plate member 138.

The bolt 144 is threadably engaged through passageway 154 and a retaining washer 156, including small
20 diameter spacer ring 158, are engaged on said bolt 144. The head 160 of the bolt 144 mounts a knob 162 including collar 164. Rotation of the knob 162 will cause the plate to be moved away from the grooves 90 and 92, widening the space between the imprinting head and the plate 88 whereby
25 the inking cartridge assembly 94 can be installed. Once the said inking cartridge assembly 94 has been installed, the plate member 138 can be brought to bear against the container 104. The rotatable wheel 166 seated on threaded bolt 144 between the collar 164 and the plate member 138
30 functions to limit the extent of movement of the said

plate member 138. Plate member 138 can be moved translated
by the manipulation of the knob 162 to facilitate the
removal of a spent or exhausted cartridge assembly 94 and
in particular, the replacement of an exhausted container 104
5 with a fresh replacement container.

Attention now will be directed to the imprinting
device, designated generally by reference character 170
which is disposed within the housing 46 for movement between
a pair of angularly displaced positions, namely, a rest
10 position, whereat a sealed engagement with the ink saturated
pad of the inking cartridge assembly 94 is established and
an imprinting position along an arcuate path 90° offset
from the rest position.

The imprinting device 170 as a unit comprises
15 an elongate shuttle arm 172 having an enlarged head 174
with an outwardly opening cavity 176 formed therein. The
shuttle arm 172 is tapered at its free end 178 to terminate
in a rounded cam-like end 180. A pair or parallel
passageways 182 are formed through the enlarged head 174
20 opening to the cavity 176 (as shown in FIGURE 8, for example).

Cap bolts 184 carry compression coil springs 186
and are seated in said passageways 182 and terminate
secured in the T-bar 188 which has opposite flanges 190
unitary therewith. The dimensions of the passageways 182
25 and the bolts 184 are selected to permit free movement of the
bolts 184 in said passageways while limiting the coil
springs 186 disposition between the caps 184 and the
enlarged head 174. The T-bar 188 normally is seated
within the cavity 176 next adjacent the opening thereof.


Type holder 192 is formed of a generally rectangular hollow block 194 having a rectangular secondary cavity 196 and flanged lug formations 198 extending outward from the surface of the block 194 opposite the cavity 196. The flanged lug formations 198 are arranged to define 90° intersecting T-shaped slots 200 and 202, the intersection being at the center 204. The T-bar 188 can be accommodated in either of slots 200 or 202 whereby to secure the type holder 192 to the enlarged head 174 of the shuttle 172.

A base-lock type support member 206 is seated securely within the cavity 196 of the type holder 192 and carries mounted therein, type font elements 208, there being rows of suitable slots for receiving the base of the type elements. A resilient sealing gasket 210 is adhesively or otherwise secured tightly on the rim 212 of the type holder 192 coextensive with the cavity 196 thereof. The thickness of said gasket 210 is selected to be only slightly less than the outermost extent of the type font elements 208 when they are seated in the base lock element 206. The gasket 210 serves multiple functions, namely, to cushion the shock of impact between the imprinting head 170 and the ink-saturated pad 114 or when provided, the inner rim portion 132 of mask 130. Gasket 210 also functions to cushion the shock of impact between the imprinting head 170 and the surface 44 of the article 16 when imprinting is performed at the end of the imprinting stroke, as will be explained.

When the type font is to be changed or when the orientation of the message also is desired to be changed

for different packaging applications, provision is made according to the invention, for facilitating establishment of access to the type holder 192 and is particular for removing the type holder 192 or changing its orientation, reassembling the type holder to the imprinting head 170. The
5 springs 186 are compressed by manipulation of the caps 184' of bolts 184 toward the enlarged head 174. The caps 184' are urged against the bias of said springs 186 until the T-bar 188 is exposed outward of the cavity 176.
10 The type holder 192 can be disengaged easily from the T-bar 188 by sliding the holder 192 therefrom. Replacement of the type holder with one carrying a different type font is performed by sliding the replacement holder onto the T-bar 188. If a 90° change in orientation is desired, the
15 holder 192 is rotated and the T-bar 188 is introduced onto the other intersecting slot. The upstanding lug 214 formed on the enlarged head 174 functions to provide a purchase for the operator in grasping the cap 184' of cap screw 184 and urging the cap 184' against the bias of springs 186.
20 Manipulation of only one of the caps 184' is required to provide clearance sufficient to permit release of the type holder 192.

Attention now is directed to the drive linkage and the guide link cooperating effectively to translate
25 the imprinting head 170 between the angularly spaced positions discussed above. The drive linkage comprises a pair of link members 216 and 218 each having outwardly extending arms 220 and 222 respectively. Socket arms 220 and 222 carry through passageways 224 and 226. The shuttle



arm 114 is provided with first and second passageways 228 and 230 in which bushings 232 and 234 are fitted. A shaft 236 is journalled in the bushing 232. Socket arms 220 and 222 are seated on the ends of shaft 236.

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5 Links 216,218 also are provided with enlarged end portions 238,240 carrying first through passageways 242 and 244 respectively located spaced inwardly of the ends 246,248 with the axes of this latter passageway being parallel to passageways 224 and 226. Shaft 250 is mounted through said passageways 242 and 244 with the enlarged portions 238,240 in oppositely facing relationship.

10 The enlarged end portions 238,240 also are provided with second through passageways 252,254 positioned parallel to first passageways 242,244 and disposed between said first passageways and ends 246,248.

15 Shaft 256 is accommodated through bushings 258,260 seated in said second passageways with the opposite ends 262,264 thereof seated in bearings 266,268 carried by the housing plates 48,50. The shaft 256 is maintained in fixed relationship within passageways 252,254, in bushings 258,260 of enlarged end portions 238,240 by set screws 269. Lock washers 272 are employed to fix the spacing between portions 238,240 and center the linkage assembly and imprinting head 170 between plates 48,50.

20 Shaft 250 is provided with a median flat portion 270 carrying transverse passage 273 through which the free end 276 of plunger 278 of cylinder 280 is passed and secured by nuts 282 and 284.

25 There is a little "play" or looseness provided in the accommodation of said shafts through the respective bushings seated in the respective passageways as related



so as to reduce the likelihood of binding during the operation of the apparatus 10.

The drive mechanism for the apparatus 10 is designated generally by reference character 286 and includes a fluid pressure operated cylinder 280 and the plunger 278 movable between fully withdrawn and fully extended conditions within said cylinder 280, a four-way valve 288 coupled between the cylinder 280 and the source of pressurized fluid (not shown). The cylinder 280 is mounted fixedly to a rockable plate 290 provided with depending ears 292 and a depending flange 294. The threaded end 196 of the cylinder 280 is secured to the depending flange 294 of said plate 290.

The four way valve 288 is seated interior of the housing 46 adjacent the bottom plate 70 and is secured to the transverse bottom brace 66. The valve body 298 of valve 288 is arranged generally parallel, and below, the cylinder 280. Valve 288 is coupled to a source of fluid pressure (not shown) by tubing 300 secured to fitting 302. The tubing 304 couples the cylinder 280 to the port 306 of the valve 288 by securement to the fitting 308 of said cylinder 280. The fitting 310 is coupled to another port 312 of valve 288. Ball switch 314 is disposed at the end of the valve body 298 opposite the fitting 302.

In FIGURE 3, the ball switch 314 is illustrated in the condition assumed thereby when the imprinting head 170 has returned to its rest condition. As the

plunger 278 is driven out of the cylinder 286, the drive link
 216,218 is caused to pivot about the axis of shaft 250
 through a part of the imprinting stroke until the imprinting
 head 174 is in the condition represented by the broken
 line representation 114'.

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The guide link 215,217 carries apertures 316 and 318
 adjacent opposite ends thereof, the link being journalled
 on shaft 320 seated in passage defined by bushing 234 in
 passageway 230, with the shaft ends 322 and 324 seated in
 aperture 316 and bearings 326 seated in apertures 318,
 in turn mounted to the plates 48,50.

