

(No Model.)

3 Sheets—Sheet 1.

J. H. SWIFT.

MACHINE FOR PRINTING BOXES.

No. 368,253.

Patented Aug. 16, 1887.

Fig. 1.

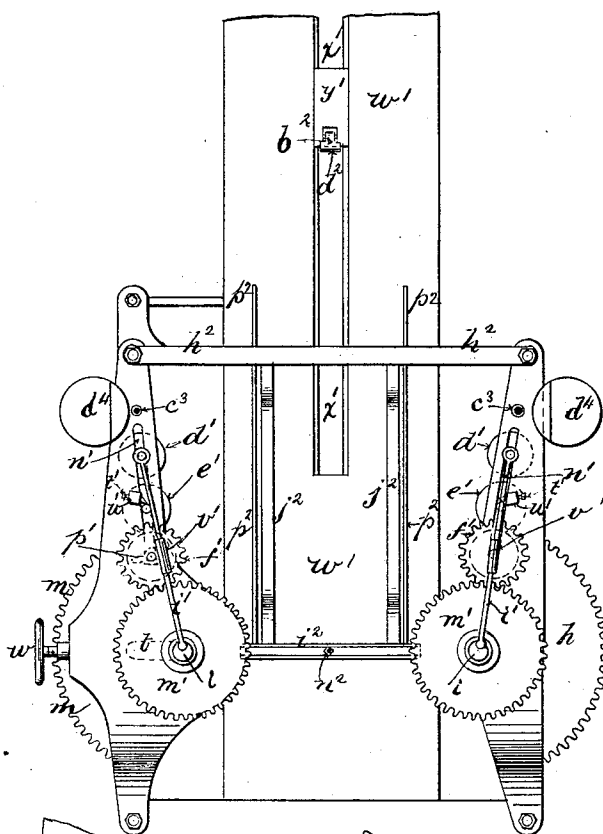


Fig. 2.

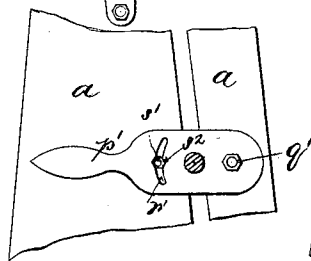
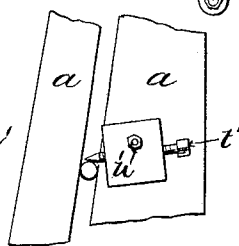


Fig. 3.



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Wm Gardner
Hm A. Pollock

Inventor:
Joseph H. Swift,
by Paul H. Bate
his attorney

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Fig. 4.

