(109.)

6 Sheets.
Sheet 1.

James Arkell.
Mach. for Pasting & Folding Bag Bottoms.

No. 122,099.

Fig. 1.

Patented Dec. 26, 1871.

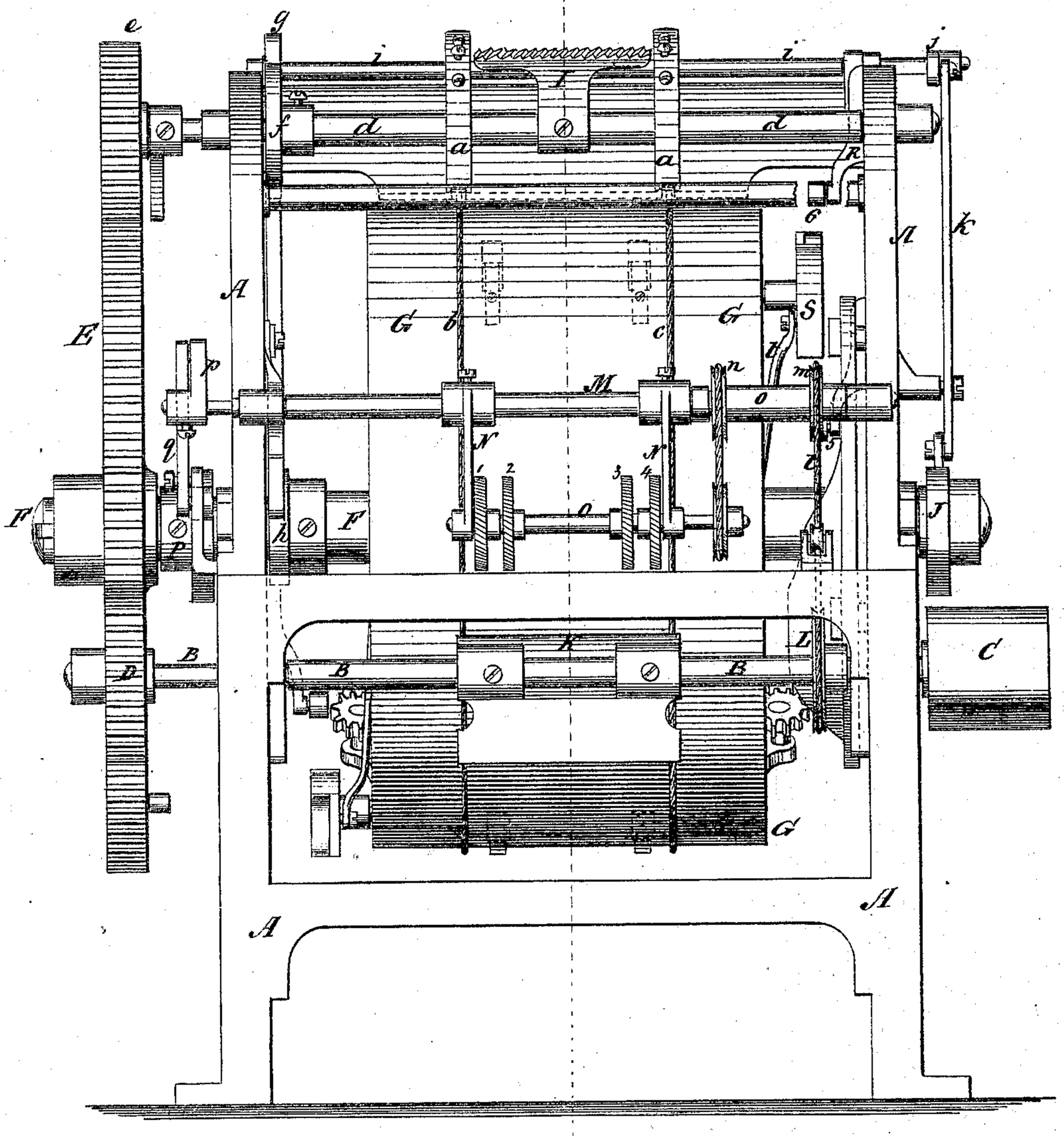

