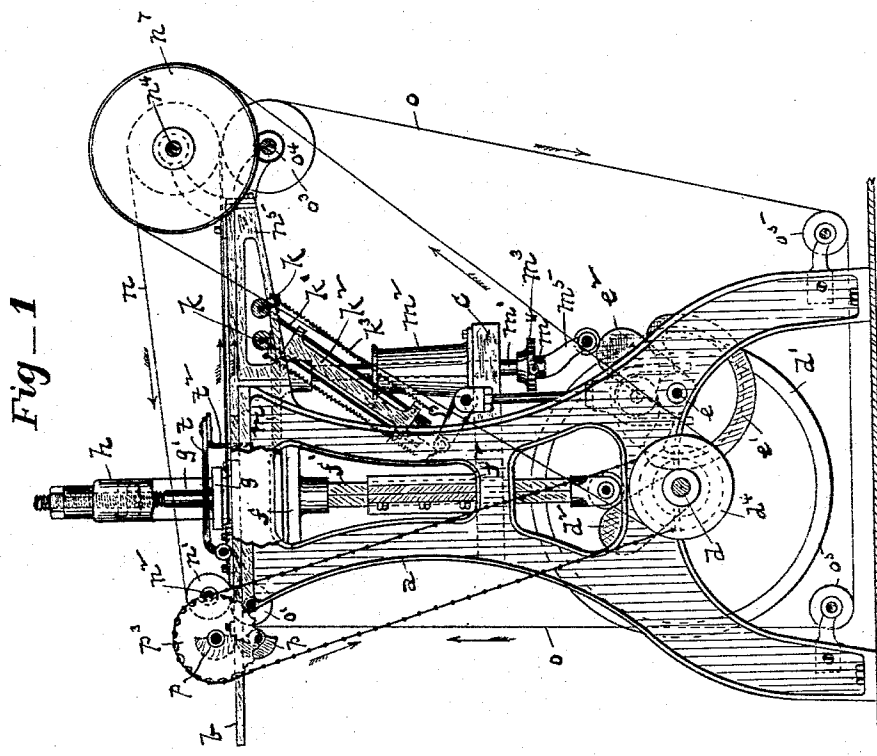
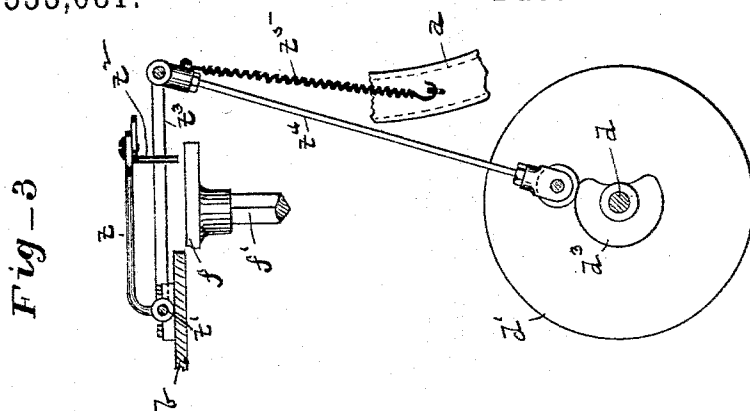


2 Sheets—Sheet 1.

No. 533,681.

Patented Feb. 5, 1895.



Richard L. Horner
J. E. Chapman

INVENTOR

6. F. Taylor

BY

Hawes Chapman
ATTORNEY & C.

(No Model.)

2 Sheets—Sheet 2.

C. F. TAYLOR.
MACHINE FOR PRINTING ENVELOPES.

No. 533,681.

Patented Feb. 5, 1895.

