

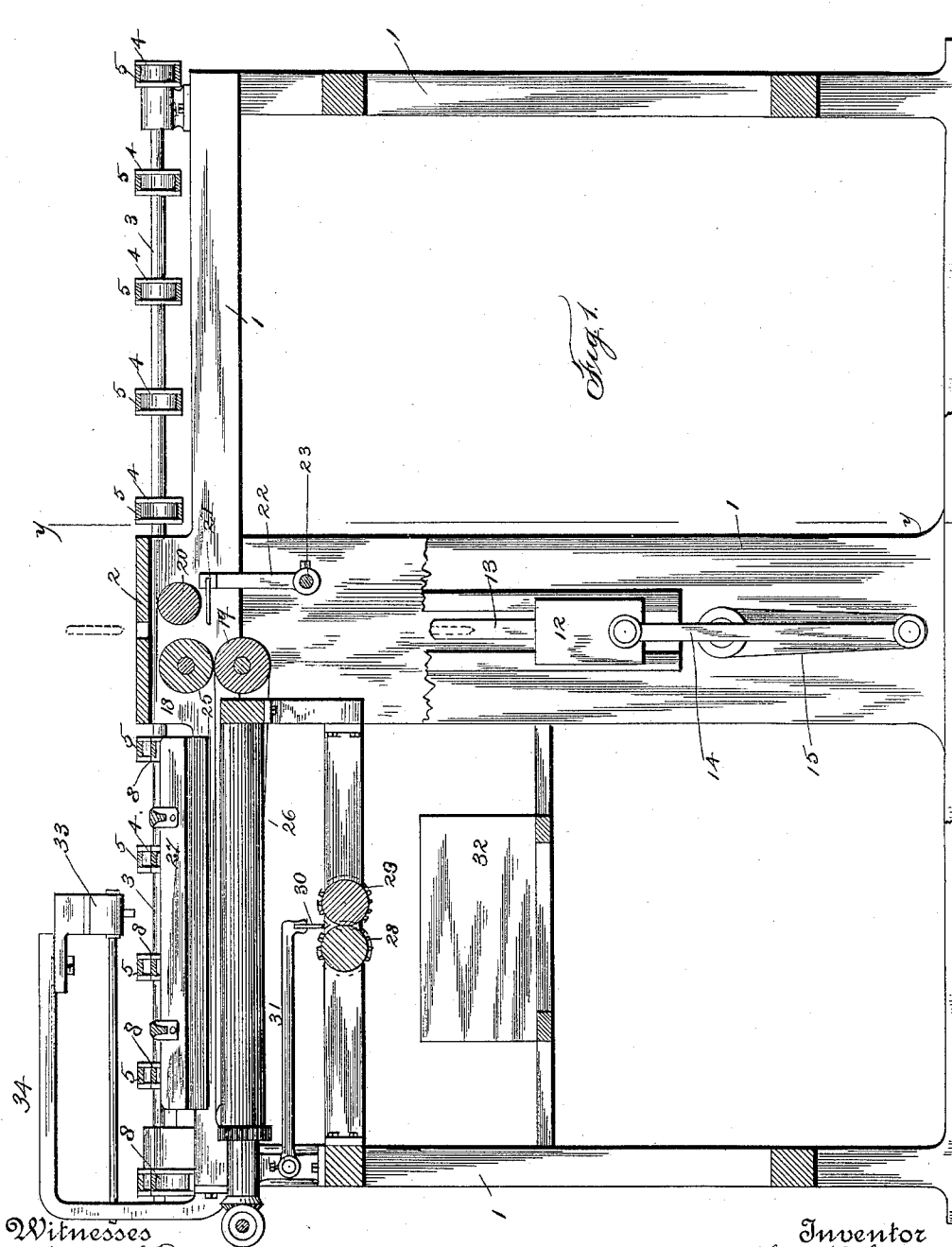
(No Model.)

4 Sheets—Sheet 1.

J. H. STONEMETZ.
PAPER FOLDING MACHINE.

No. 465,635.

Patented Dec. 22, 1891.



