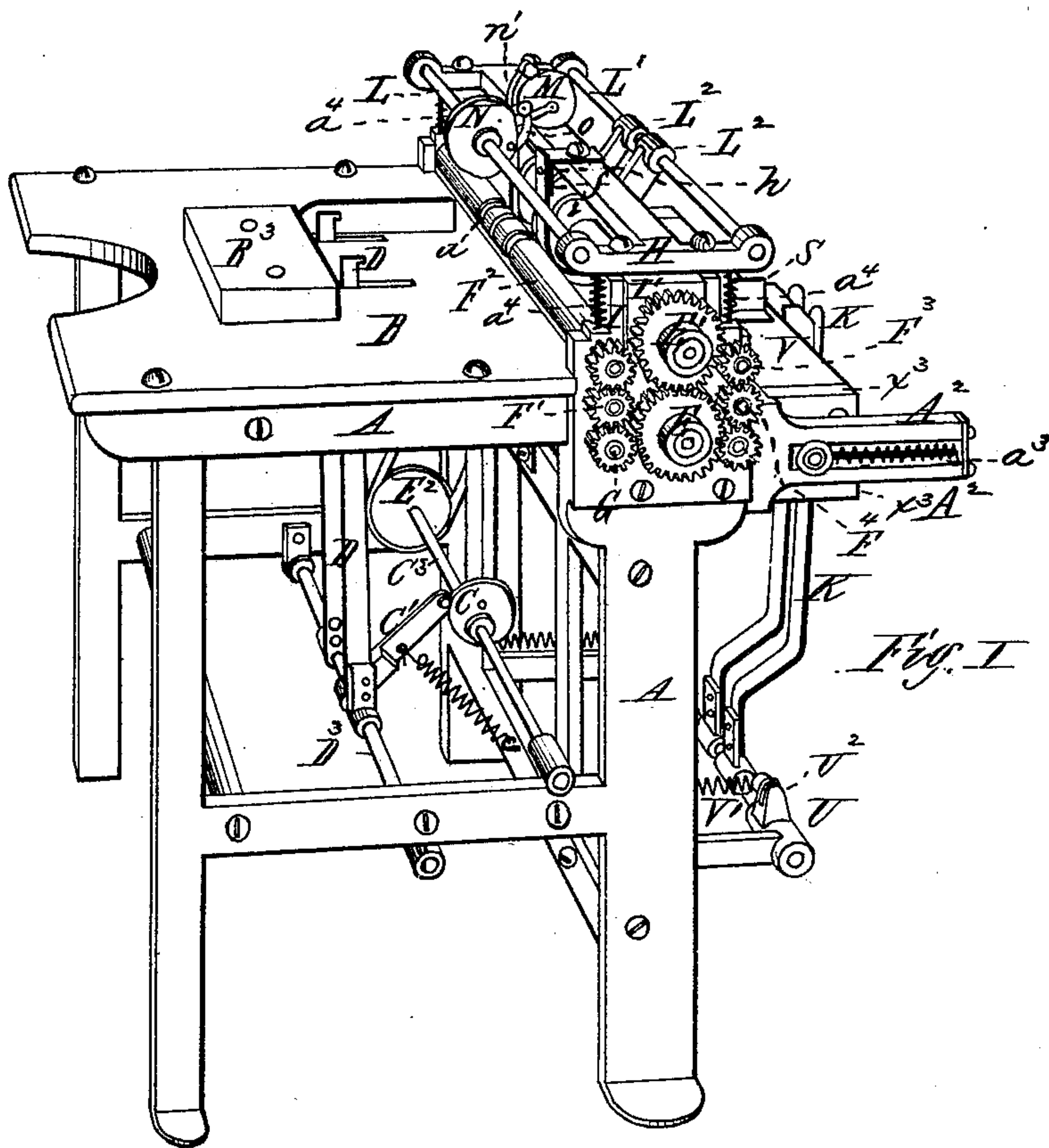


E. MORGAN.
Paper Card-Cutter.

No. 208,754.

Patented Oct. 8, 1878.



