No. 650,093. L. M. NIELSEN. Patented May 22, 1900.

MACHINE FOR OPENING ENVELOPS.

(Application filed Dec. 24, 1898. Renewed Oct. 31, 1899.)

(No Model.) 3 Sheets—Sheet 1.

FIG. 1.

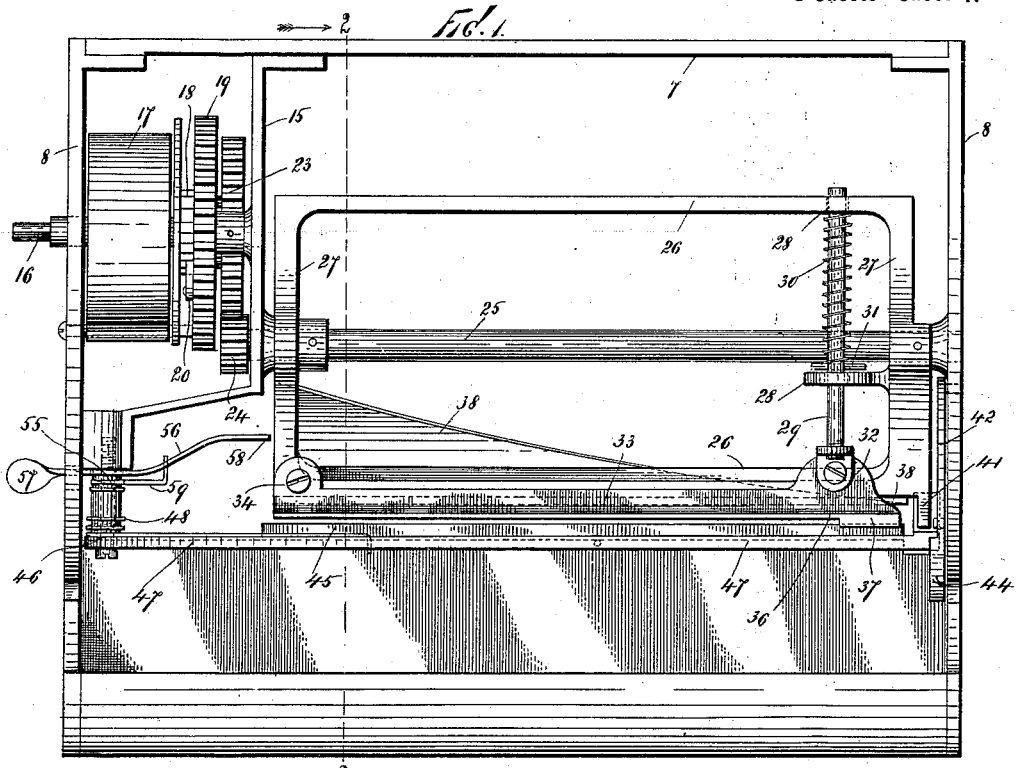

FIG. 2.

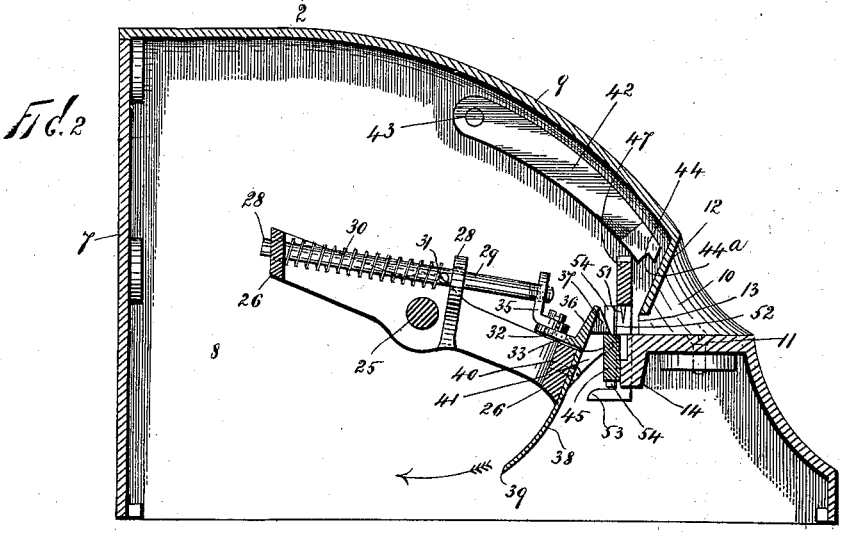

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FIG. 3.

