

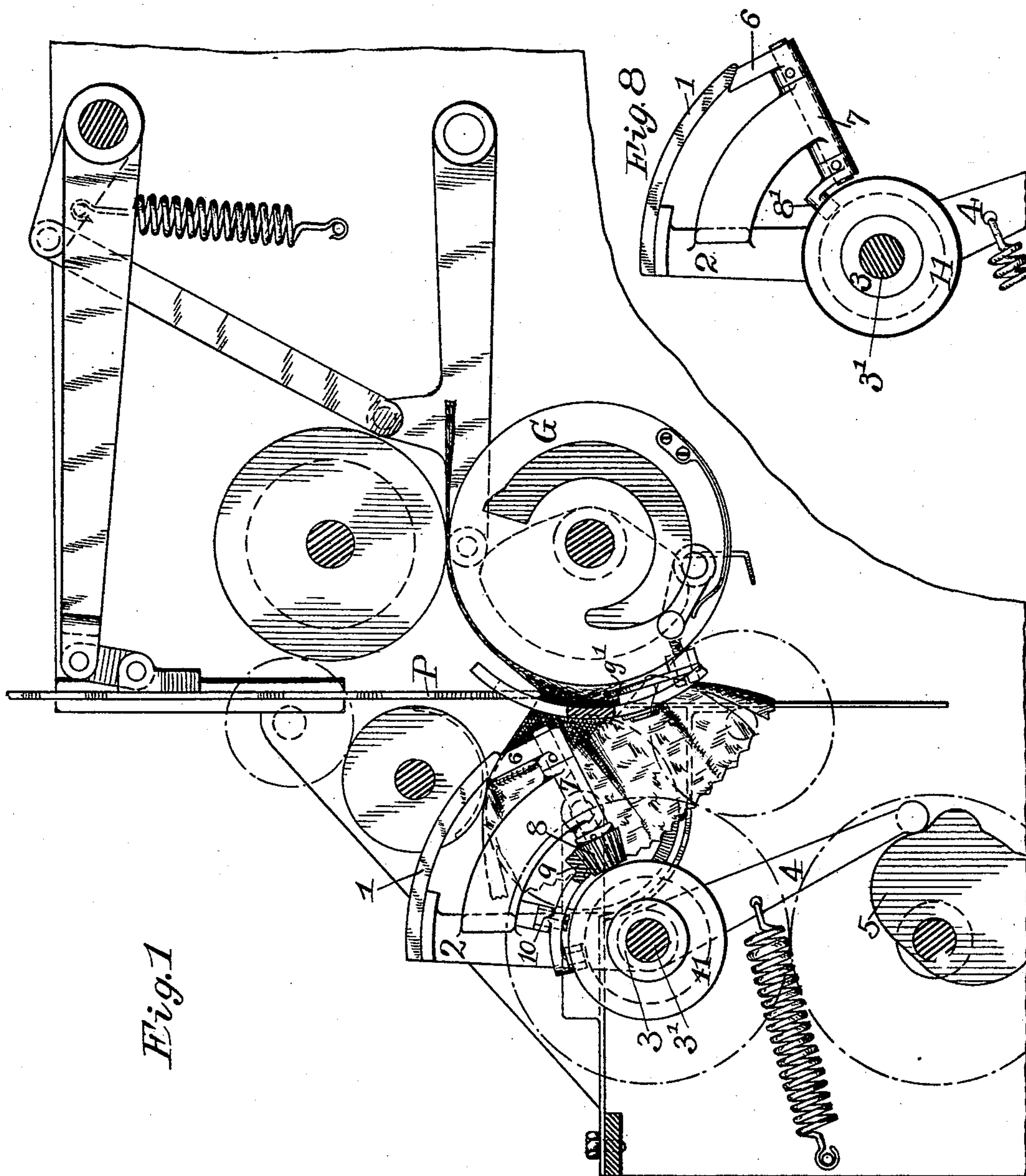
(No Model.)

5 Sheets—Sheet 1.

W. A. LORENZ & E. E. CLAUSSEN.
PAPER BAG MACHINE.

No. 459,445.

Patented Sept. 15, 1891.



