

(No Model.)

2 Sheets—Sheet 1.

G. E. JONES.
Paper Folding Machine.

No. 229,419.

Patented June 29, 1880.

Fig. 2.

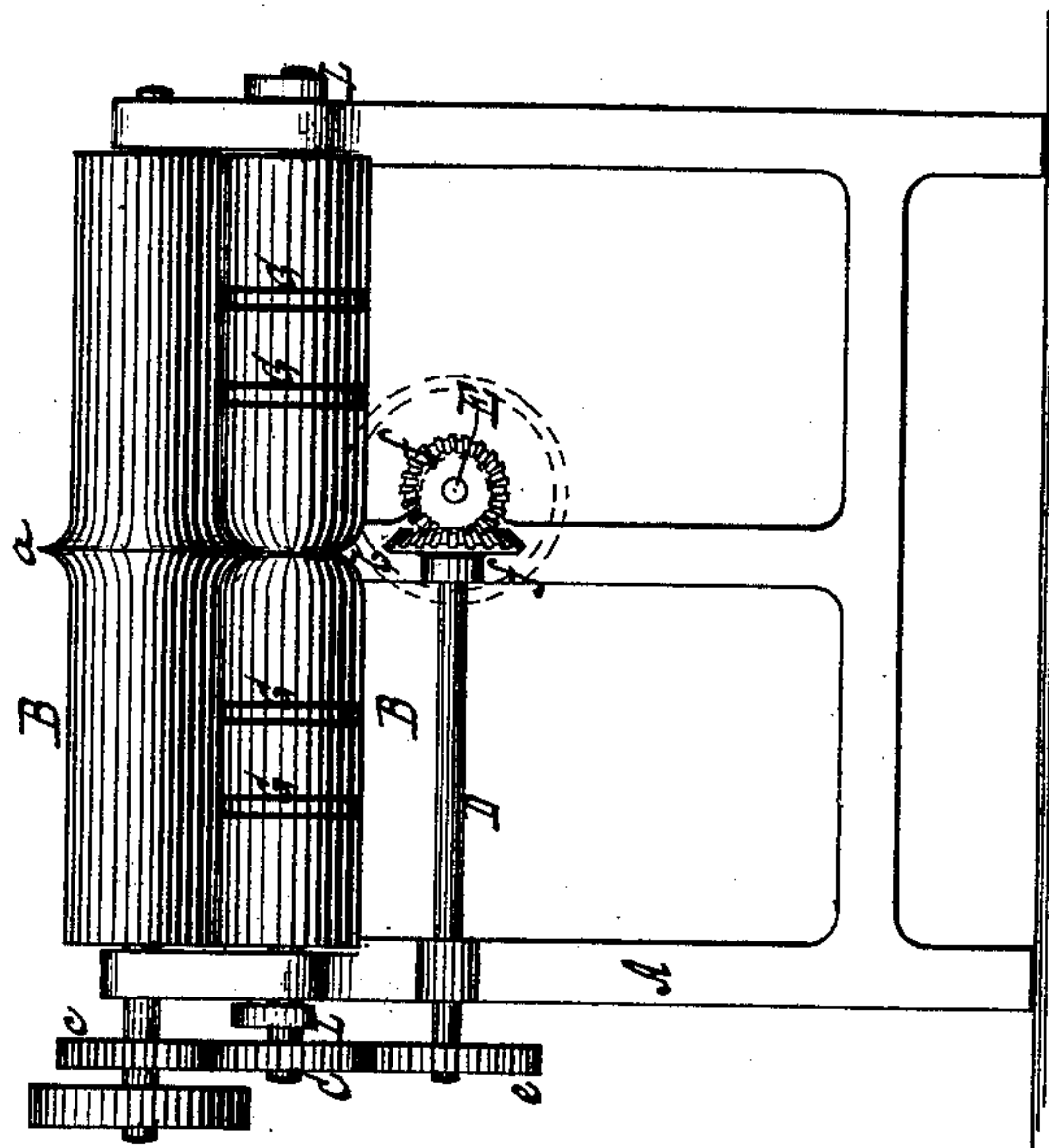
