

(No Model.)

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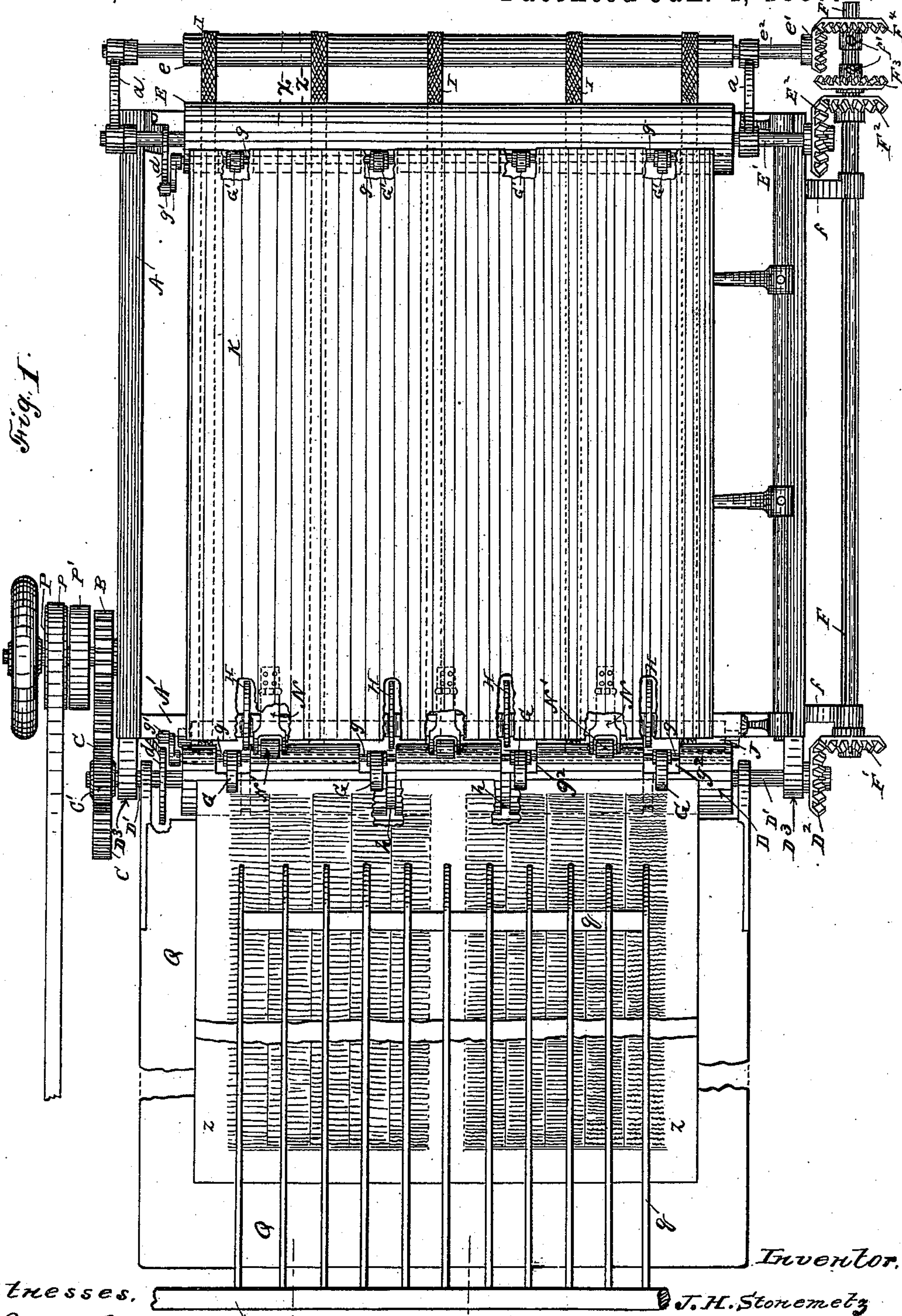
J. H. STONEMETZ.

DOUBLE FEED MECHANISM FOR PAPER FOLDING MACHINES.

No. 355,422.

Patented Jan. 4, 1887.

Fig. 1.



Inventor.

Witnesses.

John S. Rilling  
H. W. Thompson

J. H. Stonemetz

Per J. H. Stonemetz

Atty.

(No Model.)

