

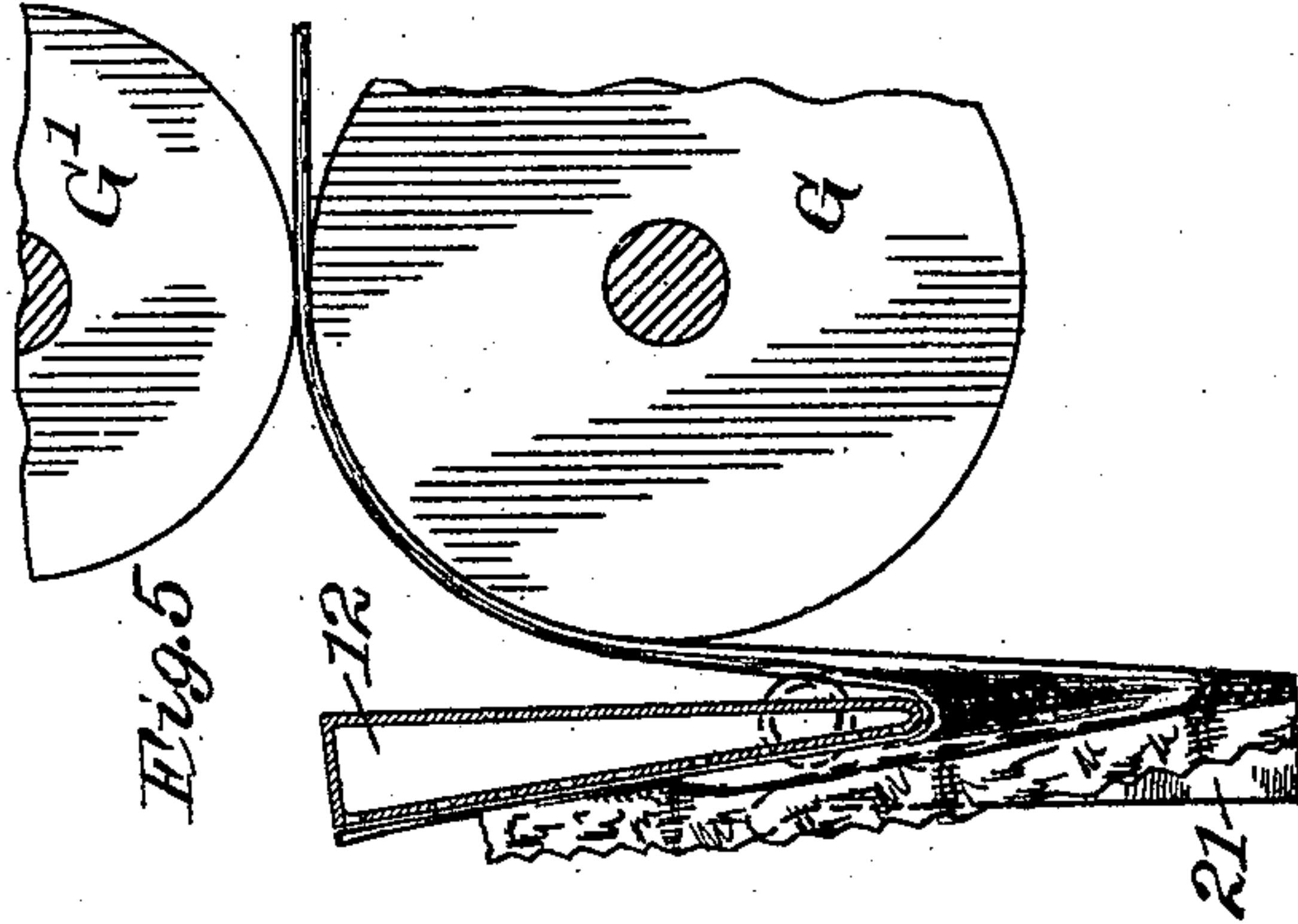
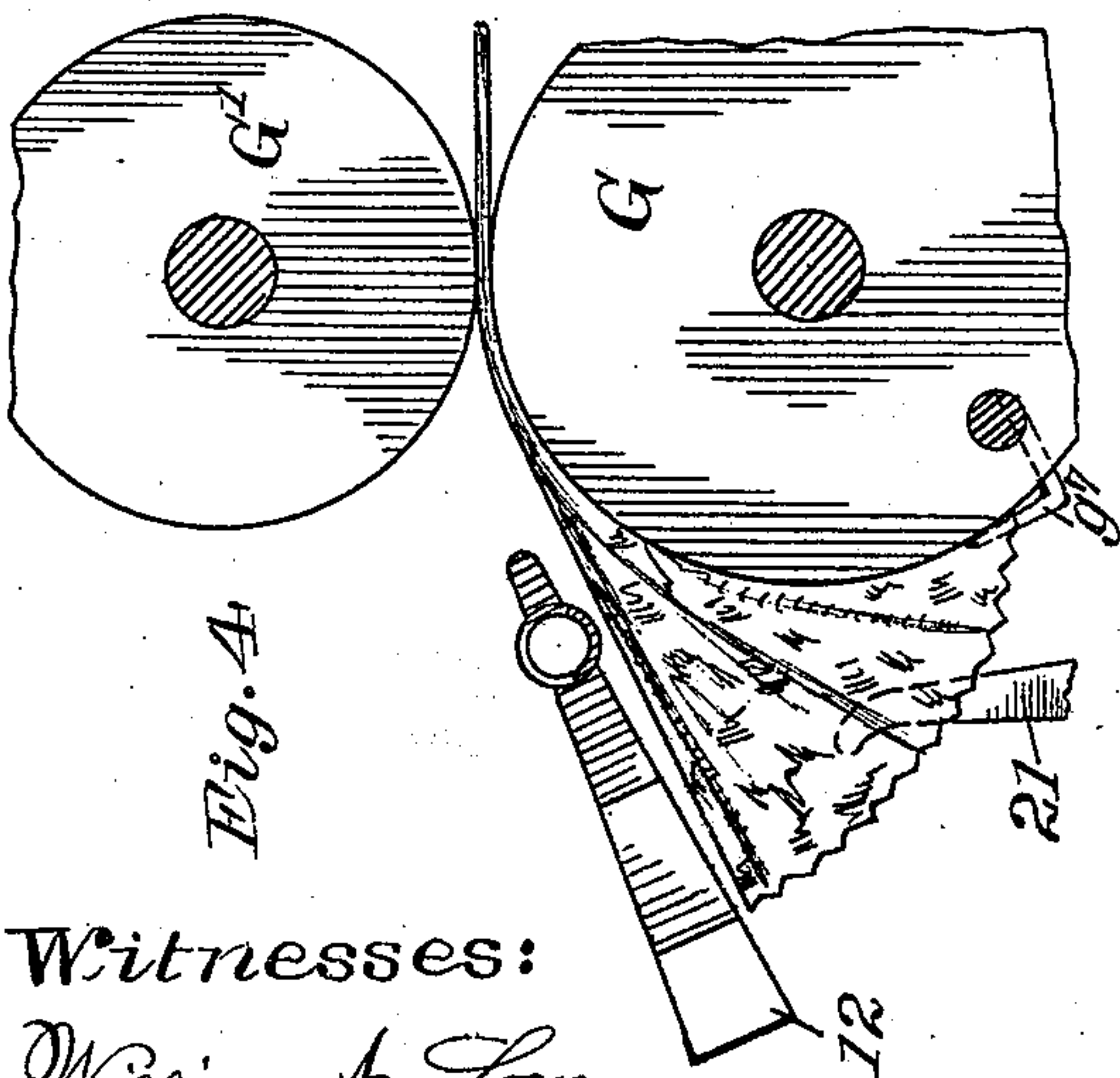
