

E. B. STOCKING.
Paper-Bag Machine.
No. 223,960. Patented Jan. 27, 1880.

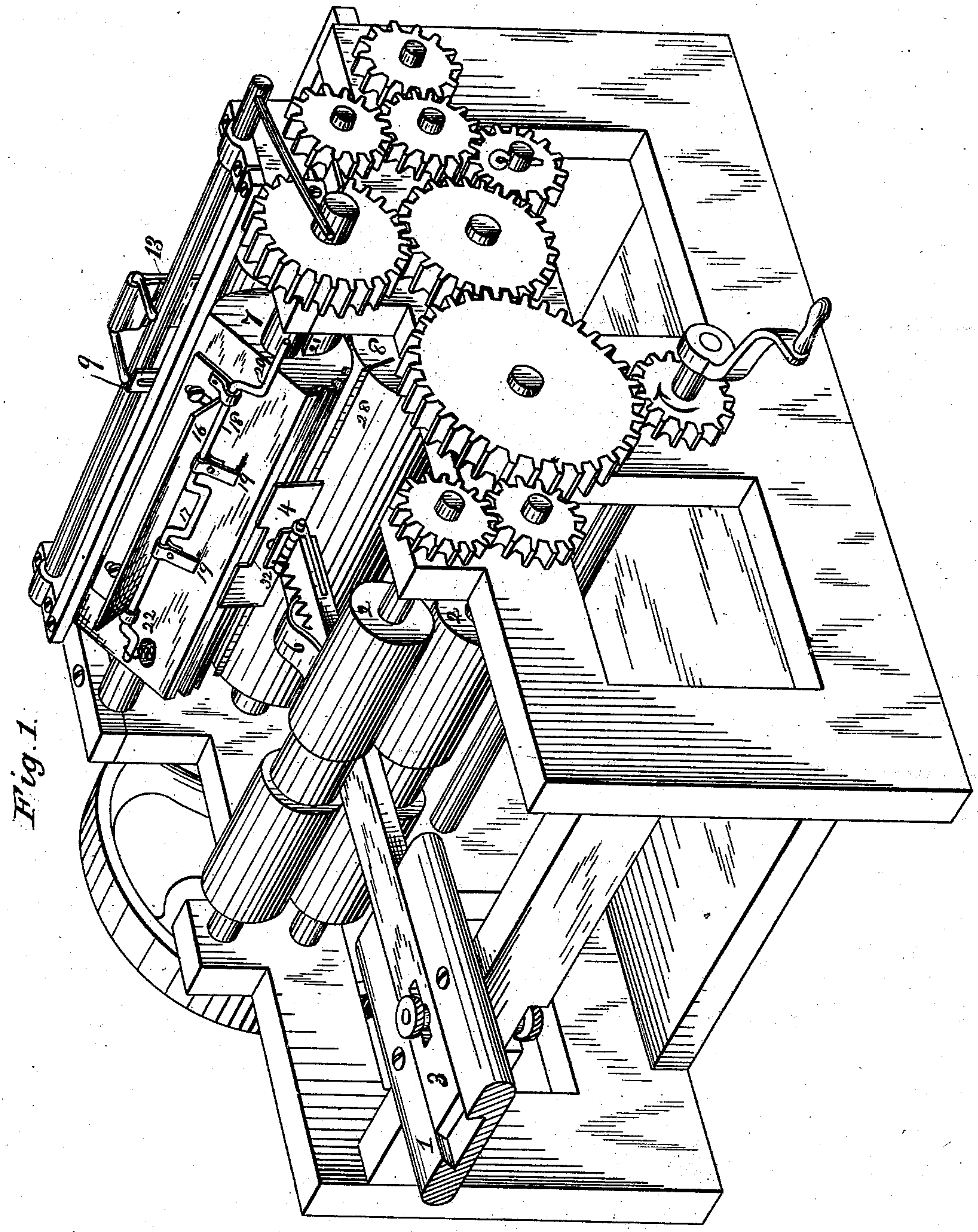
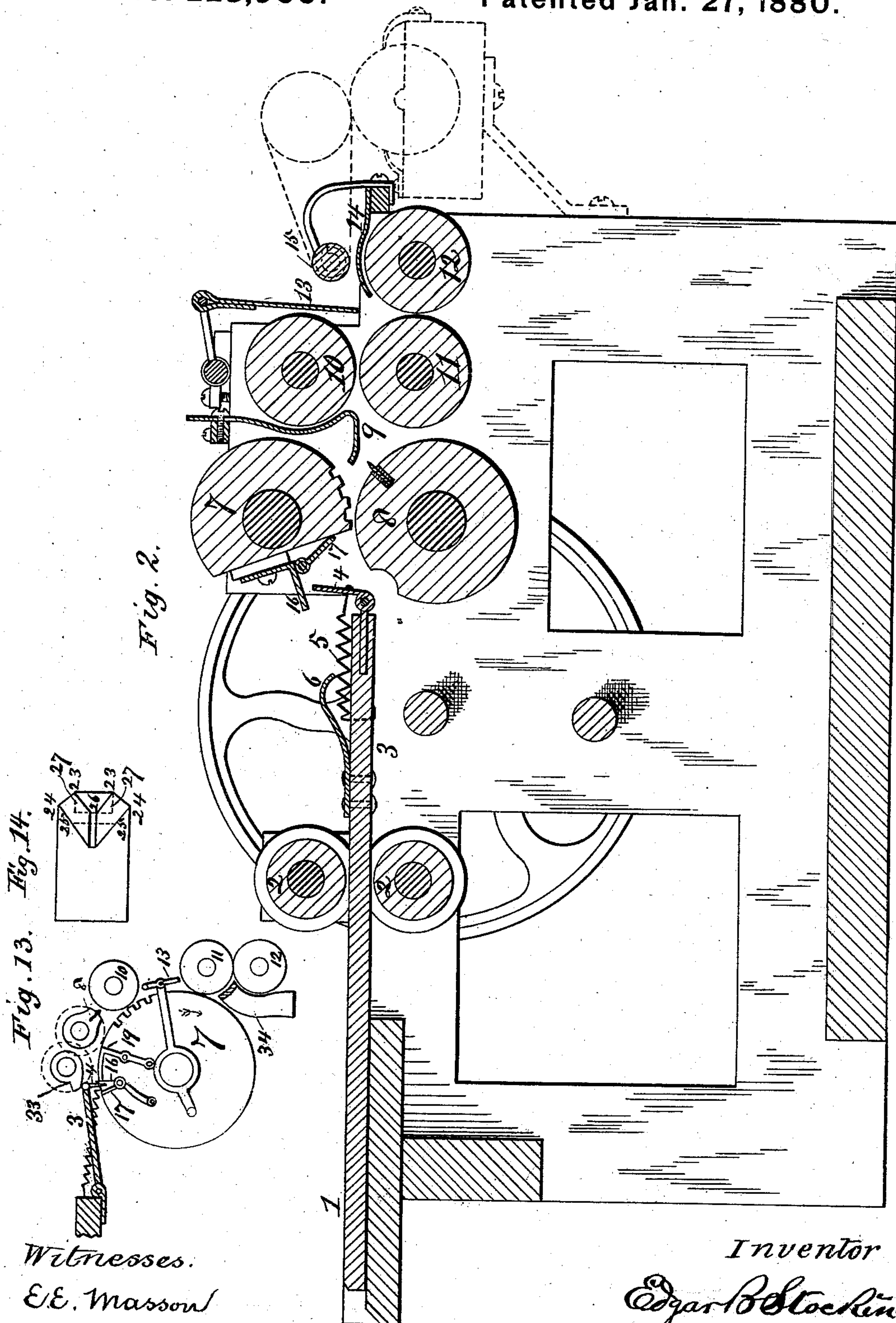


Fig. 1.

