

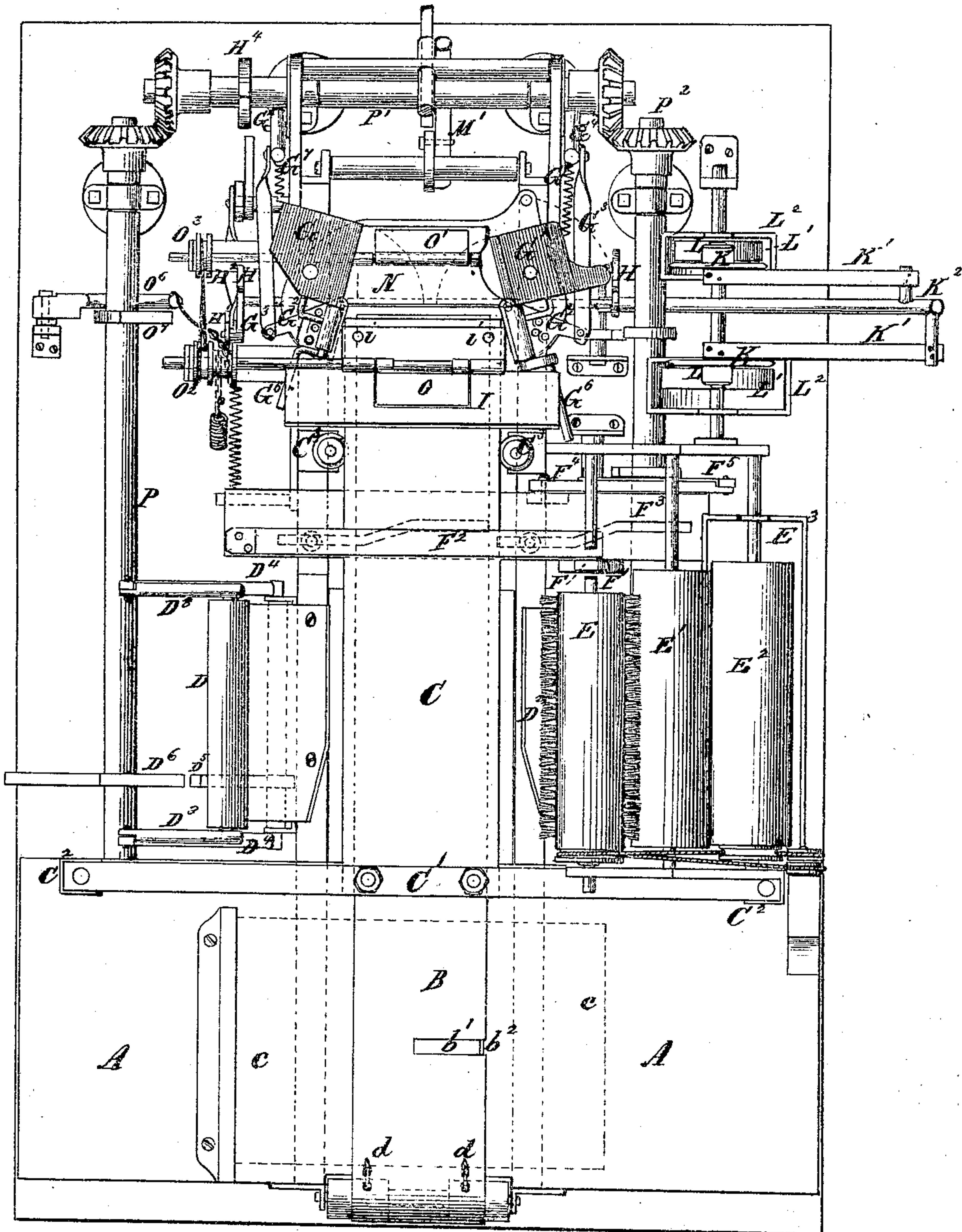
H. B. MORRIS.

Improvement in Paper-Bag Machines.

No. 132,312.

Fig. 1.

Patented Oct. 15, 1872.