Witnesses:
H. Q. Stedman
C. C. Waldorf

Inventors:
William A. Lorenz
Edward E. Claussen

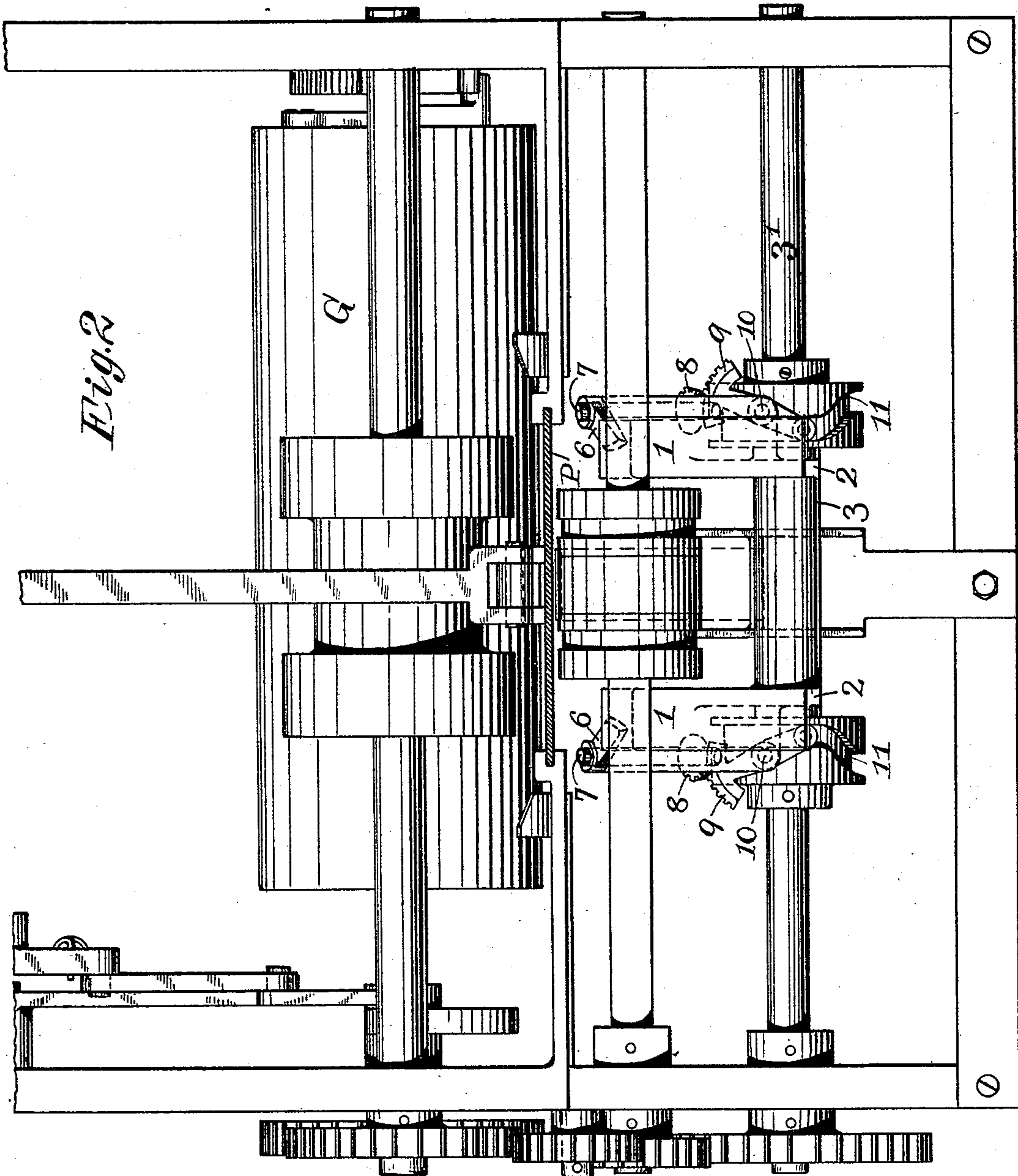
(No Model.)

5 Sheets—Sheet 2.

W. A. LORENZ & E. E. CLAUSSEN.
PAPER BAG MACHINE.

No. 459,445.

Patented Sept. 15, 1891.



Witnesses:

F. A. Stedman
C. O. Waldorf

Inventors:

William A. Lorenz
Edward E. Claussen

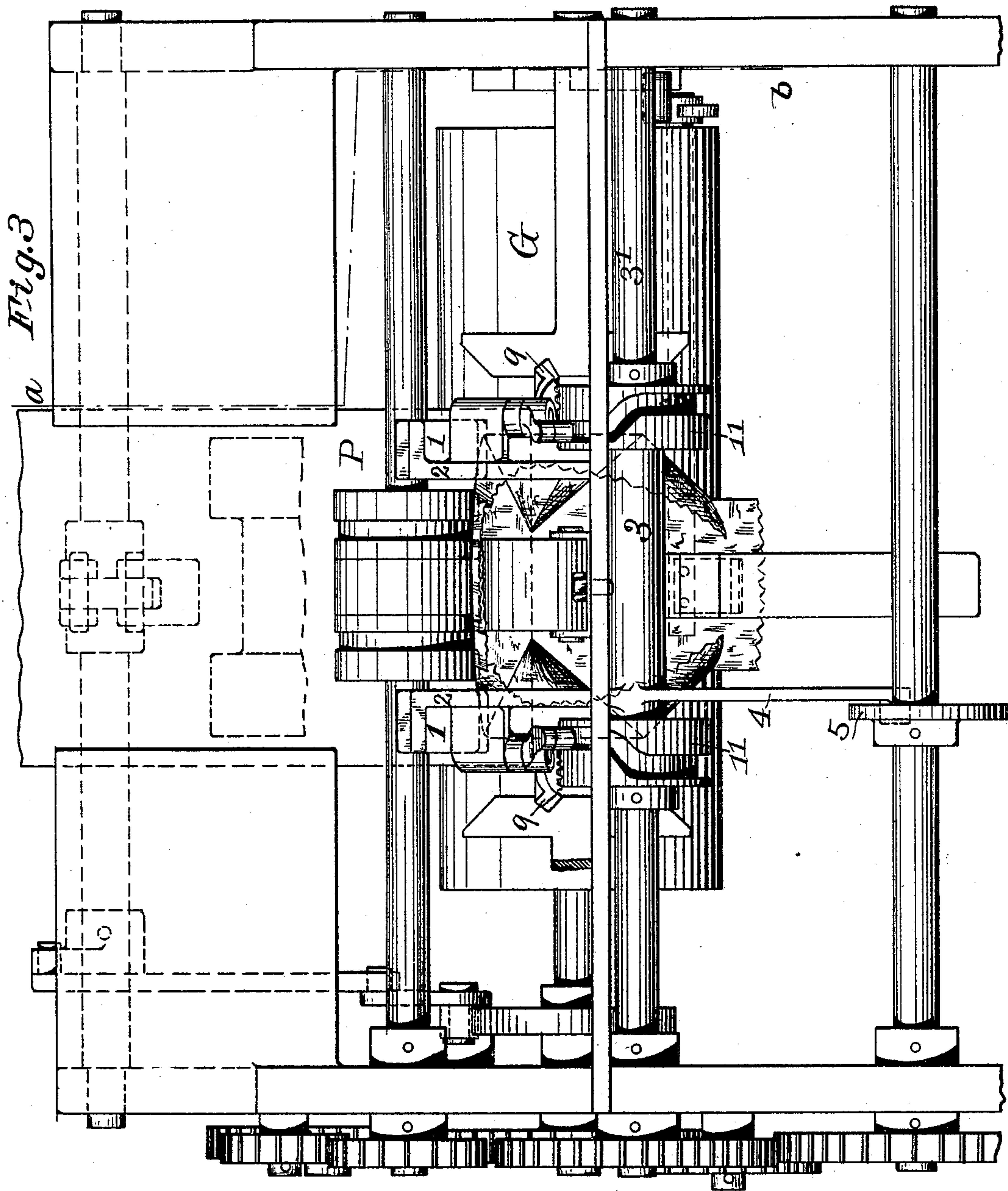
(No Model.)

5 Sheets—Sheet 3.

W. A. LORENZ & E. E. CLAUSSEN.
PAPER BAG MACHINE.

No. 459,445.

Patented Sept. 15, 1891.



Witnesses:

F. G. Stedman

O. C. Waldorf

Inventors:

William A. Lorenz

Edward E. Claussen

(No Model.)

5 Sheets—Sheet 4.

W. A. LORENZ & E. E. CLAUSSEN.
PAPER BAG MACHINE.

No. 459,445.

Patented Sept. 15, 1891.