Witnesses:
E. E. Masson
W. B. Masson

Inventor
Edgar B. Stocking

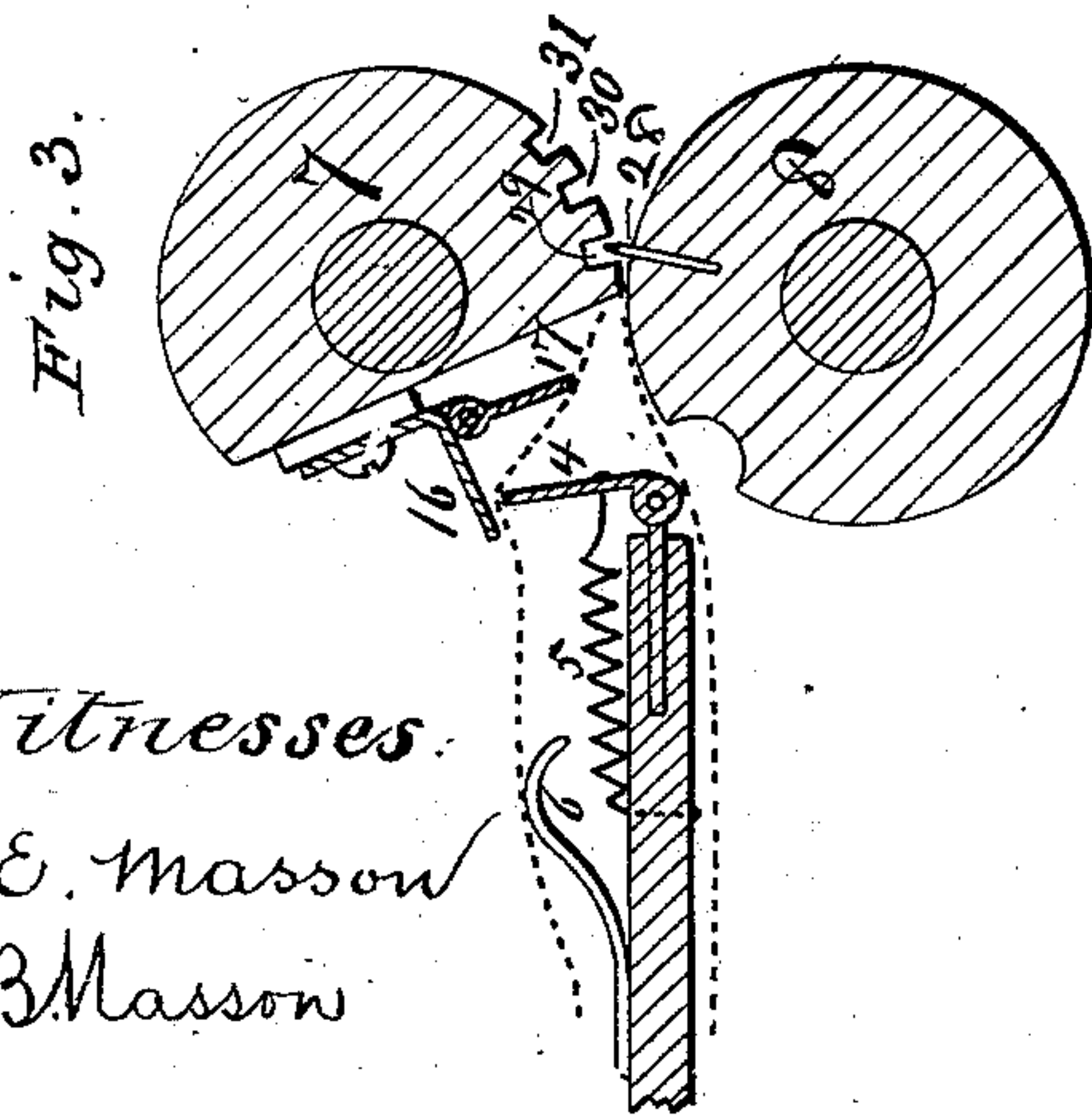
