(No Model.) 5 Sheets—Sheet 1.

C. W. F. THODE.

ENVELOPE FOLDING MACHINE.

No. 462,746. Patented Nov. 10, 1891.

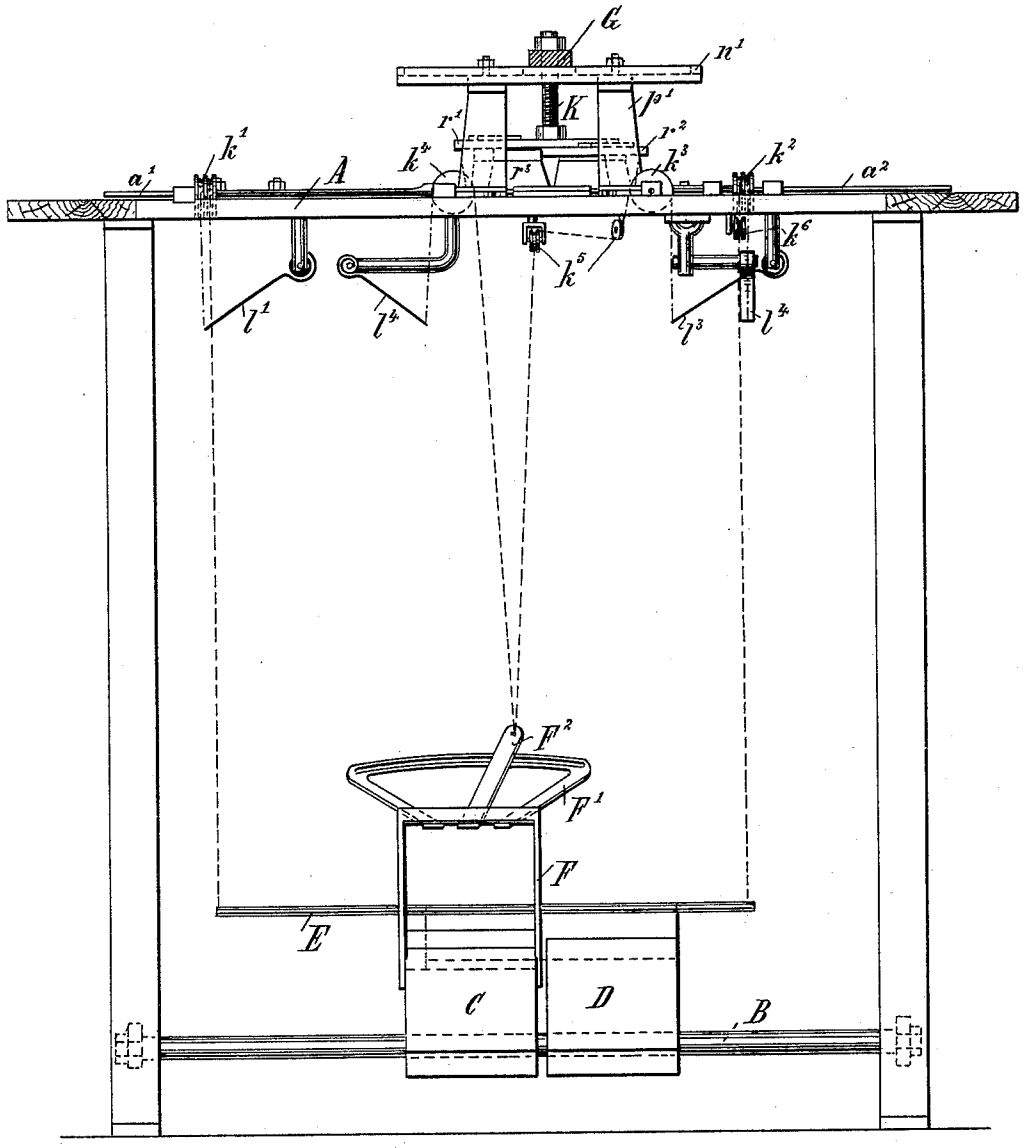

Fig. 1.

Witnesses :-
E. K. Stuntevant.
E. R. Bolton

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(No Model.) 5 Sheets—Sheet 2.

C. W. F. THODE.

ENVELOPE FOLDING MACHINE.