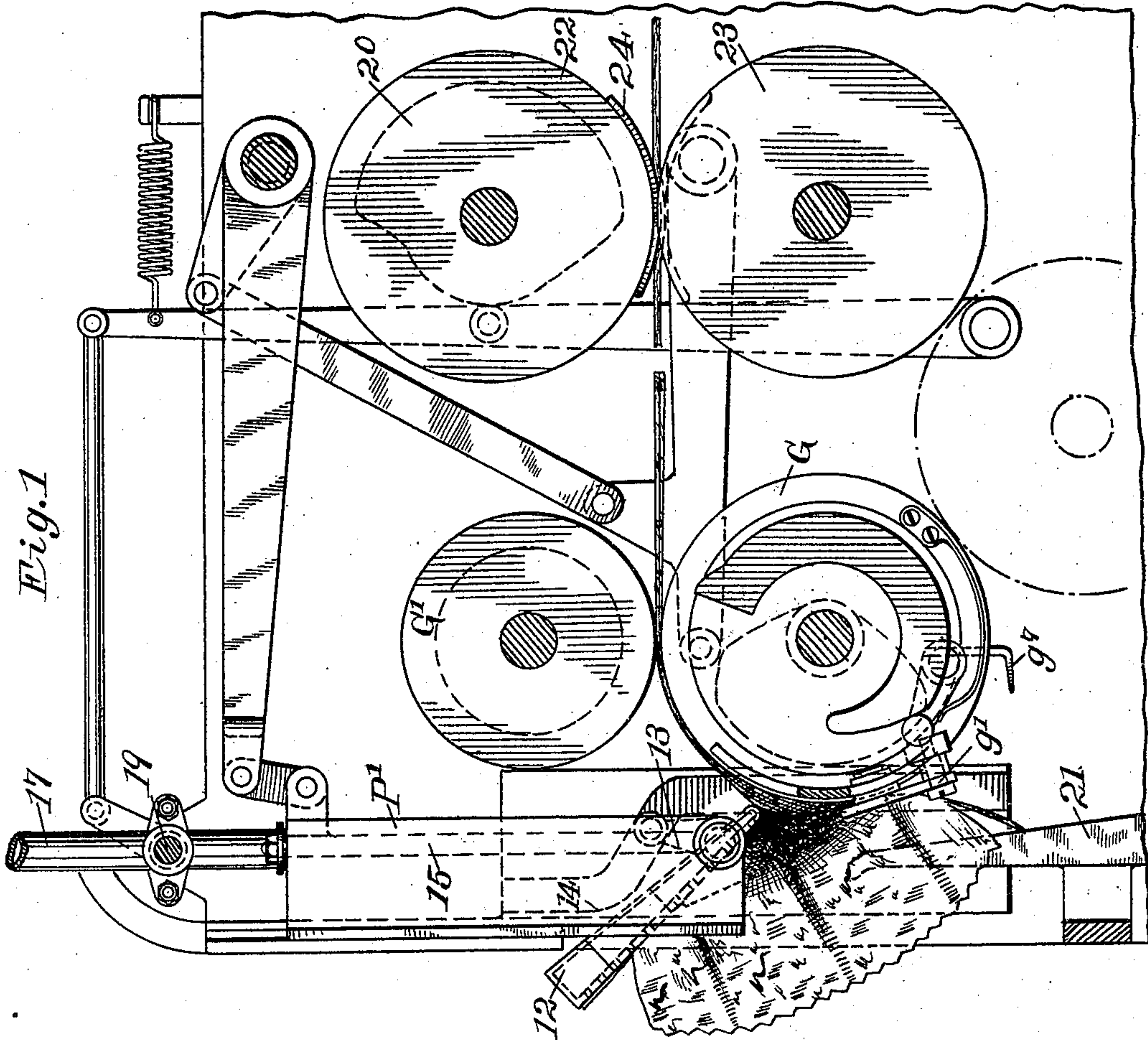
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6 Sheets—Sheet 1.