Witnesses.
A. Ruppert.
C. J. Cils

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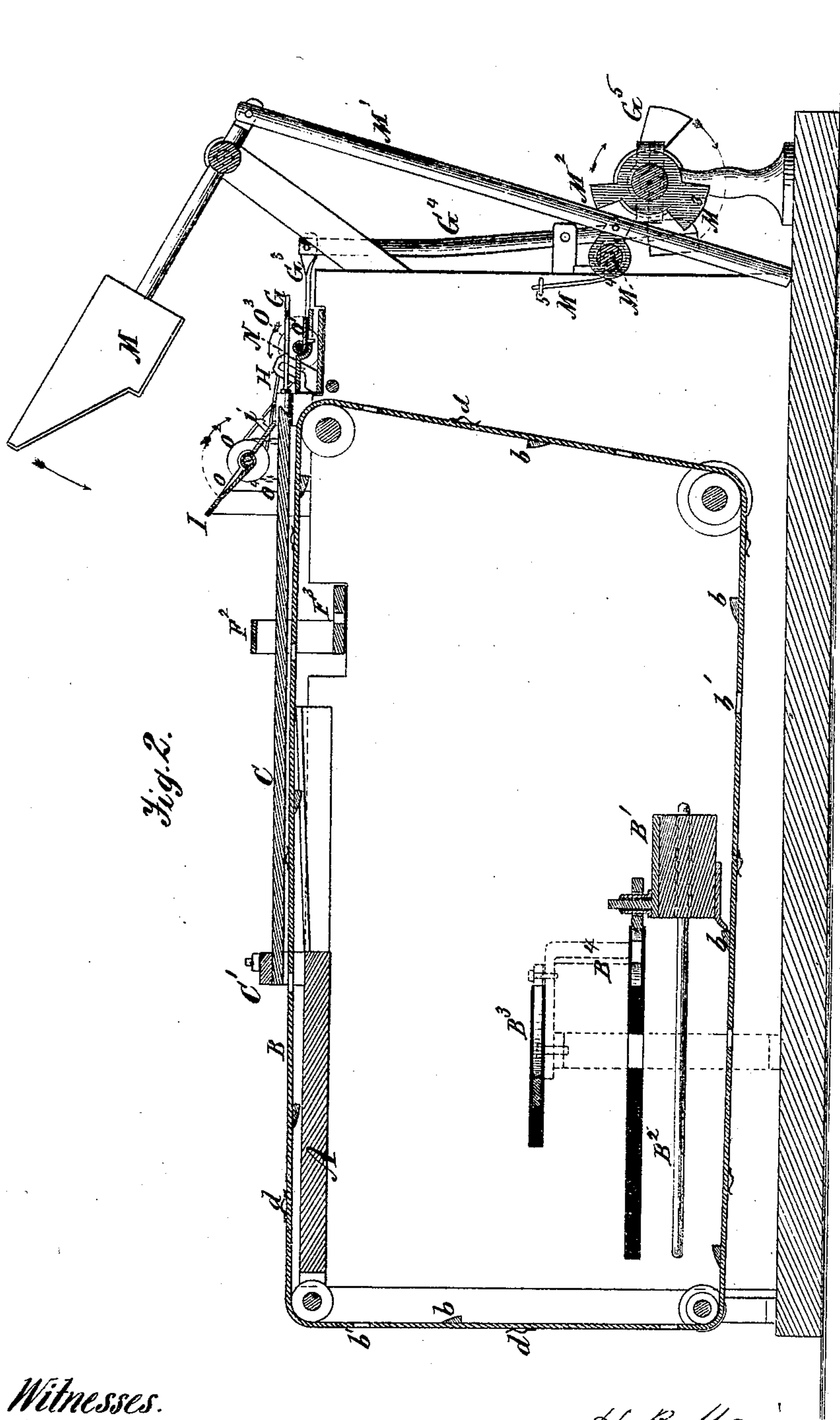


Fig. 2.