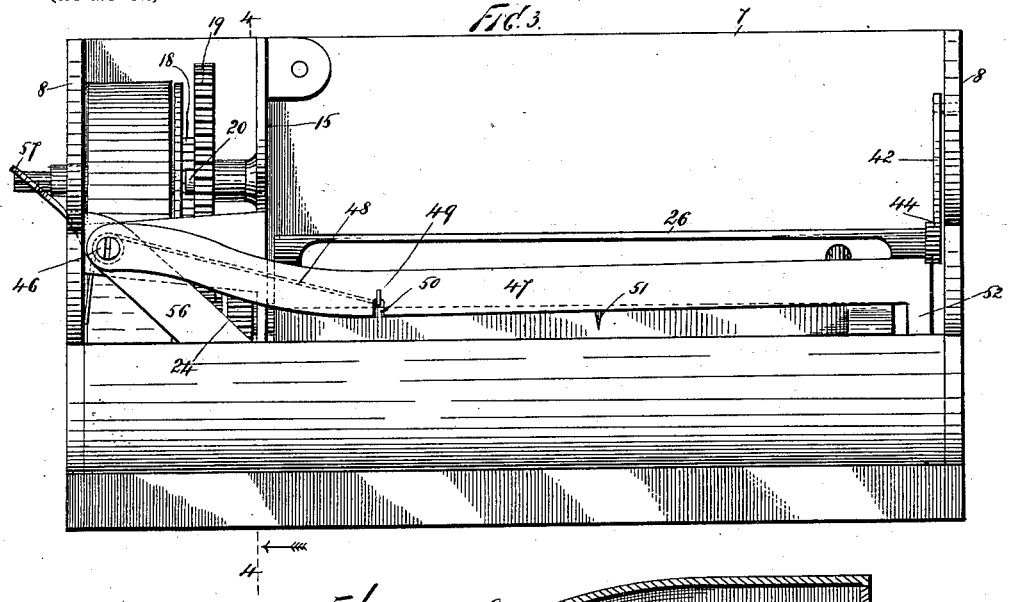

FIG. 4.

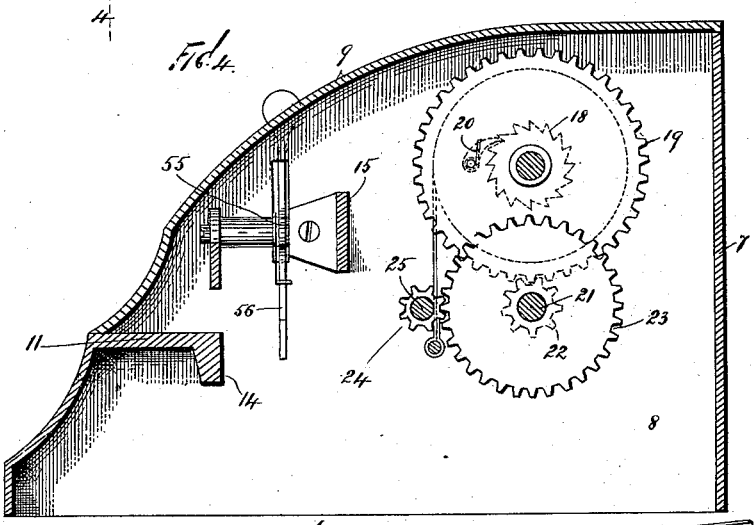

FIG. 5.

