No. 709,552. Patented Sept. 23, 1902.

W. L. MORRIS.

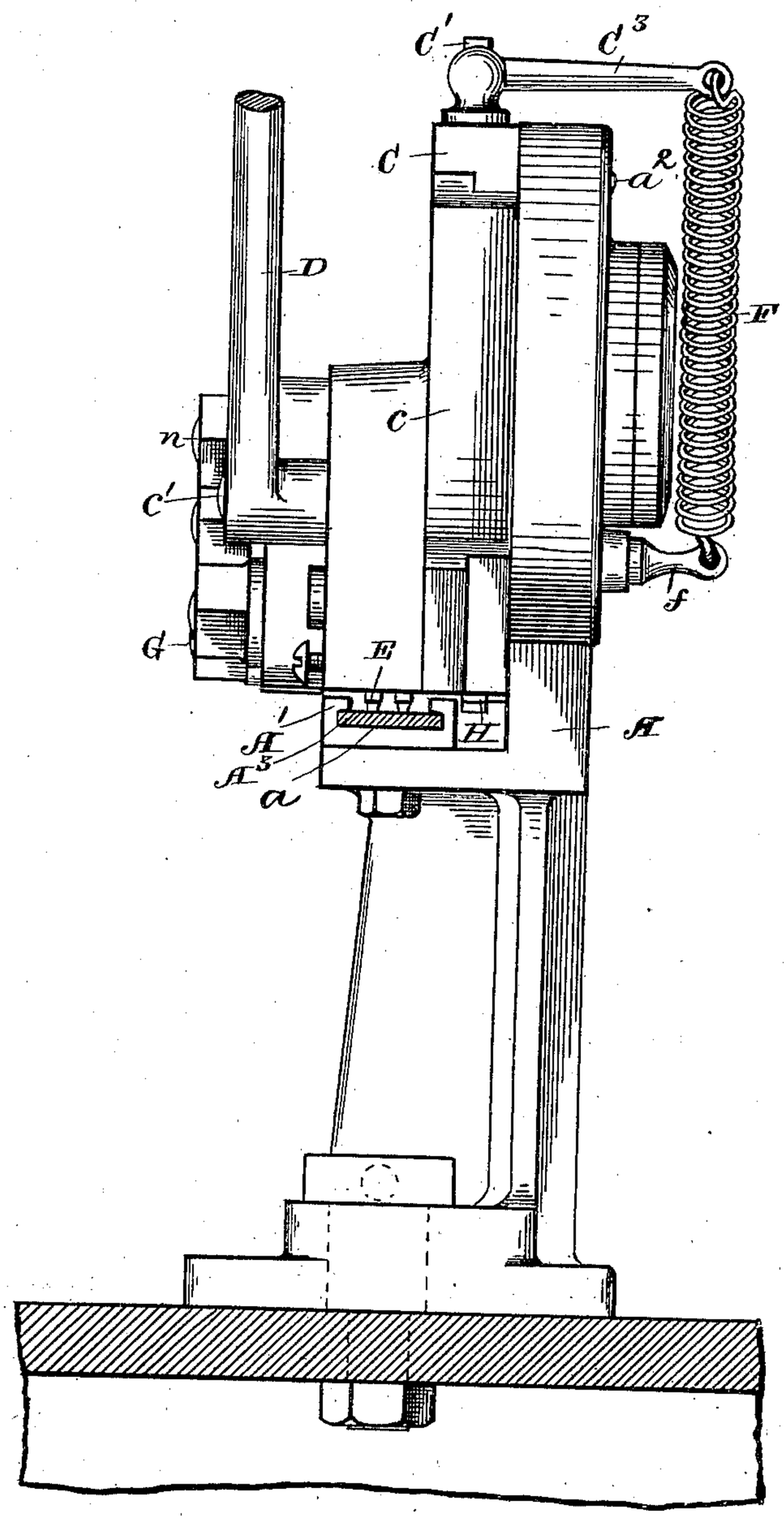
PRINTING DEVICE.

(Application filed Mar. 13, 1899.)

(No Model.)

6 Sheets—Sheet 1.

-FIG. 1-



Witnesses
J. C. Turner
N. E. Merkel.

Inventor,
By Wm. L. Morris
J. B. Fay
Atty.

No. 709,552.

Patented Sept. 23, 1902.

