

No. 677,040.

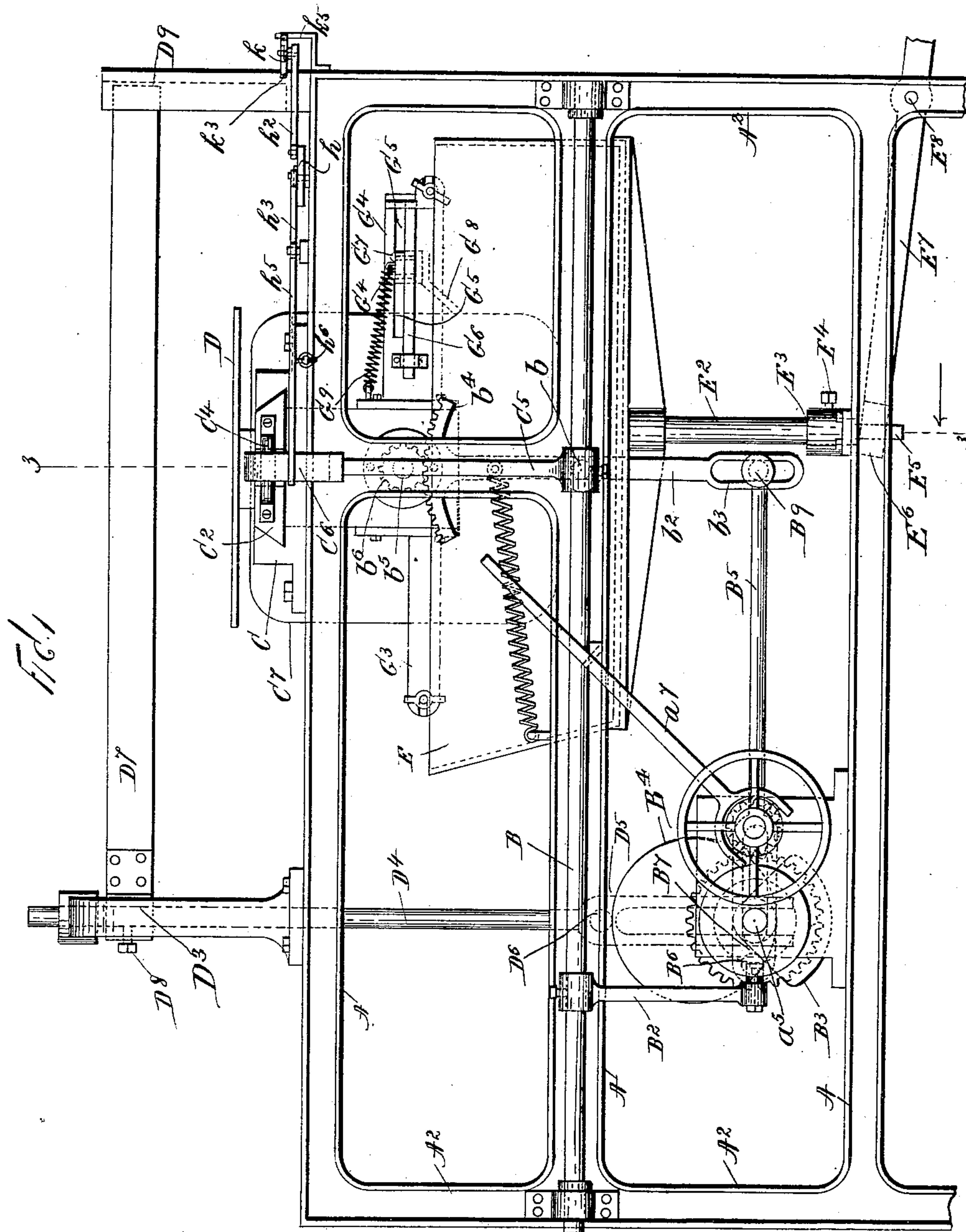
Patented June 25, 1901.

J. McCLELLAN.
BOOKBINDING MACHINE.

(Application filed June 5, 1900.)

(No Model.)

