

(No Model.)

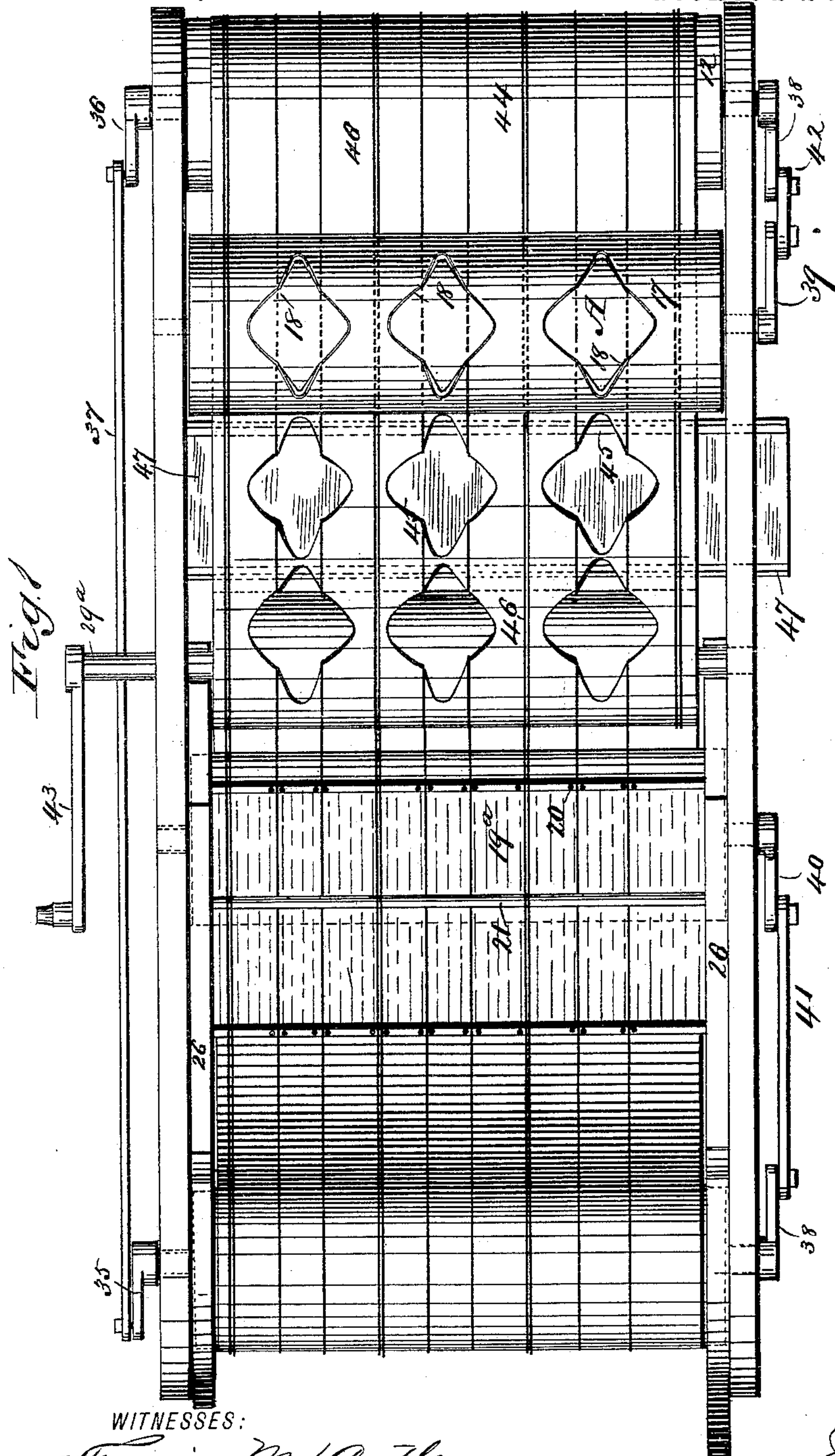
6 Sheets—Sheet 1.

J. D. FLAMMER.

MACHINE FOR FORMING ENVELOPE BLANKS HAVING OPENING THREADS.

No. 435,817.

Patented Sept. 2, 1890.



WITNESSES:

Francis Mc Ardle.
C. Sedgwick

INVENTOR

J. D. Flammer

BY

Munn & Co.

ATTORNEY

(No Model.)