Witnesses
Walter S. Bowen
R. H. Southgate

Inventor
John H. Stonemetz
By his Attorney
Louis W. Southgate

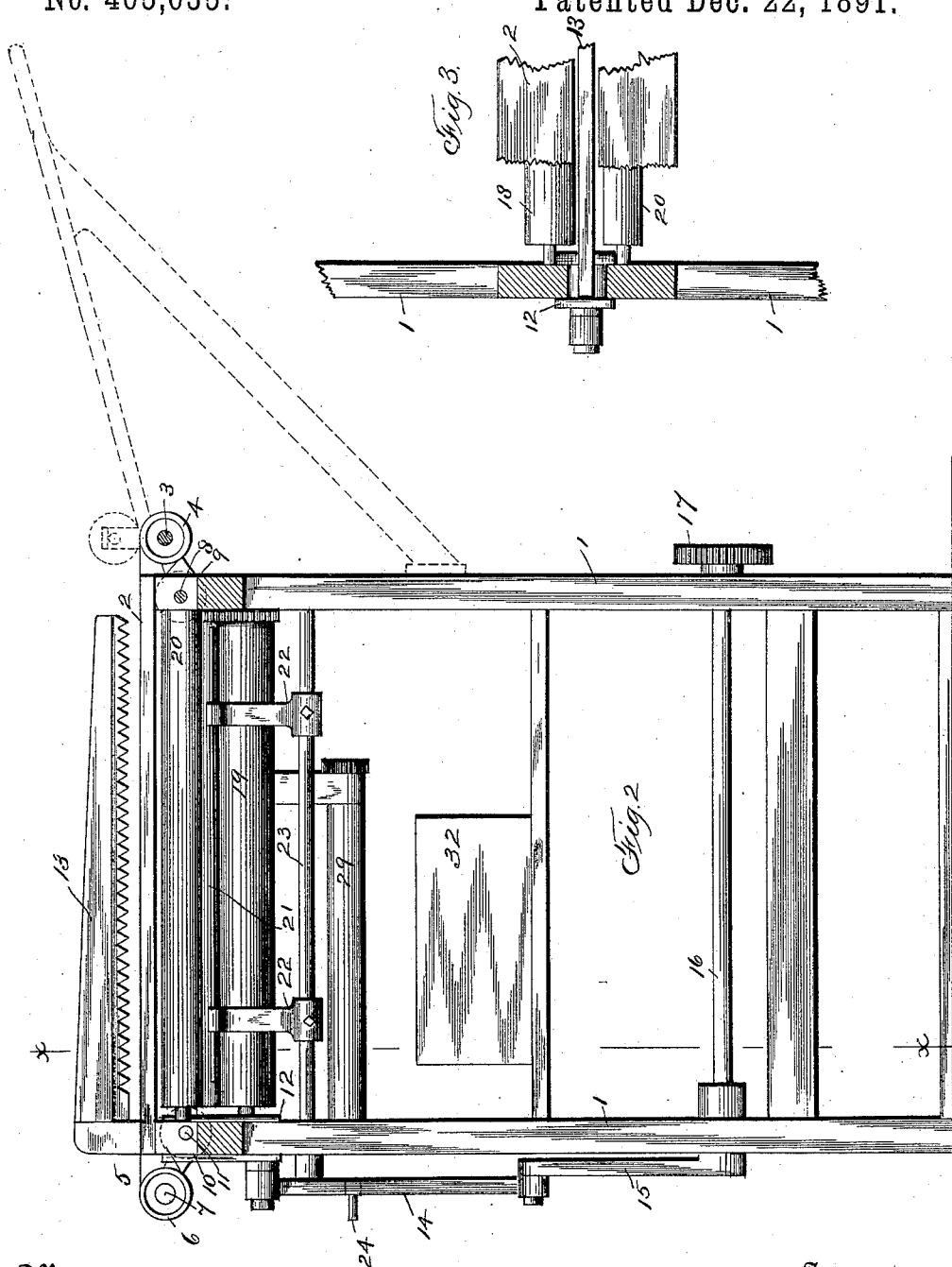
(No Model.)

