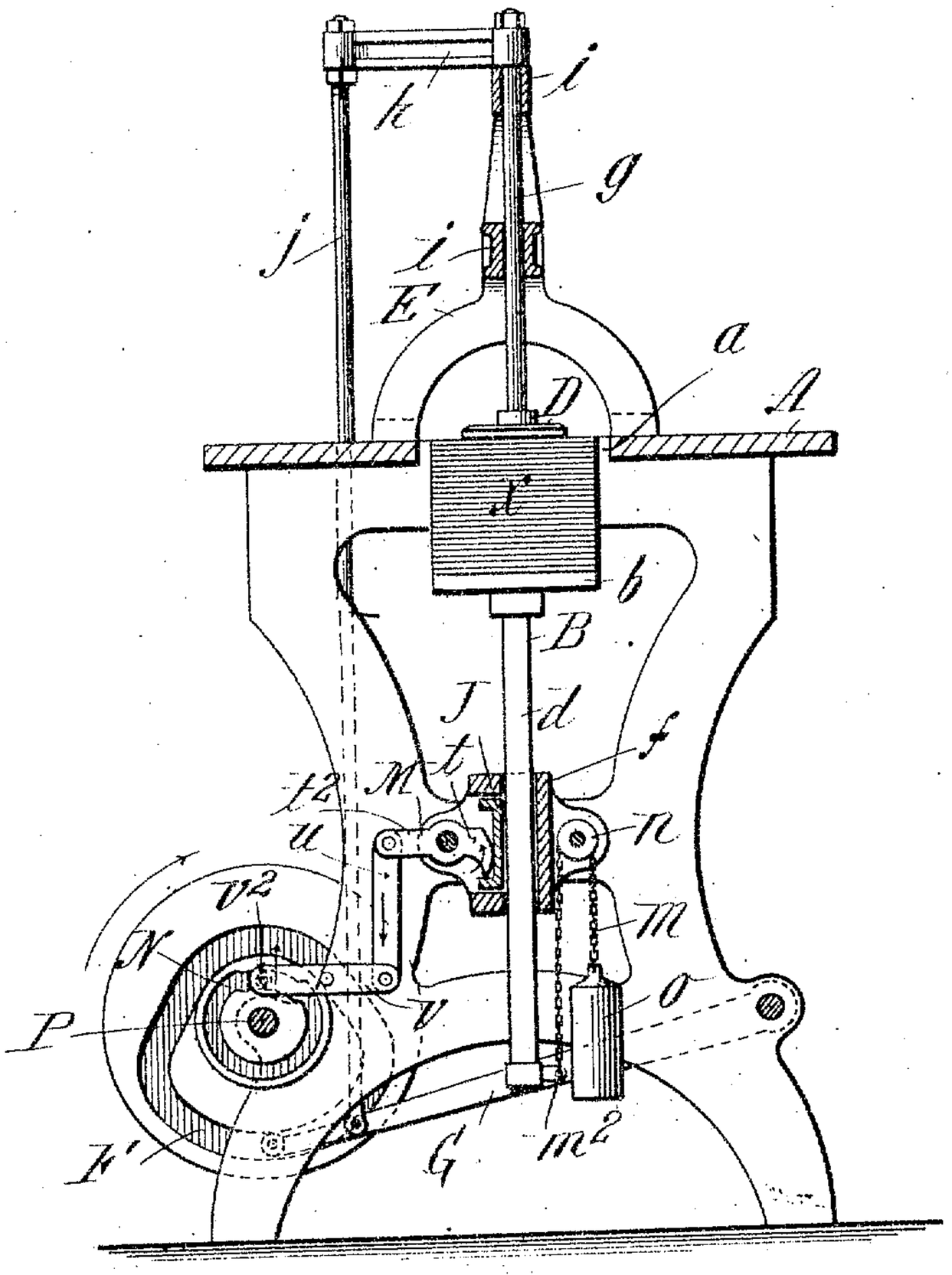
No. 848,099. PATENTED MAR. 26, 1907.

F. GRANT.

ENVELOP MACHINE.

APPLICATION FILED MAR. 1, 1906.



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UNITED STATES PATENT OFFICE.

FRANK GRANT, OF WESTFIELD, MASSACHUSETTS.

ENVELOP-MACHINE.

No. 848,099. Specification of Letters Patent. Patented March 26, 1907.

Application filed March 1, 1905. Serial No. 247,378.

To all whom it may concern:

Be it known that I, FRANK GRANT, a citizen of the United States of America, and a resident of Westfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Envelop-Machines, of which the following is a full, clear, and exact description.

This invention relates to that portion of an envelop, paper-box, or similar machine which is known as the "elevator"—that is, the support for the pile of blanks, which blanks are to be taken off one at a time, and which support has an upward-feeding action, whereby the top of the blank pile is maintained at or approximately at a certain predetermined level.

In many of the elevators as heretofore employed or proposed for use the upward feeding of the blank-pile support has been in steps or degrees corresponding to the intermittent working impulses of a ratchet-wheel and in such manner that variations of the level of the top of the blank pile would from time to time occur.

