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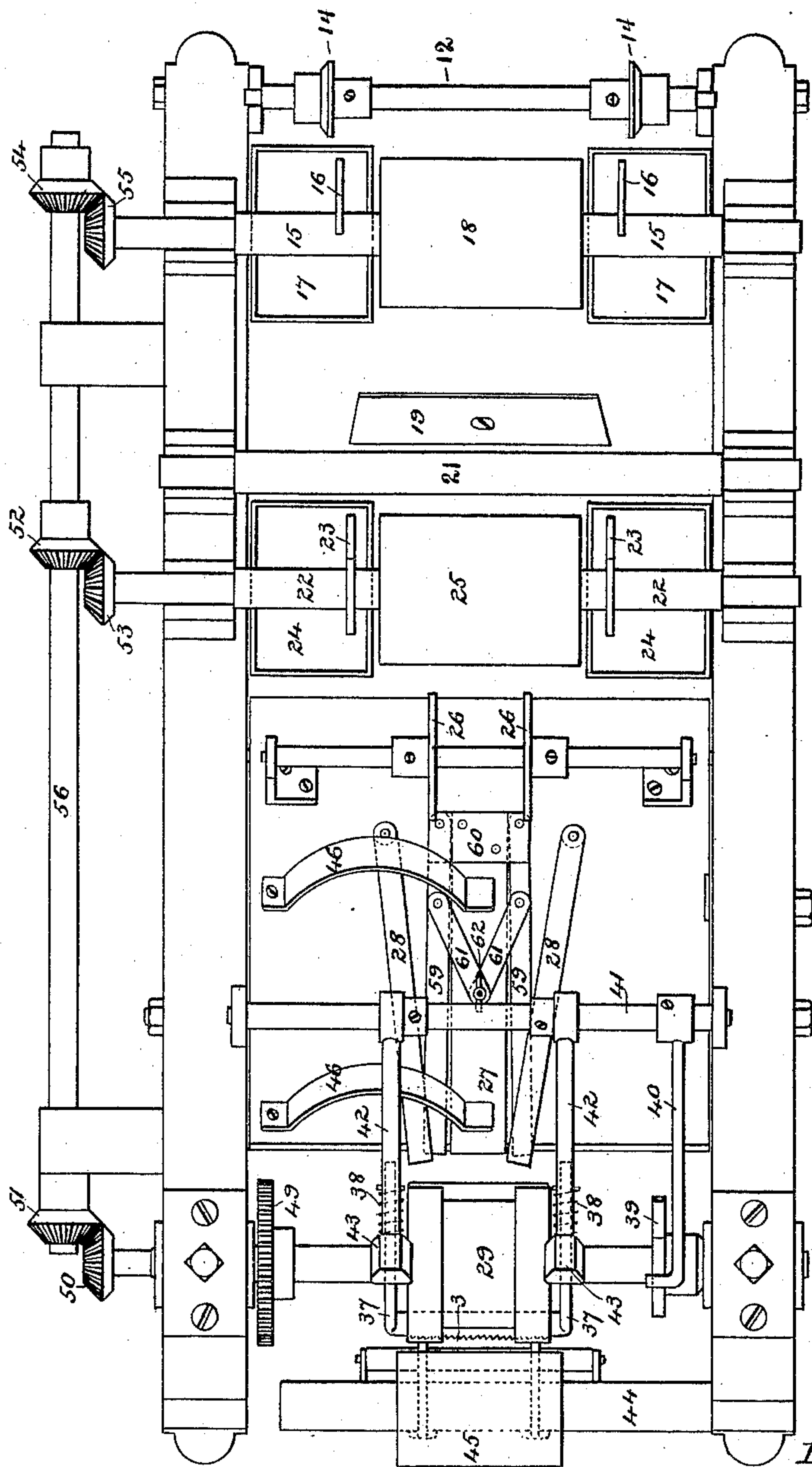
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J. WEST.
PAPER BAG MACHINE.

No. 324,620.

Patented Aug. 18, 1885.

Fig. 1.



