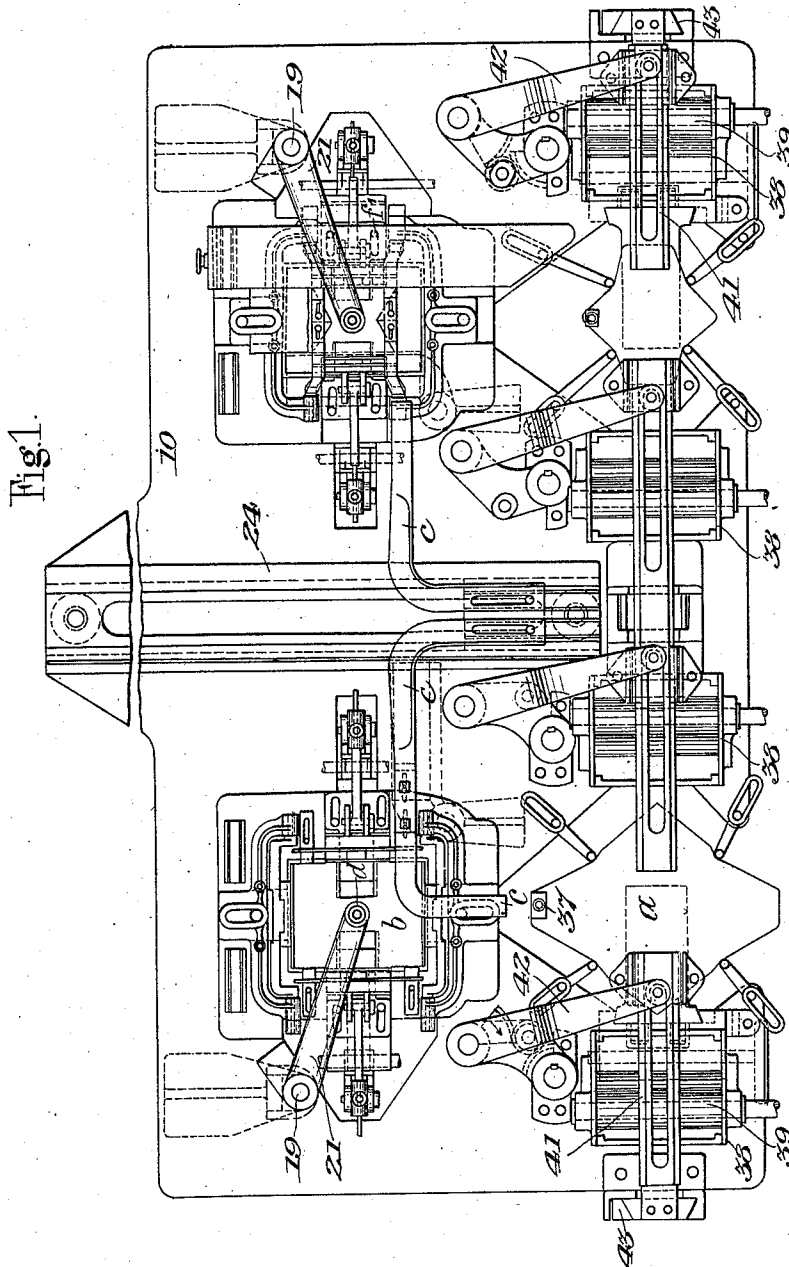


T. HUGO.
MACHINE FOR MAKING PAPER ENVELOPS.
APPLICATION FILED MAY 20, 1910.

1,066,112.

Patented July 1, 1913.