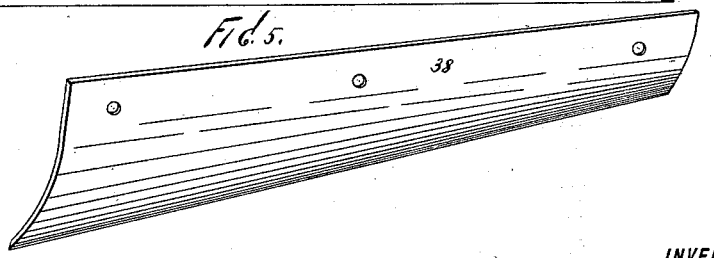

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FIG. 6.

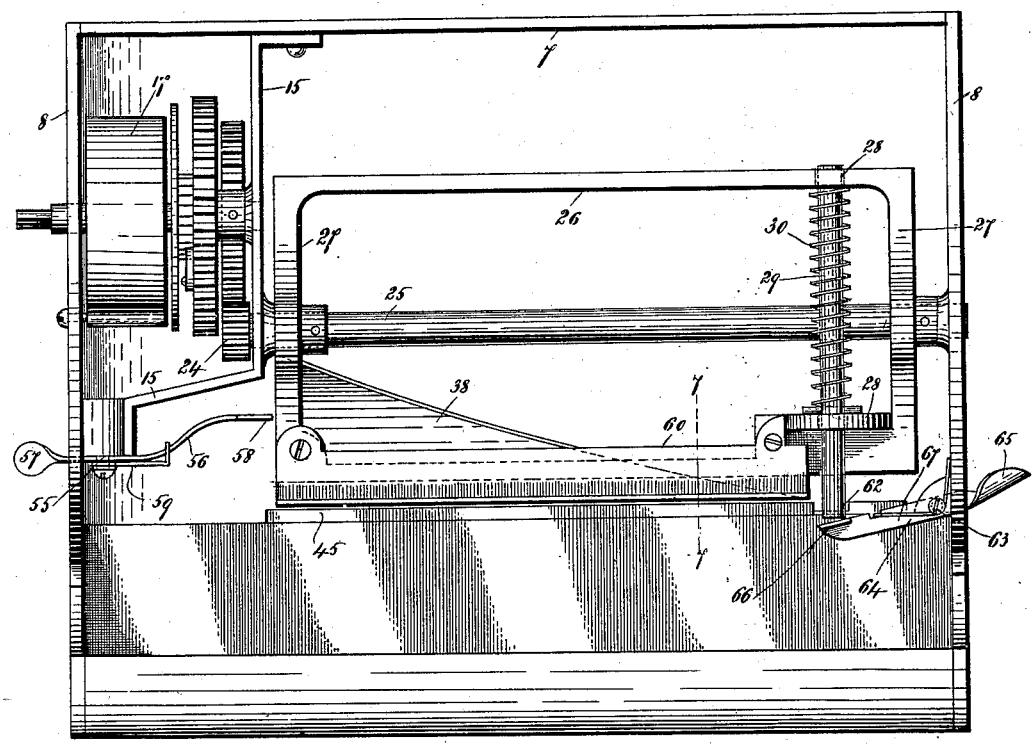
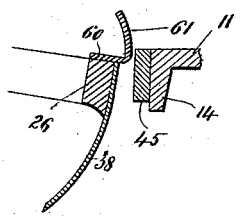


FIG. 7.



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UNITED STATES PATENT OFFICE.

LAURITS M. NIELSEN, OF NEW YORK, N. Y.

MACHINE FOR OPENING ENVELOPS.

SPECIFICATION forming part of Letters Patent No. 650,093, dated May 22, 1900.

Application filed December 24, 1898. Renewed October 31, 1899. Serial No. 735,423. (No model.)

To all whom it may concern:

Be it known that I, LAURITS M. NIELSEN, a citizen of the United States, residing at New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Machines for Opening Envelops, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to machines for opening envelops; and the object thereof is to provide an improved machine of this class which is designed to cut off the end of the envelop and which may be placed upon a desk, table, or other article of furniture.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 is a plan view of my improvement with the top and a portion of the front removed; Fig. 2, a cross-section with the top and front in position, said section being taken on the line 2 2 of Fig. 1; Fig. 3, a front view with the top and portion of the front removed; Fig. 4, a cross-section on the line 4 4 of Fig. 3; Fig. 5, a perspective view of a cutter-blade which forms a part of the machine; Fig. 6, a view similar to Fig. 1, showing a modified form of construction; and Fig. 7 a section on the line 7 of Fig. 6.