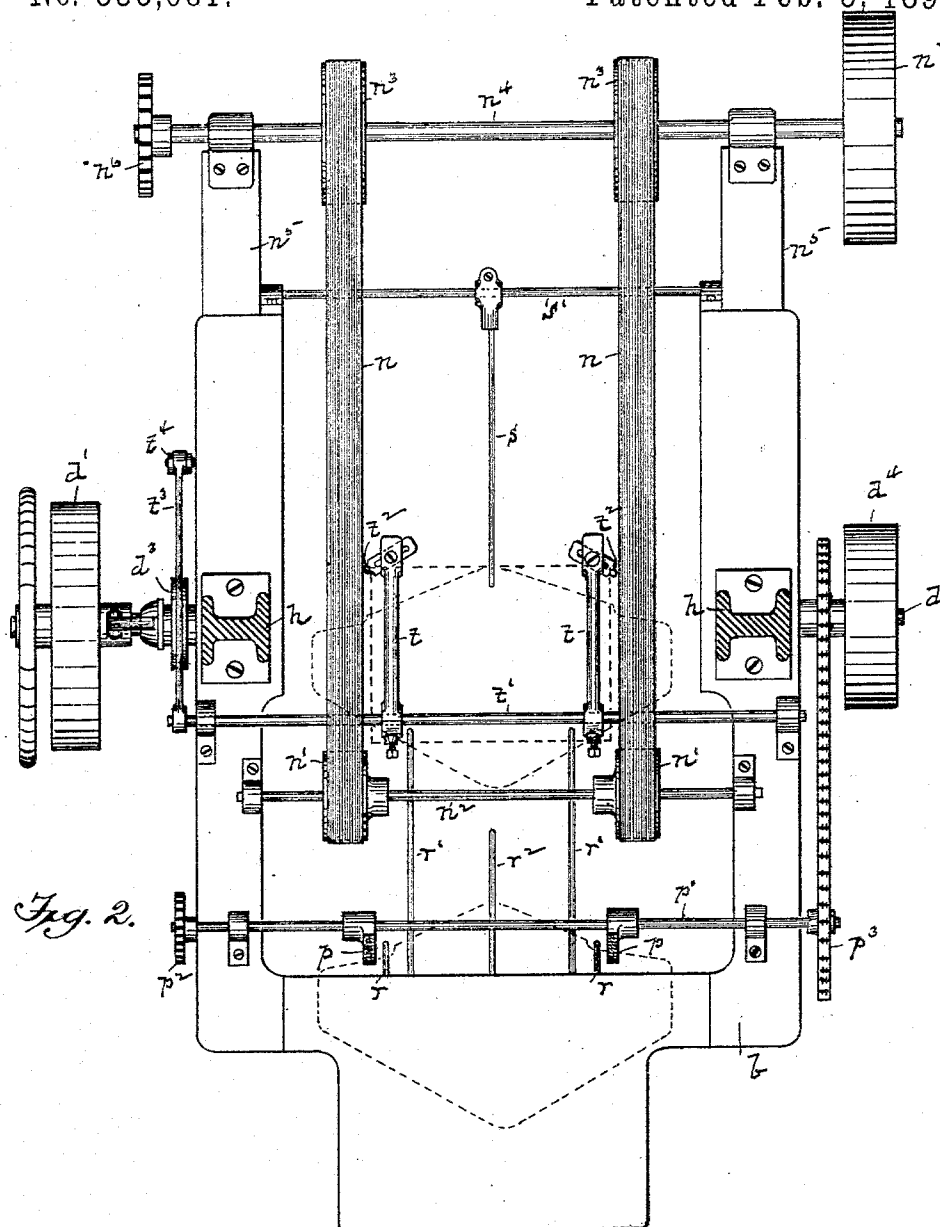


Fig. 2.

WITNESSES:

Richard. B. Corner
J. E. Chapman

INVENTOR

INVENTOR
L. F. Taylor
BY
James Chapman
ATTORNEYS.

UNITED STATES PATENT OFFICE.

CHARLES F. TAYLOR, OF HOLYOKE, MASSACHUSETTS.

MACHINE FOR PRINTING ENVELOPES.

SPECIFICATION forming part of Letters Patent No. 533,681, dated February 5, 1895.

Application filed April 2, 1892. Serial No. 427,490. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. TAYLOR, of Holyoke, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in Machines for Printing Envelopes, &c., of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

My invention relates to machines for printing envelope blanks and similar articles, whether the same constitutes an independent machine or forms an attachment to an envelope sealing or forming machine, and has particular reference to the mechanism for feeding the blanks to the printing devices, and for removing them from the latter after being printed.