Fig. 4

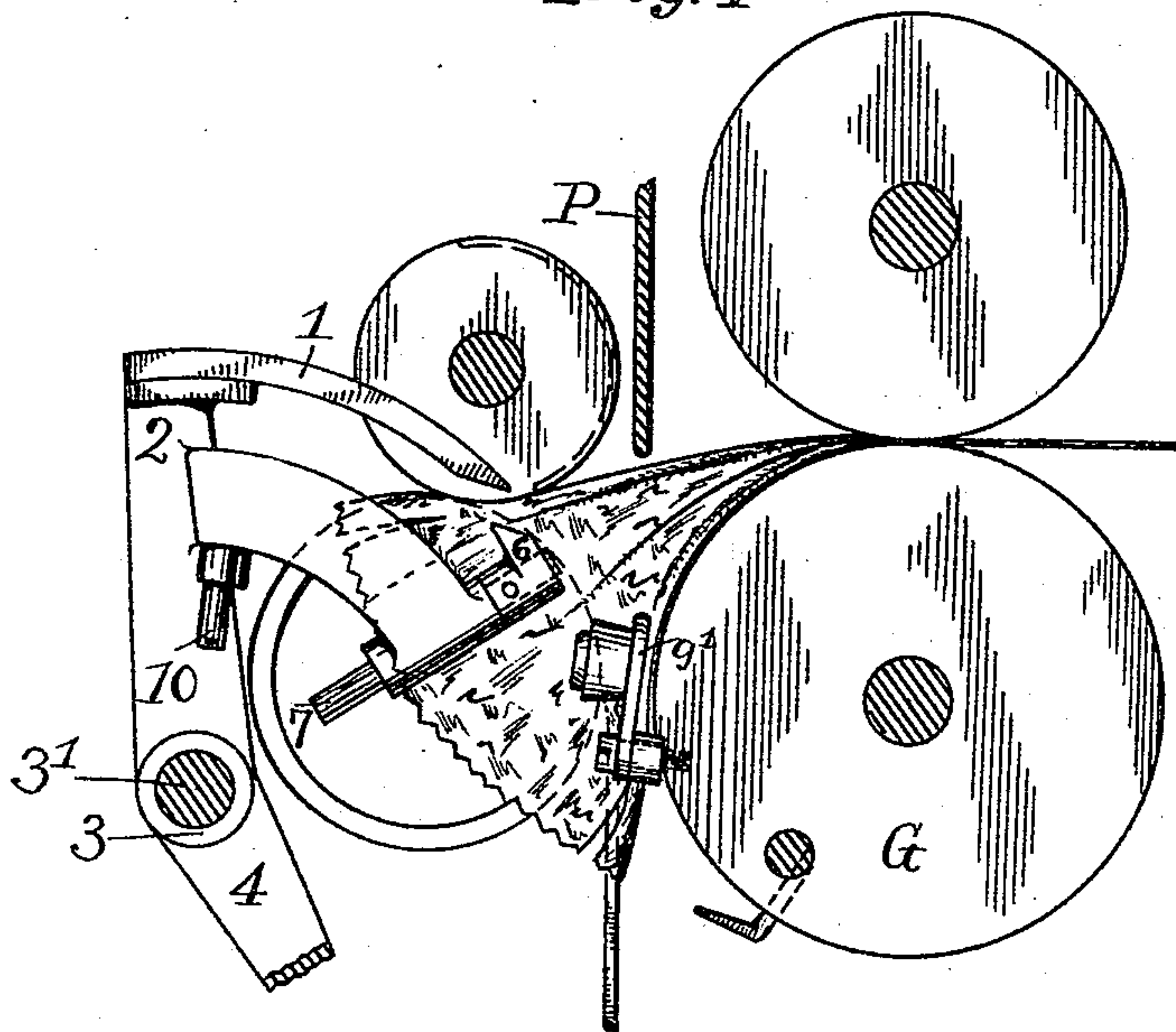
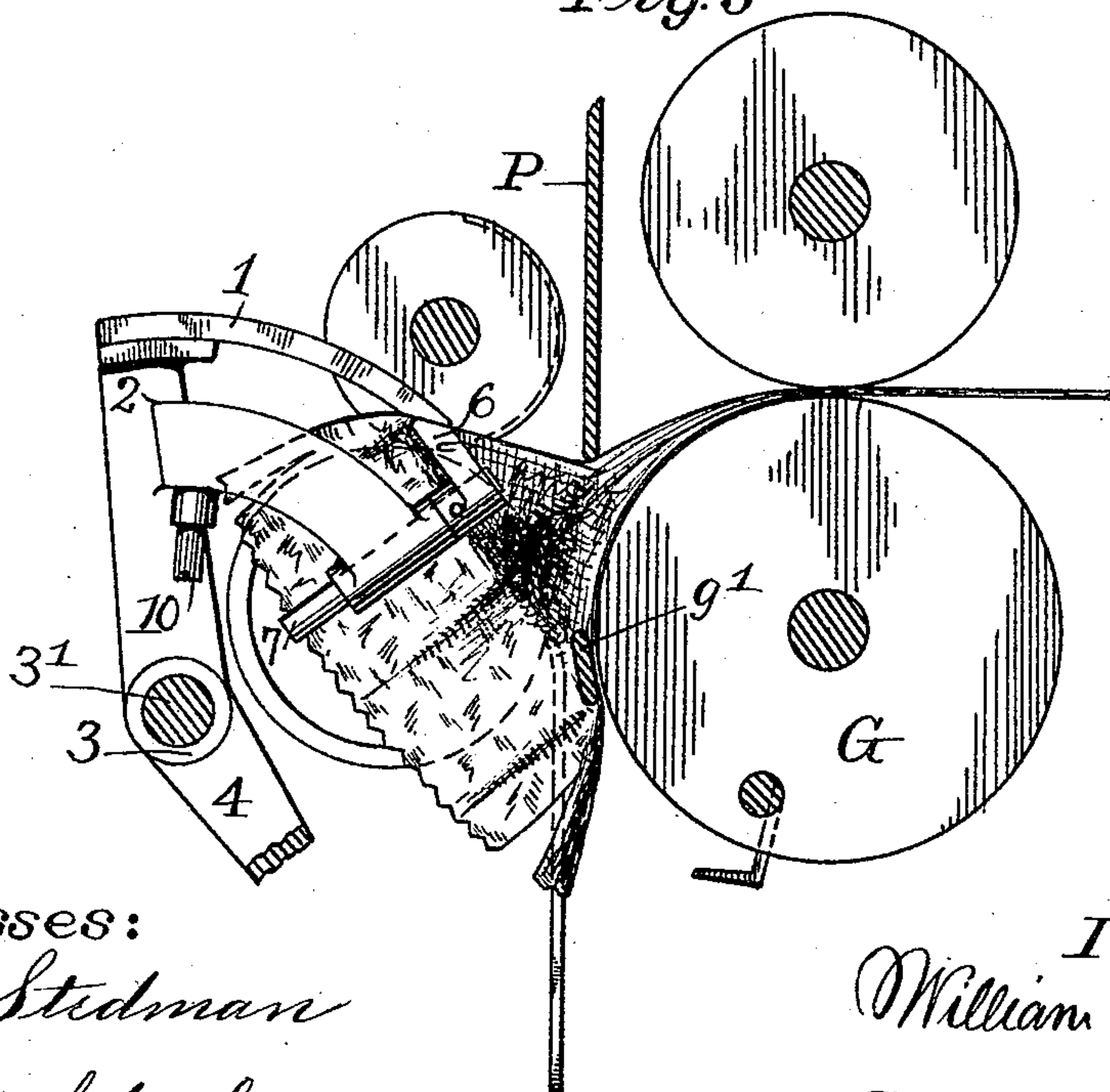