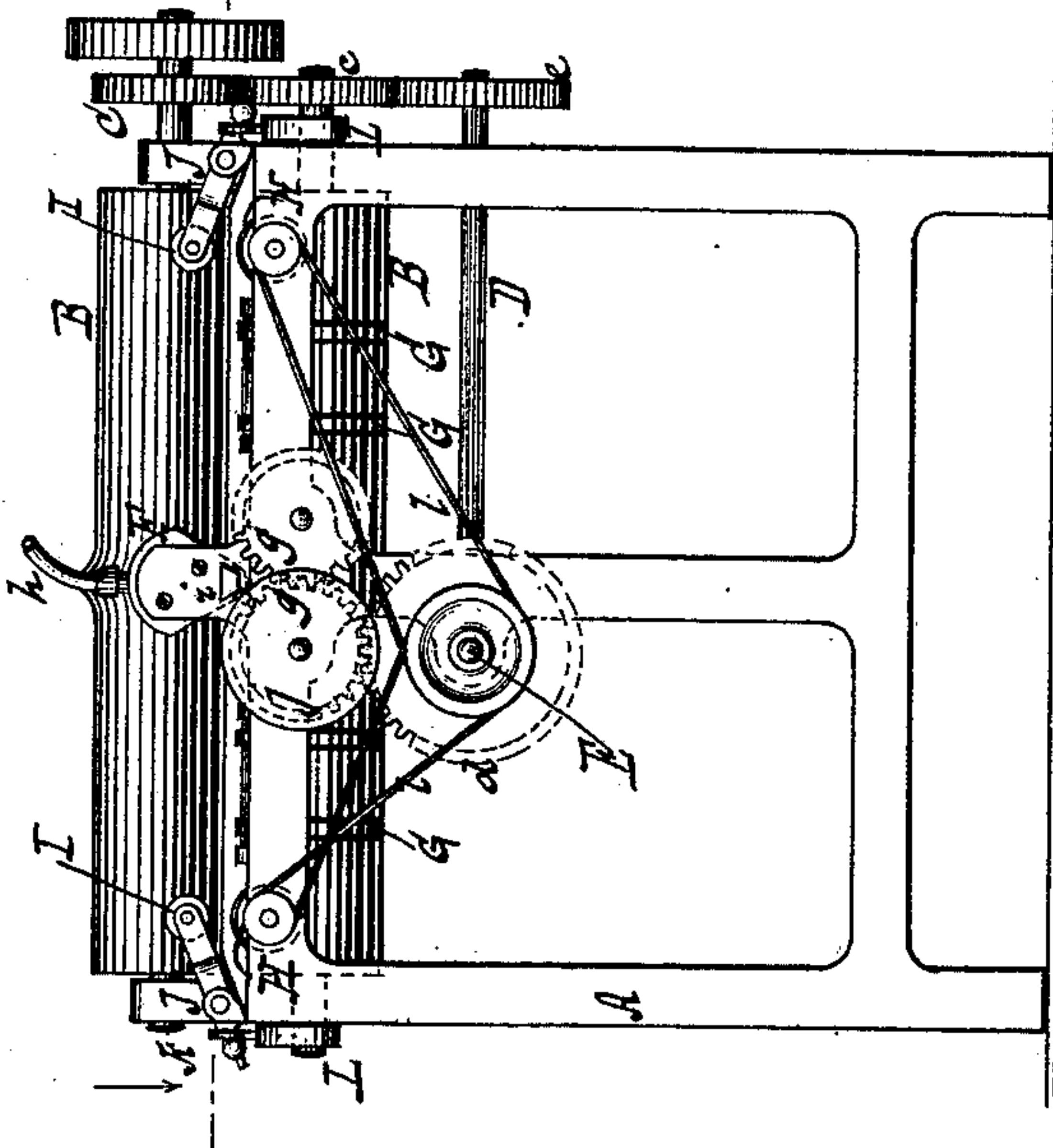


Fig. 1.



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his attorneys.

(No Model.)