The object of the invention is to provide feeding mechanism for such machines of such a nature that the machine can be operated at a much higher rate of speed than printing machines for envelope blanks have heretofore been operated, and at the same time obviate the necessity for the exercise of any particular skill upon the part of the operator in supplying the blanks to the machine.

A further object is to provide feeding mechanism of such a nature, and so co-operating with the printing devices, that all or any portion of the face of the envelope can be covered with the printed matter, and that the portion thereof which it is desired to so cover will be caused to accurately register with the type-form in every instance.

To these ends, my invention consists in the feeding mechanism for envelope printing machines, comprising two pairs of endless tapes, which have a continuous movement, and means for conveying the blanks to said tapes and for momentarily stopping the movement of each blank in position to be printed, as hereinafter fully described and particularly pointed out in the claims.

Referring to the drawings, in which like parts are designated by like letters of reference in the several views, Figure 1 is an end elevation, partly broken away, of an envelope printing machine having applied thereto a feeding mechanism embodying my invention. Fig. 2 is a plan view thereof, with the platen and its supporting bracket re-

moved. Fig. 3 is a detail view of the means for operating the stop fingers.

The letter *a* designates the frame of the machine, which supports at its upper end the table *b*, and, beneath said table, the platform *c*. Near the lower end of said frame are journaled the main driving shaft *d* and a secondary shaft *e*, the former carrying band pulley *d'* and cams *d²* *d³*, and the latter carrying cams *e'* *e²*, intermeshing spur gears being located upon said shafts respectively, as indicated by broken lines in Fig. 1, whereby the motion of the main shaft is transmitted to the secondary shaft, in an opposite direction.

The letter *f* designates the bed-plate for the type-form, which is secured upon the upper end of a vertically movable bar *f'*, said bar being guided in bearings *f²* secured to the frame, and carrying at its lower end an anti-friction roll which is engaged by the cam *d²* on the main shaft, whereby a vertically reciprocating movement is imparted to said bar and the bed-plate. The platen *g* is secured to the lower end of a rod *g'*, which is supported in an overhanging bracket *h* bolted or otherwise secured to table *b*, said rod being threaded at its upper end and having thereon nuts, located both above and below the supporting bracket, whereby said rod is rendered vertically adjustable to vary the position of the platen.

The inking rolls *k k* are carried at the outer ends of rods *k'*, which have a sliding bearing in a carrier *k²* and are connected to the latter by springs *k³*, said carrier being actuated by the cam *e'* on secondary shaft *e* to cause said rolls to transfer the ink from inking plate *m* to the type on the bed-plate *f*, in a well known manner. Said inking plate *m* is carried at the upper end of a vertical shaft *m'* journaled in a hub *m²* on the platform *c*, said shaft carrying at its lower end a ratchet *m³*, which is engaged by a pawl *m⁴* on a lever *m⁵* swiveled upon said shaft. Said lever *m⁵* carries at its free end an anti-friction roll which is engaged by the cam *e²* on shaft *e*, whereby an intermittent revolving movement is imparted to said shaft *m'* and inking plate *m*, in the usual manner.

The printing machine, as thus far described,

is of a common construction and its method of operation to cause the bed-plate *f* to carry the type-form superposed thereon upwardly and against the platen *g*, and the operation of the inking mechanism, will be fully understood by persons skilled in the art without further illustration or description. I have herein shown such form of machine for the purpose of illustrating the construction and operation of the novel feeding mechanism devised by me, and it will be understood that the same constitutes one example merely of the various forms of printing machines to which said feeding mechanism can be applied.