5 Sheets—Sheet 1.



WITNESSES

John Buckler,
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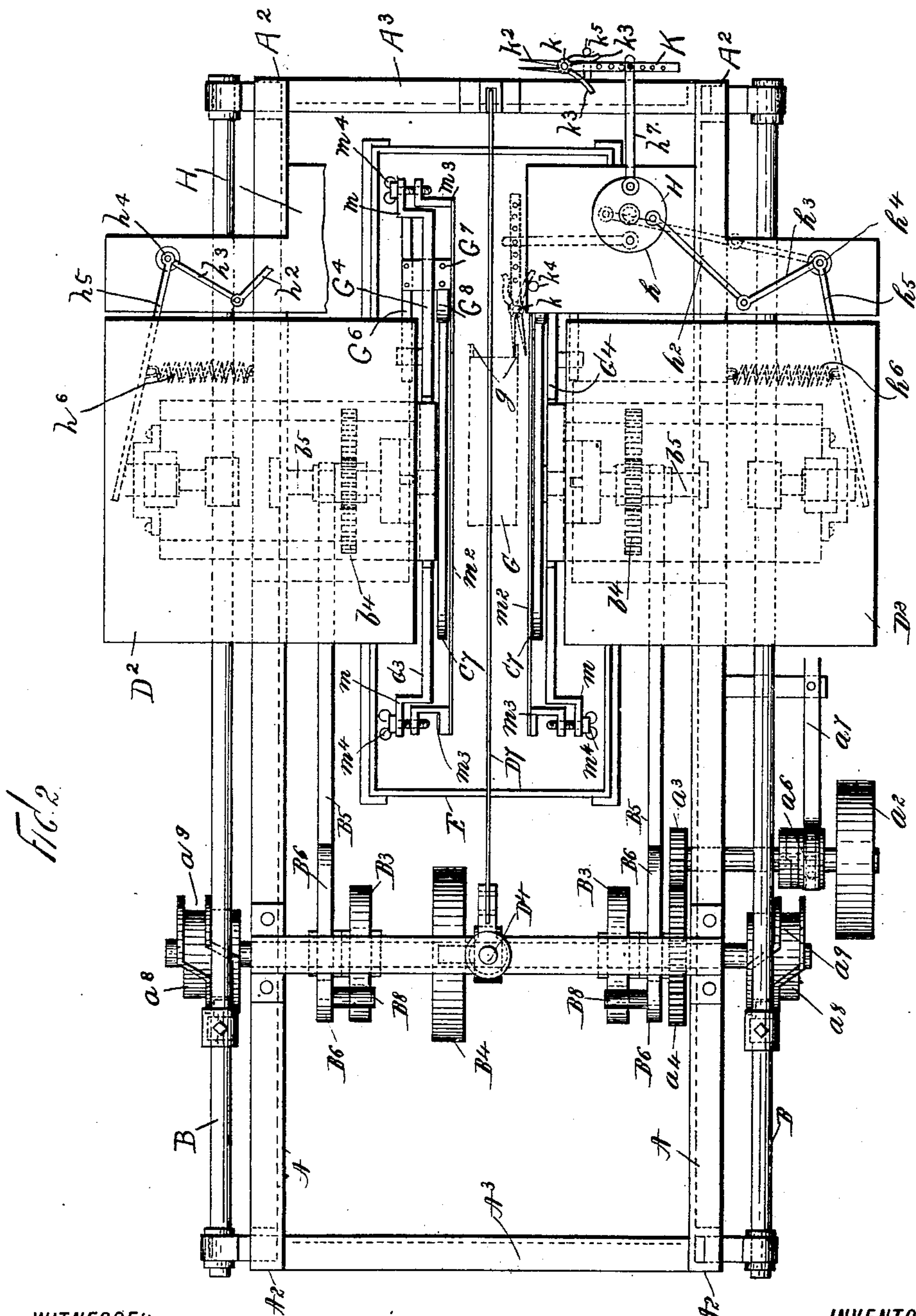
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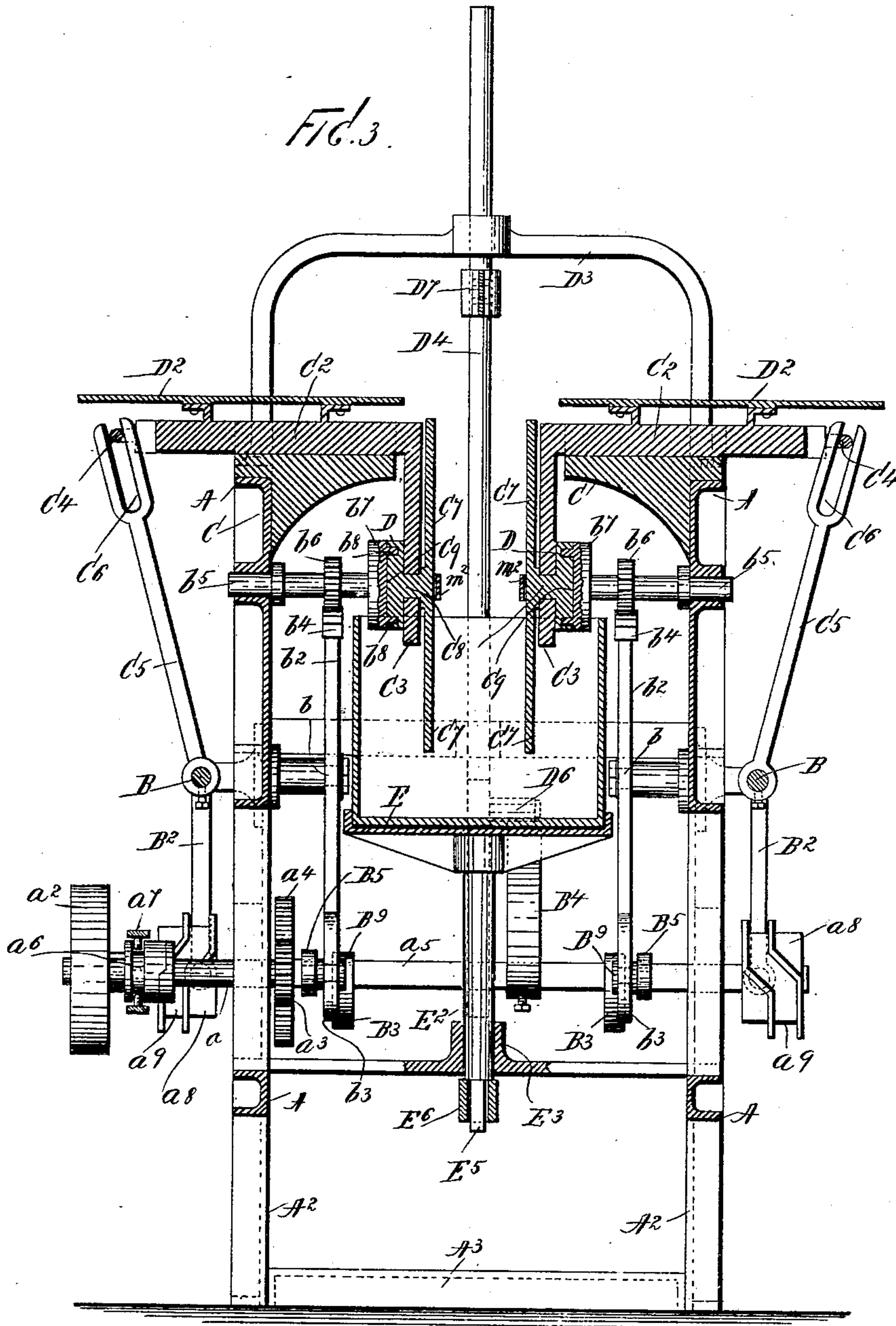
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5 Sheets—Sheet 3.