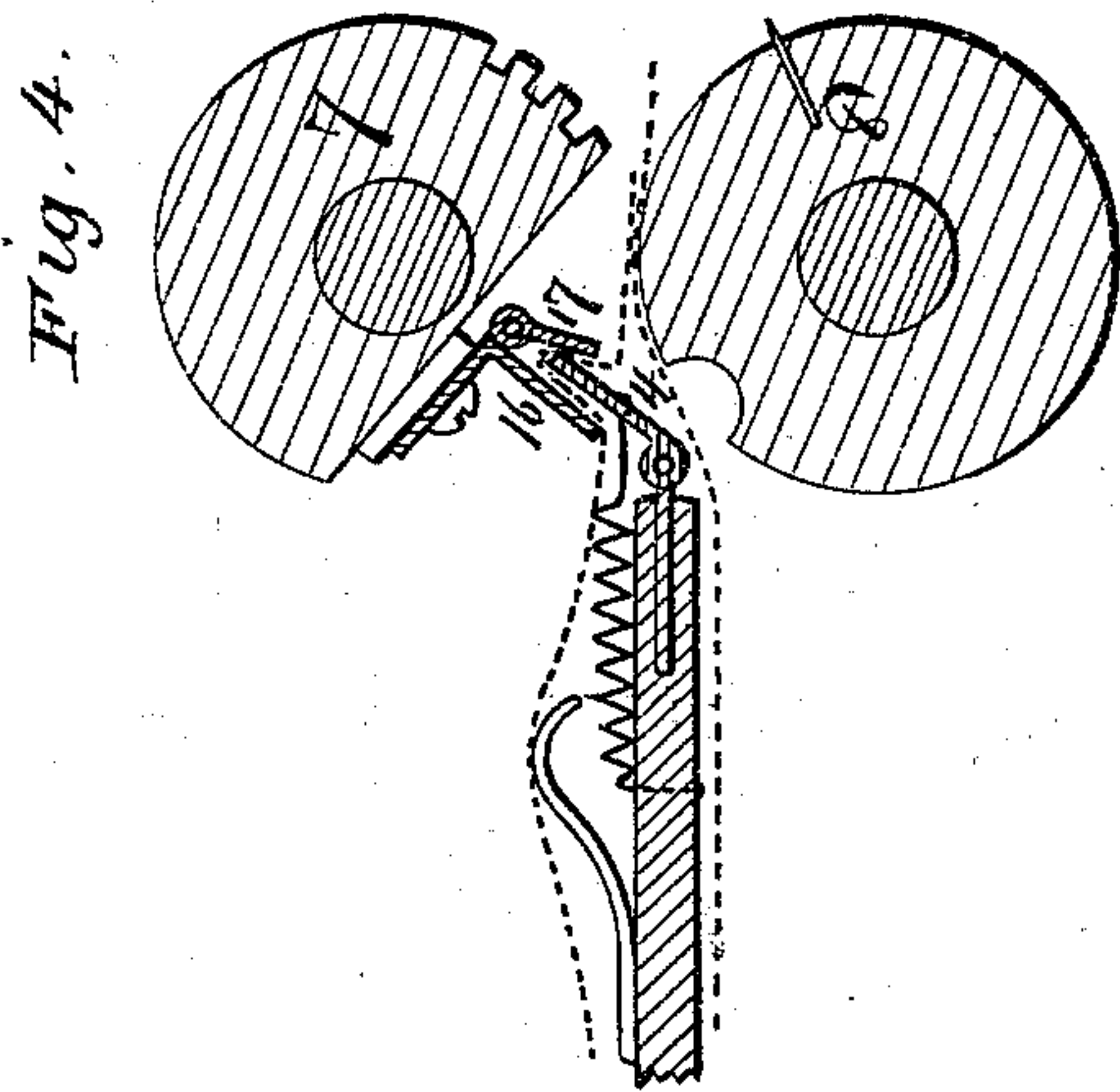
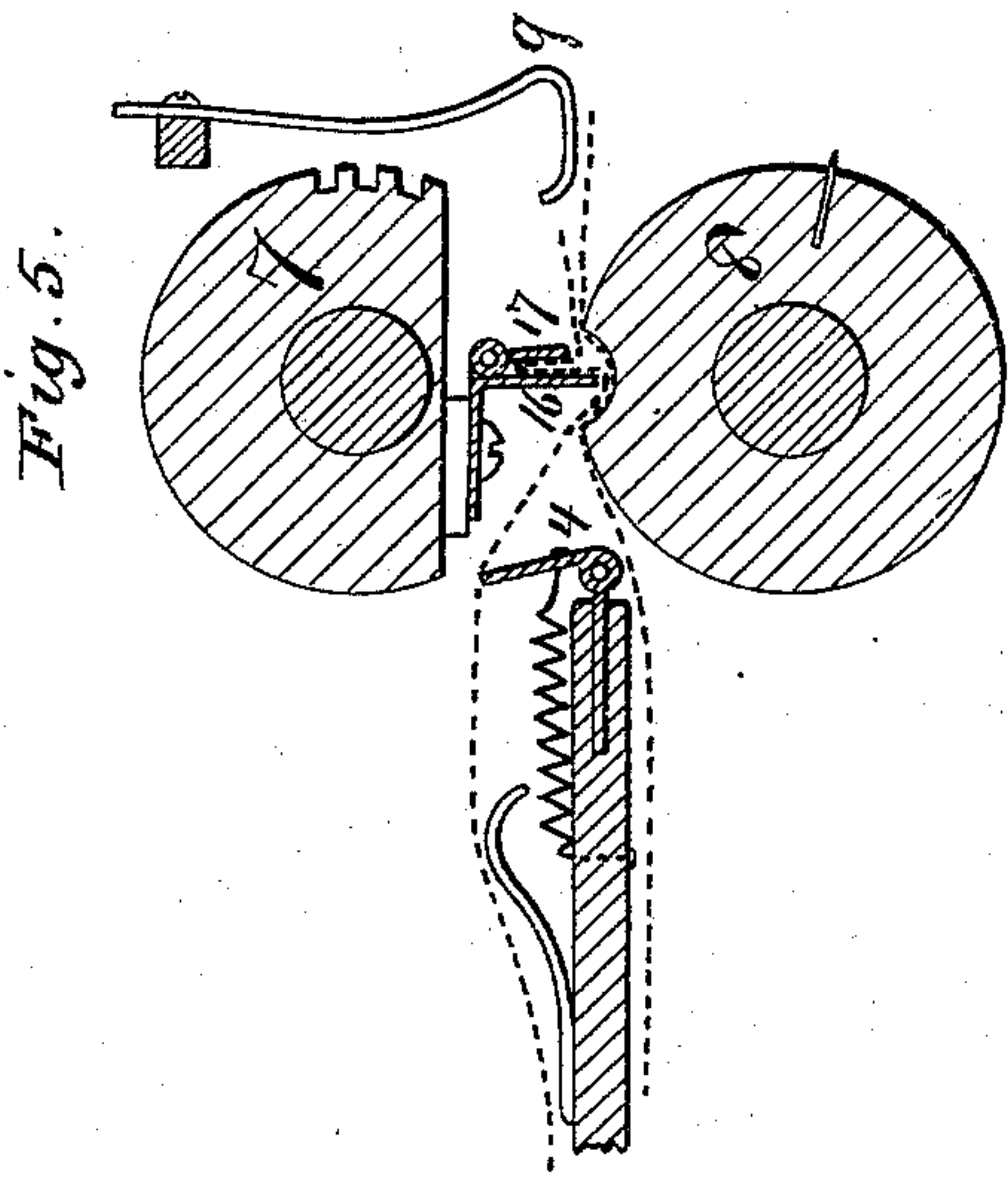
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