

3 Sheets—Sheet 1.

No. 434,446.

Patented Aug. 19, 1890.



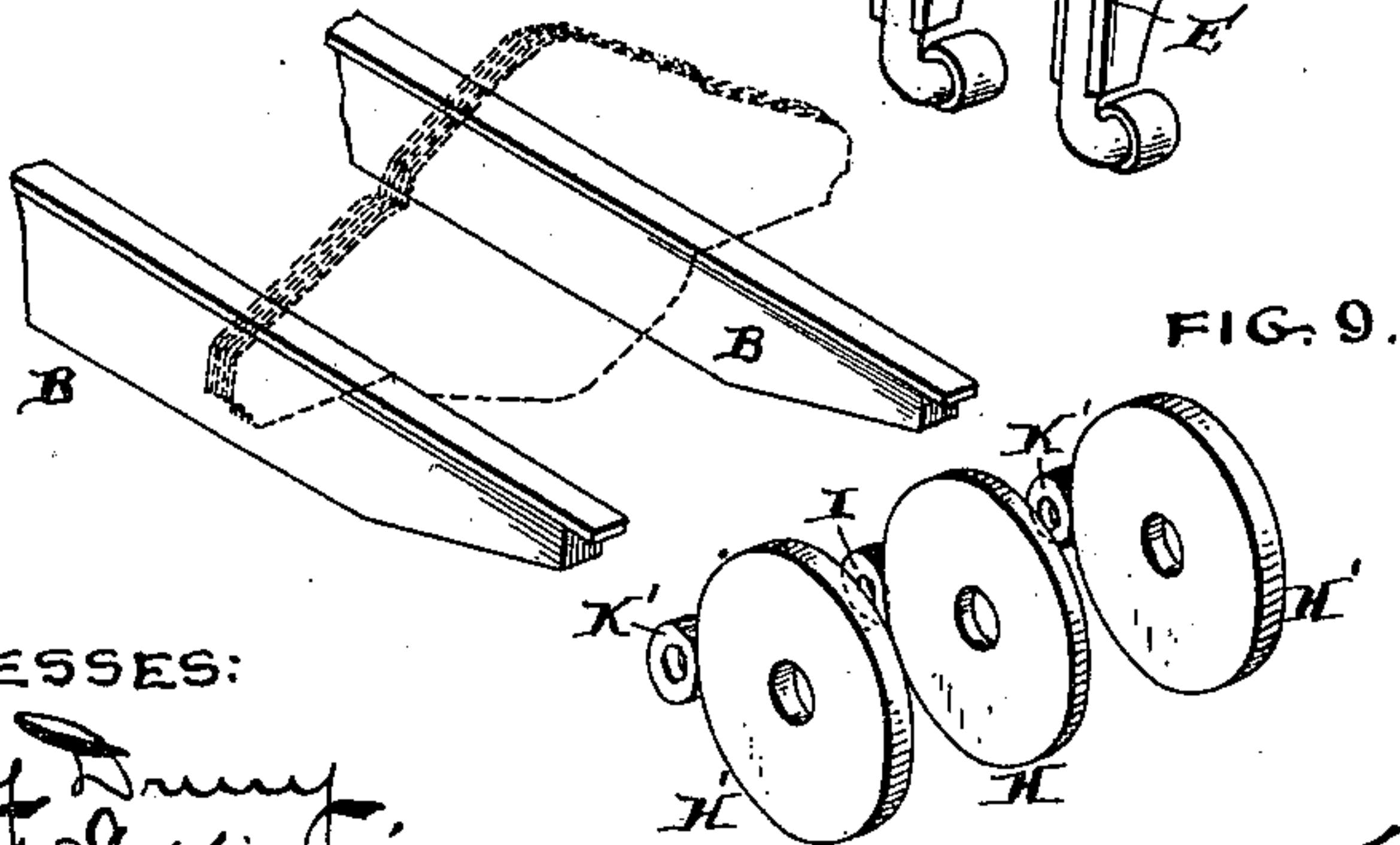