2 Sheets—Sheet 2.

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Paper Folding Machine.

No. 229,419.

Patented June 29, 1880.

Fig. 3.

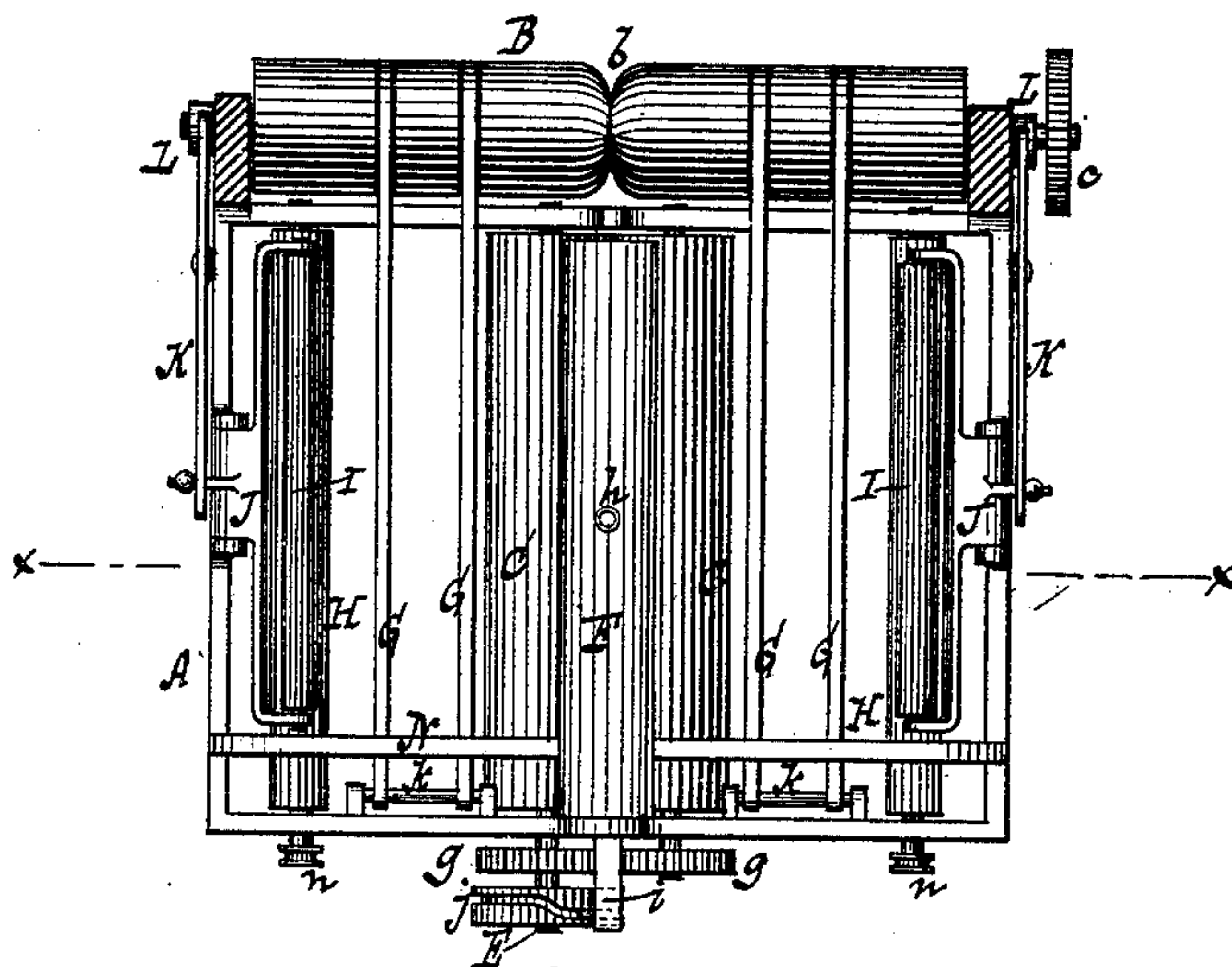


Fig. 5.