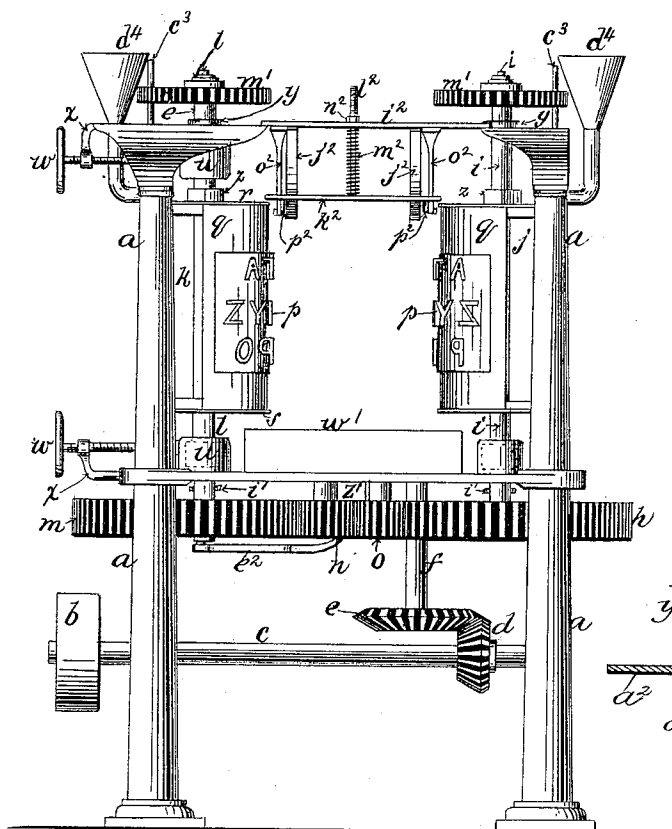
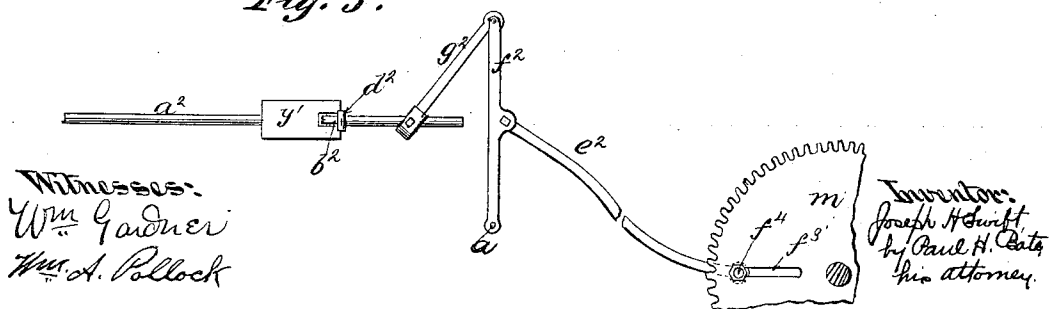


Fig. 5.



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(No Model.)

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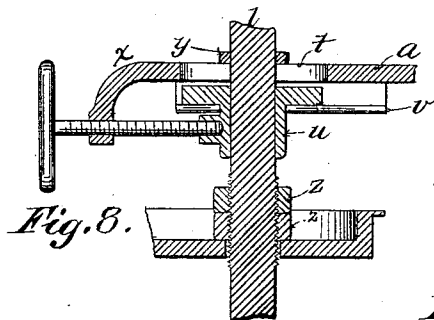


Fig. 8.

Fig. 7.

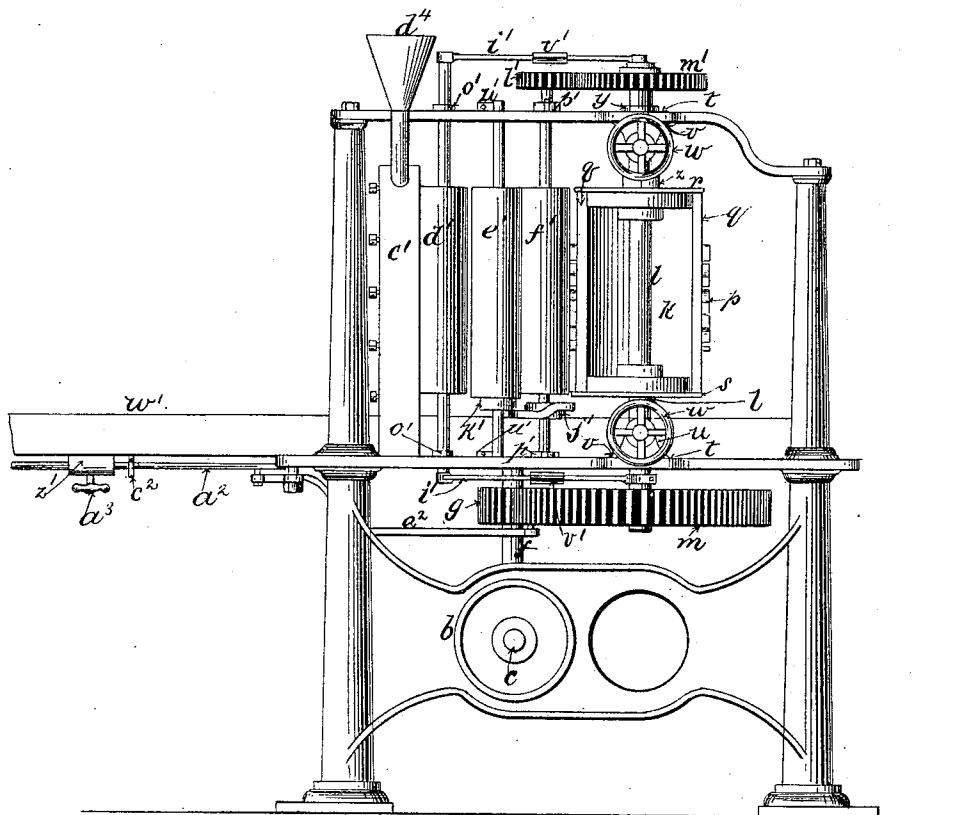
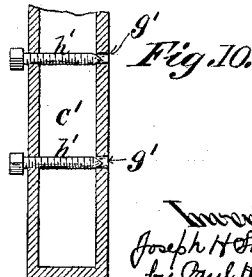
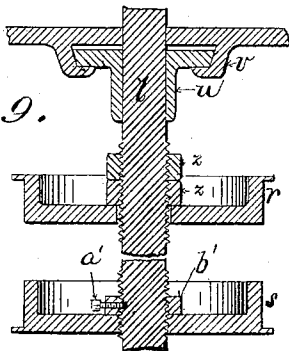