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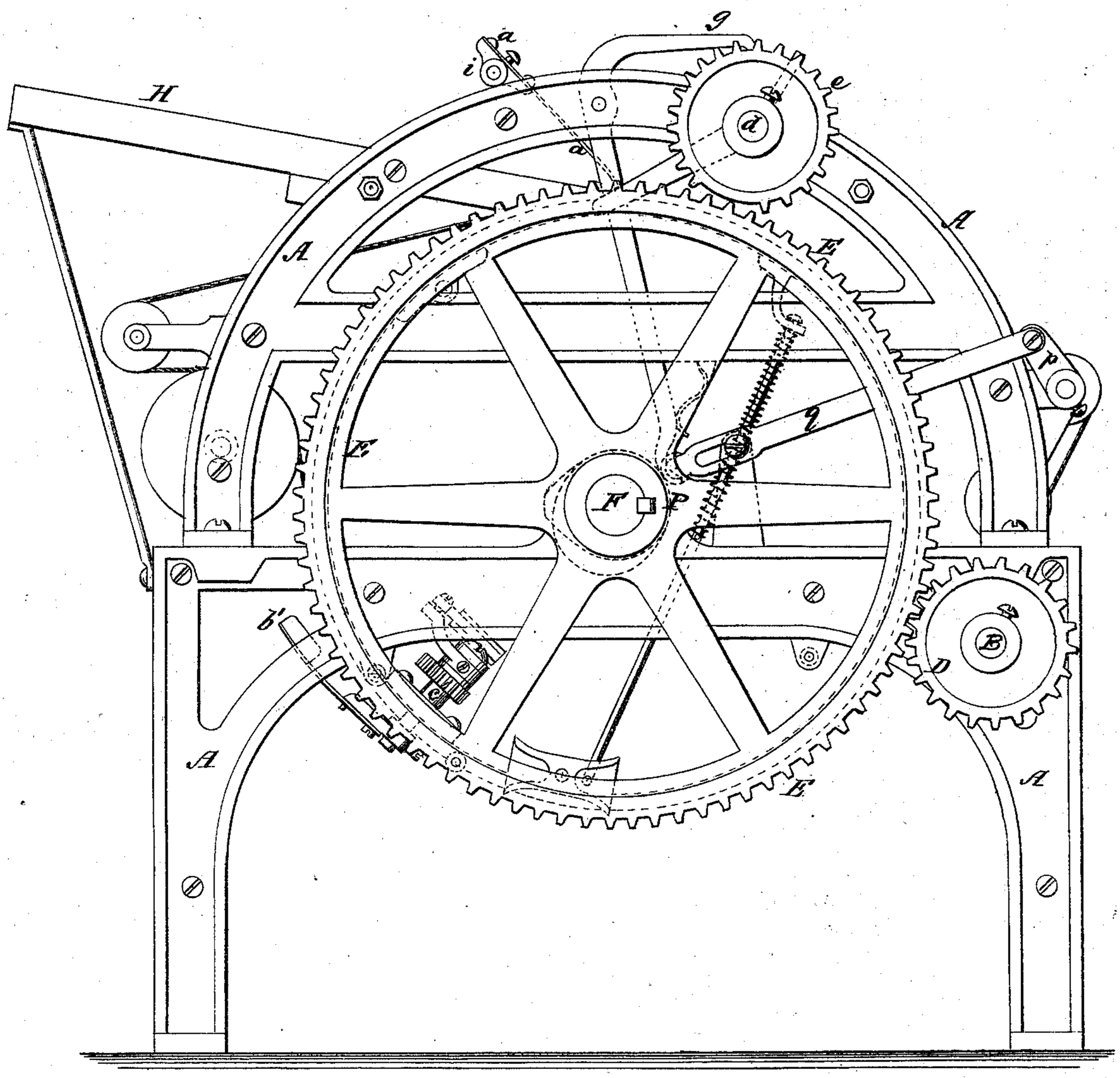
Fig. 2.

No. 122,099. Patented Dec. 26, 1871.