4 Sheets—Sheet 2.

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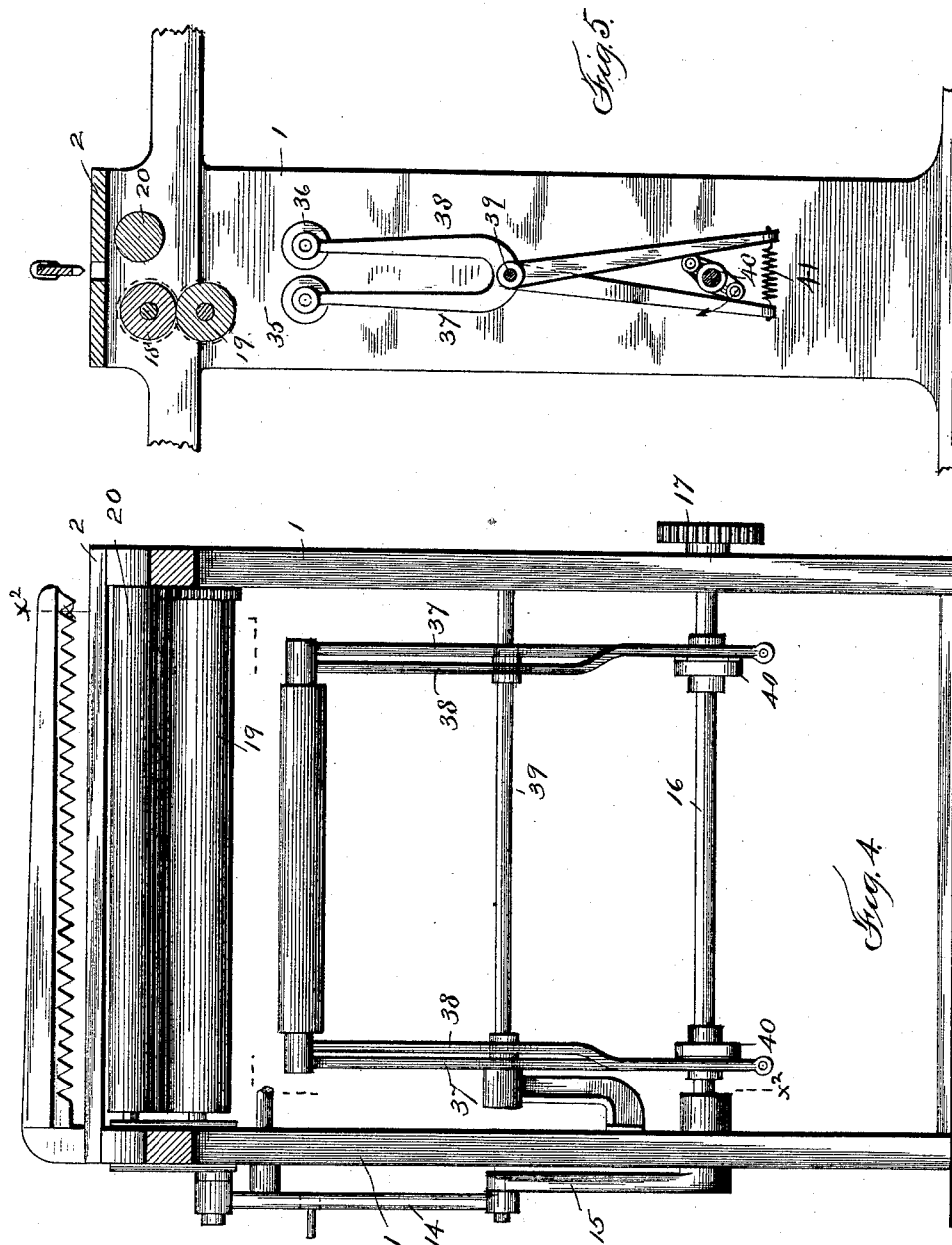
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4 Sheets—Sheet 3.

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4 Sheets—Sheet 4.

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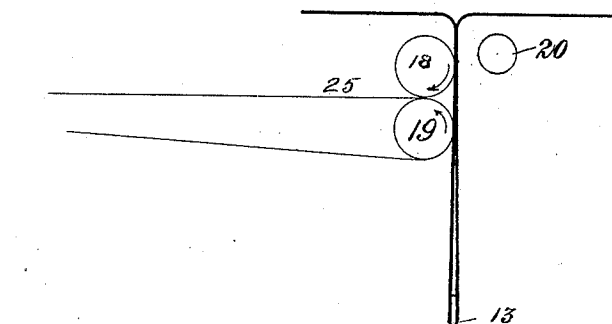
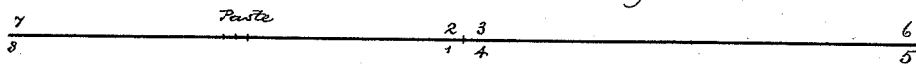


Fig. 6.

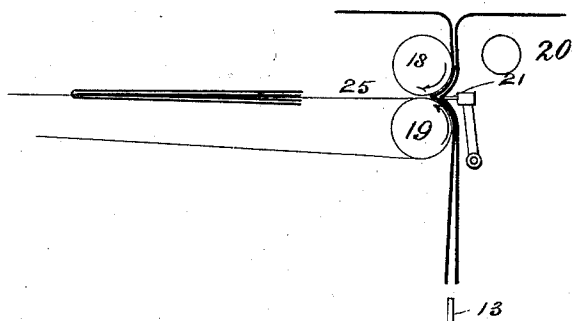
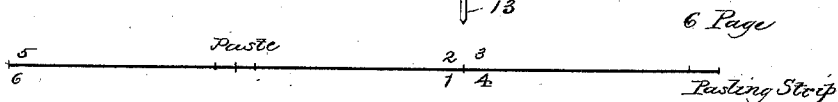


Fig. 7.