Witnesses—

J. B. Blandin
E. A. Thayer,

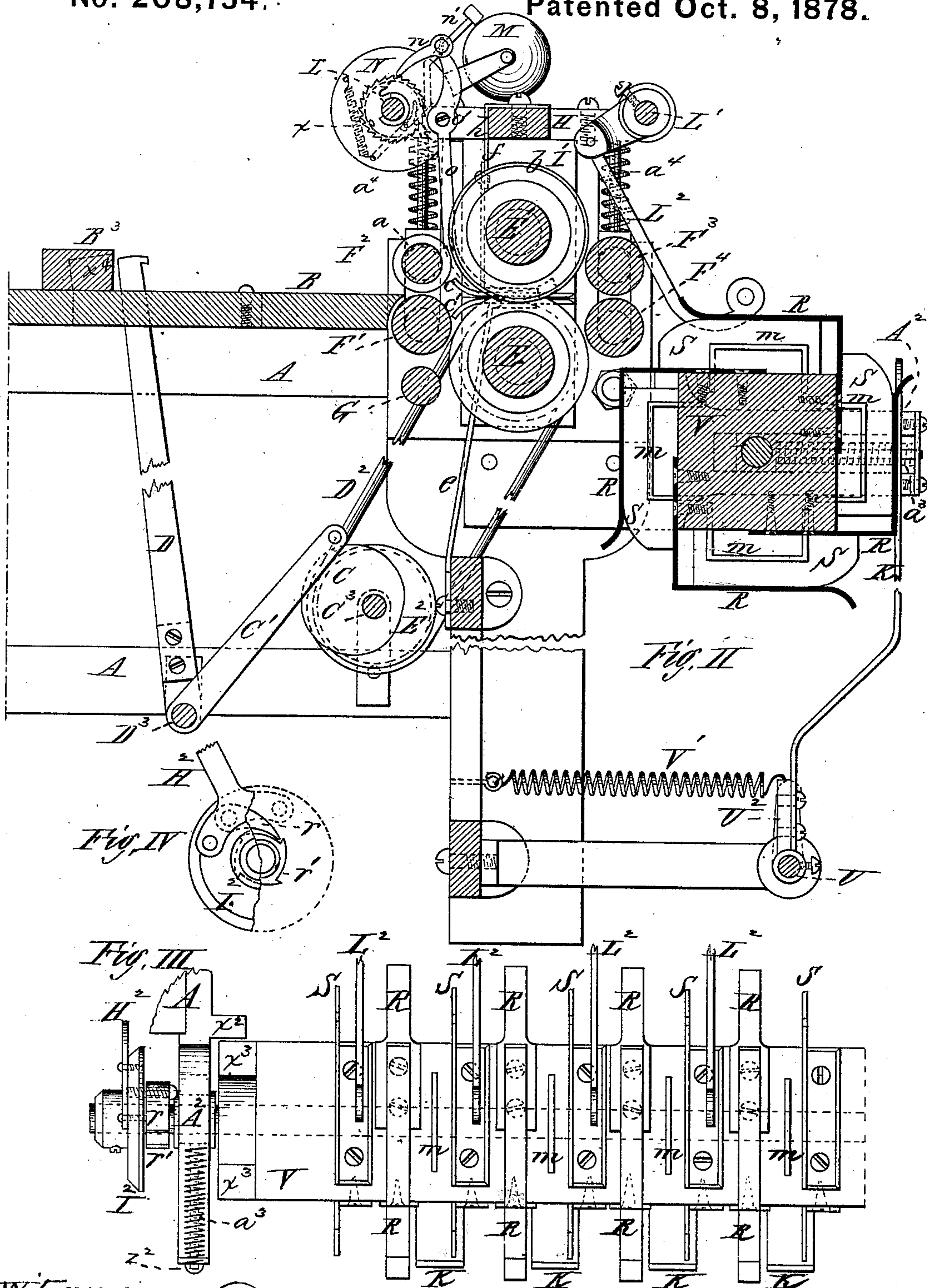
Inventor,

Eliha Morgan,
By T. A. Curtis,
his atty.

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UNITED STATES PATENT OFFICE.

ELISHA MORGAN, OF SPRINGFIELD, MASSACHUSETTS.

IMPROVEMENT IN ROTARY CARD-CUTTERS. *Counter*

Specification forming part of Letters Patent No. **208,754**, dated October 8, 1878; application filed March 28, 1877.

To all whom it may concern:

Be it known that I, ELISHA MORGAN, of Springfield, in the State of Massachusetts, have invented a new and useful Machine for Cutting Postal and other Cards; and that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon.

The object of my invention is to cut postal or other cards from strips of card-board or paper, and to count them into parcels of any desired number, so that an attendant may, at a signal given by the machine, arrange the latter to have others counted, while those previously cut and counted are removed therefrom.