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Referring to FIGURES 1 and 3, the actuating
 lever 44 disposed in the path of the article 16 is
 tripped by the leading end of said article 16. The
 interception of the article 16 by the actuating lever 44
 operates the valve 288 to cause fluid pressure to be
 introduced into the cylinder 280 driving the plunger 278
 outward of the cylinder 280. As the plunger 278 is forced
 outward of the cylinder 280, the shuttle arm 172 is
 pivoted about shaft 236 directing the shuttle arm 172
 along a path represented by an arc 328. As the shuttle
 arm 172 is forced further toward the corner braces 48
 and 50, the arm 172 is forced by guide links 315,317 to
 assume an angular disposition, bringing end 180 upward
 until the axes of shafts 256,236,250 and 320 are in a
 straight line coincident with the center line of the
 shuttle 172.

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At this time, the end 180 of arm 172 is intercepted
 by the resilient bumper 219 to force said end 180 upward
 and cause the guide links 215,217 to force the end
 180 of said shuttle 172 to pivot upward about shaft 320, bringing
 enlarged head 174 of printing head 170 directed downward

30



toward, and until, said head 174 assumes a disposition where the center line of the shuttle arm 172 is normal to the window 330 formed in the bottom plate 70. The window 330 has dimensions slightly less than that of the type holder 192 so that the imprinting head 174 will be directed, during imprinting, toward the window 330 and will impact upon said plate 70 surrounding said window 330. The type holder 192 flies out slightly after impact against the surrounding plate and hence the type engages the surface to be imprinted. The type holder 192 is propelled out of the enlarged end a small distance as an inertial response to sudden cessation of movement. The inked type 208 carried by the type holder 192 is caused therefore, to kiss the surface 43 of the article 16 to be imprinted whereby not to damage same. The resilient gasket 210 absorbs the shock of engagement with the surface 44 and also functions to enable the orientation of type holder 192 to be self-adjusted so as to compensate for minor surface irregularities of surface 44 as well as to compensate for minor height differences so long as the surface 44 to be imprinted is disposed spaced from the imprinting head within the range of extension of said type font 208 carried by the type holder 192.

As the shaft 256 rotates, the bolt head 332 carried thereby, is rotated sufficiently to signal the end of the one-shot imprinting cycle by impinging upon the ball switch 314 when the imprinter head 170 has delivered the imprint. Striking of the ball switch 314 by the bolt head 332 initiates a return movement of the plunger 278 and hence initiates the return stroke to bring the imprinting



head 170, and particularly the type holder 192, back to its sealed relationship with cartridge assembly 94.

5 The clamp 30 is assembled to the apparatus 10 by securement to a circular disc 334 seated on one of the mounting plates 48,50 of housing 46 depending on the side of the conveyor the apparatus is desired to be stationed. The disc 334 is held to the plates 48 or 50 by symmetrically positioned screws 336 carrying slotted washers 338 so that there is a three point coupling. The loosening of said
10 screws 338 enable the apparatus 10 to be rotated to any angular orientation desired, whereupon the screws 33 are tightened. The disc 334 may be removed from the plate 48 and reassembled on the opposite plate 50 if desired.

15 As viewed in FIGURE 1 it is evident that the imprinting apparatus is adjustable for height and overhang, can be installed on either side of the conveyor within appreciable downtime, and can be rotated through any angular disposition relative to the conveyor. The apparatus
20 is versatile, more durable than prior imprinting devices of the intermittent impact type, enables longer useful life for the inking cartridges in view of the improved sealing effect obtained and, as well, includes an improved means for controlling the normal stroke of the imprinting head 170
25 with added selective hyper-extension to gain access to the type holder 192 for removal and/or replacement thereof, as well as to change its orientation without the use of tools.

In lieu of the resilient bumper illustrated and described herein, a corner brace alone can be substituted to intercept the shuttle to force the same to move in the desired path for reaching the desired orientation at the imprinting position. Further, a spring finger mounted at the brace or upon the end of the shuttle can suffice to guide the movement of the imprinting head and prevent folding of the linkages causing misalignment of the imprinting head or other interference with the desired shuttle path during the imprinting and/or return strokes. The actuating lever 44 may be replaced by electronically operated sensing means, for example, such as a proximity detector, a photocell, etc, which is activated by the presence of an article at or coming to the imprinting location.

The path taken by the imprinting head of apparatus 10 is controlled by a pair of linkages secured to the imprinting head, including the direct driven link pair and the follower or idler linkage pair. The imprinting head at its rest or loading condition is oriented at a ninety degree angle relative horizontal. The head is driven through a path toward an offset printing location angularly rotating through 90° in the course of its simultaneous movement to its imprinting location. The idler link provided by the referenced structure follows a path whereby the angular rate of rotation decreases until the mid point of the path is reached and then increases until the terminus of its printing stroke is reached. The type holder is spring biased so that it is inertially driven outward of the head on the sudden cessation of

movement of the imprinting head at the imprinting **0050980**
terminus of said path,

Occasionally, the movement of the imprinting
head through the imprinting stroke angularly is misdirected
so that the orientation of the type holder may be
misoriented at the impact location. The head also may
be held up at the mid-point of travel, misoriented,
inverted, or simply stuck thereat as the rate of travel
and the angular rotation, i.e., the slip -- is at its least.

A resilient bumper is suggested in the referenced application
to aid in guiding the rotating imprinting head in
following the proper path.

Attention now will be directed to a modified
embodiment of the invention illustrated in Figures 9 to 12 and
designated generally by reference character 10'. The same
reference characters are used in Figures 9 to 13 to denote
common structural elements,

The imprinting head 150' includes a type holder
designated generally at 170' is formed of a generally
rectangular hollow block 172' having a rectangular secondary
cavity 174',

A base-lock type segments 176' are seated within
the cavity 174' of the type holder 170' and carries mounted
therein, type font elements 178'. A resilient sealing
gasket 180' is adhesively or otherwise secured tightly on
the rim 182' of the type holder 170' coextensive with the
cavity 174' thereof. The thickness of said gasket 180'
is selected to be only slightly less than the outermost
extent of the type font elements 178' when they are seated.


The gasket 180' serves multiple functions, namely, to
cushion the shock of impact between the imprinting head 170'

and the liner 108' bordering the ink-saturated pad 114',
Gasket 180' also functions to cushion the shock of impact
between the imprinting head 170' and the surface 43 of
the article 16 when imprinting is performed at the end of
5 the imprinting stroke and limits the impact of the type
font per se, resulting in a clear imprint.

When the type font is to be changed or when the
orientation of the message also is desired to be changed
for different packaging applications, provision is made
10 for facilitating access to the type holder 170', and is
particular for removing the type holder 170' or changing
its orientation, reassembling the type holder 170' to
the imprinting head 150'. The springs 166' are compressed
by manipulation of the caps of bolts 164' toward the
15 enlarged head 162'. The caps are urged against the bias
of said springs 166' until the holder 170' is forced
outward of the cavity 174' sufficiently to be disengaged
from the imprinting head.

Attention now is directed to the drive linkage and
20 the cam and follower means of apparatus 10' cooperating
effectively to translate the imprinting head 150' between
the angularly spaced positions with constant angular
acceleration to a maximum at midpath and deceleration, also
constant to a terminal condition at the end of the imprinting
25 stroke, the inertial extension thereafter effecting the
printing impression. The drive linkage comprises a pair
of link members 190' and 192', each having shallow arms 194',
Arms 194' carry through passageways 196', Links 190', 192' are
journalled on shaft 198' mounted in passageway 196' and
30 through a bore taken through imprinting head 150',

The head 150' has a pair of extensions 200' and
passageways 202' are formed therein. Shaft 204' is



journalled in said passageway, 202' and roller bearings
(bushings) 206' are seated securely at the opposite
ends of the shaft 204'. A cam slot 210' is formed in
each plate 48 and 50.

5 The cam slots 210' are identical, coextensive
and aligned along their length when the plates 48,50
are assembled to form the side parts of the housing 46.
The cam roller bushings 206' are seated within the cam
slots 210'. The cam slots 210' are formed so that they
10 guide the bushings 206' during the imprinting and return
strokes, and hence the imprinting head 150' through a
rotation of 90° with minimum possible contact on the cam
face and with the load divided equally across its entire
face.

15 The width of the slots 210' increases slightly
at the corners 212', that is approximate the midpath of
travel, over a generally constant width over the remaining
portions to avoid possible binding due to manufacturing
variations in the dimensions of the pertinent elements.

