

H. A. STILLWELL.
MECHANISM FOR PRINTING BOXES.
APPLICATION FILED SEPT. 8, 1909.

978,409.

Patented Dec. 13, 1910.

3 SHEETS-SHEET 1.

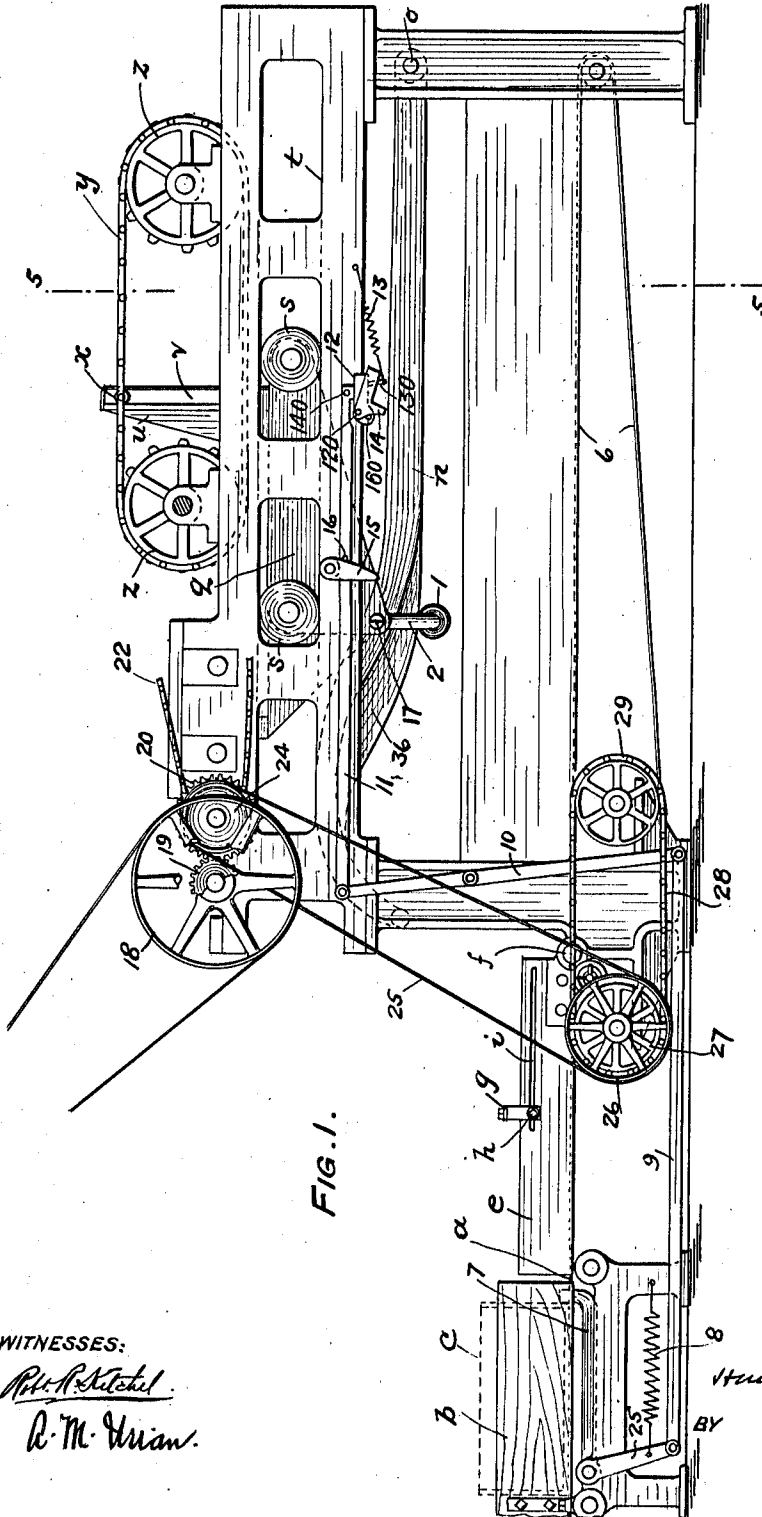


FIG. 1.