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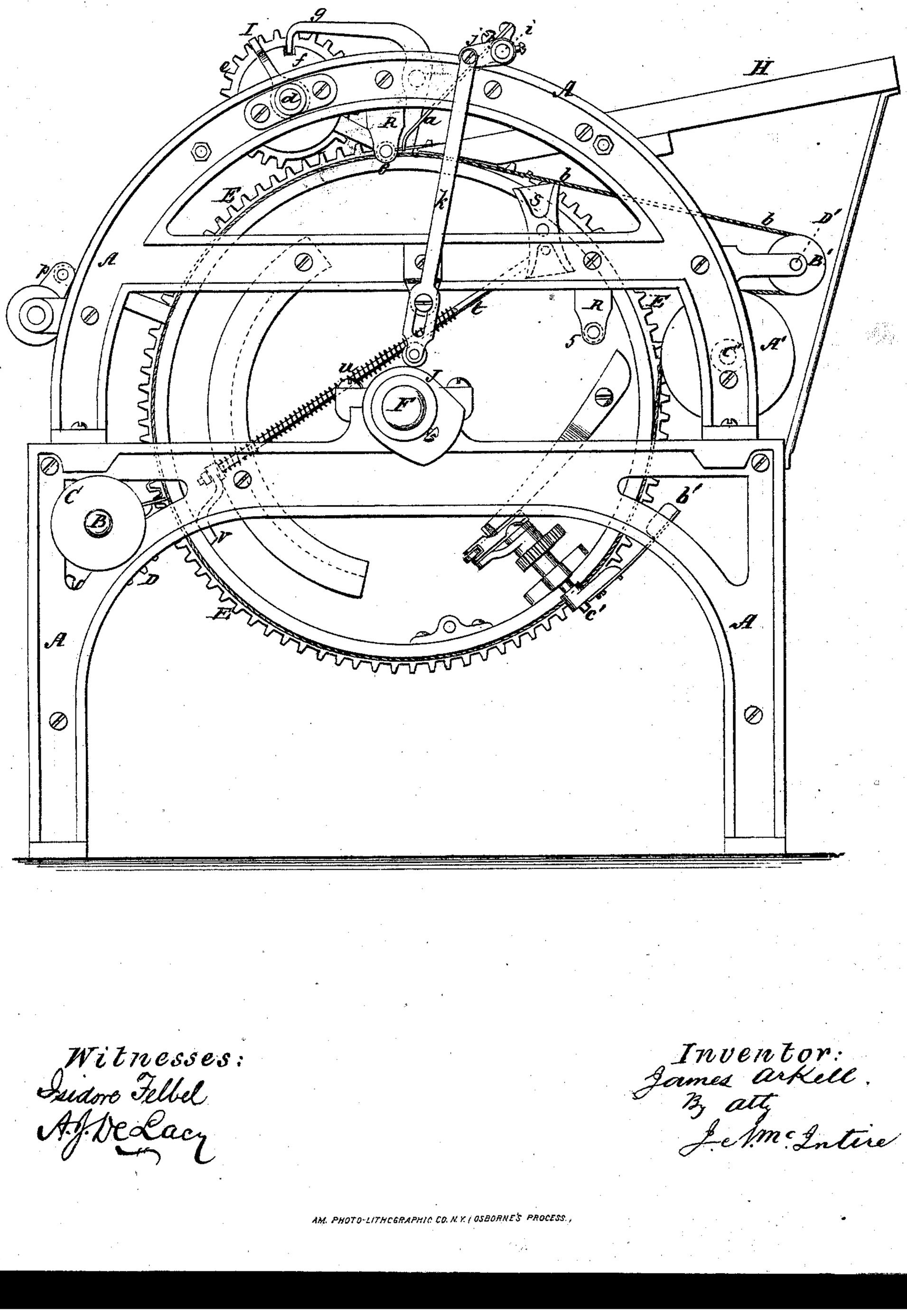
No. 122,099. *Fig. 3.* Patented Dec. 26, 1871.



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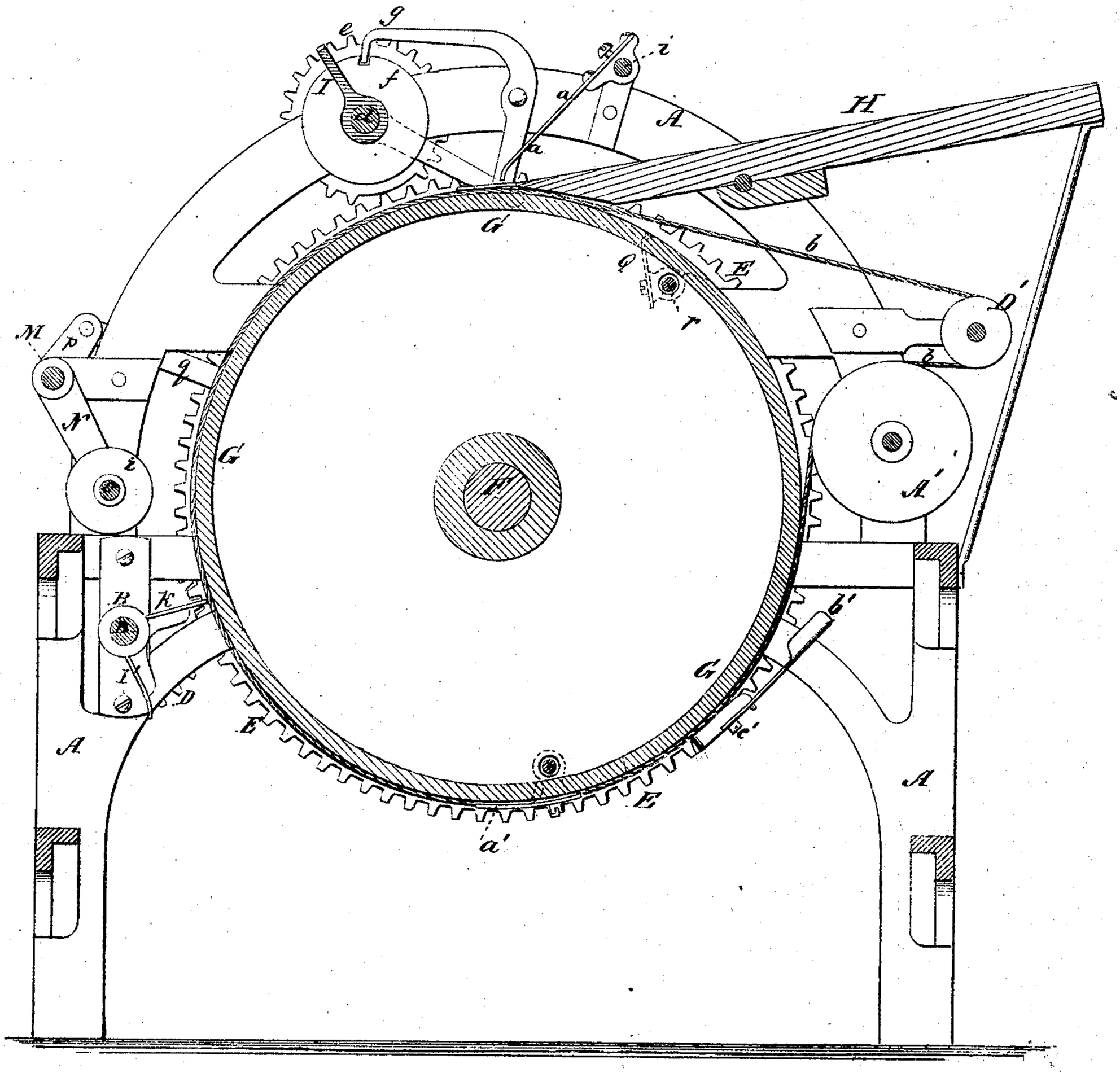
No. 122,099. *Fig. 4.* Patented Dec. 26, 1871.