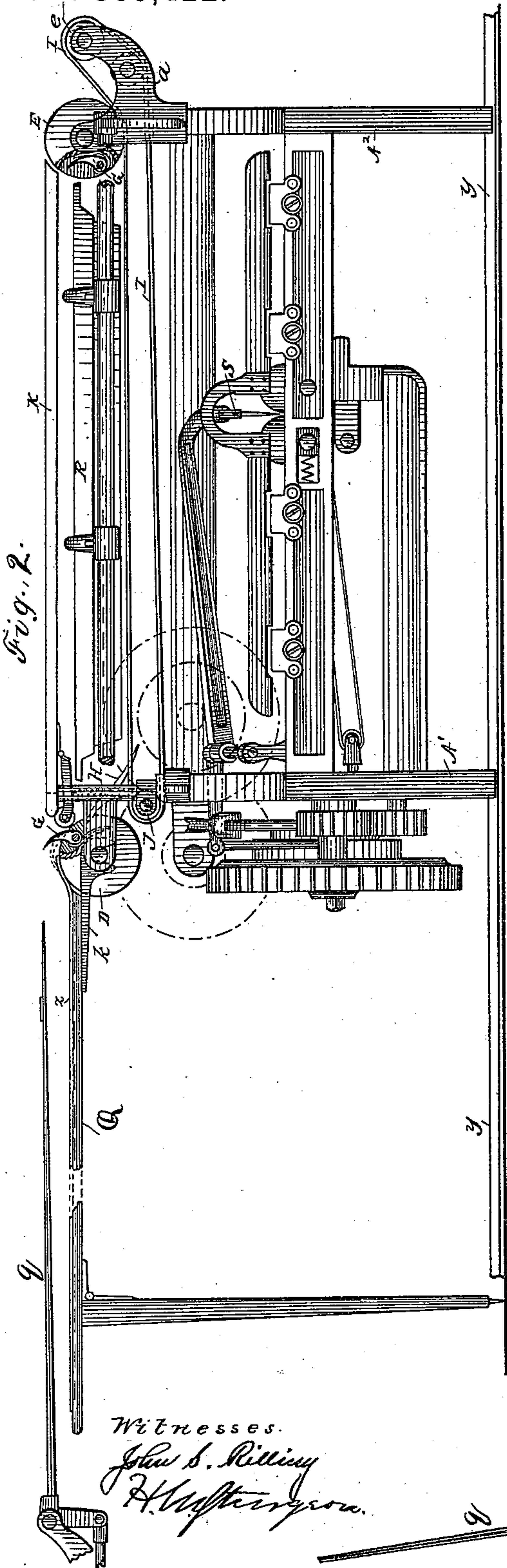
3 Sheets—Sheet 2.

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DOUBLE FEED MECHANISM FOR PAPER FOLDING MACHINES.

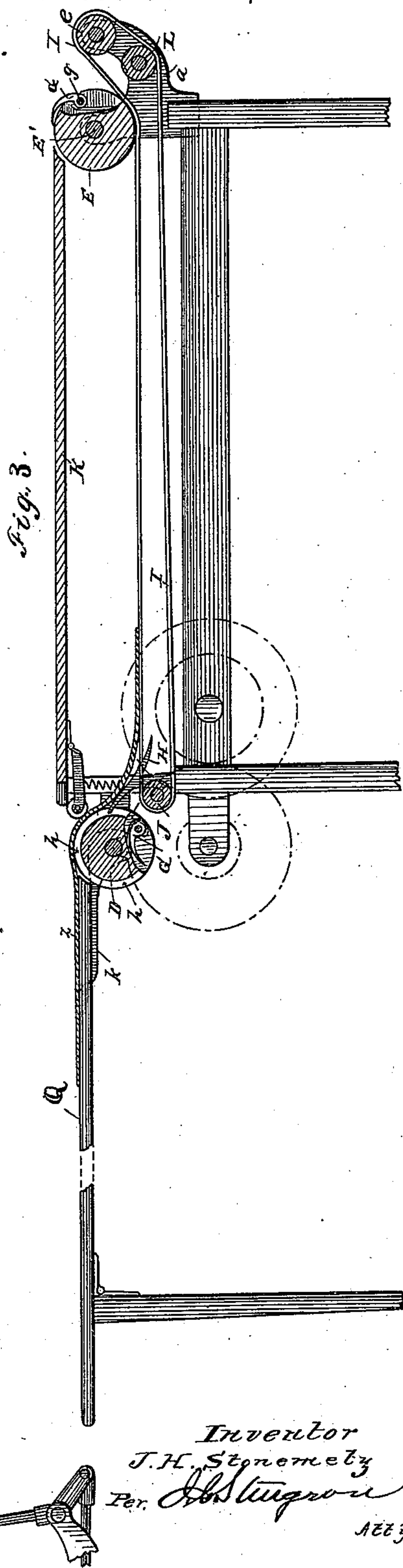
No. 355,422.

