

Feb. 25, 1941.

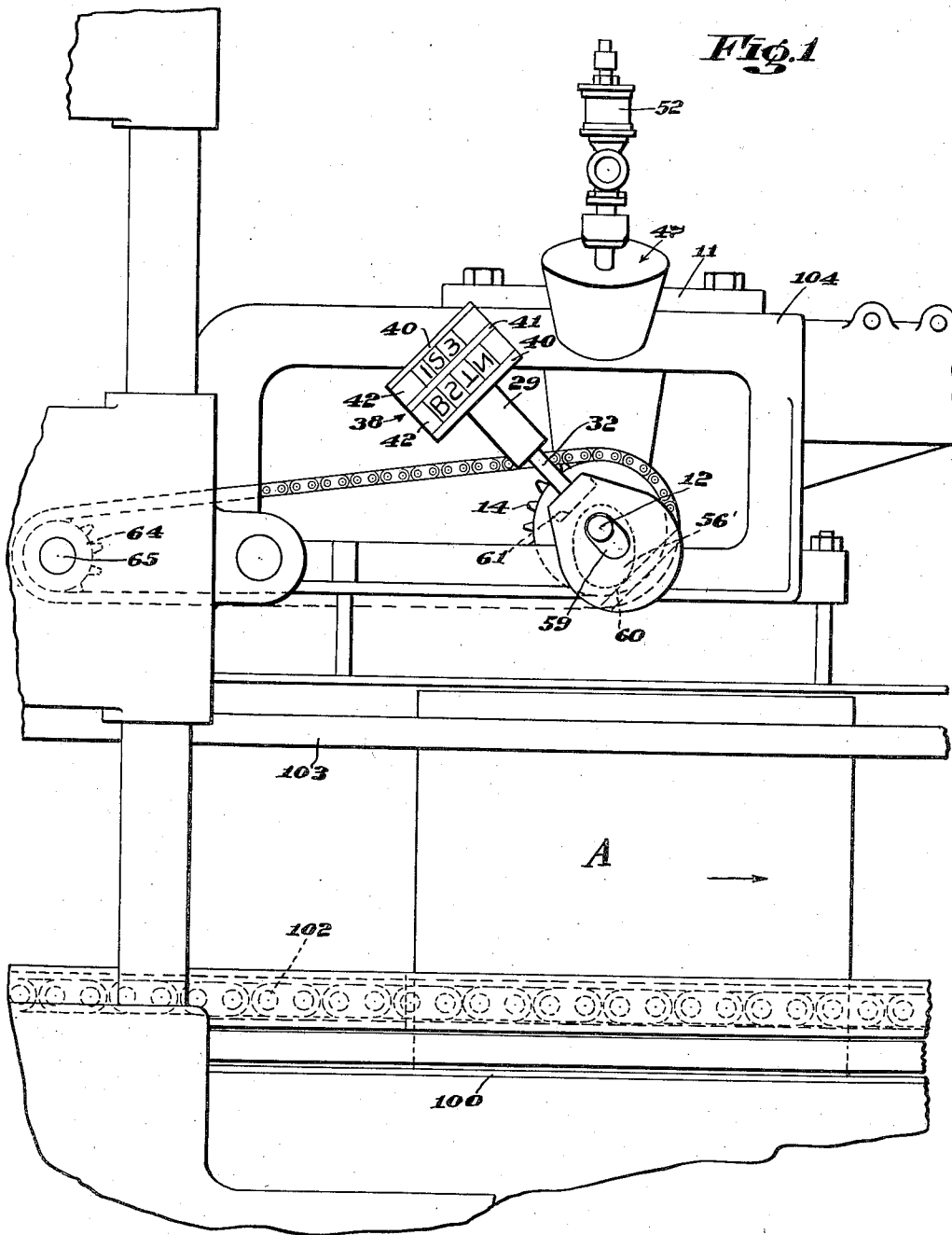
K. SERAI

2,233,360

STAMPING MACHINE

Filed Sept. 19, 1939

3 Sheets-Sheet 1



INVENTOR
KILCHI SERAI
BY *Edgar H. Kent*
ATTORNEY

Feb. 25, 1941.