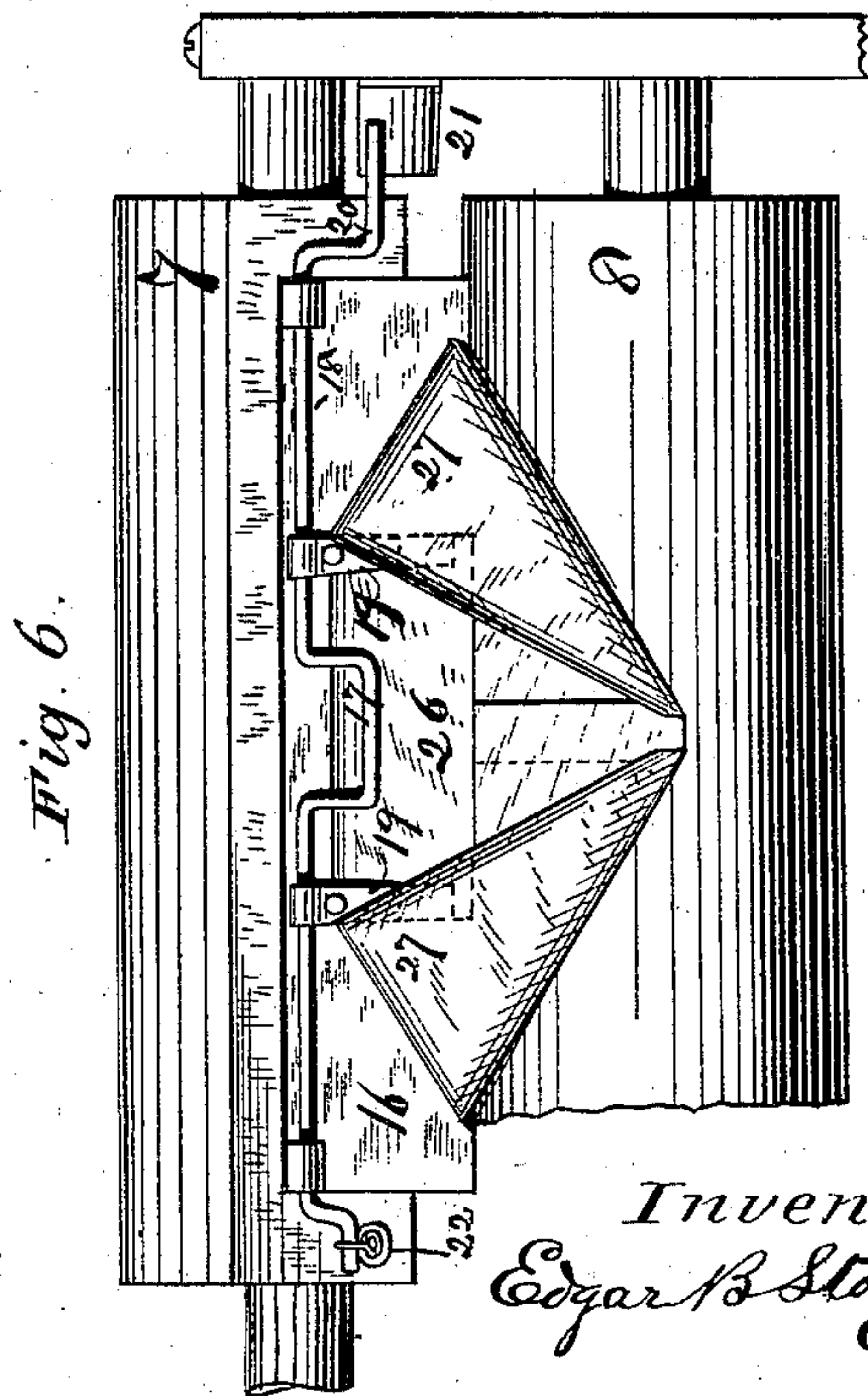
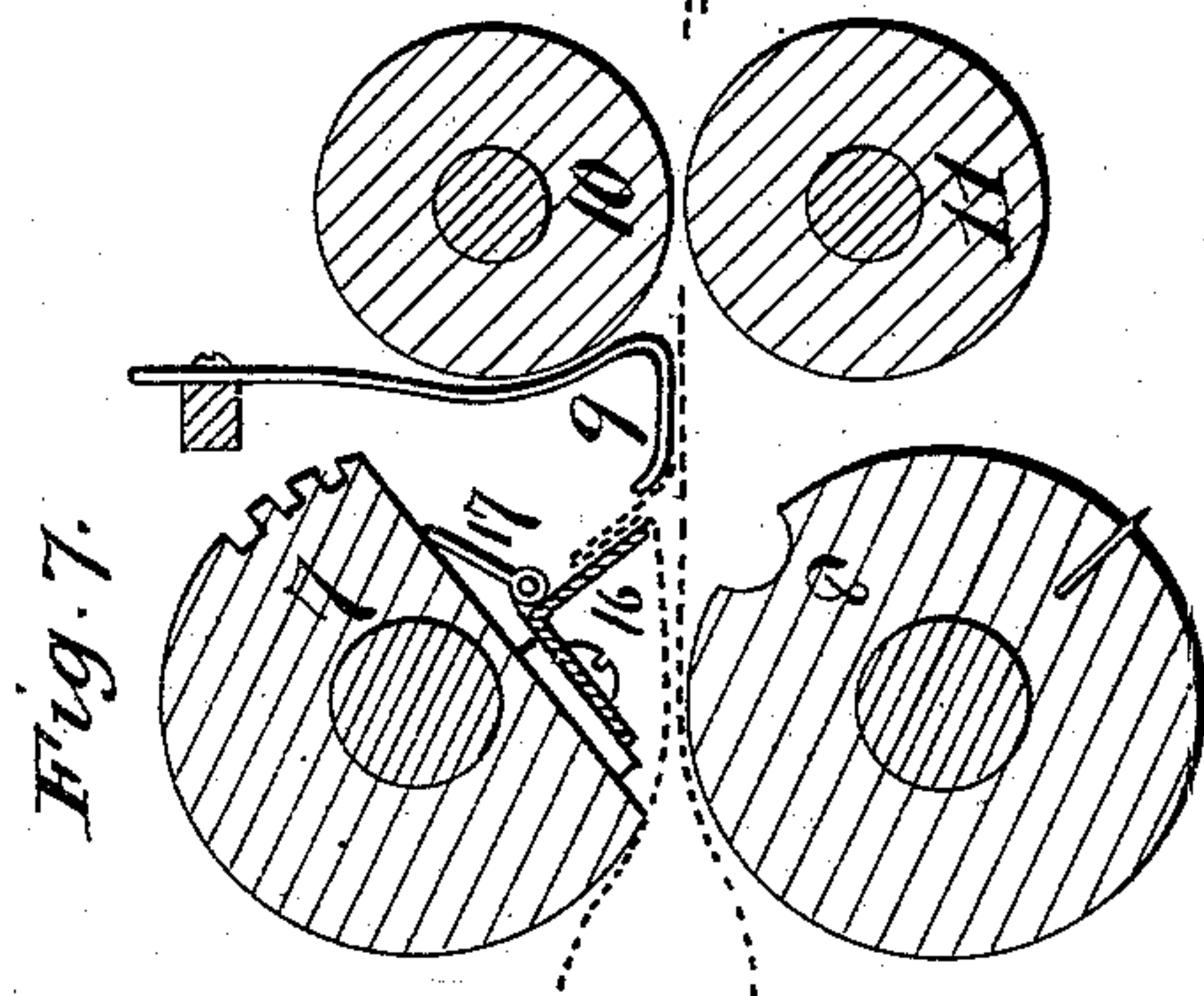
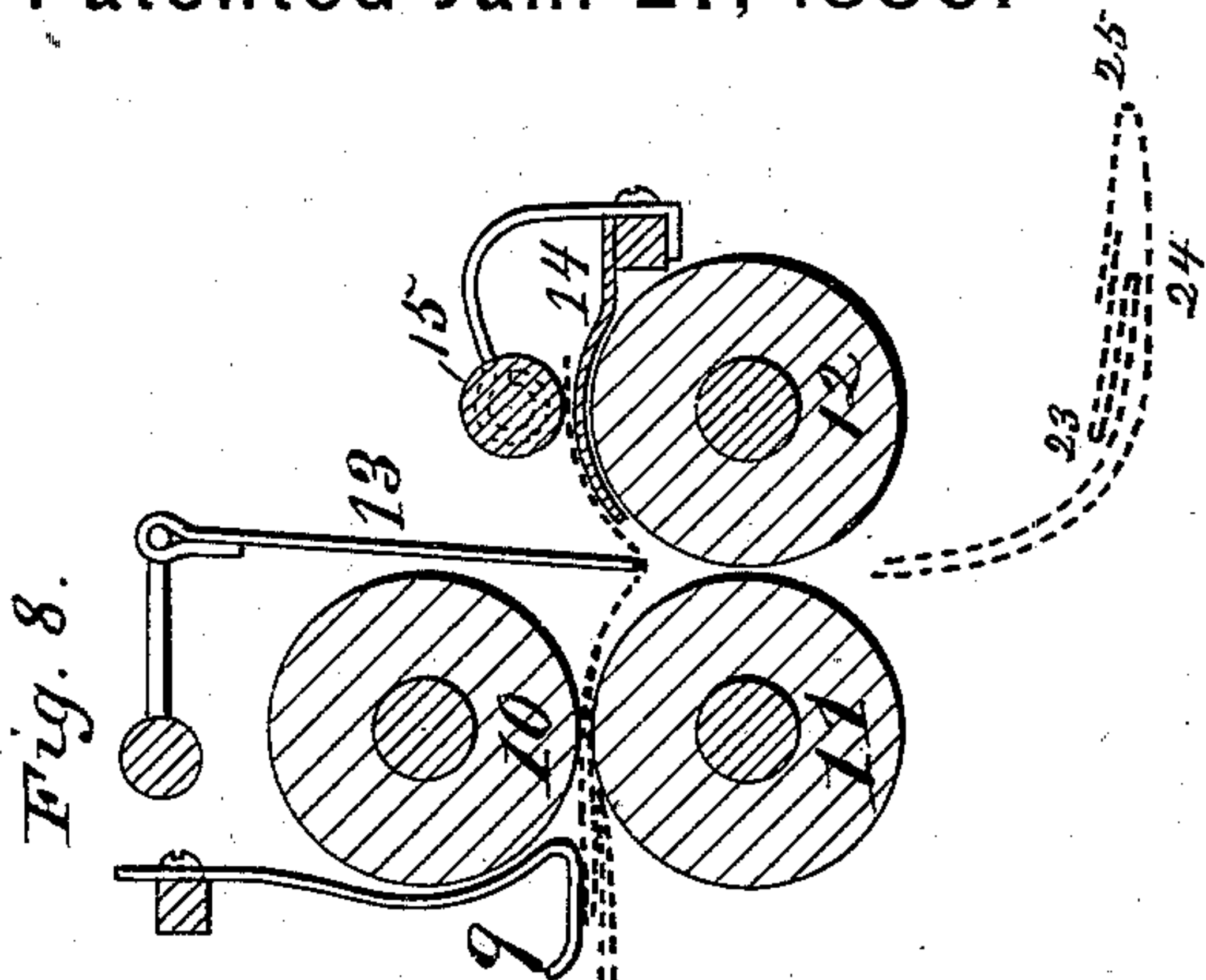