Patented Jan. 4, 1887.



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(No Model.)

3 Sheets—Sheet 3.

J. H. STONEMETZ.

DOUBLE FEED MECHANISM FOR PAPER FOLDING MACHINES.

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Patented Jan. 4, 1887.

Fig. 5.

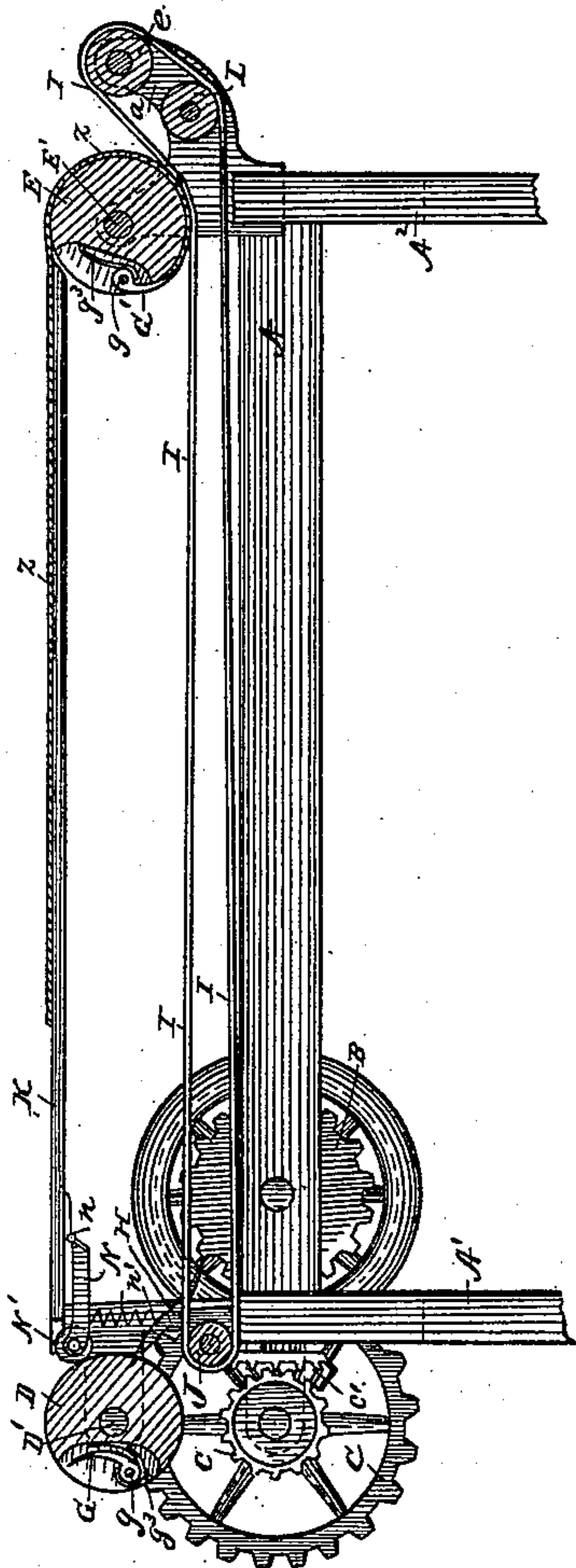
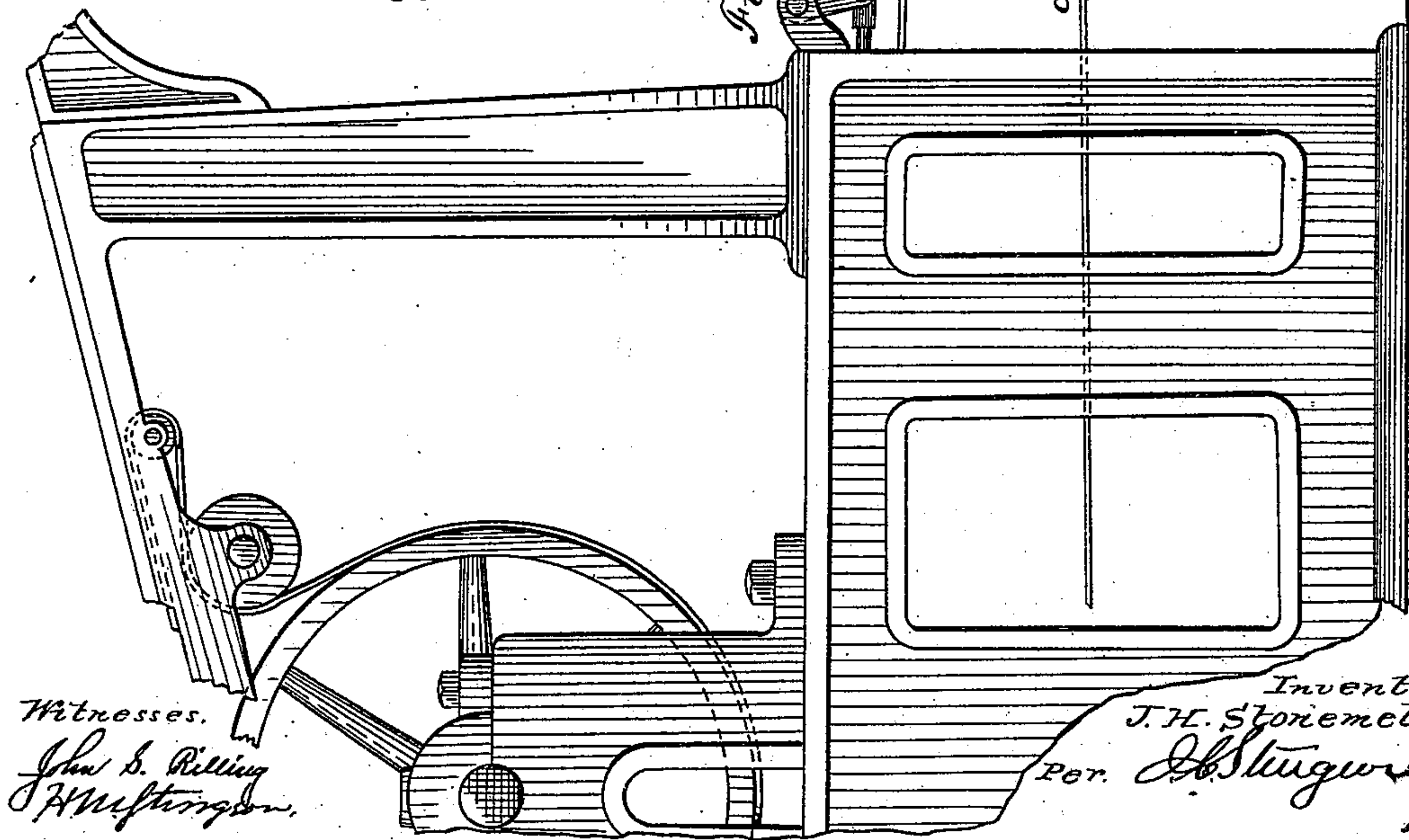
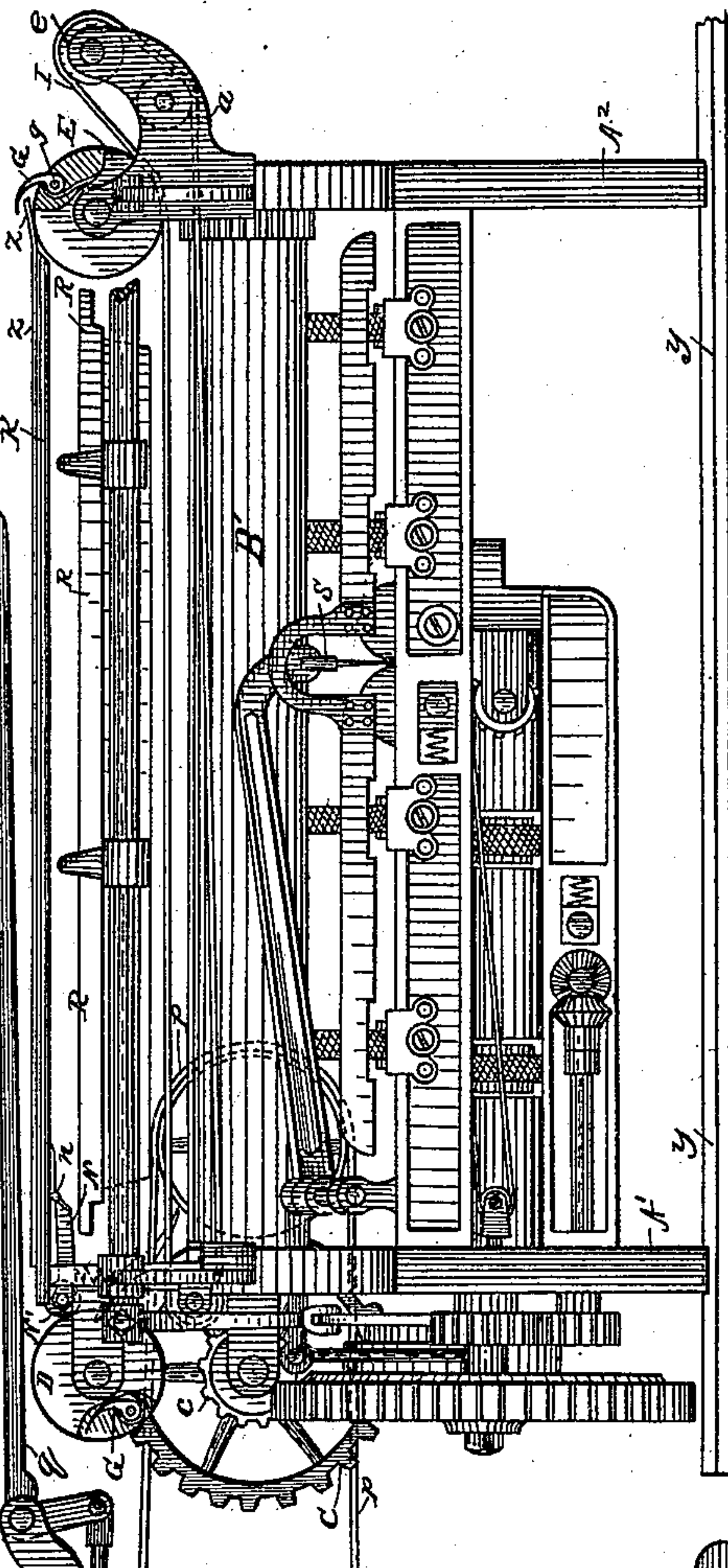