E. E. CLAUSSEN.
PAPER BAG MACHINE.

No. 574,666.

Patented Jan. 5, 1897.



Witnesses:

William A. Lorenz
Herbert R. Fitch

Inventor:

Edward E. Claussen

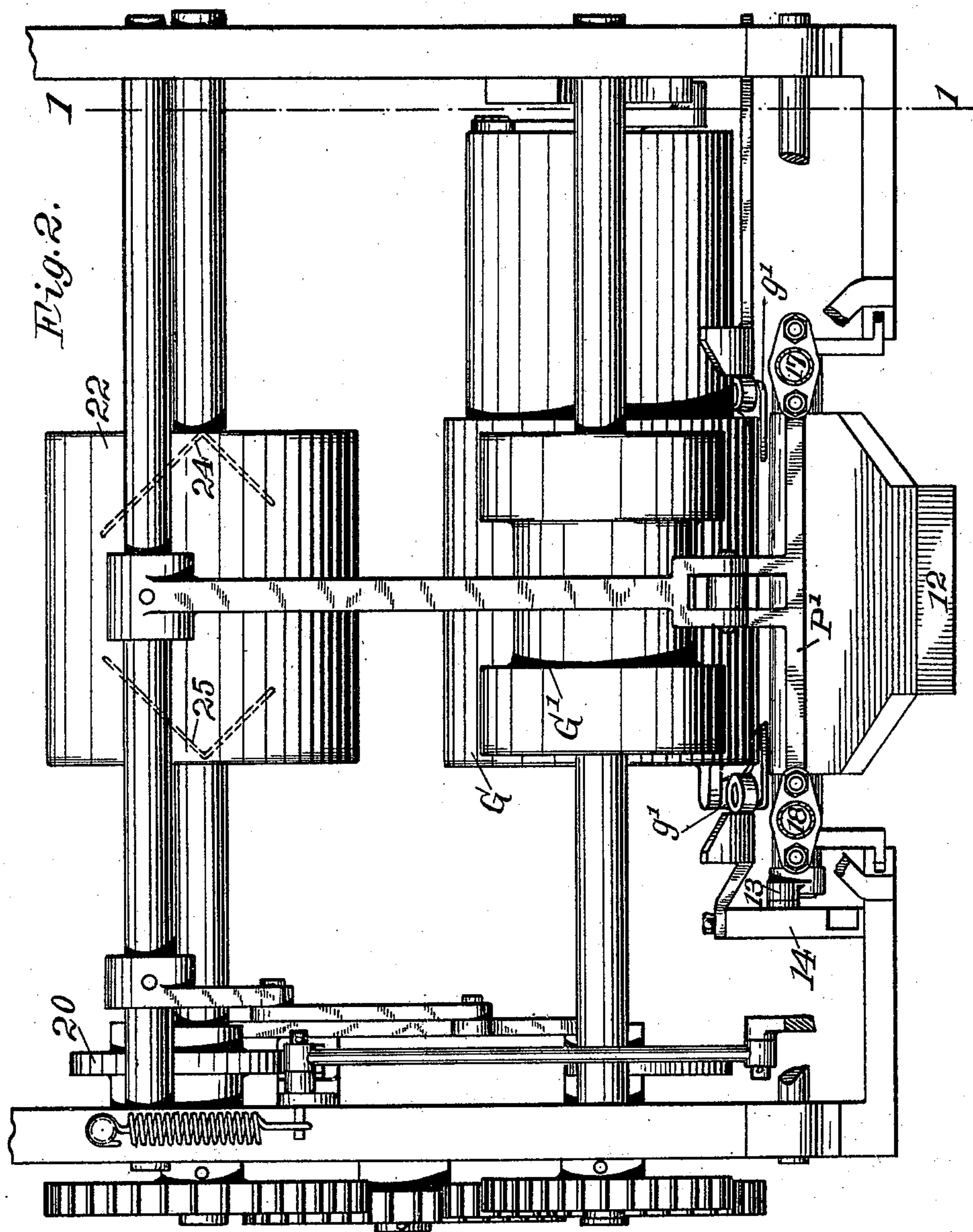