In the feeding mechanism devised by me endless tapes are utilized to carry the blanks to and beyond the printing devices, there being two pairs of such tapes, located at a proper distance from each other to permit them to respectively engage the two ends of an envelope blank, as represented in Fig. 2, in which the blanks are indicated by broken lines. Said tapes are guided about pulleys, located upon opposite sides of the printing devices, in such manner as to pass said printing devices adjacent to, and substantially in the plane of the working face of the platen, whereby a blank carried between the two pairs of tapes will be moved across said face of the platen. As herein shown, the upper tapes *n* of each pair of tapes are carried by pulleys *n'* on a shaft *n²*, journaled upon the table *b*, in front of the printing devices, and upon pulleys *n³*, on a shaft *n⁴*, journaled upon bracket arms *n⁵* projecting from said table, in the rear of the printing devices. The lower tapes *o* of each pair are led about pulleys *o'* on a shaft *o²*, journaled upon the table directly beneath the shaft *n'*, thence about pulleys *o³* on a shaft *o⁴*, journaled upon the bracket arms *n⁵* directly beneath the shaft *n⁴*, and thence about pulleys *o⁵*, near the bottom of frame *a*, back to the pulleys *o'*. The shafts *n⁴* *o⁴* carry intermeshing gears *n⁶* at one end thereof and the shaft *n⁴* carries at its opposite end a band pulley *n⁷* which is connected by belt with a band pulley *d⁴* on main shaft *d*, whereby motion is transmitted to said shaft *n⁴* from said main shaft, and to the shaft *o⁴*, in an opposite direction, through the gears *n⁶*. A continuous movement is thus imparted to the tapes *n* *o*, in the directions indicated by the arrows in Fig. 1, and it follows from the described arrangement of said tapes and their pulleys, that a blank presented in front of the pulleys *n'* *o'* will have its ends grasped by the two pairs of tapes, and will be carried beneath the platen, to and between the pulleys *n³* *o³*, where it will be discharged by the tapes. Such presentation of the blank to the tapes can obviously be done by hand, but in order to expedite such operation I prefer to employ in connection with the tapes, devices for mechanically picking up the blank and moving it to a position to be engaged by the tapes, and have herein shown a very simple form

of means for securing such function, the same consisting of two pairs of sectors *p*, carried by shafts *p'* journaled upon table *b* in front of the shafts *n²* *o²*, and so arranged that the bearing faces of said pairs of sectors will simultaneously engage the upper and lower sides of a blank placed between them. Said shafts *p'* carry intermeshing gears *p²* at one end thereof, and one of them carries at its opposite end a sprocket wheel *p³*, which is connected by a chain belt with a similar wheel on the main shaft, whereby motion is transmitted to the former from the latter, and to the second shaft *p'*, through the gears *p²*, in an opposite direction. A blank being placed in the plane of contact between said sectors, while the latter are out of contact, will be grasped by them and carried to a position where it will be seized by the tapes. The table *b* having its entire central portion open as shown in Fig. 2, I provide guiding strips or wires projecting into said opening in the table to afford vertical support to the blank in its passage to the tapes. Of said guiding strips, two, designated by the letters *r* *r*, are located adjacent to the sectors *p* and have upturned ends against which the edge of the blank is placed preparatory to being grasped by said sectors, as represented in Fig. 2. Two others, designated by the letters *r'* *r'*, are located between the former, and extend to, or nearly to, the printing mechanism; and, preferably, a fifth and shorter strip or wire *r²* is located midway between the strips *r'*, as shown. The strips or wires *r'* *r²* are thus adapted to support the central portion of the blank, as it passes to the printing mechanism, and prevent it from sagging, while the strips or wires *r* *r* are adapted to support the edge of the blank and present it evenly to the sectors, the upturned ends thereof forming stops to enable the attendant to accurately feed the blanks to said sectors. I also prefer to utilize a guiding and supporting strip or wire *s*, located upon the opposite side of the printing mechanism, which is rigidly secured to a cross-bar *s'* on the table, and projects to a position in which its free end is adapted to be engaged by the bed-plate *f*, as the latter rises to the platen, and carried upwardly against the under side of the blank, engaging the edge of the rear flap of the latter substantially midway between its ends, as represented in Fig. 2, whereby said edge of the blank is held closely against the platen while the blank is being printed. When the bed-plate descends the elasticity of said strip *s* causes it to resume its normal position in which it is out of engagement with the blank.