WITNESSES

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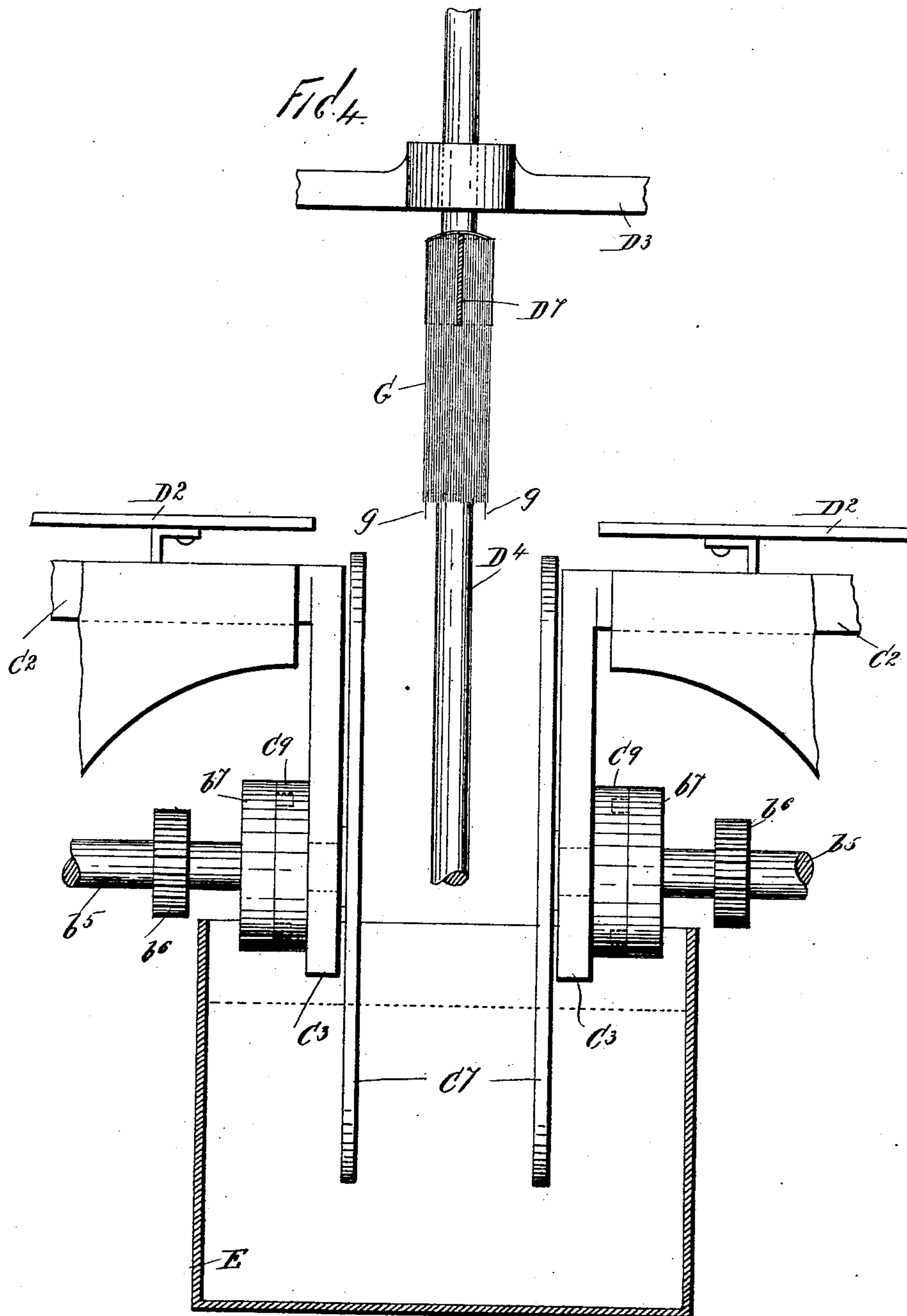
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5 Sheets—Sheet 4.