Witnesses.
A. Ruppert.
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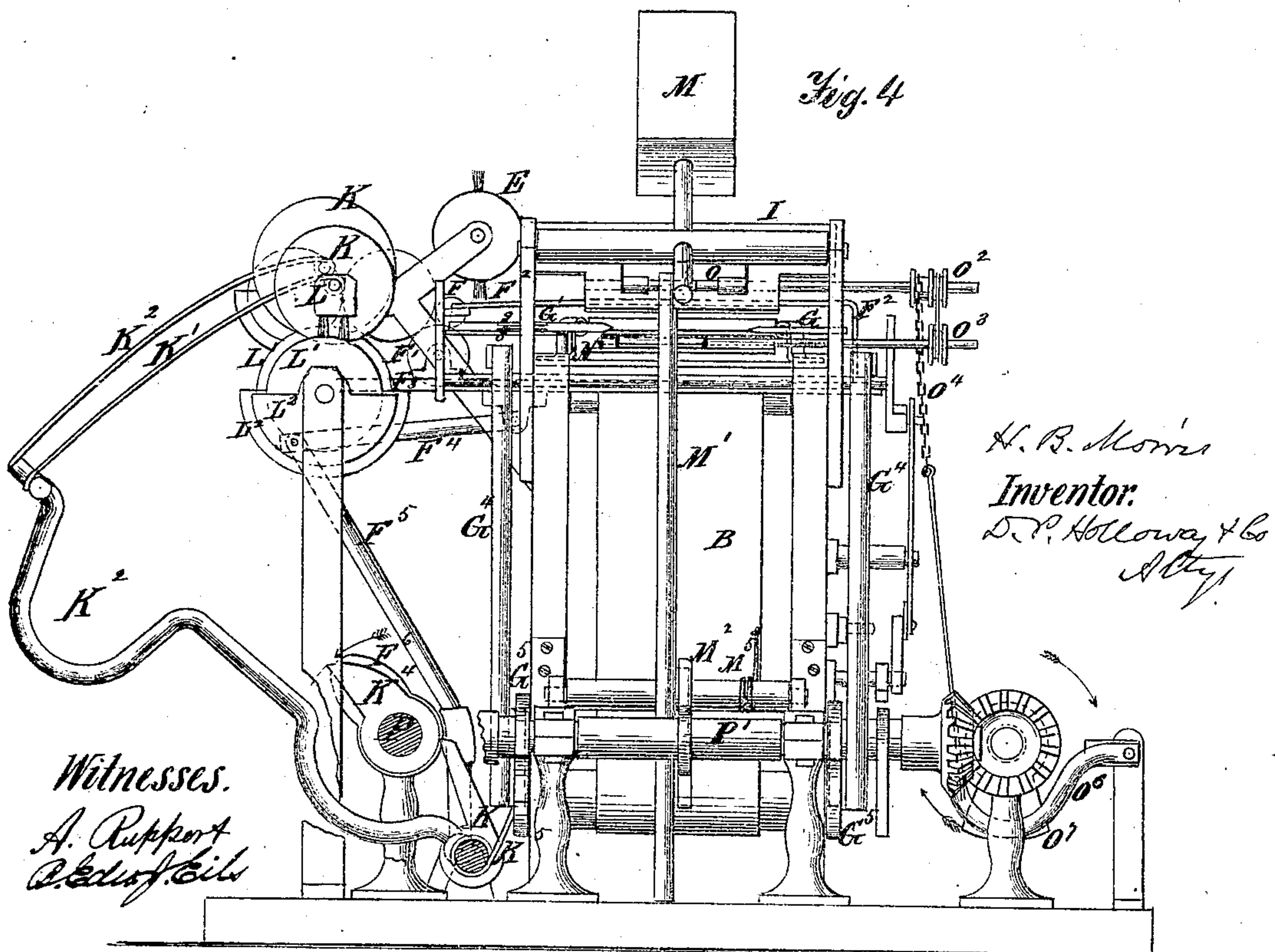
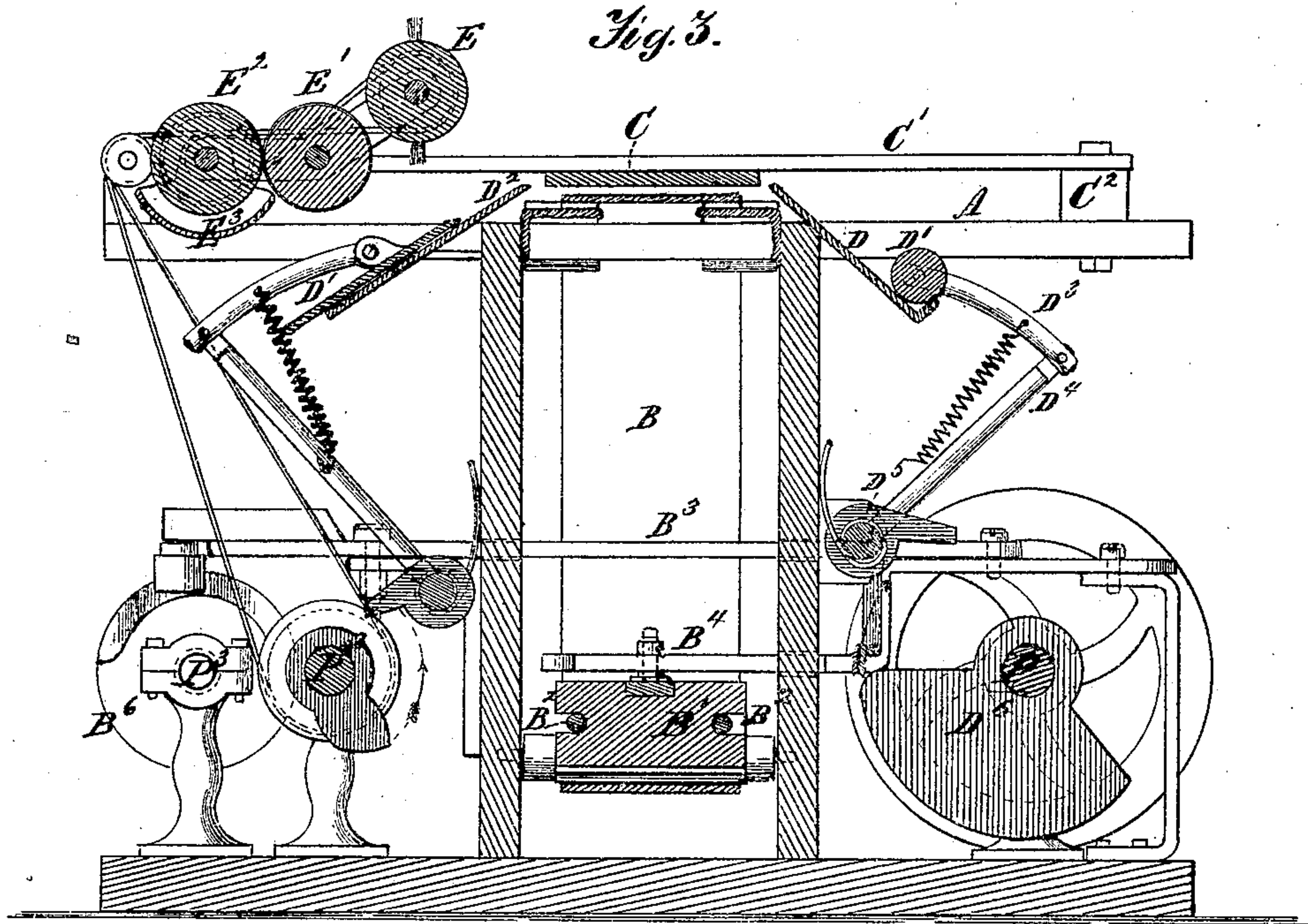
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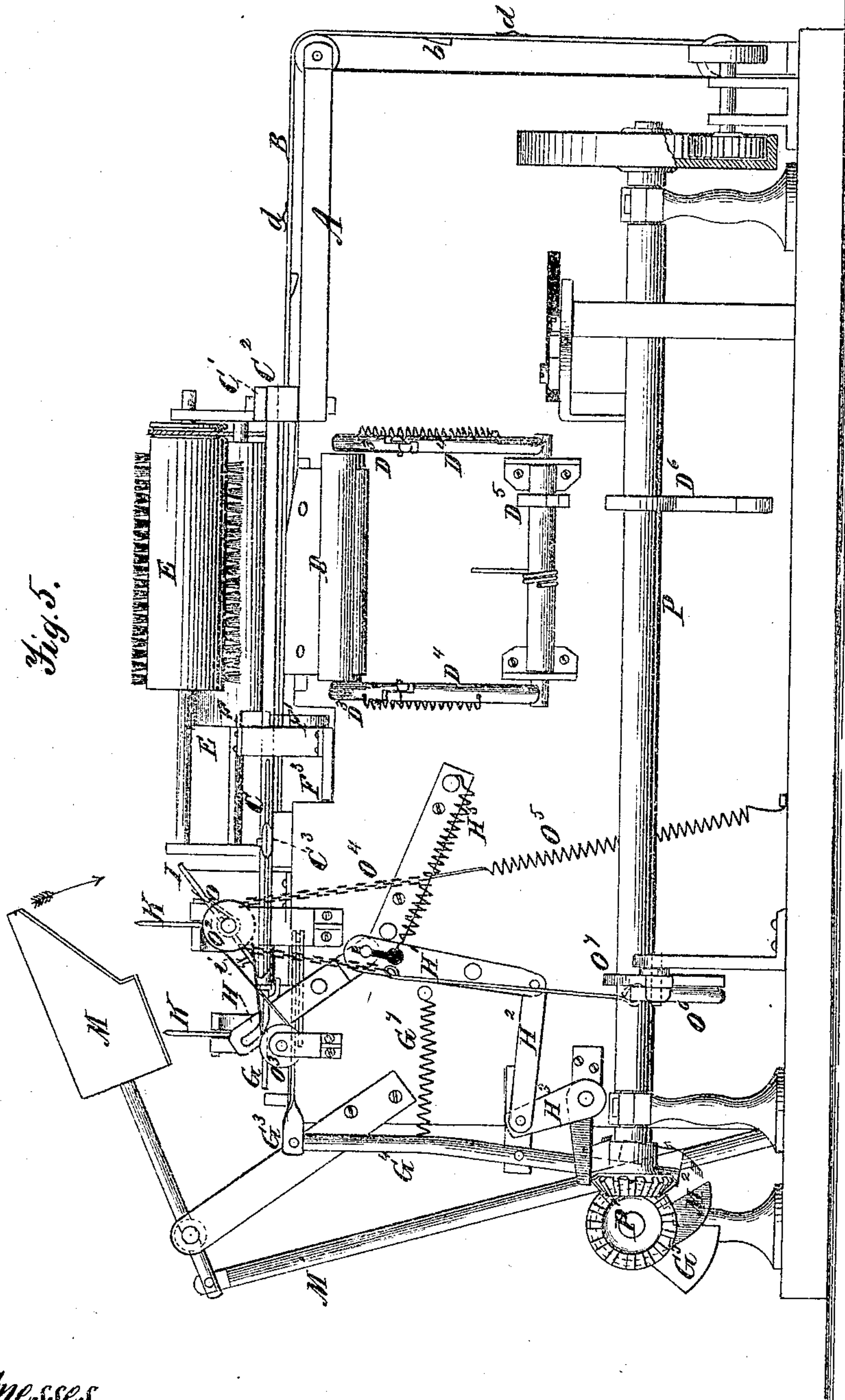