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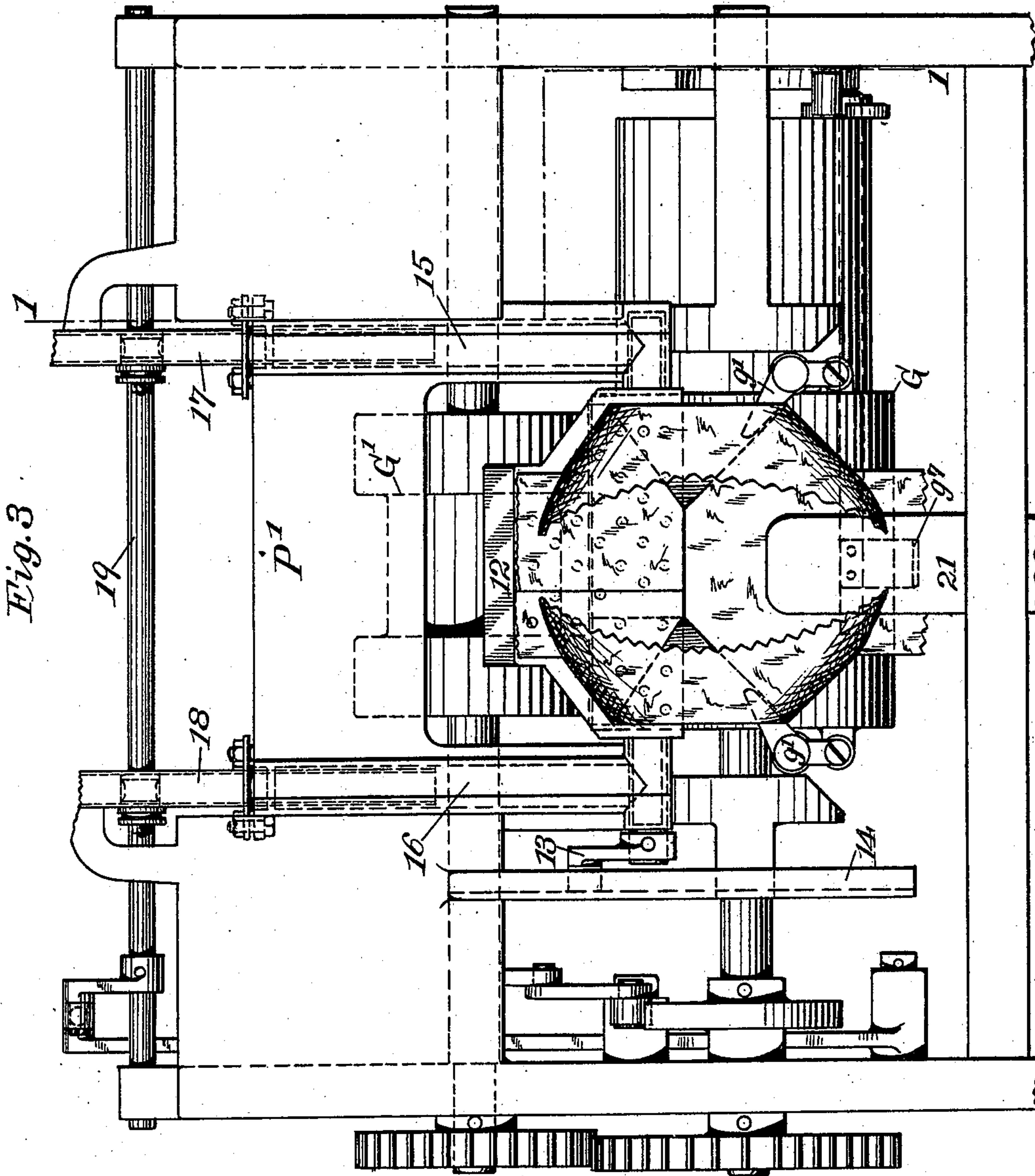
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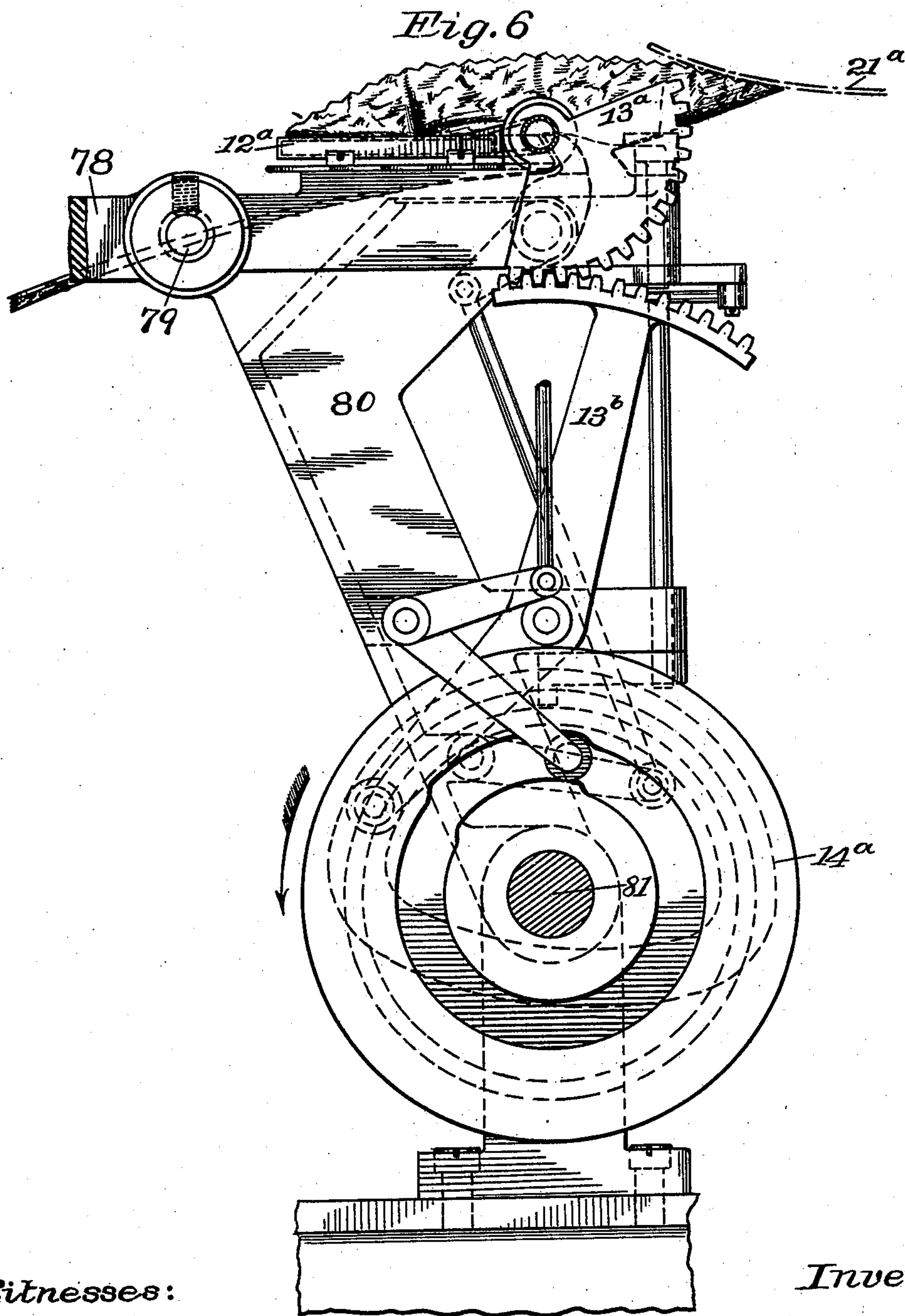