K. SERAI

2,233,360

STAMPING MACHINE

Filed Sept. 19, 1939

3 Sheets-Sheet 2

Fig. 2

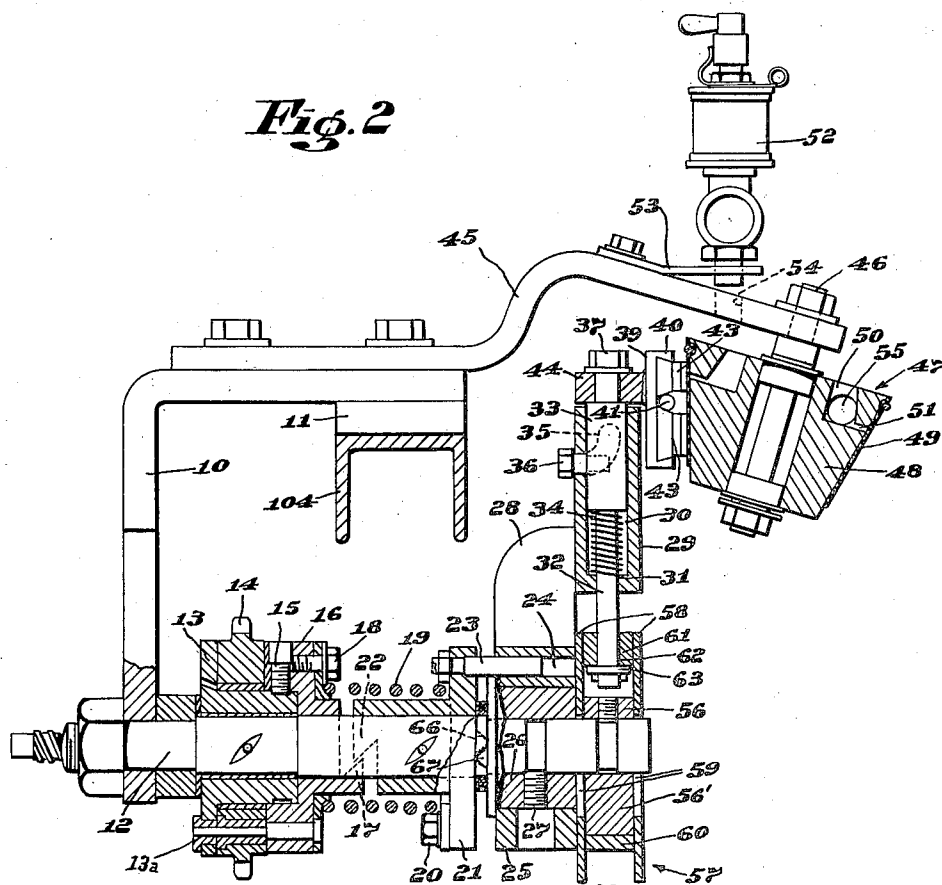
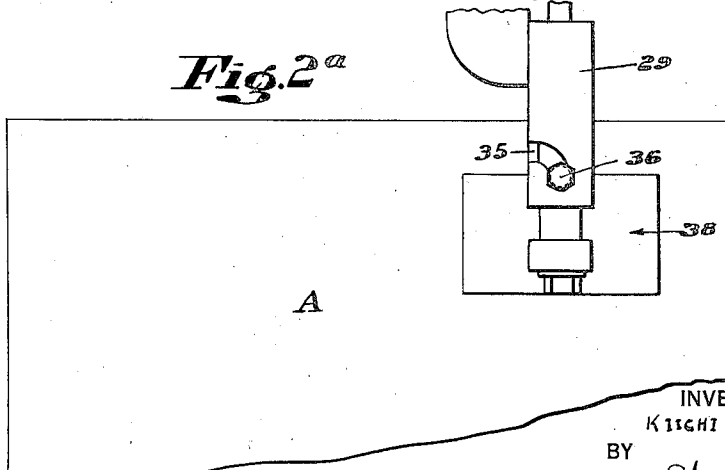


Fig. 2^a



INVENTOR
KIRIHI SERAI
BY
Edgar H. Kent
ATTORNEY

Feb. 25, 1941.