20 The path of the cam slot is developed so as
to effect a constant angular acceleration of the imprinting
head during the imprinting stroke from the load condition
to the midpath, engaged with the cartridge and a constant
deceleration from the midpath to the terminus of the
25 imprinting stroke. At the load condition, the imprinting
head is arranged with the face of the type holder in a
vertically oriented plane. At the terminus of the
imprinting stroke, the type face is in a horizontally
oriented condition.

30 The minimization of the rate of rotation of
the imprinting head near the ends of the stroke



effectively prevents shaking and/or misalignment at the ends of the stroke.

In the course of its travel, the imprinting head is rotated 90° , the angle defined between the center line of link 190' and the center line of the imprinting head, that is the pivot axis of said head, is between 90° and 180° . From 0 to 9° , the change of the latter angle is 1° for each degree of rotation of the link, the angular rotation is constant and the initial acceleration, zero.

From 9° to and through 45° , motion of the device is to obtain a gentle constant angular acceleration of the head with least (minimization of) thrust on the cam surface. The link moves through 45° rotation to the midpath (midpoint of the cam slot) while the angular rotation of the head is directed through 90° relative to the link.

The same path for deceleration is followed through the remaining 36° of movement of the link to the final 9° of the travel during which the imprinting head again assumes a parallelogrammic motion. The parallelogrammic motion insures that the plane of the type face will be parallel to the impact surfaces during its final approach thereto.

In the apparatus 10 imprinting head 150 is urged through its path during the imprinting stroke so that its least angular rate of rotation occurs at midpath to avoid undesired fold-over at the midpath. With apparatus 10, the possibility of fold over is eliminated, the least rate of rotation occurring at the end of the strokes (imprinting and return).

The path defined by the cam slot 210' is extended at its theoretical ends to provide for an additional angular

movement of the link 5° at the opposite ends of the imprinting stroke and return stroke to insure that the cam roller will not strike the ends of the path.

This also enables adjustment of the length of the stroke $\pm 3/32$ nds as will be explained hereinafter. The angular rotational acceleration of the imprinting head increases to a peak at the midpoint and then deceleration occurs through the remaining 36° until the 81° to 90° generally straight section is reached.

Links 190', 192' have enlarged end portions 214' through which there are pivot assemblies 216' and 218' with the axes of assembly 216' being generally parallel to passageways 194'. Shaft 220' is mounted in pivot assembly 216'.

The second pivot assembly 218' is positioned parallel to first pivot assembly 216'. Pivot assemblies 216', 218' include bearings carried by the housing plates 48, 50. The shaft 216' is maintained in fixed relationship relative the pivot assemblies. Means are provided to fix the spacing between enlarged end portions 214' and to center the linkage assembly and imprinting head 150' between said plates 48, 50.

Shaft 250' is coupled pivotally to plunger 222' of cylinder 224' and is secured by nut 226'.

There is a little "play" or looseness provided in the accommodation of said shafts through the respective bushings seated in the respective passageways as related so as to reduce the likelihood of binding during operation.

The drive mechanism for the apparatus 10' is designated generally by reference character 230' and includes a fluid pressure operated cylinder 232' and the plunger 222' movable between fully withdrawn and fully extended conditions

within said cylinder 232', a four-way valve 234' coupled between the cylinder 232' and the source of pressurized fluid (not shown). The cylinder 232' is mounted fixedly to a rockable plate 236' provided with ears 238' and a depending flange 240'. The threaded end 242' of the cylinder 232' is secured to the depending flange 240' of said plate 236'.

The four way valve 234; is seated interior of the housing 46 adjacent the bottom plate 71 and is secured to the transverse bottom brace 66. The valve body 244' of valve 234' is arranged generally parallel and below, the cylinder 232'. Valve 234' is coupled to a source of fluid pressure (not shown) by tubing 246' secured to fitting 248". The tubing 250' couples the cylinder 232' to one port 252' of the valve 234' by securement to the fitting 254' of said cylinder 232'. The fitting 254' is coupled to another portion of valve 234'. Ball switch 256' is disposed at an end of the valve 234' opposite the fitting 248'.

In FIGURE 12, the ball switch 256' is illustrated in the condition assumed when the imprinting head 150' is at the terminus of its imprinting stroke. As the plunger 222' is driven out of the cylinder 232', the drive links 216', 218' (in broken line) is caused to pivot about the axis of shaft 250' through a part of the imprinting stroke until the imprinting head 150' is in the condition represented by the full representation.

Referring to FIGURES 9 and 11, the actuating level 44 disposed in the path of the article 16 is tripped by the leading end of said article 16. The interception of the article 16 by the actuating lever 44 operates the valve 232' to cause fluid pressure to be introduced into the cylinder

2 32' driving the plunger 222' outward of the cylinder 2 32'.
As the plunger 222' is forced outward of the cylinder 2 32',
the imprinting head 150' is pivoted about shaft 198'
directing the head 150' along a path represented by an
5 arc. As the bearings 206' carried by the shaft 204'
are driven further along the cam slot 210' toward the
midpath point of the imprinting stroke, the imprinting
head reaches its maximum angular speed of rotation and
whips around the corner 212' directing the orientation of
10 type holder 170' to approach a horizontal plane parallel to
the surface of the package to be imprinted. After passing
the midpath of the imprinting stroke guided by the cam
slot 210', the head 150' decelerates angularly until
stopped at the end of the said stroke. The type holder 170'
15 is extended inertially to imprint the package surface.

The window 255' in bottom plate D has dimensions
slightly larger than that of the type holder 170' so that
the imprinting head will be directed, during imprinting,
through the window 255' and will impact upon said surface
20 43. The parallelogrammic motion of the type holder 170'
in the last portion of the imprinting stroke enables the
inked type 178' carried by the type holder 170' effectively
to kiss the surface 43 of the article 16 whereby not to
damage same or to mis-hit same orientationally. The
25 resilient gasket 180' on the type holder 170' absorbs the
shock of engagement with the surface 43 and also functions
to further enable the orientation of the type holder 170' to
be self-adjusted so as to compensate for minor surface
irregularities as well as to compensate for very minor
30 height differences so long as the surface to be imprinted
is disposed spaced from the imprinting head within the range
of extension of said type font 178' carried by the type holder

The window 255' in bottom plate 70 has dimensions slightly larger than that of the type holder 170' so that the imprinting head will be directed, during imprinting, through the window 255' and will impact upon said surface 43. The parallelogrammic motion of the type holder 170' in the last portion of the imprinting stroke enables the inked type 178' carried by the type holder 170' effectively to kiss the surface 43 of the article 16 whereby not to damage same or to mishit same orientationally. The resilient gasket 180' on the type holder 170' absorbs the shock of engagement with the surface 43 and also functions to further enable the orientation of the type holder 170' to be self-adjusted so as to compensate for minor surface irregularities as well as to compensate for very minor height differences so long as the surface to be imprinted is disposed spaced from the imprinting head within the range of extension of said type font 178' carried by the type holder 170', inertially or when extended adjustably as will be explained later.


As the shaft 256' rotates, the bolt 257' carried thereby rotates sufficiently to signal the end of the one-shot imprinting cycle by impinging upon the ball switch 259' when the imprinting head 150' has delivered the imprinting via type holder 170' and type font 178'. Striking of the ball switch 259' initiates a return movement of the plunger 222' and hence initiates the return stroke to bring the imprinting head 150', and particularly, the type holder 170', back to its sealed relationship with the cartridge assembly 94. The exposure of the pad 114' is minimal.

As viewed in FIGURE 9 it is evident that the imprinting apparatus 10' a-so can be installed at a predetermined location relative to the conveyor and is adjustable for

height and overhang, can be installed on either side of the conveyor within appreciable downtime, and can be rotated through any angular disposition relative to the conveyor.

5 The invention herein provides for a vernier type adjustment of the imprinting location by varying the terminal location of the imprinting stroke. This is accomplished pivotally by mounting the rocker plate 236' on an excentric axis 258'. The vertically offset point of
10 the said excentric mounting axis is variable to vary the terminus location a predetermined linear distance, here + 3/32nds of an inch. The adjustability compensates for variance in the normally encountered height once the imprinting apparatus has been mounted set up without
15 disassembly. The variance of height of a series of packages being processed require compensation which can be adjusted manually by the operator without requiring such adjustment to be made in the mounting per se.