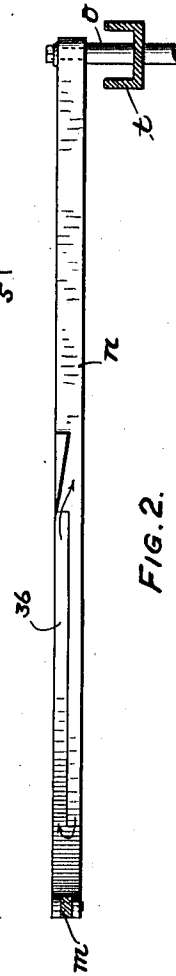


FIG. 2.

WITNESSES:

Rich. R. Kitchel

R. M. Union

INVENTOR

Howard A. Stillwell

BY

Handing & Hildy
ATTORNEYS.

H. A. STILLWELL.
MECHANISM FOR PRINTING BOXES.
APPLICATION FILED SEPT. 8, 1909.

978,409.

Patented Dec. 13, 1910.

3 SHEETS-SHEET 2.

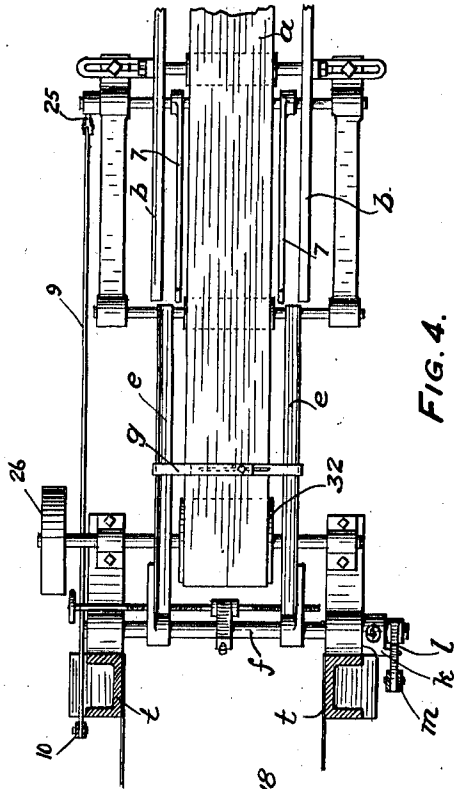


FIG. 4.

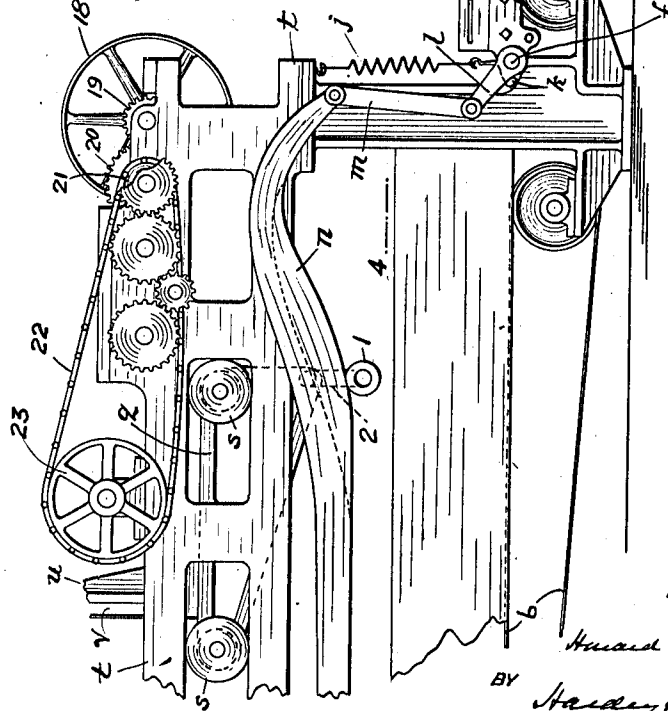


FIG. 3.

WITNESSES:

Robt R. Stichel.
A. M. Arrian.

INVENTOR

Harold H. Stillwell

BY

Harold H. Stillwell
ATTORNEY.

H. A. STILLWELL.
MECHANISM FOR PRINTING BOXES.
APPLICATION FILED SEPT. 8, 1909.

978,409.

Patented Dec. 13, 1910.