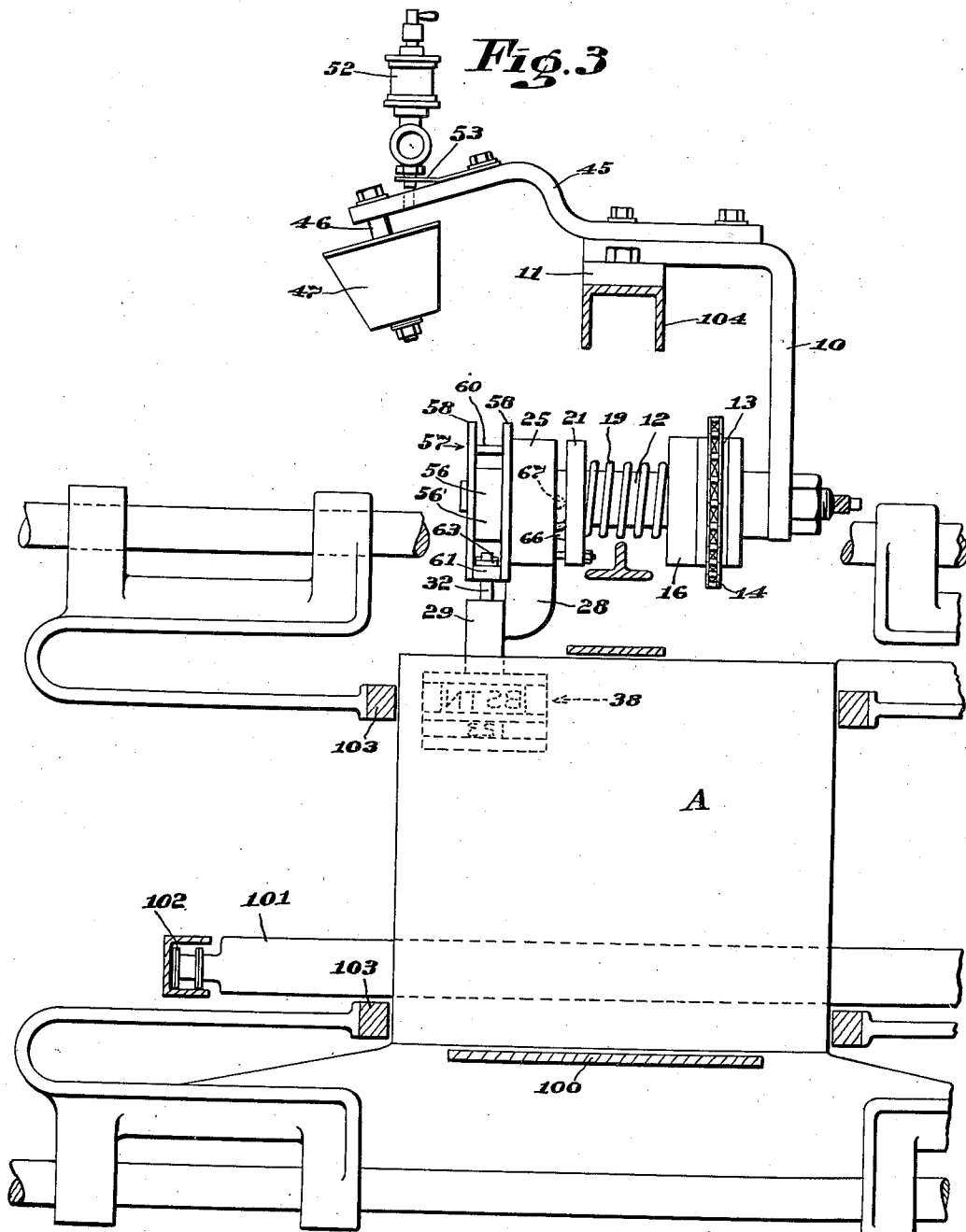
K. SERAI

2,233,360

STAMPING MACHINE

Filed Sept. 19, 1939

3 Sheets-Sheet 3



INVENTOR
KICHI SERAI
BY
Edgar H. Kent
ATTORNEY

UNITED STATES PATENT OFFICE

2,233,360

STAMPING MACHINE

Kiichi Serai, Honolulu, Territory of Hawaii, assignor to Hawaiian Pineapple Company, Limited, Honolulu, Hawaii, a corporation of Hawaii

Application September 19, 1939, Serial No. 295,593

8 Claims. (Cl. 101—35)

The present invention relates to stampers for stamping or printing upon articles as they are advancing along a conveyor system. The stamper of the invention may be advantageously employed for printing upon packing cases or cartons and is illustrated herein as so utilized, it being understood that the invention is not limited to use of the stamper for this particular purpose and that it may be beneficially employed for printing other articles.

Before a packing case is shipped, it must ordinarily be marked with information such as the lot number, destination, etc., these identification markings being usually placed upon an end or a side of the case, or both, after it has been delivered from the conveyor system of the packing or sealing machines. It is an object of the invention to provide means whereby such information may be automatically stamped upon a face of a packing case as it is travelling on a conveyor system such as that normally employed in connection with the packing and sealing of cases, thereby effecting savings both in time and expense of case packing as compared with conventional hand marking. A further object of the invention is to provide such means of relatively inexpensive construction which may be readily applied as an attachment to, and be operated by, such a conveyor system. A still further object is to provide such stamping means in which the type may be easily and quickly changed and which produces a clear, unblurred print upon the case.