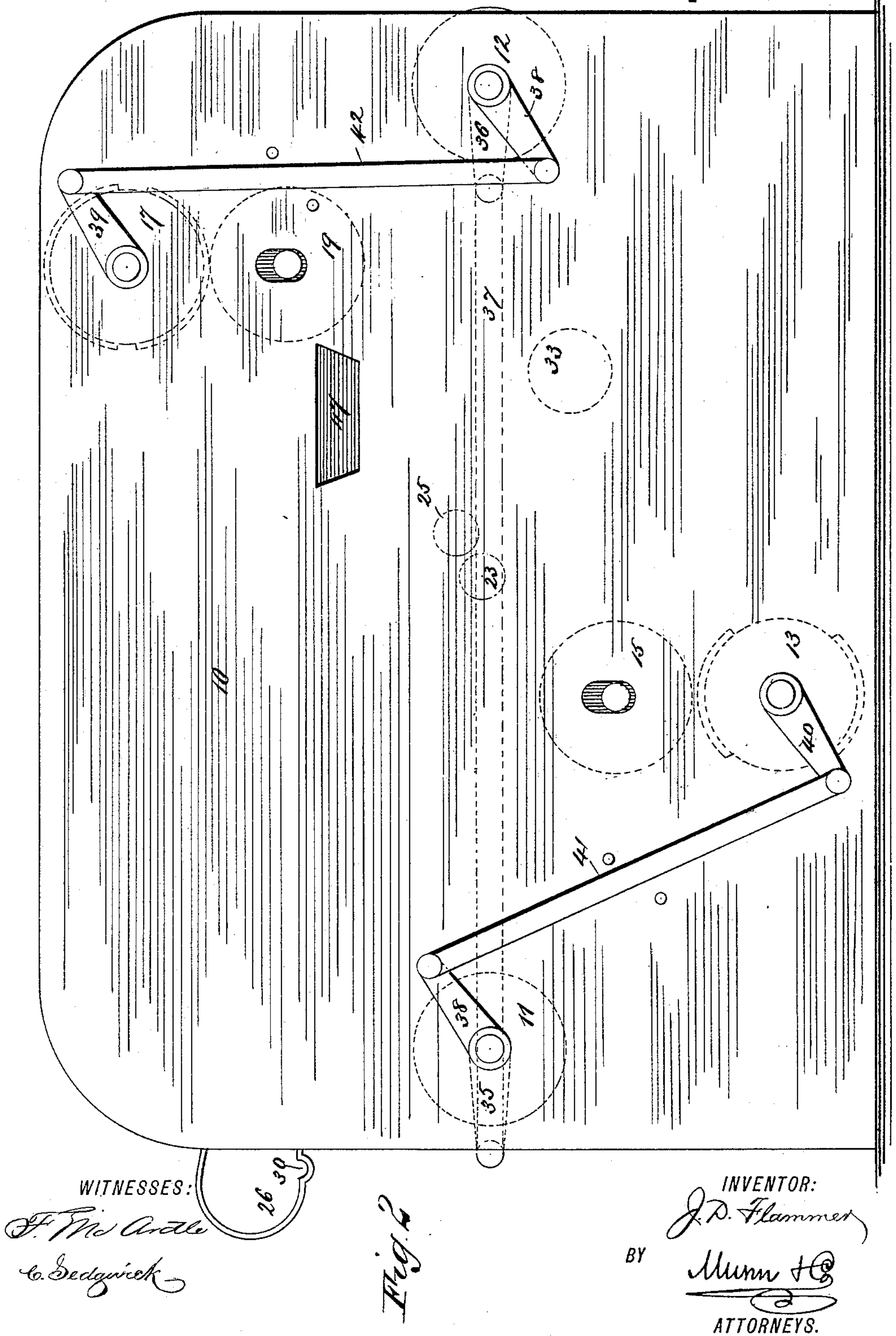
6 Sheets—Sheet 2.

J. D. FLAMMER.

MACHINE FOR FORMING ENVELOPE BLANKS HAVING OPENING THREADS.

No. 435,817.

Patented Sept. 2, 1890.

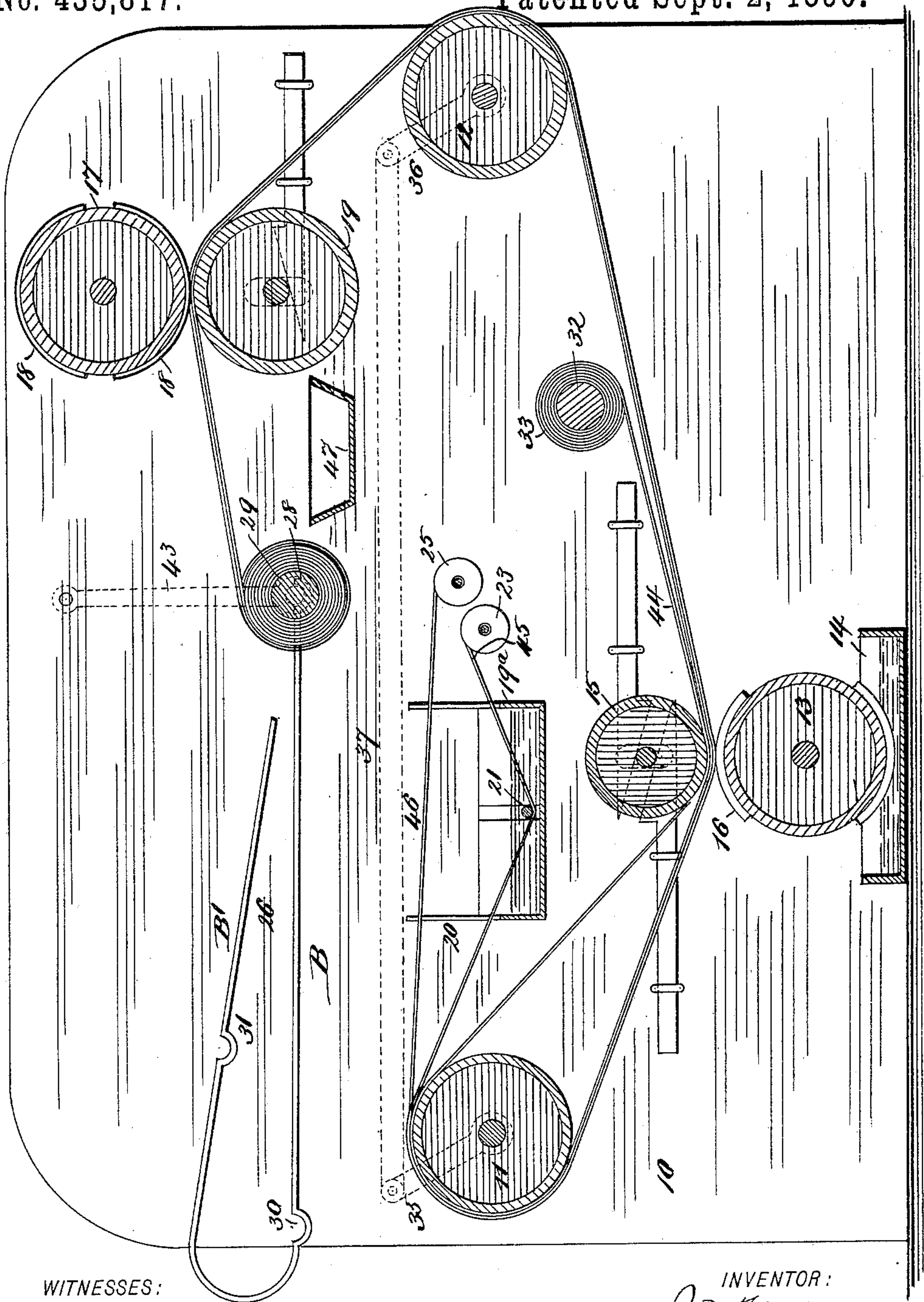


(No Model.)

