Feb. 26, 1929. 1,703,738

A. J. KEISER

ENVELOPE OPENING MACHINE

Filed March 10, 1925 2 Sheets-Sheet 1

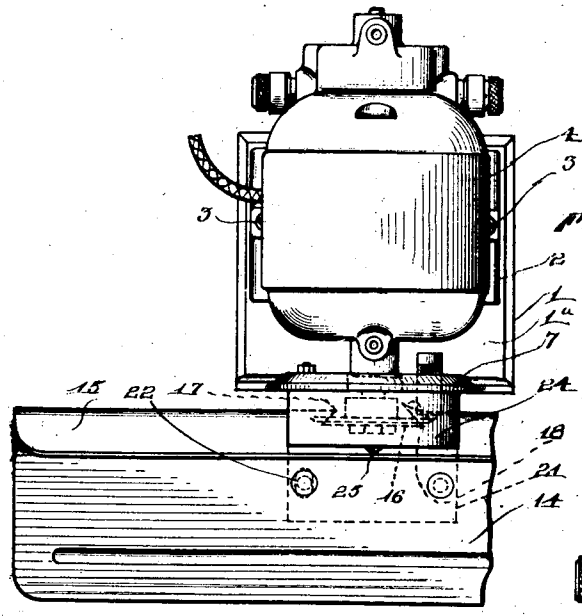


Fig. 1

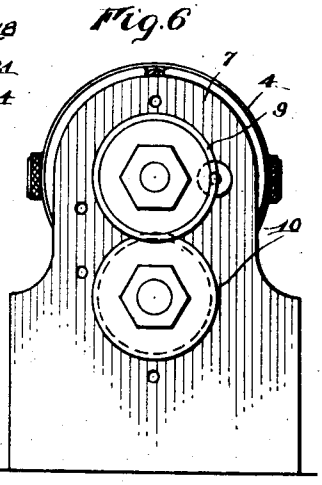


Fig. 6

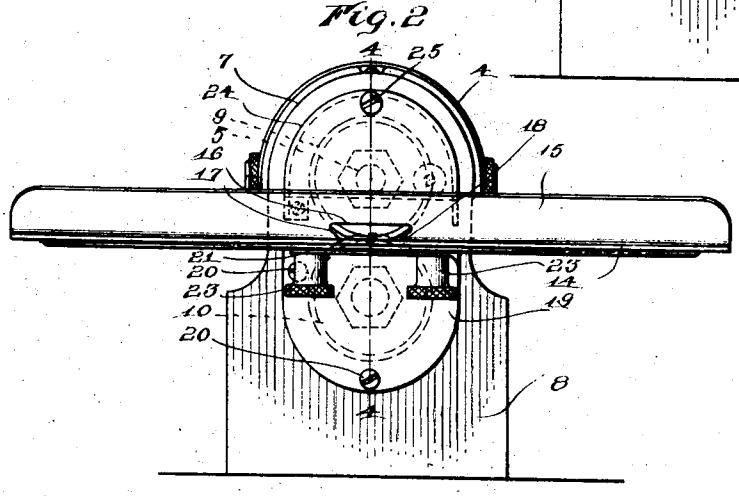


Fig. 2

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Fig. 3

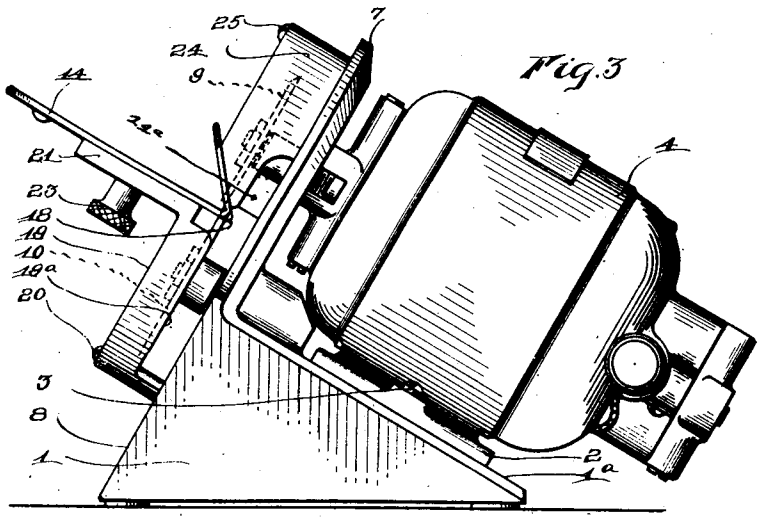


Fig. 4

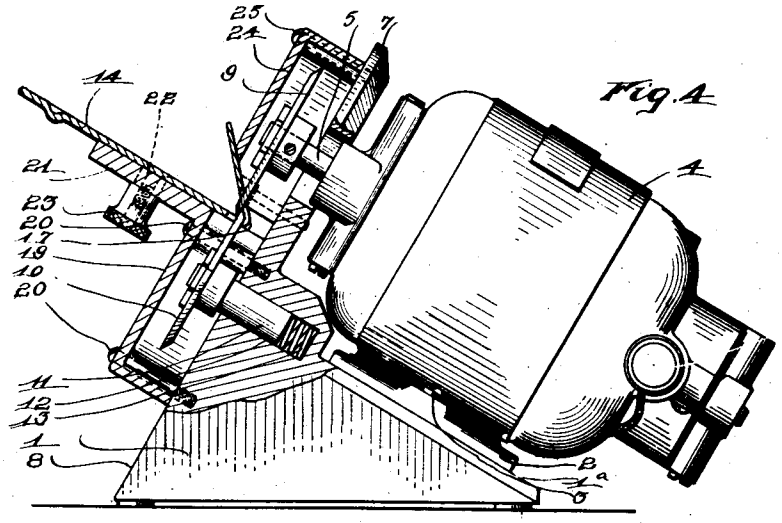
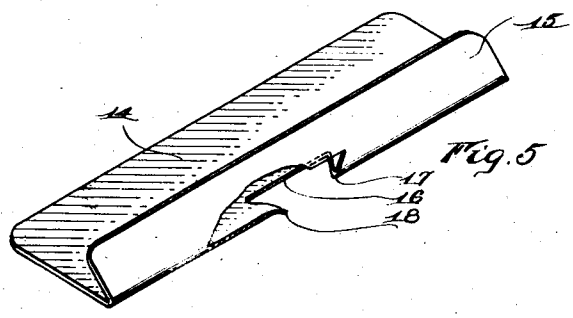


Fig. 5



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UNITED STATES PATENT OFFICE.

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ENVELOPE-OPENING MACHINE.

Application filed March 10, 1925. Serial No. 14,526.

The present invention relates to envelope opening machines and an object thereof is to provide a simple and inexpensive construction which utilizes a motor for operating the cutting mechanism. Another object of the invention is to provide a simple and inexpensive construction which will permit envelopes to be fed easily by a hand of a user past the cutting mechanism. Another object of the invention is to provide a construction in which a rotary cutter is mounted directly upon the shaft of a rotary motor whose axis of turning is arranged at an angle to the plane of the bottom of the machine. Another object of the invention is to provide an envelope opening machine in which one of two cutters is arranged on the shaft of a rotary motor and the other of said cutters is held yieldingly toward the first mentioned cutter to maintain proper cutting relation between the cutters, and, at the same time, prevent axial movement of the motor shaft. A still further object of the invention is to provide an envelope opening machine having two cutters and a guide associated with such machine formed by two parts at an angle to each other, other than a right angle. Still a further object of the invention is to provide an envelope machine with a table having a guide flange at the rear edge thereof at an angle to the plane of the table other than a right angle, to form a guide groove, the table and the guide flange being cut to provide an opening in which the cutting mechanism operates. A still further object of the invention is to provide a housing removably secured to the base frame of the machine to enclose a cutter or the cutting mechanism, said housing acting also as a support for the guide for the envelopes.

To these and other ends, the invention consists of certain parts and combinations of parts, all of which will be hereinafter described; the novel features being pointed out in the appended claims.

In the drawings:

Fig. 1 is a top view of the machine showing the same shifted so that the axis of the motor is horizontal;

Fig. 2 is a front view of the machine shifted as shown in Fig. 1;

Fig. 3 is an end view of the machine in normal position;

Fig. 4 is a similar view showing parts in section on the line 4—4, Fig. 2;

Fig. 5 is a detail view of the combined table and guide; and

Fig. 6 is a front view of the machine with the guide and the cutter housings removed.

