

M. BUNNIG.

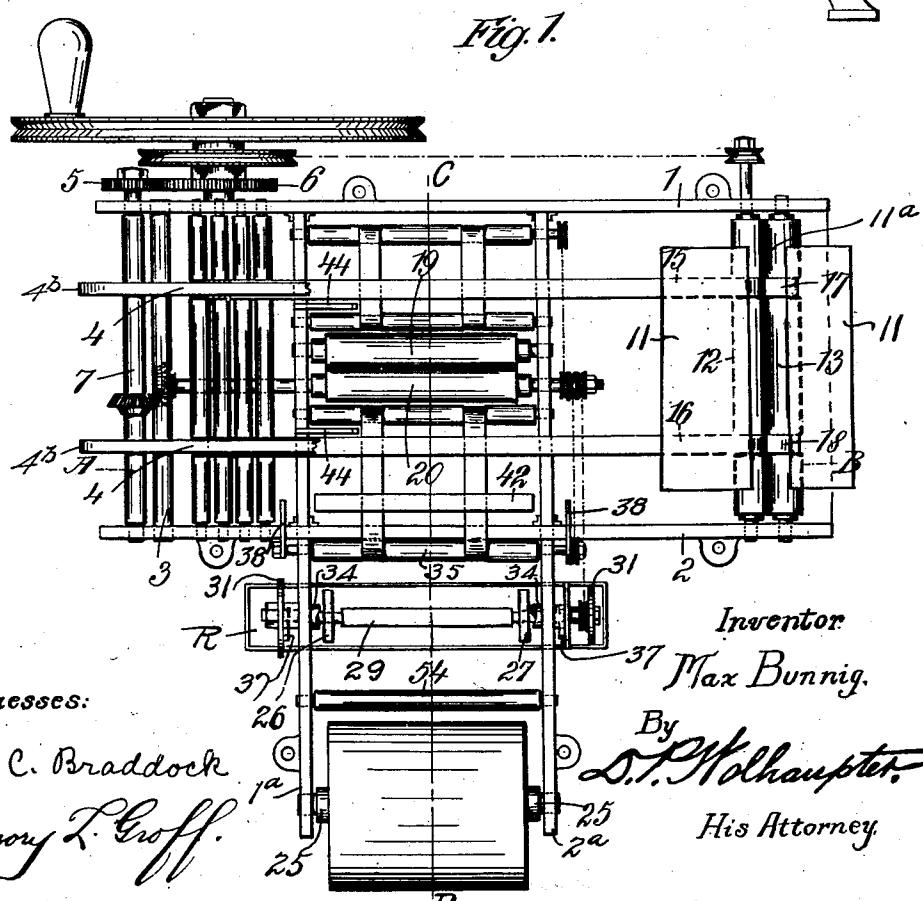
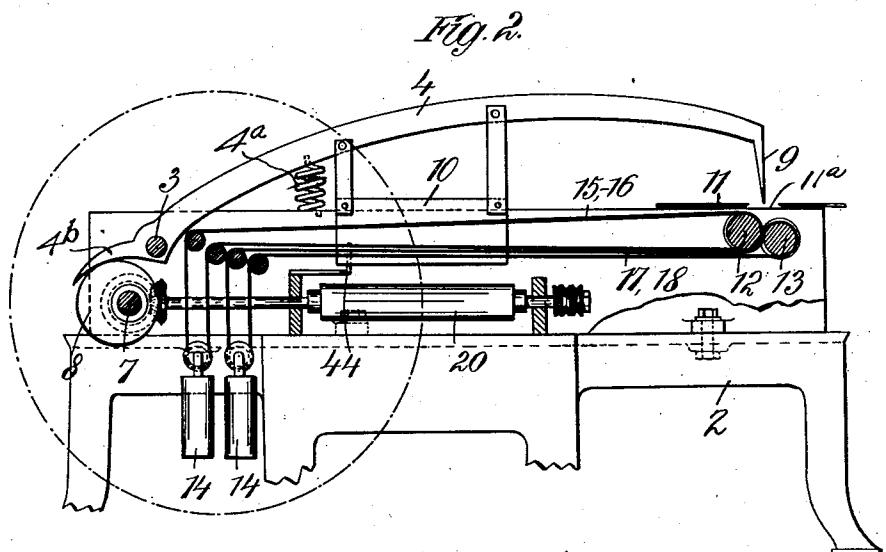
MACHINE FOR FOLDING LETTERS AND PUTTING THEM INTO ENVELOPS.

