

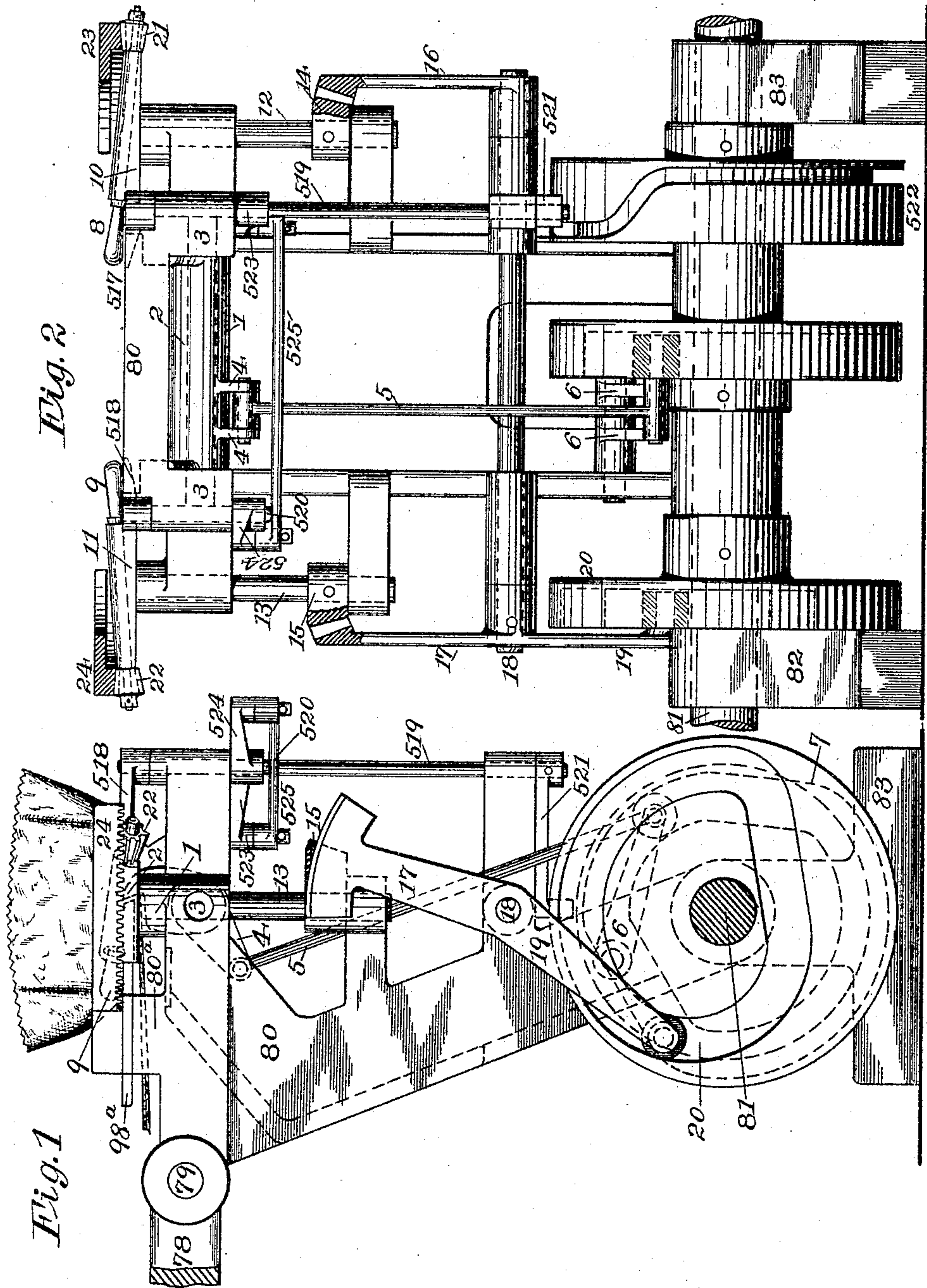
(No Model.)

3 Sheets—Sheet 1.

E. E. CLAUSSEN.
PAPER BAG MACHINE.

No. 444,727.

Patented Jan. 13, 1891.