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No. 122,099. Patented Dec. 26, 1871.

Fig. 5.

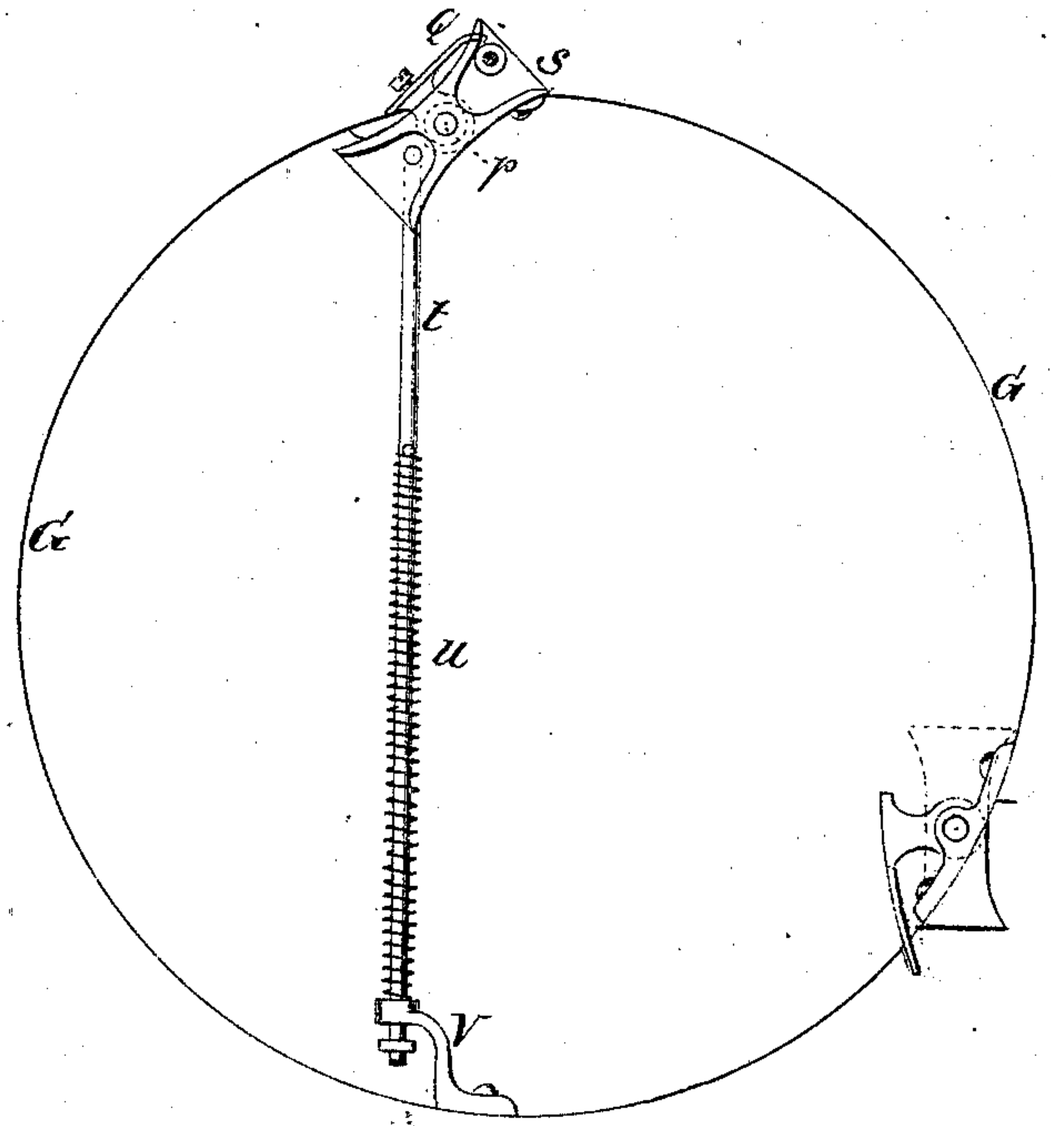
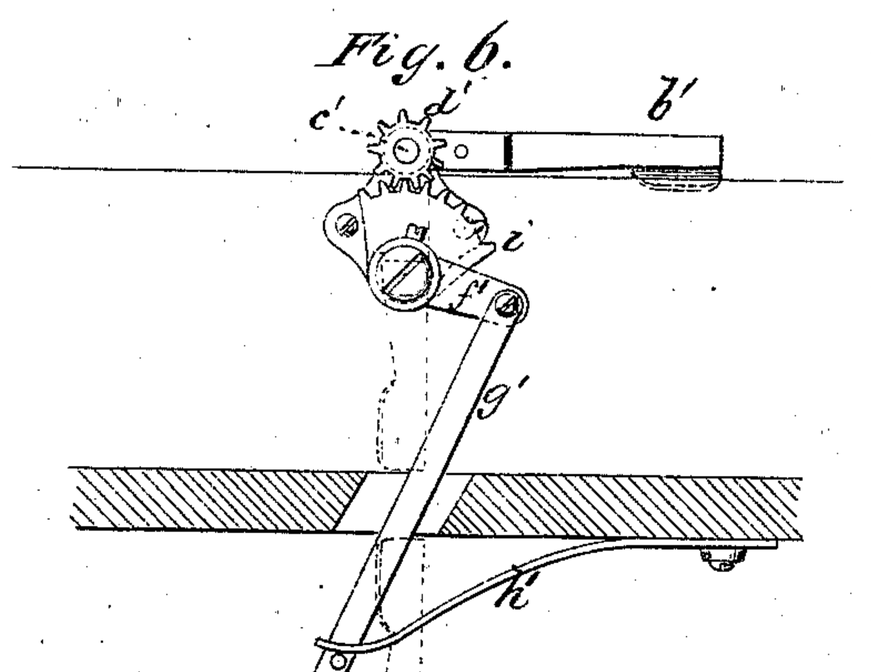