Fig. 5



Witnesses:

F. G. Stedman
C. C. Waldorf

Inventors:

William A. Lorenz
Edward E. Claussen

(No Model.)

5 Sheets—Sheet 5.

W. A. LORENZ & E. E. CLAUSSEN.
PAPER BAG MACHINE.

No. 459,445.

Patented Sept. 15, 1891.

Fig. 6

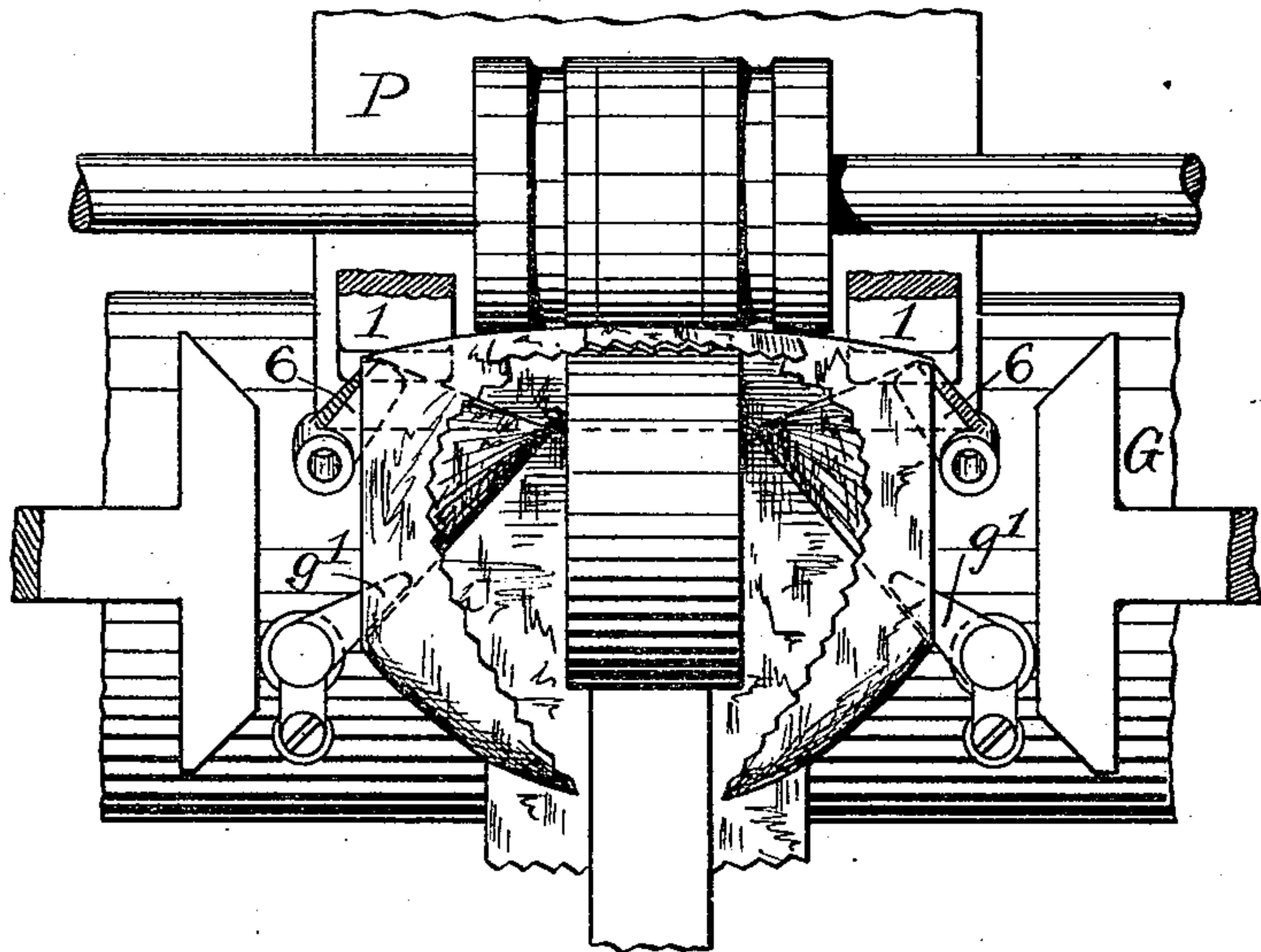
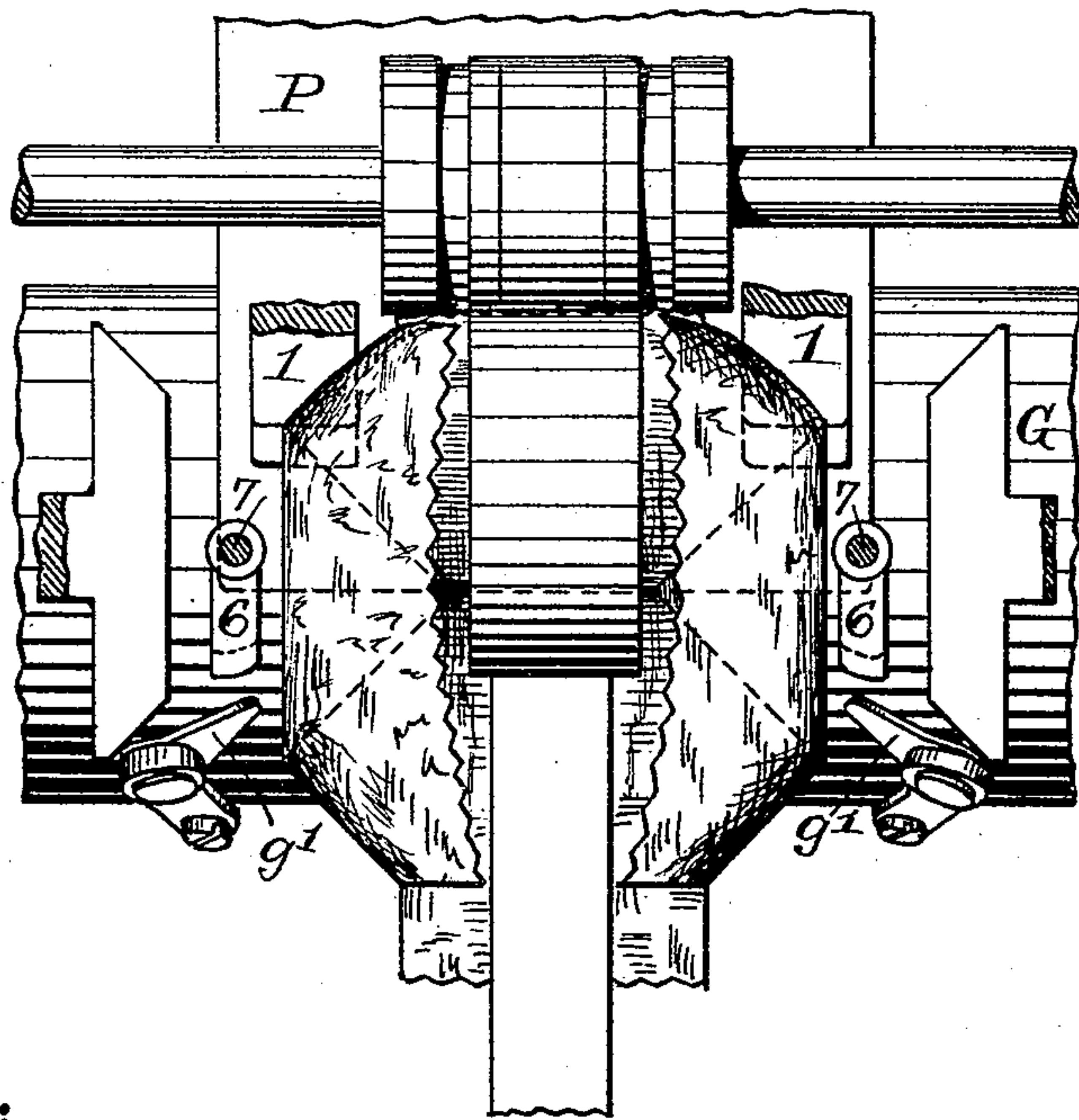


Fig. 7



Witnesses:

F. G. Stedman
C. C. Waldorf

Inventors:

William A. Lorenz
Edward E. Claussen

UNITED STATES PATENT OFFICE.

WILLIAM A. LORENZ AND EDWARD E. CLAUSSEN, OF HARTFORD, CONNECTICUT, ASSIGNORS TO ALBERT H. WALKER, TRUSTEE, OF SAME PLACE.

PAPER-BAG MACHINE.

SPECIFICATION forming part of Letters Patent No. 459,445, dated September 15, 1891.