The stamper of this invention is adapted to print upon one face only of the advancing case, this being the rear face which may be either a side or an end of the case, depending upon how it is disposed upon the conveyor. In my co-pending application Serial No. 295,592, now Patent No. 2,195,135, issued March 26, 1940, filed simultaneously herewith, there is disclosed means for automatically stamping information upon a side face of a case advancing along the conveyor. Preferably, although not necessarily, the apparatus of the present invention is employed in conjunction with that of my aforesaid patent so that the indicia may be printed upon a side and an end of the case as it travels in a single position on the conveyor.

With the foregoing and other objects and advantages in mind, the invention will now be more particularly described with reference to the accompanying drawings wherein—

Fig. 1 is a side elevation of part of the conveyor system of a carton sealing machine with stamping apparatus of the invention positioned

thereover and with the stamping arm moving from inking to stamping position;

Fig. 2 is a partial vertical section partial elevation of the stamping apparatus of Fig. 1 with the stamping arm in inking position;

Fig. 2a is a partial rear elevation of a carton and of the stamping arm in stamping position; and

Fig. 3 is a front elevation of the stamping apparatus shown in Fig. 1 with the stamping arm in stamping position and with adjacent parts of the conveyor system shown partly in elevation, partly in section.

The conveyor system illustrated in Figs. 1 and 3 is that of a carton sealing machine of standard design and comprises a slide 100 along which the cartons are propelled by means of pusher bars 101 connected to endless chains 102 operating beside the slide. The framework of the machine includes guide rails 103 at the sides of the slide 100 and a channel member or casing 104 disposed centrally over the slide. The illustrated embodiment of the invention is designed for attachment to this casing 104 in position to stamp the rear ends of cartons advanced along the slide 100 beneath it.