Fig. 5.

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Fig. 6.

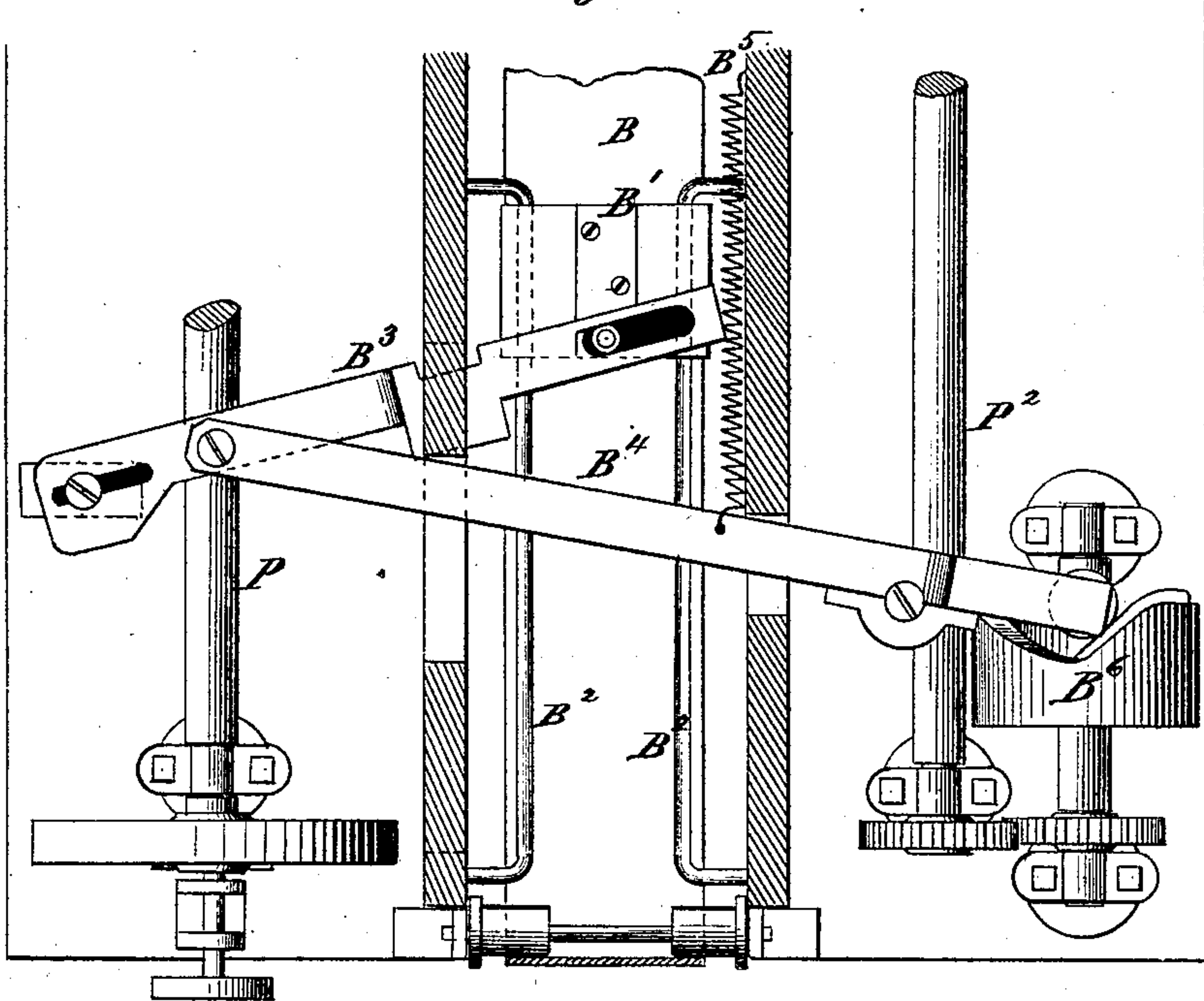