Witnesses:

W. J. Maloney
William H. Lorenz.

Inventor:

Edward E. Claussen

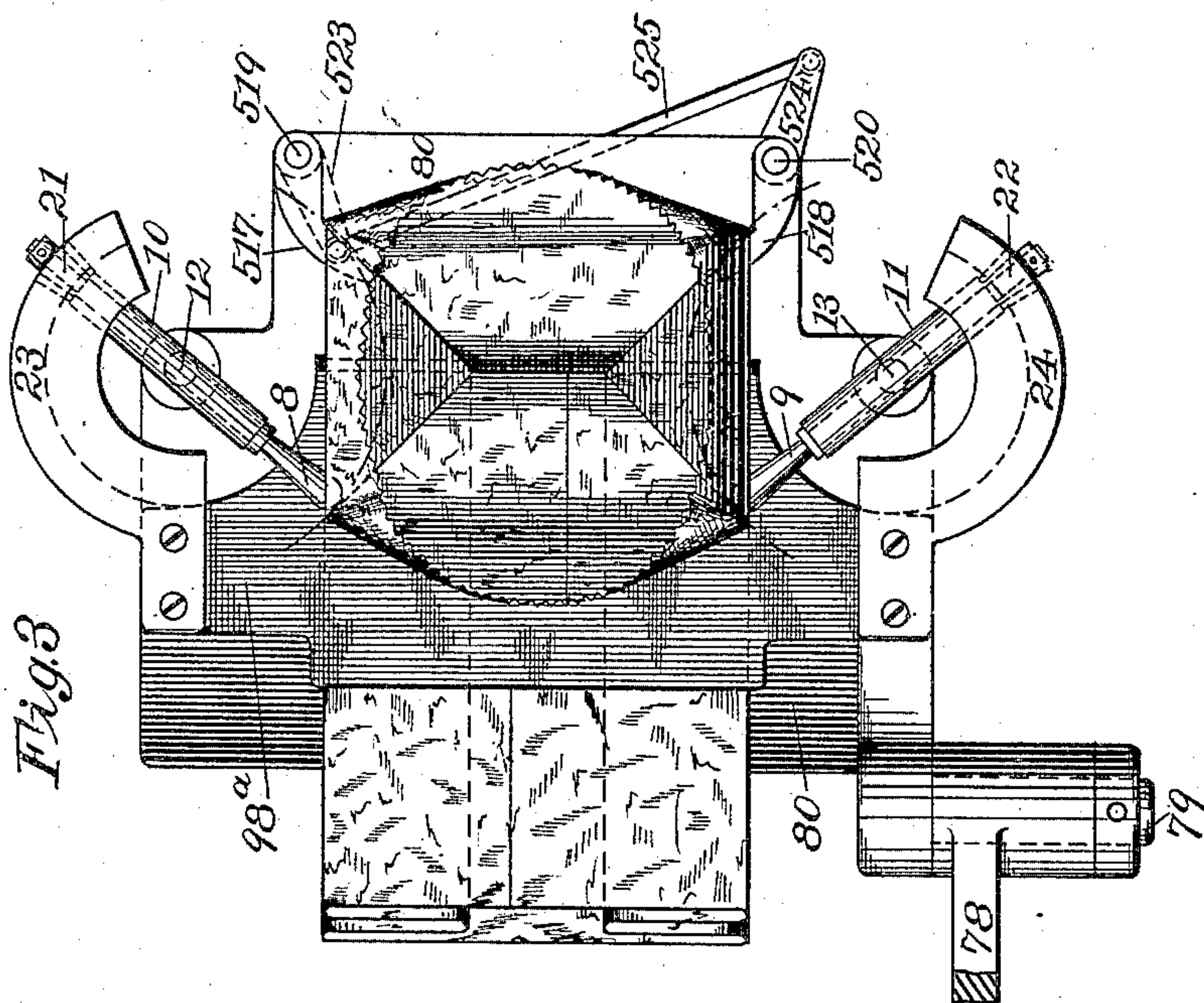