It is essential, of course, that the movement of the blank by the tapes be suspended at the platen during the instant in which it receives the impression from the type on the bed-plate, and this result can be secured by causing the movement of the tapes to be intermittent instead of continuous. I prefer, however, to utilize continuously moving tapes as

shown, and to employ in connection therewith an intermittently moving stop, adapted to engage the edge of the blank, as the latter is opposite the platen, to hold the blank against movement with the tapes long enough to enable it to receive its impression, the tapes meanwhile sliding over the surface of the blank, and, finally, to release the blank and permit it to resume its movement with the tapes. The form of said stop and the means for operating the same can be greatly varied. As herein shown the stop is composed of two arms *tt*, adjustably secured to a rock-shaft *t'*, and having adjustably secured to their outer ends depending fingers *t²*. The shaft *t'* is journaled upon the table *b* and carries at one end an arm *t³* from which depends a rod *t⁴*, which carries at its lower end an anti-friction roll that engages the cam *d³* on the main shaft, see Fig. 3, a spring *t⁵* holding said roll in constant engagement with the cam. Provision is thus made for securing a rocking movement of the shaft *t'*, with a dwell at the end of its movement in either direction, which period of rest is greatest when the arms *tt* are in their highest position by reason of the conformation of said cam *d³*. The arms *tt* are located adjacent to the two ends of the platen, or may extend over the latter, and are of a proper length to cause their outer ends to occupy substantially the vertical plane of the rear edge of bed-plate *f*. The fingers *t²* have a slotted base through which passes the screw by which they are held upon said arms, as shown in Fig. 2, thereby enabling their position to be varied to suit blanks of different sizes and shapes. When the arms occupy their highest position said fingers are above the plane of movement of the blanks through the machine, and when said arms occupy their lowest position said fingers are caused to intersect said plane in position to stop the movement of a blank beneath the platen. The cams *d² d³* are so timed that the fingers *t²* descend and stop the movement of a blank at the platen just before the bed-plate reaches the limit of its upward movement, or, in other words, as the type upon said bed-plate is about to engage the platen, and, the blank being immediately engaged by said type, the fingers *t²* are at once returned to their highest position, thus permitting the blank to resume its movement with the tapes as soon as it is released by the printing devices. The actual stoppage of the blank, therefore, is of sufficient duration merely, to permit it to receive its impression from the type, and it will be obvious such operation can be performed with great rapidity, and without any jar or strain upon the machine such as would be caused by a stoppage of the movement of the tapes themselves.

In feeding the blanks to the machine, the operator places them one at a time upon the table *b* with their rear edge against the up-turned ends of wires *r*, and while the sectors *p* are out of peripheral engagement, where-

upon the blank is immediately seized by said sectors and carried to the tapes, which latter carry it to and beyond the printing devices as described. It will thus be seen that no particular skill upon the part of the operator is required to rapidly supply the blanks to the machine.

It will be observed furthermore, that the tapes *no* constitute a continuously moving carrier, whose plane of movement is perpendicular to that of the printing devices, and which carries the blanks both to and from said printing devices, and, believing such form of carrier, in connection with a stop, movable in a plane intersecting that of the carrier, to be broadly new, I do not wish to restrict myself to the precise form of such co-operating means herein shown and described. As hereinbefore stated, the blanks can be fed to such form of carrier by hand, but I prefer to utilize in connection therewith feeding mechanism substantially like that herein described, viz:—the sectors *p*.

Attention is directed to the fact that, the blanks being carried to the feeding devices in a plane parallel with the working face of the platen, and presented squarely to said face, an impression covering the entire face of the blank, or any desired portion thereof, can be printed thereon, with entire accuracy, thereby causing the position of the printed matter upon any number of envelopes to be exactly uniform.

As before stated, the operation of the carrying and feeding mechanisms devised by me will be the same whether the printing devices with which they co-operate constitute an attachment to a gumming, sealing or envelope forming machine, or form an independent machine such as that herein shown.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for printing envelopes, &c., the combination with the printing devices of a carrier composed of endless tapes, for carrying an envelope blank to and beyond the printing devices, means for imparting to said tapes a continuous movement and means substantially as described for checking the movement of the blank in the plane of said printing devices, to enable the latter to operate upon the former, arranged and operating substantially as set forth.

2. In a machine for printing envelopes, the combination with printing devices composed of a stationary platen and a bed-plate movable in a plane perpendicular to the face of said platen, of endless tapes guided about pulleys located upon opposite sides of said printing devices in such manner as to have their plane of movement parallel with and adjacent to the working face of said platen, whereby a blank carried by said tapes will be caused to move across said face, means for imparting to said tapes a continuous movement and means substantially as described for stop-

ping the movement of the blank in the vertical plane of said printing devices without interrupting the movement of the tapes, substantially as and for the purpose set forth.