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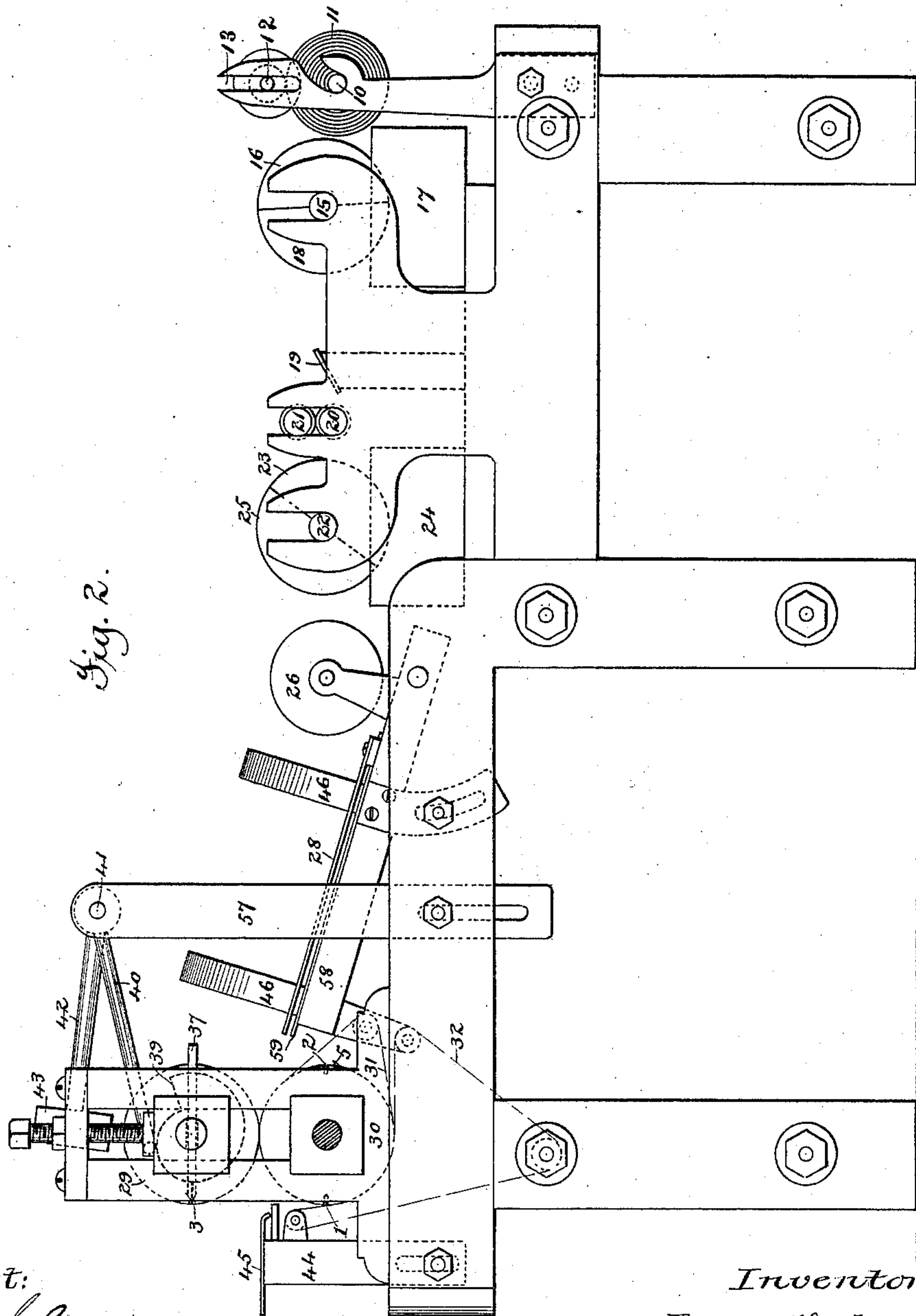