Fig. 7

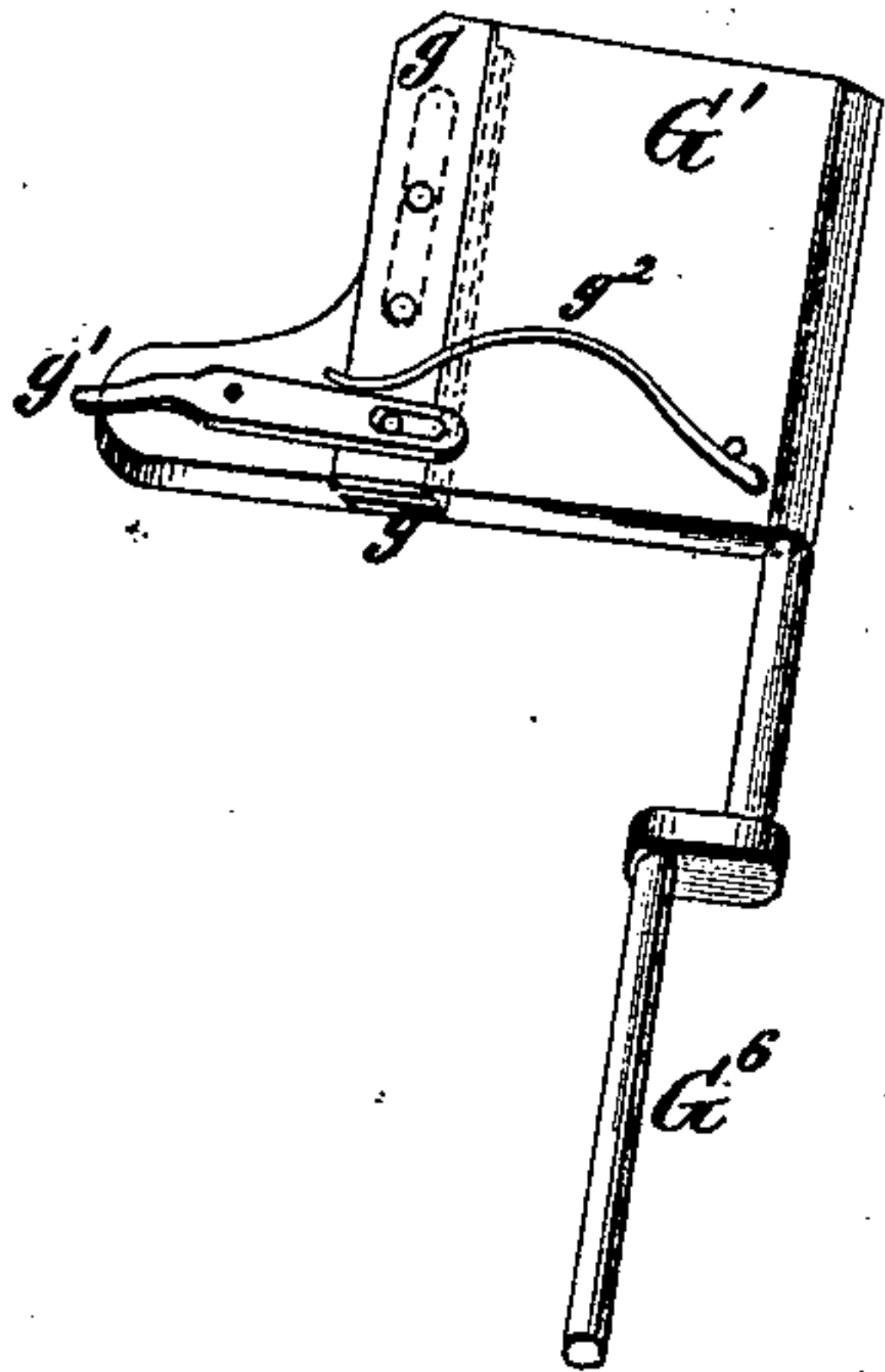
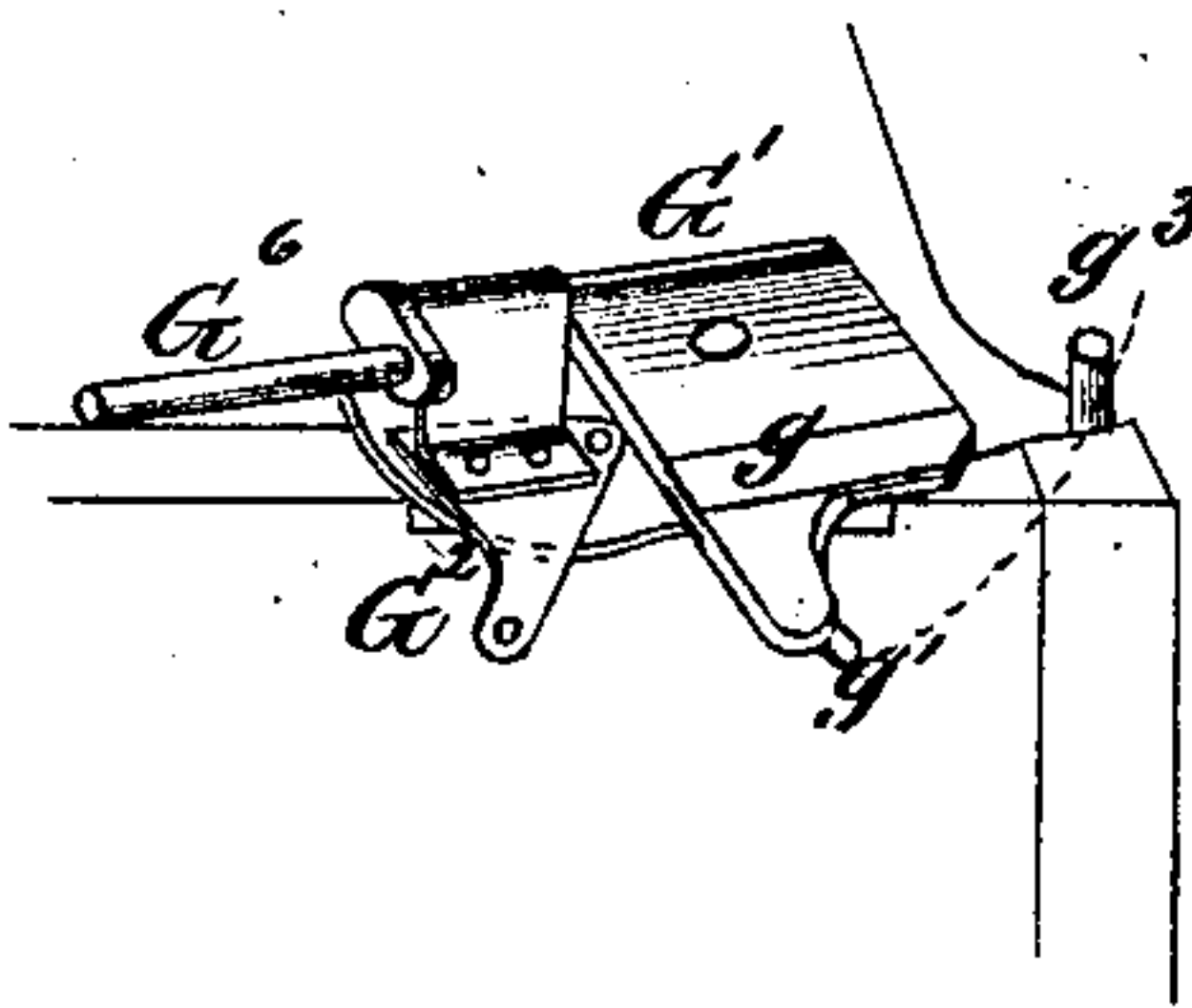