APPLICATION FILED OCT. 20, 1908.

999,204.

Patented Aug. 1, 1911.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 3.

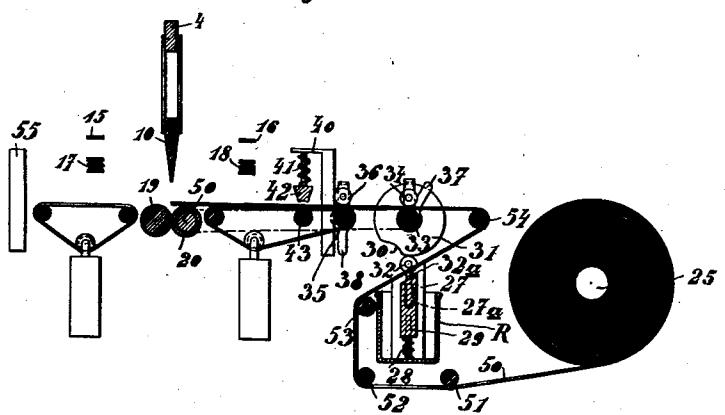
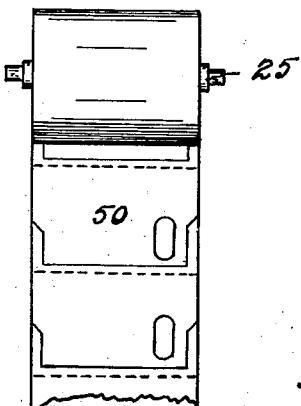


Fig. A.



WITNESSES

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UNITED STATES PATENT OFFICE.

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MACHINE FOR FOLDING LETTERS AND PUTTING THEM INTO ENVELOPS.

999,204.

Specification of Letters Patent. Patented Aug. 1, 1911.

Application filed October 20, 1908. Serial No. 458,682.

To all whom it may concern:

Be it known that I, MAX BUNNIG, a citizen of the German Empire, and resident of Gardelegen, Germany, have invented certain new and useful Improvements in Machines for Folding Letters and Putting Them into Envelops, of which the following is a specification.

This invention relates to a novel and practical construction of machine comprising means for folding letter sheets and placing them in envelops ready for mailing.

To this end the invention has in view a machine intended to obviate the many objections to the laborious operation of folding letters by hand, and inserting them in the envelops within which they are mailed, and in carrying out that object, comprises means for automatically performing these operations, whereby even unskilled workers can expeditiously and with great rapidity handle an extensive daily correspondence.

Specifically speaking, the invention provides means for folding letter sheets, and also forming the individual envelops from a blank in sheet form, and to perform these operations in such time and order that the envelop is made or wrapped about the folded letter sheet.

In carrying out these several objects, the invention comprises in combination, a folding device having means for folding a letter sheet, a second folding device comprising means for forming an envelop, damping means for the envelop paper, means for carrying a folded letter sheet from the said first folding device to the said second folding device, means for feeding the envelop paper past the damping means to said second folding device, and means for operating said second folding device to fold the envelop paper into envelop form, and to place the folded letter sheet into the envelop.

In the accompanying drawings, illustrating one embodiment of the invention,—Figure 1 is a top plan view showing part of the superstructure removed to better expose the conveying means for the letter sheets and the envelop paper. Fig. 2 is a sectional view on the line A—B of Fig. 1. Fig. 3 is a similar view on the section line C—D of Fig. 1. Fig. 4 is a plan view showing the preferred manner of preliminarily preparing the envelop paper in sheet form that

may be rolled into a reel, and which has the individual envelops blanked out.

Like references designate corresponding parts in the several figures of the drawings.

In the embodiment of the invention suggested in the drawings, the side frame members 1 and 2 of the machine constitute bearing supports for a pivot rod 3 carrying vertically swinging arms 4 normally lifted upward by retracting springs or equivalent means 4^a and having at one side of their pivot 3 bearing extensions 4^b which are engaged by eccentrics 8 keyed on a shaft 7 which is driven by hand power or equivalent driving means which include the toothed wheels 5 and 6.

