

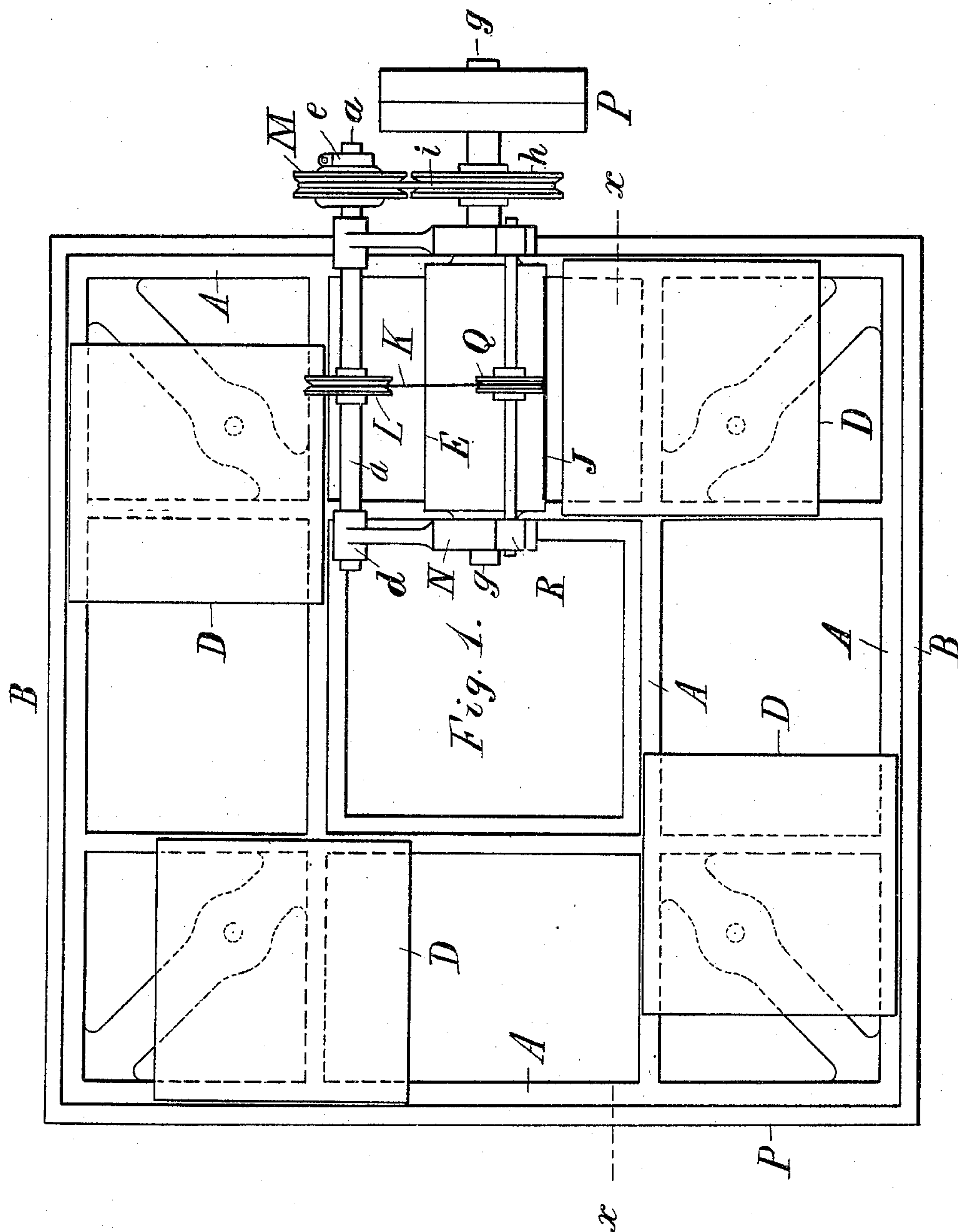
(No Model.)

3 Sheets—Sheet 1.

U., H. E. & F. L. EBERHARDT.
PLATE PRINTING MACHINE.

No. 433,457.

Patented Aug. 5, 1890.



Attest:

L. Lee.

J. Van Nostrand Jr.

Inventors.

U. Eberhardt, H. E. Eberhardt,

and F. L. Eberhardt, per
Crane & Miller, attys.