Describing now the stamping apparatus of the invention as shown in the accompanying drawings, an L-shaped frame member 10 is provided at one end with a transverse flange 11 by which the frame is bolted to a convenient part of the machine or conveyor framework, such as the casing 104. To the opposite end of the frame 10 is fixedly attached a stub shaft 12, said shaft extending horizontally over and at a right angle to the path of travel of the cartons A on the conveyor slide 100. On the shaft 12, adjacent the frame 10, is rotatably mounted a sprocket sleeve 13 carrying sprocket 14. This sprocket drives sleeve 13 through shear pin 13a. Fixedly connected to the outer end of the sleeve 13, as by set screw 15, and rotatable therewith on the shaft 12 is a clutch sleeve 16 having a jagged projection or clutch tooth 17 formed in its outer end. To the sleeve 16 is attached, by means of a bolt 18, one end of a coil spring 19 surrounding the shaft 12 and having its other end attached, by means of a bolt 20, to a second clutch sleeve 21 rotatable on the shaft 12 beyond the sleeve 16 and having at its inner end a jagged projecting portion or clutch tooth 22 normally spaced a short radial distance from the clutch tooth 17 about shaft 12 as shown in Fig. 2, but adapted to engage with the tooth 17 under certain conditions as hereinafter described.

Fixed to the sleeve 21 and projecting forwardly therefrom is a dowel pin 23 slidably received in slot 24 in a sleeve 25 rotatable on a bearing sleeve 26 fixed to the shaft 12 as by means of set screw 27. On the sleeve 25 is a projecting flange 28 to the outer side edge of which is attached the inner end of a tubular member 29, disposed at right angles to the shaft 12. A cylindrical bore 30 extends through the member 29 and has an inner end 31 of reduced diameter through which extends a push rod 32 having an enlarged outer end forming a plunger 33 slidably seated in the outer part of the bore 30. A coil spring 34 surrounds the rod 32 between the plunger 33 and the reduced portion 31 of the bore 30. The tubular member 29 is provided with an arcuate slot 35 extending a short distance along the axis of the member 29 and 90° around its circumference, and a boss 36 on the plunger 33 projects through said slot, for a purpose hereinafter described.

Fixed to the upper end of the plunger 33, as by bolt 37, is a type holder 38. Any suitable form of type holder may be employed, that shown comprising a substantially rectangular block 39 having, on its face, top and bottom ribs 40 and intermediate and parallel to said ribs a round bar 41, said ribs and bar forming two longitudinal slots 42 in which the type 43 may be slid from an end. The ribs 40 and the base of the type 43 are dovetailed so that under the pressure of the bar 41, the type is locked against forward and lateral displacement while the stamper is operating. Block 39 is provided with a collar 44 by which it is attached to the plunger 33 so as to dispose the type face in a plane parallel to the axis of the plunger.

To the upper end of the frame member 10 is bolted a frame extension 45 to the outer end of which is bolted a downwardly projecting stub shaft 46. On the shaft 46 below the frame extension 45 is rotatably mounted an inking roller 47. The inking roller shown has a frusto-conical body portion 48 around which is secured an inking pad 49. The upper end of the body portion 48 is provided with an annular ink receiving groove 50 from the base of which a plurality of capillary supply ducts 51 extend outwardly to the inner surface of the pad 49. A sight feed ink reservoir 52 attached by a bracket 53 to the upper surface of the frame extension 45 drips ink through an aperture 54 in extension 45 into the groove 50. A steel ball 55 in the groove 50 keeps the ink from coagulating.

As best shown in Fig. 2 the outer end of frame extension 45 extends beyond the type holder 38 and the axis of the inking roller 47 is inclined inwardly, in this instance by bending the outer end of frame extension 45 downwardly, so that the face of the type in holder 38 when in the position shown in Fig. 2 engages substantially flush on the pad 49, thus inking the type and also rotating the roller as the type holder is revolved about shaft 12 through the position of Fig. 2.