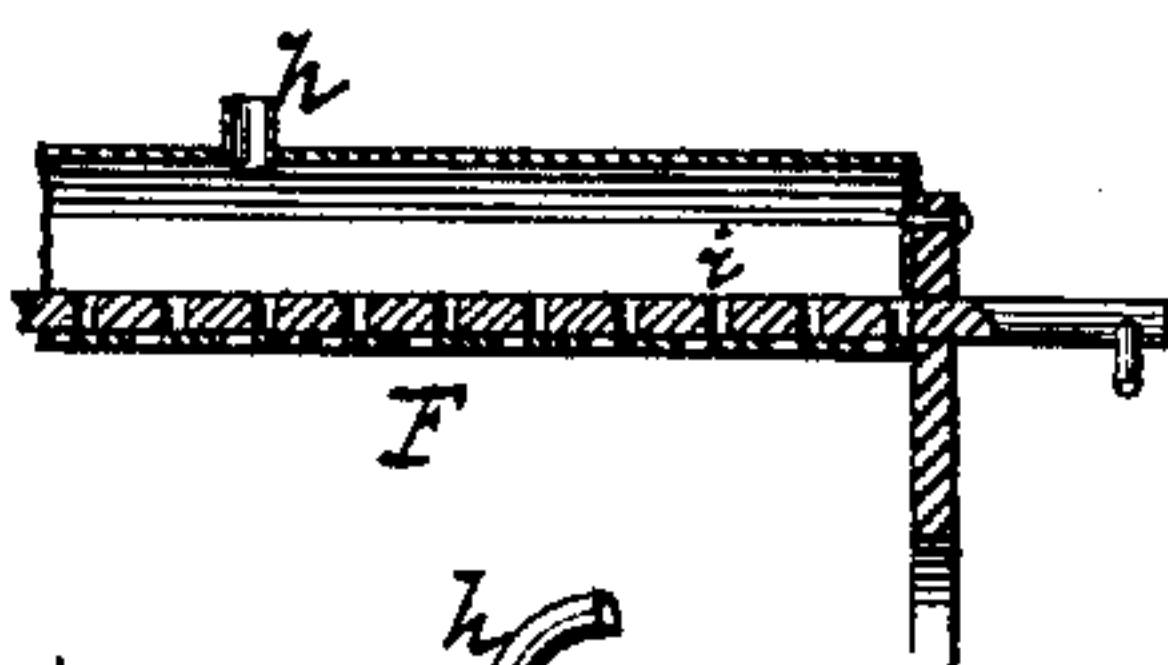


Fig. 4.