WITNESSES

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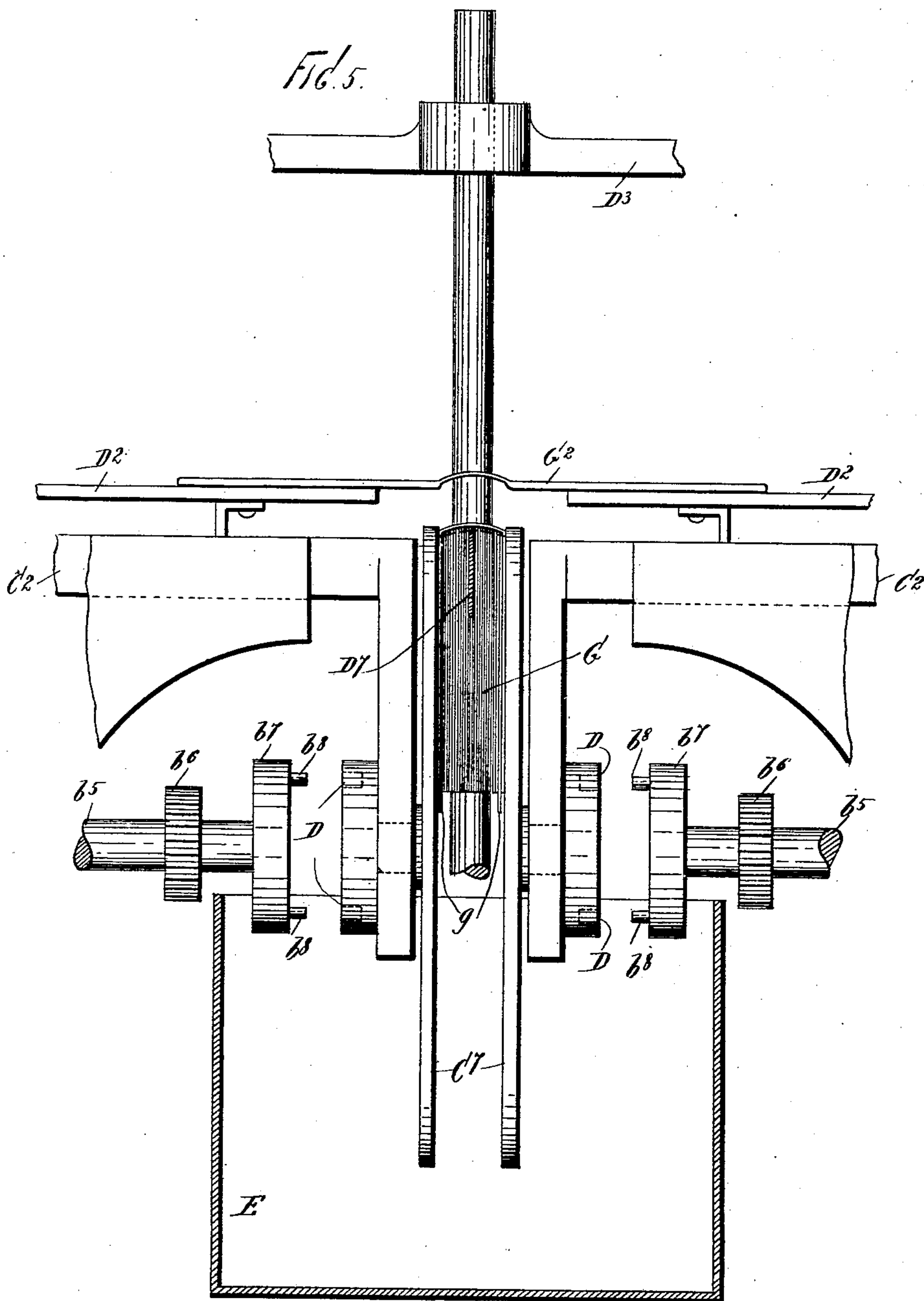
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(No Model.)