3 SHEETS-SHEET 3.

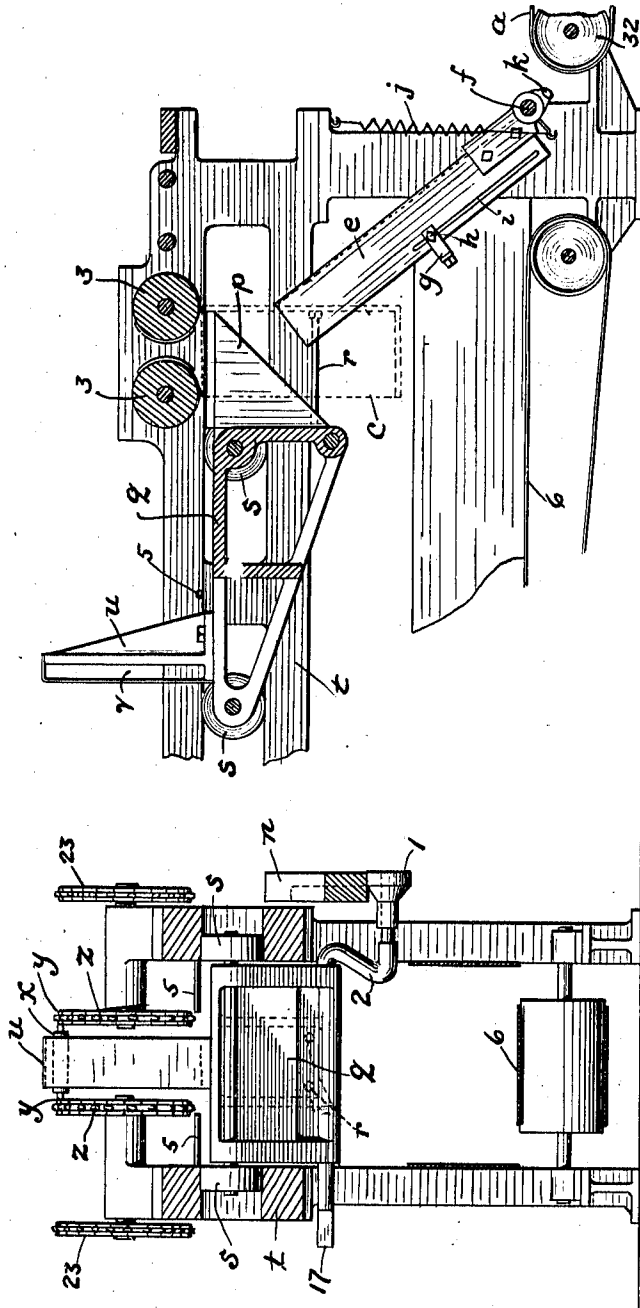


FIG. 6.

FIG. 5.

WITNESSES:

R. A. Stillwell

R. M. Dean

INVENTOR

Harold A. Stillwell

BY

Spaulding & Spaulding
ATTORNEYS.

UNITED STATES PATENT OFFICE.

HOWARD A. STILLWELL, OF WOODBURY, NEW JERSEY, ASSIGNOR TO E. I. DU PONT DE NEMOURS POWDER COMPANY, OF WILMINGTON, DELAWARE, A CORPORATION OF NEW JERSEY.

MECHANISM FOR PRINTING BOXES.

978,409.

Specification of Letters Patent. Patented Dec. 13, 1910.

Application filed September 8, 1909. Serial No. 516,653.

To all whom it may concern:

Be it known that I, HOWARD A. STILLWELL, a citizen of the United States, residing at Woodbury, county of Gloucester, and State of New Jersey, have invented a new and useful Improvement in Mechanism for Printing Boxes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object to automatically print addresses, names or titles upon the sides or ends of boxes and thus avoid the present cumbersome method of stenciling.

I will first describe the embodiments of my invention as shown in the accompanying drawings, and then particularly point out the invention in the claims.