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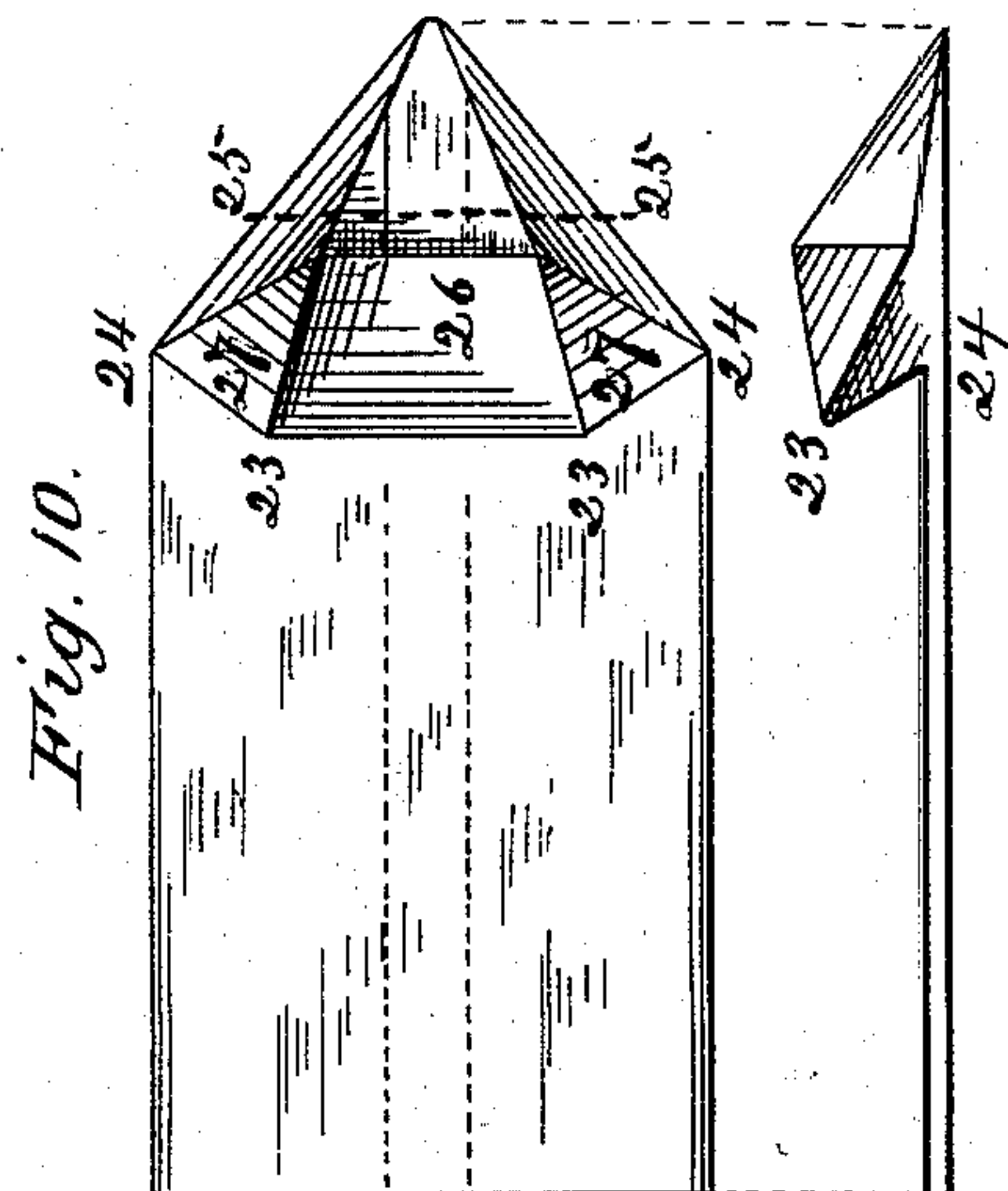