3. In a machine for printing envelopes, the combination with printing devices composed of a stationary platen and a bed-plate movable in a plane perpendicular to said platen, of two pairs of endless tapes having their plane of movement parallel with the working face of said platen and extending both in front and rear thereof, whereby a blank carried by said tapes will be caused to pass across the face of the platen, means for imparting a continuous movement to said tapes and an intermittently moving stop adapted to intersect the plane of movement of the blank and momentarily stop the latter when it arrives at the platen without interrupting the movement of the tapes, substantially as set forth.

4. In a machine for printing envelopes, the combination with the printing devices comprising a vertically movable bed plate and its platen and a carrier composed of endless tapes for moving a blank to said printing devices, of feeding mechanism for feeding the blanks to said carrier, comprising two shafts revolving in opposite directions and carrying sectors which engage the blanks upon opposite sides thereof, substantially as set forth.

5. The machine for printing envelopes herein described, comprising a frame supporting at its upper end a table, and having journaled therein a main driving shaft, a platen suitably supported above said table, a bed-plate actuated by a cam on said driving shaft, whereby it is caused to move upwardly through an opening in the table to engage the platen, a carrier composed of endless tapes suitably guided about pulleys located in front and rear of said platen, whereby a blank carried by said tapes will be moved across the working face of the platen, intermediate connections substantially as described whereby the pulleys supporting said tapes are operated from the main shaft to impart movement to said tapes in opposite directions, and means substantially as described for checking the movement of a blank carried by said tapes when beneath the platen, combined and operating substantially as set forth.

6. In the machine for printing envelopes herein described, the combination with the printing devices and main driving shaft for operating the same, of two shafts carrying pulleys and intermeshing gears, located in the rear of said printing devices, belt connection between one of said shafts and the main driving shaft, two shafts carrying pulleys, located in front of the printing devices, and two pairs of endless tapes led about the pulleys on said shafts, for carrying a blank to and beyond said printing devices, arranged and operating substantially as set forth.

7. In the printing machine herein described, the combination with the printing devices,

comprising a vertically movable bed plate and its platen the carrier composed of endless tapes, the main shaft, and intermediate connections substantially as described whereby said printing devices and carrier are operated from said shaft, of a rock-shaft carrying arms, which are provided at their outer ends with fingers adapted to be moved into and out of the plane of movement of a blank carried by said carrier, and intermediate connections substantially as described whereby a rocking movement is imparted to said shaft from the main shaft, arranged and operating substantially as set forth.

8. In the printing machine herein described, the combination with the printing devices, the carrier composed of endless tapes, and the main shaft for operating the same, of feeding devices for feeding the blanks to said carrier, the same consisting of two shafts located in front of the carrier, said shafts carrying intermeshing gears and co-operating sectors adapted to grasp between them a blank, and belt connection between one of said shafts and the main shaft, arranged and operating substantially as set forth.

9. In the printing machine herein described, the combination with the printing devices, carrier, and feeding sectors *p*, of the wires *r* located adjacent to said sectors and having upturned ends, substantially as and for the purpose described.

10. In the printing machine herein described, the combination with the printing devices, continuously moving carrier, and means for operating the same, of rock-shaft *t'* having arms *t* projecting therefrom adjacent to the plane of said printing devices, and fingers *t'* adjustably secured to said arms, and adapted to intersect the plane of movement of said carrier substantially as and for the purpose set forth.

11. In a machine for printing envelope blanks, the combination with printing devices composed of a platen and a bed-plate movable in a plane perpendicular to the face of said platen, of a continuously moving carrier, composed of endless tapes, having its plane of movement parallel with and adjacent to the face of said platen and extending both in front and rear thereof, and an intermittently actuated stop, adapted in one of its positions to intersect the path of movement of a blank moved by said carrier, immediately in rear of the platen, whereby the movement of the blank will be checked at the platen, by said stop, and will then be resumed, without interruption of the movement of the carrier substantially as and for the purpose set forth.

In testimony of which invention I hereunto set my hand.

CHARLES F. TAYLOR.

Witnesses:

W. H. CHAPMAN,
N. O. HAYES.