To this end my invention consists of a series of circular cutters arranged upon rolls having their bearings in a frame, in combination with feed-rolls and a pivoted lever, pawl, ratchet, and hammer, so that when the strips of card-board are passed in between the rolls to be cut each strip raises the lever, moves the ratchet-wheel one notch or tooth successively, and when the desired number are counted the hammer strikes the signal, and the attendant removes those already cut and counted, to make room for others.

It also consists of a prismatic shaft having upon each of its sides a series of plates arranged forming pockets, with guards and holders arranged therewith, to hold the cards in place, and the shaft is arranged in horizontal bearings, whereby the shaft, when rotated, has a slight horizontal movement, and, by means of a lever, ratchet, and pawl arranged upon the end of the shaft, it may be partially rotated to bring any desired side or series of pockets uppermost, all which will be more fully hereinafter described.

Figure I is a perspective view of my invention. Fig. II is a central vertical section of the same. Fig. III is a plan view of a part of the prismatic shaft, showing the arrangement of the pockets and their guards and holders; and Fig. IV is an end view of the shaft, with a part of the end plate broken away to show the ratchet and pawl for turning the shaft.

In the drawings, A is a frame, in the jaws

I of which, at each end, are the boxes I¹, in which the shafts E and E' have their bearings, one above the other, and each fitted with circular cutters *b b*, securely fastened to said shafts, in such manner that the circular edge of each cutter on one roll or shaft bears against the side of the corresponding cutter on the other shaft, as in the ordinary circular shears. These cutters *b* are placed at equal distances apart along the rolls in cutting a series of cards of equal length, and in rear of these rolls are the rolls F¹ and F², hung in suitable bearings at each end; and small portions of the upper roll, F², along its length, may be cut away if cards are to be cut having a printed impression upon their upper surfaces, such as the stamp upon a postal card, so that the ink from the impression will not adhere to the roll as the cards pass through.

In front of the line of cutters *b b* are two other delivery-rolls, F³ and F⁴; and in rear of the feed-rolls F¹ and F² is a platform or table, B, supported upon the frame A.

Each pair of rolls—that is to say, the feed-rolls F¹ and F², the delivery-rolls F³ and F⁴, and the rolls E and E', upon which are arranged the cutters *b*, all revolve in the same direction; and they are so located with reference to each other that if a strip of card-board is placed upon the platform B and forced in between the feed-rolls while all the rolls are in motion, the strip will be carried between all the sets of rolls while in a horizontal position.

A cap, H, holds all the rolls in proper position in their bearings; and secured to the cap is a shaft, L, upon which is fitted, to revolve freely thereon a ratchet-wheel, *i*, having, say, twenty-five teeth. A plate, N, is secured to the shaft by the side of this wheel *i*, to which is secured a bell, M, or other equivalent article, upon which a signal may be struck, and to which plate is also pivoted a lever, *o*, having a pawl, *n*, loosely attached to its upper end, the loose end of the pawl resting upon and against the ratchet-teeth of the wheel *i*. The lower end of the pivoted lever *o* hangs down to a point a little below a horizontal line at the point where the edges of the cutters *b* meet, and is curved a little, and extends

forward in between the rolls E and E', a space being made between those rolls, or a recess in one of them, for that purpose, or so that the lower end of the lever *o* may have room to move up and down between them.

A pin or projection, *s*, is made on the side of the ratchet-wheel *i*, and a hammer, *u'*, is pivoted to the plate N or to a corresponding plate placed on the opposite side of the ratchet-wheel, said hammer having a projection protruding through a hole in the plate, in such position that when the ratchet rotates the projection thereon will pass against that on the hammer and move it away from the bell M, the spring *x*, attached to the plate and to the hammer, forcing the latter quickly against the bell when the projections have passed each other.

A plate, *c*, lying in a horizontal position just beneath the upper cutter-roll, E', is secured in position by a bar, *h*, attached at the lower end to said plate, and at the upper end to the bar, which extends from one cap, H, to the other; and this bar *h* is made in two parts, and secured together at *f* by a small screw; or the plate *c* is made adjustable up and down by any other means. A corresponding plate, *c'*, placed just below the plate *c*, with sufficient space between for the strip of card-board to pass through, is secured in position by a bar, *e*, connected therewith and attached to the frame. A shaft, D³, has its bearings in the frame A, and two upright arms, D, are attached to this shaft, and project up through slots made in the table B, and a lever, C¹, is attached to said shaft, one end of which lever bears against a cam, C, secured to the shaft C³, being held in contact therewith by either a weight or spring.