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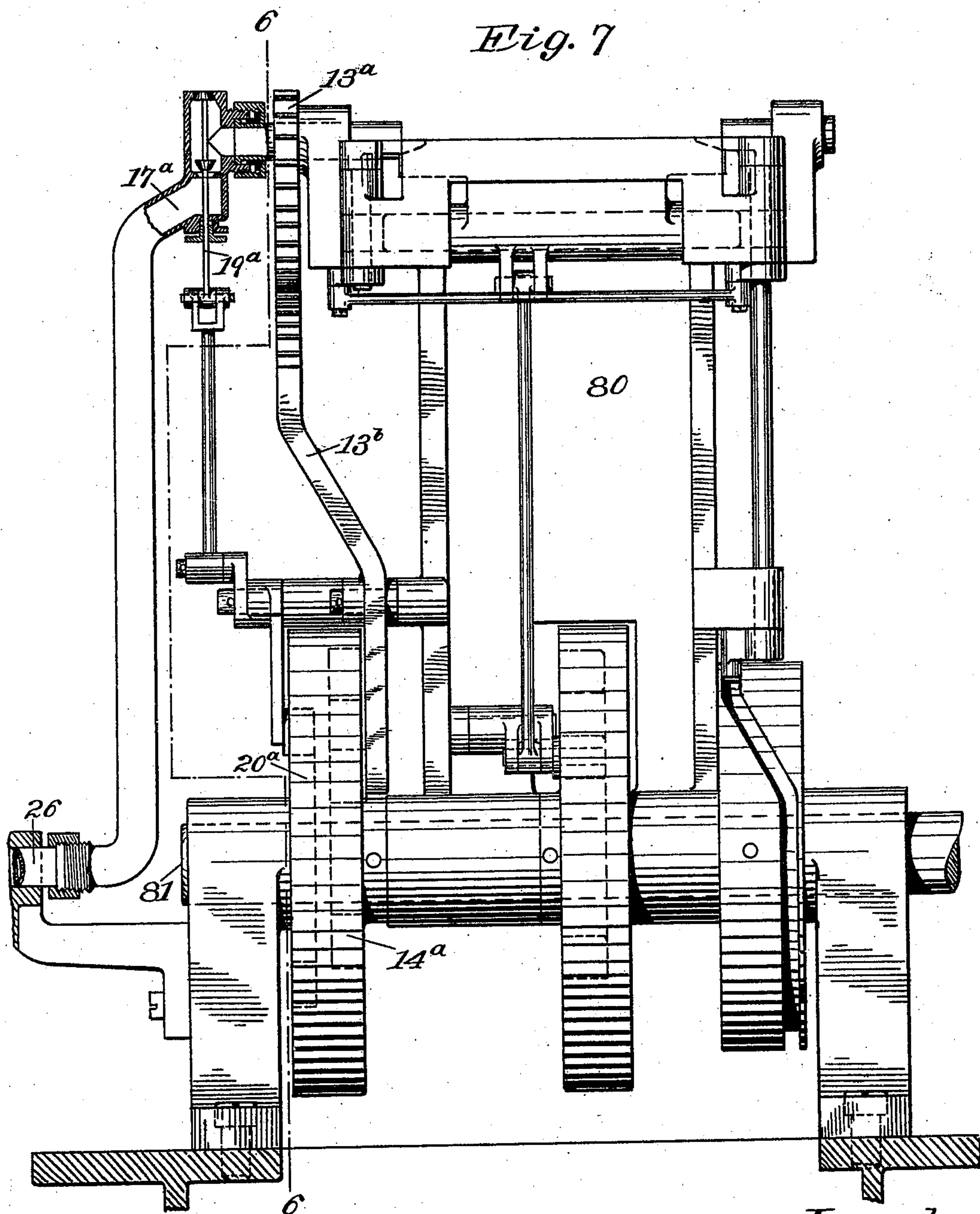
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Witnesses:

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(No Model.)

6 Sheets—Sheet 6.

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Fig. 9

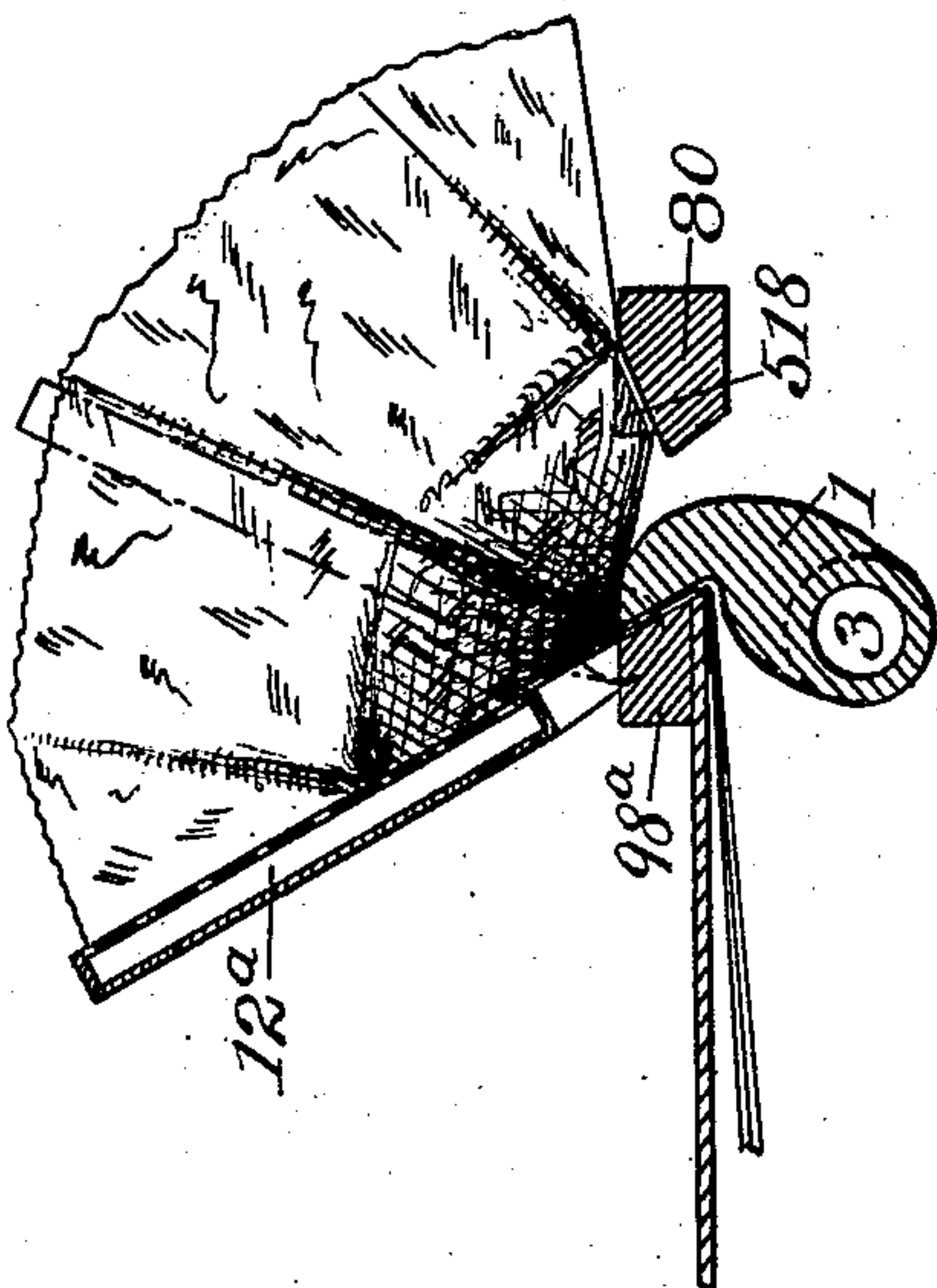
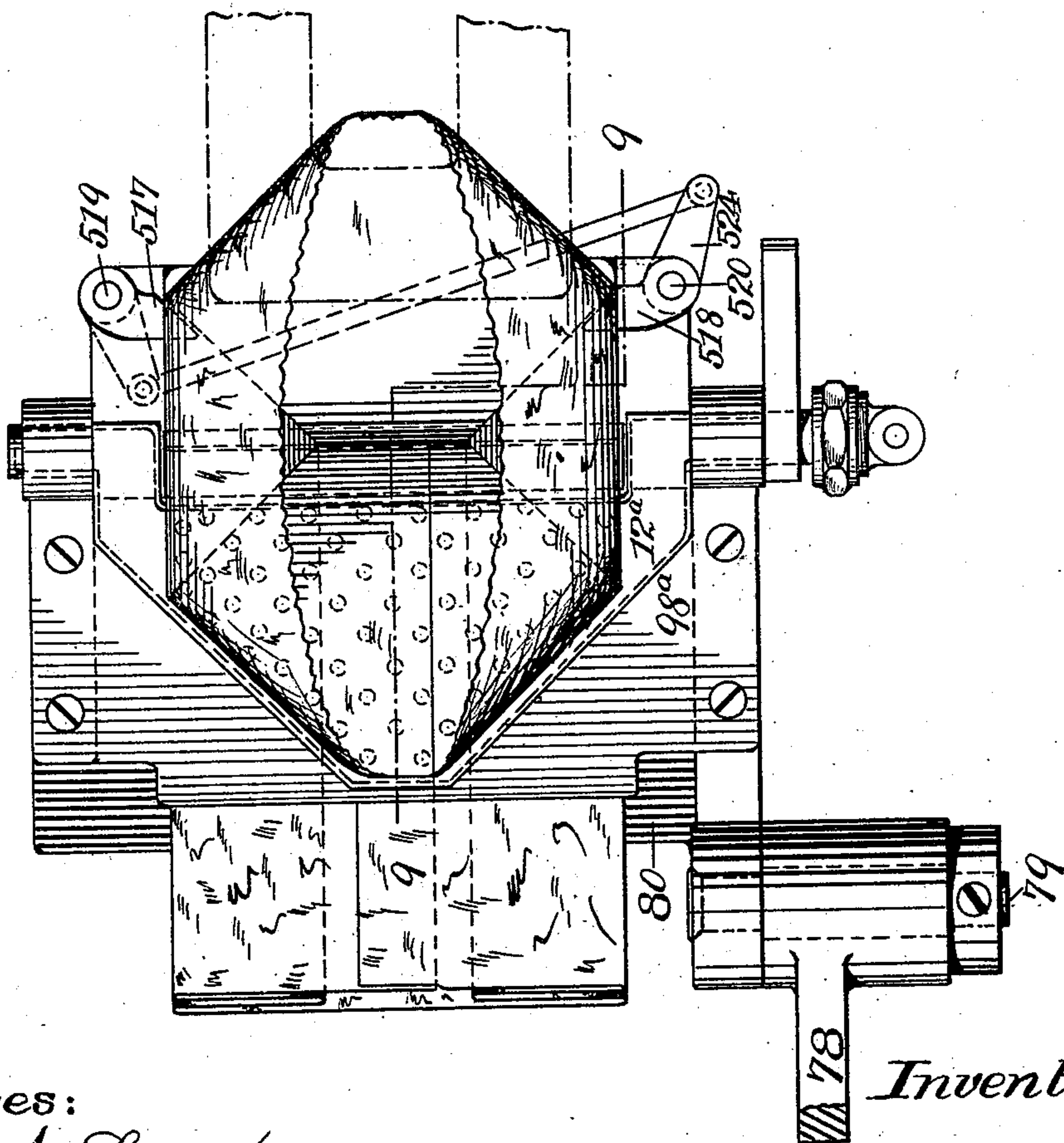