Fig. 6.



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(109.)

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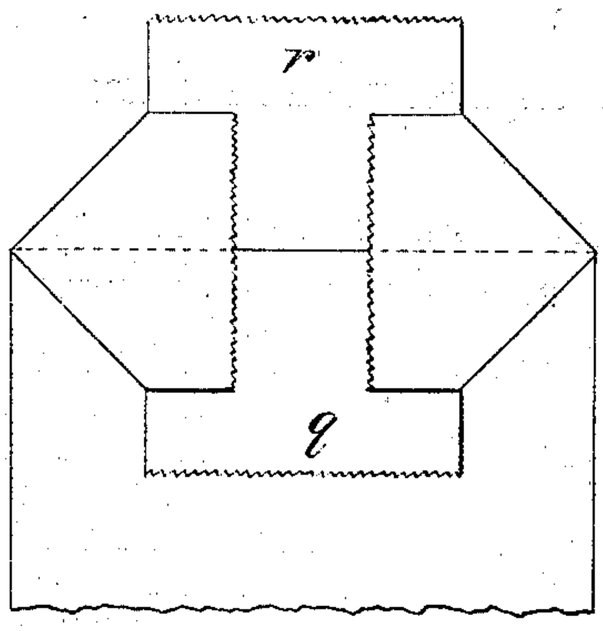
James Arkell.
Mach. for Pasting & Folding Bag Bottoms.

No. 122,099. Patented Dec. 26, 1871.

Diagr. 1.