W. L. MORRIS.

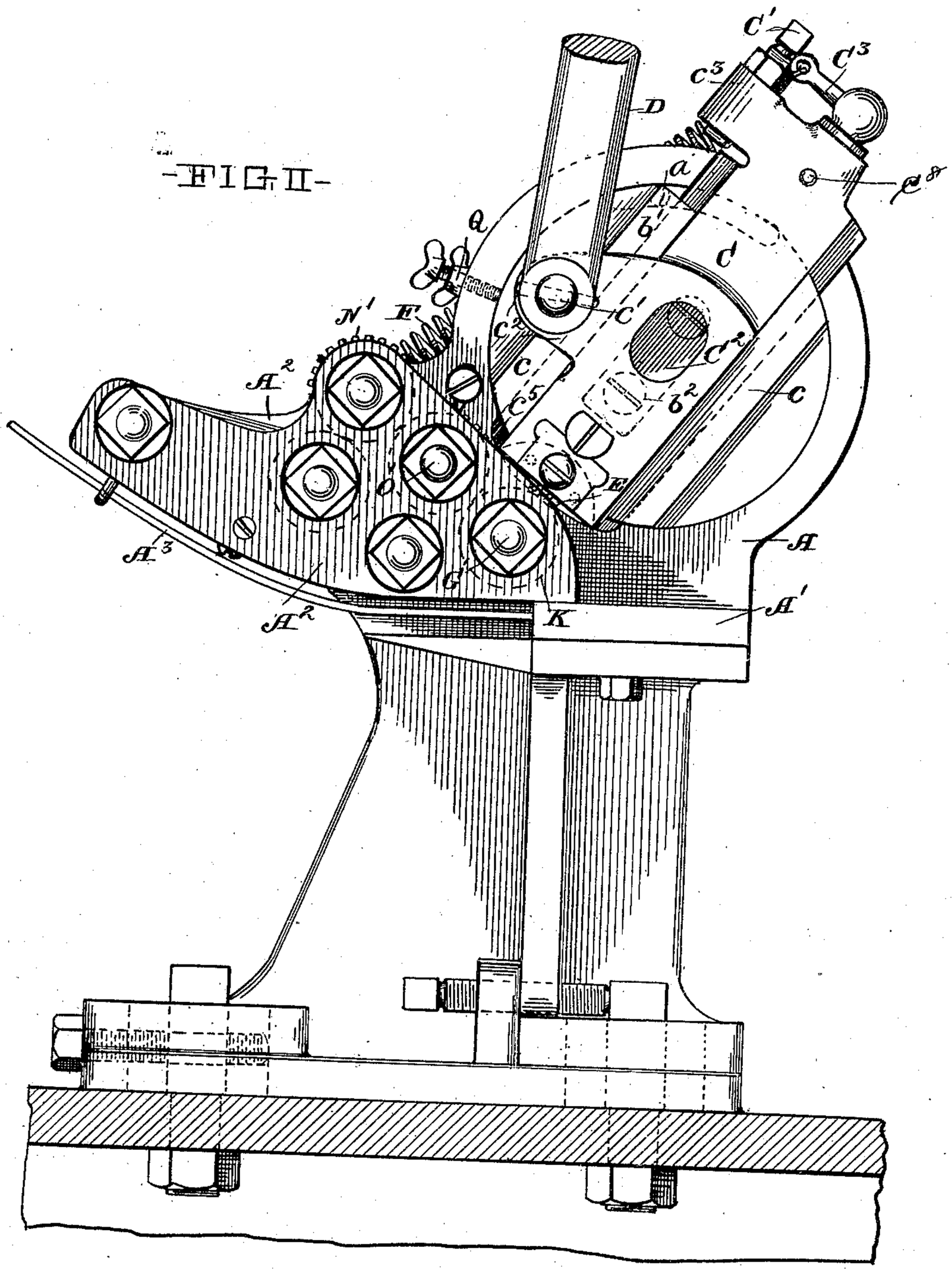
PRINTING DEVICE.

(Application filed Mar. 13, 1899.)

(No Model.)

6 Sheets—Sheet 2.

-FIG. II-



Witnesses,

J. C. Turner

N. E. Merkel

Inventor

By Wm L. Morris

J. D. Gay Atty.

No. 709,552.

Patented Sept. 23, 1902.