Fig. 8



Witnesses.
A. Ruppert.
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UNITED STATES PATENT OFFICE.

HENRY B. MORRIS, OF BURLINGTON, NEW JERSEY.

IMPROVEMENT IN PAPER-BAG MACHINES.

Specification forming part of Letters Patent No. 132,312, dated October 15, 1872.

To all whom it may concern:

Be it known that I, HENRY B. MORRIS, residing at Burlington, in the county of Burlington and State of New Jersey, have invented certain Improvements in Machines for Making Satchel-Bottom Paper Bags, of which the following is a specification:

This invention relates to machines for making paper bags from sheets of paper by a series of successive operations, by means of which the bags are pasted, folded, and completed.

Figure 1 is a plan. Fig. 2 is a vertical longitudinal section. Fig. 3 is a vertical transverse section. Fig. 4 is an end elevation. Fig. 5 is a side elevation. Fig. 6 is a plan, partly in section, representing the mechanism for operating the carrier. Fig. 7 is a perspective view of one of the folding wings. Fig. 8 is a perspective view, showing the other side of one of the folding wings.

The same letters of reference are used in all the figures in the designation of identical parts.

Power is communicated through a series of shafts, P P¹ P², connected by miter-wheels at the corners, and extending along two sides and one end of the machine. Paper having been cut into suitable blanks is placed upon a table, A, placed across the machine, and furnished with such gages as may be necessary. Transversely across this table passes an endless belt, B, on the outer surface of which are placed springs *d* or other convenient catches for holding the sheets in position at proper intervals. To this endless belt is communicated an intermittent motion. I will describe one means of communicating this motion. A series of hooks or projections, *b*, are attached at proper intervals to the inner surface of the endless belt B, being so formed that they will be caught only by the forward movement of the traveler. This traveler, B¹, has on its under face a projecting plate which catches against the hooks *b*, it moving upon parallel ways B². It receives a reciprocating motion from the bent lever B³, in the end of which is a slot embracing a stud on the top of the traveler, being pivoted by a slot and stud-pin on the end of a post. This lever is operated by an arm, B⁴, pivoted at one end to it, and having its fulcrum on a bracket on the opposite

side of the frame. On the end of the short arm of this lever is a friction-roller, which bears against the irregular face of a cam, B⁶, on a countershaft driven by spur-wheels from the shaft P². With each revolution of the cam B⁶ the traveler B¹ is thrown forward, and the endless apron carried with it the distance required for each successive movement of the sheet. The parts are retracted by the action of a spring, B⁵. By this movement of the belt the sheet will be transferred from the table until the forward edge of the sheet will be under the spring F². A plate, D², is placed under the right-hand edge of the paper, and beveled at the end nearest the table A, so that the edge of the sheet shall be brought into contact with the lines of the brushes on the paste-roller E. The brushes receive paste from the surface of a distributing-roller, E¹, revolving in contact with the face of a fountain-roller, E², which revolves in the paste carried in the trough E³. Other distributing mechanism may be used, such as is in common use in printing-presses for distributing ink. On opposite sides of the sheet while thus placed are reciprocating plates or rollers, D¹, traversing inclined tables D, and actuated by the arms D³, hinged to the oscillating rods D⁴, attached to each end of shafts, oscillating in bearings formed in brackets bolted to the sides of the frame, and carrying arms D⁵, which are raised by revolving cam-plates D⁶ keyed to the shaft P P². Coiled springs attached to the oscillating shafts and to the arms D³ and D⁴ retract the rollers or plates D¹ when relieved from the action of the cam-plates D⁶, the springs also serving to depress the rollers or plates. The cams D⁶ and arms D⁵ are so ranged that the plate or roller on the side opposite to the paste-fountain is first thrown up, bending the end of the sheet of paper over the top of the former C, which is of a thickness sufficient to produce a rounded-edged tube in contradistinction to a square-sided or doubled or flat-edged tube, and which is attached at one end by bolts which maintain it in a horizontal position to the cross-bar C¹, the ends of which are supported on the bolts C². When one of the sheets has thus been folded over the former the reciprocating roller or plate D¹ on the opposite side of the former is then thrown up, passing over the former, and folding and