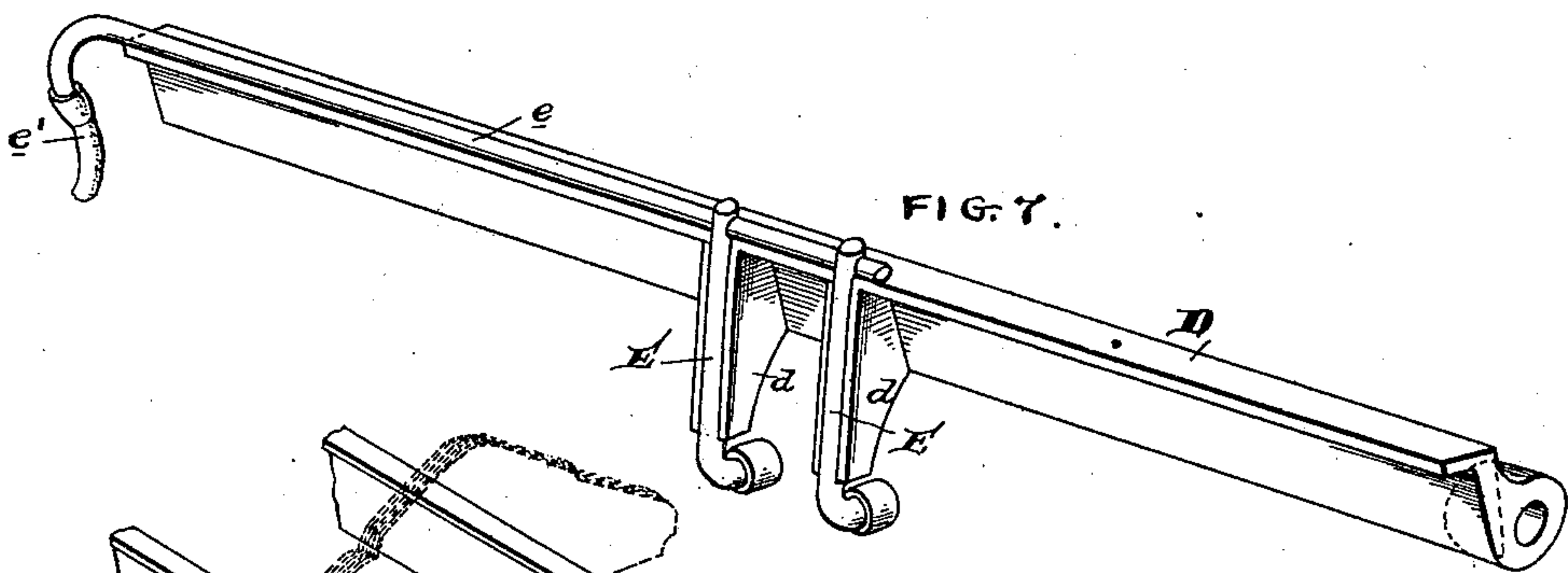
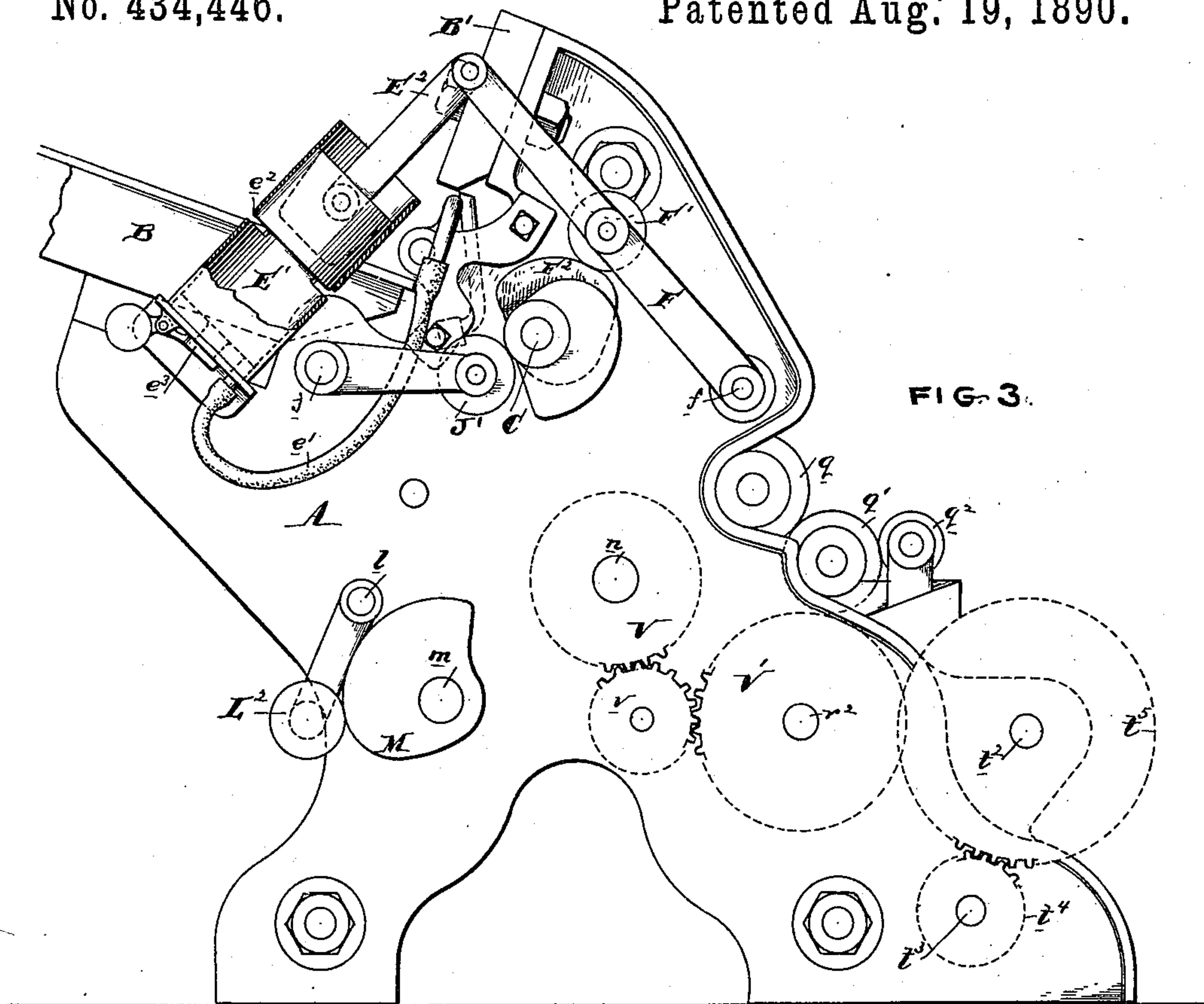
(No Model.)