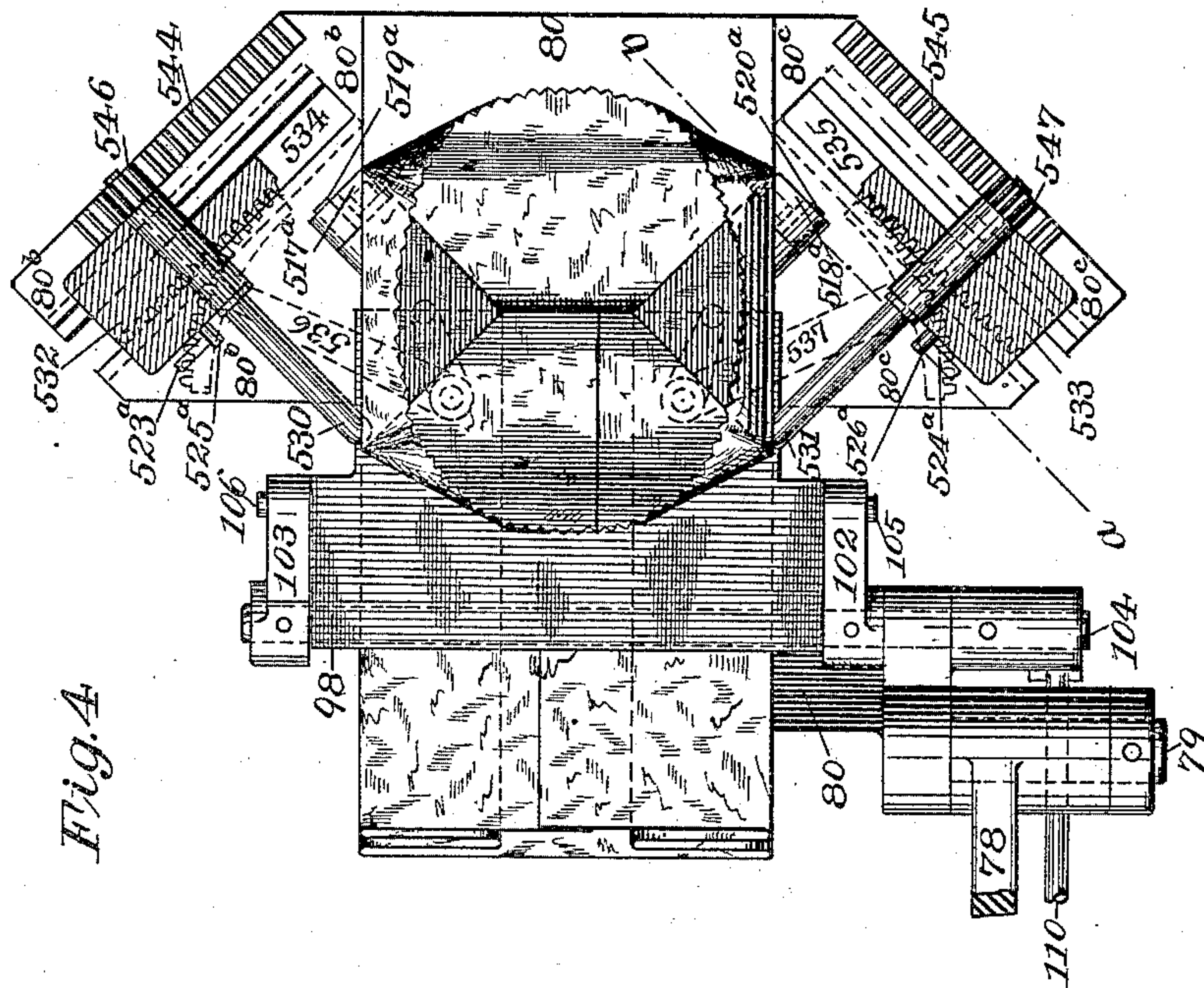
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