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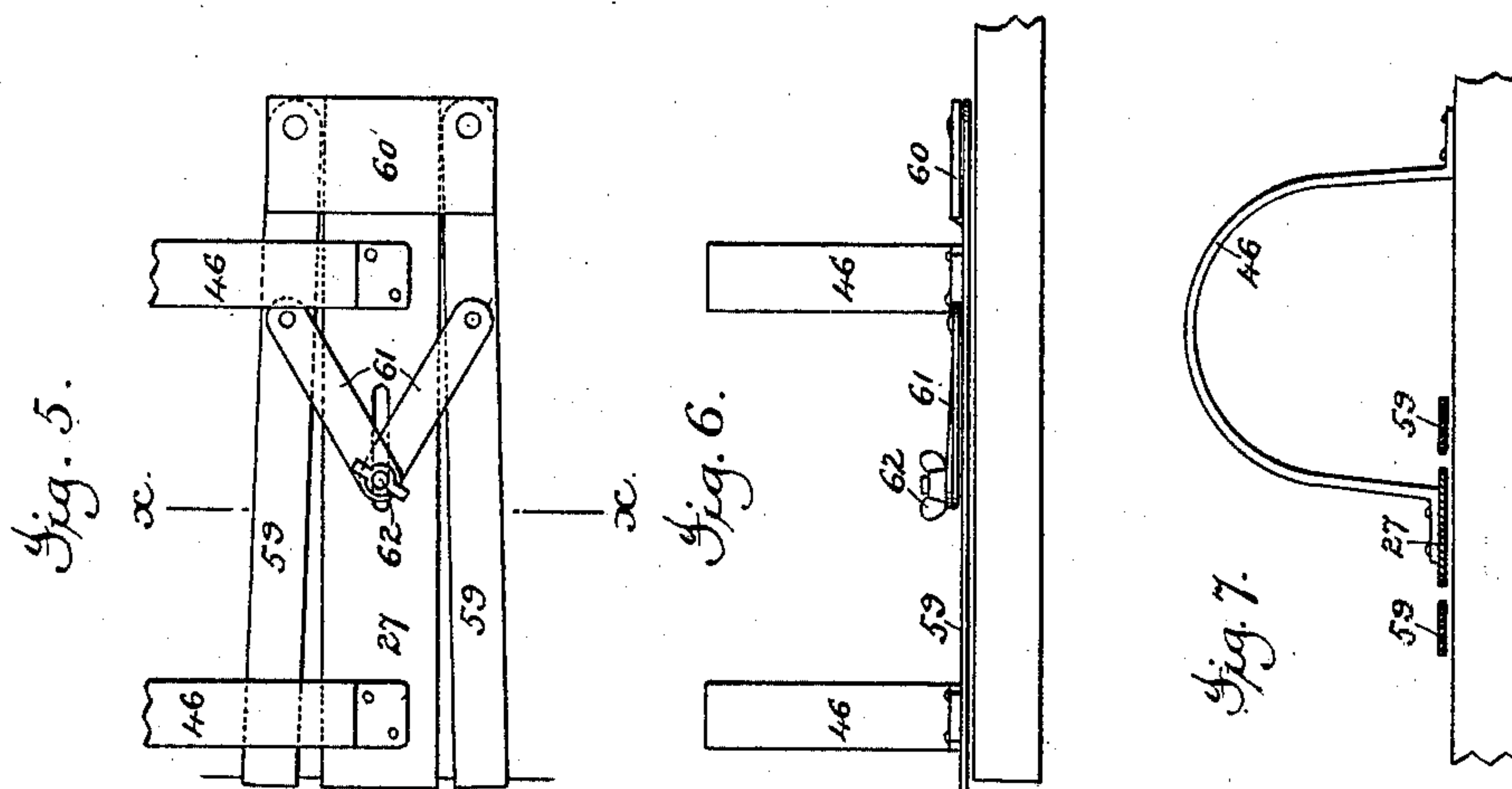
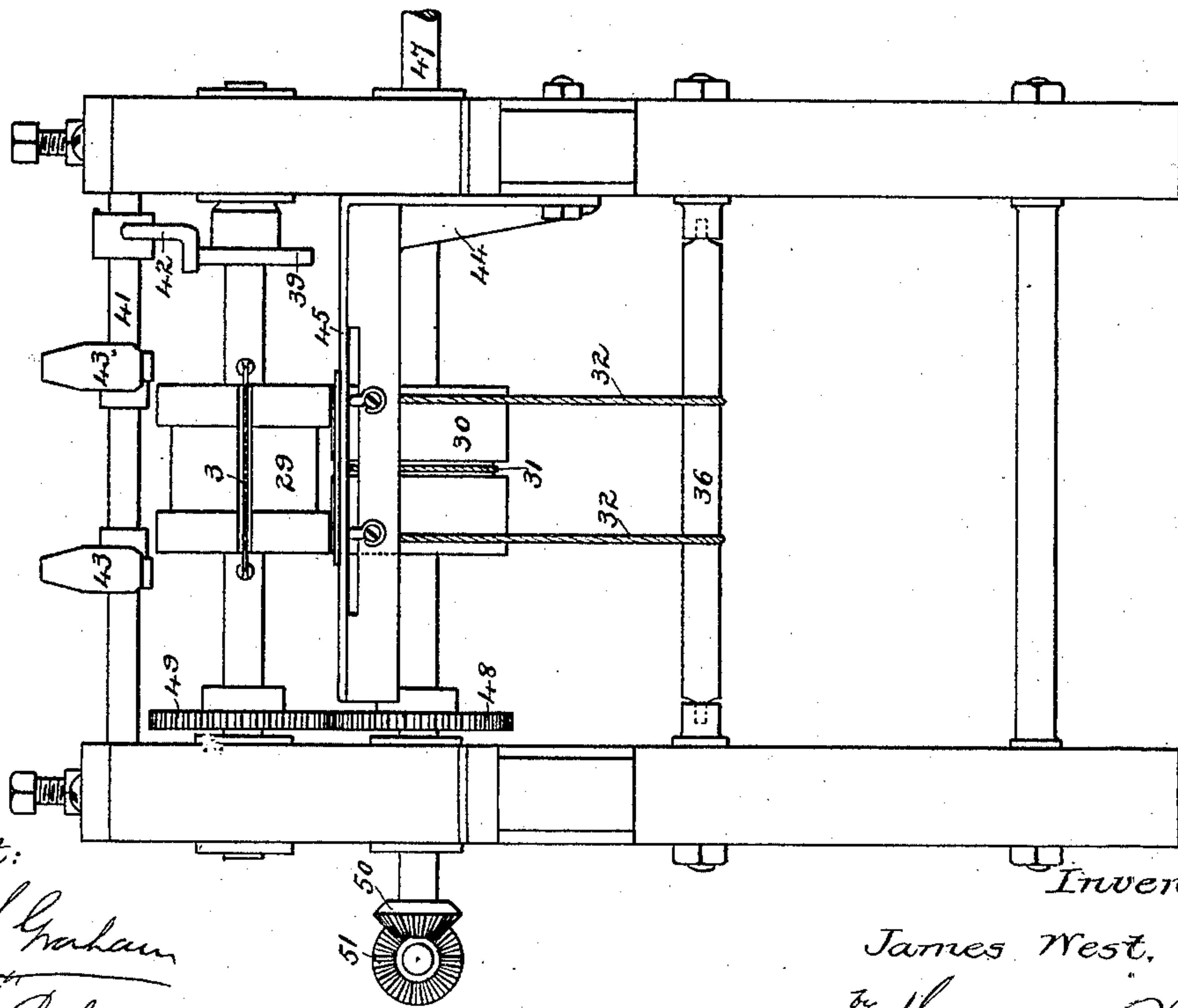