Figure 1 is a general side elevation of the machine. Fig. 2 is an inverted plan view of the operating lever. Fig. 3 is a partial elevation of the opposite side of the machine. Fig. 4 is a partial plan view on line 4-4, Fig. 3. Fig. 5 is a vertical section on line 5-5, Fig. 1. Fig. 6 is a partial longitudinal section.

a is a conveyer, *b* guiding sides secured to the frame of the machine. Upon this conveyer is placed the box *c* with the open end upward.

e is a chute pivoted on the rock shaft *f*. The side walls of this chute are connected by the cross piece *g*, which cross piece is connected by means of a bolt *h* in a longitudinal slot *i* in the side walls of the chute, so that the position of the cross piece *g* with reference to the length of the chute may be determined, and thus the chute is adjusted for varying sized boxes. Connected to this chute *e* is the spring *j* secured at the other end to a fixed part of the machine. The chute *e* has a projection or ear *k*.

l is a lever mounted on a rock shaft *f* and adapted in its movement in one direction to strike a projection on the ear or lug *k* and turn the chute. This lever *l* is connected by means of the link *m* with the lever *n* pivoted at *o*. When the lever *n* is allowed to fall at its outer end, it will, through the medium of the before described mechanism, tilt the chute against the action of the spring, and when the lever *n* is raised, the spring *j* will move the chute backward, and by the weight of the chute,

it will be finally returned to its horizontal position.

When the boxes are fed forward by the conveyer and onto the chute, and the lever falls as described, the box is tilted to a vertical position and placed upon the projection *p* of the truck *q*. This truck is provided with the projecting pins *r* which enter the box and steady the same. This truck is mounted on wheels *s* traveling in the frame *t* of the machine.

u is a projection from the truck having the vertical slot *v* in which is roller *w*. This roller is carried by and between the chains *y*, which chains pass around the sprocket wheels *z*. The roller 1 is mounted on the arm 2, projecting from the truck *q*. This roller lies beneath and against the lever *n*. The lower portion of lever *n* is cam-shaped, as shown in Figs. 1, 2 and 3, so that, as may be seen, in the travel of the truck the roller 1 will, during a portion of the movement of the truck, support the lever *n* in its upper position, while in another portion of its movement it allows the lever to move on its pivot, tilting the chute, and in the return movement will for a time maintain the lever down and then lift the lever.

The operation of the mechanism so far described is as follows: With a box delivered into the chute and the truck in its forward position ready to receive the box, the roller will be in such position that the lever *n* will have moved on its pivot to swing the chute, as shown in Fig. 6, the box being then received upon the projection from the truck, and the truck will move rearward, carrying the box. The movement of the truck through the medium of roller 1 will lift the lever, allowing the chute to return to its horizontal position. The box carried by the truck will first pass under the printing rolls 3, which may be of any number, dependent upon the number of colors or impressions desired. After passing under these printing rolls, the depending box strikes the pins 5 which projecting from the frame and extending over the truck, strikes the box at its upper end, and it will drop on the conveyer 6 below the truck, which conveyer carries it out of the machine.

In order to prevent a box being moved by the conveyer *a* while the chute is not in horizontal position, I provide dogs or catches 7 connected to lever 25, which lever is acted

upon by the spring 8 to normally hold the catches in their upright and operative position. The lever 25 is connected to the rod 9, which is in turn connected with the vertical rod or lever 10 connected at its upper end with the bar 11 extending along the frame of the machine. At the outer end of this rod is the locking device consisting of the latch 12 pivoted on pin 120 adapted to lock with the detented end of the bar 11. This latch 12 is operated by the spring 13, one end of which is connected to pin 130 on latch 12. The other end of the spring is connected to the frame of machine. Mounted upon this latch 12 is the striking-off dog 14. This dog 14 is pivoted on pin 120.

140 is a pin on bar 11.

15 is a dog pivoted to the frame of the machine, and 16 is a pin upon the rod or bar 11 contacting with said dog.

In the rearward movement of the truck *q* and after it has received a box, a pin 17 projecting from the truck *q* strikes the dog 15, which by contact with pin 16, moves the bar 11 rearward until it engages and is locked by the locking latch 12. This moves the stop 7 so that a box can be fed into the chute. On the further movement of the truck, the pin 17 strikes the releasing dog 14, moving it until its free end strikes pin 140, further movement raises that end of rod 11, lifting the detent out of engagement with latch 12, releasing the locking latch 12 and allowing the spring 8 to return the stops 7 to operative position, thus preventing any feeding of boxes and moving bar 11 to its forward position. On the return movement of the truck the pin 17 passes freely the dog 15.