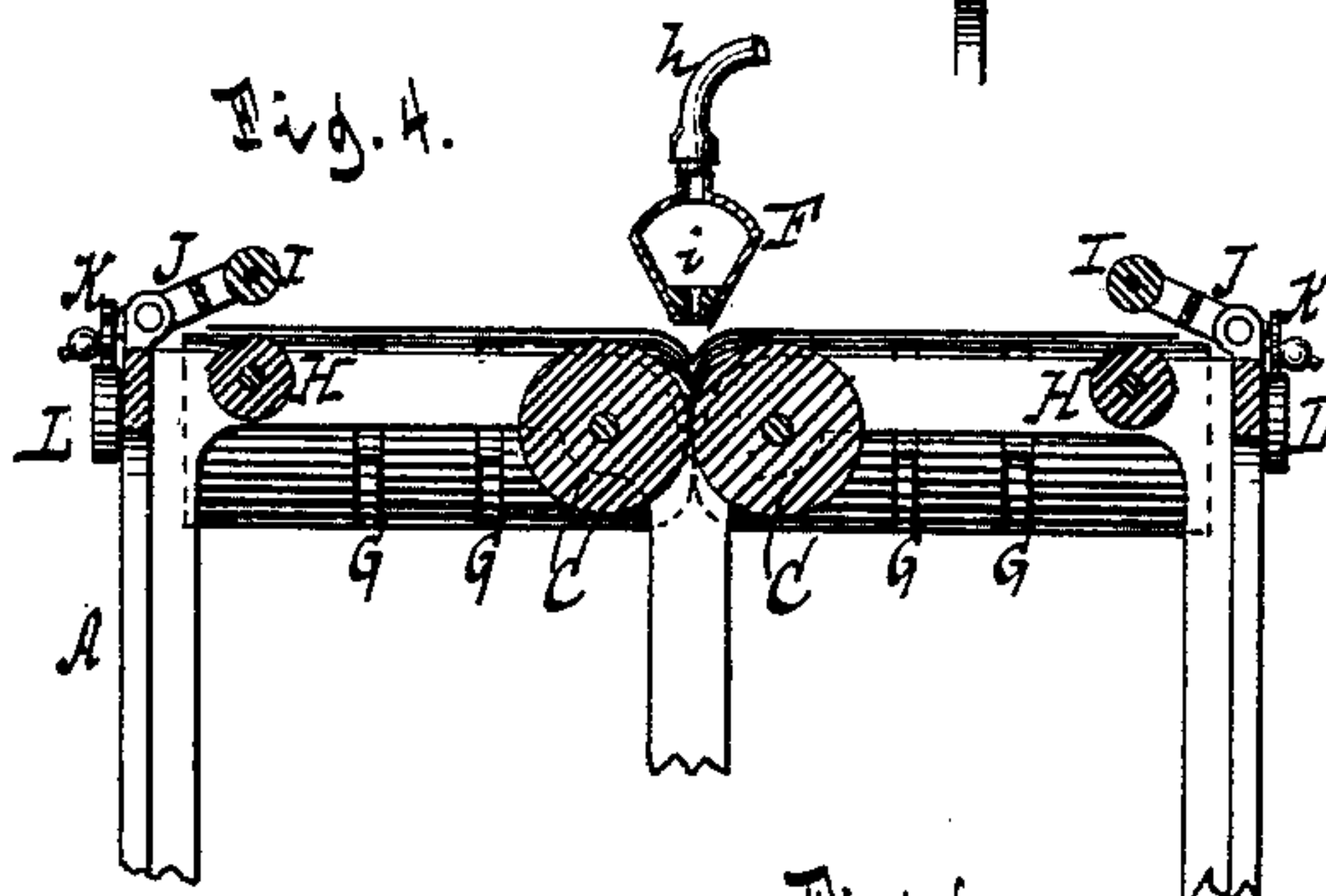
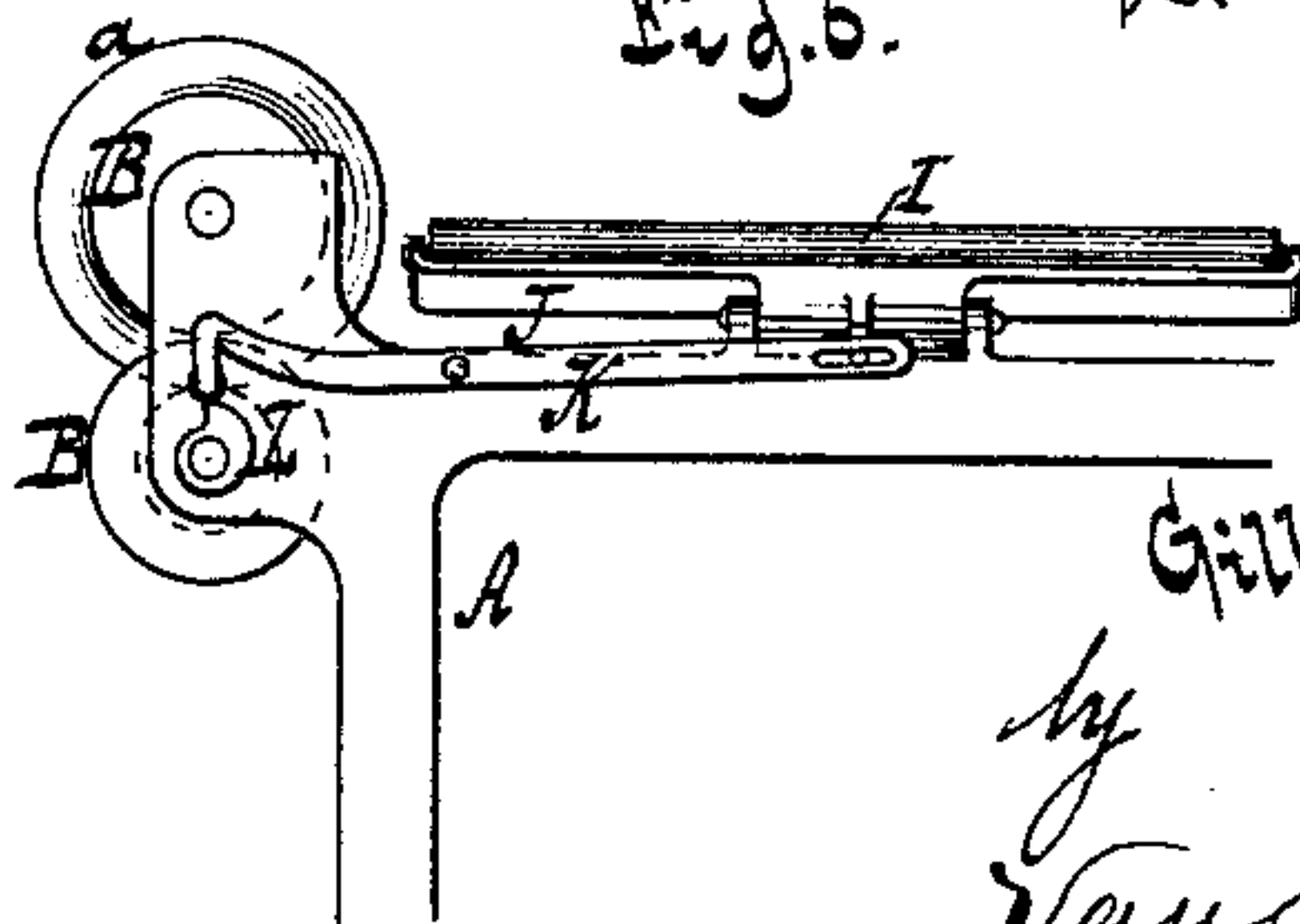