W. L. MORRIS.

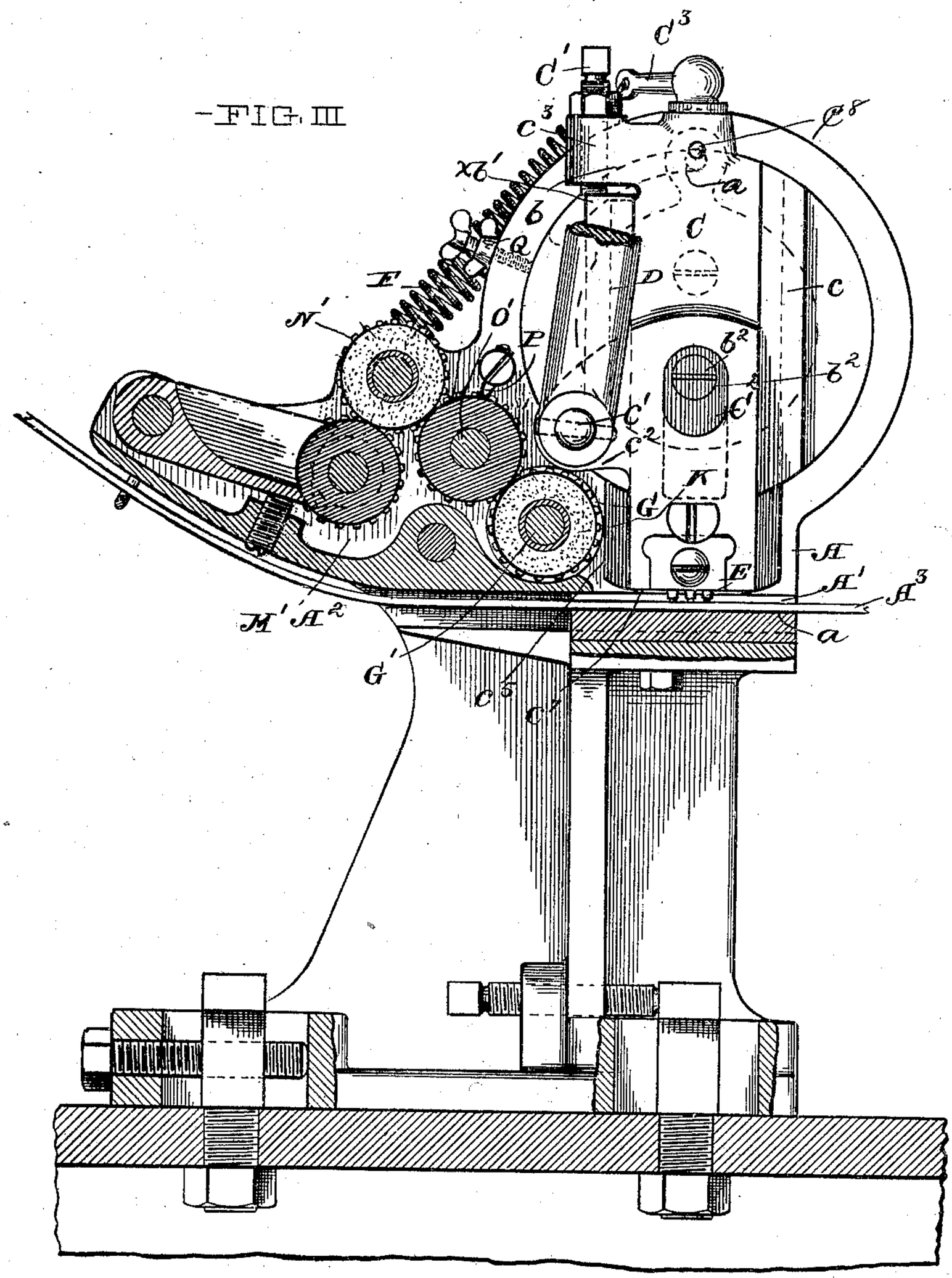
PRINTING DEVICE.

(Application filed Mar. 13, 1899.)

(No Model.)

6 Sheets—Sheet 3.

FIG. III.



Witnesses,
J. C. Turner
A. E. Merkel.

Inventor,
Wm. L. Morris
By
J. B. Fay
Atty.

No. 709,552.

Patented Sept. 23, 1902.

W. L. MORRIS.

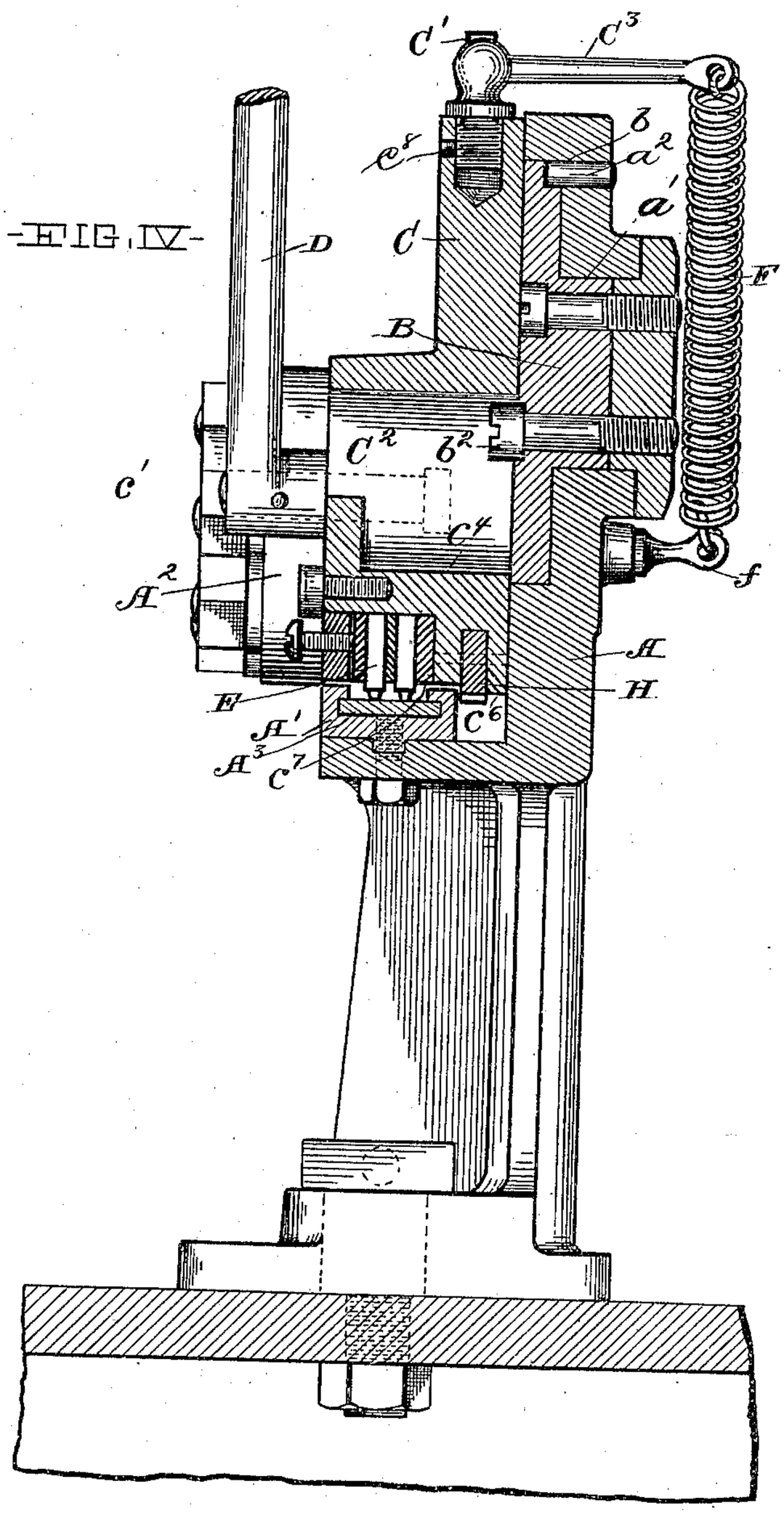
PRINTING DEVICE.