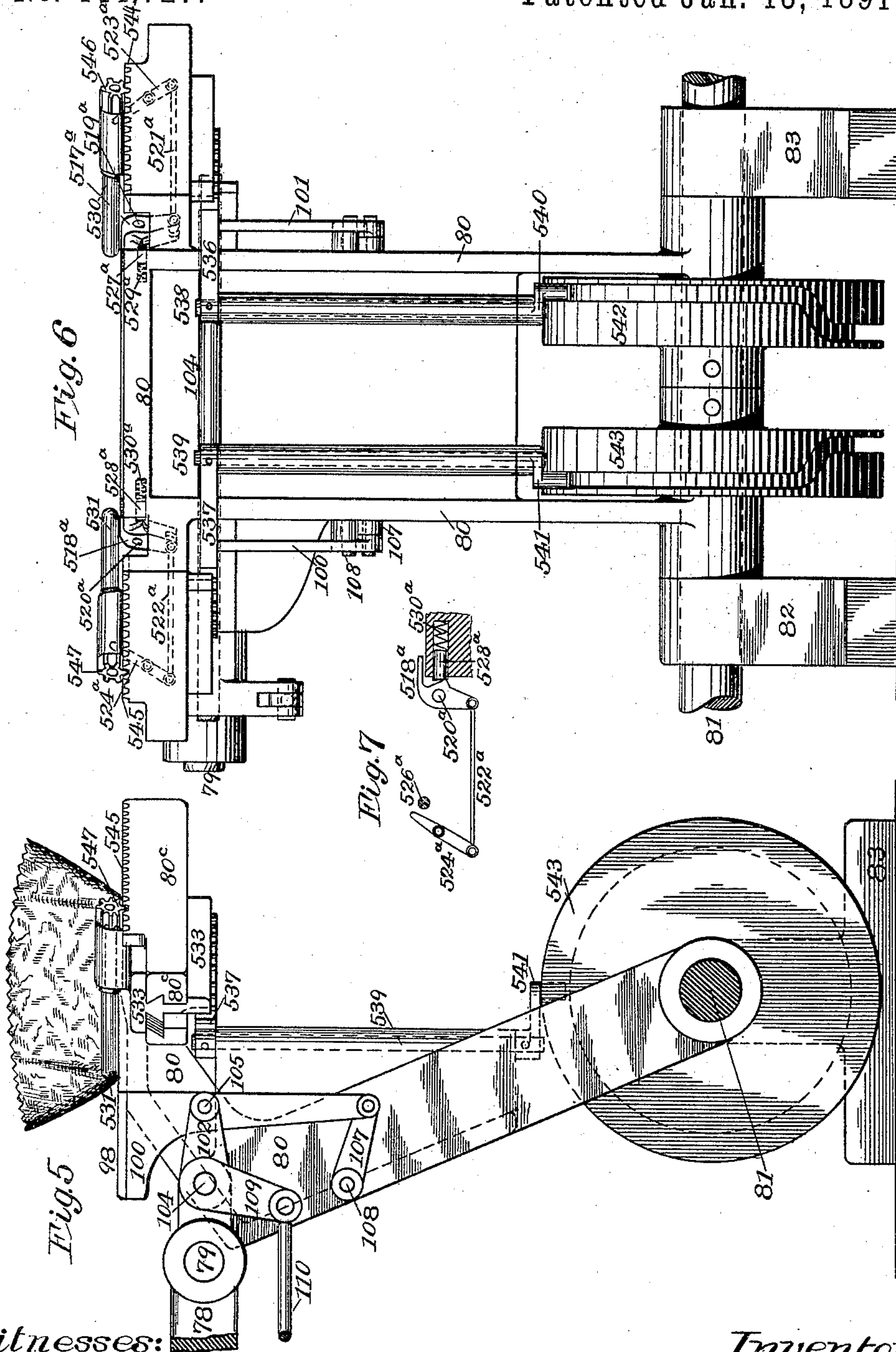
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UNITED STATES PATENT OFFICE.