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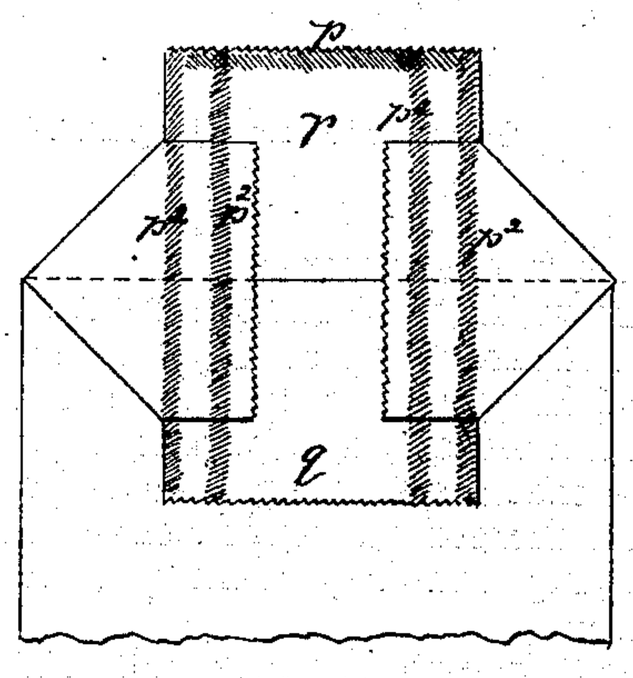
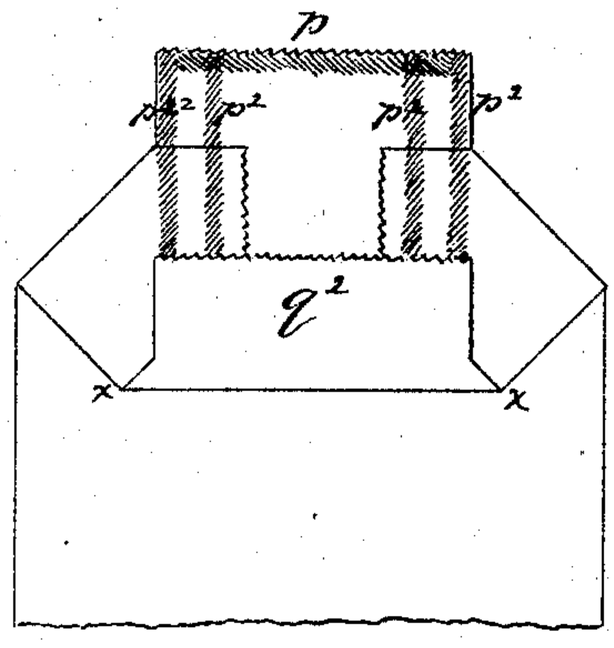
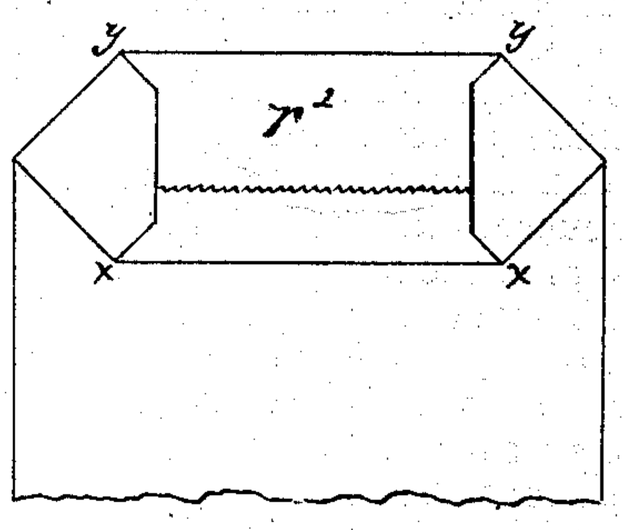


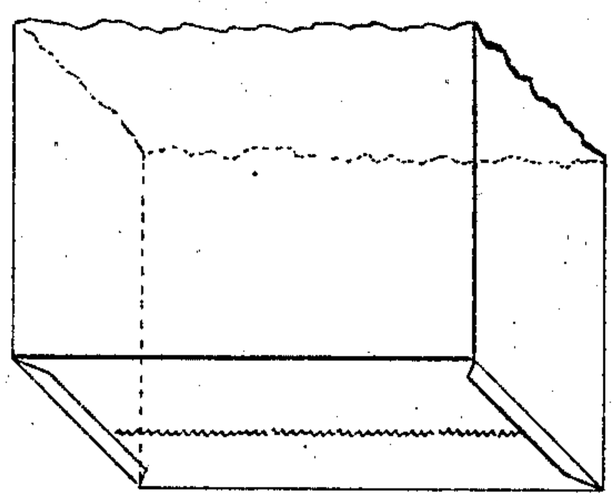
Diagr. 3.



Diagr. 4.



Diagr. 5.



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UNITED STATES PATENT OFFICE.

JAMES ARKELL, OF CANAJOHARIE, NEW YORK, ASSIGNOR TO ARKELL AND SMITH'S, OF SAME PLACE.

IMPROVEMENT IN PAPER-BAG MACHINES.

Specification forming part of Letters Patent No. 122,099, dated December 26, 1871.

To all whom it may concern:

Be it known that I, JAMES ARKELL, of Canajoharie, of Montgomery county, in the State of New York, have invented an Improvement in Pasting and Folding Bag-Bottoms; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing making part of this specification.

As is well known to those skilled in the art, the bag or sack is made from a roll of material which is passed over a suitable former and its edges pasted together, so as to be delivered from said former in the shape of a tube, which is cut up into suitable lengths, or short tubes, each of which may have one end cut and folded, or creased in a peculiar manner to facilitate the subsequent operation of forming the bottom.