6 Page

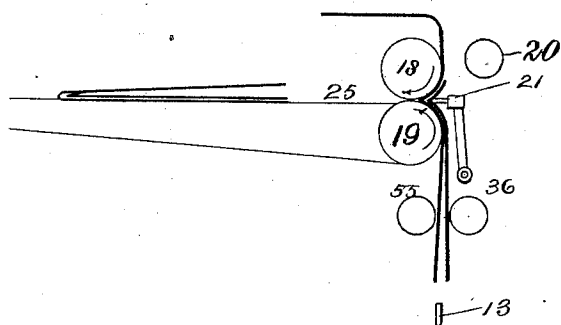


Fig. 8.

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UNITED STATES PATENT OFFICE.

JOHN H. STONEMETZ, OF MILLBURY, MASSACHUSETTS, ASSIGNOR TO THE
STONEMETZ PRINTERS MACHINERY COMPANY, OF SAME PLACE.

PAPER-FOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 465,635, dated December 22, 1891.

Application filed June 4, 1891. Serial No. 395,066. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. STONEMETZ, a citizen of the United States, residing at Millbury, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Paper-Folding Machines, of which the following is a specification.

The object of this invention is to produce a compact folding device by which a six or eight page paper can be quickly and accurately folded.

To this end the invention consists of the device described and claimed in this specification and illustrated in the accompanying drawings, in which—

Figure 1 is a sectional elevation on line X X of Fig. 2. Fig. 2 is a sectional elevation on line Y Y of Fig. 1, looking toward the left. Fig. 3 is a plan of part of the reciprocating knife. Fig. 4 is an end elevation of the sheet guiding or supporting device. Fig. 5 is a section on line X² X² of Fig. 4, looking to the right. Figs. 6 and 7 are diagrammatic views of the way an eight-page paper is folded, and Fig. 8 is a diagrammatic view of the way a six-page paper is folded.

In detail, 1 represents a framing suitably formed to support the mechanism. The frame is carried up in its center, and bolted across the same is the slotted guide-plate 2. On one side of the frame is journaled the shaft 3, which has the pulleys 4, on which run the tapes 5. These tapes 5 are endless and are carried across the machine and run around pulleys 6 on the shaft 7, journaled in suitable bearings mounted on the frame. The sheets are fed onto these tapes 5 directly from a press or from a feed-table, as indicated in dotted lines in Fig. 2, and the tapes are driven by any of the well-known mechanisms. The tapes 5 on the left-hand side of the machine are carried up over pulleys 8, journaled on the shaft 9, and the pulleys 10, journaled on the shaft 11, so that the tapes will clear the tucker-blade 27. Mounted to reciprocate in the frame is the serrated knife 13. This knife is fitted in a suitable reciprocating bearing, which works on planed ways on the side of the frame, as indicated in Fig. 1. The knife is given a reciprocating movement by means of link 14, crank 15, shaft 16, and gear 17, which

latter is driven in any suitable manner from the moving parts of the machine. Mounted in the frame under the guide-plate 2 are the folding-rollers 18 19 and a guide-roll 20. These folding-rollers 18 19 run so that their meeting peripheries move in the same line toward the left of the machine, or, in other words, are geared together. A suitable tucker-blade 21 is carried by the arms 22, mounted on shaft 23, journaled in suitable bearings on the frame, and the shaft 23 is actuated by means of crank 24 by any of the well-known tucker-blade-operating mechanisms. This tucker-blade starts the sheets between the folding-rolls 18 19. Running around the roll 19 are the endless tapes 25, which carry the sheets over the top of the folding-rollers 26. These folding-rollers are geared to run together, and a suitable tucker 27 starts the sheets between these rollers. From the rollers 26 the sheets are carried under the tucker 30 and over the folding-rollers 28 29.

The tucker-blade 30 is carried by the arms 31 and is operated in any suitable manner. The sheets drop from the folding-rollers 28 29 into a suitable receiving-box 32. The operation of these folding-rollers and their tucker mechanism is so well understood that the same will not be further described; but it may be noted that instead of the two pairs of rolls shown any desired number of pairs may be used and arranged in the usual manner, so as to give the sheets the desired number of folds.