Fig. 8



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UNITED STATES PATENT OFFICE.

EDWARD E. CLAUSSEN, OF HARTFORD, CONNECTICUT.

PAPER-BAG MACHINE.

SPECIFICATION forming part of Letters Patent No. 574,666, dated January 5, 1897.

Application filed May 5, 1894. Serial No. 510,162. (No model.)

To all whom it may concern:

Be it known that I, EDWARD E. CLAUSSEN, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Paper-Bag Machines, of which the following is a full, clear, and exact specification.

This invention relates to mechanism for converting tucked-paper tubes into diamond-folded bag-blanks, one of the most difficult steps in the various processes of manufacturing square-bottomed paper bags. It may be adapted to several types of machines now known in the art for making that form of bag and is herein shown in its adaptation to two of the leading types, such as are exemplified in Letters Patent of the United States No. 417,346 of December 17, 1889, and No. 361,951 of April 26, 1887, respectively.

Figure 1 of the drawings is a side view, partly in section, on the line 1 1 of Figs. 2 and 3, of my invention as adapted to the first of the above-mentioned types of machines, showing also a blank partly folded. Fig. 2 is a plan view of what is shown in Fig. 1, excepting that the blank is omitted. Fig. 3 is a view of the blank and mechanism of Fig. 1, looking from the left-hand side of that figure. Fig. 4 is a side view, partly in section, of the blank and of the parts most intimately employed in the folding operation in position for the commencement of that operation. Fig. 5 is a view of the blank and of the parts shown in Fig. 4 in their position at the completion of the diamond-folding operation. Fig. 6 is a side view, partly in section, on the line 6 6 of Fig. 7, of my invention as adapted to the second of the above-named types of machines, showing a partially-folded blank thereon. Fig. 7 is a view, looking from the right-hand side of Fig. 6, of what is shown in that figure, omitting the blank. Fig. 8 is a plan view of the blank and of part of the mechanism of Fig. 6. Fig. 9 is a side view of the blank and a sectional view of a portion of the mechanism of Fig. 8, the section being taken on the line 9 9 of the latter figure.

The adaptation of my invention shown in Figs. 1 to 5, inclusive, will first be described. The feeding-roll G is provided with grippers g' and g'' and operates in conjunction with

the roll G', as in Letters Patent No. 417,346. A slide P' is fitted to move up and down in the frame by means similar to those which operate the plate P of the above-mentioned patent. That slide has journaled in its lower bifurcated end the suction tucker-plate 12, which is adapted to oscillate in its slide from the position shown in Fig. 4 to that shown in Fig. 5. The plate is provided with a cam-arm 13, which engages with the cam 14, dependent from the frame, the cam being so formed as to cause a suitable oscillation of the plate. That plate is a box, preferably made in the form of an acute-angled V, as seen in side views with its pivot-bearings near to the apex. That side of the plate which is to come against the blank is perforated with holes for the passage of air, and the hollow interior of the plate communicates through its bearings with air-passages 15 and 16 in the slide. The air-tubes 17 and 18 communicate with any suitable mechanism (not herein shown) for exhausting the air therefrom, and they are fitted to the passages 15 and 16 so that the latter telescope upon them with the movements of the slide. The valve-rod 19 passes laterally through both of the tubes and is provided with transverse passages, which, by the oscillation of the rod, operate as valves for opening and closing communication between the exhausting mechanism and the plate 12. The valve-rod is operated by the cam 20 by means of the connections shown.

A distending-finger 21 is attached to the frame and extends upward, its function being to hold down the leading end of the blank and thus assist in the flattening of the diamond. A pair of creasing-rolls 22 and 23 are preferably employed and are provided with creasing-blades 24 and 25, which are fixed in one roll and fit into grooves in the other roll.

The new parts of the mechanism shown in Figs. 6, 7, 8, and 9 consist in such modified forms of the diamond-folding devices shown in Figs. 1, 2, 3, 4, and 5 as adapt those devices to the diamond-folding mechanism shown in Letters Patent No. 361,951. The construction and arrangement of the fixed presser-plate 98^a, the rocking gripper 1, the side holders 517 and 518, and their appurtenances are similar to those shown and described in Letters Patent No. 444,729, Figs.