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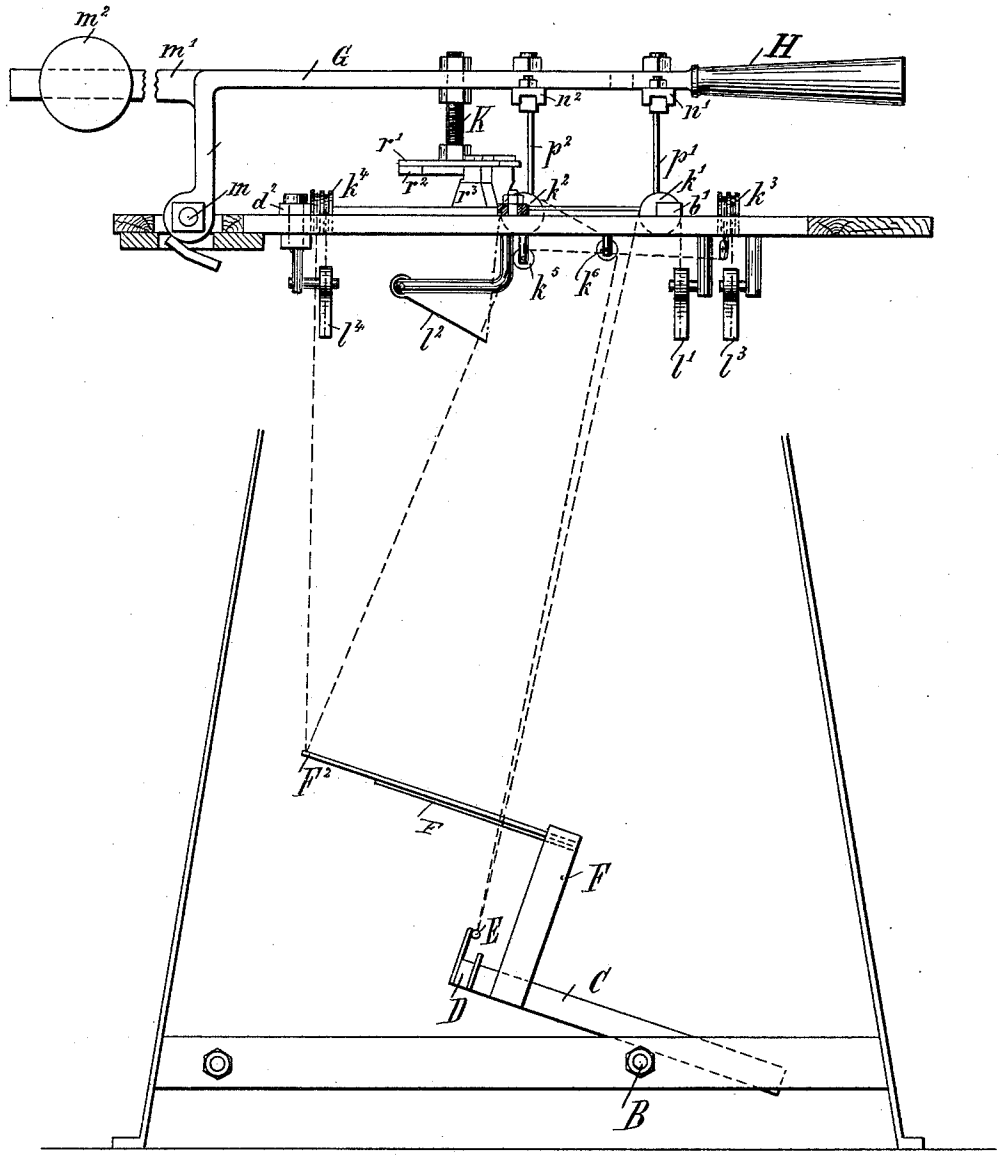

Fig. 2.

Witnesses:
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 5 Sheets—Sheet 3.

C. W. F. THODE.

ENVELOPE FOLDING MACHINE.

No. 462,746. Patented Nov. 10, 1891.