 A plate 260' carries the excentrically centered
20 shaft which constitutes said axis 258'. Plate 260' carries pin 262' which is secured to adjustment knob 264'. Through arcuate slot 268' the pin 262' is guided for movement in arcuate slot 266' formed in plate 48 along an angular path. (See arrow FIG. 11). Movement of the pin 262' in slot 266'
25 causes the plate 236' to be shifted horizontally thus the extent of the imprinting and return stroke terminal with the said linear horizontal movement of said plate 236'.
The apparatus is versatile, more durable than prior imprinting devices of the intermittent impact type, enables
30 longer useful life for the inking cartridges in view of the improved sealing effect obtained. Selective hyper-extension



of the type-holder can be provided for gaining access to the type holder 170' for removal and/or replacement thereof, as well as to change its orientation without the use of tools.

5 The invention is not limited to the use only of fluid operated systems such as described above. Electrically operated devices such as solenoids can be employed to drive the plunger or the linkages to move the imprinting head between its rest and imprinting positions. No means
10 to intercept the imprinting head during either imprinting or return stroke need be provided. The desired path defined by the cam slot is sufficient to enable the desired orientation of the type holder to be reached at the imprinting location and at the terminus of the return
15 stroke.

 No precautions need be taken to prevent mis-
folding of any linkages causing misalignment of the
imprinting head or other interference with the desired path
of said head during the imprinting and/or return strokes.
20 The actuating lever 44 may be replaced by electronically operated sensing means, for example, such as proximity detector, a photocell, etc. which is activated by the presence of an article at or coming to the imprinting location.

25 It should be pointed out that although not shown in Figure 2, reference is to be made to Figure 4 wherein there is illustrated the thin plate or mask 270' of generally rectangular dish-shaped configuration installed along with the cartridge assembly 94 functioning
30 as supplementary sealing means for establishing a sealed engagement between the imprinting head and the ink saturated pad 114 of the cartridge 94.

1. An article imprinting apparatus including an imprinting head carrying type font for applying an imprint to the surface of an object characterized by an inking cartridge having an exposed inking surface engageable by said type font during a rest condition, a drive for translating said imprinting head in an imprinting stroke and a return stroke between the rest condition and an imprinting position angularly displaced from the inking cartridge simultaneously rotating said imprinting head through approximately 90° of rotation, link members coupled between said drive and the imprinting head for effecting said translation, and a guide defining a path of travel for said imprinting head from a vertically oriented condition engaged with said inking surface to a horizontally oriented condition at the imprinting position and return and assuring proper orientation of said imprinting head at said rest condition and at the imprinting position respectively.

2. The apparatus according to claim 1 characterized in that said link members comprise a drive linkage pivotally secured to the imprinting head and to a fluid pressure operated plunger, an idler link having first and second ends, said first end being pivotally secured to said imprinting head at a location adjacent the securement of said drive linkage, a stationary mounting within the apparatus for pivotally securing the second end of the idler link and secondary pivot mounting coupled to said drive linkage offset from the pivotal coupling of said drive linkage to said plunger, said drive linkage being actuatable by said plunger for effecting pivotal movement about said secondary pivot

3. The apparatus according to claim 1

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characterized by said guide comprising a cam and follower
defining a path for the imprinting head strokes which
will cause said head to move at a substantially constant
5 angular acceleration through the midpath of the strokes,
the rate of rotation being maximum at the midpaths of
the strokes, the rate of rotation being maximum at the
midpaths of the strokes and minimum adjacent the ends
of the strokes.

4. The apparatus according to claims 1, 2 or 3
characterized in that said imprinting head includes a type
holder and said type font secured therein, and having a
resilient perimetric sealing gasket, the thickness of said
gasket being selected so that the outermost extent of the
of the sealing gasket equals or is fractionally greater
than the outermost extent of said type font.

5. The apparatus according to claims 1, 2 or 3
characterized in that said imprinting head includes a type
holder and said type font secured therein, and having a resilient
perimetric sealing gasket, the thickness of said gasket being selected
so that the outermost extent of the gasket is the same or slightly less
than the outermost extent of said type font, said gasket arranged to
engage said inking cartridge whereby to establish a sealed engagement
therewith preventing evaporation of the ink therefrom during the rest
condition of the imprinting head.

6. The apparatus according to claims 4 or ~~5~~ 50980

characterized in that there is a resilient mounting for mounting said type holder, said mounting permitting limited inertial extension of said type holder outward of said imprinting head upon abrupt cessation of motion of said imprinting head.

7. The apparatus according to claims 4 or 5

characterized in that a resilient mounting within the imprinting head for mounting said type holder thereto.

8. The apparatus according to claims 6 or 7

characterized in that said mounting is capable of being manually extended outward of said imprinting head enabling said type holder to be freed of said imprinting head for enabling removal and replacement of said type holder.

9. The apparatus according to one of claims 6, 7 or 8

characterized by a slot defined in said type holder, said slot being of size and configuration to accommodate said mounting in slidable engagement therewith.

10. The apparatus according to any one of claims 1 to 9 characterized in that said apparatus includes a disposable inking cartridge mounted at a location for receiving the imprinting head in the sealed engagement therewith, said frame including a cushion gasket seated against the inking cartridge within the frame surrounding the inking surface to expose a portion of said inking surface.

11. The apparatus according to any one of claims 1 to 9 characterized in that there is a sealing mask engaged over the exposed inking surface of the inking cartridge within the apparatus, said mask including an inner rim adapted to be engaged by said type holder to establish and maintain said sealed engagement of the imprinting head in rest condition.

12. The apparatus according to claim 11 characterized in that said sealing mask is formed as a relatively rigid dished member including inner and outer rims, the said dished member having a window defined by said inner rim and being engaged over the inking cartridge to seat said inner rim closely adjacent the inking surface.


13. The apparatus according to any one of claims 1 to 12 characterized by means stopping translation of the imprinting head just prior to reaching the imprinting position and a resilient mounting associated with the imprinting head and coupled to the type holder to permit limited inertial extension of the type holder from the imprinting head.

14. The apparatus according to claim 1 or 2 characterized in that the imprinting head comprises a shuttle arm having an enlarged head, an outwardly opening cavity formed in said head, a resiliently biased coupling seated in said cavity, a type holder removably seated on said coupling and disposed within said cavity, the type font being secured within the type holder and a perimetric sealing gasket on the type holder, the sealing gasket being selected of a thickness whereby to enable no more than a fractional extension of the type font free from the type holder, said coupling being selectively extendible outward of the said cavity to enable removal and replacement of said type holder.

15. The apparatus according to claim 14 characterized in that said type holder is inertially extensible from the cavity upon abrupt cessation of motion of the imprinting head.

16. The apparatus according to claims 1 or 2 characterized by a blocking member disposed in the path of the imprinting head for preventing undesired folding of said link members during translation of said imprinting head whereby to prevent misdirection of said imprinting head.

17. The apparatus according to claim 15 characterized in that said blocking member comprises a resilient bumper within said apparatus in the intercepting relation with a portion of said imprinting head, said portion located opposite the location of the type holder.



18. The apparatus according to claim 15
characterized in that said blocking member comprises a brace **0050980**
arranged fixedly to intercept a portion of the imprinting
head, said portion being spaced from the type holder.

19. The apparatus according to any one of
claims 1 to 18 characterized by a trip carried by one of
said link members and a switch coupled to said drive and
arranged for actuation by said trip to effect the return
5 of the imprinting head to the rest condition thereof
subsequent to application of the imprint to a surface.

20. The apparatus according to claim 8
characterized in that said mounting comprises a T-shaped
bar member mounted resiliently within said cavity and said
type holder includes a pair of undercut intersecting slots,
5 each having a configuration capable of accommodating
said T-shaped bar member.

21. The apparatus according to claim 3
characterized in that said cam and follower comprise a
slot defining a path for effecting constant angular
acceleration of said imprinting head, and a shaft carried
5 by said imprinting head and a bushing mounted fixedly on
said shaft and seated within said slot, the imprinting head
reaching maximum rate of angular rotation approximately
midway through the imprinting and return strokes thereafter
to decelerate at a constant rate to a terminus whereat the
travel path of said imprinting head defines a parallelogram.

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22. The apparatus according to any one of claims 1 to 21 characterized in that said drive comprises a driven plunger, a drive link pivotally coupled to said imprinting head and to said plunger for selectively moving said imprinting head in said imprinting and return strokes.