The shaft V is made prismatic, or four-sided, its entire length, except at its bearings at either end, which are in journal-boxes placed in the horizontal jaws A²; and the ends of this prismatic or four-sided part of the shaft V are provided with flat bearings *x*³, each of which in its turn bears against the perpendicular projection *x*² in the rear of the jaws A². A rod, *z*², extends outward from the journal-boxes through a hole in each cap, which covers the ends of the horizontal jaws A², and a spring, *a*³, is placed around each rod, which forces the boxes and the shaft backward, with the bearing *x*³, against the vertical projection *x*².

Each side of the prismatic part of the shaft is provided with a series of plates, S, or their equivalent, which stand perpendicular to the corresponding side of the prism V, and at suitable distances apart, forming a series of pockets; and a guard, R, is secured to each side of the prism V, and extends around in front of the pocket on the adjacent side, as shown clearly in Fig. II, each pocket being provided with a guard, R.

In each pocket, formed by two plates, S, I place a projection, *m*, at the bottom, or any equivalent device, or make one side of the

pocket deeper than the other, the object being to cause the cards to lie freely and uniformly in the pocket, with one side higher than the other. As the aggregate width of the pockets between the plates S in the series on one side of the prism is a little less than the actual length of the uncut strip of card-board, space must be provided so that the cards will drop into the pockets freely without interfering with each other. To accomplish this, as the cards pass out from the delivery-rolls one of their sides passes along upon the upper edge of the plate S, the opposite side of the card being pressed down into the pocket in a tilted position by coming against and under the weight L², the projection *m*, or the unequal depth of the pocket, causing the cards to lie in a uniform package.

The spring-holders K, which are made broad at their upper ends, have their lower ends attached to the shaft U, and extend up in front of and bear against each plate, and, aside from their own elasticity, may be held against the edge of the plate by a spring, V', attached at convenient points. The prismatic shaft V is provided at its outer end with a plate, I², to the side of which is pivoted a pawl, *r*, engaging with a ratchet, *r*¹, secured to the shaft, and provided with the same number of teeth as the prism V has sides, which, in the present case, are four. The arms L² are suspended from a rod, L¹, over one side of each pocket, to force one side of the card down into the pocket first, so that each card will drop quickly into the pocket, and not remain in a position to interfere with the next card.

The rear ends of the two plates *c* and *c'* are curved, the upper one upward, and the lower one downward, to permit the strip of card-board to pass in between the plates freely.

A gage, B³, may be attached to the table B, which may be cut away at *x*⁴, to permit the arms D to pass back of the line of its front edge; and an end gage may also be secured to the table, extending horizontally at right angles to the gage B³ toward the feed-rolls, and the latter, together with the delivery-rolls F³ and F⁴, are held down to give the required pressure, and yet allow the upper rolls to give slightly, by springs *a*⁴, placed between the cap H and the blocks in which said upper rolls have their bearings.

The different rolls are so geared together by toothed wheels attached thereto that the rolls shall turn in the same direction, so that a strip passed in between the feed-rolls F¹ and F² will be carried through between them and the cutters, and be carried out between the delivery-rolls F³ and F⁴ at the opposite side of the machine, and it is immaterial whether all the toothed wheels are located at one end of the machine or part located at one end and part at the other.

The operation of my invention is as follows: In the manufacture of postal cards many impressions are printed upon one sheet at the

same time, and these sheets are cut into strips, each having a single row of printed impressions, by means of a machine provided with the required number of cutters. These strips are then placed singly in succession back against the front edge of the gage B^3 , and with their ends against the end gage.

Motion being given to the rolls by a belt applied to a pulley attached to the end of the rolls, the arms D are caused to vibrate to and fro toward and from the feed-rolls, and a strip laid against the gage B^3 is carried by the arms up to and passed in between the feed-rolls F^1 and F^2 , and is carried by them in between the cutters $b b$, and as the strip passes in it raises the lower end of the arm o , the curved end of which then rides along upon the strip, or, rather, the strip passing along beneath it, and the ratchet-wheel i is turned one tooth. As soon as that strip is passed through, the lower end of the arm o drops again, and is again raised, as before, by the next strip passing through, turning the ratchet-wheel i another tooth, and so on.