4 SHEETS-SHEET 1.



Witnesses
Katherine Koch
Daniel Holmgren

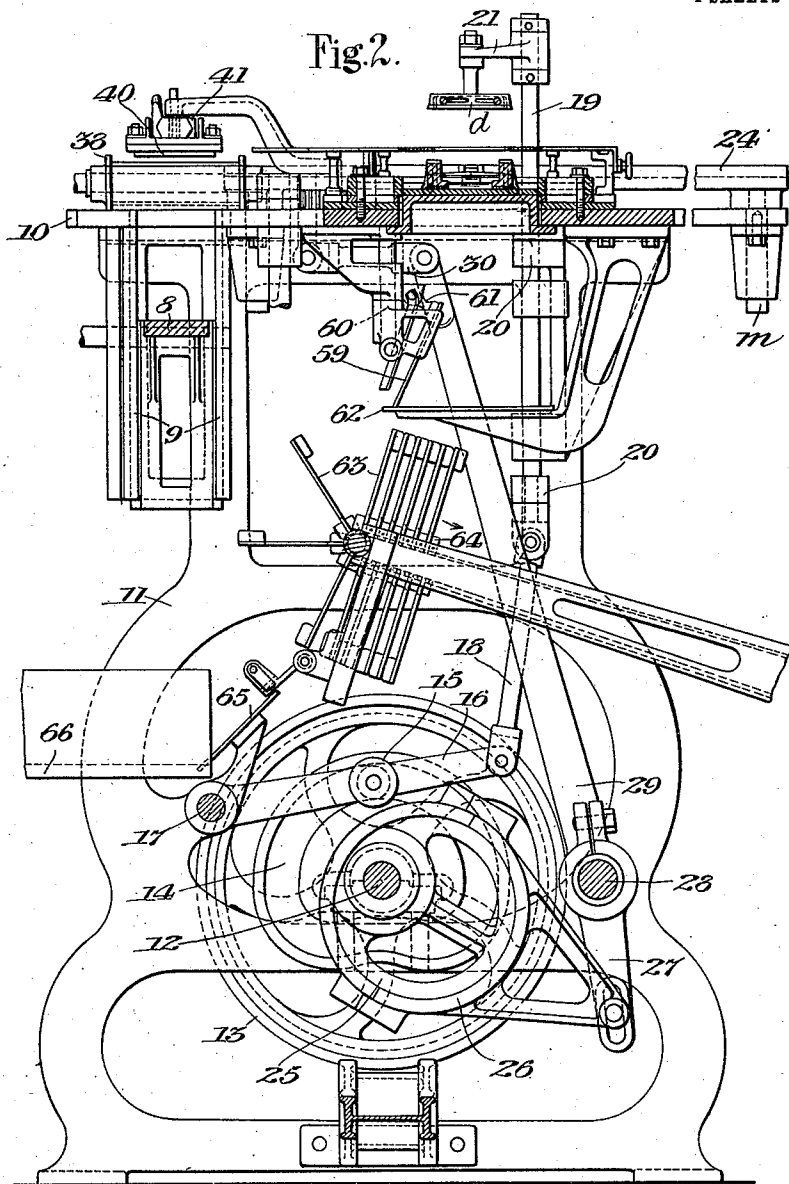
Inventor.
Theodor Hugo
by his attorneys
Briesen & Junge

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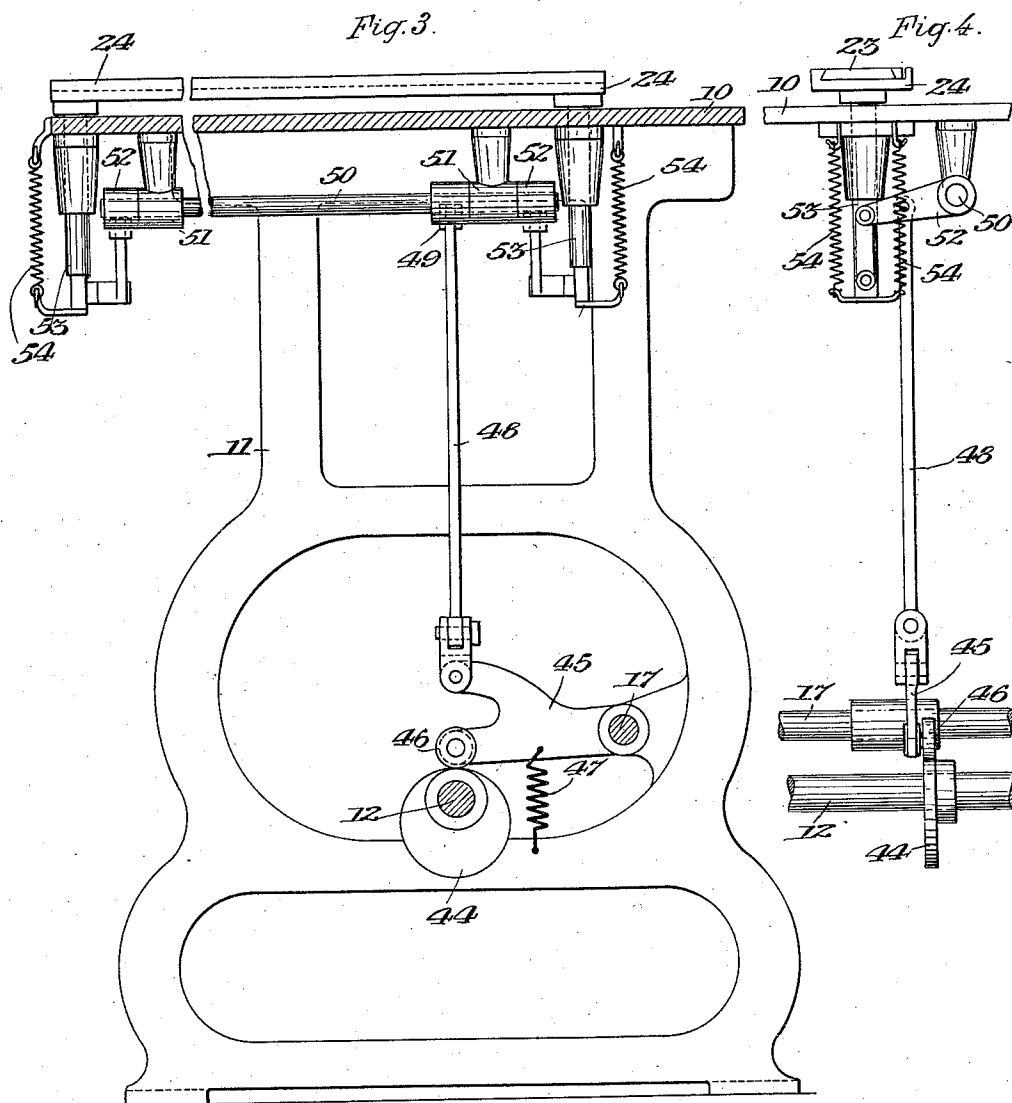
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4 SHEETS—SHEET 3.