Fig. 6.



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UNITED STATES PATENT OFFICE.

GILBERT E. JONES, OF NEW YORK, N. Y.

PAPER-FOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 229,419, dated June 29, 1880.

Application filed April 22, 1880. (No model.)

To all whom it may concern:

Be it known that I, GILBERT E. JONES, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Paper-Folding Machines, of which the following is a specification.

This invention relates to machines for folding sheets of paper or other materials; and it consists in the combination of creasing-rollers adapted to act on the paper along the line of the desired fold, with folding-rollers arranged to receive the sheet after it has left the creasing-rollers, and a reservoir emitting a blast of air, which impinges on the sheet along the line of its crease to force the sheet between the folding-rollers. The sheet of paper leaving the creasing-rollers rests on tapes, and the edges thereof are held by drop-rollers combined with supporting-rollers until the sheet is caught and follows the action of the folding-rollers.

This invention is illustrated in the accompanying drawings, in which Figure 1 represents an end view. Fig. 2 is a like view, looking in an opposite direction to Fig. 1. Fig. 3 is a plan or top view, partly in section. Fig. 4 is a cross-section on the line *x x*, Fig. 3. Figs. 5 and 6 are detail views, hereinafter referred to.

Similar letters indicate corresponding parts.

The letter A designates a frame supporting the parts of my machine; B B, the creasing-rollers, and C C the folding-rollers. One of the creasing-rollers B B has a circumferential ridge or projection, *a*, which is adapted to a groove, *b*, in the other roller. The folding-rollers C C are arranged at right angles to the creasing-rollers B B, and in such relation to the latter that they are substantially level with the line of contact of the creasing-rollers, while their own line of contact is in line with the apex of the circular ridge *a*. The creasing-rollers B B are geared together by cog-wheels *c c*, and also geared with a shaft, D, by a cog-wheel, *e*, which shaft is geared by bevel-wheels *f*, Fig. 2, with a counter-shaft, E. This counter-shaft carries a cog-wheel, *d*, which gears with one of two cog-wheels, *g*, whereby the folding-rollers C C are geared together.