1, 2, 3, 4, and 5. In this adaptation the suction tucker-plate 12^a is journaled in upwardly-projecting hubs at each side of the rocking carriage 80, and its interior chamber communicates with the tube 17^a by a joint, which permits of the oscillation of the plate in its bearings. The tube 17^a extends downward and connects by means of another slip-joint with a tube 26, which is concentric with the axis of oscillation of the rocking carriage and which leads to the exhausting mechanism. The operation of the suction is controlled by the plugs on the valve-rod 19^a, and that rod is operated by the cam 20^a on the shaft 81 through the bell-lever and connecting-rod shown. The suction-plate has fixed to it the sector-arm 13^a, which meshes with the sector cam-arm 13^b. That arm is pivoted to the carriage and engages with the cam 14^a, which is so formed as to communicate the desired oscillatory motion to the suction-plate.

The operation of the mechanism shown in Figs. 1 to 5, inclusive, is as follows: A blank of tucked-paper tubing is fed between the rolls 22 and 23 and is creased by the blades 24 and 25. Passing to and between the rolls G G' the lower ply is seized at its front by the gripper *g*⁷ and at its sides by the grippers *g*'. Arriving at the position shown in Fig. 4, the blank has passed under the tucker-plate 12, at which time the valves are open, allowing the suction to act upon the upper ply, drawing it against the perforated side of the plate. As the blank advances the slide P' is moved downward with it and the tucker-plate is turned to the positions shown in Figs. 1 and 5, thus opening and flattening the blank into the well-known diamond form. The distending-finger 21 is also employed at this point to assist in flattening the blank, which is now released and passes under the finger, and may then be pasted and completed as a bag by any of the well-known means for performing those operations.

The construction and mode of operation of the old parts of the machine shown in Figs. 6, 7, 8, and 9 are substantially the same as the construction and mode of operation of the corresponding parts in the machines shown in said Letters Patent Nos. 361,951 and 444,729.

The mode of operation of the above-described new parts of the machine of Figs. 6, 7, 8, and 9 is substantially the same as the mode of operation of the corresponding parts of the machine shown in Figs. 1, 2, 3, 4, and 5 of Letters Patent No. 444,729, and is as follows: The forward end of the blank is passed under and beyond the front edge of the presser-plate and is gripped by the side holders and rocking gripper, as shown in Patent No. 444,729. At this period the suction-plate is in the position represented by the dot-and-dash lines in Fig. 9. The valve is now opened to allow the suction to draw the upper ply of the blank against the perforated side of the plate, and that plate is rocked over down upon the presser-plate to the posi-

tion shown in Fig. 6. The valve is now closed to stop the operation of the suction, the grippers are opened, and the blank, flattened by the finger 21^a, is drawn away from the mechanism, to be pasted and completed as a bag by any of the well-known means for performing those operations.

The tucked tube-blanks employed herein may be folded and pasted either from sheets or from a continuous web, and the blanks severed by any of the well-known methods. In either case they are to be fed in uniform time and register to the herein-described folding devices, which, after performing their work upon a blank, return to their described first position to receive and operate upon the succeeding blank.

In the machine of Figs. 1, 2, 3, 4, and 5 the primary cross-fold in the upper ply of the tube is defined by the edge of the suction-plate, and that edge is shown to project beyond the center of oscillation of the plate. In the machine of Figs. 6, 7, 8, and 9 that primary fold is defined by the upper edge of the presser-plate 98^a, and the center of oscillation of the suction-plate is located coincident therewith. In this machine, however, the edge of the suction-plate is not extended to the line of its axis of oscillation. This invention is applicable also to the forming of the primary folds in the process of making satchel-bottomed bags from plain tubes. In that case the grippers *g*' of Figs. 1, 2, and 3 and the corresponding grippers 517 and 518 of Fig. 8 are omitted.

The machine of Figs. 1 to 5, inclusive, is represented as having an air-tube connection to each of the bearings of the suction-plate, and the machine of Figs. 6 to 9, inclusive, has an air-tube on one side only. It will, however, be obvious that either of those machines may employ either one or more tubes, as may be found preferable or convenient.

I claim as my invention—

1. The combination of a hollow plate, having one perforated wall, and adapted to vibrate upon bearings located upon a line with, or parallel with, the line upon which a ply of a paper-bag blank is to be folded over by that plate; with pneumatic mechanism to draw the ply to be folded to the perforated side of the plate, and to carry it therewith and devices coöperating with the plate to effect the opening of the bag-blank, all substantially as described.

2. The combination of a hollow plate, having one perforated wall, and one thin edge, and adapted to vibrate upon bearings located upon a line with, or parallel with, the line upon which a ply of a paper-bag blank is to be folded over by that plate, across its thin edge; with pneumatic mechanism to draw the ply to be folded to the perforated side of the plate, and to carry it therewith and devices coöperating with the plate to effect the opening of the bag-blank; all substantially as described.

3. The combination of a traveling folding
bed, having grippers or other means for hold-
ing the lower ply of a paper-bag blank there-
on; a hollow plate, having one perforated
5 wall, and adapted to vibrate upon bearings,
which are located upon a line with, or par-
allel with, the line upon which the upper ply
of the paper-bag blank is to be folded over by
that plate, and which bearings move in uni-
10 son with the traveling folding bed, during the
folding operation; and pneumatic mechanism,
to draw the ply to be folded to the perforated
side of the plate, and to carry it therewith;
all substantially as described.

15 4. The combination of a traveling folding

bed, having grippers or other means for hold-
ing the lower ply of a paper-bag blank there-
on; a hollow plate, having one perforated
wall, and one thin edge, and adapted to vibrate
upon bearings located upon a line with, or 20
parallel with, the line upon which a ply of a
paper-bag blank is to be folded over by that
plate, across its thin edge; with pneumatic
mechanism, to draw the ply to be folded to the
perforated side of the plate, and to carry it 25
therewith; all substantially as described.

EDWARD E. CLAUSSEN.

Witnesses:

WILLIAM A. LORENZ,
W. H. HONISS.