Witnesses:
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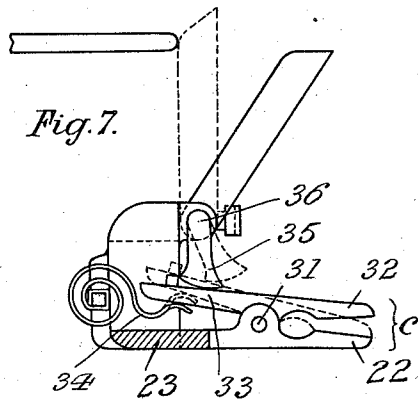
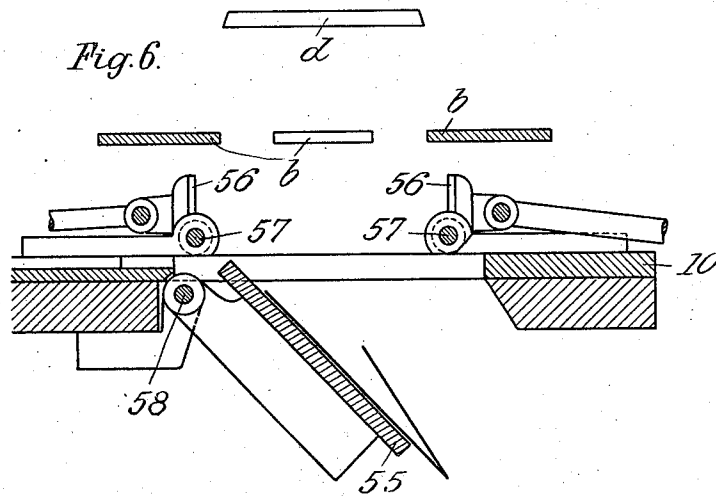
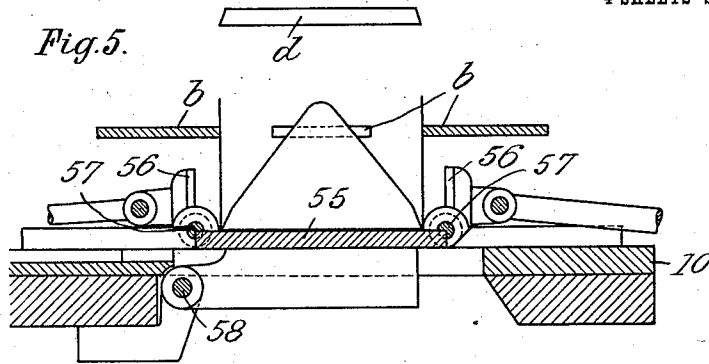
Inventor
Theodor Hugo
By *Brice & Gump*
Att'ys.

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4 SHEETS—SHEET 4.



Witnesses:
Hathorne Koch,
Daniel Holmgren.

Inventor:
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UNITED STATES PATENT OFFICE.

THEODOR HUGO, OF BERLIN, GERMANY.

MACHINE FOR MAKING PAPER ENVELOPS.

1,066,112.

Specification of Letters Patent.