Fig. 3.



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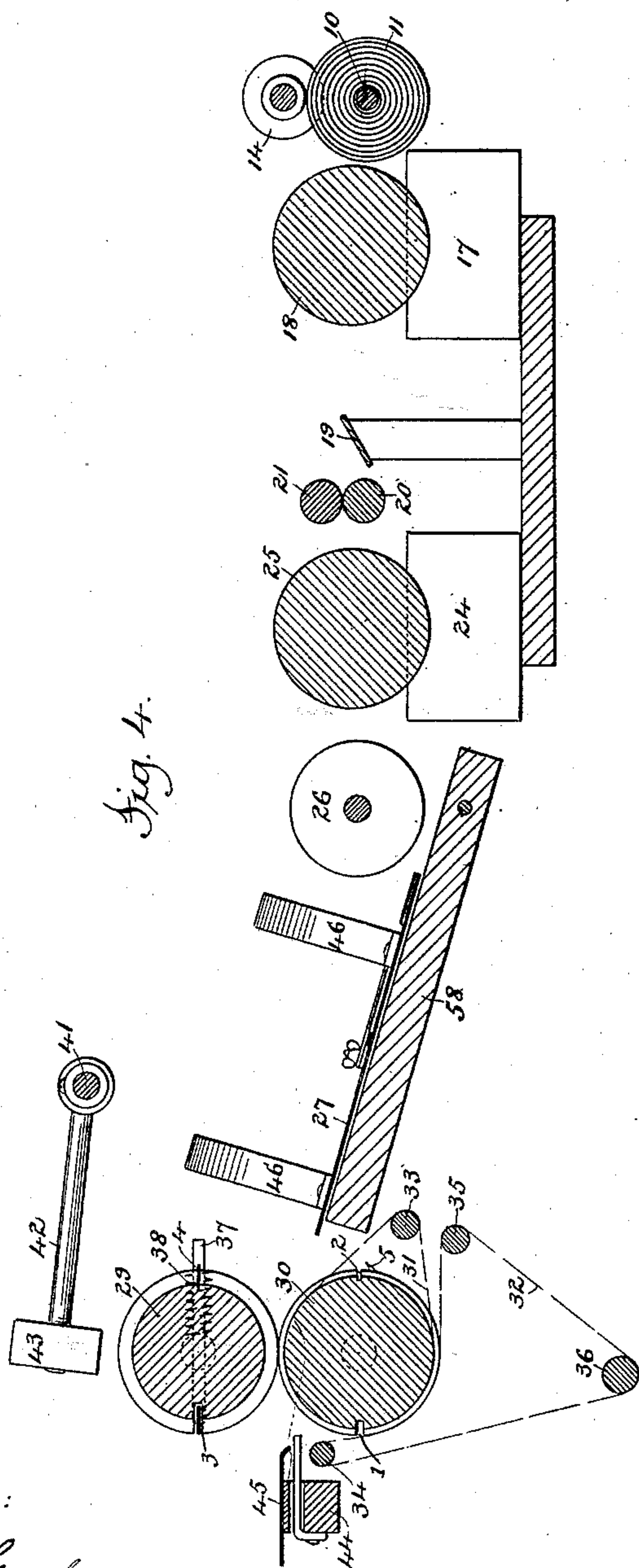
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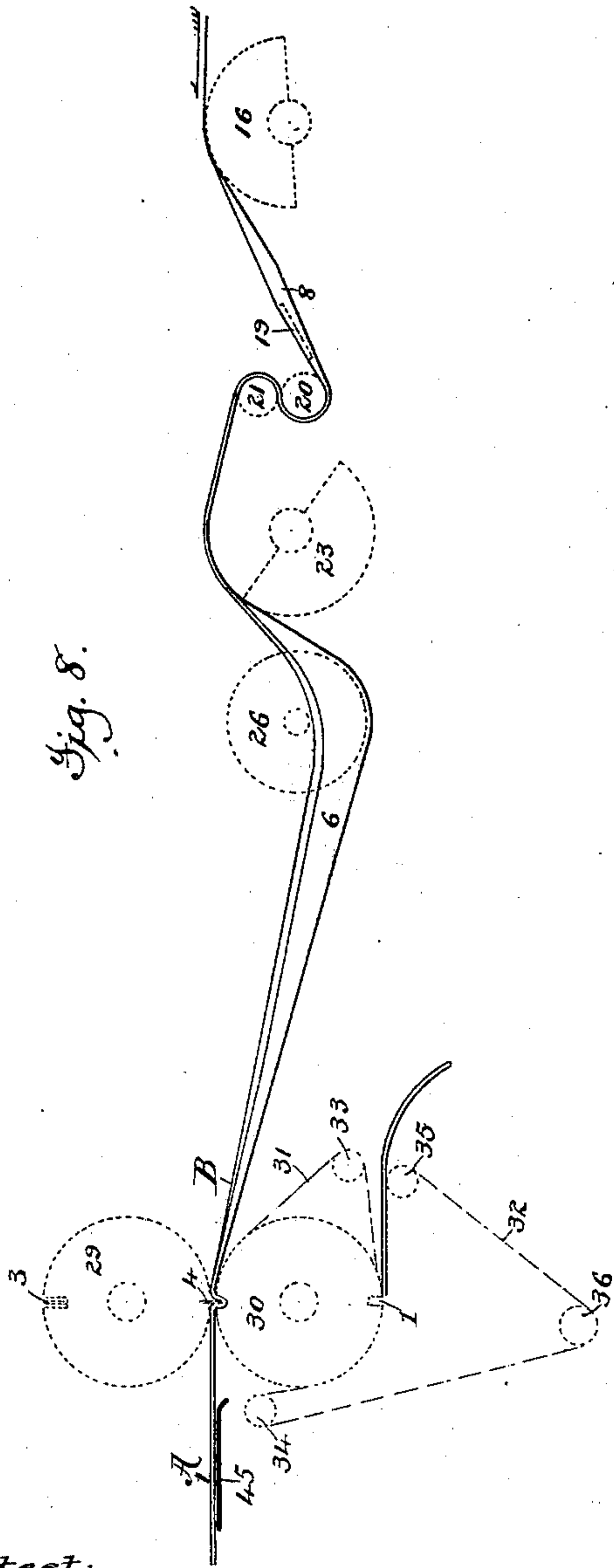


Fig. 10.