3 Sheets—Sheet 2.

I. W. HUCKINS.
ENVELOPE BLANK GUMMING MACHINE.

No. 434,446.

Patented Aug. 19, 1890.



WITNESSES:

Henry Denny
David S. Williams

INVENTOR:

Irring W. Huckins
By *W. H. Huckins*

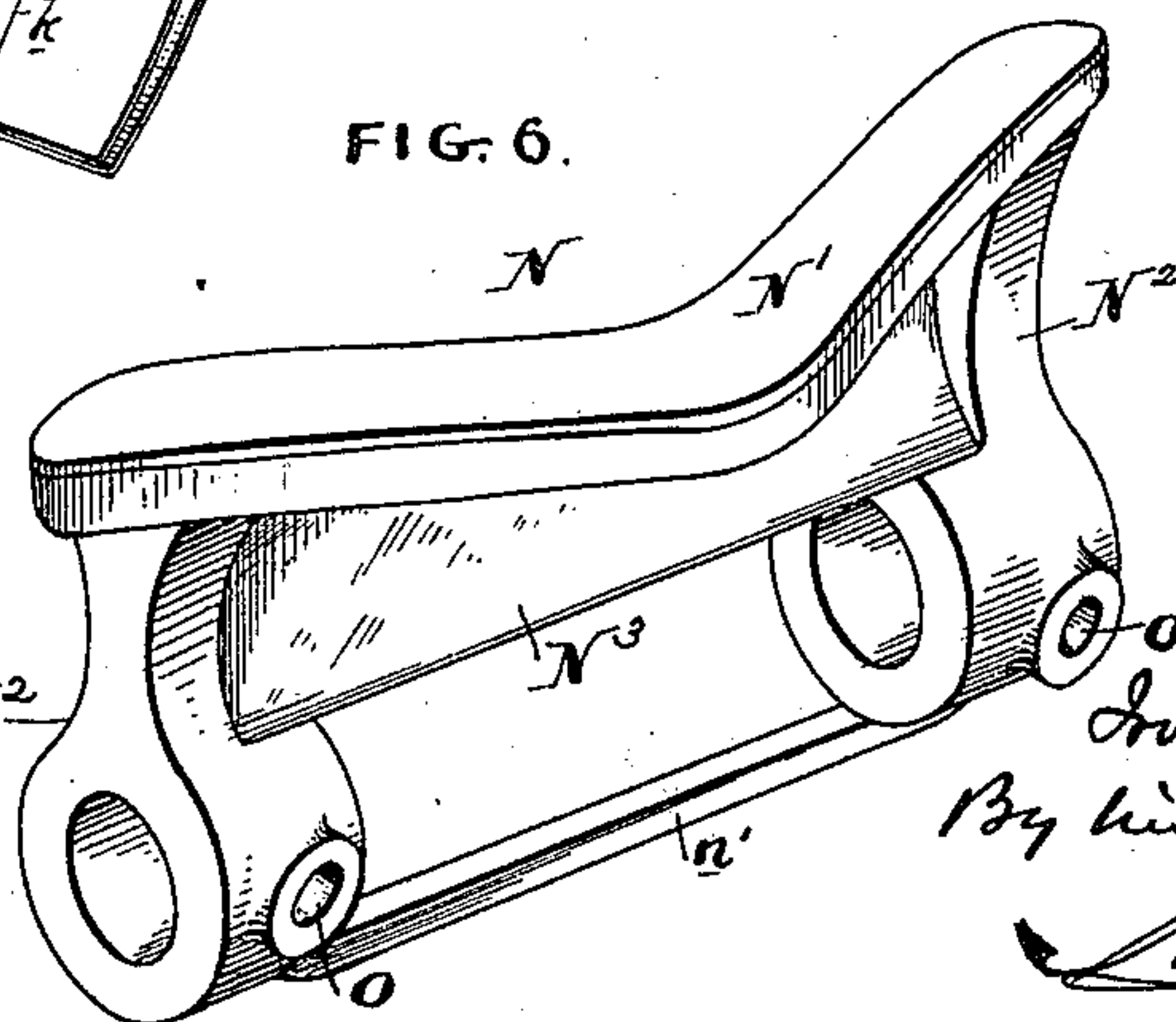
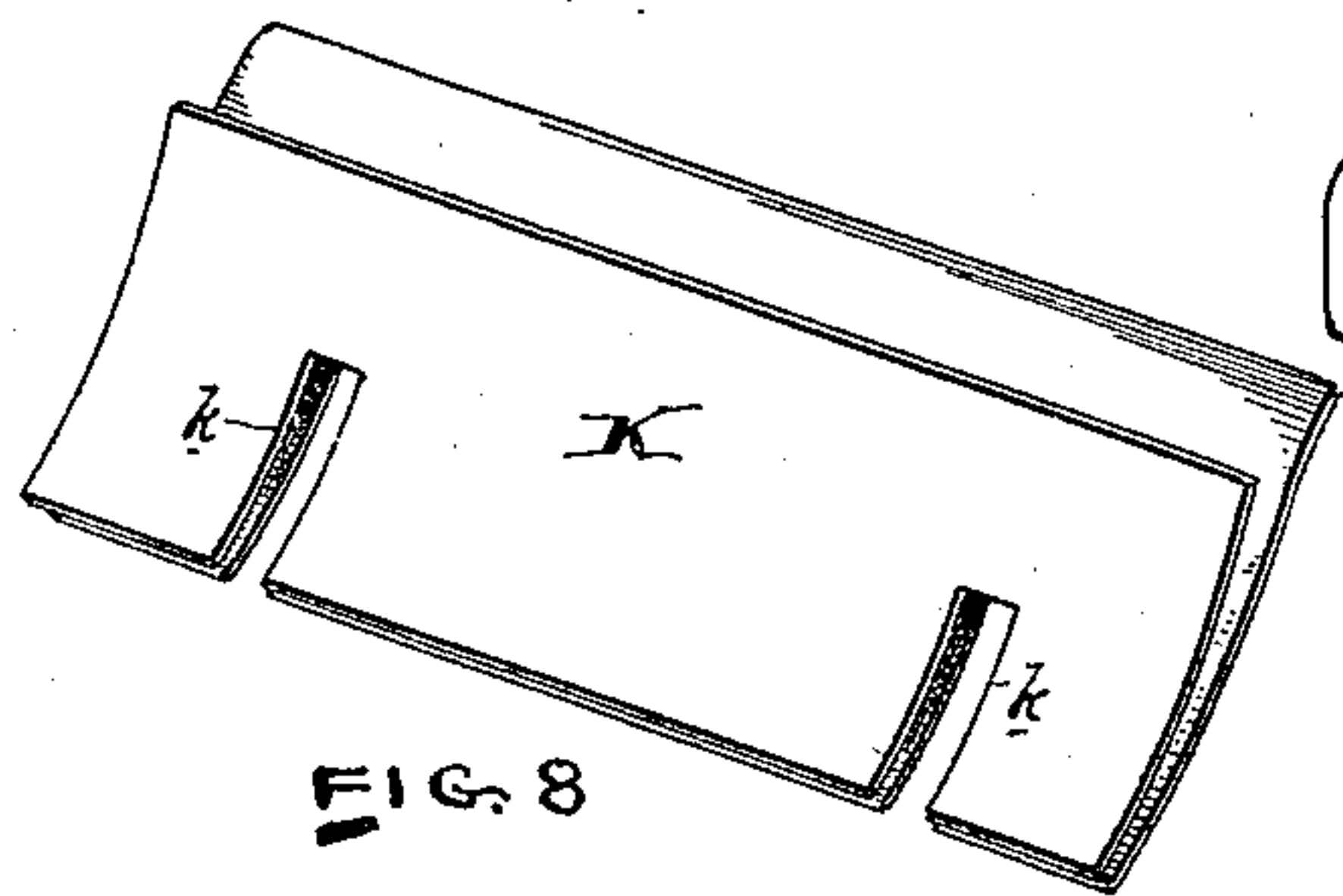