Application filed April 24, 1891. Serial No. 390,353. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM A. LORENZ and EDWARD E. CLAUSSEN, of Hartford, Connecticut, have jointly invented a new and useful Improvement in Paper-Bag Machines, of which the following description and claims constitute the specification, and which is illustrated by the accompanying five sheets of drawings.

10 This improvement is applicable to such a paper-bag machine as that shown in Letters Patent of the United States, No. 417,346, of December 17, 1889; and it consists in improved mechanism for opening out one end
15 of a tucked-paper tube in the manner indicated in the drawings of this specification.

Figure 1 of the drawings is a sectional side view on the broken line *a b* of Fig. 3 of such paper-bag machinery as is shown
20 in said Letters Patent No. 417,346, of December 17, 1889, and having our present improvement incorporated therewith. Fig. 2 is a plan view of the mechanism of Fig. 1. Fig. 3 is a view of the left-hand end of what is
25 shown in Fig. 1. Fig. 4 is a side view of parts of the mechanism of Fig. 1 in the positions which those parts occupy when the new grippers of this invention are about to grip the paper. Fig. 5 is a side view of what is shown
30 in Fig. 4 at a more advanced stage of operation. Fig. 6 is a view of the left-hand end of the mechanism of Figs. 4 and 5 at a still more advanced stage of operation. Fig. 7 is a view of what is shown in Fig. 6 when the work of
35 the mechanism thereof is substantially done. Fig. 8 is a modified form of a part of what is shown in Fig. 1.

The machine shown in the drawings is mainly identical with the corresponding
40 mechanism shown in said Letters Patent No. 417,346, and the construction and mode of operation of the old parts of that machine are substantially the same as the construction and mode of operation of the corresponding
45 parts of the machine shown in said letters patent.

The new parts of the mechanism shown in the drawings of this specification are a pair of outside pinching mechanisms working on

opposite sides of the paper tube. These include the blades 1 1, respectively, fixed to the upper ends of the arms 2 2, and those arms are fixed to the sleeve 3, and that sleeve is rocked by the arm 4 and the cam 5. The working ends of the blades 1 1 are preferably beveled at the angle shown in Figs. 1, 4, and 5. The pinchers 6 6 have their working ends beveled to match the working ends of the blades 1 1, and those pinchers are fixed to the shafts 7 7, which rock in bearings in the ends of brackets which project from the arms 2 2, respectively. Those shafts are made to rock by the bevel-gears 8 8 meshing with the bevel-sectors 9 9. Those sectors are levers turning on the studs 10 10 and worked by the cams 11 11. Those studs project from the brackets in which the shafts 7 7 rock, and those cams are fixed to the shaft 3', so as to revolve therewith. Each shaft 7 may be rocked by an arm 8', worked by a cam 11, as shown in Fig. 8, instead of by a bevel-gear 8, worked by a sector 9, as shown in Fig. 1; but the latter arrangement is preferred, because it requires less throw from the cam.

The mode of operation of the above-described new parts of this machine is as follows: When the old parts of the machine have carried the process of opening out one end of a tucked-paper tube as far as the stage indicated in Fig. 4, the blades 1 1 are over the borders of the upper ply of the paper, and the pinchers 6 6 are rocked on the shafts 7 7, with their ends in the tucks of the paper, but moving outward toward the borders of the upper plies of those tucks, respectively, so as to pinch those borders, together with the borders of the upper ply of the tucked paper tube, between them and the beveled ends of the blades 1 1, respectively. When the paper adjacent to the upper bends of the tucked-paper tube has been thus gripped by the blades 1 1 and the pinchers 6 6, those blades and pinchers move upward as far as the position shown in Fig. 5, while the side grippers *g'* on the cylinder *G* are carrying the corresponding parts of the lower bends of the tucked-paper tube in the opposite direction and while the tucker-plate *P* is descending

to the position shown in Fig. 5. Thereupon the blades 1 1 and pinchers 6 6 swing downward together while still gripping the paper to the position shown in Fig. 1, or farther.

5 This downward movement may extend through from ten to thirty degrees of an arc of a circle, and preferably through as many as thirty degrees. At the end of their downward swing the pinchers 6 6 rock backward

10 from their contact with the blades 1 1, and thus release the paper to be carried forward and folded by the other mechanisms into the form shown in Fig. 7. The backward rocking of the pinchers 6 6 may continue as far as

15 to their positions shown in Fig. 7, and from those positions they rock forward again into the tucks of another paper blank and pinch the paper of that blank against the diagonal ends of the blades 1 1, and thereupon operate with those blades, as before. The places

20 where the paper is pinched between the ends of the blades 1 1 and the ends of the pinchers 6 6 are between the line where the lower edge of the tucker-plate P presses upon the paper, and the location of the rearward corners of the inward triangular folds of the diamond-shaped paper-bag blank, which is

25 manufactured by the machine and which is shown in Fig. 7 of the drawings. It is desirable to pinch the paper at those places between diagonal surfaces, as shown in Figs. 1, 4, and 5, so that the portions of paper thus pinched may remain as nearly as practicable