6 Sheets—Sheet 3.

J. D. FLAMMER.
MACHINE FOR FORMING ENVELOPE BLANKS HAVING OPENING THREADS.
No. 435,817. Patented Sept. 2, 1890.

Fig. 3.



WITNESSES:

J. M. Andle
C. Sedgwick

INVENTOR:

J. D. Flammer
BY *Munn & Co.*
ATTORNEYS

(No Model.)

6 Sheets—Sheet 4.

J. D. FLAMMER.
MACHINE FOR FORMING ENVELOPE BLANKS HAVING OPENING THREADS.
No. 435,817. Patented Sept. 2, 1890.

Fig. 4

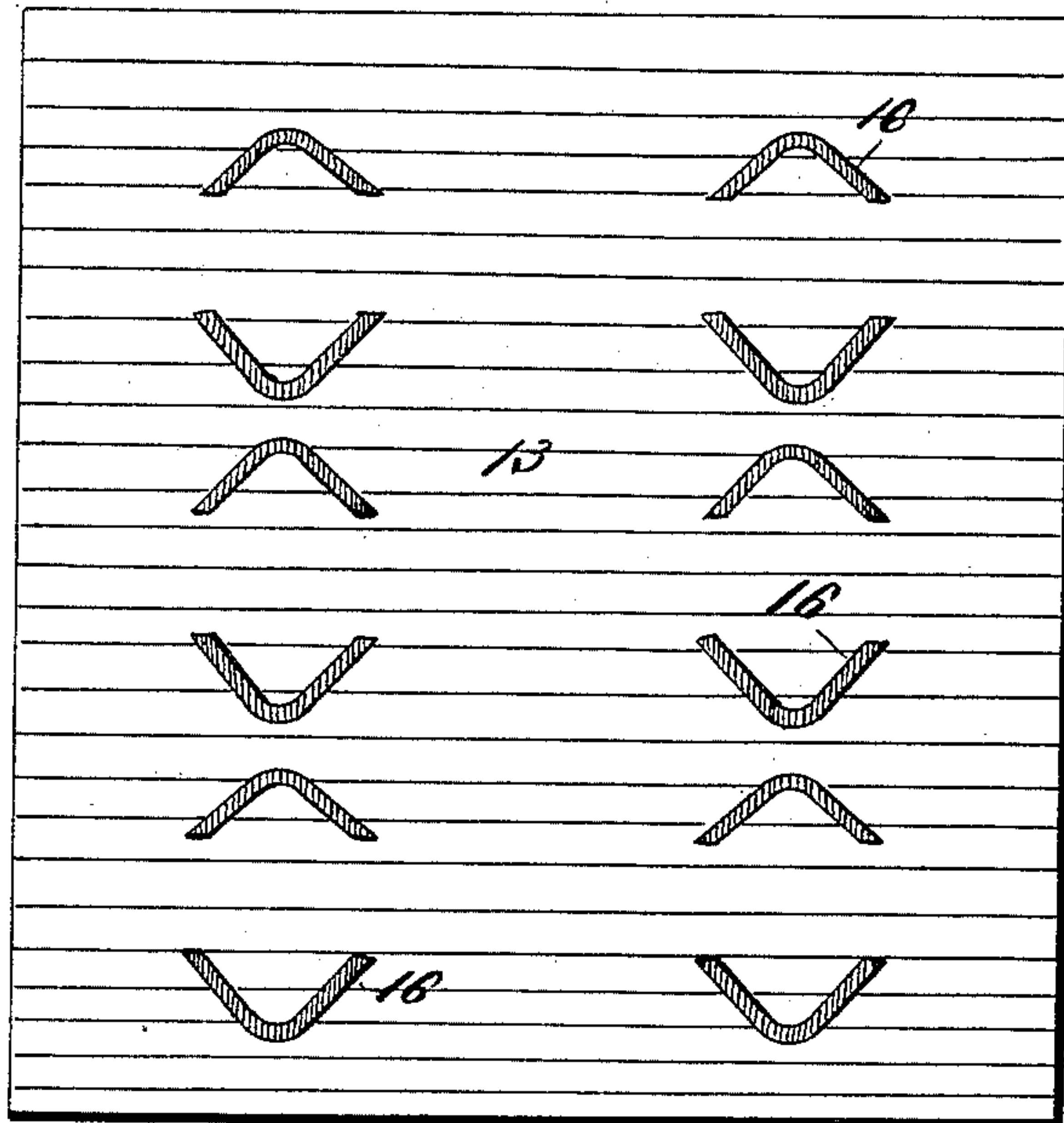
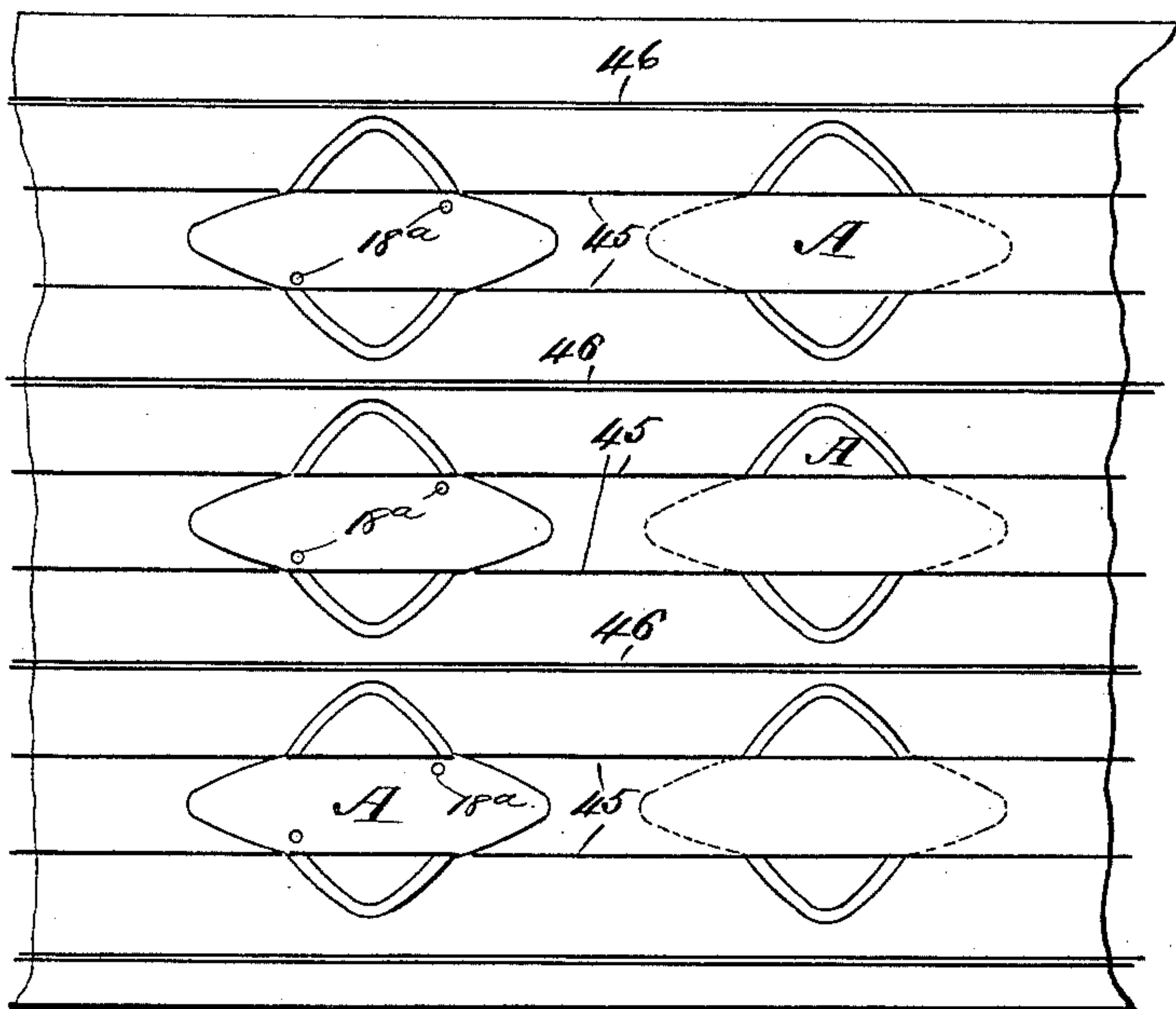