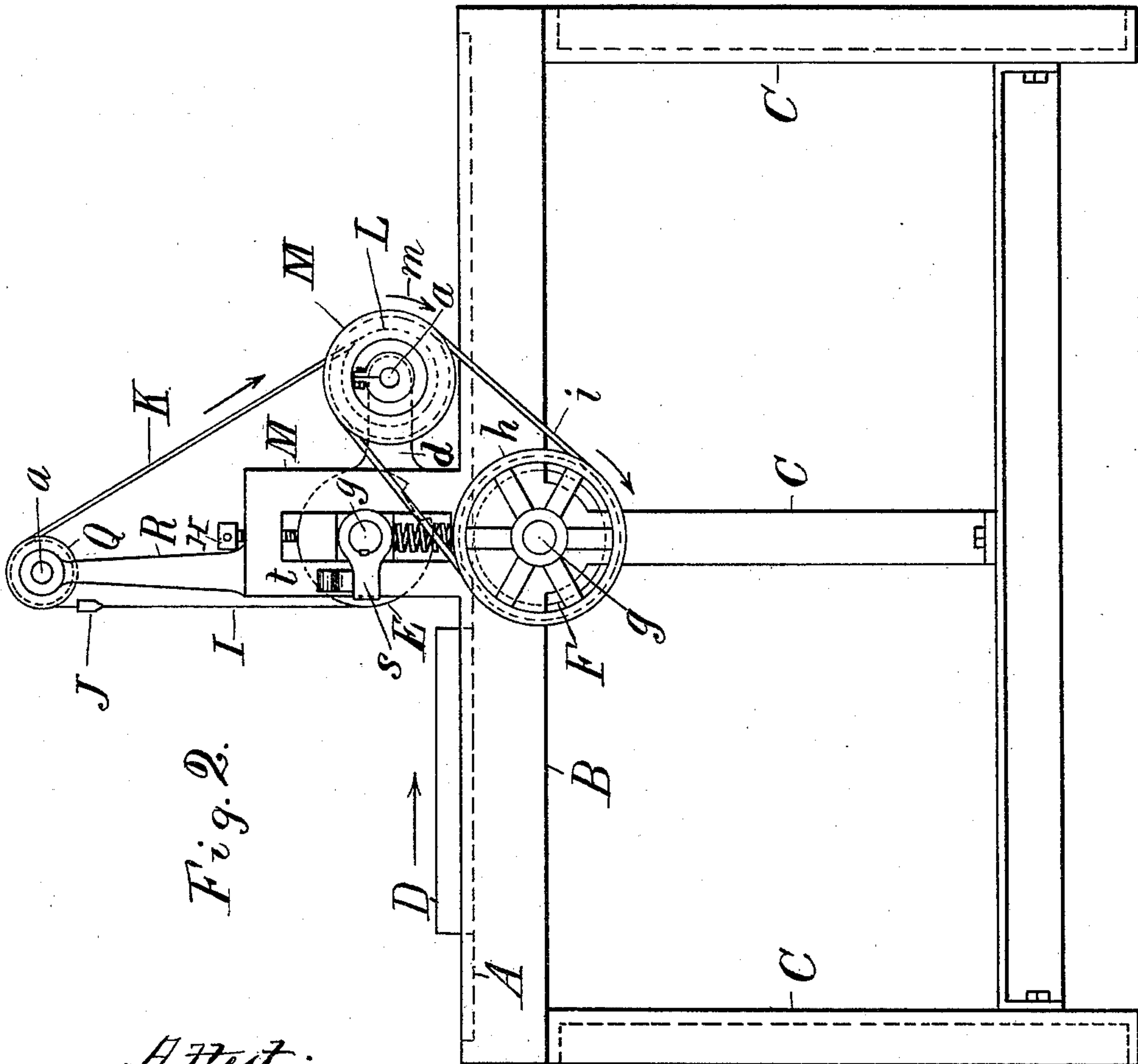
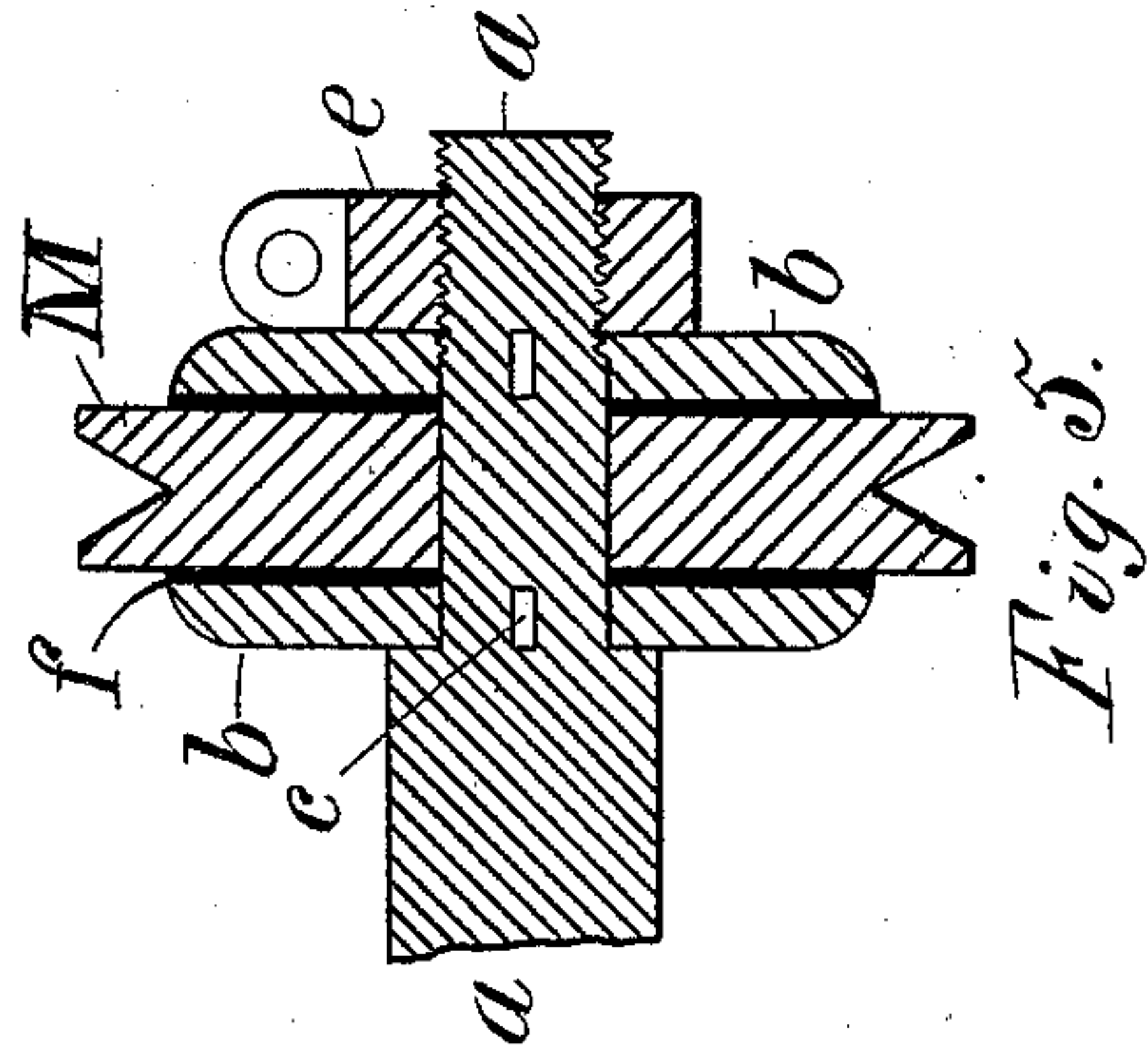