Fig. 9.



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UNITED STATES PATENT OFFICE.

JOSEPH H. SWIFT, OF BROOKLYN, NEW YORK.

MACHINE FOR PRINTING BOXES.

SPECIFICATION forming part of Letters Patent No. 368,253, dated August 16, 1887.

Application filed December 4, 1886. Serial No. 220,693. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. SWIFT, a citizen of the United States, residing at the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machines for Printing Boxes, of which the following is a specification, reference being had to the accompanying drawings.

The invention relates to a machine for printing labels upon packing-boxes and the like; and it consists in the special improvements hereinafter designated.

In the accompanying drawings, Figure 1 represents a plan of the machine; Fig. 2, a plan of the device used for adjusting the position of the ink-distributing roller *f'*; Fig. 3, a plan of the device used in holding the ink-distributing roller *e'* in position; Fig. 4, an elevation of the rear of the machine; Fig. 5, a plan of the mechanism used in operating the box-forwarder *y'*; Fig. 6, a central sectional view of the box-forwarder *y'* and its connecting parts; Fig. 7, a side elevation of the machine; Fig. 8, a vertical section showing means for adjusting the position of the shaft *l*, which supports the type-cylinder *k*; Fig. 9, a vertical section (in part) of the shaft *l*, which supports the type-cylinder *k*, showing the heads *r s* of the latter and the means for adjusting and holding the same in position; Fig. 10, a vertical section of the lower portion of one of the ink-wells, showing the outlets for the ink.

In the practice of my invention a suitable frame, *a*, is provided, upon which are supported the various parts of the machine.

The machine is set in motion by means of power communicated through a fixed pulley, *b*, on the shaft *c*, Fig. 4. The shaft *c* is provided with a beveled pinion, *d*, by means of which motion is communicated to the beveled gear-wheel *e*, secured to the shaft *f*, the latter shaft, *f*, also having secured to it at the upper end a pinion, *g*, Fig. 7, by which motion is given to the gear-wheel *h* on shaft *i*, Fig. 4. The shaft *i* has secured to it a cylinder, *j*, which is arranged on one side of the frame, substantially as shown in Figs. 4 and 7. On the other side of the frame is a similar cylinder, *k*, the same being secured to the shaft *l*, to which latter shaft motion is imparted through the gear-wheels *h m* and the loose pinions *n o*, Fig. 4, the gearing being so constructed and

arranged as to cause the shafts *i* and *l* to operate simultaneously and at the same rate of speed, but in different directions axially. Rubber or other suitable type, *p*, for printing the desired labels are secured in any suitable manner to the periphery of the cylinders *j* and *k*. In Fig. 7 the type-plates *q q* are represented as held in position between the flanged heads *r s* of the cylinder *k*.