5 Sheets—Sheet 5



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UNITED STATES PATENT OFFICE.

JACKSON McCLELLAN, OF BROOKLYN, NEW YORK, ASSIGNOR OF THREE-
FOURTHS TO GEORGE HENRY McCLELLAN, OF ARLINGTON, NEW JERSEY,
AND GILBERT HUNT McKIBBIN AND BOYD EVERETT, OF NEW YORK, N. Y.

BOOKBINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 677,040, dated June 25, 1901.

Application filed June 5, 1900. Serial No. 19,106. (No model.)

To all whom it may concern:

Be it known that I, JACKSON McCLELLAN, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Bookbinding-Machines, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to bookbinding-machines; and the object thereof is to provide an improved machine of this class which is simple in construction, effective in operation, strong and durable, and which is not liable to frequently need repair.

In the accompanying drawings, forming part of this specification, in which like reference characters denote like parts in the several views, Figure 1 is a side view of my improved bookbinding-machine; Fig. 2, a plan view thereof; Fig. 3, a vertical section on the line 3 3 of Fig. 1; Fig. 4, a detail view, on an enlarged scale, partly in vertical section; and Fig. 5, a view similar to Fig. 4, showing the parts in a different position.

In the practice of my invention I provide a machine of the class described, which comprises a frame which, as shown in the drawings, consists of horizontal side bars A, vertical end posts A², and connecting end bars A³; but it will be apparent that this frame may be of any desired form or construction, any suitable support for the operative mechanism being sufficient.

In the rear portion of the frame of the machine and at one side thereof is mounted a power-shaft *a*, at the outer end of which is a drive-wheel *a*² and on the inner end of which is a pinion *a*³, which operates in connection with a gear-wheel *a*⁴ on a supplemental shaft *a*⁵, and connected with the shaft *a* and the drive-wheel *a*² is an ordinary clutch mechanism *a*⁶, operated by a hand-lever *a*⁷, by means of which the power-shaft *a* may be thrown into or out of operation. This clutch mechanism is not shown in detail; but any suitable construction for this purpose may be employed. On each end of the supplemental

shaft *a*⁵ is a cam-wheel *a*⁸, each of which is provided with a cam-groove *a*⁹, and at each side of the machine is a horizontal rock-shaft B, each of which carries near its rear end a downwardly-directed arm B², the lower end of which carries a pin which operates in the groove *a*⁹ of the corresponding cam-wheel *a*⁸. The supplemental shaft *a*⁵ is also provided with two triangular cams B³ and with a central circular cam B⁴, and arranged longitudinally of the frame are two rods B⁵, each of which is provided at its rear end with an oblong flattened head B⁶, in which is a longitudinal slot B⁷, (shown in dotted lines in Fig. 1,) and the supplemental shaft *a*⁵ passes through the heads B⁶ or through the slots B⁷, formed therein, and the heads B⁶ of each of the rods B⁵ is provided at its outer end with an inwardly-directed pin B⁸, and the cams B³ operate on the pins B⁸ to oscillate the rods B⁵ or move the same back and forth in the operation of the machine, as hereinafter described.

The front ends of the rods B⁵ are each provided with a headed pin B⁹, and pivotally supported at *b* over the front ends of the rods B⁵ and at each side of the machine is a lever *b*², the lower end of each of which is provided with a longitudinal slotted head *b*³, through which the corresponding pin B⁹ passes, and the upper end of each of the levers *b*² is provided with a segmental gear-head *b*⁴.

