G. METZKE.

MACHINE FOR OPENING ENVELOPS.

APPLICATION FILED FEB. 17, 1909.

924,562. Patented June 8, 1909.

Fig.1.

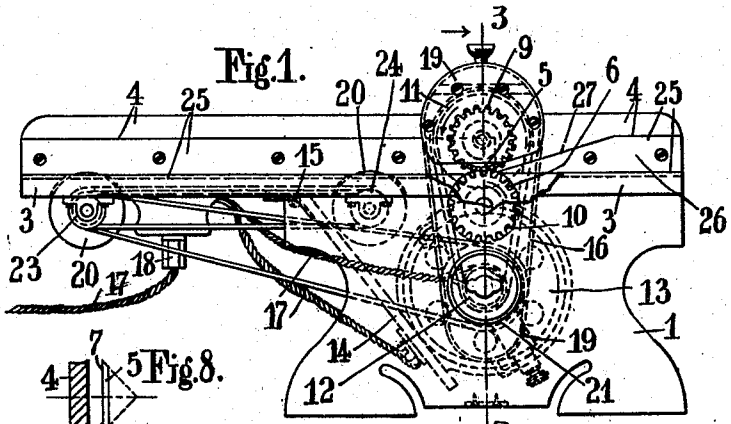


Fig.8.

Fig.2.

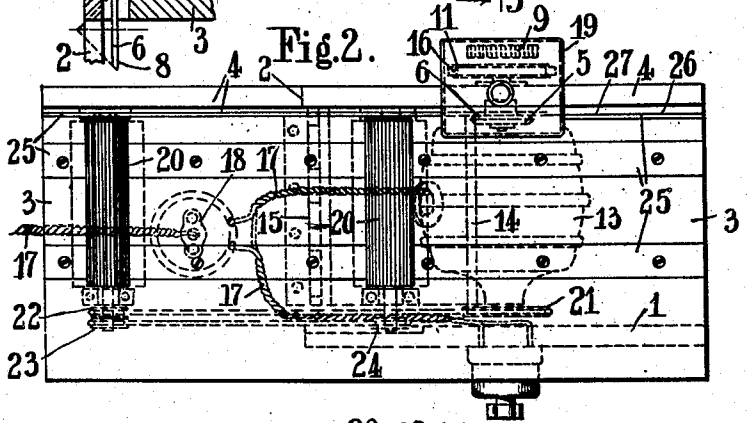


Fig.3.(3-3).

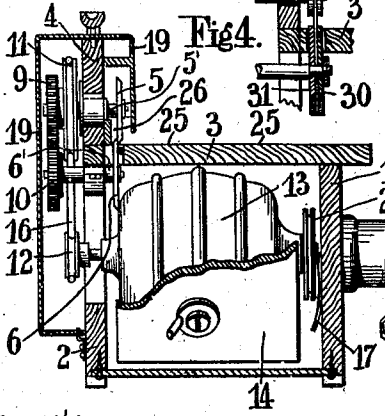


Fig.4.

Fig.4a.

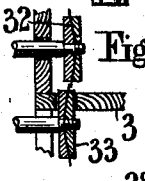


Fig.5.

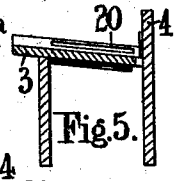


Fig.7.

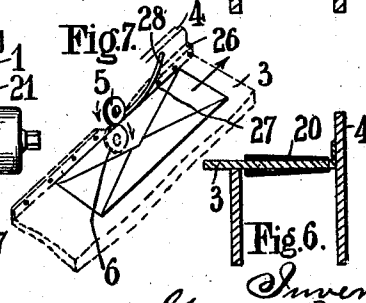


Fig.6.

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UNITED STATES PATENT OFFICE.

GEORG METZKE, OF BERLIN, GERMANY.

MACHINE FOR OPENING ENVELOPS.

No. 924,562. Specification of Letters Patent. Patented June 8, 1909.

Application filed February 17, 1909. Serial No. 478,476.

To all whom it may concern:

Be it known that I, GEORG METZKE, a subject of the German Emperor, and residing at Berlin, Germany, have invented a certain new and useful Improved Machine for Opening Envelops, of which the following is a specification.

The invention relates to machines for opening envelops and its object is to provide a machine capable of opening a large number of envelops in succession in the smallest space of time possible, without other manipulations being necessary than those for placing the envelops in succession on the machine which then automatically performs the rest.

In accordance with the invention the envelops are cut open between two circular knives arranged in such manner that they draw the envelops between them at the same time as they cut them. The knives, which are driven positively and preferably at the same speed, are given a definite shape for fulfilling the double purpose and are so mounted with regard to a guide arranged at right angles to the feed-table that they guide the envelops along the vertical face of the guide. According to one constructional form of the invention the knives are shaped conically at the periphery, namely in such manner that the larger circular face of the top knife faces the vertical guide, whereas that of the bottom knife is turned away from the same. The knives may also be such that the one knife, for example the top one, is a plane circular plate, whereas the other knives, for example the lower, comprise two circular disks each having a cylindrical periphery. The two circular disks will then be arranged on an axle at a distance from one another which corresponds to the thickness of the top knife, so that the latter can enter into the intermediate space. The peripheral faces of the two circular disks will be cylindrical in order that the envelops can be driven on them; to improve the driving power of the knives their circumferential faces may be roughened or milled. Lastly, two thin steel disks each pressed into the form of a flat funnel can be employed with their concave sides facing one another. In order to carry away the separated strips separately from the envelop, behind the knives there is provided a guiding ledge, the operative face of which lies in a plane different from the face on which the envelops are fed. In order to feed the envelops to the knives in succession automatically, in front of the latter are arranged driven rollers; these may be shaped differently according as the face of the table forms a right or an acute angle with the vertical face of the guide. In the former case, in order to guide the envelops which are already in front of the knives along the vertical guide, the rollers may be conical and arranged so that the smaller ends of the rollers face the vertical guide; the rollers may also be cylindrical however, in which event the table will form an acute angle with the vertical guide. The table may in addition be sloped downwardly in the direction of motion of the envelops, in order to support or aid the envelop being conveyed automatically by gravity.