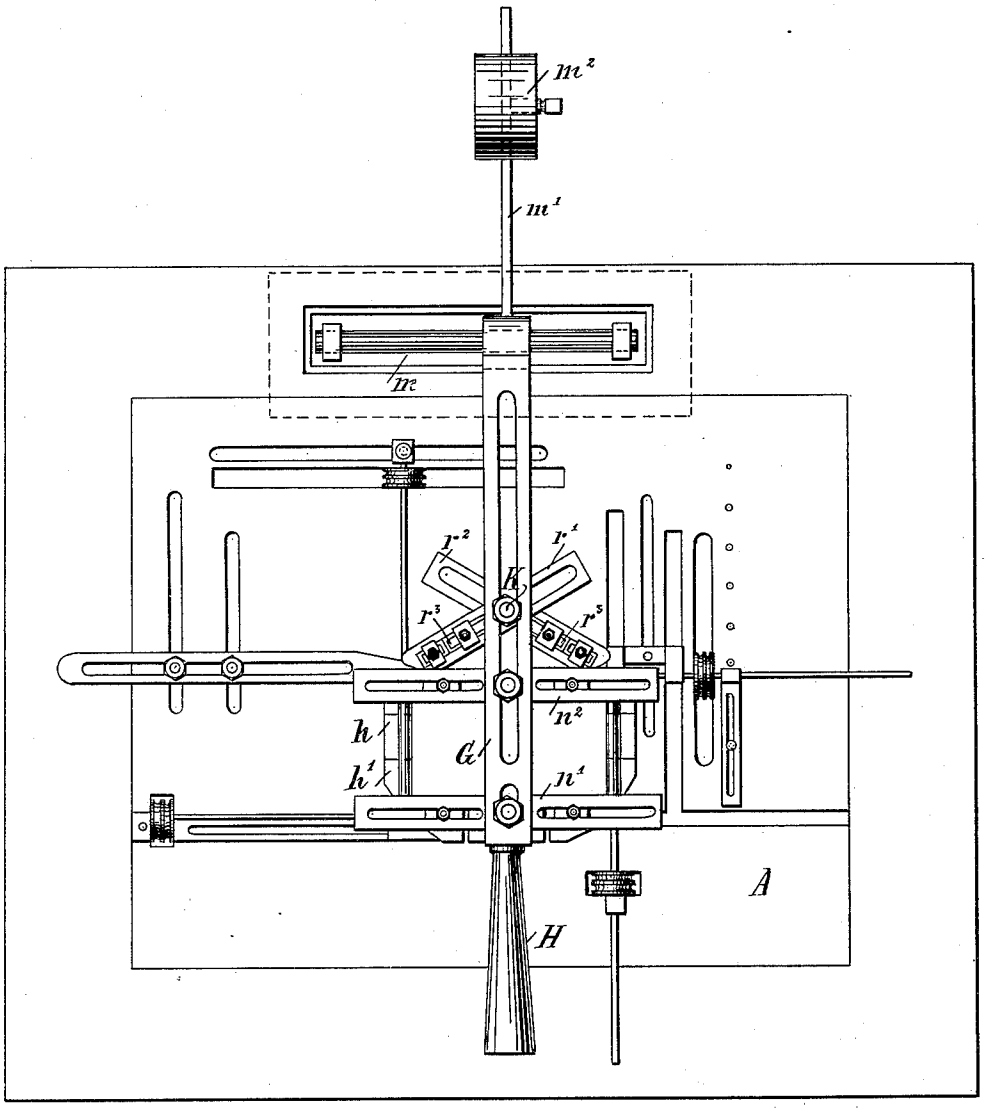

Fig. 3.

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(No Model.) 5 Sheets—Sheet 4.

C. W. F. THODE.

ENVELOPE FOLDING MACHINE.

No. 462,746. Patented Nov. 10, 1891.

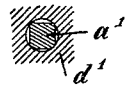

Fig. 5.

Fig. 6.

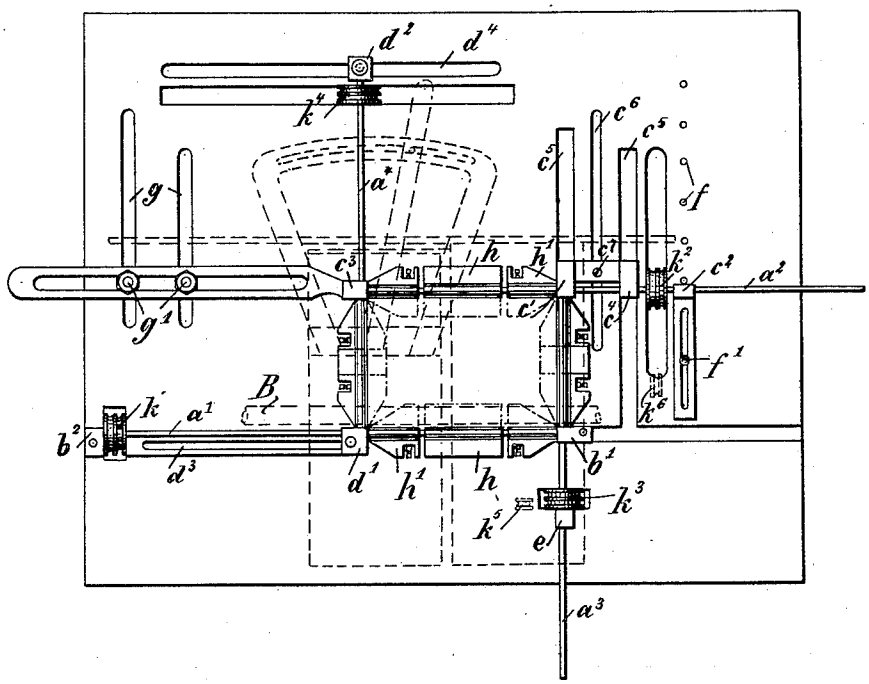

Fig. 4.