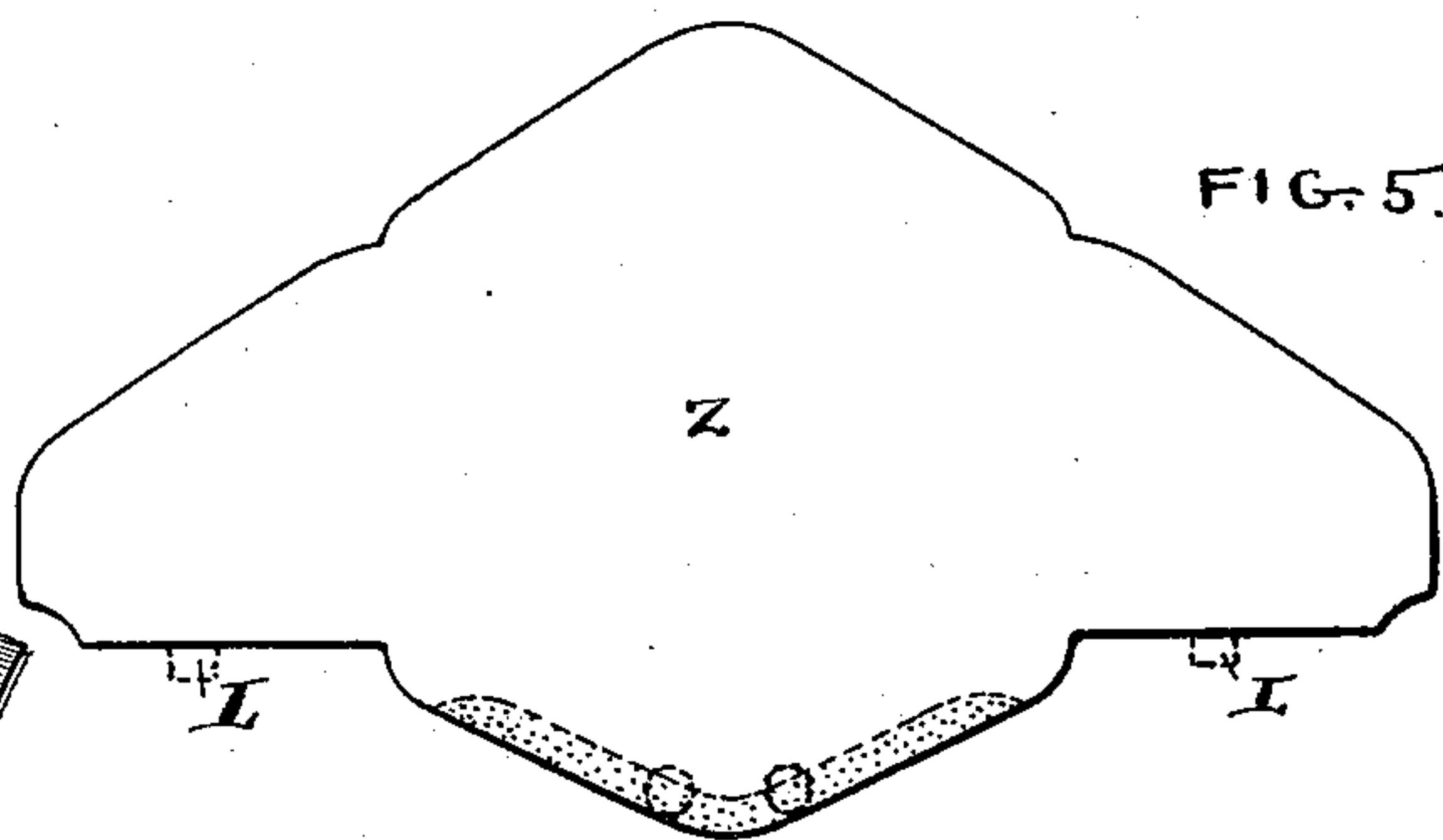
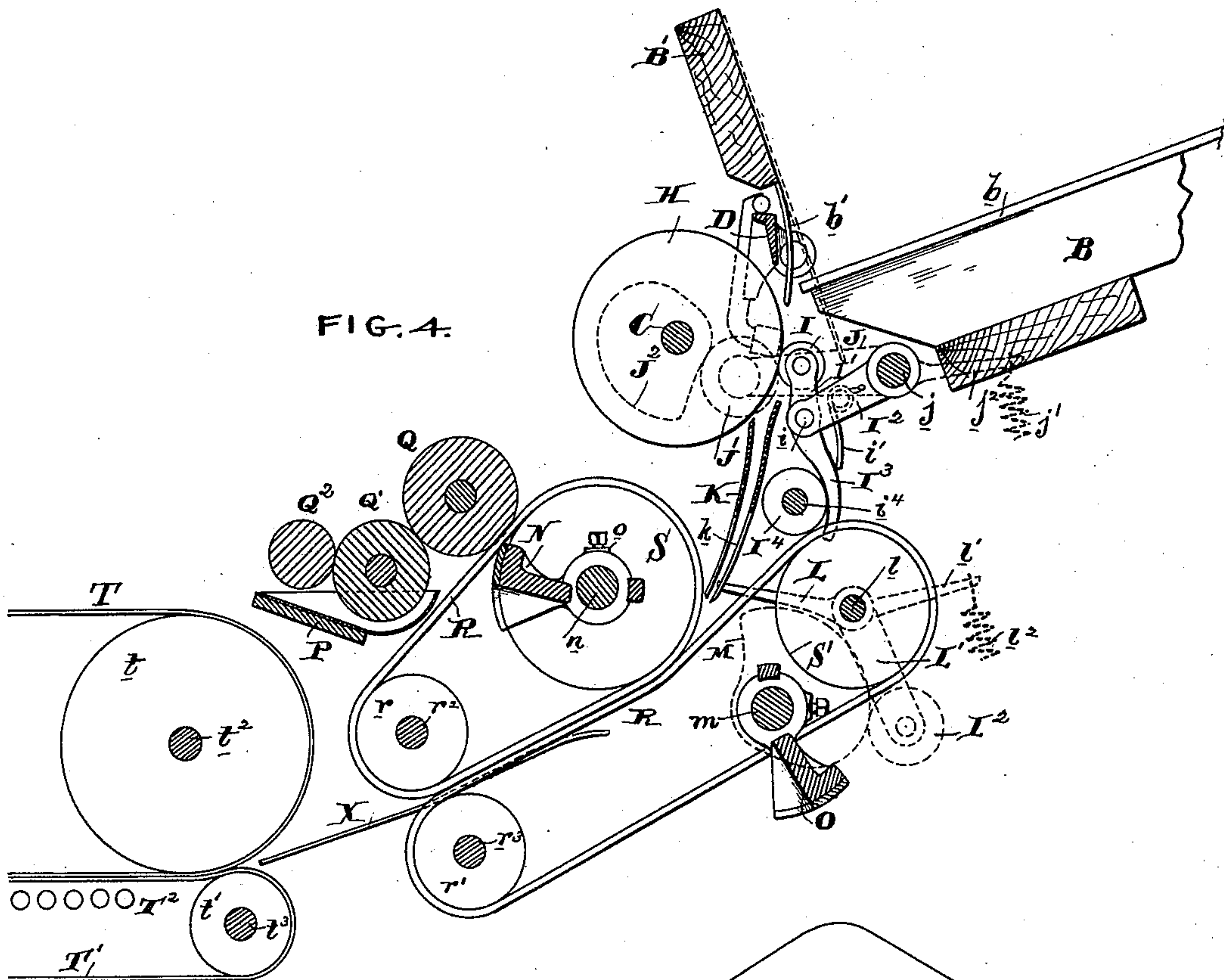
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ENVELOPE BLANK GUMMING MACHINE.