23. The apparatus according to any one of claims 1 to 22 characterized in that a mounting for the drive mounted on an axis which is selectively shiftable linearly to change the terminus of the imprinting stroke.

24. The apparatus according to claim 23 characterized in that the mounting is a rockable plate, said plunger being mounted to said plate, the axis is an excentric axis, said rockable plate is mounted to pivot on the excentric axis.

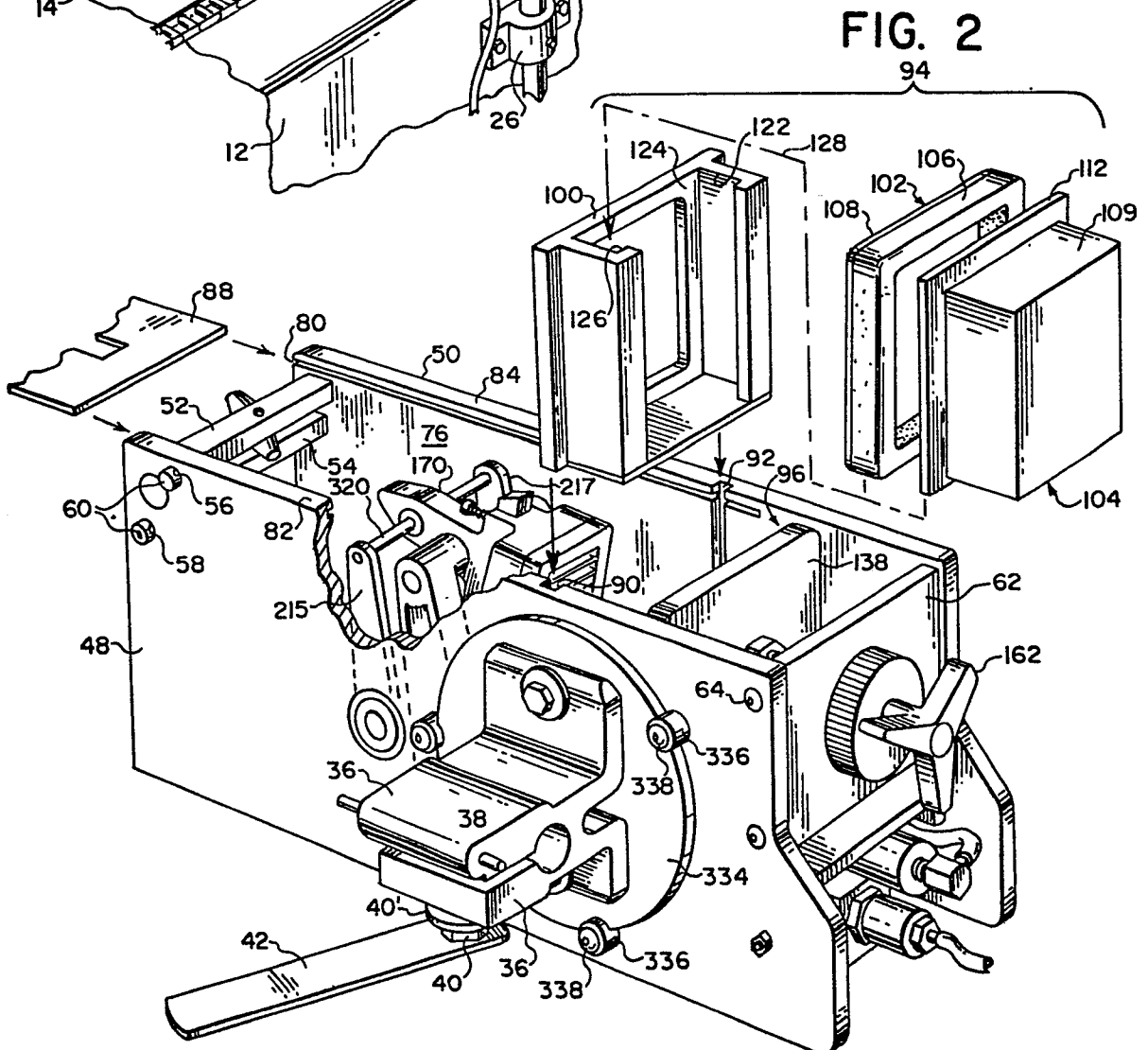
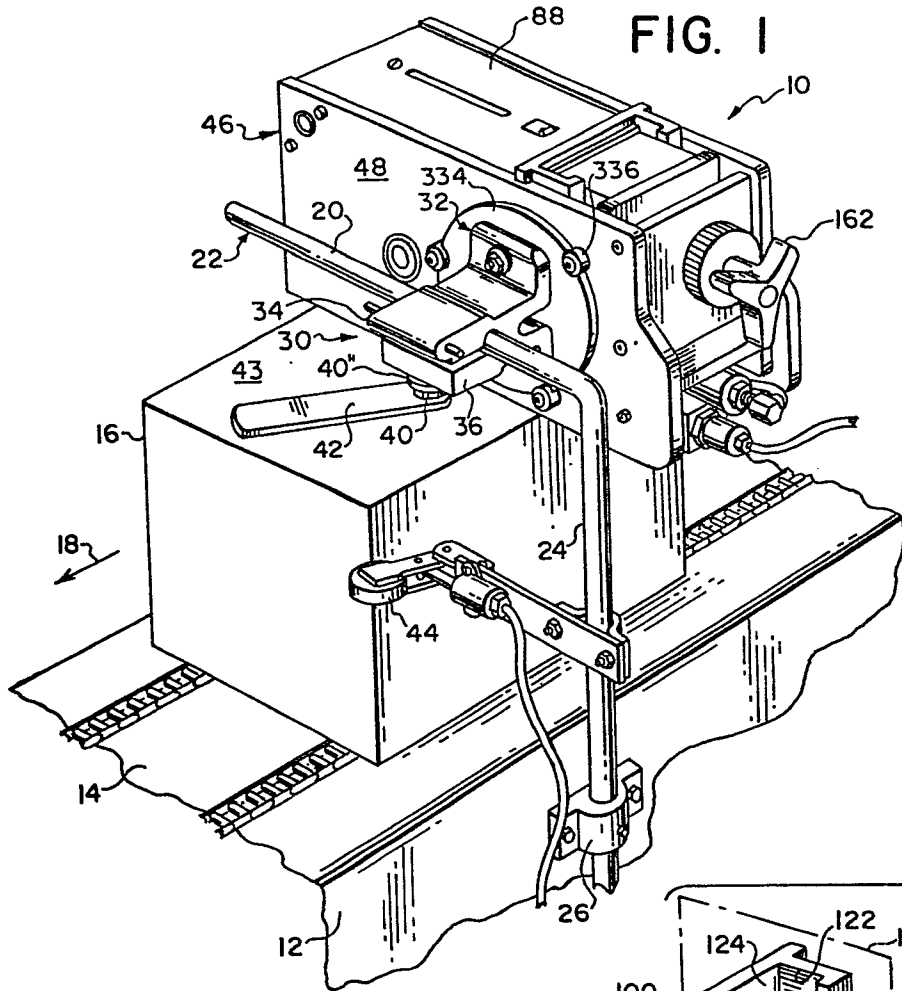
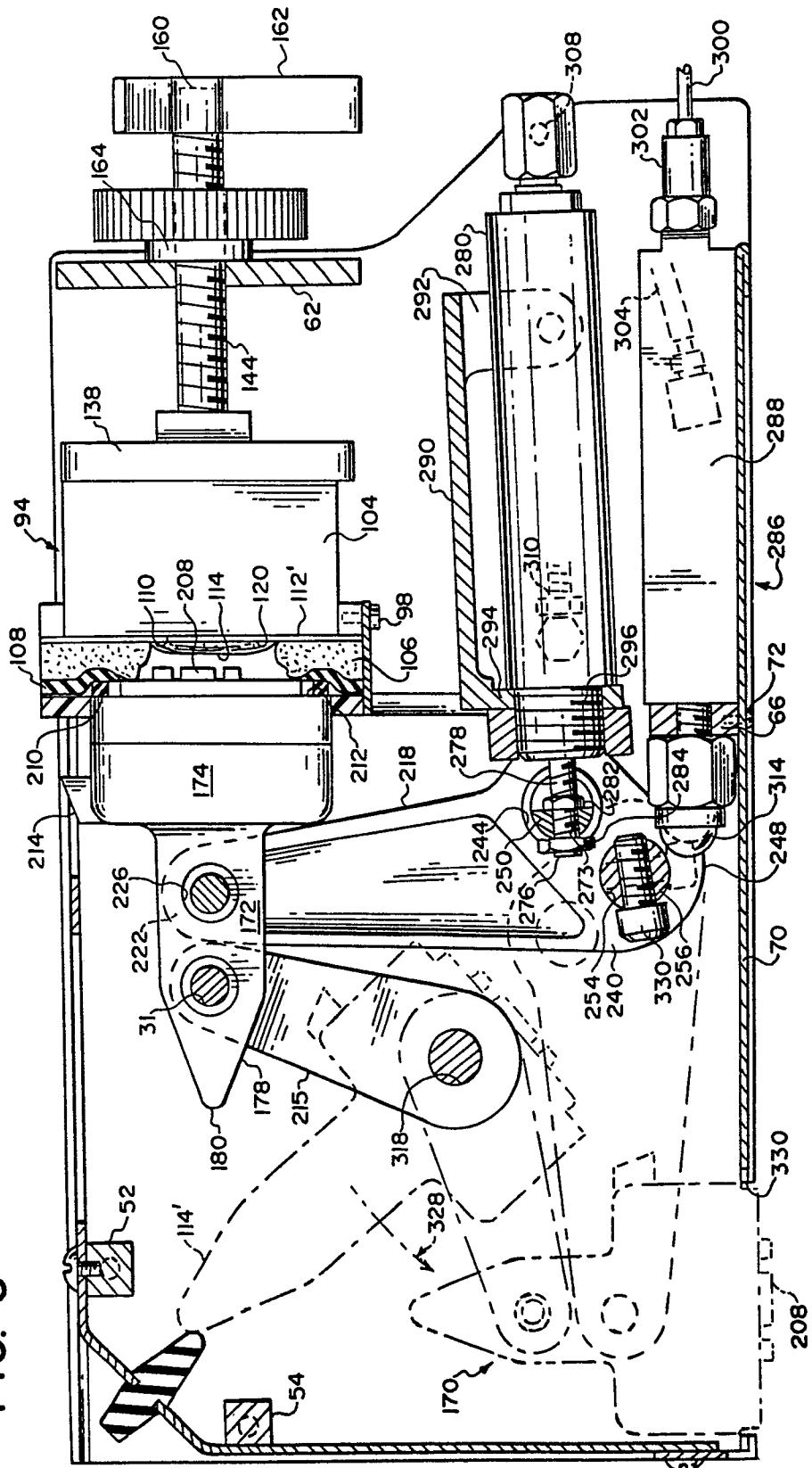