Mounted in each side of the machine and in the front portion thereof and over the pivotal supports of the levers *b*² is a shaft *b*⁵, each of which is provided centrally with a gear-wheel *b*⁶, and each of which is provided at its inner end with a clutch-head *b*⁷, this construction being clearly shown in Figs. 3, 4, and 5. The clutch-heads *b*⁷ are provided on their inner surfaces with pins *b*⁸, which are preferably diametrically arranged, and in the operation of the machine, as hereinafter described, the levers *b*² turn the shafts *b*⁵ intermittently, but always in the same direction.

At the top of the machine and over the shafts *b*⁵ are transverse supports C, on each of which is a transversely-movable plate C², the plates C² and supports C being con-

connected by tongue-and-groove joints, and each of the plates C^2 is provided at its inner end with a vertical and downwardly-directed extension C^3 .

5 The transversely-movable plates C^2 are each provided at its outer end with a link or staple C^4 , and secured to each of the shafts B at the opposite sides of the machine is an upwardly and outwardly directed arm C^5 , each
10 of which is provided at its upper end with a slotted head C^6 , in which the links or staples C^4 fit, and in the operation of the machine the plates C^2 are moved transversely of the machine by the arm C^5 . Each of the downwardly-directed and vertically-arranged extensions C^3 of the plates C^2 carries a paste-plate C^7 , which, as shown in the drawings,
15 are preferably rounded at the corners only, but which may be of any desired shape, and each of the paste-plates C^7 is provided with a central hub C^8 , which passes through the corresponding downwardly-directed extension C^3 of the plates C^2 , and each of the hubs C^8 is provided at its outer end with a clutch-head C^9 , and said clutch-heads C^9 are provided on their outer surfaces with cavities or
20 recesses D , (shown in dotted lines in Figs. 4 and 5 and in full lines in Fig. 3,) designed to receive the pins b^8 on the clutch-heads b^7 . Each of the transversely-movable plates C^2 supports a table D^2 , on which in practice the back of the book to be bound is placed, and near the rear end of the machine and over the frame thereof is a yoke-shaped or any desired support D^3 , in which is mounted a vertically-movable bar D^4 , the lower end of which is provided with a slotted head D^5 , through which the supplemental shaft a^5 passes, and at the upper end of the slotted
30 head D^5 of the bar D^4 is a pin D^6 , (shown in dotted lines in Figs. 1, 2, and 3,) which bears upon the perimeter of the circular cam B^5 as the shaft a^5 is revolved. By means of this construction the bar D^4 is caused to move vertically, and said shaft carries at its upper end a horizontal support D^7 , which is preferably very thin and which is designed in practice to support the book in the operation of the machine, and said support D^7 is made vertically adjustable by means of a set-screw D^8
45 or in any desired manner, and the front end of the support D^7 moves in a vertical groove formed in a standard D^9 , secured to the frame.

Mounted in the frame and below the paste-plates C^7 is a paste-tub E , in which said plates are free to turn, and said paste-tub may be of any desired form or construction, and in practice the paste for securing the back or cover to the book is placed in said tub in the
55 usual manner. The paste-tub E is vertically movable and is supported by a central shaft E^2 , which is connected with the bottom thereof and passes through a tubular bearing E^3 , in which is placed a set-screw E^4 , and the lower end of the shaft E^2 is reduced in form, as shown at E^5 , and passes into or through the head E^6 of a lever E^7 , pivoted at E^8 , and

by means of which the paste-tub may be raised. When it is desired to lower the paste-tub, the set-screw E^4 is loosened and the
70 paste-tub will drop by gravity. By means of this construction the paste-tub may be lowered or removed whenever desired for cleaning or other purposes.