Witnesses:
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(No Model.) 5 Sheets—Sheet 5.

C. W. F. THODE.

ENVELOPE FOLDING MACHINE.

No. 462,746. Patented Nov. 10, 1891.

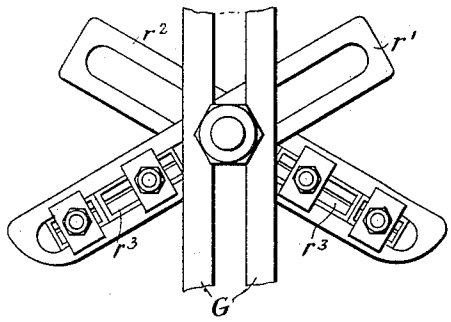

Fig. 9.

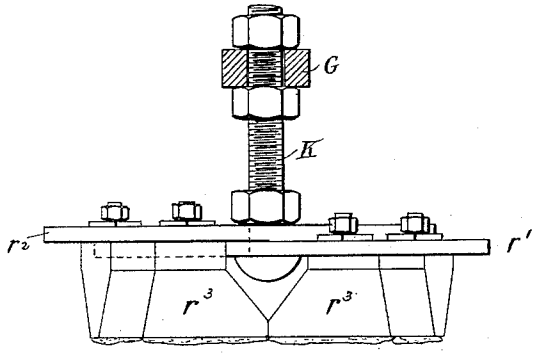

Fig. 7.

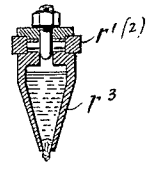

Fig. 8.

Witnesses

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Chas. F. Hoyer

Inventor

C. W. F. Thode,

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UNITED STATES PATENT OFFICE.

CARL WILHELM FRIEDRICH THODE, OF HAMBURG, GERMANY.

ENVELOPE-FOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 462,746, dated November 10, 1891.

Application filed February 5, 1891. Serial No. 380,392. (No model.) Patented in Germany December 23, 1890, No. 55,827.

To all whom it may concern:

Be it known that I, CARL WILHELM FRIEDRICH THODE, a subject of the Emperor of Germany, residing at Hamburg, Germany, have invented certain new and useful Improvements in Envelope-Folding Machines, (patented in Germany December 23, 1890, No. 55,827,) of which the following is a specification.

The purpose of my envelope-machine (shown in accompanying drawings) is to mechanically make a complete envelope from the properly-cut paper sheets.

Figure 1 is a front view. Fig. 2 is a side view with the frame partly removed. Figs. 3 and 4 are plan views of the machine. Figs. 5 and 6 are detail views. Fig. 7 is a view of the mucilage-vessel. Fig. 8 is a section of the same, showing the arrangement of the sponges, and Fig. 9 is a view of its holder.

Into the top of a table of suitable size and height, so that the workman can perform all the necessary work while sitting, a plate A is fitted, on which the different parts are mounted. On the same are the four shafts a' a^2 a^3 a^4, which are of the cross-section shown in Figs. 5 and 6. This form was chosen so that the shafts turn accurately in the bearings, Fig. 5, while those parts which turn with the shaft fit the straight or flat surfaces thereof, Fig. 6. The bearings b' b^2 for the journals of the shaft a' are stationary on plate A. The bearing b' also serves for the shaft a^3, which latter also runs in bearing e, which is fixed tight on plate A, while its end journal is supported by bearing c'. The shaft a^2 runs in the bearings c' c^2, and its end journal in the bearing c^3. Finally, the shaft a^4 runs by its end journals in the bearings d' d^2, and is supported besides by bearing c^3. As is seen from the drawings, all bearings, with the exceptions of b', b^2, and e, can be adjusted. They are arranged so that they can only move parallel or normal to the axle. The two side pieces c' c^4 are adjustable in the parallel grooves c^5 of plate A, while they are fastened by the movable screws c^7 in the slot c^6. The bearing c^2 can also be moved as desired and secured by the fastening-screw f', which is set in one of the holes f. The bearing d' fits in slot d^3. Finally, the extension of c^3 is slotted and engaged by bolts g', which are situated in the slots g.