(Application filed Mar. 13, 1899.)

(No Model.)

6 Sheets—Sheet 4.

FIG. IV.



Witnesses,
J. C. Turner
N. E. Merkel.

Inventor,
Wm L. Morris
By
J. D. Fay
Atty.

No. 709,552. Patented Sept. 23, 1902.

W. L. MORRIS.

PRINTING DEVICE.

Application filed Mar. 13, 1899.

(No Model.) 6 Sheets—Sheet 5.

FIG V

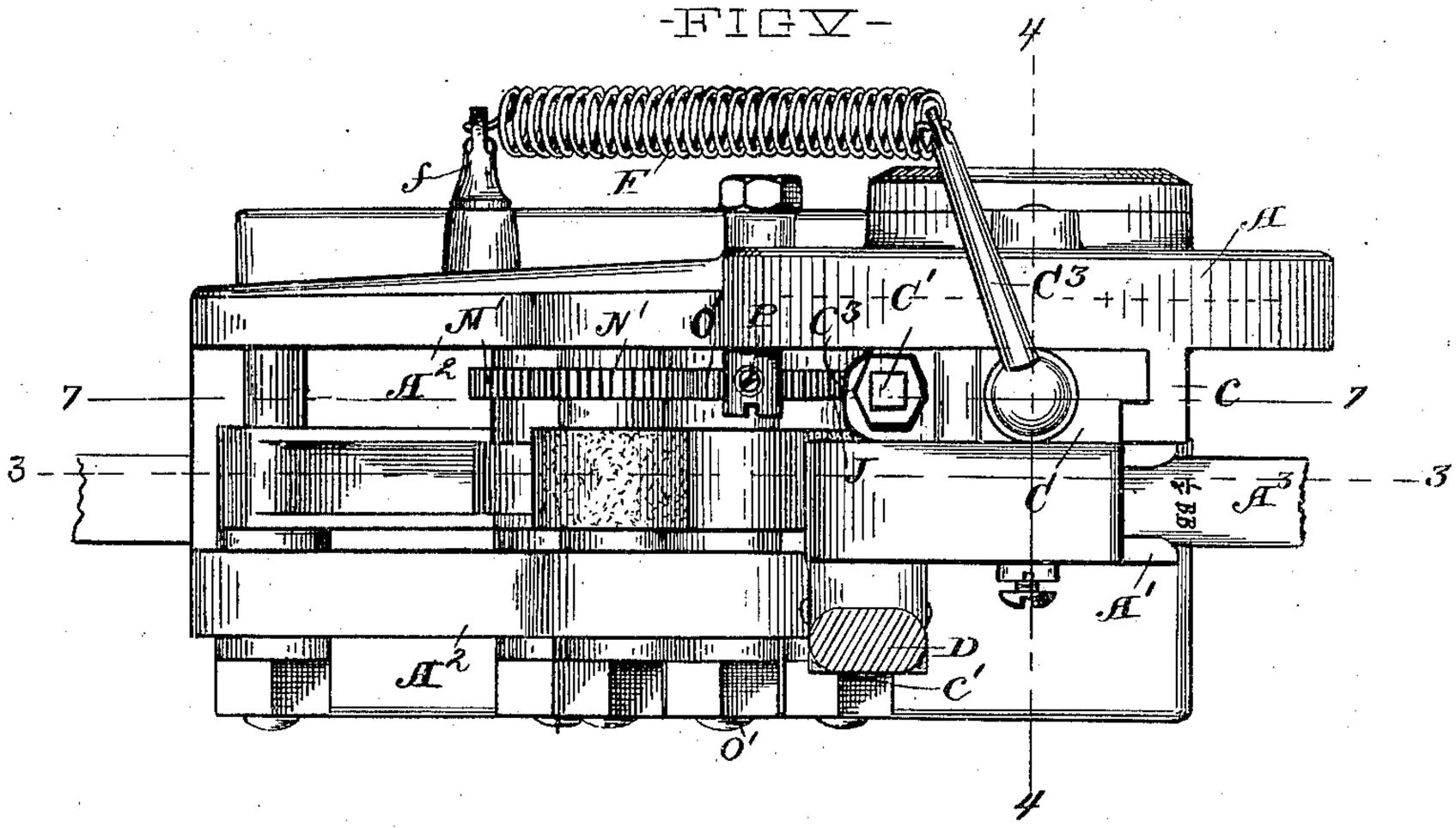


FIG X

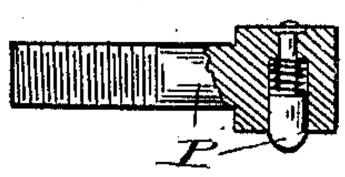


FIG VI

Witnesses.
J. C. Turner
N. E. Merkel.