In order to adapt the machine for use in printing boxes of different widths, it is necessary to adjust the position of one of the cylinders, so as to bring them closer together or place them farther apart, as may be required. Slots *t t* are made in the frame *a*, so as to allow of such adjustment, the form of such slots being shown in Figs. 7 and 8. The shaft *l* is provided with adjustable bearings *u u*, as shown in Figs. 7 and 8, which are moved along flanges or ways *v v* by means of the hand-screws *w w*, the latter being supported in flanges *x x*. By adjusting the position of the bearings *u u*, as described, the position of the shaft *l*, with its supported cylinder *k*, is likewise adjusted, there being sufficient play in the gearing to allow of some adjustment. In cases where the play in the gearing is not sufficient to allow of the desired adjustment, pinions of less diameter may be substituted for the pinions *n o*. The shafts *i l* are held in place by means of collars *y y*, or in any other suitable manner.

In printing boxes of different heights type-plates of different lengths are used, and it therefore becomes necessary to adjust the position of the cylinder-heads *r s*. The upper cylinder-head, which slides upon the shaft, may be secured in any desired position by means of the nuts *z z*, which co-operate with the thread cut upon the shaft *l*, as shown in Figs. 8 and 9. The lower cylinder-head is held in any desired position by the co-operation of its own thread with that cut upon the shaft, as well as by the thumb-screw *a'*, which passes through the collar *b'*.

On each side of the frame is provided an ink-well, *c'*, provided with a vent-pipe, *c''*, and funnel *d'*, substantially as shown in Figs. 4 and 7, the ink being supplied to the type *p* through the intermediate rollers, *d' e' f'*, there being a set of such rollers on each side of the frame and in connection with each ink-well. These ink-distributing rollers are coated or covered

with gelatine in the usual manner. The flow of the ink from the wells $c' c'$ through the orifices $g' g'$ (shown in Fig. 10) is regulated by loosening or tightening the screws or plugs h'

5 h' . The rollers are similarly arranged and similarly operate on both sides of the machine. The roller d' is caused to reciprocate back and forth in contact with an ink-well by means of pitmen $i' i'$, which at one end connect with the axis of the roller and at the other end are eccentrically pivoted to either the shaft i or l , substantially as shown in Fig. 1. The roller d' is caused to intermittently rotate by frictional contact with the roller e' , the axis of the former being free to revolve in the ends of the pitmen $i' i'$. An up-and-down motion is given to the roller e' by means of the co-operation of the cam j' on the axis of the roller f' with the collar k' on the axis of the roller e' , substantially as shown in Fig. 7. The roller f' is caused to revolve by means of the pinion l' , which is secured to the axis of the roller, and to which motion is given by the gear-wheel m' on shaft l .

25 As shown in Fig. 1, the frame a is provided with slots $n' n'$, through which the upper ends of the axes of the ink-distributing rollers pass. Provision is thus made in conjunction with similar slots which are provided in the frame to receive the lower ends of such axes for the adjustment of the rollers and for the reciprocation of roller d' . The roller d' is held in position by means of the collars $o' o'$, Fig. 7, or in any other suitable manner. The roller e' , as shown, is upheld by means of the collar k' and cam j' . The position of the roller f' is adjusted by means of two devices of the pattern shown in Fig. 2. This device consists of the hand-lever p' , pivoted to the frame a at the point marked q' , and provided with a slot, r' , adapted to co-operate with the stud s' . These devices are placed in the positions shown in Figs. 1 and 7. The hand-lever p' of the lower device is formed with a seat or step adapted to receive the lower end of the axis of the roller f' , the latter being thereby or in any other suitable manner upheld. The roller e' is held in position against the roller f' by means of two devices of the form shown in Fig. 3. These latter devices, which are placed in the positions shown in Figs. 1 and 7, consist in each case of a plate, u' , secured to the frame a , and a thumb-screw, t' , which screws into and through the plate u' , substantially as shown.