Patented July 1, 1913.

Application filed May 20, 1910. Serial No. 562,404.

To all whom it may concern:

Be it known that I, THEODOR HUGO, a citizen of Germany, and a resident of Berlin, Germany, have invented a new and useful Machine for Making Paper Envelops, of which the following is a specification.

This invention relates to an envelop making machine of novel construction which may be operated with a higher speed than the machines hitherto generally used. For this purpose, the height of the flap folding device is considerably reduced thereby correspondingly diminishing the distance to be covered by the folding plunger and thus shortening the length of time required for its operation, so that the blank carrier may pass underneath the previously retracted plunger when returning to its original position.

In the accompanying drawing: Figure 1 is a plan of my improved envelop making machine; Fig. 2 a vertical section thereof; Fig. 3 a similar section showing the means for raising and lowering the tongs; Fig. 4 an end view of Fig. 3; Fig. 5 an enlarged vertical section through the flap folding means proper and cooperating parts; Fig. 6 a similar section showing the parts in a different position, and Fig. 7 a sectional side view of the blank-carrying tongs.

The envelop blanks *a* to be folded are stacked on a plunger 8 vertically movable in suitable guides 9 of a table 10 which is supported by standards 11. Within the latter is rotatably mounted a main shaft 12 carrying a cam disk 13, the groove 14 of which is engaged by a roller 15 of a lever 16. This lever turns loosely on an axle 17 and its free end is by link 18 connected to a vertically reciprocative rod 19 guided in suitable bearings 20. To the upper end of rod 19 is secured by arm 21 a plunger *d* that cooperates with a folding frame *b*. The blanks to be folded are conveyed from the stack to frame *b* by means of tongs *c*, the lower jaw 22 of which forms part of a slide 23 guided in corresponding ways 24. Slide 23 receives reciprocating movement from shaft 12 by eccentric 25, the strap 26 of which is bolted to a lever 27 fast on a rock shaft 28. To the latter is secured a lever 29 which is by link 30 connected to slide 23.

To jaw 22 is pivoted at 31 the upper jaw 32, the tail 33 of which is engaged by a spring 34 tending to close jaws 22, 32.

When the latter are moved toward the stack of blanks *a*, an eccentric dog 35 is turned by suitable means on its axis 36 so as to open the jaws (Fig. 7) and thus permit the top blank to enter therebetween, said top blank having previously been lifted off the stack by a suitable suction device 37. Dog 35 is then returned to its initial position (dotted lines in Fig. 7) so as to permit spring 34 to close the jaws upon the top blank. In this way the latter is taken along during the subsequent movement of slide 24 toward the folding frame *b*. After the blank has been properly placed on said frame, dog 35 is operated to open the jaws and thus free the blank.

Before the top blank is withdrawn from the stack, an adhesive is applied to its bottom flap in the following manner: Into a suitable receptacle 38 containing the adhesive, dips a roll 39 which is adapted to be engaged by a horizontally and vertically reciprocable member 40, the latter transferring the adhesive from roll 39 to the bottom flap of the envelop blank. Member 40 is horizontally reciprocated within a suitable guide 41 by means of an oscillating arm 42 while guide 41 is in turn vertically reciprocable in a way 43. The several movements of transfer member 40 are relatively so timed, that when the latter has arrived above the bottom flap (after previously having been provided with the adhesive owing to its engagement with roll 39) guide 41 is lowered by suitable means so as to transfer its adhesive to said flap. Guide 41 is then raised to its initial position and member 40 is retracted to be again coated with adhesive. After member 40 has thus been withdrawn from the blank, the suction device 37 raises said blank whereupon the latter is conveyed to the folding means in manner hereinabove described.

As will be seen from Fig. 1, the machine is preferably arranged *in duplico*, so that two sets of envelops may be formed at the same time. It is further evident from this figure that there are provided two adhesive applying means for each stack of blanks *a*. The device at the left hand side of each stack provides the bottom flap with the adhesive as above explained, while the similarly actuated device at the right hand side applies an adhesive to the closing flaps of the envelops. If the latter are to be used for inclosing printed matter, the closing

flaps need not be provided with an adhesive for which purpose the last mentioned device is put out of action. The guide 24 is vertically reciprocable (as illustrated in Figs. 3 and 4) for a purpose hereinafter more fully explained, so that the tongs *c* participate in the raising and lowering of the guide. The latter receives its movement from an eccentric 44 which is fast on shaft 12, by means of a lever 45 carrying roller 46. Lever 45 turns loosely on axle 17, a spring 47 drawing roller 46 against eccentric 44. Lever 45 is by link 48 and arm 49 connected to a rock shaft 50 mounted in suitable bearings 51 that depend from table 10. Shaft 50 carries a pair of arms 52 which are linked to rods 53 depending from guide 24 and passing through corresponding apertures of table 10. During the ascent of guide 24, the springs 54 interposed between rods 53 and table 10 are slackened, while during the descent of the guide, said springs are placed under tension. In this way springs 54 yieldingly engage guide 24 and insure an unjarring movement of the latter.