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WITNESSES:

Henry Dury N
David S. Williams

INVENTOR:

Irving W. Huckle's
By his atty


UNITED STATES PATENT OFFICE,

IRVING W. HUCKINS, OF PHILADELPHIA, PENNSYLVANIA.

ENVELOPE-BLANK-GUMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 434,446, dated August 19, 1890.

Application filed March 28, 1889. Serial No. 305,063. (No model.)

To all whom it may concern:

Be it known that I, IRVING W. HUCKINS, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Envelope-Blank-Gumming Machines, of which the following is a specification.

My invention relates to machines for gumming envelope-blanks, &c.; and it consists of certain improvements, which are fully set forth in the following specification, and shown in the accompanying drawings, which form a part thereof.

More specifically, my invention is intended for applying the gum to the flaps of the envelope-blanks in an even and regular manner, and so that the blanks may be gummed or pasted with great rapidity and efficiency. It has been found difficult heretofore to apply the gum regularly, owing to the uneven surface of the blank often presented to the gumming devices. My invention is intended to entirely overcome this fault by applying the gum to each envelope-blank separately and in such a manner that the pasting or gumming form presses upon the flap of the blank with an equal pressure at all points of the edge upon which the gum is to be applied.

My invention furthermore consists in certain improved feeding devices whereby the blanks are fed evenly, continuously, and rapidly to the pasting mechanism without the necessity of interrupting the action of the machine for the purpose of replenishing the supply of blanks upon the guide or feed table. The blanks are fed from the bottom of the pile or supply, one at a time, by certain suction and roller devices hereinafter fully described, and the gum is applied to the flap by rotating devices, whereby with economy of space a high speed can be obtained without any jarring motions of the mechanism. By this means the amount of production is greatly increased.

My invention also includes certain improvements in the guiding and gumming devices, and certain combinations of the parts, more fully set out in the claims.

In the drawings, Figure 1 is a side elevation of my improved envelope-gumming machine. Fig. 2 is a plan view of the same. Fig. 3 is an opposite side elevation to Fig. 1. Fig. 4 is a

vertical sectional view through the line xx of Fig. 2. Fig. 5 is a plan view of the envelope-blank. Fig. 6 is a perspective view of the gumming-form. Fig. 7 is a perspective view of the rocker-bar carrying the suction-feeding device. Fig. 8 is a perspective view of the guiding-plates detached from the machine, and Fig. 9 is a perspective view of the feeding-rollers detached from the machine.

A is the side frame of the machine.

B is the feeding-table upon which the envelope-blanks are supported, and from which they are fed one at a time to the gumming devices. This table consists of two supporting-rails $b\ b$, forming a guide for the blanks, arranged at an incline and having an open space between them.

B' is an end support for the upper part of the blanks. The blanks are placed upright upon the table B with the side flaps resting upon the rails $b\ b$ and the central or main flaps to which the gum is to be applied depending between the rails. The weight of the envelope-blanks feeds them down upon the inclined table B, and they are held by the end support B', to which is secured a curved guide b' .

C is the main or power shaft from which the entire apparatus may be operated by suitable gearing.

D is a rocker-bar, Fig. 7, supported in suitable bearings between the side frames A and in front of the feeding-table B, and having at about its central portion two projecting arms or brackets $d\ d$. The brackets support the suction-tubes E E, connected by a tube e , secured upon the rocker-bar and by a flexible tube e' with the suction-pump E'. The plunger E² of this suction-pump is connected to a lever F, pivoted to the main frame at f , and carrying a roller F', which runs in contact with a cam F² upon the power-shaft C, whereby the plunger of the pump E' is operated. (See Fig. 3.) These tubes E E, carried by the rocker-bar D, constitute a suction-separator for separating the foremost blank from the others.

G is an arm secured to the rocker-bar D and carrying a roller G', which runs in contact with a cam G² upon the power-shaft C, whereby the rocker-bar is rocked.

G³ is an arm also extending from the rocker-

bar D, connected to the main frame by a spring g , to keep the roller G' in contact with the cam G^2 and to return the rocker-bar to the upright position. The cams F^2 and G^2 are so arranged relatively to each other on the shaft C as to be perfectly timed in their action, the suction being created at the moment the rocker-bar D is rocked forward and the suction-tubes E E depressed or brought in contact with the flap of the envelope-blank, as is hereinafter more fully disclosed. I prefer to form the suction-pump E' with a slot or opening e^2 to admit the air the moment the plunger rises beyond that point, so as to relieve instantly the suction in the tubes E E. The plunger may descend in the pump-cylinder by gravity, and the pump is provided with an air-escape valve e^3 at its bottom. While I prefer this pump to create the suction in the tubes E E and to construct it in the manner shown and described, it is apparent that any other suitable means might be employed to create a suction in the tubes E E.

H is a roller, preferably provided with a rubber or other soft coating, and is carried by the shaft C. I prefer to have the periphery of this roller extend between the suction-tubes E E.

H' H' are similar rollers to the roller H upon the ends of the shaft C.

I is a small roller loosely journaled to an arm I' , which is in turn pivoted at i to an arm I^2 . This arm I^2 is rigidly connected, preferably by set-screws, upon a rocking shaft j , journaled in the side frames A. J is a lever similarly connected with the rocking shaft j .

J' is a roller upon one end of the lever J, held in contact with a cam J^2 , carried by the power-shaft C. The roller J' is held in contact with the cam J^2 by a spring j' , secured to an arm j^2 , extending from the rocker-shaft.

I^3 is a curved leg extending from the arm I' pressed in contact with a roller I^4 by means of a spring i' , secured to the arm I^2 . The roller I^4 is carried upon a shaft i^4 .

K' K' are pressure-rollers carried upon arms K^2 K^2 , preferably pivoted to the shaft i^4 , adapted to run in contact with the feeding-rollers H' H', and kept in contact therewith by suitable springs k' k' .

K K are guides, preferably of sheet metal, slightly curved, leading from the rollers H and H' H' to the pasting or gumming devices. These guides K K are provided with two slots k , through which fingers L, secured upon a rocker-shaft l , project.

L' is an arm secured to the rocker-shaft l , carrying a roller L^2 , which runs in contact with a cam M carried upon the shaft m . This cam M imparts to the fingers L a reciprocating motion back and forth in the slots k , dropping the fingers L below the surface of the guide K in their lowest position, for the purpose hereinafter more fully described. An arm l' , connected with the rocker-shaft l , and a spring l^2 ,

connected with said arm, may be used to keep the roller L^2 in contact with the cam M.