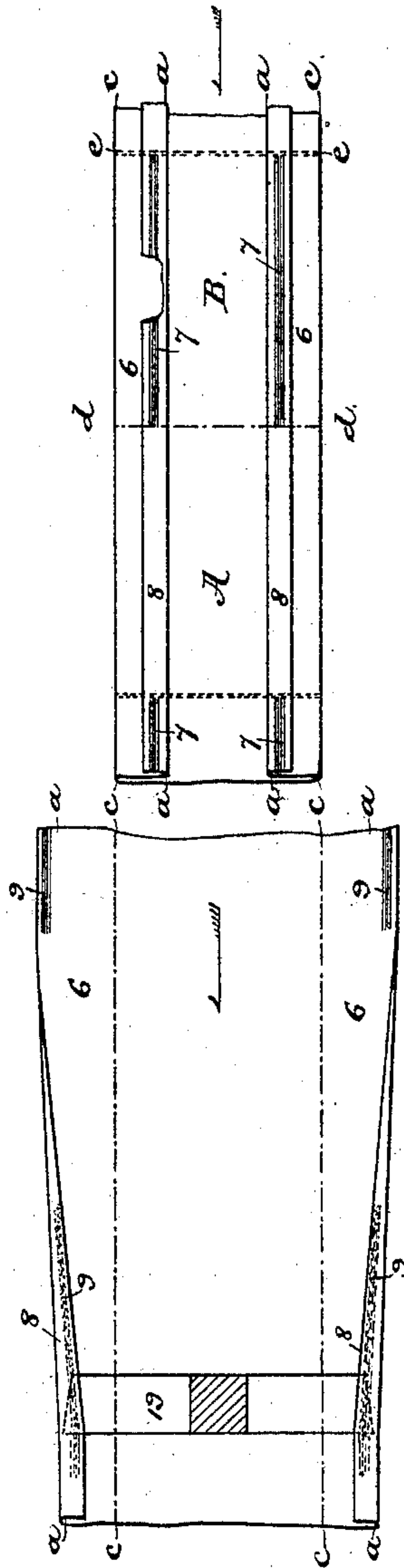
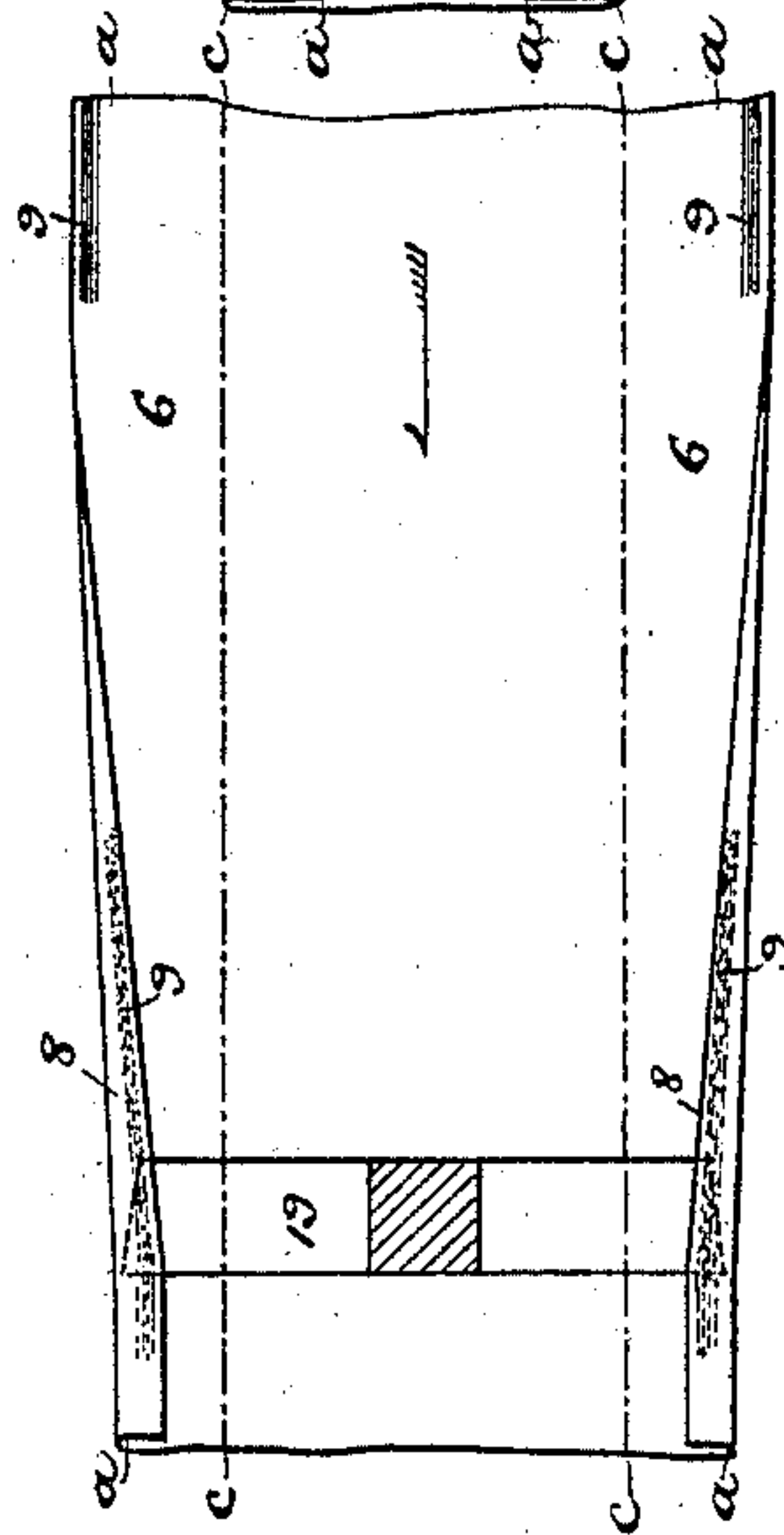


Fig. 9.