In the illustrated embodiment of the invention, 1 indicates the base of the machine which, in this instance, is in the form of a single casting. This casting has an inclined surface 1ª on which the base 2 of a motor frame 4 may be bolted as at 3. The motor, in this instance, is a rotary motor and preferably an electric motor. Its axis of rotation is at an angle to the horizontal or to the plane of the bottom of the base 1. The shaft 5 extends through an opening 6 formed in an inclined extension 7 at the front of frame 4 and in front of the motor. This inclined extension 7 has its front face aligned with the front face 8 of the main portion of the base, so that a substantially plane surface is provided extending over the front of the base and the front of the extension 7.

The cutting mechanism of the machine embodies, in this instance, two rotary or beveled disk-shaped cutters 9 and 10. The cutter 9 is secured, in this instance, to the shaft 5 of the motor 4 in front of the extension 7 and has its bevelled edge facing outwardly and its axis at an angle to the plane of the bottom of the base or to the horizontal. The cutter 10 cooperates with the rear face of this cutter 9 and is supported on the base below the cutter 9, the axis of the cutter 10 being at an angle to the horizontal plane of the bottom of the base and being in a vertical plane with the axis of the cutter 9. In this instance, the cutter 10 is secured to a shaft 11 which extends into a pocket bearing 12 formed in the base 1 below the extension 7, this pocket bearing also containing a helical spring 13 which seats against the bottom of the pocket and also against the shaft 11 tending to hold the cutter 10 in yielding engagement with the rear face of the cutter 9, maintaining proper cutting relation between the two cutters and, at the same time, tending to prevent any axial movement of the motor shaft 5.

Suitable means is employed for guiding the envelopes in proper cutting relation to the cutters. In this instance, this means embodies a table 14 whose plane is at an angle to the plane of the bottom of the face or the horizontal and is preferably parallel with the axis of rotation of the two cutters. At the rear

edge of this table is a flange 15 coextensive with the length of said table and arranged at an angle other than a right angle to the edge of the table and extending inwardly over the face of the table. In this instance, the table and the flange are formed in one piece of sheet metal bent to provide both parts. At the corner between the flange and the table, an opening 16 is provided in both parts in which the cutters 9 and 10 operate. This opening has two oppositely extending lugs 17 and 18 arranged at opposite sides thereof so as to extend into the recesses formed between the two cutters. The lug or projection 17 conducts the envelopes to the meeting edges of the cutters, while the lug or projection 18 is deflected rearwardly so that the envelopes after passing the cutters will not contact with the end thereof, but will strike the grooved inclined surface and be redirected to the main guide groove of the lugs 18 formed between the flange 15 and the table 14.

Any suitable means may be employed for supporting the table and the guide flange. In this instance, a bracket is employed which has a lower portion 19 in the form of a housing opening in its rear end inclosing the lower cutter, being secured to the front wall of the base 8 by bolts 20. Projecting from the upper part of this house is an arm 21 which extends forwardly and is secured to the under side of the table 14. In this instance, two screws 22 are employed, said screws being fastened to the table 14 and extending downwardly through the underside thereof through two openings in the arm 21, their lower ends being engaged by thumb nuts 23. One of the openings through which the bolts or screws 22 project is slightly enlarged so that by loosening the nuts 23, the table and guide may be shifted laterally in order to establish proper guiding relation to the cutters. This is due to the fact that the screws 22 lie on opposite sides of the vertical plane through the axis of both the cutters.

The upper cutter 9 may be enclosed by a housing 24 secured by bolts 25 to the front face of the extension 7, the lower part of this housing being open and the front wall thereof cooperating with the rear surface of the guide 15. The housings 19 and 24 are recessed respectively at 19^a and 24^a to provide an opening through which the pieces cut off the envelopes may be discharged.

In using this invention, after the machine is properly adjusted and the motor started, the envelopes are taken one by one, are laid by hand upon the table 14 in advance of the cutters with an edge of the envelope to be opened at the groove or corner formed between the flange 15 and the table 14, and are moved along the groove until the entire envelope has passed the cutters. This removes from the envelope a small strip and opens the same. Owing to the fact that the guide flange 15 is at an angle other than a right angle to the plane of the table and overhangs the latter, the groove formed at the corner between the two tends to compress one edge of the envelope to put it in condition for opening by the cutters, and the contents of the envelopes are held back to some extent away from the cutters.