EDWARD E. CLAUSSEN, OF HARTFORD, CONNECTICUT, ASSIGNOR TO ALBERT H. WALKER, TRUSTEE, OF SAME PLACE.

PAPER-BAG MACHINE.

SPECIFICATION forming part of Letters Patent No. 444,727, dated January 13, 1891.

Application filed July 31, 1890. Serial No. 360,444. (No model.)

To all whom it may concern:

Be it known that I, EDWARD E. CLAUSSEN, of Hartford, Connecticut, have 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 three sheets of drawings.

This improvement is particularly applicable to such a paper-bag machine as that shown in Letters Patent of the United States No. 361,951, of April 26, 1887; and it consists in improved mechanism for opening out one end of a tucked paper tube like that shown in Figures 1, 2, and 3 of said Letters Patent into a box-like form like that shown in Figs. 5 and 6 of said Letters Patent and in Figs. 1, 3, 4, and 5 of this specification.

Fig. 1 of the drawings of this application is a side view of the rocking carriage 80 of said Letters Patent No. 361,951 and of one form of my present improvement, which in such a paper-bag machine as that of said Letters Patent is carried by that rocking carriage. Fig. 2 is a view of the right-hand end of the mechanism shown in Fig. 1, and Fig. 3 is a plan view of the upper parts of what is shown in Fig. 1. Fig. 4 is a plan view of another form of my present improvement applied to such a rocking carriage, while Fig. 5 is a side view, and Fig. 6 is a view of the right-hand end, of the mechanism shown in Fig. 5. Fig. 7 is a detached and detailed sectional view of a small part of the mechanism shown in Figs. 4, 5, and 6 and on the dotted lines *a b* of Fig. 4.

The connecting-rod 78 is worked by a crank (not shown in the drawings) and is pivoted by the stud 79 to the rocking carriage 80, and that carriage rocks upon the shaft 81 in brackets 82 and 83.

In that form of the present machine which is shown in Figs. 4, 5, and 6 upon the upper part of the carriage 80 there is a presser-plate 98, fastened to the tops of two brackets 100 and 101, which receive vertical reciprocating motion by means of two arms 102 and 103, which are fixed to the rock-shaft 104, and which are pivoted by the pins 105 and 106 to the brackets 100 and 101, respectively. To

the lower end of the bracket 100 a link 107 is attached and is pivoted by the pin 108 to the carriage 80 and serves to give the presser-plate a parallel motion. To the shaft 104, at the outer end of the carriage 80, there is attached an arm 109, the lower end of which is pivoted to the connecting-rod 110, and that connecting-rod is made to reciprocate longitudinally by a crank or cam. (Not shown in the drawings.)

In that form of the present machine which is shown in Figs. 1, 2, and 3 the vertically-moving presser-plate 98 and the parts which actuate it are omitted and the fixed presser-plate 98^a is substituted therefor and is fastened at its respective ends to the bracket 80^a and to a corresponding bracket extending upward from that side of the rocking carriage 80 which is opposite the side from which the bracket 80^a extends upward. The forward edge of the plate 98^a is a narrow surface sloping upward and backward, as shown in Fig. 1.

In the form of machine shown in Figs. 4, 5, and 6 the upper surface of the forward part of the carriage 80 is level and continuous with that part of the surface of that carriage upon which the presser-plate 98 descends; but in the form of machine shown in Figs. 1, 2, and 3 the upper surface of the forward part of the carriage 80 is level with the upper surface of the plate 98^a, and instead of being continuous with the rearward part of the upper surface of the carriage is separated therefrom by an opening which extends crosswise of the top of the carriage, just forward of the forward edge of the plate 98^a. In that opening is situated a backwardly-inclined flange 2 of the rocking gripper 1. That flange operates to clamp the paper-bag blank across the forward edge of the plate 98^a, and that gripper is rocked on the shaft 3 by the arms 4, the connecting-rod 5, the arms 6, and the cam 7, as fully described in another application for Letters Patent of the United States, filed contemporaneously herewith by William A. Lorenz and myself as joint inventors.

In the form of machine shown in Figs. 1, 2, and 3 the side holders 517 and 518 are rocked horizontally on the upper ends of the shafts 519 and 520, respectively, while the shaft 519

is rocked by the arm 521 and the cam 522, and the shaft 519 rocks the shaft 520 by means of the arms 523 and 524, which are attached to those shafts, respectively, and by means of the rod 525, which connects those arms. In this form of the machine the lower sides of the working ends of the side holders 517 and 518 are inclined downward and inward, so as to fit the downward and backward inclination of the rearward edge of the forward part of the carriage 80. This form of the side holders 517 and 518, together with the parts which actuate them, as above enumerated, are also fully described in the said joint application of William A. Lorenz and myself.