N is the pasting or gumming form secured to the shaft n , having the paste or gum applying surface N' of the shape in which the paste is to be applied to the flap of the envelope-blank. The preferable construction of this paste or gum applying form is shown in Fig. 6, Sheet 3, of the drawings, and consists of the two arms N^2 N^2 , adapted to be journaled upon the shaft, and the strengthening-web N^3 between said arms, to support the gum-applying surface N' , and a strengthening-bar n' connecting the hubs. These parts are preferably made integral, and the arms N^2 N^2 are secured to the shaft n by means of screws through the screw-holes o . By this means the forms N may be easily removed and replaced by another form of a different size, to suit different envelope-blanks, so that the same machine is suited to any reasonable variation in size of envelope-blanks. The backing or impression form O is carried by the shaft m , and is similar in general construction to the gumming-form N, but is preferably covered with rubber. While I prefer the construction of these forms shown, it is apparent that it may be altered in many ways without departing from my invention, as these are at most mere details of construction.

Paste or gum is supplied to the paste-form N from the paste or gum receptacle P by the distributing and spreading rollers Q Q' Q' in the usual manner.

R R are endless guiding and carrying bands, between which the pasted blanks are conveyed between the pasting devices and to the driers. These bands R R are carried by rollers S and S' on the shafts n l and rollers r r' upon shafts r^2 r^3 . There are two each of these rollers S S' and r and r' , separated some distance apart, so that between the two lower and between the two upper bands there is an open space. The bands convey the blanks by the side flaps, leaving the wet gummed part in the open space.

T T' are endless bands passing over wheels or rollers t t' in line with bands R for conveying the blanks and allowing them to dry. It is apparent that heating-coils T², Fig. 4, or other suitable drying devices may be employed in connection with these bands T T' for the purpose of drying the gummed blanks.

X is a guide, preferably of sheet metal, slightly inclined to convey the gummed blanks from the bands R R to the bands T T'.

Motion is imparted to the mechanism in the following manner: C is the main or power-shaft, which is operated by a band or other connection with the power-shaft of the room or in any other suitable manner. This shaft carries the cams by which the suction-pump E' , the rocker-bar D, and the feed-roller I are operated. A gear-wheel C' upon the end of the shaft C is connected by an intermediate gear-wheel c with a gear-wheel U upon the

shaft n , whereby said shaft n and the pasting or gumming form N is rotated. The paste supplying and distributing rollers Q Q' and Q^2 are operated by the gear-wheel U by means of suitable gearing q q' q^2 . The shaft m , carrying the impression or backing form O , is operated through a gear-wheel U' gearing with the wheel U . This shaft m carries the cam M , whereby the fingers L are operated. V is a gear-wheel upon the other end of the shaft n , by which power is transmitted through an intermediate gear-wheel v and the gear-wheel V' to the shaft r^2 . The shaft r^3 is operated by a wheel V^5 gearing with the gear-wheel V^4 upon the shaft r^2 .

W is a large gear-wheel upon the shaft t^3 , operated by the gear V^6 upon the shaft r^2 . The shaft t^2 is operated by the gearing t^4 and t^5 . By this large gear-wheel W it will be seen that the carrying aprons or bands T T' will be run at a much slower speed than the other parts of the machine, by which means the blanks will overlap each other upon the aprons or bands, (leaving the gummed flaps exposed,) and thereby occupy much less space.

In place of using the shaft C as the power-shaft it is apparent that either the shaft n or m might be made the power-shaft.

Z is the envelope-blank.

From the foregoing description of the mechanism the operation of the machine will be readily understood. The envelope-blanks are supported in a pile or supply upon the inclined table B in an upright position, the side flaps resting upon the guide formed by the rails b b , and the central flap, to which the gum is to be applied, depending between the rails. The blanks rest against the top support B' . The main shaft C is rotated and the rocker-bar D is rocked by the action of the cam G^2 bringing the suction-tubes E E in contact with the depending flap of the first envelope presented. Simultaneously the suction is created in the pipes E E by the pump E' through the action of the cam F^2 , and as the rocker-bar is rocked back the tubes E E lift the flap of the blank away from the pile. Prior to this the roller I is depressed by the operation of the cam J^2 , which depresses the arm J and its arm I^2 , carrying the arm I' and the roller I . As the flap of the blanks is raised away from the pile, the roller I is raised by the operation of the spring j' , and by the leg I^3 and roller I^4 it is pressed forward, seizing the flap between itself and the roller H . This roller I presses the end of the flap of the blank with a biting action against the roller H . Simultaneously with this the suction is stopped in the tubes E by the action of the cam F^2 , and the blank, guided by the curved guide b' , is carried down by the rollers I H to the rollers H' H' and K' K' , by which it is fed between the guides K K . When the blank is released by the feeding-rollers H' and K' K' between the guides K K , it is supported by the fingers L L , which act on the under edges of the side flaps, as indicated in Fig. 5, and by them allowed to de-

scend gradually to the pasting mechanism. The roller I has meanwhile been brought back into position by the operation of the cam J^2 to operate upon another blank, the flap of which is being raised by the suction-tubes E E . At the moment the flap of the first-mentioned blank is received between the forms N and O , the fingers L being previously dropped down by the operation of the cam M and after the passage of the blank returned to receive and support the next blank. The gum is applied to the flap by the forms N and O , and the gummed blank is carried by the bands R R and guide X to the drying-conveyers T T' , which, as heretofore explained, travel at a slower rate, so that the gummed blanks are placed thereon, one overlapping the other, leaving the gummed flaps exposed. This operation continues constantly with the successive blanks.

It will be seen that by feeding from the bottom of the pile or supply and supporting the blanks in an upright position in an inclined trough or table the capacity of the blank-holder is practically unlimited, and an indefinite supply may be given to the machine at once, which may be replenished as required without disturbing in the least the operation of the machine and requiring little attention from an operator.