Fig. 4.



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1163



# UNITED STATES PATENT OFFICE.

JOHN H. STONEMETZ, OF ERIE, PENNSYLVANIA.

## DOUBLE-FEED MECHANISM FOR PAPER-FOLDING MACHINES.

SPECIFICATION forming part of Letters Patent No. 355,422, dated January 4, 1887.

Application filed January 2, 1886. Serial No. 187,370. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. STONEMETZ, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Double-Feed Mechanisms for Paper-Folding Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming part of this specification.

My invention relates to paper-folding machines, and particularly to sheet-receiving and feeding mechanism therefor; and it consists in the improvements hereinafter set forth and explained.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a top or plan view of a paper-folding machine embodying my improvements. Fig. 2 is an end view thereof in elevation. Fig. 3 is a vertical transverse section of same on line *x x* in Fig. 1. Fig. 4 is an end view of my improved machine attached to a printing-press. Fig. 5 is a vertical transverse section of same on line *z z* in Fig. 1.

Like letters refer to like parts in all the figures.

In the construction of my improved paper-folding machine hereinafter described the folding-blade and folding-roll mechanism is substantially like that ordinarily used in Stonemetz's paper-folding machines, my invention relating principally to improvements in feed mechanism for taking the sheets directly from the fly of a printing-press and conveying them into the folding-machine.

Heretofore in the construction of paper-folding machines the feed mechanism of the folder has been constructed to suit the particular press to which it was to be connected, and if the heading was printed with the last side of the sheet intermediate conveyer mechanism had to be used to convey the sheets from the press into the folder, while if the machine was to be used as a hand-feed machine it had to be specially constructed therefor.

In the improved machine hereinafter shown and described all these features are combined,

adapting the machine to be attached to the press so as to take the sheet directly from the fly whether the heading is printed with the first or last side of the sheet, and also to be entirely detached from the press and used as a hand-feed machine.