In the form of machine shown in Figs. 4, 5, and 6 the side holders 517^a and 518^a are rocked vertically upon the pivots 519^a and 520^a. Their outward rocking is caused by the connecting-rods 521^a and 522^a and the levers 523^a and 524^a, and those levers are worked by the projections 525^a and 526^a from the slide 532 and 533. The inward rocking of the side holders 517^a and 518^a is caused by the same projections acting directly upon those side holders, respectively, and the side holders are held in their inward and also in their outward positions by the slides 527^a and 528^a and the spiral springs 529^a and 530^a.

In the form of machine shown in Figs. 4, 5, and 6 the side folders 530 and 531 are carried by the slides 532 and 533 in the diagonal courses indicated by the openings 534 and 535 in the side projections 80^b and 80^c of the rocking carriage 80. Those slides are provided with racks on the inner sides of their lower extensions, and are made to reciprocate by the sectors 536 and 537, fixed to the upper ends of the rock-shafts 538 and 539, while those rock-shafts are worked by the arms 540 and 541 and the cams 542 and 543. While the side folders 530 and 531 reciprocate diagonally with the slides 532 and 533, they are also caused to revolve upon their own axes in alternating directions by means of the racks 544 and 545, respectively, which are cut in the upper edges of the outward diagonal walls of the extensions 80^b and 80^c, respectively, and by means of the pinions 546 and 547, meshing with those racks.

In the form of machine shown in Figs. 1, 2, and 3 the side folders 8 and 9 are carried by the sleeves 10 and 11, respectively, and those sleeves vibrate upon the tops of the shafts 12 and 13, while those shafts are rocked by the sectors 14 and 15 and the sector-arms 16 and 17, and those arms are fixed to the shaft 18, which is rocked by the arm 19 and the cam 20. The side folders 8 and 9 not only vibrate with the sleeves which carry them, but are caused to turn in opposite directions alternately upon their axes in those sleeves by means of the sector-pinions 21 and 22, meshing with the fixed sectors 23 and 24.

The mode of operation of my improvement is as follows: A tucked paper tube of sufficient

length to make a square-bottom paper bag is placed upon the carriage 80, under the moving presser-plate 98 or the fixed presser-plate 98^a, as the case may be. In the former case the tucked paper tube is clamped to the top of the carriage by the moving presser-plate, and in the latter case it is clamped to the forward edge of the fixed presser-plate by the flange 2 of the rocking gripper 1, and it is also held down upon the forward part of the carriage by the side holders 517 and 518 or 517^a and 518^a, as the case may be. The way in which the side holders 517 and 518 are made to grip and to release the paper-bag blank is described in the said joint application of William A. Lorenz and myself. The side holders 517^a and 518^a are made to grip the lower folds of the tucked paper tube at their indicated localities when the projections 525^a and 526^a collide with the upper and outer sides of the holders 517^a and 518^a, respectively, and that colliding occurs whenever the slides 532 and 533 reach the forward ends of their strokes, and the side holders 517^a and 518^a are caused to release the paper-bag blank when the projections 525^a and 526^a collide with the upper ends of the levers 523^a and 524^a, respectively, and that colliding occurs when the slides 532 and 533 reach the rearward ends of their strokes. The bag-blank being thus held in position upon the carriage 80 by the presser-plate 98 or the presser-plate 98^a, as the case may be, and by the side holders 517 and 518 or the side holders 517^a and 518^a, as the case may be, the working ends of the side folders 530 and 531 or the side folders 8 and 9, as the case may be, are carried into the adjacent tucks of the paper-bag blank, respectively, to a position forward of the forward edge of the presser-plate 98 or 98^a, as the case may be. This is accomplished in the case of the side folders 530 and 531 by the forward and inward movement of the slides 532 and 533, and that forward and inward movement is produced by the sectors 536 and 537, the shafts 538 and 539, the arms 540 and 541, and the cams 542 and 543. The forward and inward movement of the side folders 530 and 531 occurs before the paper-bag blank is clamped by the presser-plate 98 and the side holders 517^a and 518^a, and during that forward and inward movement the working ends of the side folders 530 and 531 pass under the presser-plate 98. Where the side folders 8 and 9 are used, their working ends enter the adjacent tucks of the paper-bag blank from the positions indicated by the forward ends of the curved broken lines which in Fig. 3 indicate the arcs of circles through which those side folders vibrate. When in the backward swings of their vibration the working ends of those side folders reach the forward edge of the presser-plate 98^a, the flange 2 of the rocking gripper 1 has clamped the paper-bag blank against the forward edge of the presser-plate 98^a, and the side holders 517 and