Inventor,
Wm L. Morris
By J. B. Fay
Atty

No. 709,552. Patented Sept. 23, 1902.

W. L. MORRIS.

PRINTING DEVICE.

(Application filed Mar. 13, 1899.)

(No Model.) 6 Sheets—Sheet 6.

FIG. VII

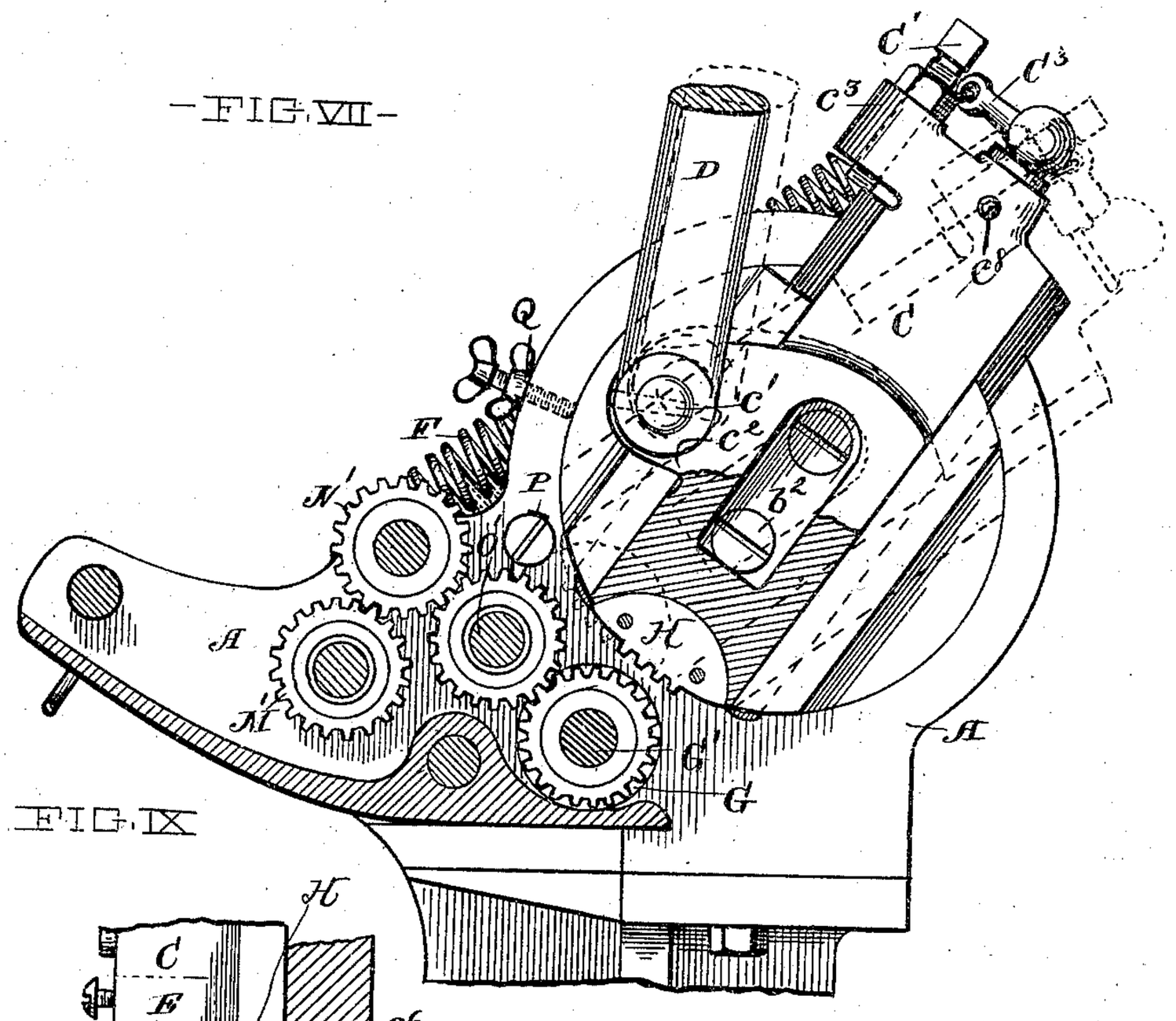


FIG. IX

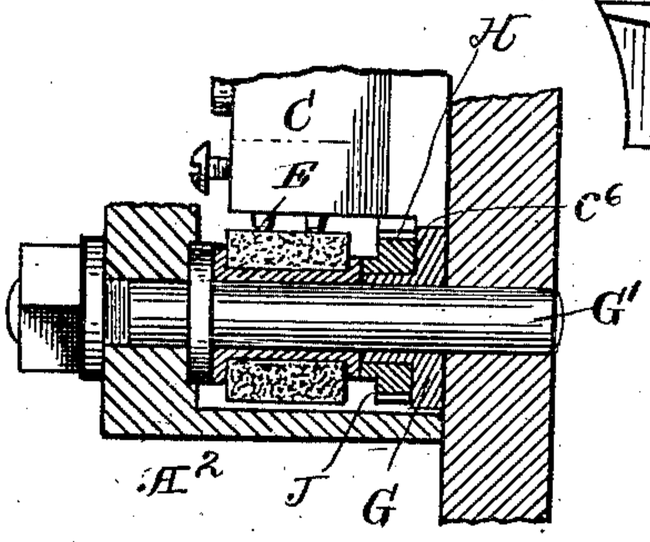


FIG. VIII

Witnesses,
J. C. Turnes
A. E. Merkel

Inventor
Wm L. Morris
By
J. D. Fay
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM L. MORRIS, OF CLEVELAND, OHIO, ASSIGNOR TO THE AUSTIN CARTRIDGE COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

PRINTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 709,552, dated September 23, 1902.

Application filed March 13, 1899. Serial No. 708,802. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. MORRIS, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Printing Devices, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to that class of printing devices used for printing upon wads used in shell-loading machines, and particularly to that device shown and claimed in United States Letters Patent No. 639,080, issued December 12, 1899.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure I represents a front view of my improved device. Fig. II represents a side elevation illustrating a particular position assumed by the mechanism during its operation. Fig. III represents a partial side elevation and a partial section taken upon the transverse vertical plane indicated by line 3 3, Fig. V, illustrating a second position of the mechanism. Fig. IV represents a cross-section taken upon the plane indicated by line 4 4 in Fig. V, showing portions cut by such plane in elevation, said Fig. V representing a top plan. Fig. VI represents a view similar to that shown in Fig. III, showing the lower or base portion broken away and illustrating the mechanism in a third position assumed in its operation. Fig. VII represents a partial side elevation and a partial section taken upon the transverse vertical plane indicated by line 7 7 in Fig. V, the position of the mechanism being the same as illustrated in Fig. VI. Fig. VIII represents a view similar to that shown in Fig. VII, showing the mechanism in the position assumed as indicated in Fig. II. Fig. IX represents a detail section taken upon the longitudinal vertical plane indicated by line 9 9, Fig. VII, and showing parts cut by such plane in elevation; and Fig. X represents a partial cross-section of a detail of the mechanism.

The moving parts of my improved device are mounted upon a frame A, formed or provided with a suitable base or pedestal, which may be secured to a shell-loading machine, as shown and described in my said above-named application.