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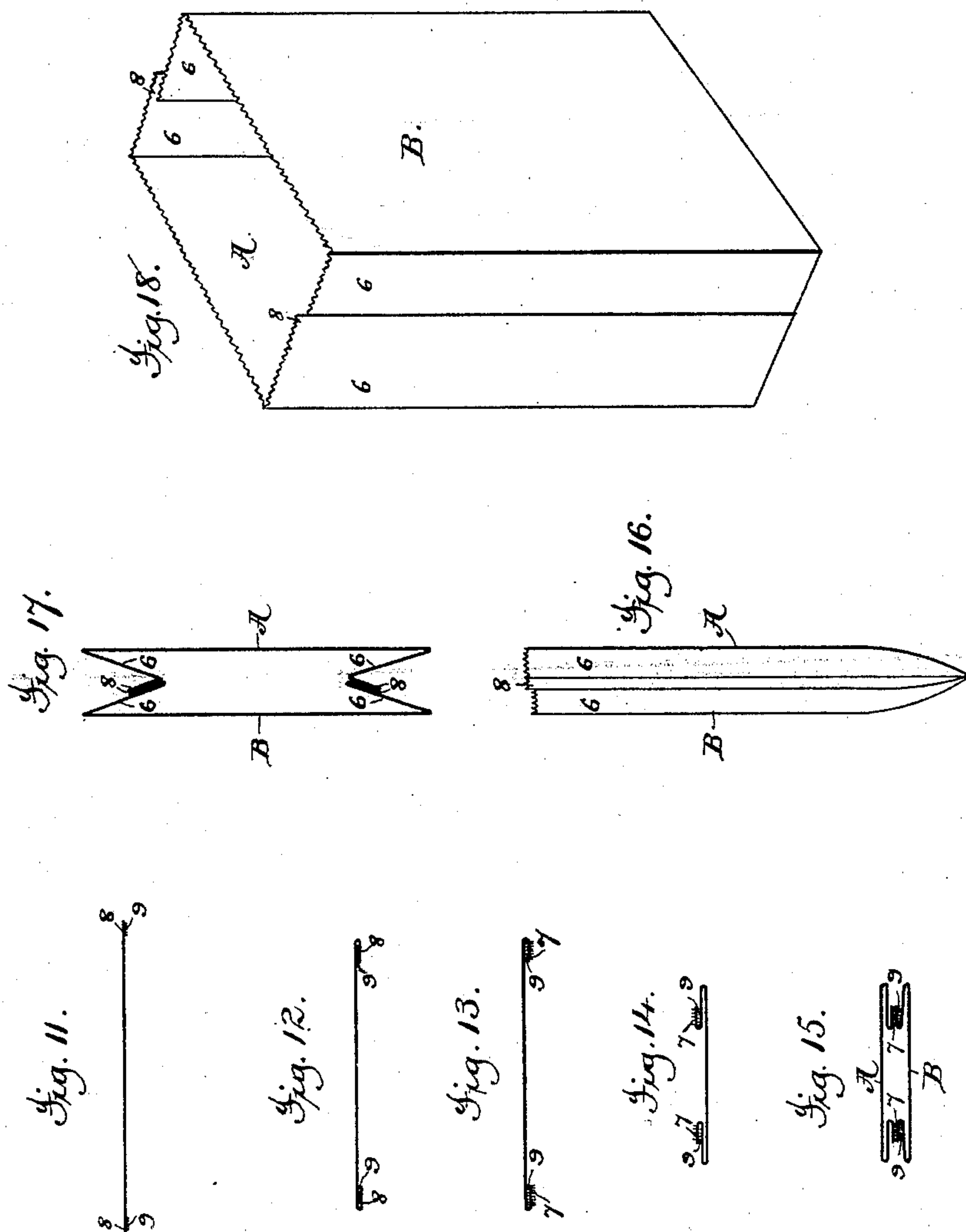
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No. 324,620.

Patented Aug. 18, 1885.



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UNITED STATES PATENT OFFICE.

JAMES WEST, OF BALLSTON SPA, NEW YORK, ASSIGNOR TO THE UNION
PAPER BAG MACHINE COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

PAPER-BAG MACHINE.

SPECIFICATION forming part of Letters Patent No. 324,620, dated August 18, 1885.

Application filed July 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES WEST, a citizen of the United States, residing in the city of Ballston Spa, county of Saratoga, and State of New York, have invented certain new and useful Improvements in Paper-Bag Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The present invention relates to the manufacture of what are known as "seamless-bottom paper bags," and particularly to bags of the construction shown and described in United States Letters Patent No. 146,435.

It is the object of the invention to provide a mechanism for the manufacture of bags of this description which shall be simple in construction, capable of rapid and reliable operation, and which can be easily adjusted so as to produce bags of various sizes.

The general features of that class of bag-machines to which the present invention relates are well known to those familiar with the art, and the details of construction and organization of the particular machine in which the present invention is embodied are hereinafter so fully described and particularly pointed out as to render an extended preliminary description unnecessary.