Fig. 5



WITNESSES:

J. M. Andle.
C. Sedgwick

INVENTOR
J. D. Flammer
BY
Munn & Co.
ATTORNEY.

(No Model.)

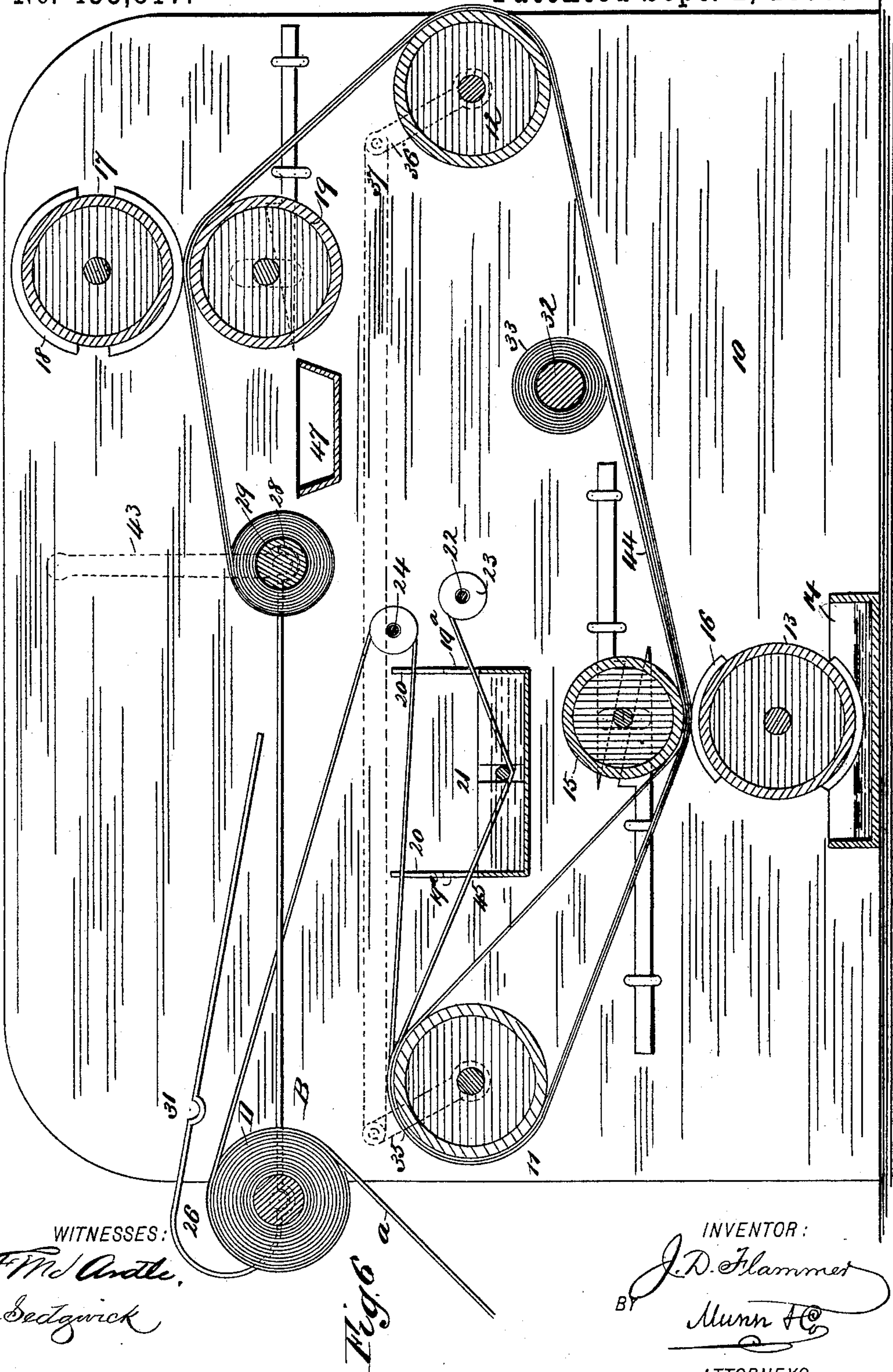
6 Sheets—Sheet 5.