In the drawings forming part of this specification the separate parts of my improvement are designated by the same numerals of reference in each of the views, and in the practice of my invention I provide a casing comprising a back 7, vertical end pieces 8, and a downwardly and forwardly inclined top and front 9, in which is formed a longitudinal opening 10, said opening consisting of a base-plate 11 and a downwardly and backwardly-directed shield 12, between which and the base-plate is a longitudinal slot 13, and the base-plate 11 of the opening 10 is provided at its inner edge with a downwardly-directed flange 14.

Within the casing at one of the back corners thereof is secured a frame-plate 15, and mounted in the adjacent end 7 and in said frame-plate 15 is a drum-shaft 16, on which is mounted a spring-drum 17, provided with a ratchet-wheel 18, which is secured thereto, and a gear-wheel 19, which is provided with a spring-operated pawl 20, which operates in connection with the ratchet-wheel 18, and below the drum-shaft 16 is another short shaft 21, provided with a pinion 22, (see Fig. 4,) in connection with which the gear-wheel 19 operates, and the shaft 21 is also provided with a gear-wheel 23, which operates in connection with a pinion 24, mounted on a shaft 25, supported centrally and longitudinally of the machine and in front of the shaft 21, as clearly shown in Figs. 1, 2, and 4.

Mounted on the shaft 25 and rigidly secured thereto is a rectangular cutter-blade frame comprising parallel sides 26 and parallel ends 27, and mounted in bearings 28 at one end of said frame, as shown at the right of Fig. 1, is a rod 29, provided with a spring 30, which bears on the bearing at 28 and on a pin 31, secured in said rod, and the operation of said spring 30 is to force the rod 29 transversely of the cutter-blade frame, and the end of the rod 29 which projects in the direction in which the spring 30 operates is pivotally connected at 32 with a horizontal bar 33, which is pivoted at 34 to the opposite end of the cutter-blade frame, the connection between the rod 29 and the bar 33 being made by means of an angle iron or clip 35. The end of the bar 33 adjacent to its connection with the rod 29 is provided with an upwardly-directed flange 36, having a forwardly-directed tooth 37, beveled on its upper front side, as clearly shown in Figs. 1 and 2. The cutter-blade 38 is of the form shown in Figs. 2 and 5, one end thereof being wider than the other and the front being convex in cross-section, the cutter edge 39 being also directed downwardly, and said cutter-blade is rigidly secured to one side of the cutter-blade frame, as shown at 40, and the end of the cutter-blade frame adjacent to the rod 29 is provided at one corner with a shoulder or projection 41, which is adapted to operate in connection with an arm 42, pivoted at 43, and the lower end of which is provided with a head 44, having a notch or recess 44^a.

Secured to the downwardly-directed flange 14 of the bottom or base 11 of the front opening 10 is a cutter-bar 45, in connection with which the cutter-blade 38 operates.

Pivoted adjacent to the end of the casing

opposite the arm 42, as shown at 46, is an arm 47, which extends longitudinally of the machine and which is held in a raised position by a spring 48, having a hook 49, which catches in a notch or recess 50 in the bottom of said arm, and said arm is provided centrally with a downwardly-directed pin 51 and at its free end with a downwardly-directed extension 52, provided at its lower end with a backwardly-directed foot 53, and the upward movement of the arm 47 is limited by a stop 54, secured to the adjacent end of the main casing of the machine.