The operation of the machine is as follows: 75 Suppose the parts to be in the position shown in Fig. 3. The leaves of the book to be bound are suspended from the support D^7 , as shown at G in Figs. 4 and 5 and in dotted lines in Fig. 2. The shaft a^5 is revolved by the shaft
80 a , and in this operation the shafts b^5 are revolved through one-half a revolution by the segmental gears b^4 . This operation gums the lower sides of the plates C^7 and turns the same upwardly, and at the same time the
85 leaves of the book to be bound descend between said plates into the position shown in Fig. 5. The back or cover G^2 is then placed on the tables D^2 . During the first part of the above-described operation the supports C^2 remain stationary. At the close of it, however, said supports C^2 are forced inwardly and the paste-plates C^7 are pressed firmly against the leaves of the book and the outer leaves are gummed, as will be readily understood, or
95 the paste is applied thereto by the plates C^7 . In this operation the plates C^7 are disconnected from the shafts b^5 , as shown in Fig. 5, and in the next movement of the levers b^2 said shafts b^5 turn in the opposite direction
100 and turn freely. As the shafts a^5 continue to revolve the supports C^2 are drawn outwardly in the position shown in Fig. 4, and the book-support D^7 moves upwardly and carries with it the back or cover G^2 , the sides of
105 which are pressed to the gummed surfaces of the outer leaves of the book by hand or in any desired manner. In the outer movement of the supports C^2 connection is again made between the paste-plates C^7 and the shafts C^5 , and these parts are again in condition for operation, and the operation above described will be repeated as long as the power-shaft is in operation. I also find it necessary to provide means to prevent the inner surfaces of
115 the paste-plates C^7 and the edges thereof from being clogged or to prevent too much paste clinging thereto. In order to accomplish this result, I secure to the opposite edges of the downwardly-directed extensions C^3 of the supports C^2 oppositely-projecting arms or supports G^3 and G^4 , the latter projecting toward the forward end of the machine and the former backwardly. The arm or support G^4 is preferably wider than the arm or support
125 G^3 and is provided with a longitudinal slot G^5 . It will be seen that this construction is employed on both sides of the machine or in connection with each of the paste-plates, and back of each of the arms or supports G^4 is a longitudinally-movable support G^6 , as shown in Figs. 1 and 2, with which is connected a sliding block G^7 , which passes through the slot G^5 and with which is connected a down-
130

wardly-directed spring-tongue G^8 , which bears upon the edge of the adjacent paste-plate C^7 and is designed to remove the paste therefrom. A spring G^9 is connected with the sliding block G^7 and with the downwardly-directed extension C^3 of the corresponding support C^2 and serves to move the sliding block G^7 backwardly, while the paste-plate itself in the revolution thereof operates to move the sliding block G^7 forwardly, and the spring-tongue G^8 is thus kept constantly in contact with the edge of the paste-plate.

Each of the arms or supports G^3 and G^4 is provided at its free end with an angular head m , and connected therewith is a scraper m^2 , which extends entirely across the face of the corresponding paste-plate and is provided with angular heads or ends m^3 , which are connected with the ends or heads m of the arms or supports G^3 and G^4 by means of set-screws m^4 , and by means of which the scraper m^2 may be adjusted toward or from the corresponding paste-plates. I also prefer to provide means to prevent the gumming or pasting of the edges of the leaves, and for this purpose I place just within each of the outer leaves a supplemental leaf or sheet g , the supplemental leaves g being of greater dimensions than the main leaves of the book and consisting of separate detached sheets, which are placed within the outer leaves, as above described. I also provide means for removing the supplemental or independent leaves or sheets at the time that the book is raised to the position shown in Fig. 4 and the back or cover connected therewith, and this construction I will now describe.

Pivoted to any suitable support, as H , over the front portion of the machine and at each side is a wheel h , (but one of which is shown,) and eccentrically connected with each of these wheels is a link-rod h^2 , which is pivotally connected with a link h^3 , each of which is pivotally connected at h^4 with the support H and rigidly connected with a rod or bar h^5 , and the rods or bars h^5 project backwardly and transversely of and against the heads C^6 of the arms C^5 , as shown in full lines in Fig. 1 and in dotted lines in Fig. 2, and in the operation of the machine, as hereinbefore described, the rods or bars h^5 are swung outwardly by the heads of the levers C^5 and drawn inwardly by a spring h^6 . (Shown in dotted lines in Fig. 2 and the end of which is shown in full lines in Fig. 1.) Rigidly secured to each of the wheels h (but one of which is shown) is a rod h^7 , which carries at its outer end a cross-bar K , one end of which is secured to a clamp k , having projecting jaws k^2 and backwardly-directed fingers k^3 . The movement of these parts is so regulated that when the book is in the position shown in Fig. 5 the clamps k are turned in the position shown in dotted lines in Fig. 2, and secured to each of the plates or supports H is a stop-pin k^4 , which operates in connection with the inner

finger k^3 to open the jaws k^2 of the clamps k , and as the wheel h turns into the position shown in full lines the said clamps move backwardly and are thrown into the position shown in full lines in Fig. 2, and the pin k^4 allows the jaws to come together and to close on the sheet or leaf g . When the plate H is turned fully into the position shown in full lines in Fig. 2, a stop k^5 operates in connection with one of the fingers k^3 to open the jaws k^2 and drop the sheet or leaf held thereby. As hereinbefore stated, this construction is employed in connection with each side of the book-support, but is only shown in its entirety on one side, only a part thereof being indicated on the opposite side, the reason for this being that the wheel h and its support on one side are removed in order to show more clearly the construction beneath.