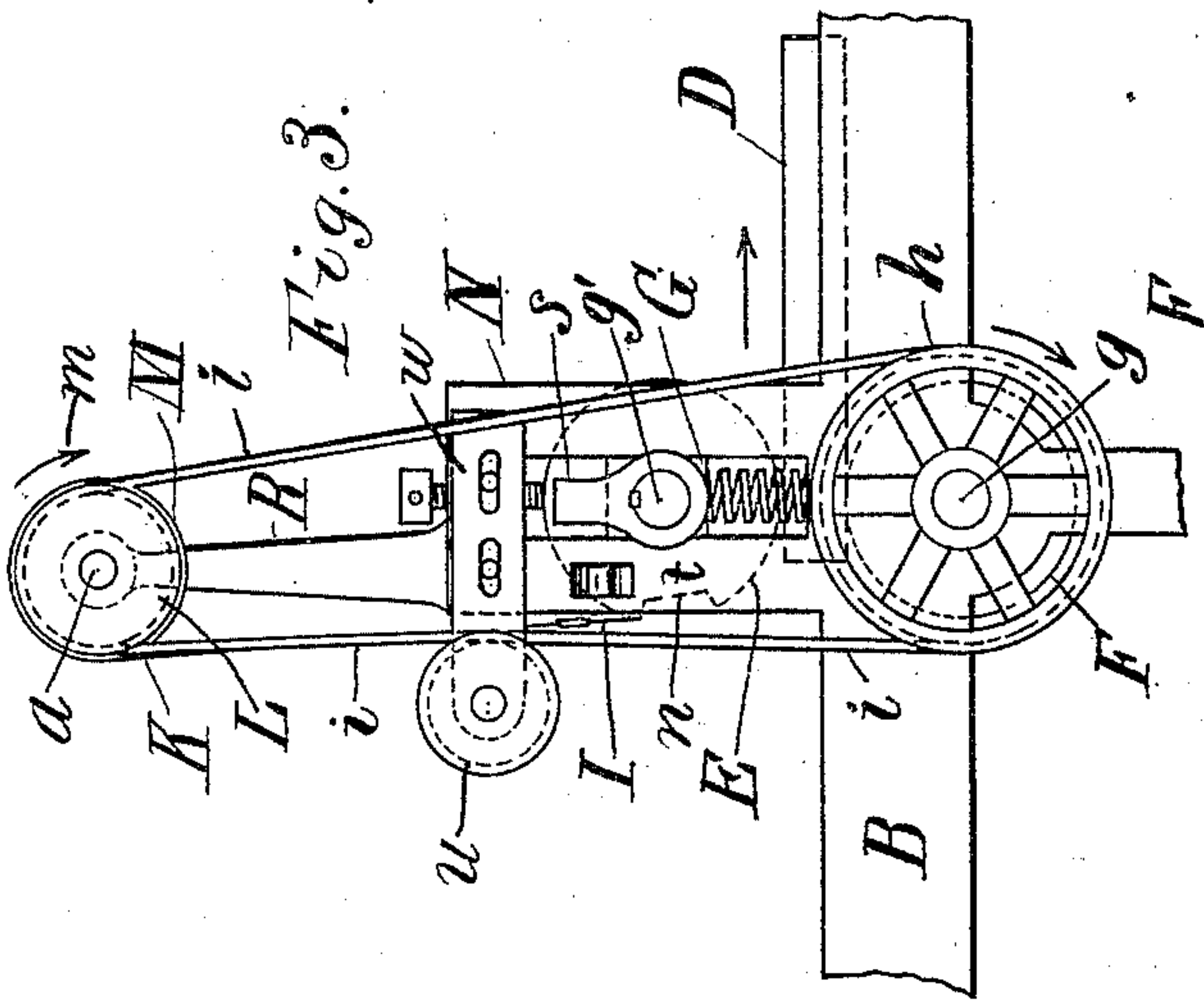
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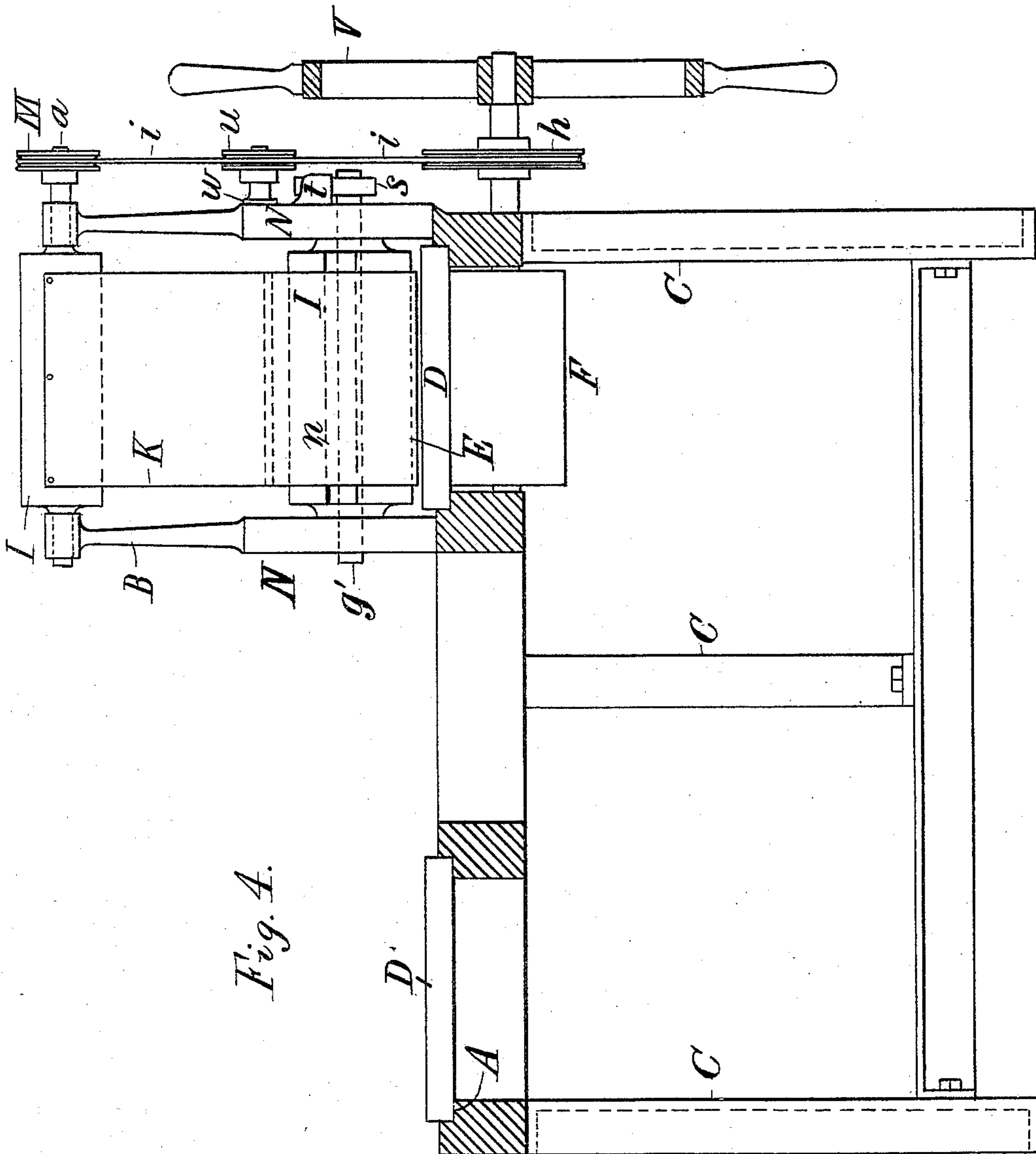
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UNITED STATES PATENT OFFICE.