The normal position of the parts of the machine is that shown in Figs. 1 and 2, and it will be apparent that the spring-drum 17 operates at all times to turn the cutter-blade frame in the direction of the arrow shown in Fig. 2, and in the position of the parts shown in said figure the tooth or projection 37 rests on the cutter-bar 45 and holds the cutter-blade frame in the position shown in said figure. If now it is desired to open an envelop or cut off the end thereof, the end of the envelop is passed into the opening 10 and through the slot 13. The end of the envelop strikes the tooth 37 and forces back the bar 33 and the spring-operated rod 29, the spring 30 being so adjusted as to require but very slight pressure to accomplish this operation. The instant that the bar 33 has been moved back the cutter-blade frame starts to revolve, and the tooth 37 at the end of the bar 33 strikes the foot 53 on the downwardly-directed extension 52 of the arm 47 and depresses said arm, so that the point or needle 51 passes through the envelop and prevents it from being pushed backwardly too far into the machine, and at the same time the pivoted arm 42 drops down and the notch or recess in the head 44 thereof engages the arm 47 and holds said arm in a depressed position. It will be understood that the cutter-blade frame is revolved instantly and quickly by the spring-drum, and as the said frame completes its revolution the blade 38 cuts off the end of the envelop, said blade operating in connection with the cutter-bar 45 in the manner of a pair of shears and the tooth or projection 37 strikes the said cutter-bar 45, as shown in Fig. 2, and stops the revolution of the cutter-blade frame until the bar 33 is again moved inwardly by the insertion of another envelop. The cutter-blade frame at each revolution also raises the free end of the pivoted arm 42, so as to allow the arm 47 to be raised by the spring 48, this operation being accomplished by the projection 41 operating in connection with the head 44 of the arm 42.

It will be understood that the entire operative parts of this device are inclosed in a casing and concealed from view, and nothing can be inserted into said casing except the thin end of an envelop or similar article.

It may sometimes happen when the spring-drum is run down that the cutter-blade frame or the tooth 37 will rest on the foot 53 at the lower end of the downwardly-directed extension 52 of the arm 47, and in this event the said cutter-blade and the frame with which it is connected must be raised into the position shown in Fig. 2, in which position the tooth or projection 37 presses on the cutter-bar 45 before the machine can be operated. For this purpose I pivot at 55 a lever 56, the outer end of which projects through the adjacent end of the casing and is provided with a thumb-piece or handle 57, and the inner end of said lever projects downwardly and inwardly and terminates at 58, and the cutter-blade frame may be raised into the position shown in Fig. 2 by depressing the thumb-piece or handle 57 of said lever, the inner end of said lever thus being forced upwardly and coming in contact with the end of the cutter-blade frame forward of the shaft 25, and the inner end of the lever 56 is normally depressed by a spring 59.

In Fig. 6 I have shown a plan view of a modified form of construction in which the pivoted bar 33 is dispensed with and a stationary bar 60 is secured to the side of the cutter-blade frame and provided with an upwardly-directed flange 61. In this form of construction the cutter-blade is secured to the side of the cutter-blade frame, as shown in Fig. 7, directly under the bar 60. The cutter-bar 45 is also employed in this form of construction, and the end of the spring-operated rod 29 is adapted to enter a notch or recess 62 in said cutter-bar 45, as shown in Fig. 6. Pivoted at 63 adjacent to the end of the cutter-bar 45 in which the notch or recess 62 is formed is a spring-operated lever 64, the end of which projects through the adjacent end of the main casing and is provided with a thumb-piece or handle 65, and the inner end 66 of said lever is adapted to press on the adjacent end of the spring-operated rod 29 and force it backwardly. In the operation of this form of construction the end of the envelop is inserted, as hereinbefore described, and strikes the upwardly-directed flange 61 of the bar 60. The lever 64 is then operated to force the rod 29 inwardly, and the cutter-blade frame is revolved, as hereinbefore described, and the blade 26, operating in connection with the cutter-bar 45 as said frame is revolved cuts off the end of the envelop. The revolution of the cutter-blade frame is instantaneous, and when the lever 64 is operated to release the rod 29 the spring 67 throws said lever back into the position shown in Fig. 6, and as the cutter-blade frame comes around the rod 29 strikes the bar 45 and stops said frame, and this operation is repeated as often as it is desired to cut off the end of an envelop.

My improved machine is simple in construction and perfectly adapted to accomplish the result for which it is intended, and it will be apparent that changes in and modifications

of the construction described may be made without departing from the spirit of my invention or sacrificing its advantages.