To this operation of forming the "bottom" of the bag by pasting and folding over the material into the requisite shape my invention relates.

My invention has for its object to provide a means for successfully and economically performing this part of the operation in the manufacture of square-bottomed bags or sacks from single pieces of material; and consists in a machine in which the mode of operation is such that the partially-formed sack or the prepared sack-body is carried automatically through the machine on a carrier or bed which moves always in the same direction, and on which it is successively subjected to the operations of mechanism or devices for applying the paste and making the folds to finish the bag-bottom, as will be hereinafter more fully explained; and my invention further consists in certain novel combinations of devices for performing the several operations by which the bag-bottom is completed, as will be hereinafter more fully explained.

To enable those skilled in the art to make and use my invention, I will proceed to more fully describe it, referring by letters to the accompanying drawing which make part of this application, and in which the diagrams Nos. 1, 2, 3, 4, and 5 illustrate the different conditions of the bag during its manufacture, as I will presently more fully explain; and

Figures 1, 2, 3, 4, 5, and 6 are, respectively, a front elevation, side view, side elevation, vertical section, skeleton view of holding mechanism, and skeleton view of folding mechanism.

In the several figures the same part of the machine is designated by the same letter of reference.

Before describing the construction and operation of the machine illustrated, I will explain by the diagrams the operations to be performed on the bag, which I think will render the specification of the machine more intelligible. At No. 1 of the diagrams is illustrated a partially-formed paper-sack, such as is usually manufactured by me for putting up flour, &c., in the condition in which the article is supplied to the machine, (I will presently describe,) and where it has first the paste or other adhesive material applied to it, as illustrated at p and p^2 p^2, No. 2; next the portion q, folded over, as seen at q^2, No. 3; and finally the portion r, folded over, as seen at r^2, No. 4; when the sack is finished, so as to present when distended or filled the appearance illustrated at No. 5.

In the several figures, A is the frame of the machine, in which are mounted all the working parts. B is the main driving-shaft, to which power and motion are imparted through the medium of a pulley, C, and driving-belt, from any suitable motor in the usual manner. On one end of shaft B is a driving-pinion, D, which engages with a large spur-gear, E, which is keyed on a shaft, F, that is mounted on suitable bearing-boxes about the middle of the frame of the machine, and which carries a large drum or cylinder, G, which receives on its external face and carries along the material to be operated on, as will be presently explained. H is the feed-table, on which the partially-formed sacks are placed, and from which they are fed into the machine by the operative or attendant, after the fashion of feeding a printing-press. *a a* are stop-fingers or registers, against the lower bent ends of which the mouth end of the bag is placed by the attendant to insure the proper position of the material or bag on the face of the cylinder; and *b c* are bands or cords which serve to properly lead it out of the machine, as will be hereinafter explained. I is a paster or intermittently moving arm, which receives a proper supply of paste from a suitable paste-reservoir, (not shown in the drawing.) It is mounted on a shaft, *d*, running in suitable bearing-boxes in the main frame A, and which is driven by means of a spur-sector, *e*, which engages with the main gear E in a manner to be