ULRICH EBERHARDT, HENRY E. EBERHARDT, AND FRED L. EBERHARDT,
OF NEWARK, NEW JERSEY.

PLATE-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 433,457, dated August 5, 1890.

Application filed December 26, 1889. Serial No. 335,075. (No model.)

To all whom it may concern:

Be it known that we, ULRICH EBERHARDT, HENRY E. EBERHARDT, and FRED L. EBERHARDT, citizens of the United States, residing at Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Plate-Printing Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention consists in an improved means of reversing the blanket-roll after each printing movement of the block carrying the engraved plate in contact with the roll. Heretofore a tension-cord has been attached to the free end of the blanket and provided with a weight to reverse the roll after each impression; but such weight falls with an increasing velocity and needlessly jars the blanket-roll and the means applied thereto for stopping the roll at a fixed point. In the present invention a friction-driver is connected with a roll or winder upon which the tension-piece is wound and operates at the close of each impression to wind up the blanket and reverse the roll with a uniform and regulated velocity.

In the annexed drawings the invention is shown applied to a power-machine in which four printing blocks or platens would be continuously propelled past the blanket-roll; but the construction of such machine is already well known, and only the frame is shown herein with the parts relating to the present invention.

Figure 1 is a plan of the machine, and Fig. 2 a side elevation, the tension-piece being shown as a cord K attached to the free end of the blanket by a slat J. Fig 3 is a similar elevation of part of the frame with the tension-piece shown of the full width of the blanket. Fig. 4 is an elevation in section on line *x x* in Fig. 1 with the tension-piece shown as in Fig. 3, and Fig. 5 is a longitudinal section of the friction-driver upon a larger scale.