160 is a pin on latch 12 for limiting the downward movement of dog 14.

The parts are driven in the following manner: The truck is reciprocated backward and forward by the following mechanism leading from the pulley 18. Upon the shaft of this pulley 18 is the gear 19 which meshes with the gear 20. Upon the shaft of the gear 20 are the sprocket wheels 21. These sprocket wheels 21, by means of the chains 22, drive the sprocket wheels 23, on the shafts of which are one set of the sprocket wheels *z*.

The conveyer *a* is driven in the following manner: Upon the shaft of the gear 20 is a pulley 24 which, by means of a belt 25, is connected with the pulley 26. Upon the shaft of this pulley 26 is the conveyer belt wheel 32 for the conveyer *a*. The conveyer 6 is driven by means of a sprocket wheel 27 on the shaft of the pulley wheel 26 from which a chain 28 passes to the sprocket wheel 29, on the shaft of which is the belt conveyer 6.

It will be noticed that the lever *n* has the cut-away portion 36, as shown in Figs. 1

and 2, which comes into action in the initial rearward movement of the truck. The purpose of this is to maintain the lever *n* in its depressed position for a short time to insure the carrying of the box by the truck beneath the printing rolls. It will be noted further that with this mechanism there is no danger of the box being broken in the operation, for the strain upon it at any time is no greater than the weight of the pivoted lever *n*.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:—

1. In a machine for printing upon boxes, in combination, a truck adapted to reciprocate, printing rolls beneath which said truck passes, a conveyer, a chute, in line with said conveyer, mounted to swing from a horizontal to a vertical position, mechanism for swinging said chute controlled by said truck in its movement.

2. In a machine for printing upon boxes, in combination, a truck adapted to reciprocate, printing rolls beneath which said truck passes, a conveyer, a chute, in line with said conveyer, mounted to swing from a horizontal to a vertical position, mechanism for swinging said chute controlled by said truck in its movement, and means to close the entry to said chute when said chute is in a vertical position.

3. In an apparatus of the character described, in combination, a reciprocating truck, a chute, said chute being mounted to be movable from a horizontal to a vertical position to receive the article and deliver it to the truck, mechanism for tilting said chute, said mechanism being controlled by the truck in its movement.

4. In an apparatus of the character described, in combination, a reciprocating truck, a chute, said chute being mounted to be movable from a horizontal to a vertical position to receive the article and deliver it to the truck, mechanism for tilting said chute, said mechanism being controlled by the truck in its movement, and a conveyer to deliver the article to the chute.

5. In an apparatus of the character described, in combination, a reciprocating truck, a chute, said chute being mounted to be movable from a horizontal to a vertical position to receive the article and deliver it to the truck, mechanism for tilting said chute, said mechanism being controlled by the truck in its movement, a conveyer to deliver the articles to the chute, and means to hold the articles on the conveyer from movement when the chute is in a vertical position.

6. In an apparatus of the character described, in combination, a reciprocating truck adapted to enter and hold an open box-like article to be printed, and a swinging chute adapted to receive and deliver the article to the truck.

7. In an apparatus of the character described, in combination, a reciprocating truck adapted to hold the article to be printed, a swinging chute adapted to receive and deliver the article to the truck, a conveyer to carry the article to the chute, and a knock-off device for releasing the article from the truck.

8. In an apparatus of the character described, in combination, a reciprocating truck adapted to hold the article to be printed, a swinging chute adapted to receive and deliver the article to the truck, a conveyer to carry the article to the chute, a knock-off device for releasing the article from the truck, and a conveyer adapted to receive and carry the article when released from the truck.

9. In an apparatus of the character described, in combination, a reciprocating truck adapted to hold the article to be printed, a swinging chute adapted to receive and deliver the article to the truck, mechanism for swinging said chute, said mechanism being controlled by the truck during its movement.

10. In an apparatus of the character described, in combination, a reciprocating truck adapted to hold the article to be printed, a swinging chute adapted to receive and deliver the article to the truck, a pivoted lever to swing said chute vertically, a roller supporting said lever, the face of said lever coacting with said roller having a portion cut away above the line of travel of said roller, whereby said lever descends swinging said chute.