The flap folding means comprise essentially the above mentioned folding frame *b* and plunger *d*, so that upon a descent of the latter, the central portion of the blank is laid flat upon an abutting plate or support 55, while the four blank-flaps are upturned. Upon the rising of plunger *d* to its initial elevation, the parts thus occupy the position illustrated in Fig. 5. This figure also shows that frame *b* is arranged at such a height above plate 55 that the upturned blank-flaps project beyond said frame. The flaps are finally laid down by folders 56 which turn on pivots 57 and are actuated in suitable manner. The flap folders are of less length than the distance between support 55 and frame *b* so as to be accommodated below the latter as clearly shown in Fig. 5.

The movements of the several operative parts of my machine are so timed, that when tongs *c* start to move toward frame *b*, plunger *d* begins to descend, so that the plunger will force the blank into the frame as soon as the tongs have cleared the plunger and have released the blank after having deposited it upon frame *b*. Tongs *c* continue in their movement and are slightly raised at their point of reversal whereupon they return to their original position. When the tongs start their return movement, plunger *d* will have already pushed the blank into frame *b* and owing to its short travel will again have assumed its raised position, so that the tongs are free to return below plunger *d* toward the stack of blanks. Immediately after the ascent of the plunger, the folders 56 are actuated so that they have partly performed their function, when tongs *c* in returning pass over frame *b*. In order

to obtain but a short travel for plunger *d*, the folding mechanism is of considerably less height than heretofore and is also considerably lower than the envelop flaps, so that about half of the latter projects beyond the folders after the blank has been pressed into the folding recess. The tips of the flaps which are uncovered by the folders 56 are subsequently laid down by separate pressing means for which purpose the abutting plate or support 55 is swung downward on its fulcrum 58 after folders 56 have laid down the blank flaps. In this way, the folded envelop drops upon a shelf 62 and rests against an inclined plate 59 which is rotatably mounted on an axle 60. Upon this plate the final pressing is performed by a presser 61 that is to say the three tips of the closed flaps are finally laid down. While the finished envelop rests upon shelf 62, plate 59 is turned through an angle of 90°, so that the envelop will slip off said shelf to drop between two wings 63 of the drying chain 64, moving in the direction of the arrow (Fig. 2). As soon as the wings arrive during their return movement below their charging point, they will open to release the dried envelop, which will by guide 65 be conveyed to the receiving table 66.

The machine is so constructed that as the stack of blanks is located in proximity to the folding device, each delivery of a blank to said device is performed during about the first quarter of one revolution of the eccentric actuating tongs *c*, during which movement said tongs advance with comparatively low speed. In this way a true positioning of the blank against the stops is rendered possible. After the tongs have released the blank they attain their maximal velocity, which then gradually diminishes until the tongs arrive at their terminal position. Immediately after the blank has been deposited upon frame *b*, plunger *d* and the flap folders are put into operation, while tongs *c* complete their forward stroke and commence their return stroke. In this manner, the movement of the tongs does in no way conflict with that of the plunger and flap folders, so that the speed of the machine may be increased to correspondingly increase its output.

I claim:

In an envelop making machine, an apertured folding frame, an apertured table arranged below said frame, a support pivoted to the table and adapted to be projected through the table-aperture, tongs adapted to grasp an envelop-blank, means for horizontally reciprocating said tongs to deposit the grasped blank upon the folding frame, a plunger, means for vertically reciprocating the same to press the blank through the frame aperture into engagement with the support thereby upturning the blank-flaps,

the height of the folding frame above the support being such that the tips of the up-
turned flaps project beyond the frame,
means for raising the tongs during their
5 return movement so as to pass between the
flap-tips and the raised plunger, folders
adapted to engage the lower portions of the
flaps and to lay down said flaps, means for
swinging the support downward to dis-
10 charge the folded blank, means independ-
ent of said plunger and folders for apply-

ing final pressure to the blank-flaps, and a
drying chain adapted to receive the folded
and pressed blank.

In witness whereof I have hereunto 15
signed my name in the presence of two sub-
scribing witnesses.

THEODOR HUGO.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