The cross-bar K on the rod or arm h^7 is provided with a plurality of longitudinal perforations in order that the clamp k may be adjusted thereon so as to adapt the device to books of different sizes.

When the book is raised to the position shown in Fig. 4, the back or cover is preferably pressed downwardly thereon by hand, thus holding it in proper position, and the said back or cover is then clamped or closely pressed upon the book by any suitable means.

The entire machine is simple in construction and operation and is well adapted to accomplish the result for which it is intended, and it will be apparent that changes in and modifications of the construction described may be made without departing from the spirit of my invention or sacrificing its advantages.

Having fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A machine for binding books, comprising a frame, a paste-tub mounted therein, laterally-movable supports mounted over said tub, intermittently-rotatable shafts mounted beneath each of said supports, intermittently-rotatable paste-plates carried by said supports, clutch-heads connecting said shafts and said paste-plates and engaged and disengaged by the movement of the supports, a vertically-movable book-support mounted over and between said paste-plates, means for removing paste from the face of said plates and devices for moving said book-support vertically and for intermittently rotating said shafts and for operating said supports, substantially as shown and described.

2. In a machine for binding books, a frame, a paste-tub mounted therein, a power-shaft mounted at one side of said frame, a supplemental shaft mounted transversely of said frame and operated by said power-shaft, supports mounted at each side of the frame and over said paste-tub and laterally movable, paste-plates connected with said supports, shafts mounted below said supports and con-

connected with said paste-plates to rotate the same intermittently when the supports are in one position, said shafts and said supplemental shaft being in operative connection, a vertically-movable book-support mounted over and between said paste-plates, and devices connecting said laterally-movable supports and said supplemental shaft for moving said supports laterally, substantially as shown and described.

3. A machine of the class described provided with a paste-tub, transversely-movable supports mounted over said tub and provided with intermittently-rotatable paste-plates adapted to turn therein, a vertically-movable book-support mounted over and between the paste-plates, means for operating said supports, said paste-plates and said book-support, said machine being also provided with devices for removing supplemental or independent sheets or leaves from within the outer leaves of the book after the paste has been applied thereto, substantially as shown and described.

4. A machine of the class described provided with a paste-tub, transversely-movable supports mounted over said tub and provided with intermittently-rotatable paste-plates adapted to turn therein, a vertically-movable book-support mounted over and between the paste-plates, means for operating said supports, said paste-plates and said book-support, said machine being also provided with devices for removing supplemental or independent sheets or leaves from within the outer leaves of the book after the paste has been applied thereto, comprising pivotally-supported clamps which are adapted to turn into position to grasp said independent leaves or sheets and remove the same as the book is raised, substantially as shown and described.

5. In a machine of the class described, a frame, a vertically-movable paste-tub mounted therein, laterally-movable supports mounted over said tub, intermittently-rotatable paste-plates connected with said supports, a vertically-movable book-support mounted over and between said paste-plates, laterally-movable scrapers mounted across the faces of the paste-plates, and spring-operated devices

adapted to bear on the edges of said plates, substantially as shown and described.

6. A machine of the class described, comprising a frame, a vertically-movable paste-tub mounted therein, a power-shaft mounted at one side of said frame, a supplemental shaft mounted transversely of the frame and geared in connection with the power-shaft, cam-heads connected with the ends of the supplemental shaft, transversely-movable supports mounted over the paste-tub and in operative connection with said cam-heads, intermittently-rotatable paste-plates connected with said supports, shafts mounted beneath said supports and adapted to be connected with said paste-plates, devices for connecting the supplemental shaft with said last-named shafts and for operating the latter, and a vertically-movable book-support mounted over and between the paste-plates, substantially as shown and described.

7. A machine of the class described, comprising a frame, a vertically-movable paste-tub mounted therein, a power-shaft mounted at one side of said frame, a supplemental shaft mounted transversely of the frame and geared in connection with the power-shaft, cam-heads connected with the ends of the supplemental shaft, transversely-movable supports mounted over the paste-tub and in operative connection with said cam-heads, intermittently-rotatable paste-plates connected with said supports, shafts mounted beneath said supports and adapted to be connected with said paste-plates, devices for connecting the supplemental shaft with said last-named shafts and for operating the latter, and a vertically-movable book-support mounted over and between the paste-plates, said paste-plates being also provided with devices for removing the paste from the faces thereof, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 9th day of April, 1900.

JACKSON McCLELLAN.

Witnesses:

F. A. STEWART,
C. C. OLSEN.