Since, in its inking position of Fig. 2, type holder 38 is disposed at right angles to its stamping position shown in Figs. 2a and 3, it is necessary to provide means for turning the type holder 90° as it is revolved about the shaft 12 between these two positions. To this end, there is fixed to the shaft 12 beyond the sleeve 25 a cam 56 having an extended lobe 56' below the shaft 12. Surrounding the cam 56 is a cam head 57, said head comprising a pair of disks 58 at opposite

sides of the cam, these disks being provided with aligned central slots 59 by means of which the disks are slidably and rotatably mounted on the shaft 12, said disks being joined together adjacent the opposite ends of the slots 59 by cross strips 60 and 61 disposed transverse to the long axis of the slots 59. Cross strip 61 is provided with an aperture 62 through which is received the push rod 32, the end of the rod being provided with a stop 63 to prevent withdrawal of the rod through the aperture. Cross strip 60 acts as a cam follower, engaging the cam lobe 56' as the type holder rises toward inking position.

As cam follower 60 rides down around the end of lobe 56' of cam 56, cam head 57, and consequently push rod 32 and plunger 33 are drawn downwardly compressing spring 34 until boss 36 on plunger 33 reaches the lower end of slot 35 in member 29, this movement of cam head 57 transverse to the axis of shaft 12 being permitted by the slots 59. In this position of the parts, type holder 38 is disposed transverse to the axis of shaft 12 and spring 34 is compressed. As type holder 38 is rotated from inking position above shaft 12 to stamping position below shaft 12, cam follower 60 rides off the extended lobe 56' of cam 56 and spring 34 forces plunger 33 outwardly in member 29, in turn drawing cam head 57 in the same direction until boss 36 reaches the outer end of slot 35. As boss 36 rides outwardly in guiding slot 35 plunger 33 is turned 90° to bring type holder 38 to its stamping position parallel to the axis of shaft 12.

The drive for sprocket sleeve 13 is so regulated as to effect a complete revolution of the type holder 38 and intermediate connecting rotary parts about shaft 12 in the interval between arrival of the rear ends of successive cartons in stamping position. Conveniently, this may be accomplished, as indicated in Fig. 1, by sprocket chain connection to a sprocket wheel 64 fixed to a shaft 65, said shaft being driven from the conveyor or its operating motor by suitable driving connections (not shown) at such speed as to make one complete revolution as each carton is advanced by the conveyor a distance equal to the space between the rear ends of successive cartons.

While the cycle of revolution of the type holder about shaft 12 is thus a fixed interval of time corresponding to the speed of travel of the cartons on the conveyor, it is desirable that provision be made for varying the speed of travel of the type holder at times within each cycle. Thus, in order to overtake the carton and effect proper stamping engagement of the type therewith, it is important that the type holder be travelling at an accelerated speed as it approaches stamping position. Furthermore, to prevent blurring of the imprint and damage to the carton or apparatus, provision should be made for automatically momentarily checking the speed of the type holder as it engages the carton. Each such momentary checking of the angular velocity of the type holder must, of course, be compensated for by a corresponding increase in velocity to maintain the predetermined period of revolution.

To these ends, I provide the spring 19 as a link in the drive connection to the sleeve 25 which carries the type holder, and I also provide on the outer face of the sleeve 21 a forwardly projecting cam 66 (see Fig. 2) and on the inner face of the bearing sleeve 26 a rearwardly projecting spring cam 67 in position to engage

the cam 66 as the type holder approaches stamping position.

As cam 66 engages spring cam 67, the angular velocity of sleeve 21 and consequently of sleeve 25 and of the type holder is momentarily slowed and also sleeve 21 is forced rearwardly along shaft 12 toward clutch sleeve 16, until cam 66 passes cam 67, dowel pin 23 sliding rearwardly in slot 24 to a corresponding extent. Due to the presence of the spring connection 19 between the sleeve 21 and the driving clutch sleeve 16, the angular velocity of the latter is not affected and the spring 19 becomes wound. When cam 66 passes cam 67 spring 19 unwinds, temporarily increasing the angular velocity of the sleeves 21 and 25 above that of driving clutch sleeve 16 until sleeves 21 and 25 catch up to and move ahead of their normal position with respect to sleeve 16, and correspondingly accelerating the speed of the type holder so that it moves ahead of its normal position with respect to sleeve 16 to overtake and engage the rear end of the advancing carton.