A machine constructed in accordance with this invention is inexpensive to manufacture. The table is arranged so that it lies in such a position that the hand may be utilized for feeding the envelopes past the cutters. The cutters are driven by a rotary motor without necessity of complicated gearing, one of the cutters being directly arranged upon the shaft of the motor and the other being driven by frictional contact therewith. The cutter on the motor shaft is held against longitudinal movement by a spring which tends to maintain the lower cutter also in proper cutting relation to the motor driven cutter. A novel support for the table is provided which also acts as a housing for the lower cutter. The housing for the upper cutter cooperates with the flange of the table to provide a complete enclosure for the cutter. The table and flange are formed from one piece of sheet metal bent to form the two parts and the cutters operate at the bend or corner formed between such parts, the metal being cut to provide an opening which has two projections extending toward each other to operate in spaces between the cutters adjacent their meeting edges. Both of these projections form extensions of the guide groove and one is deflected rearwardly so as not to interfere with the movement of the envelope past the cutters.

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

1. A machine for opening envelopes comprising a base, two rotary cutters mounted to turn on the base, a guide for directing envelopes past the cutters and having two portions arranged at an angle other than a right angle to each other, and two detachable housings, one for each of the cutters, one of said housings connecting with one of the portions of said guide to support said guide, and the other housing cooperating with the other portion of said guide to close the space between the guide and the housing.

2. A machine for opening envelopes comprising a base having a motor supporting portion at an angle to the plane of the bottom of said base and an extension at the front of the base with its front wall in a line with the front wall of the base, the front wall of the extension and the base forming a surface at an angle to the plane of the bottom of the base and substantially at right angles to the inclined motor supporting portion first mentioned, the extension having an opening,

a rotary motor supported on the motor supporting portion of the base and having a shaft extending through the opening, a cutter mounted on said shaft in front of the extension, a second rotary cutter cooperating with the first mentioned rotary cutter and arranged in front of the base, a guide for directing envelopes past the cutters, and means for housing the cutters supporting said guides and detachably secured to the front walls of the base and said extension.

3. A machine for opening envelopes comprising two rotary cutters and a guide for directing envelopes past the cutters, embodying two parts arranged at an angle one to the other, other than a right angle, said guide having at the junction an opening in which the cutters operate, the opposite ends of the opening being provided with tongues extending into spaces between the two cutters adjacent the meeting edges.

4. A machine for opening envelopes comprising two rotary cutters and a guide for directing envelopes past the cutters embodying two parts arranged at an angle one to the other, other than a right angle, said guide having at the junction an opening in which the cutters operate, the opposite ends of the opening being provided with tongues extending into spaces between the two cutters adjacent the meeting edges, one of said tongues being deflected rearwardly.

5. A machine for opening envelopes comprising a base having a motor supporting portion and an upward extension in front of the motor supporting portion provided with an opening, a rotary motor having a casing bolted to the upper face of the motor supporting portion and having a shaft extending through the opening, a cutter mounted on the shaft in front of the extension, a second rotary cutter mounted on the base below said shaft and cooperating with the first named cutter, two housings detachably secured to the base over the two cutters, and a guide for the envelope supported between the two housings in cooperative relation with both cutters.

6. A machine for opening envelopes comprising a base having its bottom portion formed to rest upon a supporting surface to sustain the machine in operative position, a table supported on said base at an angle to the plane of the bottom of said base, a guide flange connected with the table and lying at an angle other than a right angle to the horizontal plane of the base to form with the table a guide at the junction of the table and the guide flange, said guide having an opening at the junction of the table and the flange, and cutting mechanism operating through said opening.

7. A machine for opening envelopes comprising a base having its bottom portion formed to rest upon a supporting surface to sustain the machine in operative position, a table arranged at an angle other than a right angle to said base, a flange having connection with the table to form a guide, said flange lying at an angle other than a right angle to the horizontal plane of the base, the guide being provided with an opening at the junction of the table and the flange, and two rotary cutters mounted to turn about two axes parallel with the table and on opposite sides thereof, said axes being inclined with reference to the horizontal plane of the bottom of the base.

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