In the accompanying drawings, Figure 1 is a plan view of a mechanism embodying the present invention. Figs. 2 and 3 are respectively a side and front end elevation of the same. Fig. 4 is a longitudinal vertical section of the principal parts. Fig. 5 is a plan view, upon an enlarged scale, of the "former," around which the web of paper is folded. Fig. 6 is a side view of the same, and Fig. 7 is a cross-section taken upon the line *xx* of Fig. 5. Fig. 8 is a diagram showing the course of the web through the machine and the order in which the folds are made. Fig. 9 is a view of the under side of the web at the point where the first side folds are made. Fig. 10 is a top view of the web after the second side folds have been made and the pasting completed. Figs. 11, 12, 13, and 14 are cross-sections of the web, illustrating the manner of pasting and folding. Fig. 15 is a cross-section of the bag, illustrating the manner in which the side seams are formed. Fig. 16 is an edge view of

the completed bag, showing the same partly expanded. Fig. 17 is a cross-section of the same; and Fig. 18 is a perspective view of the completed bag, showing the same fully expanded.

Referring to said figures, it is to be understood that the web of paper, 11, from which the bags are to be made is wound upon a spindle, 10, which is supported in suitable bearings at the rear of the machine. Directly above the spindle 10 there is located a shaft, 12, which is supported in slotted bearings 13, so as to be capable of a rising and falling movement, and is provided with a pair of adjustable flanged collars or disks, 14, which bear against the ends of the roll of paper and cause the web to enter the machine in the proper position.

Located a suitable distance in advance of the spindle 10 is the first pasting apparatus, which consists of a continuously-rotated shaft, 15, carrying two semicircular pasting-disks, 16, which receive paste from fountains 17, and a supporting-roll, 18, mounted between said disks and of a length somewhat less than the width of the web. The web 11 is led from the roll directly above the supporting-roll 18, it being held by the disks 14 in such position that its edges will overlies the disks 16 and receive a series of short lines of paste, 9, as indicated in Figs. 9 and 11, the disks 16 being of such size that the lines of paste 9 will be equal to the length of the completed bag. After passing the roll 18 and disks 16 the web passes above and is slightly bent across the edge of a short creasing plate or former, 19, so that its margins 8 are caused to turn downward, as shown in Figs. 8 and 9. The portions 8 are then completely folded under against the body of the web, as indicated in Figs. 9 and 12, and the web is led around a roll, 20, and then backward between said roll 20 and a presser-roll, 21, and thence forward above the second pasting apparatus. The strain upon the paper in passing around and between the rolls 20 21, together with the downward bend given to the margins in passing the plate 19, will usually be found sufficient after the machine has been threaded to make the folds upon the lines *aa*; but, if found necessary, ordinary guide-fingers may be located between the roll 20 and plate 19 to aid in this operation. In passing around

and between the rolls 20 21 the portions 8, which have been folded under, will be pressed against the body of the web, so as to be united or secured thereto at the points occupied by the lines of paste 9, as indicated in Figs. 10 and 12.

The second pasting apparatus, like the first, consists of a continuously-rotated shaft, 22, carrying two semicircular pasting-disks, 23, which receive paste from fountains 24, and a supporting-roll, 25, mounted between said disks and of a length somewhat less than the width of web after it has been folded, as indicated in Fig. 12. After passing the roll 21 the web passes above the supporting-roll 25 with its margins in such position as to overlie the disks 23 and receive a series of short lines of paste, 7, corresponding to the lines 9, as shown in Figs. 10, 13, and 14. After leaving the roll 25, the web, which is then folded and pasted, as shown in Figs. 9 and 13, passes downward around the disks 26 and forward beneath the former 27, which is attached to the overhanging arms 46. In passing around the disks 26 the side portions, 6, of the web are caused to turn upward, as indicated in Fig. 8, and in passing the former 27 these side portions are acted upon by the fingers 28 so as to be folded down upon the lines *c c*, thereby bringing the paste-lines 7 to the top and reducing the web to the form shown in Figs. 10 and 14, the fingers 28 being so positioned that their ends will bear upon the side portions, 6, but not extend sufficiently far inward to pass beneath the portions 8.

After leaving the former 27 the web passes between the feeding, cutting, and folding rolls 29 30, the former of which is cut away at its center so as to bear only upon the margins of the web and not come into contact with the paste-lines 7. The rolls 29 30 are of a circumference equal to twice the length of the completed bag, the roll 29 being provided at opposite points with a cutting-blade, 3, and a creasing-blade, 4, while the roll 30 is provided with co-operating grooves 1 2 and, at a point just in the rear of the groove 2, with two or more impaling-pins, 5, the purpose of which will hereinafter appear. The roll 30 is also provided with two sets of cords or tapes, 31 32, the first of which, 31, passes around said roll in a groove for the purpose and returns around a roll or pulleys, 33, while the second set, 32, passes around a roll, 34, thence beneath said roll and around a roll, 35, returning around a roll, 36.

The severing-blade 4 is seated in a recess in the roll 29, and is secured to the ends of a pair of rods, 37, which extend through openings in the shaft of said roll and are provided with springs, as 38, the tendency of which is to hold the blade in its retracted position. The shaft of the roll 29 is also provided with an abrupt cam, 39, which acts upon an arm, 40, extending from a rock-shaft, 41, which shaft also carries a pair of arms, 42, which are

provided at their outer ends with heavy weights or hammers 43, which are so positioned as to strike upon the ends of the rods 37.

Just in advance of the rolls 29 30 there is located a bracket, 44, which supports a guide-plate, 45, said plate occupying a position just below the bite of said rolls.