In similar fashion, upon printing engagement of the type face of the type holder with a carton, the rotation of the type holder and sleeves 25 and 21 is momentarily stopped, or possibly reversed due to bounding back of the type holder, a movement permitted by the unwound condition of the spring at the moment of stamping contact, while the regular rotation of the driving clutch sleeve 16 continues unaffected, rewinding the spring 19. This momentary stopping of the rotation of the type holder instantly frees the type face from engagement with the continuously advancing carton preventing blurring of the imprint, and also causes the type holder to lag behind the carton while advancing through the remaining intersecting portion of their paths so that a second engagement of the type holder with the carton is prevented. The type holder and sleeves 21 and 25 are brought back to their normal position with reference to driving clutch sleeve 16 by unwinding of the spring 19.

Clutch teeth 17 and 22 normally remain out of engagement throughout the cycle of revolution of the type holder, the sole driving connection between the sleeve 16 and the sleeve 21 being the spring 19. In the event, however, that spring 19 should break, said clutch teeth will become engaged due to rotation of sleeve 16 relative to sleeve 21 so that the type holder will thereafter continue to rotate with sleeve 16 at uniform speed without engagement with the advancing cartons until the breakage is noted and the apparatus can be stopped for repairs. Thus clutch teeth 17 and 22 comprise a safety device which prevents damage to the cartons or apparatus that might result if the type holder arm were allowed to dangle loose in the path of the continuously moving succession of cartons on breakage of spring 19.

It is to be understood that while the invention is herein described and illustrated as applied to the stamping of cartons and in conjunction with a particular type of conveyor system, it is by no means limited thereto but may be employed for stamping other articles and in connection with other types of conveyors, such, for example, as the continuous belt or driven roller types. It will also be understood that various changes may be made in the particular embodiment of the invention shown and described herein without departing from the spirit and scope of the invention.

I claim:

1. In apparatus for printing upon articles car-

ried by a conveyor in spaced relation, the combination of a stamping member, operating means for rotating said member about an axis outside and substantially normal to the path of travel of the articles on the conveyor through an arc in said path to stamp successive articles advancing on the conveyor in a plane transverse to their direction of travel, an inking pad disposed beside the path of travel of the stamping member about said axis, and means for reciprocally pivoting the stamping face of the stamping member through substantially a 90° arc during each revolution of said member about said axis for alternate engagement of said stamping face with said inking pad and with an article on the conveyor.

2. In apparatus for printing upon articles carried by a conveyor in spaced relation, the combination of an arm carrying a stamping member, operating means for rotating said arm about an axis outside and substantially normal to the path of travel of the articles on the conveyor to pass said stamping member through an arc in said path to stamp successive articles advancing on the conveyor in a plane transverse to their direction of travel, an inking pad disposed beside the path of travel of the stamping member about said axis, and means for reciprocally pivoting said member through substantially a 90° arc about the axis of said arm during each revolution of said member about said axis for alternate engagement of the stamping face of said member with said pad and with an article on the conveyor.

3. In apparatus for printing upon articles carried by a conveyor in spaced relation, the combination of an arm rotatable about an axis outside and substantially normal to the path of travel of the articles on the conveyor, a stamping member connected to said arm for sliding longitudinally thereof, means for rotating said arm about said axis to pass said stamping member through an arc in said path for stamping successive articles advancing on the conveyor in a plane transverse to their direction of travel, an inking pad disposed beside the path of travel of the stamping member about said axis, means to slide said member in one direction longitudinally of said arm as said member approaches said pad, means to slide said member in the opposite direction as said member advances from said pad toward stamping position, and means to cause said sliding movements of said member to reciprocally pivot said member through substantially a 90° arc about the axis of said arm.