55 In the case of each of the pitmen $i' i'$ the two portions of the same are connected by means of the coupling v' , which is provided at one end with a right-hand screw-thread and at the other end with a left-hand screw-thread, so as to co-operate with suitable threads cut upon the ends of the divided pitmen, provision being thus made for lengthening or shortening the latter. The machine is also provided with a table, w' , which extends out beyond the frame, as shown in Fig. 7. The table is provided with a slot or way, x' , of

suitable form, Fig. 1, in which operates the box-forwarder y' , the latter being a device for pushing or conveying the box into proper position to have the labels printed upon it. 70

The form of box-forwarder shown in Figs. 1 and 6 consists of a piece of metal adapted to slide in the way x' and provided with a downwardly-projected portion, z' , through which passes the rod a^2 , the latter being secured thereto by means of a set-screw, a^3 . The forwarder is provided at its front end with a dog, b^2 , the latter being pivoted within a recess, substantially as shown in Figs. 1 and 5. The lower end of the dog, which is in the form of a fork, c^2 , extends down through the way x' , and in the position shown loosely clutches the rod a^2 , the latter having at that particular point a less diameter, substantially as shown in Fig. 6. As shown, the dog stands vertical, being so balanced as to naturally maintain that position. The box-forwarder y' , when placed in the way x' , so far sinks therein as to allow for the necessary play and projection of the head of its supported dog b^2 in the operation of the machine. The mechanism for operating the dog consists of the rods $a^2 e^2$, the lever f^2 , and the link g^2 , Figs. 5, 6, and 7.

The link g^2 is pivoted at one end to the rod a^2 and at the other end to the lever f^2 , the opposite end of the lever f^2 being pivoted to the frame a . The lever f^2 is also pivoted at about its central portion to the rod e^2 , the other end of the latter rod being connected with the gear-wheel m , substantially as shown. In order to allow for the adjustment of the cylinder k and the necessary lengthening or shortening of the rod f^2 , the connection between the latter and the gear-wheel m is made by means of a slot, f^3 , and screw-nut f^4 , the latter co-operating with a threaded pin on the end of the rod. Devices for guiding the box and for holding it in position are also preferably employed. 110

The frame of the machine is provided with two bars, h^2 and i^2 , Figs. 1 and 4, to which are secured two flexible strips of metal, $j^2 j^2$, bent substantially as shown, so as to rest upon the box and hold it down as it moves along the table. 115

Another spring guide or holder, Fig. 4, is supported from the bar i^2 , the same being formed of the cross-bar k^2 , rod l^2 , spiral spring m^2 , and nut n^2 . The nut n^2 serves to hold the rod l^2 in position, and by means of it the height of the cross-bar k^2 may be adjusted so as to render the guide capable of use in connection with boxes of different sizes. This latter spring-guide is of service after the box has passed beyond the strips $j^2 j^2$. The bar i^2 is also provided with two hanging arms, $o^2 o^2$, Figs. 1 and 4, to which are attached two flexible metal strips, $p^2 p^2$, which serve to keep the moving box in line with reference to the type-cylinders. 120 125 130

The arms $o^2 o^2$ are removable from the frame, longer or shorter ones being used, according to the different sizes of the boxes upon which

the labels are to be printed. The arms o^2 o^2 are placed adjacent to the cross-bar k^2 , and so serve to keep it from swinging.