pressing the pasted edge of the sheet onto the other end, forming a tube or hose of paper around the former C. The next forward movement of the endless apron will bring another sheet from the table and carry the hose forward until its end projects beyond the overhung end of the former C. One-half the exterior diameter of this end of the hose will have been pasted, at the same time that it was being pressed by the roller or plate D¹, by means of the two rollers F F¹, the former attached to a spring, F², and the latter to a reciprocating plate, F³, placed under the endless apron, and to which the spring is attached. This plate has angular slots, indicated in Fig. 1 by dotted lines, embracing studs attached to the top of the frame, so that the plate F³, while being moved longitudinally, is also thrown to one side to bring the rollers F F¹ into contact with the end of the paper tube when projected, and against the face of the distributing paste-cylinder E¹ when retracted. The plate F³ is actuated by an arm, F⁴, attached to a lever, F⁵, oscillating on a shaft, the bearings of which are formed in standards bolted to the bed-piece of the frame. A cam, F⁶, on the shaft P² projects the rollers F F¹, and they are retracted by a spring coiled around the shaft carrying the lever F⁵. The throw of the paste-rollers F F¹ is sufficient to paste one-half of the width of the tube on the former. To permit the lower paste-roller F¹ to come in contact with the lower side of the paper tube transverse slits b¹ are cut one-half the distance across the belt, the corners being connected by wires b². Grooves are cut in the edges of the former C, opposite to the wheels C³ revolving on bolts inserted in the top of the frame. At this stage of the operation the condition of the sheet of paper will be as follows: Owing to the thickness and form of the edges of the former the sheet will have been bent without being creased around the former, and the edges pasted together to form a tube surrounding the former. One-half of the width of this tube, above and below, will have been covered with paste and creases will have been formed in the edges of the tube by the creasing-wheels C³. Opposite to and beyond the ends of the former are plates G G¹. The plate G¹ is shown in detail in Figs. 7 and 8. They oscillate upon pivots passing through the triangular plates G², to which they are attached by means of standards, serving also as bearings for the shafts carrying the plates G G¹, by means of which they are made also to oscillate vertically. The plate G¹ is constructed with sliding fingers g above and below, which, at the conclusion of the horizontal oscillation of the plate, are projected by means of the slotted lever g¹, embracing a stud-pin on the fingers g and causing them to be projected by the end of the lever encountering a pin, g³. The fingers are retracted by means of the springs g², as soon as the end of the lever is lifted above the end of the pin g³, by a motion hereafter described. The plates or wings G

G¹ are actuated horizontally by means of a connecting-rod, G³, attached to the lever G⁴ pivoted centrally on the main frame, and actuated by cam-plate G⁵ on the shaft P¹. When these wings are swung forward the rods G⁶ are caught in the arms H, and when released the wings are retracted by the springs G⁷. The cams G⁵ are so arranged that the wing G¹ shall be first thrown forward, striking against the creased edge of the paper tube and forming a tuck in the pasted side extending a little beyond the middle line of the paper tube. Instantly after this action of the wing G¹ is completed a corresponding tuck will be forced in from the opposite side, between its pasted edges, by a similar action of the wing G. As the tucking action of the wings G and G¹ is about being completed the fingers g are projected into and between the laps of the bottom fold at its ends to act as folders for properly doubling the paper in the corners. At this stage of the operation the end of the bag, closed by the pasting of the edges, will be formed with two projecting points, one below the wings and the other above the wings, and formed between them and the head M, the operation of which will be hereafter described. The head M is then lifted and the wings G G¹ are swung vertically, turning over the upper point upon the table I, where the edges of the point are caught by the small hooks i. This oscillation of the wings is caused by the action of the slotted arms H, with which they are engaged, these arms being centrally pivoted, actuated by the slotted lever H¹, to the short arm of which is pivoted the connecting-rod H², pivoted to the bell-crank lever H³, which is actuated by a cam-plate, H⁴, on the shaft P¹, and retracted by the spring H⁵. When the upper point of the bag has been placed upon the table I by the action of the wings G G¹ in the manner hereinbefore set forth, and the head M raised by mechanism hereinafter to be described, the disks K K will then be driven forward across the upper surfaces of the points for the purpose of creasing the paper at the points where the points are to be turned down to complete the bottom of the sack. These disks are operated by the following mechanism: They run upon journals attached to springs K¹. These springs are carried upon an oscillating arm, K², which swings upon journals in standards attached to the bed-plate of the main frame, and actuated by a cam-plate, K⁴, keyed to the shaft P², acting against an arm, K³, attached to the shaft of the arm K². Blocks L L are hung upon the journals of the disks K. In the bottom of these blocks brushes are placed, so that when the arm is retracted the brushes shall bear against the surfaces of the paste-wheels L¹, revolving in the paste-troughs L². These brushes being carried forward with the movement of the disks K K will traverse the face of the paper on the tables I N and apply paste to the surface thereof at the same time that