4. In apparatus for printing upon articles carried by a conveyor by rotating a stamping member about an axis outside the path of travel of articles on the conveyor through an arc in said path in the direction of travel of the conveyor to stamp the rear ends of successive articles advancing on the conveyor, the combination of a driving element rotatable about said axis, means for rotating said element in timed relation to the speed of the conveyor, an arm carrying the stamping member, said arm mounted for rotation about said axis and relatively pivotally connected to said driving element, resilient means connecting said arm and said element and tensioned by rotation of said element to restrain pivoting of said arm opposite to the direction of rotation of said element, and brake means operative to restrain rotation of said arm by said element as said member approaches stamping position, whereby to cause said arm to pivot relative to said element opposite to the direction of rotation increasing the tension of said resilient means,

and to release said arm to permit said resilient means to pivot said arm in the direction of rotation of said driving element to stamping position by discharge of said increased tension.

- 5 5. In apparatus for printing upon articles carried by a conveyor in spaced relation, the combination of a stamping member, means mounting said member for rotation about an axis outside the path of travel of articles on the conveyor through an arc in said path, and operating means for rotating said member about said axis through said arc in the direction of travel of the conveyor to stamp the rear ends of successive articles advancing on the conveyor, said operating means comprising a driving element rotatable about said axis, means for rotating said element in timed relation to the speed of the conveyor, resilient means operatively connecting said member to said element for rotation by said element about said axis through tensioning of said resilient means, and brake means operative to restrain rotation of said member by said element as said member approaches stamping position, whereby to permit rotation of said element relative to said member increasing the tension of said resilient means, and to release said member for rotation to stamping position by the combined rotary force of said driving element and of said resilient means discharging said increased tension.
- 30 6. In apparatus for printing upon articles carried by a conveyor in spaced relation, the combination of a stamping member, means mounting said member for rotation about an axis outside the path of travel of articles on the conveyor through an arc in said path, and operating means for rotating said member about said axis through said arc in the direction of travel of the conveyor to stamp the rear ends of successive articles advancing on the conveyor, said operating means comprising a driving element rotatable about said axis, means for rotating said element in timed relation to the speed of the conveyor, a spring operatively connecting said member to said element about said axis, and brake means operative to restrain rotation of said member by said element as said member approaches stamping position, whereby to permit rotation of said element relative to said member winding said spring, and to release said member for rotation to stamping position by said element and the unwinding of said spring.

7. In apparatus for printing upon articles carried by a conveyor in spaced relation, the combination of a stamping member, means mounting said member for rotation about an axis outside the path of travel of articles on the conveyor through an arc in said path, and operating means for rotating said member about said axis through said arc in the direction of travel of the conveyor to stamp the rear ends of successive articles advancing on the conveyor, said operating means comprising a driving element rotatable about said axis, means for rotating said element in timed relation to the speed of the conveyor, resilient means operatively connecting said member to said element for rotation by said element about said axis through tensioning of said resilient means, a fixed cam adjacent the path of travel of said member and a co-operating cam on said member adapted to engage and release said first cam as said member approaches stamping position whereby to restrain momentarily rotation of said member by said element.

8. In apparatus for printing upon articles carried by a conveyor by rotating a stamping member about an axis outside the path of travel of articles on the conveyor through an arc in said path in the direction of travel of the conveyor to stamp the rear ends of successive articles advancing on the conveyor, the combination of a first driving element rotatable about said axis, means for rotating said element in timed relation to the speed of the conveyor, a second driving element rotatable about said axis and slidable longitudinally thereof, a spring operatively connecting said second driving element to said first driving element for rotation by said first driving element about said axis, means mounting said stamping member for rotation about said axis by said second driving element, a fixed cam adjacent said second driving element, and a co-operating cam on said second driving element adapted to engage said first cam as said member is rotated toward stamping position, whereby to restrain momentarily rotation of said member and said second driving element and to slide said second driving element longitudinally of said axis to disengage said cams and free said second driving element to rotate said stamping member to stamping position under the action of said spring.

KIICHI SERAI.