Below the moving parts of the mechanism and formed in or suitably secured to the stationary frame of the machine is a wad-strip guide A′, open above, the lower inner surface *a* being flat and forming a support for the wad-strip while being impressed by the type, as shown in Fig. III.

In the upper portion of the frame is formed a longitudinally-cylindrical bore *a′*, forming a bearing for an oscillatory head B, which forms a support for a type-carrier C, which is mounted upon said head in suitable guides *c*, forming slide-bearings for said carrier, as shown in Figs. II and VI.

The head B is provided with a segmental slot *b*, Figs. III and IV, into which projects a pin a^2, secured to the frame A.

Journaled upon a wrist-pin *c′*, secured to a rearwardly-projecting extension c^2, formed upon the type-carrier C, Figs. II and III, is an operating-arm D, which reciprocated by suitable mechanism effects the oscillation of the oscillatory head and the reciprocation of the type-carrier in a manner hereinafter described. The axis of the wrist-pin is located eccentrically with reference to a plane perpendicular to the plane of oscillation of the carrier or the head B and containing a line passing through the center of oscillation and parallel with the direction of the reciprocal movement of said carrier. By the "plane of oscillation" I mean the plane containing the arc of a circle described by a given fixed point in the head.

The type E are secured by suitable means to that end of the type-carrier adjacent to the wad-strip support and in a manner such that the printing-surface of said type is parallel with the wad-strip support or the surface of the wad-strip in the guide when the pin a^2 engages the end of the slot *b* toward the front of the machine, as shown in Fig. III in dotted lines.

An adjusting-screw C′ passes through a rearward extension c^3 at the upper end of the type-carrier and determines the end of the reciprocating stroke toward the wad-strip by engaging a shoulder b' on the oscillatory head, as shown in Fig. III.

The amount of retraction of the type-carrying slide from the wad-strip support is limited by a projection, such as the head of a screw b^2, Fig. IV, which may engage the lower surface c^4 of a slot C^2, formed in the type-carrier. Upon the upper end of said carrier is secured a laterally-extending arm C^3, which may be moved in a plane transverse to the carrier-axis and its angular position in such plane fixed as by means of a set-screw c^8, engaging a threaded pivot, as shown in Fig. IV. To the free end of said arm is secured one end of a helical spring F, whose opposite end is secured to a rearwardly-located post f, (shown in Fig. IV,) so that said spring extends angularly toward the back of the machine with reference to the carrier-axis, as shown in Fig. III, when said carrier is in its printing position—that is, when the type-surface is parallel with the wad-strip surface.