518 have clamped the lower folds of the tucks of the paper-bag blank down upon the forward part of the carriage. Then the continuation of the backward swing of the side folders 8 and 9 operates to fold backward over the forward edge of the presser-plate the upper ply of the tucked paper tube, and also operates to fold backward a triangular portion of each of the lower plies of the upper folds of the tucks. This folding backward is accomplished against the resistance of the side holders 517 and 518 and results in the production of the inwardly-inclined triangular folds of the well-known diamond form of a tucked paper-bag blank. When the side folders 530 and 531 are employed, the same function is performed by them that is performed by the side folders 8 and 9, and the only difference in the operation consists in the fact that the working ends of the side folders 530 and 531 pass backward over the presser-plate in straight lines instead of in curved lines; but whether the side folders 530 and 531 or the side folders 8 and 9 are employed they must, according to my present invention, as they pass backward and do their work revolve upon their own axes, so as to roll along over the surface of the paper beneath them as they fold the paper backward over the presser-plate. Thus by the use of the mechanism in Figs. 1, 2, and 3 or by the use of the mechanism shown in Figs. 4, 5, and 6 of the drawings one end of the tucked paper-bag blank is opened out into the box-like form shown in Figs. 3, 4, and 5. That box-like form may be folded down into the well-known diamond form of a tucked paper-bag blank, and that diamond form may be folded and pasted into the form of a square-bottom paper bag by other machinery already well known in the art.

It is not essential that the side folders as they roll backward shall move so closely to the presser-plate beneath them as to press the paper down upon the presser-plate, and if they do move so closely as that it is not necessary to cause them to positively revolve upon their own axes by extraneous means, for in that case they will thus revolve by reason of the friction between them and the pa-

per along which they roll; but it is expedient to make the side folders revolve positively, whether they move so close to the presser-plate as to press the paper down upon it or not, and such positive revolution may be imparted to them by other extraneous means than those shown in the drawings.

It is essential that the ends of the rolling side folders shall be rounded, so as not to abrade the paper while doing their work thereon, and it is also essential that those rolling side folders shall be so mounted as to vibrate together into the tucks of the tucked paper tube and then to vibrate apart out of those tucks while they do their work upon the paper. Therefore where those rolling side folders vibrate upon pivots those pivots must be nearly or quite parallel to each other, and where they vibrate with slides those slides must reciprocate in nearly or quite the same horizontal plane.

I claim as my invention—

1. A pair of oppositely-disposed, round, slender, end-rounded, outside-rolling side folders constructed and mounted to vibrate together to enter the tucks of a tucked paper tube and then to vibrate apart out of those tucks and to roll upon their own axes as they thus vibrate and to turn the upper folds of those tucks backward as they thus withdraw therefrom, all substantially as described.

2. The combination of the rolling side folders 530 and 531, the slides 532 and 533, provided with bearings for the rollers and with racks for their own propulsion, the sectors 536 and 537, meshing with those racks, the rock-shafts 538 and 539, working those sectors, the arms 540 and 541, rocking those shafts, and the cams 542 and 543, working those arms, all substantially as described.

3. The combination of the side holder 518^a, turning upon the pivot 520^a and worked by the rod 522^a, the lever 524^a, and the projection 526^a of the slide 533, all substantially as described.

Hartford, Connecticut, July 21, 1890.

EDWARD E. CLAUSSEN.

Witnesses:

ALBERT H. WALKER,
PHOEBE A. PHELPS.