J. D. FLAMMER.

MACHINE FOR FORMING ENVELOPE BLANKS HAVING OPENING THREADS.

No. 435,817.

Patented Sept. 2, 1890.



(No Model.)

6 Sheets—Sheet 6.

J. D. FLAMMER.
MACHINE FOR FORMING ENVELOPE BLANKS HAVING OPENING THREADS.
No. 435,817. Patented Sept. 2, 1890.

Fig. 7

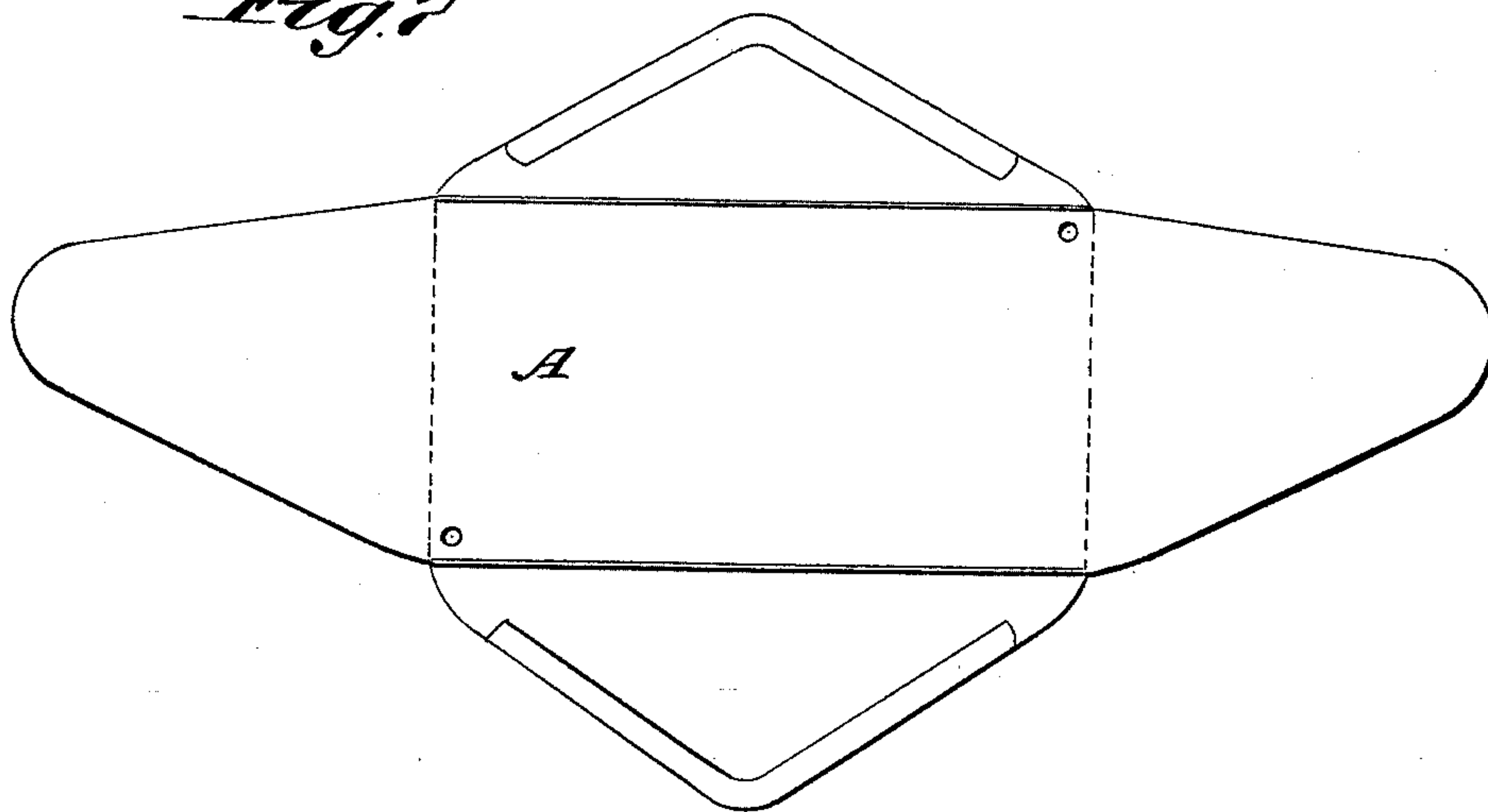
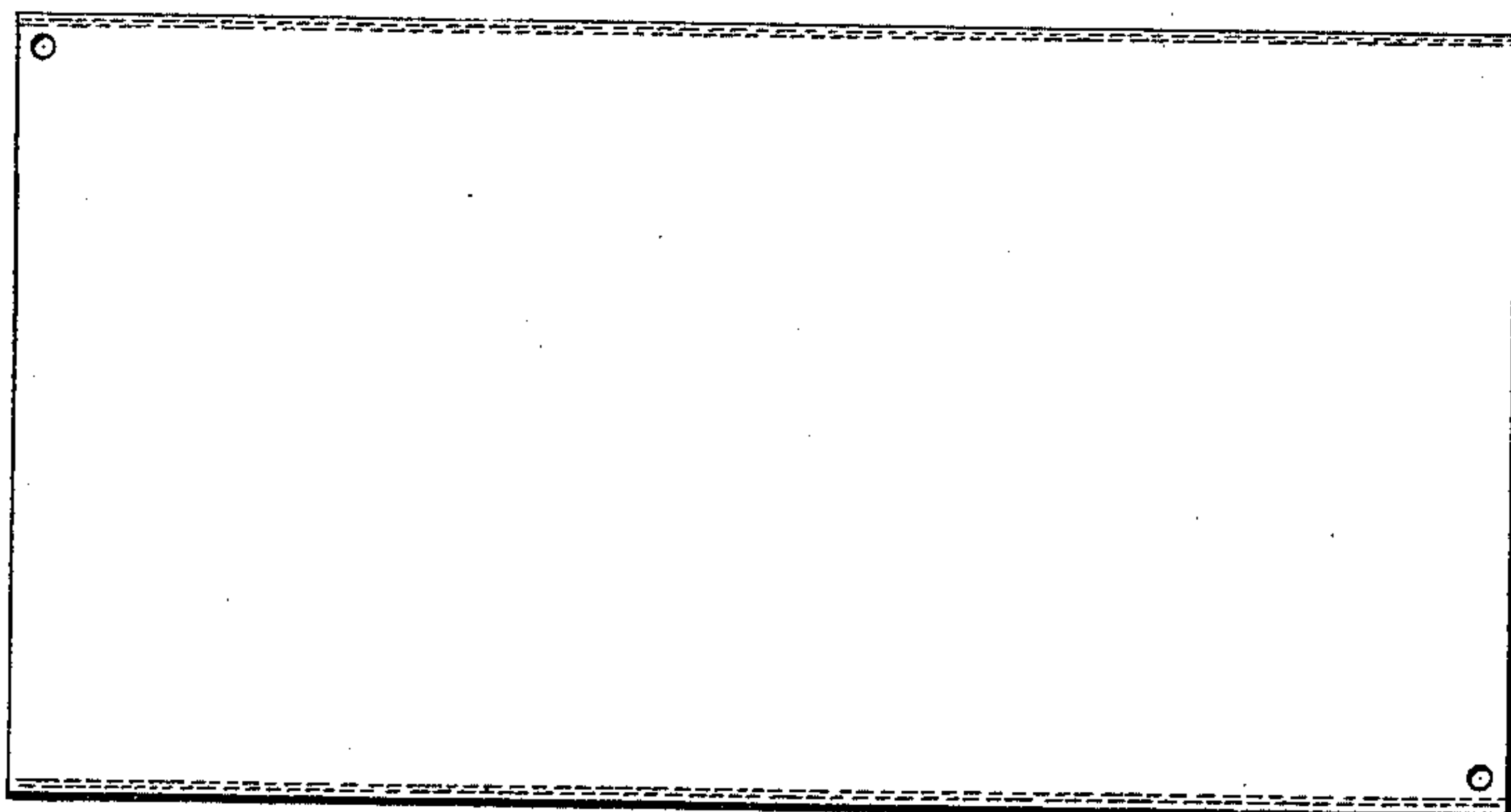


Fig. 8



WITNESSES:

J. Mc Ardle
W. Sedgwick

INVENTOR:

J. D. Flammer
BY *Munn & Co*

ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN D. FLAMMER, OF NEW YORK, N. Y.

MACHINE FOR FORMING ENVELOPE-BLANKS, HAVING OPENING-THREADS.

SPECIFICATION forming part of Letters Patent No. 435,817, dated September 2, 1890.

Application filed March 16, 1889. Serial No. 303,558. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. FLAMMER, of the city, county, and State of New York, have invented a new and Improved Machine for
5 Forming Envelope-Blanks having Opening-Threads, of which the following is a full, clear, and exact description.

My invention relates to an improvement in machines for securing ribs upon paper, and
10 has for its object to provide a machine of simple, durable, and economical construction whereby a thread or a series of threads may be securely attached to a web of paper as the same is delivered from a roll, and a further
15 object of the invention is to provide a means whereby at the same time the paper may be punched or punctured, gummed, and cut to any desired shape, as, for instance, a shape necessary to produce an envelope.

20 The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying
25 drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the machine.
30 Fig. 2 is a side elevation. Fig. 3 is a central longitudinal section. Fig. 4 is a plan view of the gumming-roller. Fig. 5 is a plan view of the paper after having passed through the machine. Fig. 6 is a central vertical longitudinal section, illustrating the supporting
35 bands or threads as being drawn from the waste-roller. Fig. 7 is a rear view of the completed envelope-blank, and Fig. 8 is a face view of the completed envelope.