The guides c are of a length such that the end of the carrier projects therefrom, permitting a portion of the lower rear surface c^5 to be free from contact therewith during the reciprocation of said carrier.

Upon a spindle G′, secured in the forward part of a rearwardly-extending portion or inker-frame A^2 of the machine-frame and front portion of the inker-frame, is journaled a guide-roll G, Fig. IX, of a diameter such that its peripheral surface engages said type-carrier surface c^5 when said carrier is in its printing position and at an intermediate portion of either reciprocal stroke.

The portion c^6 of the face c^7, Fig. IV, of the carrier, in which are secured the type, and adjacent transversely of the machine to the guide-roll surface is given a form corresponding with the type-surface. In said face c^7 of the carrier, located adjacent longitudinally of the machine to the surface c^6, is secured a segment H of a gear, the teeth of which are designed to mesh with a pinion J, mounted upon the spindle G′ adjacent to the guide-roll, preferably loosely mounted upon a sleeve formed upon the roller G. Upon a thimble journaled upon said spindle is secured an inker-roll K, composed of gelatin or other similar material.

The location of the cylindrical surface c^6 relatively to the type-surface is such that said type-surface will contact the gelatin-roll surface when the surface c^6 contacts the periphery of guide-roll, the relationship of the segment H to said surface c^6 being such that the segment-teeth will properly mesh with the teeth of the pinion J during such contact between said surface and the guide-roll, whereby the segment-teeth are prevented from jamming or otherwise improperly engaging the pinion-teeth.

The distance between a plane perpendicular to the direction of movement of the type-carrier and passing through the points upon that portion of the periphery of the screw b^2 which contacts the lower surface of slot C^2 and a plane parallel thereto and tangent to the periphery of the gelatin roll K is made greater than that between the plane of said lower slot-surface and parallel with said first-named plane and the plane of the type, whereby it is seen that the carrier may be drawn up so that said type may escape contact with said gelatin roll upon the rotation of said carrier.

The inking device constitutes a part of my invention, for which I have made separate application for United States Letters Patent filed December 9, 1899, Serial No. 739,738, and which consists, stated briefly, of a series of inker-rolls communicating with an ink-well, by means of which the ink in such well is transferred to said roll K, said rolls being operatively connected by means of a series of gears M′ N′ O′ and the aforementioned gear J. In the vicinity of one of the gears O′, as illustrated in Figs. VI and X, is located a spring-actuated locking-pin P, whose end projects between the gear-teeth spaces. The said end is so formed and the spring is of such a strength that on the rotation of the gear O′ it will cause the pin to be pressed from between the two teeth engaged by it and engage succeeding adjacent teeth, thereby punctuating the rotation of the rollers.

The operation of the mechanism is as follows: The operating-arm is secured at its upper end to means suitable for reciprocating its lower end attached to the type-carrier. Beginning with the mechanism in the position shown in Figs. I and III, the upward stroke of the operating-arm causes the type-carrier to execute the upward stroke of its reciprocal movement, the rear lower surface of said carrier bearing against the guide-roll, as shown in said Fig. III. During that part of said upward stroke in which the rear carrier-surface contacts the guide-roll G there is constant tendency on the part of the head to rotate upon its axis, such tendency being the result of the eccentric location of the attached end of the operating-arm. This tendency is, however, counteracted by the contact of the guide-roller during the time of such contact. As will be subsequently seen, however, it is necessary to draw said carriage upwardly to a point such that it will become disengaged from the guide-roller. Upon such disengagement it is necessary to provide means for preventing rotation of the head, which would occur immediately upon such disengagement were such means not provided. To prevent such rotation at such time, a screw Q, Fig. III, is provided, which projects against the bearing-surface of said head x, as shown in dotted lines, and which may be caused to exert frictional resistance to prevent such rotation until the carriage has been drawn to the extreme up-

per limit of its stroke. The oscillatory stroke of the head and type-carrier continues to a point at which the type-surface has completely passed the inker-roll surface, as shown in dotted lines in Fig. VII. During the combined reciprocal and oscillatory movement of the type-carrier the spring F has been caused to elongate and at the end of the above-described rotary stroke exerts a force upon the said carrier substantially in the direction of the carrier-axis. On the return movement of the operating-arm D a reciprocating stroke on the part of said carrier will therefore take place, such stroke continuing until the surface c^6 strikes the surface of the guide-roll. A return oscillatory stroke follows, caused by the action of the operating-arm. The reciprocating stroke preceding the said return oscillatory stroke brings as a result of the previously-described relative location of the type and contact-surface the inker-roll surface into the oscillatory path of the type, at the same time causing the pitch-lines of the pinion J and the segment to become tangent to each other. Such last-described rotation continues until rear contact-surface c^5 of the type-carrier becomes tangent to the guide-roll G′ and the carrier is advanced toward the wad-strip support and the type are impressed upon the wad-strip A^3. The pin a^2 engages the end of the segmental slot b' at this point and prevents continued oscillatory movement of the head, which would result during the impression of type upon the strip, and thereby displace the strip and cause a variation of the distance between successive impressions upon said strip. The action above described is then repeated, reciprocation of the carrier being combined with oscillation thereof, a reciprocating stroke preceding each oscillatory stroke, the ink-rolls being rotated intermittently, such rotation always taking place on the return oscillating stroke, and hence being always in the same direction. The locking-pin causes each tooth to occupy the exact location occupied by its predecessor in the preceding position of the pinion J, so that said pin having been adjusted so as to assure the correct meshing of the segmental and pinion teeth such correct meshing always follows.