In the construction of my improved paper-folding machine,  $A^1$   $A^2$  are the side frames, and  $A$   $A$  the end frames, of the machine. Near the top of the side frame  $A^1$ , and on the outside of the same, are brackets  $D^3$   $D^3$ , in which is mounted a gripper-roller,  $D$ , this roller  $D$  being driven by a spur-gear,  $C'$ , on the shaft thereof, intermeshing with the gear-wheel  $C$ , which intermeshes with and is driven by the gear-wheel  $B$  on the main shaft of the machine. The gripper-roller  $D$  is provided at intervals with recesses  $g^2$ , in which recesses grippers  $G$  operate, these grippers  $G$  being mounted on a small shaft or rod,  $g$ , journaled in the roller  $D$ . The grippers  $G$  are kept normally closed by springs  $g^3$ , which operate in the recesses behind the grippers to close them, the shaft  $g$  extending out from one end of the roller  $D$ , where it is provided with an arm and friction-roller,  $g'$ , which operates on a cam,  $d$ , attached to the frame  $A^1$ , to open the grippers  $G$  at the proper time for seizing a sheet. The gripper-roller  $D$  is also provided with grooves  $h$  at intervals, in which sheet-deflectors  $H$  operate. Attached to the under side of the table  $K$ , by means of hinged brackets  $N$ , are friction-rollers  $N'$ , these rollers being held in contact with the roller  $D$  by spiral springs  $n'$ , and are driven by frictional contact with the roller  $D$ .

In the upper portion or top of the side frame  $A^2$  are bearings, in which is mounted another gripper-roller,  $E$ . This gripper-roller is constructed in all respects like the gripper-roller  $D$ , hereinbefore described, having grippers  $G$  upon a shaft or rod,  $g$ , journaled in the roller, the grippers being provided with gripper-springs and with an arm and frictional-roller operating upon a cam-surface,  $d$ , which is attached to the frame  $A^2$ . The gripper-roller  $E$  is connected with the gripper-roller  $D$  by a cross-shaft,  $F$ , provided with miter-gears  $F'$   $F^2$ , intermeshing with like gears on the shafts of the rollers  $D$  and  $E$ .

The upper portion of the frame  $A^2$  is also provided with brackets  $a$ , adapted to sustain tape-rollers  $e$  and  $L$ . The tape-roller  $e$  is pro-



vided with a bevel-gear,  $e'$ , which is adapted to intermesh with the bevel-gears  $F^3$  and  $F^4$  upon the shaft  $F$ , and by which it may be driven, the gears  $F^3$   $F^4$  being movably secured by set-screws  $f'$ , by means whereof either may be placed in or out of mesh with the gear  $e'$ . The tape-roller  $L$  is driven by frictional contact with the tapes  $I$ . The tapes  $I$  pass around the roller  $e$  and under the gripper-roller  $E$ , around the friction-roller  $L$ , over the first set of folding-rolls  $B'$ , to and around the tape-roller  $J$  at the opposite side of the machine, the tape-roller  $J$  being located near to and somewhat lower than the gripper-roller  $D$ .

The machine is also provided with a flat table-top,  $K$ , which extends from a point near the gripper-roller  $D$  to the gripper-roller  $E$ , and serves as a receiving or fly table, upon which the fly of the press deposits the sheet when desired, or which may be used as a feed-table when feeding the machine by hand.

The construction of the other mechanism of the machine is substantially the same as that ordinarily used in Stonemetz's paper-folding machines, and a detailed description thereof is deemed unnecessary.