The letter F designates the air-reservoir.

This reservoir is of equal length, or nearly so, to the folding-rollers C C, and it is secured to the machine-frame in such relation to these rollers that the discharge-orifices of the reservoir are in a line directly opposite the line of contact of the folding-rollers. The reservoir F connects with a suitable air-supply source by a pipe, *h*, and is provided with a valve or gate, *i*, (best seen in Fig. 5,) which is connected to a cam, *j*, mounted on the shaft of one of the folding-rollers, whence it receives a reciprocating motion to open and close the discharge-orifices at the proper intervals.

The letter G designates a series of tapes passing over the lower creasing-roller and over rollers *k k* on opposite sides of the folding-rollers C C. The upper portions of these tapes are on a level with or slightly above the folding-rollers C C, and travel in a direction away from the creasing-rollers B B with a corresponding speed to the latter. On opposite sides of the tapes G are the sheet-edge-supporting rollers H, with each of which is combined a drop-roller, I. The supporting-rollers H are parallel to the folding-rollers C C, and they are geared with the counter-shaft E by belts *l*, running over pulleys *n*, and so arranged that both supporting-rollers revolve in the direction of the folding-rollers. The drop-rollers I are mounted in swinging frames J, to each of which is connected one end of a vibrating arm, K, (best seen in Fig. 6,) the other end of which rests on a cam, L, mounted on the shaft of one of the creasing-rollers B B, whereby the drop-rollers are lifted and permitted to drop at the proper intervals.

The sheet of paper to be folded is fed to the creasing-rollers B B, and as it passes through between them it is creased by the action of the ridge *a* and groove *b*, while, when the sheet has entirely emerged from between the creasing-rollers, the reservoir F is opened and the same emits a blast of air, which impinges upon the sheet along the line of its crease. By this means the crease of the sheet is forced into the bite of the folding-rollers C C, whereupon the sheet is caught by these rollers and drawn between them so as to become doubled or folded. The sheet of paper is thus provided with a crease prior to being subjected to the action of the air-blast, and since the air

has a tendency to enter such crease the latter is a positive guide to the fold which is produced in the sheet. In other words, the sheet is not liable to become shifted during the folding operation and is always folded along the desired line. As the sheet leaves the creasing-rollers B B it is carried along by the tapes G, and the edges thereof are laid on the supporting-rollers, the drop-rollers I being in an upper position, and when the sheet has completely emerged from between the creasing-rollers the drop-rollers fall to their positions on the supporting-rollers, so as to bear on the edges of the sheet. The drop-rollers I, together with the supporting-rollers H, thus serve to steady the sheet while it is being acted on by the air-blast, and since the supporting-rollers have a continuously-revolving motion the sheet is not liable to be retarded by that means, but is free to follow the action of the folding-rollers. The leading end of the sheet, emerging from between the creasing-rollers B B, comes in contact with a gage, N, and by this means the sheet is checked at the proper stage of its movement.

I am aware that it is old to use an air-reservoir in combination with folding-rollers for the

purpose of folding sheets of paper, and that combination forms no part of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a paper-folding machine, the combination, with creasing-rollers and folding-rollers, of a reservoir emitting a blast of air which impinges on the sheet of paper along the line of the crease formed therein by the creasing-rollers to force the sheet between the folding-rollers, substantially as shown and described.

2. The combination, with the folding-rollers C C and air-reservoir F, of the tapes G, the drop-rollers I, and sheet-edge-supporting rollers H, substantially as and for the purpose described.

3. The combination of the tapes G, drop-rollers I, and sheet-edge-supporting rollers H with the creasing-rollers B B, folding-rollers C C, and air-reservoir F, substantially as and for the purpose described.

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

Witnesses: GILBERT E. JONES. [L. s.]
J. VAN SANTVOORD,
CHAS. WAHLERS.