The operation of the parts just described is as follows: As the leading end of the web, which has been folded to the form shown in Fig. 10, as already described, emerges from between the rolls 29 30 it will be projected above the plate 45 and will continue to advance above said plate until said rolls have made one-half a revolution, at which time the blade 4 and groove 2 will come into co-operative position and force the web upon the bottom fold-line, *d d*, into said groove, as shown in Fig. 8, and at the same time cause the pins 5 to impale the margins of the web just back of said fold-line. As the rolls continue the revolution from this point the bottom fold-line, *d d*, will be held to and carried around by the roll 30, thereby causing the tapes or cords 32 to press the parts A and B (see Figs. 8, 10, and 15) together so as to complete the fold upon the line *d d* and cause the lines of paste 7 to unite the side seams of the bag. At the end of the first revolution of the rolls the cam 39 will arrive in such position as to allow the hammers 43 to fall and strike the ends of the rods 37, thereby suddenly projecting the blade 3 so as to sever the web upon the line *e e* and complete the bag. As the rolls commence their second revolution the freshly-cut end of the web will be projected above the plate 45, and the tape or cord 31 will strip the completed bag from the pins 5 and discharge it from between the rolls 33 35, and so the operation will continue to be repeated.

By means of pasting and folding mechanisms, organized as hereinbefore described, the apparatus is capacitated to produce with great rapidity a seamless-bottom bellows-sided bag, which, when expanded, will present the square and symmetrical appearance shown in Fig. 18, and in which the seam portions 8 of the opposite sides, A B, of the bag will be pasted and secured to the portions 6 of one of said sides, as shown in Figs. 15, 16, and 17, thereby avoiding all objectionable inward or outward projections, as described in the Letters Patent hereinbefore referred to.

It is apparent that the disks 26 may, if preferred, be made complete instead of semicircles, so that the lines of paste 7 will be continuous instead of intermittent, as shown, and also that the tape or cord 31 may be omitted, the pins 5 being provided with a stripper-plate for removing the bag, or with means by which they are retracted within the roll at the proper time to release the bag.

The rolls 29 30 and the disks and rolls 16 18 and 23 25 are positively driven from the main shaft 47, they being connected by gears, as 48 49 50 51 52 53 54 55, and shaft 56, so

proportioned as to cause them to revolve in unison.

As before stated, the present machine is designed with special reference to the production of bags of varying sizes. This, as will readily be seen, may be accomplished either by varying the width of the web operated upon or by varying the length of blanks severed from the web, or both. To permit of either or both of these variations, the rolls 29 30 the disks and rolls 16 18 and 23 25 and the plate 19 are so mounted as to be capable of ready removal, so that they may be removed and parts of different sizes substituted when it is desired to change the length or width of the bag. The guiding-flanges 14 and the creasing-disks 26 are made adjustable upon their shafts, so as to be capable of operating upon webs of different widths, and the bracket 44 is made capable of vertical adjustment, so that the position of the plate 45 can be changed to conform to any change in the size of the rolls 29 30. The supports 57 of the shaft 41, and the bed 58 upon which the former is supported, are also made vertically adjustable, so as to vary the position of the hammers 43 and of the forward end of the former for the same purpose. To provide for varying the distance between the longitudinal fold-line *cc*, the former 27 is provided with lateral extensions 59, which are pivoted at their rear ends to a plate, 60, secured to the top of the former, and are provided with links 61 and a set-screw, 62, by which their positions can be varied, so as to change the width of the former to correspond with any change in the width of the web operated upon, all as shown in Figs. 5, 6, and 7. The fingers 28 are also made capable of adjustment to conform to any change in the position of the extension 59.

What I claim is—

1. The combination, with a mechanism, as the disks 16, for applying a series of short lines of paste to the edges of the web, of a mechanism for folding over said edges, a mechanism, as the disks 23, for applying lines of paste to said folded edges, and a mechanism, as the former and fingers 27 28, for folding over the edges of the web a second time, all substantially as described.

2. The combination, with a mechanism, as the disks 16, for applying a series of short lines of paste to the edges of the web, of a mechanism for folding over said edges, a

mechanism, as the disks 23, for applying lines of paste to said folded edges, a mechanism, as the former and fingers 27 28, for folding over the edges of the web a second time, and a mechanism for severing and folding the web transversely, all substantially as described.

3. The combination, with the removable rolls and disks 16 18 and 23 25 and the removable plate 19, of adjustable guides 14 and the expansible former 27, substantially as described.

4. The combination, with the removable rolls and disks 16 18 and 23 25, the removable plate 19, and the removable rolls 29 30, of the adjustable guides 14 and the expansible former 27, substantially as described.

5. The combination, with the roll 29 and its severing-blade 3, of the hammers 43 and means for actuating the same, all substantially as described.

6. In a bag-machine, the combination, with means for advancing the web and for folding over its edges, of the creasing-blade 4 and the roll 30, provided with the pins 5, arranged to impale the paper just in the rear of the line creased by the blade 4, and the tapes or cords 31 32, arranged to complete the fold and deliver the bag from the roll, all substantially as described.

7. In a bag-machine, the combination, with means for advancing the web and for folding over its edges, of the roll 29, provided with the creasing and cutting blades 4 3, and the roll 30, provided with the pins 5, arranged to impale the paper just in the rear of the line creased by the blade 4, and the tapes or cords 31 32, arranged to complete the fold and deliver the bag from the roll, all substantially as described.

8. In a bag-machine, the combination, with means for advancing the web and for folding over its edges, of the creasing-blade 4 and the roll 30, provided with the pins 5, arranged to impale the paper just in the rear of the line creased by the blade 4, and means for completing the fold and delivering the bag from the roll, all substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JAMES WEST.

Witnesses:

A. B. RUSS,

CHAS. T. BARNARD.