In operating the machine a box is first placed on the table w' in front of the box-forwarder y' , and the machine is then started. As the gear-wheel m turns the box-forwarder is drawn forward and the head of the dog, serving as a shoulder, pushes the box along the table until brought into position to be caught between the type-cylinders j k , by which latter the labels are printed upon the box. The gearing is so timed that the boxes as fast as they are brought forward shall be caught between the type on the cylinders j k , the labels being thus printed on as the box passes through, and the cylinders turning in time to catch the next box. The box-forwarder is both drawn forward and pushed back during a single revolution of the type-cylinders. In case there should be any boxes resting on the table when the forwarder is pushed back, the head of the dog (the latter being loosely pivoted) would be forced down by the weight of the boxes to a level with the top of the table, and so enabled to slide under the same. Suitable play for the lower end of the dog when its head is thus depressed is provided by making the rod a^2 of less diameter at that point, as before set forth. After passing the boxes, the dog will assume its vertical position. The boxes may be supplied to the table by hand or by an automatic feeder. As the box is drawn along the table and passed between the type-cylinders it is held in position by the guiding devices before described. During the operation of the machine the set of ink-distributing rollers d' e' f' on each side of the frame is of course kept in motion, the roller d' being pushed back and forth in contact with the orifices g' g' , and receiving ink therefrom to be distributed to the other rollers. The roller e' , which has an up-and-down motion, as described, takes the ink from the roller d' and spreads it upon the roller f' , from which latter it is again taken by the type on the cylinders j k .

In the practice of my invention the form of the machine or of its different parts admits of variations without change of character and without affecting the result to be accomplished, and I do not, therefore, limit myself to the exact forms shown and described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in a rotary printing-machine, substantially as described, of a table for the support of the box to be printed upon, two vertical ink-wells, two sets of vertical ink-distributing rollers, and two vertical type-cylinders, the ink-wells, ink-distributing rollers, and type-cylinders being arranged on opposite sides of the table, substantially as shown, and for the purpose set forth.

2. The combination, in a rotary printing-machine, substantially as described, of a table for the support of the box to be printed upon, two vertical ink-wells, two sets of vertical ink-

distributing rollers, two vertical type-cylinders, and a box-forwarder, the ink-wells, ink-distributing rollers, and type-cylinders being arranged on opposite sides of the table, substantially as shown, and for the purpose set forth.

3. The combination, in a rotary printing-machine, substantially as described, of a table for the support of the box to be printed upon, two vertical ink-wells, two sets of vertical ink-distributing rollers, two vertical type-cylinders, and guides for directing and holding the box in its course on the table, the ink-wells, ink-distributing rollers, and type-cylinders being arranged on opposite sides of the table, substantially as shown, and for the purpose set forth.

4. The combination, in a rotary printing-machine, substantially as described, of the table w' , formed with a way, x' , the box-forwarder y' , provided with the dog b^2 and with a downwardly-projecting portion, z' , secured to the rod a^2 , the link g^2 , the lever f^2 , and the rod e^2 , secured to the gear-wheel m , substantially as and for the purpose set forth.

5. The combination, in a rotary printing-machine, substantially as described, of the table w' , formed with a way, x' , the box-forwarder y' , provided with a dog, b^2 , and suitable operating mechanism, substantially as and for the purpose set forth.

6. The combination, in a rotary printing-machine, substantially as described, of the table w' , the bars h^2 i^2 , and flexible metal strips j^2 j^2 , substantially as and for the purpose set forth.

7. The combination, in a rotary printing-machine, substantially as described, of the table w' , the two opposite type-cylinders j k , the bar i^2 , and the guide or holder formed of the cross-bar k^2 , rod l^2 , spiral spring m^2 , and nut n^2 , substantially as and for the purpose set forth.

8. The combination, in a rotary printing-machine, substantially as described, of the table w' , the box-forwarder y' , the bar i^2 , provided with the arms o^2 o^2 , and the two flexible metal strips p^2 p^2 , secured to the arms o^2 o^2 , substantially as and for the purpose set forth.

9. The combination, in a rotary printing-machine, substantially as described, of the vertical roller e' , slots n' , the adjusting device formed of the plate u' , secured to the frame a , and the thumb-screw t' , substantially as and for the purpose set forth.

10. The combination, in a rotary printing-machine, substantially as described, of the roller d' , slot n' , the adjustable pitmen v' v' , and the shaft i , substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH H. SWIFT.

Witnesses:

F. E. HANSON,
WM. GARDNER.