The shafts carry between the bearings b' c' c^3 d' flaps, which are hollowed out square, so that they must take part in the rotation of the shafts. The middle flaps h are to be considered as sleeves, while the outer flaps h' are set fast in the shafts by means of thumb-screws, whereby also the sliding of the shafts in the bearings is prevented. Each shaft further bears pulleys k' k^2 k^3 k^4, provided with two grooves and whose naves are bored square, so that by turning the pulleys the shafts turn therewith; also, the flaps are turned. The pulleys are now situated in the following manner: On the shaft B, which is underneath the table, two treadles C D are arranged. Treadle D for the right foot bears a long rod E, while the left treadle C is provided with a stirrup F and the movable turning rod F^2 on the segment F'. From the ends of the rod E two cords run to the pulleys k' k^2, and from the arm F^2 two other cords run to the pulleys k^3 k^4. The ends of the cords are so fastened to the pulleys that through pressing down the treadles or drawing the cords the pulleys will turn toward one another, so that the flaps which are on the shafts lie toward the inside—that is, so as to be in the position marked in dotted lines in Fig. 4. To bring the flaps back to their original position, (drawn in full lines in Fig. 4,) a second cord is attached to pulley k', whose other end is attached to a strong spring l'. By actuating the treadles these springs are compressed, so that when the treadles are let free all parts are brought back to their original position through the action of the springs. As the positions of the pulleys k^2 and k^4 are adjustable on the plate of the table, the holders for the springs belonging thereto are also movable and are connected rigidly with the parts of the bearings c' and c^2 which are underneath the plate A. Several rollers k^5 k^6 serve as guide-pulleys for the cords. If the treadle C is actuated, the flaps of the shafts a^3 a^4 are actuated, and by the pressing down of the treadle D the flaps on the shafts a' a^2 are actuated.

On the back side of the table-plate is a shaft m, supporting pivotally the angular-shaped

lever G, whose long arm is provided with the handle H and which bears the tracks or guides n' n^2. In each of these tracks are two broad but very flat dies p' p^2, which are movable and are set in the desired position by means of screws. Furthermore, the lever G has on a bolt K two holders r' r^2, carrying receptacles r^3, which contain mucilage. This arrangement is for the purpose of supplying the lower flap of the envelope with mucilage, which permeates through the sponges arranged in the lower edge of the vessel r^3. The outer end m' of the lever G carries the counter-weight m^2. The lever G is adjustable longitudinally on shaft m, and the dies p' p^2 are adjustable in the tracks n' n^2.

The machine is now handled in the following manner: The workman takes one of the properly-cut sheets of paper, whose upper flap has already been provided with gum, and puts it on the machine in such a way that when dies p' p^2 are pressed down they just strike the places where the fold should be. The dies will press the paper down somewhat and thereby the lower flap will come in contact with the gum-giving sponges of the vessel r^3. While the lever G is held down the left treadle C is pressed down, whereby the flaps on shafts a^3 a^4 are turned over, and thereby also the side flaps of the envelope. Now lever G is held up and the right treadle D is pressed down. As the cord running from rod E to disk k^2 is drawn a little tighter, shaft a^2 will rotate before shaft a'. The flaps on axle a^2 will press the under flap, whose gum is still damp, tightly onto the side flaps, while the flaps of shaft a' only produce the folding of the so-called "closing-flap." Both treadles are now let free, the finished envelope is taken out, and by the action of the counter-weight m^2 and the springs l' l^2 l^3 l^4 the machine is made ready for the manufacture of the next envelope. As has been observed, the upper or closing flaps of the envelopes are provided with gum before they are placed in the manner described into the machine.

On the machine as described any sort of envelope can be made without replacing any part thereof. A simple adjustment of the respective parts suffices.

I claim—

1. The combination of the adjustable shafts a' a^2 a^3 a^4, arranged in pairs, folding flaps mounted thereon, and means for actuating the shafts, substantially as set forth.

2. The combination of the four adjustable folding shafts, arranged in pairs and having folding flaps, and treadles connected with said shafts for oscillating them, substantially as set forth.

3. The combination of the four shafts arranged in pairs and having the folding flaps, suitable bearings for said shafts, certain of which are adjustable, the hand-lever G, a shaft m on which said lever is mounted and adjustable, dies carried by said lever, and a gumming-vessel also carried by said lever, substantially as set forth.

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

CARL WILHELM FRIEDRICH THODE.

Witnesses:

ALFRED JOSEPH,

SIGFRIED KAMMES.