40 It is the prime object of the present invention to provide a machine especially adapted for attaching threads upon paper, gumming the paper as required in envelopes, and for cutting out the envelope-blanks, whereby en-
45 velopes may be constructed in a simple and economical manner, having a thread attached thereto to facilitate opening; also, to so puncture or perforate the blank at two opposite diagonal corners, as shown in Fig. 7,
50 that when the envelope is formed and filled and the contents therein are touching either of the two perforated corners the tearing of the

contents can be avoided by ripping the envelope open at that end where the contents
cause the least impediment. The end to be
opened may be readily determined, as the let-
55 ter-sheet will show through the punctures or perforations.

To this end the machine consists of two spaced sides 10, in which sides or between
60 the same at each end rollers 11 and 12 are respectively journaled, and near the base of the sides and between the same a pasting-roller 13 is journaled, adapted to rotate within
65 a tank 14, containing mucilage or equivalent adhesive material, which tank is also located between the sides and at the base of the machine, as illustrated in Fig. 3. The tank 14
is so placed and is of such depth that as the
gumming-roller revolves the under side will
70 be in contact with the adhesive material, while the upper side will be removed therefrom.

Immediately above the gumming-roller 13
a guide-roller 15 is journaled in adjustable
75 bearings, and is raised or lowered through the medium of bolts having opposed inclined bearing surfaces, whereby the said roller 15
may be carried to and from the gumming-roller, the slots in the bearing-slides being in-
80 dicated by dotted lines in Fig. 3 and the bolts in positive lines in Figs. 3 and 6. The gumming-roller 13 has produced upon its periphery a series of pads 16, as illustrated in Fig.
4, so arranged that when brought in contact
85 with the web of paper, as hereinafter described, such a gummed impression will be made upon the paper as is required in the manufacture of envelopes—that is to say, a series of opposed or spaced essentially gummed
90 lines will be produced—the form and arrangement of the pads being clearly shown in Fig. 4, which figure illustrates the upper face of the gumming-roller, the lower face being of
similar contour.

95 Diagonally above the roller 12 a cutter-roller 17 is journaled in the side pieces, having produced thereon a series of cutters 18 of similar contour to cut from the web of paper a series of envelope-blanks. (Illustrated at A
100 in Figs. 1 and 5 and likewise in Fig. 7.) The cutters upon the roller 17 are arranged in like manner to the gumming-pads upon the roller 13, and below the cutter-roller 17 an

idler 19 is adjustably journaled in the sides of the frame, raised and lowered by suitable bolts, whereby the said idler may be carried to and from the said cutter-roller.

5 Above the guide-roller 15 a tank 19^a is transversely secured between the sides of the frame purposed to contain an adhesive material, such as mucilage. The upper edges of the ends of this tank are provided with a series of spacing-pins 20 to guide a series of threads, hereinafter described, and the said tank is provided with a groove near the center of two of its inner sides adapted to receive a removable rod or bar 21, the said rod or bar being capable of contact with the threads to be passed through the adhesive material in the tank to retain the threads a sufficient time within said material to insure their adhesion to the web of paper.

20 Near one end of the upper tank 19^a a shaft 22 is journaled in the side pieces of the frame, upon which shaft a series of bobbins 23 are loosely mounted adjacent to the shaft 22, and at an elevation above the same a similar shaft 24 is journaled in the side pieces, on which latter shaft a series of bobbins 25 are held to turn. Upon the inner face of each side piece near the top a track 26 is rigidly secured, comprising a horizontal member B, extending, essentially, from one outer end of the side pieces longitudinally thereof to a point at or near the center, terminating in a hook 28, capable of serving as a bearing for the roller 29, upon which the waste paper is to be wound, and a second bearing 30 is formed in the horizontal member B of the track near its outer end, as best shown in Fig. 3.

At or near the outer end of the machine the track is carried upward in a curved line and downward in the direction of the receiving-roller 29, thereby forming an inclined member B', in which a bearing 31 is produced. A roller 32, upon which the roll of paper to be operated upon is mounted, is detachably held in a suitable bearing located upon the side pieces of the frame, as best illustrated in Figs. 2 and 3.

The journals of the opposed end rollers 11 and 12 are carried through the side pieces of the frame, and are respectively provided at one end with a crank-arm 35 and 36, which arms are united by a connecting-rod or horizontal link 37, as shown in dotted lines in Fig. 3 and in positive lines in Fig. 1. The said link may be made double, if so desired.

Upon the opposite side of the machine to that upon which the link or rod 37 is located, connecting the rollers 11 and 12, the journals of the said rollers 11 and 12 are each provided with a crank-arm 38.

The cutter-roller and the gumming-roller are respectively provided with a crank-arm 39 and 40. The crank-arm 40 of the gumming-roller is connected with the crank-arm 38 of the roller 11 by a link 41, and the crank-arm 39 of the cutter-roller is similarly connected with the crank-arm 38 of the roller 12

through the medium of a link 42. It will be observed that the link 37, connecting the end rollers 11 and 12, and its crank-arms are in the same straight line when the link 41 of the gumming-roller 13 and the link 42 of the cutter-roller 17 are at an angle to their crank-arms. The said links 41 and 42 are provided with limit-pins projecting from the side of the frame at proper distances and near the center of said links to guide them in their proper position, as shown in Fig. 2.