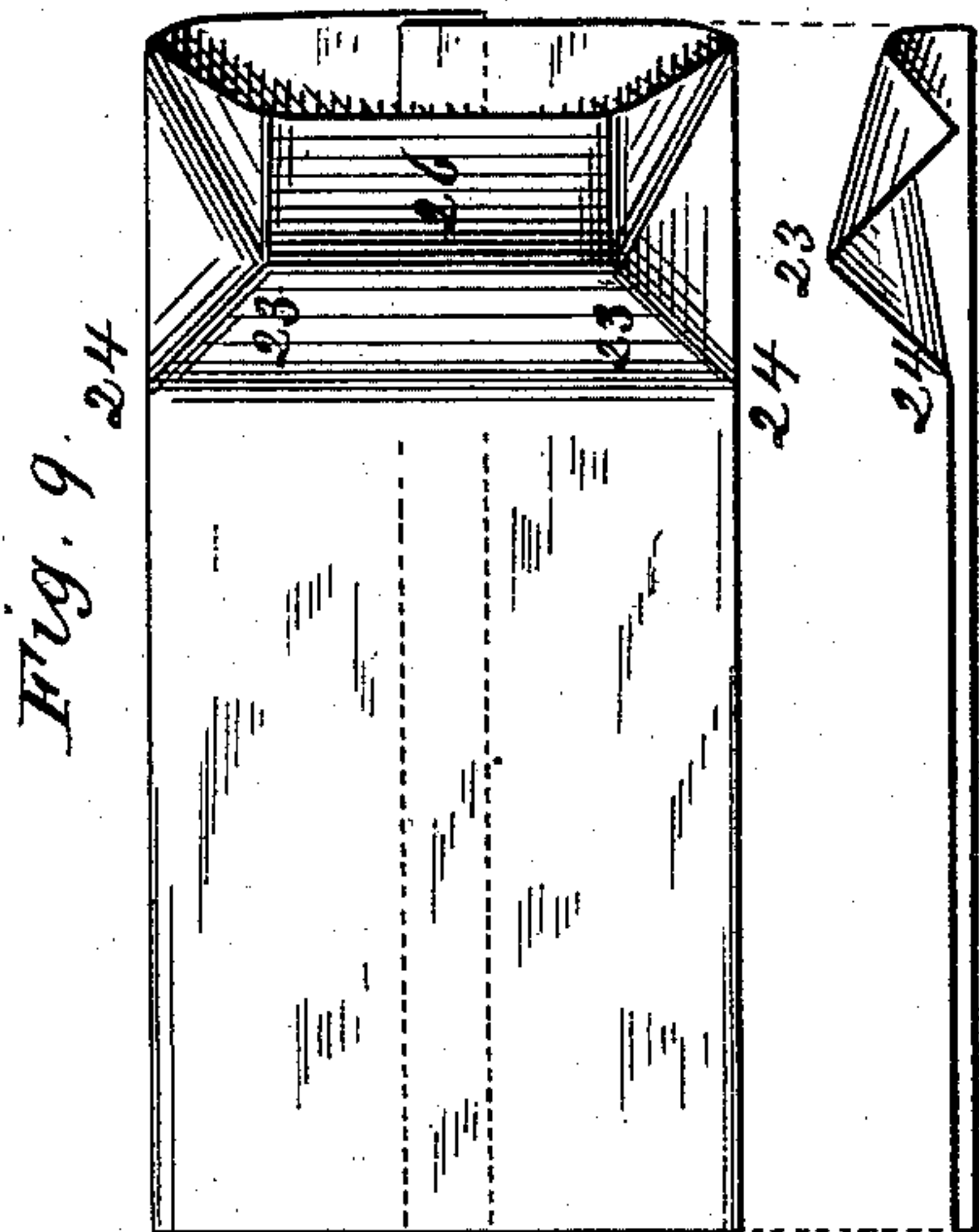
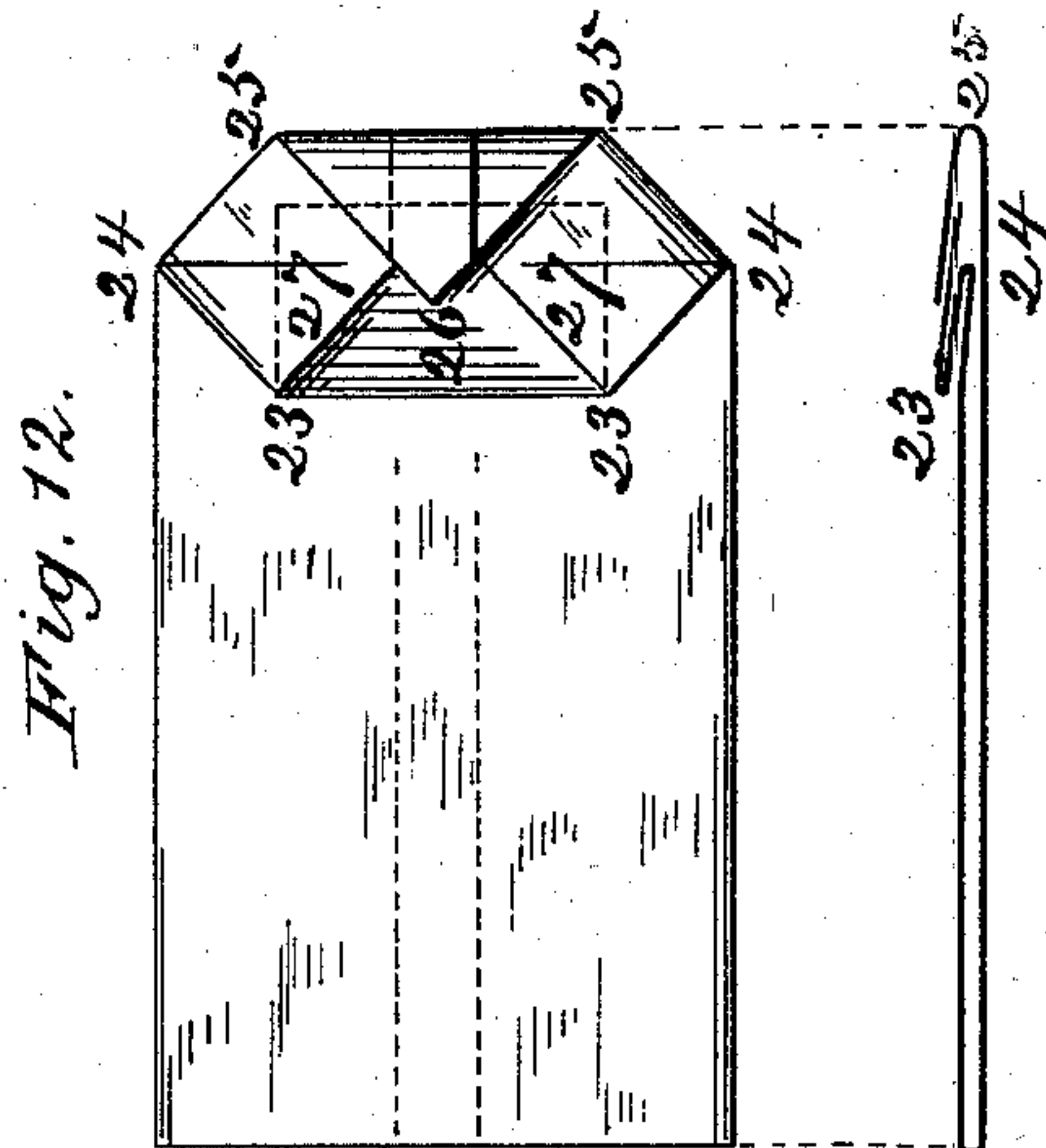
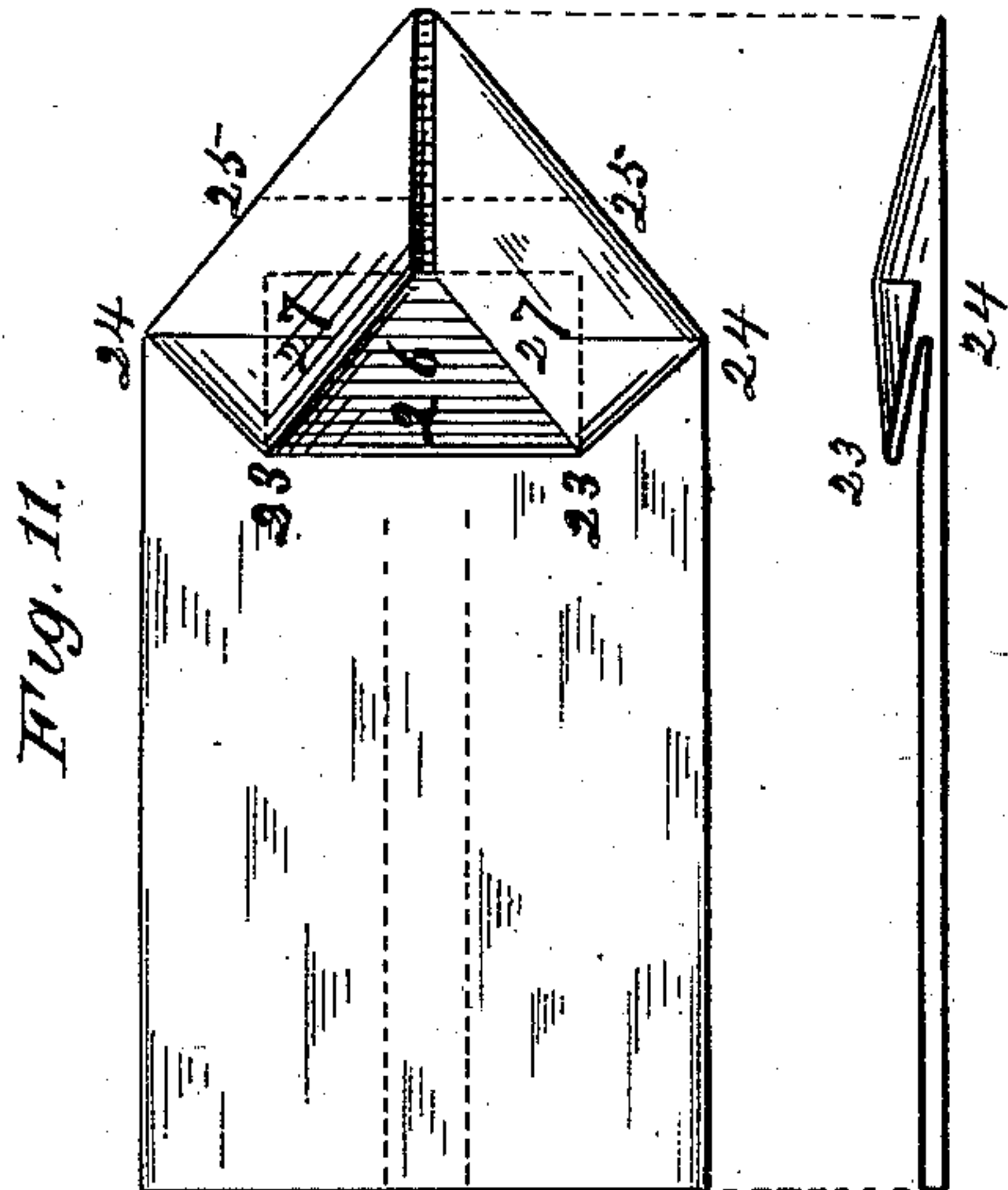