In order that the invention may be clearly understood, reference will be made to the accompanying drawing in which several embodiments are represented by way of example, and in which:

Figure 1 is a side elevation, Fig. 2 a plan, Fig. 3 a vertical section in the plane 3—3 in Fig. 1 showing one constructional form of the machine, whereas Figs. 4 to 8 show details and modified forms of some parts.

Referring to the drawing, the pedestals 1, 2 carry the table 3; the pedestal 2 has, as an upward extension, the border 4 which forms the vertical guide.

According to the form shown in Figs. 1, 2, 3, 7 and 8 the circular knives, between which the envelops are cut open, are the conical knives 5, 6. According to Fig. 8 the larger circular face 7 of the top knife 5 faces the vertical guide 4, whereas the larger circular face 8 of the bottom knife 6 is turned away from the border 4. In this manner it is obtained that the slanting conical faces guide each envelop between the knives, as clearly shown in Fig. 7, so that it always remains in contact with the vertical guide 4, and the separated strip keeps the same breadth. The axle 5′ for the top knife is journaled in the wall 4, and the axle 6′ for the bottom knife in the pedestal 2. These axles 5′, 6′ are provided with toothed wheels 9, 10 of equal size which are driven, for example, by means of a grooved pulley 11 on the top axle which is driven by a cord 16 from the grooved pulley 12 on the shaft of an electric motor 13 for example. The latter is mounted on a plate 14 which is hinged at 15 to the underside of the table 3 so that it can swing, so that the electric motor hangs on the rope or cord 16

and its own weight tensions the same. Current is supplied to the motor through the conductors 17 and plug 18, and the gearing may be covered by a casing 19.

In front of the knives 5, 6 there are arranged projecting through the table rollers 20 which are driven by the electric motor 13 by means of grooved pulleys 21, 22, 23 and 24 and a cord passing over the same.

Since the parts 1, 2, 3 and 4 are preferably made of wood for reducing the weight, in order to obtain durable guiding faces, polished metal bars 25 can be inserted in the table 3 and guide 4. Behind the knives the guide 4 has a ledge 26, the operative face 27 of which is located in a plane other than that of the feeding face of the table 3, so that the separated strips 28 are guided away upward, as clearly indicated in Fig. 7. This ledge 26 is preferably adjustable on the guide 4.

Fig. 4 shows a modified constructional form of the knives. The top knife is a circular disk 29 which enters into the space between the two disks 30, 31. The cylindrical peripheral faces of the disks 30, 31 may be roughened or milled for feeding the envelops.

According to the form shown in Fig. 4ª the knives may be formed of two thin steel disks 32, 33 each pressed into the shape of a flat funnel and having their concave sides facing one another. The disks are fitted between correspondingly shaped plates, as clearly shown.

The table 3 is preferably arranged slanting with regard to the guide 4, namely either sloping transversely according to Fig. 5 or simultaneously also sloping longitudinally, so that the envelops are always guided to the guide 4 by the cylindrical rollers 20. According to the form shown in Fig. 6 the rollers 20 may also be conical so that they always place the envelops against the guide 4.

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

1. In a machine for opening envelops, the combination of a table having a guide, two circular knives having conical peripheries mounted revolubly on the table parallel with said guide, a ledge adjustable on said guide behind the knives, the operative guiding face of the ledge being situated in a plane other than that of the top of the table, and means for rotating said knives.

2. In a machine for opening envelops, the combination of a table having a vertical guide, the top of the table being arranged sloping downward toward said guide, two circular knives having conical peripheries mounted revolubly on the table parallel with said guide, two rollers arranged in said table in front of said knives, means for rotating said rollers, and means for rotating said knives.

3. In a machine for opening envelops, the combination of a table having a guide, two circular knives having conical peripheries mounted revolubly on the table parallel with said guide, a plurality of cylindrical rollers arranged in said table in front of said knives, means for rotating said rollers, and means for rotating said knives.

4. In a machine for opening envelops, the combination of a table having a guide, a strip guiding ledge on said guide, knives revolubly mounted on the table adjacent said guide and ledge and rotating in a plane parallel with said guide, and means for rotating said knives.

5. In a machine for opening envelops, the combination of a table having a guide, a ledge adjustably mounted on said guide, two superposed circular conical knives mounted revolubly on the table parallel with said guide and adjacent said ledge, the top knife being arranged with its larger side facing said guide, and the bottom knife being arranged with its smaller side facing the guide, and means for rotating said knives.

6. In a machine for opening envelops, the combination of a table having a guide, two circular knives having conical peripheries mounted one above and the other below the table parallel with said guide, a ledge on said guide behind the knives and located in a plane above the top of the table, and means for rotating said knives.

In testimony whereof, I affix my signature in the presence of two witnesses.

GEORG METZKE.

Witnesses:

WOLDEMAR HAUPT,

HENRY HASPER.