The operation of my improved paper-folding machine is as follows: When it is desired to fold sheets having the heading printed with the first side, the folder is placed at the rear of the printing-press, with a fly-table,  $Q$ , between the press and folder, substantially as illustrated in Figs. 1, 2, and 3, so that the press-fly  $q$  will deposit the sheets upon the fly-table  $Q$  with one edge of the sheet resting upon the gripper-roller  $D$ , as illustrated in Figs. 1 and 2, where the grippers  $G$  grasp it and carry it around the roller  $D$  until the edge of the sheet passes between the roller  $D$  and the small friction-rollers  $N'$ , when the action of the gripper-lever  $g'$  upon the cam-surface  $d$  opens the grippers  $G$ , releasing the sheet, which is carried along by the rollers  $D$  and  $N'$ , guided by the sheet-deflector  $H$ , as illustrated in Fig. 3, upon the conveyer-tapes  $I$ , which carry it under the first folding-blade,  $R$ , which tucks it between the first set of folding-rolls  $B'$ , from whence it passes through the remaining folding-rolls of the machine. I can, however, if it is desired to fold sheets having the heading printed with the last side, place the folding-machine close to the rear of the press, (the fly-table  $Q$  being removed,) substantially as shown in Fig. 4, so that the press-fly  $q$  will deposit the sheets upon the table  $K$  with one edge of the sheet resting upon the gripper-roller  $E$ , as illustrated in Fig. 4. The bevel gear-wheel  $F^4$  is at the same time shoved back out of mesh with the gear  $e'$  and the gear-wheel  $F^3$  shoved up into mesh therewith, so as to reverse the movement of the first set of carrier-tapes  $I$ . When so adjusted, the press-fly  $q$  deposits the printed sheet upon the table  $K$ , with one of its edges resting upon the gripper-roller  $E$ , as shown in Fig. 4, when it is grasped by the grippers  $G$  therein, and carried around the roller  $E$  until the edge of the sheet

passes between the roller  $E$  and the carrier-tapes  $I$ , as shown in Fig. 5, when the action of the gripper-lever  $g'$  upon the cam-surface  $d$  opens the grippers  $G$ , thereby releasing the sheet, the action of the roller  $E$  against the carrier-tapes  $I$  moving the sheet along under the first folding-blade  $R$ , which at the proper time tucks it between the first folding-rolls  $B'$ , from whence it passes through the remaining folding-rolls of the machine.

It will be observed that in taking the sheet into the machine, as last described, the sheet is turned over in its passage to the first folding-blade, so as to bring the heading on the outside of the once-folded sheet.

In operating the folder in both of the ways described the motive power for the folder is derived by a chain belt from a pulley on the press, which connects with the driving-pulley  $P$  on the driving-shaft of the folder.

In case the folder is to be used as a hand-feed machine, the sheets may be fed either from the table  $Q$  or from the table  $K$  of the folder in the same manner as in an ordinary hand-feed folder.

Having thus described my invention, it is obvious to those skilled in the art to which it appertains that my improved machine is adapted to take the place and do the work of several different patterns of folding-machines as heretofore constructed, and also that it may be attached to and run in conjunction with a printing-press without any of the auxiliary mechanism heretofore used in connecting folding-machines to printing-presses when the heading of the sheet is printed with the last side. It is also obvious to those skilled in the art to which my invention appertains that many modifications in the construction of my improvement may be made and good results be attained therewith, without departing from the spirit of my invention. Therefore I do not desire to confine myself to the exact construction shown, my invention principally consisting in so constructing a paper-folding machine with a double-feed mechanism that it is adapted to be used for any purpose for which a paper-folding machine is adapted without change of construction.

Having thus fully described my invention, so as to enable others skilled in the art to which it appertains to construct and operate the same, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination, in a paper-folding machine, of the following elements: gripper feed-rollers provided with sheet-grippers on each side of the machine with a set of carrier-tapes and mechanism for operating the same in both directions, substantially as and for the purpose set forth.

2. The combination, in a paper-folding machine, of a first set of carrier-tapes and mechanism for driving them in both directions with two separate sets of feed mechanisms, substantially as shown and described, one of which is adapted to take and turn the sheet over and



the other to take and convey the sheet into the folder without turning it over, substantially as and for the purpose set forth.

3. The combination, with a printing-press, 5 of a paper-folding machine having a fly-table on the top thereof adapted to receive sheets directly from the press-fly and a feed mechanism, substantially as shown and described, at one side of said fly-table, adapted to take 10 sheets from such fly-table and turn them over during their passage into the folder, substantially as and for the purpose set forth.

4. The combination, with a printing press, 15 of a paper-folding machine having a set of reversible carrier-tapes, a fly-table over the top of the folder adapted to receive sheets directly from the press-fly, and separate feed

mechanisms, substantially as shown and described, at each side of said fly-table, one of which feed mechanisms is adapted to take 20 sheets from such fly-table and turn them over during their passage into the folder and the other of which is adapted to take sheets from an auxiliary fly-table placed between the press and the folder and convey them into the fold- 25 ing-machine without turning them over, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. STONEMETZ.

Witnesses:

JOHN S. RILLING,  
F. W. GRANT.