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UNITED STATES PATENT OFFICE.

EDGAR B. STOCKING, OF SYRACUSE, NEW YORK.

PAPER-BAG MACHINE.

SPECIFICATION forming part of Letters Patent No. 223,960, dated January 27, 1880.

Application filed November 28, 1879.

To all whom it may concern:

Be it known that I, EDGAR B. STOCKING, a resident of Syracuse, New York, and temporarily residing at Washington, District of Columbia, have invented certain new and useful Improvements in Machinery for Making Satchel-Bottomed Paper Bags, of which the following is a description.

My invention relates to machinery constructed and arranged to manufacture satchel-bottomed paper bags of that kind and according to that method which are disclosed and claimed in another application pending herewith, which bag and which method of manufacture are therefore not herein covered, secured, or claimed, but constitute the subject-matter of another application.

The object of my invention is to devise or produce mechanism which is simple in construction, continuous in operation, adjustable to different sizes of product, and capable of performing its functions in a rapid and accurate manner.

To enable others skilled in the art to construct and use my machine, reference is made to the following description and to the annexed drawings, in which like numbers of reference indicate like parts in all the figures, and in which—

Figure 1 is an isometric view of my machine. Fig. 2 is a central vertical longitudinal section of the same. Figs. 3, 4, 5, 6, 7, and 8 are detail views of the principal operative parts at successive stages of their operation, Fig. 6 being a front elevation of Fig. 5, and the remaining figures of the series being sectional; Figs. 9, 10, 11, and 12 being views, in plan and section, of the tubular blank at different stages of its formation into a satchel-bottomed bag of the kind herein referred to; Fig. 12 being a view of the same completed; and Fig. 13, a modification of the arrangement of the principal devices of my machine, and Fig. 14 a modified form of bag as produced by such modification of the machine.

Upon and within a suitable frame are supported the operative parts of the machine. 1 represents a former of the usual construction, about which a web of paper is formed into a continuous tube in a manner well known in the art.

In advance of the former are the feed-rolls 2 2, which are cut away at their central portions to permit the passage between them of an extended portion, 3, of the former, to which, in any suitable manner, is pivotally attached a folding-blade, 4, which, in the present instance, is, by spring 5, retracted to a desired position, said extension being also provided with a curved plate, 6, located between the feed-rolls and folding-blade.

By substituting other well-known feed-rolls the blade 4 and plate 6 may be attached to the former, instead of to an extension thereof.

In advance of the folding-blade are what I shall designate as the "folding-roll," 7, and "cutting-roll," 8, and, proceeding in the line of feed, are successively located the presser-foot or guide 9, pressure-rolls 10 11, of which the lower constitutes one of the pair of final-folding rolls 11 and 12, between which the folding-blade 13 operates, and over the roll 12 is situated the guard-plate 14, and above this the paste-roll 15.

To the folding-roll 7—in this instance upon a surface produced by cutting away a portion of said roll—is attached adjustably what I term a "jaw-plate," 16, by which term I mean a plate acting, in connection with a nipper or nippers, to seize material, whether or not also having the additional function of determining a transverse fold in the material parallel to and back of the line of seizure, as hereinafter set forth.

Pivotally attached to the jaw-plate 16, Figs. 1 and 6, is a nipper, 17, a part of or attached to a nipper-bar, 18, upon which are adjustably attached guides 19 19, said nipper-bar being operated by the contact of its crank 20 with the cam 21, adjustably fixed to the frame of the machine and retracted by spring 22. These constitute the operative parts of the machine, and are driven by means of the gearing clearly shown in Fig. 1; but I do not limit myself to any particular means for operating the main and principal devices herein employed, as it is obvious that any skilled mechanic can give them the proper relative direction, time, and speed of movement by well-known means.

To more particularly set forth the construction and operation of the machine, reference

is first made to Sheet 4 of the drawings to clearly understand the purpose of such construction and operation. Fig. 9 on said sheet shows that the first step in making the bottom of the bag is the formation of an intermediate transverse fold upon a line, 23 23, and about a center coincident with the line 24 24, and disposing the material, at the bottom-forming portion of the blank, into an inner transverse rectangular ply, 26, two outer diagonal folds, 27 27, and the entire bottom into a form substantially triangular in contour, Figs. 10, 11, when a transverse fold on line 25 25 is made, thus completing the bag, Fig. 12.

As regards the construction of the machine, the jaw-plate 16 projects beyond the circle described by the periphery of the folding-roll 7, and the folding-blade 4 (held by spring 5 in a substantially tangential position to said jaw-plate when it arrives at said folding-blade and within the circle described by said jaw-plate) is struck by the jaw-plate 16 when blade 4 travels upward on said plate toward the center of roll 7, and in the further rotation of roll 7 the blade is withdrawn and returns to its position immediately after being released from the jaw-plate 16, passing through said return movement before the unremoved portion of the roll 7 encroaches upon its path. While in its most inward position the nipper 17 is thrown, by bar 18 20 and cam 21, through an opening, 32, Fig. 1, in the folding-blade against the jaw-plate, the guides 19 19 closely following, and, being elastic, permit the withdrawal and return of the folding-blade, as above described. The cam 21 releases the nipper at a farther point in the revolution of roll 7, and these movements are repeated at each revolution thereof.