11. In an apparatus of the character described, in combination, a reciprocating truck adapted to hold the article to be printed, a swinging chute adapted to receive and deliver the article to the truck, a pivoted lever to swing said chute vertically, a roller supporting said lever, the face of said lever coacting with said roller having a portion cut away above the line of travel of said roller, whereby said lever descends swinging said chute, and another portion extending below the line of travel of said roller, whereby said roller lifts said lever, allowing said chute to return to the horizontal position.

12. In an apparatus of the character described, in combination, a reciprocating truck adapted to hold the article to be printed, a swinging chute adapted to receive and deliver the article to the truck, a conveyer to carry the article to the chute, and means to hold the article from movement with the conveyer when the chute is delivering an article to the truck.

13. In an apparatus of the character described, in combination, a reciprocating truck adapted to hold the article to be printed, a swinging chute adapted to receive

and deliver the article to the truck, a conveyer to carry the article to the chute, means to hold the article on the conveyer from movement with the conveyer when the chute is delivering an article to the truck, and a mechanism in line of travel of the truck for controlling the operation of said holding means.

14. In an apparatus of the character described, in combination, a reciprocating truck adapted to hold the article to be printed, a swinging chute adapted to receive and deliver the article to the truck, a conveyer to carry the article to the chute, holding dogs adjacent to the chute movable in and out of line of travel of the article on the conveyer, means to move said dogs in alinement with the article on the conveyer in the movement of the chute to deliver to the truck.

15. In an apparatus of the character described, in combination, a reciprocating truck adapted to hold the article to be printed, a swinging chute adapted to receive and deliver the article to the truck, a conveyer to carry the article to the chute, holding dogs adjacent to the chute movable in and out of line of travel of the article on the conveyer, a rod, connected with said dogs, extending along the line of travel of said truck, a locking device for said rod, a pivoted dog from said rod in line of travel of the truck, said dog being active in one direction of movement of the truck, and when struck moving the rod into engagement with the locking device, and a releasing device in line of travel of the truck and active in the opposite direction of movement of the truck.

16. In an apparatus of the character described, in combination, a reciprocating truck adapted to hold the article to be printed, a swinging chute adapted to receive and deliver the article to the truck, a conveyer to carry the article to the chute, holding dogs adjacent to the chute movable in and out of line of travel of the article on the conveyer, a rod, connected with said dogs, extending along the line of travel of said truck, a locking device for said rod, a pivoted dog from said rod in line of travel of the truck, said dog being active in one direction of movement of the truck, and when struck moving the rod into engagement with the locking device, a releasing device in line of travel of the truck and active in the opposite direction of movement of the truck, and a spring normally holding said holding dogs in active position.

17. In an apparatus of the character described, the combination with the movable truck and the chute mounted to swing from a horizontal to a vertical position, of the pivoted lever for controlling said movement, a support for said lever carried by said truck, the face of said lever, contacting

with said support in one direction of movement of said truck, being cut upward to allow said lever to descend.

5 18. In an apparatus of the character described, the combination with the movable truck and the chute mounted to swing from a horizontal to a vertical position, of the pivoted lever for controlling said movement, a support for said lever carried by said
10 truck, the face of said lever, contacting with said support in one direction of movement of said truck, being cut upward to allow said lever to descend, and, in the other direction of movement of said truck, being
15 formed for a certain distance to maintain said lever in the last mentioned position and then cut downward to cause said support to elevate said lever.

19. In an apparatus of the character de-

scribed, the combination with the movable truck and the chute mounted to swing from a horizontal to a vertical position, of the pivoted lever for controlling said movement, a support for said lever carried by said truck, the face of said lever, contacting
25 with said support in one direction of movement of said truck, being cut upward to allow said lever to descend, and, in the other direction of movement of said truck, being cut downward to cause said support to ele-
30 vate said lever.

In testimony of which invention, I have hereunto set my hand, at Woodbury, N. J., on this 27th day of August, 1909.

HOWARD A. STILLWELL.

Witnesses:

ERNEST REDFIELD,
IOLA REDFIELD.