A suitable paste-box 33 is adjustably mounted on bracket 34, so that a line of paste will be deposited on the sheet at the point indicated as the same passes onto the machine. A set of guiding or supporting rolls 35 36 is mounted on pairs of arms 37 38, journaled on the fixed shaft 39. These arms 37 38 extend down and straddle the crank-shaft 16, and on the crank-shaft are the cams 40, which bear against these arms. The rolls 35 36 are pulled together by the springs 41. The cams on the shaft 16 are so set that the rolls 35 36 will bear on the sheet as soon as the knife 13 passes through the same on its downward movement; but as soon as the knife reaches its lowest extreme the same will open and allow the sheets to pass up into the rolls 18 19, and also the knife 13 to pass back between the same. As the

rolls 35 and 36 are loosely mounted in their bearings, they will not hold the sheet back, so that the sheet will be severed by the continued action of the knife; but the rolls will turn with the sheet, and thus will act to hold the upper part of the sheet in proper position, so that the folded sections will not slip on each other. Now the sheet will be cut in two, as before described, and at this instant the tucker 22 acts, as before described. Thus the sections of the sheet will be held during the entire operation. Also, at the same instant that the tucker 22 acts the rolls 35 and 36 will be separated. This is necessary because the motion of that part of the sheet that is held by the rolls is, by the action before noted, reversed, and if the sheet were still held by the rolls 35 and 36 the momentum of the said rolls would still keep the same turning in the same direction that they were turned by the sheet passing down between the rolls, and this motion would derange the sections of the sheet as the same is drawn up by the tucker 22 and the folding-rollers. These guiding or supporting rolls are very useful where a six-page paper is to be folded, as the same then hold the middle leaf of the paper against displacement, and of course, if desired, they may be also used where an eight-page paper is to be folded.

The operation of folding an eight-page paper will now be described. The printed sheets, as indicated in Fig. 6, are fed onto the machine and the paste-box deposits a line of paste at the point indicated. The sheet is then folded and carried by the knife 13 to the lowest point of its travel, as shown in Fig. 6, and here the tucker 21 starts the sheets between the rolls 18 20. As the knife 13 is driven from a crank movement, the same is stationary for an instant when the same is at its lowest point of travel, and as the sheet is struck between and caught by the rolls 18 20 the same will be pulled from the knife 13 and the sheet severed on the line that has been carried down by the knife. The knife 13 is serrated or otherwise formed so that this will readily take place. The double sheet thus formed passes between the rolls 18 19 and is thus given another fold, and is carried by the tapes 25 to the folding mechanism before described, and is here given any further desired number of folds and deposited in the box 32. Thus it will be seen that no further cutting is necessary and that an eight-page paper is very speedily pasted, cut, and folded. The six-page paper, printed as indicated in Fig. 8, has a small pasting-strip left on one end. The six-page sheets are fed onto the machine and a line of paste deposited on the same, as before described in connection with the eight-page paper. The sheets are then carried down by the knife 13 in front of

the folding-rollers 18 19, and the sheet is then tucked between these folding-rollers by the tucker 21, thus severing the sheet on the line carried down by the knife 13. The sheet is then carried between these folding-rollers 18 19, and is thus given the next fold. The pasting-strip holds the middle sheet in place, as indicated in Fig. 8. From the tapes 25 the sheet is further folded and delivered, as before described in connection with the eight-page sheet. The function of the rollers 35 36 is to hold that part of the sheet which is to be the middle leaf in place as the same is carried down by the knife 13, as before described, and as will be readily understood. Thus it will be seen that a machine is provided that will paste, cut, and fold either a six or eight page paper in a very rapid and accurate manner.

The details of construction herein shown may be greatly varied by a skilled mechanic without departing from the scope of my invention.

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

1. The combination, in a folding-machine, of the two horizontal folding-rollers, a vertically-reciprocating knife for drawing a sheet in front of said rollers, a guiding and supporting device mounted below said rollers and adapted to hold that part of the sheet which is drawn below the rollers, and means for tucking the double sheet thus formed between said rollers, substantially as described.

2. In a folding-machine, the combination of the two rollers, the knife for drawing a double sheet in front of said rollers, and the operating mechanism of the said knife, a sheet guiding or supporting device arranged below said rollers, connections whereby the same will be operated from said knife-operating mechanism, and the tucker for starting the double sheet thus formed between said folding-rollers, substantially as described.

3. In a paper-folding machine, the combination of the two rollers, the knife for drawing a double sheet in front of said rollers, the operating mechanism thereof, consisting of the link, crank, and crank-shaft, the guiding or supporting rollers mounted below said folding-rollers, cams on the crank-shaft, connections between said cams and said rollers, whereby the same are operated, and tucker mechanism for starting the sheets between said rollers, substantially as described.

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

JOHN H. STONEMETZ.

Witnesses:

LOUIS W. SOUTHGATE,
JAMES J. RAFFERTY.