The tubular blank, made, as hereinbefore stated, in the usual manner, about the former 1, is drawn or fed by the rolls 2 2, and, passing between them, surrounds the extension 3, and is kept open and guided over the folding-blade 4 by the plate 6, and from thence passes between the rolls 7 and 8, where the knife 28 severs the tube transversely at each revolution of the roll 8, and at a distance from the line 24 24, Figs. 9, 10, 11, and 12, dependent upon which of the grooves 29, 30, or 31, Fig. 3, the knife enters, and this is controlled by unshipping the gear-wheel employed to rotate roll 8 from its companion gear on folding-roll 7 and resetting it so that it shall mesh or match therewith to bring the knife into the desired groove. By this means the cutting of the blank at different distances from the central transverse folding-line 24 24 in bags of varying sizes is facilitated, and additional variation is also provided in the adjustable attachment of the jaw-plate 16 to the folding-roll 7. In the larger sizes said plate is set farther from the longitudinal center of said roll, and for smaller sizes nearer thereto.

Furthermore, the length, from side to side, of the intermediate transverse fold upon a line, 23 23, is determined by the position of the

guides 19 19 upon bar 18 to produce a fold of the desired length for any required size of bag. Thus, while the cutter-roll severs blanks of a length equal to its circumference when directly driven with the feed-rolls, varying sizes are produced by the varying width of tubular blanks, and varying locations of the transverse folds and of the severing operation, while if the severing device is driven independently of the feed-rolls lengths of blanks not dependent upon the circumference of the cutting-roll may be produced and folded in the same manner.

As regards the operation of the machine, referring to Figs. 3, 4, 5, 6, 7, and 8, in which the dotted lines represent the tubular blank, it will be seen that the knife 28, entering the groove 29, severs the blank to be operated upon from the next preceding blank. (Not shown.) Jaw-plate 16, in its rotation, strikes upon the upper ply of the tube, determining the line 24 24, and against the folding-blade within the tube, and causes it to oscillate to the front in the line of feed and carry with it the material upward toward the center of folding-roll 7, Fig. 4, when nipper 17 grasps the material and the blade retires downwardly, the elastic guides permitting this movement and substantially retaining their proper position, and as jaw-plate 16 passes from said blade it quickly returns to its former position. The action of the nipper 17 has caused the upper ply to retreat longitudinally from the end of the lower ply, thus presenting said lower ply singly to the presser-foot 9, Fig. 5, and the action of the guides 19 19 has formed the rectangular fold or ply 26, and bent, curled, or formed the two diagonal folds 27 27, as seen clearly in Fig. 6, the foot 9 being not shown, as it is not essential to the formation of the blank into this condition.

This much has been accomplished during that quarter of a revolution of the folding-roll 7 which presents jaw-plate 16 and its adjuncts (the nipper and guides) to the rear in line of feed, and which terminates with these in a vertical position, the next quarter-revolution presenting them to the front in the line of feed, thus operating in such quarter-revolution to partly lay back and down the folds made during the previous quarter-revolution, and at this point the blank is in a possible and desirable position to receive its final fold, 25 25, as hereinafter mentioned.

The presser-foot 9 and the rolls 10 and 11 flatten the folds already made, and present the point of the triangular bottom upon guard-plate 14 and its upper surface in contact with paste-roll 15, when folding-blade 13 forces the blank on line 25 25 into the bite of rolls 11 and 12, which deliver the completed bag. Paste may be applied to the material when and where desired.

I have only shown means of applying paste to the front point of the bottom when in triangular form. About the roll 15 runs an endless paste-applying band, which runs against

a roll in a paste-vat, as indicated by dotted lines in Fig. 2. Paste may be applied in transverse lines upon the upper and lower plies of the tubular blank just back of the severing-line, before the bottom-folding operation begins, in a manner heretofore practiced in the art.

Various modifications will suggest themselves to those skilled in the art.

10 The rolls 8 and 11 may constitute the final-folding rolls, the blade 13 operating in conjunction therewith to simultaneously flatten the folds thus far made and form the transverse fold 25 25, as above suggested.

15 The folding-roll 7 may be constructed with pockets—one for the reception and operation of the nipper and guides, and the other to permit the return movement of folding-blade 4.

20 The nipper and guides may be made integral, and of different sizes for different bags.

The folding-blade 4 may be operated positively by means within the former, and thereby connected at the rear to operating mechanism.

25 As indicated herein and in the companion application referred to, the intermediate transverse fold may be made in the lower ply of the blank, as well as the upper, either being the seam-ply thereof, and in Figs. 13 and 14 I have

30 shown such an arrangement of the main and principal devices of my machine as adapts them to so form said fold and complete the bag, wherein the folding-blade 4 operates to throw the intermediate transverse fold into the

35 bite of nippers 17 and jaw-plate 16, said blade being actuated by an intermittently-rotated tappet, 33, striking the upper ply and blade 4, the guides 19 entering on the fold thus made and determining the outline of the rectangular fold or ply 26, the knife 8, also intermit-

40 tently rotated, having severed the preceding bag, the folding-roll 7 being continuous in its rotation. The upper ply of the bag being formed strikes against the shaft of the knife 8 and is

45 deflected to the rear, when the guides 19 extend over the folding-line of said ply. Forming the intermediate transverse fold on the line 23 23 in the lower ply results in a substantially triangular bottom identical with that

50 heretofore described, but with the point thereof projecting to the rear in the line of feed, and necessitates the employment of a follower carrying the final-folding blade, 13, pivotally attached thereto, and having a projecting arm

55 to operate it, and traveling in the same direction and faster than the bag-blank upon which it operates, and returning to its former position, when the bag is directed by the guide 34 into the delivery-rolls 11 and 12.

60 It is also evident that other than a rotating folding jaw or jaw-plate may be employed to

receive the fold on the line 23 23 from the blade 4, located within the tube. A reciprocating jaw may be caused to descend upon a fixed blade upon the former and take up and deliver said fold by substituting these for those shown, and stopping the feed during their operation.

Other modifications suggest themselves, and therefore I do not limit myself to the precise construction herein shown and described, but deem the arrangement or location of the well-known device, a folding-blade, within the tubular blank, and the arrangement or location of the equally well-known device, a co-acting jaw, external to and without the tubular blank, so as to receive, retain, convey, or deliver for subsequent operation an intermediate transverse fold in a tubular blank, as involving my invention.

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

1. A former provided with a folding-blade adapted, substantially as described, to make an intermediate transverse fold, as set forth.

2. Folding mechanism constructed, arranged, and operating substantially as shown and as described, whereby is formed an intermediate transverse fold in a tubular blank.

3. An internal former having connected therewith a folding-blade, in combination with folding mechanism arranged external to the tubular blank and operating to form an intermediate transverse fold, as set forth.

4. The combination of an oscillating folding-blade, a former, and a rotating jaw-plate and its nipper, substantially as shown and described.

5. The combination of an internal folding-blade, a rotary adjustable jaw-plate, a nipper, and adjustable guides, substantially as and for the purpose set forth.

6. The combination of a former, internal folding mechanism, severing mechanism, external folding mechanism, and final-folding mechanism, all substantially as shown and described.

7. The combination of a former, feeding mechanism, folding mechanism, and a presser-foot with final-folding mechanism, all substantially as shown and described.

8. The combination of a former, feeding mechanism, internal folding mechanism, external folding mechanism, final-folding mechanism, and pasting mechanism, substantially as shown and described.

EDGAR B. STOCKING.

Witnesses:

E. A. DICK,
M. GEORGH.