Any suitable means may be employed for intermittently feeding the wad-strip through the wad-guide, one such means being described and claimed in the above-mentioned Letters Patent No. 639,080.

I claim as my invention—

1. In a printing device, the combination of an oscillatory support, a type-carrier slidably mounted upon said oscillatory support, means for imparting an oscillatory movement to said support, and a reciprocating movement to said carrier, and means for causing a partial reciprocating stroke in one direction prior to the return oscillatory stroke, whereby the position of the carrier relative to said support will be different during the two oscillatory strokes.

2. In a printing device, the combination of an oscillatory support, a type-carrier slidably mounted on said support; means for reciprocating said carrier, means for oscillating said support intermittently intermediate the reciprocating movements, a partial reciprocating movement in one direction being provided prior to the return oscillatory stroke, and means for preventing oscillation during the initial and final strokes of the reciprocating movement of said carrier, whereby the position of the carrier relative to said support will be different during the two oscillatory strokes.

3. In a printing device, the combination of an oscillatory support, a type-carrier slidably mounted upon said support, means for oscillating said support and carrier, means for imparting a sliding movement in one direction prior to one oscillatory stroke, and means for imparting a sliding movement of a length less than the full reciprocating movement and in the opposite direction prior to the opposite oscillatory stroke, whereby the position of the carrier relative to said support will be different during the two oscillatory strokes.

4. In a printing device, the combination of an oscillatory support, a type-carrier slidably mounted upon said support, means for oscillating said support and carrier, means for imparting a sliding movement in one direction prior to one oscillatory stroke, and independent means for imparting a sliding movement only in the opposite direction prior to the opposite oscillatory stroke.

5. In a printing device, the combination of a type-carrier capable of oscillation, means for effecting such oscillation, means for imparting a sliding movement to said carrier prior to one oscillatory stroke, and a spring adapted to impart to said carrier a movement in a direction opposite to that of said sliding movement, substantially as set forth.

6. In a printing device, the combination of a type-carrier capable of oscillatory and reciprocal movement, means for effecting such oscillation, means for imparting a sliding movement to said carrier prior to one oscillatory stroke of said carrier, and a spring for imparting a sliding movement to said carrier prior to the other oscillatory stroke, substantially as set forth.

7. In a printing device, the combination of a type-carrier suitably mounted and capable of an oscillatory and reciprocal movement, a guide adapted to contact said carrier whereby one reciprocating stroke may be effected, said guide located in a manner such that it may be disengaged from said carrier, and an actuating-arm journaled upon said carrier eccentrically whereby reciprocation of said carrier may be effected during such contact and oscillation of same effected during such disengagement, substantially as set forth.

8. In a printing device, the combination of

a type-carrier suitably mounted and capable of an oscillatory and a reciprocating movement, means for effecting such movement and a roller for engaging said carrier and adapted to prevent oscillation during one reciprocal movement thereof, substantially as set forth.

9. In a printing device, the combination of a support, a type-carrier suitably mounted upon said support and capable of a reciprocating movement, means for oscillating said support and reciprocating said carrier, and a roller for engaging said carrier and adapted to prevent oscillation of said support during one reciprocal movement of said carrier, substantially as set forth.

10. In a printing device, the combination of an oscillatory support, a type-carrier slidably mounted upon said support, means tending to rotate said carrier, a guide-roller for engaging the latter, and means for withdrawing same from contact with said roller, whereby said rotating means are rendered operative, substantially as set forth.

11. In a printing device, the combination of an oscillatory support, a type-carrier slidably mounted upon said support, driving means journaled without the axial plane perpendicular to said carrier, a guide-roller for engaging said carrier, the latter adapted to be withdrawn from contact with said roller by said driving means, whereby the carrier may be rotated, substantially as set forth.

12. In a printing device, the combination of an oscillatory support, a type-carrier slidably mounted upon said support, means for imparting an oscillatory and a reciprocating movement to said carrier, type carried thereby, and relatively stationary inking means located in the path of movement of the type and adapted to ink the same during but one of the oscillatory movements of the carrier, said type being out of contact with the inking means during the opposite oscillatory stroke.

13. In a printing device, the combination of an oscillatory support, a type-carrier slidably mounted upon said support, means for oscillating said carrier, an ink-roller, and means for rotating said roller during one stroke of the oscillatory movement of the said carrier, said means being inoperative during the other oscillatory stroke, substantially as set forth.

14. In a printing device, the combination of an oscillatory support, a type-carrier slidably mounted upon said support, driving means journaled without the axial plane perpendicular to said carrier, a guide-roller for engaging said carrier, the latter adapted to be withdrawn from contact with said roller by said driving means, whereby said carrier may be rotated, and means for limiting such rotation, substantially as set forth.

Signed by me this 4th day of March, 1899.

WILLIAM L. MORRIS.

Attest:

D. T. DAVIES,

A. E. MERKEL.