Having fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A machine of the class described, comprising a casing having a longitudinal slot in the front thereof, a cutter-bar secured to the inner rear wall of said slot, a spring-operated shaft mounted in said casing, a cutter-blade frame secured to said shaft and provided with a cutter-blade which operates in connection with said cutter-bar, a bar pivoted to one end of said frame adjacent to the cutter-blade, and extending longitudinally thereof, a transverse spring-operated rod mounted in said frame and connected with the free end of said bar, said bar being also provided at its free end with a tooth or projection operating in connection with said cutter-bar to stop the cutter-blade frame at each complete revolution thereof, and a spring-raised arm pivoted within said casing and extending longitudinally and rearwardly of said slot and provided with a pin adapted to bind an inserted envelop against said cutter-bar, and also provided with a downwardly and rearwardly projecting foot which said projection is adapted to engage to depress said arm and pin, substantially as shown and described.

2. A machine of the class described, comprising a casing having a longitudinal slot in the front thereof, a cutter-bar secured to the inner rear wall of said slot, a spring-operated shaft mounted in said casing, a cutter-blade frame secured to said shaft and provided with a cutter-blade which operates in connection with said cutter-bar, a bar pivoted to one end of said frame adjacent to the cutter-blade, and extending longitudinally thereof, a transverse spring-operated rod mounted in said frame and connected with the free end of said bar, said bar being also provided at its free end with a tooth or projection operating in connection with said cutter-bar to stop the cutter-blade frame at each complete revolution thereof, said casing being also provided with a pivotally-supported spring-raised arm which extends longitudinally and rearwardly of said slot, and which is adapted to hold an envelop when inserted through said slot and to be depressed by said frame in the revolution thereof, substantially as shown and described.

3. A machine of the class described, comprising a casing having a longitudinal slot in the front thereof, a cutter-bar secured to the inner rear wall of said slot, a spring-operated shaft mounted in said casing, a cutter-blade frame secured to said shaft and provided with a cutter-blade which operates in connection with said cutter-bar, a bar pivoted to one end of said frame adjacent to the cutter-blade, and extending longitudinally thereof, a transverse spring-operated rod mounted in said frame and connected with the free end of said bar, said bar being also provided at its free end with a tooth or projection operating in connection with said cutter-bar to stop the cutter-blade frame at each complete revolution thereof, said casing being also provided with a pivotally-supported spring-raised arm which extends longitudinally and rearwardly of said slot, and which is adapted to hold an envelop when inserted through said slot and to be depressed by said frame in the revolution thereof, and said casing being also provided with a pivoted catch which is adapted to hold said arm in a depressed position, substantially as shown and described.

4. In a machine of the class described, a casing provided with a slot in the front thereof, a cutter-bar secured to the inner lower edge of said slot, a revoluble spring-operated frame mounted in said casing and provided with a cutter-blade which operates in connection with said cutter-bar, said frame being provided with a spring-operated device for engaging said cutter-bar to stop it at each revolution, and means for swinging said frame to raise said cutter-blade and bring said device into engagement with said cutter-bar, substantially as shown and described.

5. In a machine of the class described, a casing provided with a slot in the front thereof, a cutter-bar secured to the inner lower edge of said slot, a revoluble spring-operated frame mounted in said casing and provided with a cutter-blade which operates in connection with said cutter-bar, said frame being provided with a spring-operated device for engaging said cutter-bar to stop it at each revolution, and means for swinging said frame to raise said cutter-blade and bring said device into engagement with said cutter-bar, comprising a pivotally-mounted spring-depressed arm 56 provided with a thumb-piece exteriorly of said casing and the inner end of which is adapted to project beneath said frame, substantially as shown and described.

6. In a machine of the class described, a casing provided with a slot in the front thereof, a cutter-bar secured to the inner lower edge of said slot, a revoluble spring-operated frame mounted in said casing and provided with a cutter-blade which operates in connection with said cutter-bar, said frame being also provided with a spring-operated pin which operates to stop said frame at the completion of each revolution thereof, means for releasing said frame, and means for swinging said frame to raise said cutter-blade, and bring said pin into operation, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 22d day of December, 1898.

LAURITS M. NIELSEN.

Witnesses:
F. A. STEWART,
V. M. VOSLER.