In operation the web of paper 44 is drawn from the roller 32, passing under the adjustable roller 15, over the end roller 11, and down again in contact with the said web under and on said roller 15. From thence it passes under and over the opposite end roller 12 and between the cutter-roller 17 and the lower adjustable roller 19 to a contact with the receiving-roller 29, to which roller the end of the web with the threads or bands from the bobbin 25 upon the shaft 24 are rigidly attached. The threads 45 from the bobbin 23 are carried between the fingers 20 of the tank 19^a into the adhesive material contained within the said tank below the tank cross-bar 21, and the ends of the several threads are attached in any suitable manner, preferably by glue, to the upper surface of the web of paper over the roller 11. The end of each thread or band 46 from the bobbins 25 on the shaft 24 are drawn between the pins 20 and over the end roller 11, thence under and over the several rollers, and upon the web to the receiving-roller 29, to which latter roller the said bands or threads are attached. When the handle is turned in the proper direction, the web of paper with the supporting threads or bands 46 are wound upon the receiving-roller 29. The threads or bands 46 are for the purpose of preventing any rupture of the web between the roller 19, upon which the cutter operates, and the receiving-roller 29, and by the tension of the said bands 46, traveling with and upon the web of paper, considerable strength is imparted to said web, and by the frictional contact with the end rollers 11 and 12 a rotary movement is imparted to the latter rollers, and they being linked together, and the end roller 11 also linked to the gumming-roller 13 and the end roller 12 to the cutter-roller 17, all of the said rollers are rotated in the proper direction, as hereinbefore described. The threads 45 are adapted to be glued upon the paper and constitute ribs thereon. The threads or bands 46 from the shaft 24 are for the purpose heretofore described. These threads are clearly illustrated in Fig. 1, in which the supporting threads or bands are indicated by double longitudinal lines and the rib-threads by single lines. As the web of paper is drawn upward from the roll 33, after having received the threads 45, it passes downward, supported by threads or bands 46 between the rollers 13 and 15, at which point the pads 16, acting, gum the under face of the paper, and as the web of paper

passes between the cutter-roller 17 and the lower roller 19 envelope-blanks A are cut out therefrom and caused to drop into a tray 47, (shown in Figs. 1 and 3,) the waste paper and sustaining-bands being wound upon the receiving-roller 29. When the roll of paper 33 has been exhausted, the waste-roller is carried back upon the horizontal member B of the track 26 to the bearing 30, as shown at D in Fig. 6, and another roll, which has been held in reserve in the bearing 31 in the inclined member of said track, is suffered to roll downward to the bearing 28. After the threads or bands upon the bobbins 25 are exhausted said bobbins are removed and other bobbins substituted. In manipulating the next roll of paper the end of said roll, if so desired, may be attached to the end of the former roll, and likewise the threads or bands may be detached and attached from and to the receiving and waste rollers without going through the primary operation. The supporting-bands are drawn from the waste-roller D in the bearing 30, and as the bands are unwound therefrom the waste-paper, unrolling, passes out of the machine, as shown at a in Fig. 6. In carrying the supporting-bands from the waste-rolls to the web of paper being operated upon they are passed over the bobbins 25, which act as guide pulleys or rollers. The cutter-roller 17 is provided with fixed or detachable punches 18^a, as shown in Fig. 5, which puncture the blanks for the purpose heretofore described.

It will be perceived that in order to fully accomplish the object of the invention any well-known heater will be required to dry the gummed web, which heater may be located underneath the web between the rollers 12 and 13; but, as any form of heater may be employed, I have not illustrated any particular kind in the drawings.

I do not in the present application claim the envelope illustrated, as application has been separately made, the date of filing being May 10, 1890, and the serial number of the application 351,221. The envelope is here introduced only to illustrate the product of the machine.

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

1 In a machine of the character described, the combination, with two longitudinally-aligning end rollers, a cutter-roller journaled above the end rollers, and a gummer-roller journaled below the same, of guide-rollers contacting with the gummer and cutter rollers, a transverse shaft carrying a series of bobbins, and supporting-bands wound upon the bobbins and passed in contact with the

end rollers and the cutter and gummer rollers, substantially as and for the purpose specified.

2. In a machine of the character described, the combination, with longitudinally-aligning end rollers, a cutter-roller and a coacting guide-roller located above the end rollers, a gummer-roller and guide-roller located below the end rollers, and receiving and delivery rollers adapted for attachment to the ends of a paper web, which web is also adapted to pass over the end rollers and between the guide-rollers and their coacting gummer and cutter rollers, of a series of bobbins held to revolve within the frame of the machine and supporting-bands wound upon the said bobbins and adapted also to pass in contact with the paper web in contact with the said rollers, substantially as shown and described, whereby the web of paper to be operated upon is supported in its travel, as and for the purpose specified.

3. In a machine of the character described, the combination, with longitudinally-aligning end rollers, a cutter-roller and a coacting guide-roller located above the end rollers, a gummer-roller and guide-roller located below the end rollers, and receiving and delivery rollers adapted for attachment to the ends of a paper web, which web is also adapted to pass over the end rollers and between the guide-rollers and their coacting gummer and cutter rollers, of a series of bobbins held to revolve within the frame of the machine, supporting-bands wound upon said bobbins and adapted also to pass in contact with the paper web in contact with the said rollers, and link-connections, substantially as shown and described, between the end rollers and the gummer and cutter rollers, whereby the said gummer and cutter rollers are actuated from the end rollers, as and for the purpose specified.

4. In a machine of the character described, the combination, with the transverse end rollers, the gummer and cutter rollers, their adjustable contacting guide-rollers, and the roller link-connections, as set forth, of a paste-tank provided with a removable rod and a series of guide-pins upon its edge, a series of bobbins held to revolve within the machine, supporting-bands wound upon said bobbins and adapted to pass in contact with the said rollers, and a second series of supply-bobbins adapted to carry the opening-threads to be secured to the envelope-blanks, as and for the purpose specified.

JOHN D. FLAMMER.

Witnesses:

J. T. ACKER, Jr.,
C. SEDGWICK.