The cards are all cut up into equal lengths by the cutters $b b$, and are carried through by the rolls F^3 and F^4 , and as they pass out through those the weights L^2 press upon one edge and tilt that side of the card down, so that it passes readily under the guard R , and a card drops into each pocket along the upper side of the prism V as each strip is passed through and cut, and the arm o is also moved and the ratchet i turned one tooth.

If there are twenty-five teeth on the wheel i , as the latter makes one revolution, or moves around twenty-five teeth, the pin on the wheel i passes against the projection on the hammer and raises it or moves it away from the bell, and when the pin has passed the spring forces back the hammer, or if the latter is sufficiently heavy it will drop of itself, causing it to strike the bell. When this occurs the attendant seizes the lever H^2 , brings it forward, and the pawl r engages with a tooth, r' , on the end of the shaft V , and turns the latter, bringing the next side, with its empty pockets, uppermost, ready to receive the cards as they are cut, and while these are being cut those in the other pockets turned to the front are removed.

If the prism or shaft V is turned immediately after the bell is struck, each pocket turned in front will be found to contain just twenty-five cards, or the same number as there are teeth in the wheel i .

Any desired number of pockets may be arranged on each side of the prismatic shaft V to correspond with the number of cards it is desired to cut the strip into, and each pocket will receive the same number of cards at the same time, and may be removed by the operators and put up into packages without any time being wasted in counting them, the machine having performed that work when the cards were deposited.

The cam-shaft C^3 is made to rotate or re-

volve by a band, D^2 , passed over a pulley attached to that shaft, and over another attached to any of the shafts, or in any other convenient manner.

As the cards pass through the machine in being cut a very narrow strip is generally cut off from the ends of the long strip of cards; and the plates c and c' are placed at that part of the machine where the ends pass through, to hold the ends steady and in a perfectly horizontal position as they pass along; otherwise the ends would bend or curl, so that the edge of the last card at each end would not be straight, or the card rectangular.

It will be perceived that the lever o will not be raised unless the strips are passing through, so that the counting portion of the machine will not operate, although the machine may be left running for any length of time, unless strips are being cut.

I am aware that counting-machines of various constructions have heretofore been made and used, and I do not claim the same in general; and I am also aware that various machines have heretofore been made and used for cutting paper or card-board, and I make no claim to the said devices, irrespective of my construction of the same, for the purposes described.

Having described my invention, what I claim as new is—

1. The combination, in a machine for cutting cards, of the feed-rolls F^1 and F^2 , the series of cutters $b b$, arranged on the shafts E and E' , the rolls F^3 and F^4 , and the horizontal guide-plates c and c' with the feed-arms D , all substantially as described.

2. The combination of the feed-rolls F^1 and F^2 , the series of cutters $b b$, arranged on the rolls E and E' , the pivoted lever o , pawl n , ratchet-wheel i , and hammer n' , substantially as and for the purpose herein set forth.

3. In a machine for cutting cards, the prismatic shaft V , provided with a series of pockets, S , upon its sides, each having a guard, R , said shaft being arranged to have an intermittent rotary movement, in combination with a series of cutters for cutting the cards and rolls for delivering them into said pockets after being cut, substantially as described.

4. A series of pockets, S , arranged on the sides of a prismatic shaft, V , each pocket provided with a guard, R , in combination with a series of holders, K , which are common to each series of pockets on the different sides of the shaft as each series is brought successively into connection with said holders, substantially as set forth.

5. In a card-cutting machine, the combination of the prismatic bearing x^3 , the vertical projection x^2 , having a correspondingly-straight bearing, and the springs a^3 , for holding the said bearings firmly in contact and the shaft V in its proper position for the pockets arranged thereon to receive the cards from the cutters, substantially as herein set forth.

6. The series of plates S, arranged on the sides of the prismatic shaft V, forming pockets between, each pocket provided with a projection, *m*, or equivalent device, in the bottom of the pocket, in combination with the weights or arms L², as a means of causing the cards to drop into and lie in the pockets in a tilted position, substantially as described.

7. A series of plates, S, arranged on the

sides of a prismatic shaft, V, forming pockets, each of the latter provided with a projection, *m*, or equivalent device, in combination with the guards R and holders K, substantially as herein set forth.

ELISHA MORGAN.

Witnesses:

T. A. CURTIS,

E. A. THAYER.