The vertically swinging arms 4 carry the vertically arranged folding blades 9 and 10, which are disposed at right angles to each other. Below the folding blade 9 is arranged the table 11 for the letter sheets, and this table is slotted as at 11^a to permit the blade 9 to pass therethrough, and below the slotted portion of the table are located the rollers 12 and 13 around which pass pairs of endless belts 15, 16, 17, and 18, which are held in taut condition by weights 14 or equivalent means and which are arranged respectively at opposite sides of the vertical path of movement of the second folding blade 10 so as to feed the letter sheets to the latter. Below the said second folding blade 10 there is mounted a pair of rollers 19 and 20, one of which, for instance the roller 20, is preferably driven by the shaft 7 through the medium of a suitable driving connection such as shown in Fig. 2 of the drawings.

The lateral frame extensions 1^a, 2^a project from the main frame 1—2 at right angles to the latter, and at the outer end of said frame extension 1^a 2^a is mounted a reel 25 upon which is rolled a supply of the envelop paper.

Between the reel 25 and the main frame 1—2, there is located a damping device, consisting of a water reservoir R, two damping stamps 26 and 27 disposed in the direction in which the envelop paper runs, and a third damping-stamp 29 capable of vertical movement and thrust upwardly under tension of the spring 28. The said third damping stamp 29 is arranged between the two end stamps 26 and 27 and carries on lateral arms 32^a extending through slots 27^a in the stamps

26—27, rollers 32 or their equivalent. The stamp 29 extends across nearly the entire width of the band or sheet of envelop paper so as to provide means for damping the 5 lengthwise strip of adhesive on each envelop blank, while the terminal or end stamps 26 and 27 provide for damping the end strips of adhesive previously placed on the individual envelop blanks. The said third 10 damping-stamp 29 is held down or depressed by means of disks 31 carried with the roller 33 (hereinafter referred to) and provided with a peripheral recess 30. The rollers 32 of the stamp 29 are in continuous contact 15 with the disks 31, and when the disks 31 turn to a position that the recess 30 lies in the vertical plane of the stamp 29, the spring 28 then moves the said stamp upward, and thus dampens the said lengthwise strip of 20 adhesive on the envelop blank. As the disks 31 turn, they act as cams to again depress the said stamp 29 to its inactive position as shown in Fig. 3.

There are included as a part of the damping mechanism and the means for feeding the envelop paper through and past the same, the pairs of rollers 33—34, and 35—36, between which paired rollers the paper passes, and of which pairs the lower rollers 30 are preferably covered with india rubber. Motion may be communicated to these rollers by any suitable driving means with other moving parts of the machine such as indicated by the dotted belt line positions shown 35 in Fig. 1 of the drawings, and cams 37 and 38 are so arranged on the axles or shafts of the rollers 33 and 35 as to provide means for successively moving the upper rollers 34 and 36 toward and from the lower rollers which 40 are paired therewith.

The machine includes a combined clamp and severing device for the envelop paper consisting primarily of the clamping head 42 actuated by a lever 40 and a spring 41, 45 and a bed roll 43 arranged beneath said clamping head.

A projection 55 is arranged in the line of movement of the envelop paper to arrest the same in position to be acted upon by the 50 folding blade 10.

The general operation of the machine may be stated as follows: With the arms 4 in elevated position and the letter sheet on the table 11, the operation of the eccentrics 8 55 serves to lower the folding blade 9 with the result of pressing the letter sheet to a folded form between the rollers 12 and 13, and the folded sheet is then carried between the belts 15—16 and 17—18 to a stop projection 44, during which travel the arms 4—4 have 60 been automatically retracted by their lifting means, so that a second letter sheet may be placed on the table 11. In the meantime, the envelop paper 50, blanked off as shown in Fig. 4, has been conveyed to and over

the rollers 19 and 20 so that an individual envelop blank lies on these rollers but underneath the previously folded letter sheet which has been carried up to the stop 44. The transportation of the envelop has been 70 effected in the following manner, that is to say, has been guided by the guide rollers 51, 52, 53 and 54 over and past the damping devices above referred to and between the paired rollers 33—34 and 35—36, the result 75 of which movement serves to dampen the adhesive on the envelop blank in the manner previously referred to. Also, the cams 37 and 38 are so arranged as to lift the rollers 34 and 36 during the time the damp or 80 wetted gummed places on the envelop paper are moving beneath these rollers. To accomplish this successfully, only one pair of the rollers 33—34 and 35—36 is in action 85 at one time. Now, with the damped envelop blank underlying the previously folded letter sheet, over the rollers 19 and 20, on the lowering action of the arms, the said sheet is caught by the descending folding blade 10 and again folded downward with the envelop blank between the rollers 19 and 20. This operation folds the letter sheet a second 90 time, and also surrounds it with the envelop and seals together the damped gummed portions of the envelop. At the same time, the envelop paper being held by the clamping head 42, the individual envelop is torn off from the strip or sheet 50. The above operation repeats itself as will be well understood. 95