the paper is creased by the disks. There are grooves upon the tables I N, into which the paper is pressed by the edges of the disks. The corners of the points are then turned over by the action of the doors O O¹, which oscillate in opposite directions, being connected by a crossed belt around the pulleys O² O³ on the ends of the shafts to which the doors are hung. The action of these pulleys is derived from a pulley on the shaft of the door O, around which a chain, O⁴, passes, one end of which is attached to a spiral spring, O⁵, and the other to a bent arm, O⁶, pivoted to a standard on the bed-plate, and actuated at the proper intervals by a cam-plate, O⁷, keyed to the shaft P. When the pressure of the cam-plate is taken off, the doors will be brought back to their original position by the tension of the spring O⁵. The bag is now completed by the head M, which is brought down sharply so as to press and strike upon the upper surface of the folds. This head is formed to correspond with the outlines of the surfaces of the tables I N, upon which the bag is completed. It is attached to an arm attached to trunnions turning in standards bolted to the main frame. A connecting-rod, M¹, is pivoted to the end of this arm, and operated by an arm on the counter-shaft, journaled on the main frame, and carrying an arm, as shown at M⁴, Fig. 2. This arm is operated by two cams, M² and M³, projecting from a plate keyed to the shaft P¹. The points of these cams, it will be observed, are of different widths, as one of them is intended to strike the short quick blow at the completion of the bag, and the other to turn down the head to near the surface of the tables N I and hold it there in contact with the paper while the wings G and G¹ are forming the tucks.

I am aware that in machines for making flat paper bags formers have been used consisting of a thin sheet of metal with correspondingly sharp edges, over which the paper was folded, creasing the paper at the folds, and forming a tube the sides of which nearly touched on leaving the former, so that it would be impossible to tuck in the tube at the end. To accomplish this I use a former of considerable thickness, with rounded edges, around which the paper is bent without forming creases or well-defined folds, and which forms a tube the sides of which are held apart sufficiently to permit the tucking in at the bottom end by means of suitable devices operating automatically.

What I claim as my invention in machines for making paper bags, and desire to secure by Letters Patent, is—

1. The supporting former C, in combination with swinging plates G G¹, acting against the edge of the paper tube to tuck in its sides preparatory to folding the same, substantially as specified.

2. The thick dull-edged former C, having grooves in its edges near the outer end, in

combination with the creasing-rollers C³, substantially as and for the purpose set forth.

3. The combination, with the endless apron constructed with hooks or stops, of a reciprocating traveler for communicating motion intermittently to the belt, substantially as specified.

4. In combination with the former and intermittently-moving endless apron, reciprocating folders operating from opposite sides to fold the ends of the sheet over the former, substantially as set forth.

5. In combination with the former, intermittently-moving endless apron, and folders, the pasting apparatus for applying paste to one end of the sheet, substantially as specified.

6. In combination with the former, the beveled guide for throwing up the end of the sheet carried over its edge, and the pasting apparatus arranged to apply the paste to such elevated end, substantially as specified.

7. In combination with the beveled guide for throwing up one side of the sheet carried over its edge while the body-portion is supported under the former, a suitable paste-fountain and a rotating brush for applying paste, substantially as specified.

8. In combination with the supporting former, a reciprocating pasting apparatus for applying paste to one-half the circumference of the end of the paper tube, substantially as specified.

9. The combination of the former, paste-distributing cylinder, and paste-rollers F F¹ carried on a plate or bar, F³, reciprocated in manner substantially as specified.

10. The endless apron, when constructed with open spaces across the semi-diameter, as shown at b¹, in combination with apparatus for applying paste to the upper and lower faces of the tube of paper, substantially as specified.

11. The wings G G¹, having the double oscillation horizontally and vertically for tucking and folding the bottom of the bag, substantially as specified.

12. The combination of the wings G and G¹, fingers g of the latter, and means for projecting and retracting such fingers, substantially as and for the purpose specified.

13. The head M, having two movements—one to aid in tucking and the other to finish the bottom of the bag—substantially as specified.

14. In combination with the paper-carrying belt and the former, folders descending in retreat below the plane in which the belt travels, substantially as specified.

15. The combination of the endless belt B having hooks b, traveler B¹, bent lever B³, arm B⁴, and revolving cam B⁶, substantially as set forth.

16. The combination of the former C, belt B, inclined tables D, folders D¹, flexible connected arms D³ and D⁴, the latter of which are keyed to rock-shafts actuated by cams D⁵

and D⁶ and suitable springs, in manner substantially as specified.

17. The combination of the slotted belt B b¹, former C, reciprocating bar F³, spring F² fast thereon, paste-rollers F¹ F¹, and pasting apparatus for supplying the latter with paste, substantially as specified.

18. The wing G¹, in combination with the fingers g, lever g¹, spring g², and stud g³ fixed on the frame, substantially as specified.

19. The combination of the wings G G¹, rods G³, oscillating levers G⁴, shafts G⁶ of the wings, connected slotted arms H, slotted lever H¹, rod H², oscillating lever H³, cams to actuate the levers G⁴ and H³ in manner set forth, and springs suitably arranged to return the wings to their normal positions, substantially as specified.

20. The hooks i i on the table I, arranged and operating substantially as specified.

21. The combination of the reciprocating creasing-rollers K K, paste-brushes L carried therewith to act simultaneously with the creasers, and a pasting apparatus for supplying the brushes with paste, substantially as specified.

22. The combination of the head M supported by an arm on trunnions, connecting-rod M¹, rock-shaft having an arm, M⁴, double-winged cam M² M³ M⁴, and spring M⁵, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY B. MORRIS.

Witnesses:

JOHN T. WHITE,
AUSTIN WHITE.