The object of this invention is to provide an automatic mechanism which will at each taking off of the top blank become operable to raise the blank-pile support to an extent exactly corresponding to the thickness of the withdrawn blank, so that the level of the top of the blank pile is always maintained up to the predetermined horizontal plane.

The invention consists in the combination in a mechanism for the purpose described of the vertically-movable elevating-support for the blank pile and means of limitation relatively and upwardly, to which the support may be moved; means for imparting a lifting movement to such support having capability of yielding relatively to the resistance of said means of limitation above the blank-pile support, and means for the retention of the support at the required level to which it is successively maintained by the lifting means.

The invention otherwise and furthermore consists in the combinations of parts and devices, all substantially as hereinafter fully described, and set forth in the claims.

Mechanisms for carrying out the object of this invention are illustrated in the accompanying drawings, in which the figure is a sectional elevation showing so much of an envelop-machine as is necessary to make plain the application thereon of the present improved devices, which are illustrated in their appropriate situations.

In the drawings, A represents the table of an envelop-machine having the aperture *a* for the accommodation of the pile of blanks *x*, which is shown, supported as usual on the elevator or blank-pile support B, which comprises the top table or platform *b* and a vertical member *d* depending through and guided in the portion *f* of the machine-frame properly arranged and constructed for such vertical guiding of the blank-pile support.

D represents a plunger carried for a vertical reciprocatory movement at the lower end of the shaft *g*, having guiding-bearings at *i i* in the arch E, and the plunger-shaft *g* has a fixed arm *h*, to which is connected the rod *j*, which also has a connection with the lever G, which engages in and receives a swinging motion from the cam F. This plunger will be periodically brought down to the level of the top of the blank pile, dwelling thereat, and constitutes a means of limitation relatively and upwardly, to which the support and blanks thereon may be moved.

As a means for imparting a lifting movement to the blank-pile support and one which has a capability of permitting a yielding relatively to the resistance imposed by the plunger, a cord or chain *m*, having one end affixed at m^2 to the vertical portion *d* of the blank-pile support, having therefor the guiding-sheave *n*, around which its intermediate portion takes a half-turn, and the weight *o*, suspended at the free end of the cord or chain, are provided in the manner and for the effect clearly apparent in the drawing, and of course after each removal of a blank the weight is operative, if the blank-support is liberated, to lift such support up to the limit of its rising movement, which limit would, especially in envelop-machines of the character set forth in the patent to Grant, March 1, 1904, No. 753,256, or in the application for patent of Grant *et al.*, filed December 19, 1904, Serial No. 237,568, be constituted by the gummers at the bottom of the plunger in the one case or by the foot-piece carrying former-plates in the other instance.

At the side of the vertical portion *d* of the elevator is a friction-shoe *J*, adapted by sidewise pressure thereagainst to be bound against the side of the part *d* and to be freed therefrom on the release of such pressure, and coacting with said shoe is an intermedi-

ately-pivoted lever M, having the end of its arm t eccentrically curved, while to the other arm t^2 of said lever is secured a connecting-rod u, which is also connected to one end of an intermediately-pivoted lever v, which has a roller v^2 at its other end which engages in the groove of a rotary cam N, which is shown on the same shaft P that carries the aforementioned plunger-operating cam F.

By having the cam N properly graded and timed there will be a releasing of the elevator so that it is subjected to the upward pressure of its elevating means at a time when the plunger is dwelling at its lowermost position for the limitation of such upward movement, while, on the other hand, just before the plunger retires upwardly away from the top of the pile the shoe becomes locked and remains locked until the plunger has again resumed its lowermost position.

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

1. In an envelop-machine in combination, a vertically-movable elevating support for the blank pile, a plunger reciprocating thereover, and adapted to periodically dwell at the limit of its descending movement and to constitute a means of limitation relatively, and upwardly, to which the blank-pile support and blanks thereon may be moved, means for imparting intermittent reciprocatory movements to the plunger, means for imparting a lifting movement to such support, having capability of yielding relatively to the resistance of the lowered and temporarily-immovable plunger, and means intermittently operable for the retention of the blank-pile support at the required level at which it is constantly maintained by the lifting means.

2. In an envelop-machine in combination, a vertically-movable elevating blank-pile support, a plunger reciprocating thereover and adapted to periodically dwell at the limit of its descending movement and to constitute a means of limitation relatively and up to which the blank-pile support and blanks thereon may be moved, means for imparting the intermittent reciprocatory movements to the plunger, a shoe arranged alongside a vertical portion of the blank-pile support, a lever mounted for swinging movement adjacent said shoe and having a cam-shaped end operable to bind the shoe against, and permit its release from, the support, a cam having an actuating connection with the lever, a weight, and a flexible connection to a portion of which the weight is hung, intermediately sheave supported and guided, and having a portion thereof connected to the blank-pile support.

Signed by me at Springfield, Massachusetts, in presence of two subscribing witnesses.

FRANK GRANT.

Witnesses:
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