Inasmuch as only a preferred embodiment is shown for carrying out the invention, it will be understood that changes in the form, proportion and minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention. 100

What I claim herewith as my invention, and desire to secure by Letters Patent, is— 110

1. In a machine for folding and wrapping letters into envelopes, the combination of a plurality of folding blades in angular relation to each other, a single movable arm supporting both folding blades, and pairs of rollers beneath said blades, means for transporting the letter from the first folding device to the second and arresting it there, a damping device for the envelop-paper, and means for transporting the envelop-paper to and beneath the second folding device, substantially as set forth. 115

2. In a machine for folding and wrapping a plurality of folding blades arranged at right angles to each other, an arm moving up and down, supporting both folding blades, pairs of rollers, between which the letter is pushed by the blades in order to be folded, pairs of endless belts running around one pair of 120

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said rollers for transporting the letter from the first pair of rollers to and beneath the second blade, a stop for arresting the letter beneath the second blade, a damping device 5 for the envelop-paper, and means for transporting the latter beneath the second blade at the same time as the letter is transported underneath it, substantially as set forth.

3. In a machine for folding and wrapping 10 letters into envelops, the combination of two folding blades arranged at right angles to each other, on an arm moving up and down, pairs of rollers beneath said folding blades, pairs of endless belts running around one 15 pair of said rollers, a stop for arresting the once-folded letter beneath the second blade, two damping-stamps or blocks arranged in the direction in which the envelop-paper runs, and a yielding vertically movable 20 third damping-stamp between the first ones, a disk having a recess or a curved face, said third damping-stamp being moved against the band of envelop-paper when the recess of the disk faces a roller or projection provided 25 on the said third damping-stamp, and means for transporting the envelop-paper to the second blade at the same time that the once-folded letter is transported underneath said blade, substantially as set forth.

30 4. In a machine for folding and wrapping letters into envelops, the combination of a plurality of folding blades for folding the letter, a corresponding number of pairs of rollers, pairs of belts running around said 35 rollers, two damping-stamps rigidly arranged and a third damping-stamp moving upwardly against the envelop-paper, two additional pairs of rollers for transporting the envelop-paper, and means for cutting off a 40 sheet from the band of envelop-paper, substantially as set forth.

5. In a machine for folding and wrapping letters into envelops, the combination of a plurality of folding blades for folding the 45 letter, a corresponding number of pairs of rollers, pairs of belts running around said rollers, three damping-stamps, means for moving one up and down, two additional pairs of rollers for transporting envelop- 50 paper to the last blade, the upper rollers being movable successively away from the lower rollers, and means for cutting off

sheets transported underneath the blade from the band of envelop-paper, substantially as set forth. 55

6. In a machine for folding and wrapping letters into envelops, the combination of a plurality of folding blades, a movable arm supporting the same, a corresponding number of pairs of rollers, pairs of belts running 60 around said rollers, three damping-stamps, one of which is movable up and down, two additional pairs of rollers for transporting envelop-paper, the upper ones of said rollers being movable successively away from the 65 lower ones, a clamp arranged behind the last lower ones, a clamp arranged behind the last pair of rollers, and means for moving said clamp down to the band of envelop-paper in order to retain the latter immediately behind the line where the sheet for the envelop transported underneath the last blade is to be torn off, substantially as set forth. 70

7. In a machine for folding letters and wrapping them into envelops, the combination of a plurality of folding blades for 75 folding the letters, a swinging arm carrying the blades, a corresponding number of pairs of rollers arranged beneath the blades, pairs of belts running around said rollers for transporting the folded letter from the first 80 blade to a position underneath the next blade, stops for retaining the letter beneath said blade, three stamps in the path of the envelop-paper, two additional pairs of rollers for transporting the envelop-paper, the 85 upper ones of said rollers being successively movable away from the lower ones, and a clamp or rail arranged behind the last pair of said rollers, said clamp being temporarily pressed upon the envelop-paper transported 90 underneath the last blade, so that the envelop blank is separated from the envelop paper when the last blade finally folds the letter together with the sheet of envelop-paper and pushes them between the rollers 95 arranged beneath it, substantially as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

MAX BUNNIG.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.