FIG. 3



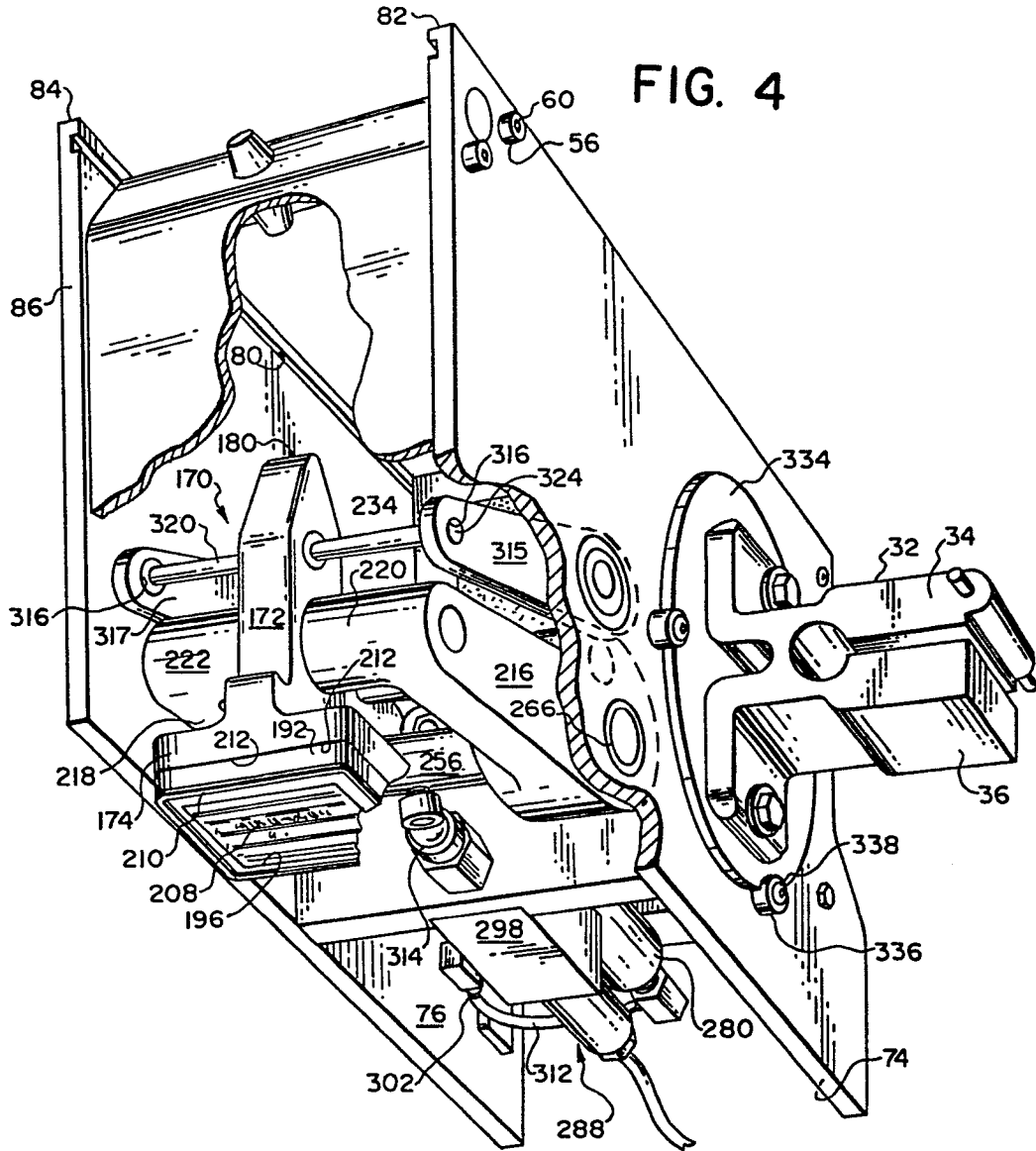


FIG. 5

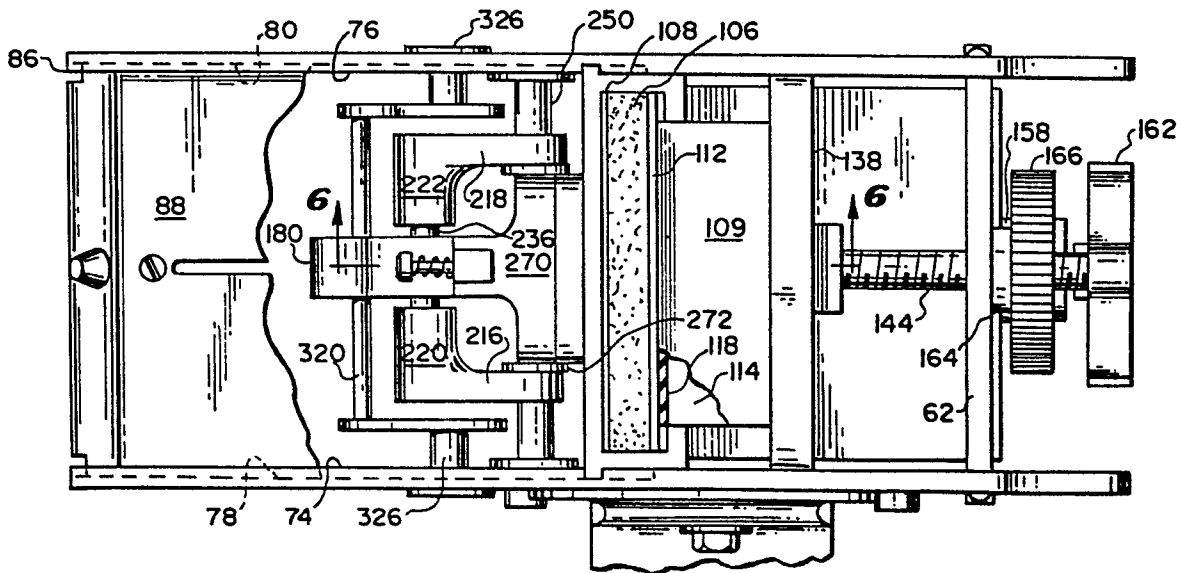


FIG. 9

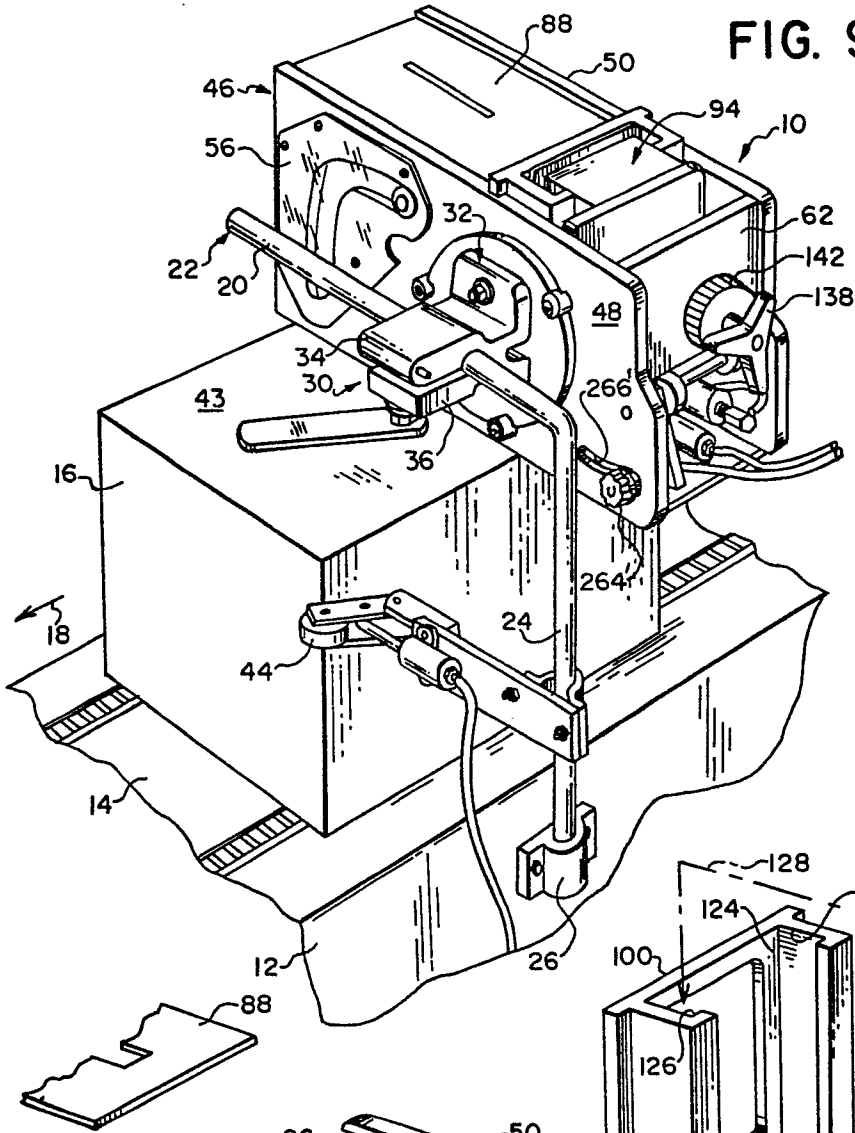


FIG. 10

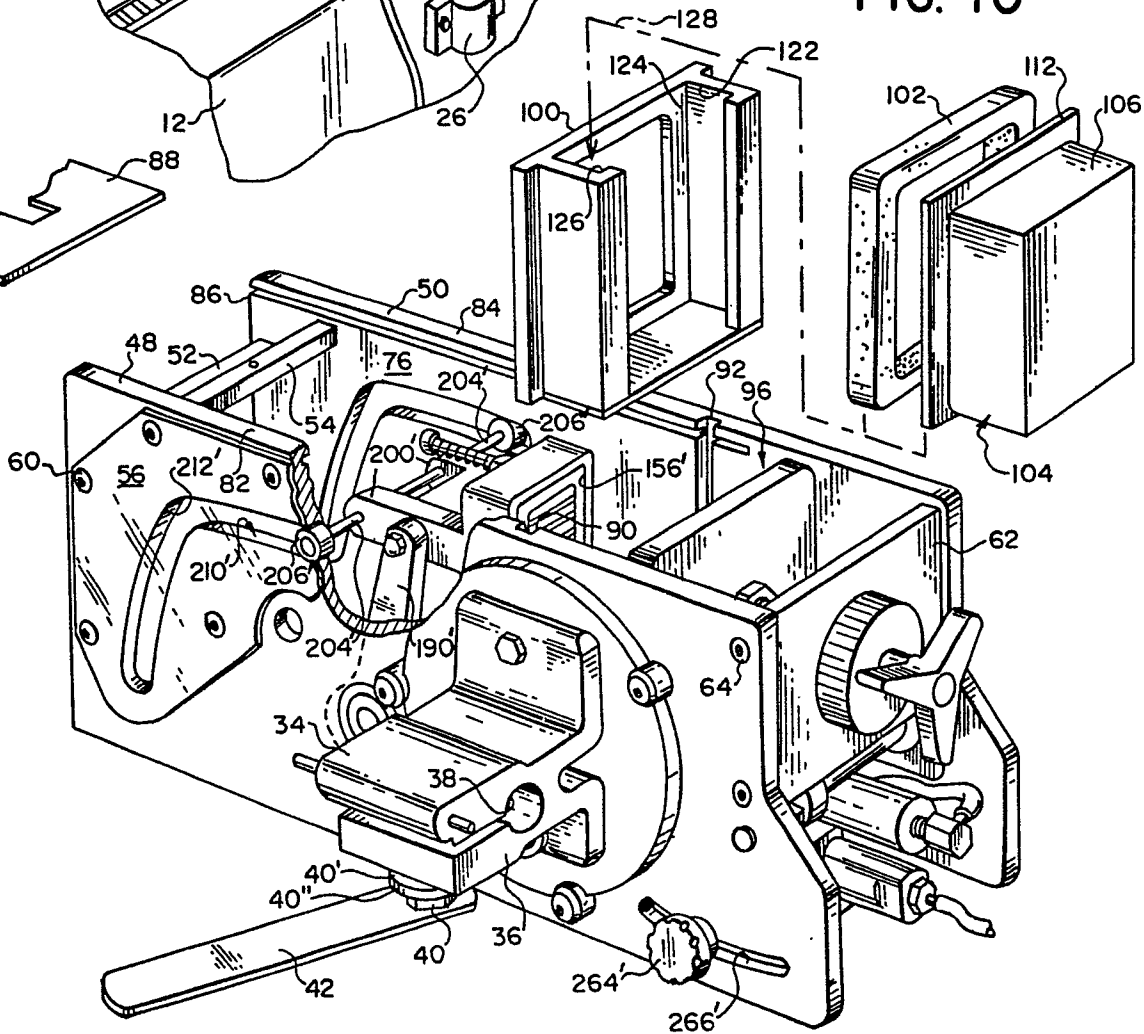


FIG. II

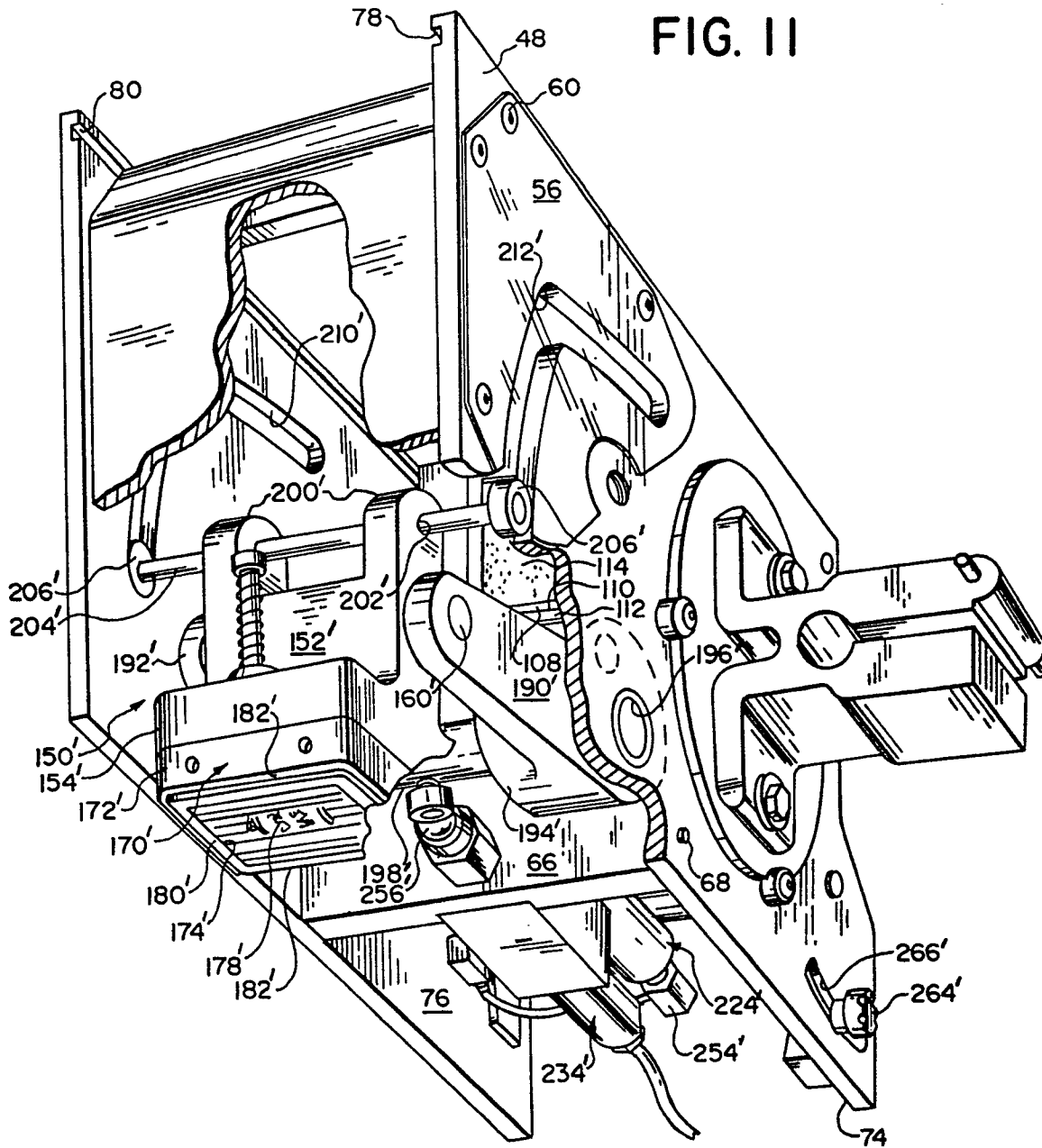
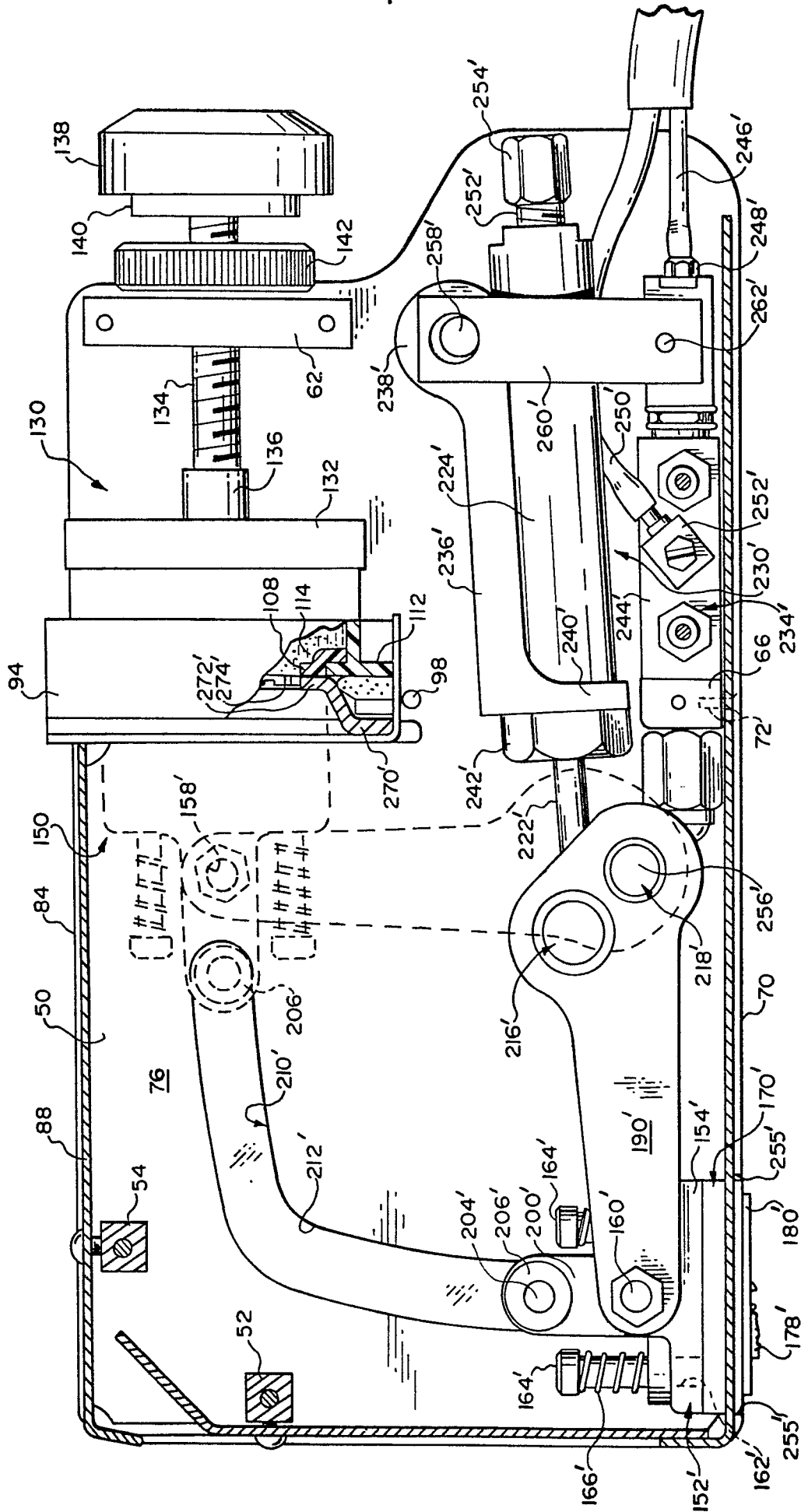


FIG. 12





European Patent
Office

EUROPEAN SEARCH REPORT

0050980

Application number

EP 81305034.1

DOCUMENTS CONSIDERED TO BE RELEVANT		CLASSIFICATION OF THE APPLICATION (Int. Cl.3)	
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	<p>DE - B2 - 2 302 004 (BELL-MARK) * Column 2, line 68 - column 3, line 62; column 4, lines 38-54 * & US - A - 3 804 016 --</p> <p>GB - A - 1 493 638 (KORTHOFAH) * Totality * --</p> <p>US - A - 3 877 367 (NORWOOD) * Column 4, line 62 - column 5, line 23 * ----</p>	<p>1,3,10, 11,12</p> <p>1,3,6- 9,14, 17,22, 23</p> <p>19</p>	<p>B 41 F 17/24// B 41 J 3/28 B 65 B 61/26</p> <p>TECHNICAL FIELDS SEARCHED (Int. Cl.3)</p> <p>B 41 F 17/00 B 41 F 31/00 B 41 J 3/00 B 41 K 1/00 B 41 K 3/00 B 65 B 61/00</p> <p>CATEGORY OF CITED DOCUMENTS</p> <p>X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons</p> <p>&: member of the same patent family. corresponding document</p>
X	The present search report has been drawn up for all claims		
Place of search	VIENNA	Date of completion of the search	21-01-1982
		Examiner	KIENAST