30 on a line with that part of the paper which extends therefrom to the lower edge of the tucker-plate, as shown in Figs. 5 and 1, and may thus remain throughout the time in which the paper is held between the blades and the pinchers; but the pinching-surfaces

40 may occupy a plane somewhat inclined to the plane of the paper which extends from those surfaces to the lower edge of the tucker-plate without vitally affecting the utility of the mechanism. It is highly desirable that the

45 arms 2 2 shall rock, so that the blades 1 1 and the pinchers 6 6 may grip the paper when it is in the position shown in Fig. 4, and may then raise the paper thus gripped to the position shown in Fig. 5, and may then accom-

50 pany that paper downward while still holding it until the cylinder G and the side holders g' have drawn the paper into the form shown in Fig. 1, and it is proper that the downward rocking of the blades 1 1 and the

55 pinchers 6 6 shall continue even farther than is shown in Fig. 1. This upward and this downward movement of the blades 1 1 and the pinchers 6 6 while gripping the paper is beneficial to the utility of the machine, because

60 it holds the upper ply of the paper and the upper thicknesses of the tucks in the paper against the downward pull of the cylinder G and the side holders g' longer than could be the case if the blades 1 1 were stationary and

65 the places of pinching between them and the pinchers 6 6 were also stationary; but a good result can be reached when the upward move-

ment of the pinching devices, after they have pinched the paper and before they move downward with it, is omitted, and where these

70 devices begin to move downward with the paper immediately after they grip it. So, also, a fair result will come from the machine where the blades 1 1 are stationary and where

75 the pinchers 6 6 have no motion, except to rock with the shafts 7 7. In such a case as this, however, the time of pinching must be much shorter than is both practicable and desirable, when the arms 2 2 rock on the shaft

80 3 and carry the blades and the pinchers with them in that rocking. The rocking motion of the pinchers 6 6 upon the shafts 7 7 is a good one by means of which to bring the working ends of those pinchers into impingement with the working ends of the blades 1 1

85 and to carry them out of that impingement, as above described; but the pinchers may pass into and out of such impingement in any one of several other ways, and a reciprocating movement at right angles to the adjacent

90 edge of the paper-bag blank and on a plane inclined outwardly and downwardly from the plane of the upper ply of the bag-blank is an example of such a motion. Another example of

95 such a motion would be presented by arranging the pinchers 6 6 to swing from outside the tucks of the paper radially into those tucks in such a way as to impinge against flat surfaces of the blades 1 1, instead of against

100 beveled surfaces of those blades. So, also, the working ends of the fingers 6 6 may be made rounding as well as flatly diagonal. Indeed, the forms of the blades 1 1 and of the pinchers 6 6 and their impinging surfaces

105 may be varied in many ways; but it is essential to this invention that those impinging surfaces shall be so constructed and adjusted as to grip the paper between the places where the rearward corners of the inward triangular folds are to come and the lower edge of

110 the tucker-plate, for if those surfaces grip the paper between the places where the rearward corners of the inward triangular folds are to come and the forward end of the paper tube the result will be sometimes to wrinkle the

115 paper and sometimes to tear it, and thus to spoil the product of the machine.

We claim as our invention—

1. The combination of the cylinder G, provided with the side holders g' and adapted

120 to hold and carry downward the lower ply of a tucked-paper tube, together with the adjacent folds of the tucks therein, and two pairs of pinchers, adapted to grip and to hold the upper ply of that tucked-paper tube, together

125 with the adjacent folds of the tucks therein, between the places where the rearward corners of the inward triangular folds are to come and the lower edge of the tucker-plate, and the tucker-plate P, adapted to press downward

130 upon the upper side of the tucked-paper tube rearward of the side holders and the pinchers, the whole being so combined and arranged and so operating together as to open

out opposite parts of the inwardly-inclined tucks of the tube into inwardly-inclined triangular folds, all substantially as described.

2. The combination of the cylinder G, provided with the side holders *g'* and adapted to hold and carry downward the lower ply of a tucked-paper tube, together with the adjacent folds of the tucks therein, and two pairs of following pinchers adapted to grip the upper ply of that tucked-paper tube, together with the adjacent folds of the tucks therein, between the places where the rearward corners of the inward triangular folds are to come and the lower edge of the tucker-plate, and the presser-plate P, adapted to press downward upon the upper side of the tucked-paper tube rearward of the side holders and the pinch-

ers, the whole being so combined and arranged and so operating together that while the cylinder and its side holders are moving away from the two pairs of pinchers those pinchers are following those side holders, but at such slower speed as to co-operate with them and with the tucker-plate in opening out opposite parts of the inwardly-inclined tucks of the tube into inwardly-inclined triangular folds, all substantially as described.

Hartford, April 16, 1891.

WILLIAM A. LORENZ.

EDWARD E. CLAUSSEN.

Witnesses:

ALBERT H. WALKER,
PHOEBE A. PHELPS.