presently explained. *f* is a disk, fast on shaft *d*. This disk has a notch in its edge or face, into which catches the bent end of a retaining bar or arm, *g*, pivoted to the frame A, and said bar *g* is at intervals drawn back (to release the disk *f*) by means of a cam, *h*, on the shaft F. The register figures or stops *a a* are secured at their upper ends to a rock-shaft, *i*, which is moved through the medium of a crank, *j*, and bar *k*, by the cam J on shaft F. On the main driving-shaft B is secured the creaser and holder K, (the operation of which will be presently explained,) and a pulley, L, from which passes a belt, *l*, to the pulley *m*, which latter, together with pulley *n*, is fast on (or part of) a sleeve or hollow shaft, *o*, that turns freely on the shaft M, and on which is secured a frame, N, which carries the counter or short shaft O. The shaft M is mounted in suitable bearings in the frame A, and is periodically rocked or oscillated through the medium of crank *p* and rod *q*, by a cam, P, on the shaft F, and on the shaft O are mounted four paste-wheels, 1 2 3 4, which are kept supplied, (in any suitable manner from a reservoir not shown,) and from the peripheries of which paste is supplied to the bag-bottom. Q Q are holder-fingers or dogs, which clasp or hold the mouth end of the bag securely on the face of the drum or carrier G. They work back and forth in slots in the face of said drum, and are operated by means and in the manner I will now explain, viz.: said fingers are fast on a rock-shaft, *r*, which is mounted in suitable boxes, as seen in the internal face of the rim of drum G; and on one end of said shaft is secured a shoe piece, *s*, from which extends a rod, *t*, provided with a spiral spring, *u*, and passing through a stand, *v*, (see Fig. 5,) and so arranged that the tendency of said spring-rod attachment is to hold the shoe piece *s* in either of the two positions in which it may be placed, (these two positions being those which the rock-shaft *r* assumes when the fingers Q are either drawn in or thrown out to clasp the bag.) This shoe-piece *s* is formed with two cam-like depressions, in which work alternately (as said shoe travels around with the carrier-drum or cylinder) two rolls or caster-wheels, 5 and 6, which are mounted in little stands, R, that are bolted to and project from the main frame A, as seen; and as the shoe piece *s* travels along and is struck by first one and then the other of the wheels 5 and 6, it is oscillated in first one and then the other direction, and so rocks the shaft as to alternately throw the said fingers out to clasp and carry in a bag, and to release it when finished and passing to the discharging mechanism. The pulleys A′ B′, mounted on shafts C′ D′, as shown, with the cords or bands passing around them, as seen, discharge the finished bags under the table, on which the attendant places the work to be fed to the machine. *a′* are the folding-arms or blades which effect the last fold of the bag-bottom. They, like the holding-fingers, are protruded through the face of the cylinder or drum, and are worked from a rock-shaft by mechanism, and in a manner similar to that just described, in connection with said fingers Q, the only difference in their operations being that while the fingers Q are short, and are so arranged that their extreme ends only protrude and clasp the edge of the mouth of the bag, the blades *a′* are long, and so arranged that their axes of motion shall be about coincident with the line in which is made the fold in the bag-bottom. *b′ b′* are folding-arms or sweeps, which gather up and fold over the stock to form the first fold made in the bottom-forming operation of the machine. They are mounted on short shafts or studs, *c′*, that turn in stands secured to the rim of the drum, and which are provided with pinions *d′*, which mesh into sectors *e′*. These sectors are each provided with an arm, *f′*, (see Fig. 6,) and to these arms is a bar, *g′*, which is held in one direction by a spring, *h′*, and is forced at intervals in the opposite direction by means of a cam-plate, F′, which presses against a roll or caster, *i′*, in the end of said bar *g′;* and by the alternate movements endwise of the said bar in opposite directions the sectors *e′* are worked, and from them, through the medium of pinions *d′*, the folders *b′ b′* are operated.

After what has been said of the detailed construction and operation of parts, the following explanation of the general operation of the machine will be readily understood: Motive power being applied to the main shaft and the machine put in motion, the prepared stock or partially-formed bags, in the condition seen at diagram No. 1, are fed from the table (with their mouths or open ends toward the machine) against the stop-fingers *a a*, and there allowed by the attendant to rest until the feed-fingers come along and carry each bag along on the face of the drum or cylinder G. When arrived at the proper position, the paster I comes in contact with the material and puts a coating of paste along the edge at *p*, (see diagram 2,) and then the paste-wheels 1 2 3 4 move up and apply the paste in four lines, as seen at p^2, diagram 2. As the bag is carried on, the edge of creaser K comes up and indents the material at the line *x x*, diagram 3, while at the same time the folders *b′ b′* gather up and fold over the stock, as shown at diagram No. 3. And as the bag further progresses with the drum G, the creaser I′ comes up and indents the material at *y y*, and holds it while the folders *a′* come out, and, folding the stock over into the shape seen at diagram No. 4, complete the bag, which passes on and is discharged between the cords *b b* and wheels A′ D′ in a finished state.

When the bag with its folded bottom thus pasted and folded is opened out or filled, it presents about the shape seen at diagram No. 5.

It will be seen that by applying the paste as shown there is no danger of any of the bottom portions getting stuck to those portions of the sides which have necessarily to rest in contact with the inner surfaces of the bottom parts while the latter are being pasted and folded.

In conclusion, I would state I do not limit myself to the precise details of construction herein shown and described, as the same may in some respects be varied without departure from the principle of my invention; but

Having fully described my new machine for

pasting and folding the bottoms of bags, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for pasting and folding bag-bottoms, the combination of the drum or carrier for the blank, moving in one direction, as specified, with pasting and folding mechanisms arranged and operating substantially in the manner shown and described to successively paste and fold the material to be operated on, as set forth.

2. In combination with the drum or carrier, on which the blank is held, the creaser K for creasing or indenting the blank, and the folders b' or their equivalents, arranged substantially as described, to fold over the paper so creased in a direction contrary to that in which the blank is moving in order to make the first fold.

3. In combination with the drum or carrier, on which the blank is held, the creaser I′ and the folders a', or their equivalents, arranged substantially as described to fold the paper in order to make the second fold in the direction in which the blank moves.

4. The combination of the drum or carrier for the blank, the pasting and folding mechanisms, and the creasers, when arranged and operating substantially in the manner shown and described.

5. The rotary paste-wheels, when arranged to automatically move up to and away from the carrier or sack-supporting surface, in combination with the automatically vibratory paster and the moving carrier or bed, the whole arranged to operate as described.

In witness whereof I have hereunto set my hand and seal this 8th day of March, 1871.

JAMES ARKELL. [L. S.]

Witnesses:
J. N. McINTIRE,
E. I. DELBEL.

(109)