While I prefer the details of construction here shown, I do not limit my invention thereto, as it is apparent that they may be varied in many ways without departing from my invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an envelope-gumming machine, an inclined feeding-support for the envelope-blanks and a support for the lowermost blanks adapted to hold the series of blanks in an upright position, in combination with reciprocating suction feeding devices for sucking upon and withdrawing successively the lowermost blank and devices for applying a liquid substance to said blanks.

2. In an envelope-gumming machine, an inclined feeding support for the envelope-blanks consisting of two inclined guiding-rails separated to form a space between and unobstructed at their lowest ends, an upright support at the lowest ends of the guiding-rails to support the blanks on edge or in an upright position, in combination with gum-applying devices, and intermediate suction feeding devices consisting of reciprocating suction-tubes moved to and from the envelope-blanks and feeding-rolls.

3. In an envelope-blank-gumming machine, the combination of a stationary guide for holding the envelope-blanks on edge, a reciprocating suction-feed for separating the flaps of the lowermost blanks successively, feeding-rollers for withdrawing said lowermost blanks successively, rotary forms for applying the gum to the blanks in succes-

sion, and suitable gearing-cams and connecting mechanism for making the various parts operate synchronously.

4. In an envelope-blank-gumming machine, the combination of a stationary guide for holding the envelope-blanks on edge, a reciprocating suction-feed for separating the flaps of the lowermost blanks successively, feeding-rollers for withdrawing said lowermost blanks successively, intermittently-operated stop-fingers for arresting the blank for an instant just before passing between the gum-applying forms, rotary forms for applying the gum to the blank in succession, and suitable gearing-cams and connecting mechanism for making the various parts operate synchronously.

5. The combination, in an envelope-blank-gumming machine, of an inclined feeding-table composed of suitable guiding-rails for supporting the unfolded blanks on edge, a reciprocating feeding device consisting of a frame having one or more suction-tubes, power mechanism to move said suction-tubes to or from the blanks, gum-applying devices to apply gum to said blanks, feeding devices to feed the blanks from the suction-tubes to the gum-applying devices, a vacuum-pump to create an intermittent suction, a pipe connecting the suction-tubes with the suction part of the pump, and power mechanism to operate the pump.

6. In an envelope-gumming machine, a feeding-support for the envelope-blanks formed of two inclined rails separated to form a space between them, and a support for the lowermost blanks adapted to hold a series of blanks in an upright position upon said inclined rails, with the flaps depending between the rails, in combination with suction devices, substantially as set out, for successively sucking upon the depending flap of the lowermost blank and withdrawing the blank from the others, and devices for applying a liquid substance to said blanks.

7. The combination of a support for a series of blanks, a feeding-roller arranged adjacent thereto, a rocker-bar journaled in the main frame of the machine, two suction-tubes carried by the rocker-bar projecting on each side of the feeding-roller, means to rock the rocker-bar to bring the suction-tubes in contact with the blanks and draw their flaps successively toward the feeding roller, a second feeding-roller adjacent to the first-mentioned feeding-roller, and devices for applying a liquid substance to the blank.

8. The combination, with a support for the blanks, and the suction-separator to separate the foremost blank from the others, consisting of two reciprocating suction-tubes, of the feeding-roller H, arranged between the suction-tubes and carried by the shaft C in fixed

bearings, the feeding-rollers H H', also carried by the shaft C, the feeding-roller I, movable to and from the roller H, the rollers K' K' running in contact with the rollers H' H', and the devices for applying a liquid substance to the blank.

9. The combination of a support for a series of blanks, a feeding-roller arranged adjacent thereto, a rocker-bar journaled in the main frame of the machine, two suction-tubes carried by the rocker-bar projecting on each side of the feeding-roller, means to rock the rocker-bar to bring the suction-tubes in contact with the blanks and draw their flaps successively toward the feeding-roller, a second feeding-roller arranged adjacent to the first-mentioned feeding-roller, devices to move the second feeding-roller into and out of contact with the former to press the separated flap of the blank into contact therewith, and devices for applying a liquid substance to the blank.

10. The combination, with a support for a series of blanks, and a suction-separator for separating the flaps of the blanks successively, of a feeding-roller H, arranged adjacent to the support, a rocking shaft *j*, carrying the arms J and I², an arm I', carried by the arm I², a roller I, supported by the arm I', a spring *j'* to raise the arms J and I² to bring the roller I into contact with the roller H, a cam J² to depress the arms J and I² for the purpose of moving the roller I out of contact with the roller H at stated intervals, and devices for applying a liquid substance to the blank when fed between the rollers H and I.

11. The combination, with a support for a series of blanks, and a suction-separator to separate the foremost blank from the others, of the roller H, carried upon the shaft C in stationary bearings, the rock-shaft *j*, arm I², carried by the rock-shaft, the roller I, carried by the arm I', pivoted to the arm I², and having the curved leg I³, the roller I⁴, the arm J, carried by the rock-shaft *j* and provided with the roller J', the cam J², and devices to apply a liquid substance to the blanks.

12. The combination, with a support for a series of blanks, of a suction-separator to separate the foremost blank from the others, devices for applying a liquid substance to the blanks, feeding-rollers for feeding the blanks from the suction-separator to the liquid-applying devices, a slotted guide-plate between the feeding-rollers and liquid-applying devices, and intermittently-operated stop-fingers projecting through said slots.

In testimony of which invention I hereunto set my hand.

IRVING W. HUCKINS.

Witnesses:

ERNEST HOWARD HUNTER,
ELLA M. BRECKINREED.