A are the ways, upon which the blocks D move, the ways forming a frame B, which is supported on legs C.

E is the blanket-roll, and F the pressure-roll beneath the same.

G are boxes mounted in housings N upon

the frame B and adjusted by screws H to secure the proper impression.

I is the blanket; K, the tension-piece attached thereto; L, a winder, upon which the tension-piece is wrapped, and M a friction-pulley applied to such winder and rotated continuously in the same direction, as indicated by the arrow *m*.

In Figs. 1 and 2 the tension-cord K is carried from the slat J over a guide-pulley Q, which is mounted in standards R upon the housings N. The winder L consists in a grooved pulley, to which the end of the cord K is attached, and it is fixed upon a shaft *a*, which is mounted in bearings *d* upon the housings N.

The friction-driver is shown as a grooved disk M, mounted movably upon the shaft *a* between flanges *b*, which are driven by key *c* in the shaft and clamped upon the loose disk M by a nut *e*. The flanges are shown in Fig. 5 faced with leather *f* to make suitable frictional contact with the disk M.

The shaft *g* of the pressure-roll F is shown in Fig. 1 provided with driving-pulleys P, by which the roll would be actuated when in operation. A grooved pulley *h* is shown on the shaft *g* and connected with the friction-driver M by a cord *i*. The continued rotation of the pulley *h* when the machine is in operation rotates the friction-driver continuously and produces a uniform tension on the cord K by its attachment to the winder L. That part of the friction-driver which is attached to the tension-piece is so adjusted by the nut *e* as to slip or turn backward when the blanket-roll is rotated by the movement of the block D, and the friction-driver then operates at the end of the printing-impression when the roll is release from the block to reverse the roll, as shown in Fig. 2, and hold the blanket in readiness for a subsequent impression. When reversed by the friction-driver, the roll would be arrested in the usual manner by the contact of a dog *s*, attached to the blanket-roll shaft *g'* with a stop *t*, attached to the housing, as shown in Fig. 2. In Fig. 2 the block D is shown approaching the blanket-roll, which is therefore shown in its reversed position ready to make the impression; but in

Fig. 5 the block is shown moved almost entirely past the blanket-roll, and the blanket is therefore shown wound thereon.

Instead of employing a friction pulley with a movable piece, like the disk M, adapted to rotate continuously while the winder turns in the opposite direction, a pulley may be connected rigidly to the winder and the driving-belt may be made to slip upon its pulleys when the blanket-roll is making an impression. Such construction is shown in Figs. 3 and 4, in which the tension-piece is shown as an extension of the full width of the blanket and the winder adapted to roll up such blanket being mounted directly over the blanket-roll upon bearings upon the standards R.

The pulley M is shown fixed rigidly upon the winder-shaft *a*, and a tightening-pulley *u* is shown applied to the belt *i*, which connects the pulley M with the continuously-rotating pulley *h*. The tightener *u* is fixed to the housing N by a slotted foot *w*, and such tightening-pulley may be adjusted upon the cord in such relation that the cord would slip upon its pulleys when the blanket was wound upon the blanket-roll in the printing operation.

Many varieties of friction-drivers in addition to those shown herein are already in use, and it is therefore immaterial what kind we employ in practising our invention. The friction-driver may be connected to any shaft upon the machine which is continuously rotated, or rotated during a sufficient period after the impression to reverse the blanket-roll and may be actuated by any suitable gearing, as a chain, toothed cog-wheels, or any kind of belt, the rotation of the friction-driver being so proportioned as to give the blanket the required speed when reversing the blanket-roll.

Although the device is shown applied herein to a power-machine, it may also be applied to hand-machines in which a notched blanket-roll, commonly called a "D-roll," is used, as the notch *n* in the D-roll used in such machines permits the retraction of the block or platen D by the descent of a weight as soon as the impression is completed.

In Fig. 4 we have shown a spider or hand wheel V applied to the shaft *g* to illustrate the means that may be used in the hand-machine for reversing the blanket-roll. By continuing the rotation of such hand-wheel after the close of the impression the friction-driver would operate to rotate the winder and reverse the blanket-roll the same as in a power-machine. It will be readily perceived that

the friction-driver is required to wind up the blanket and reverse the blanket-roll in the brief interval of time between the successive strokes of the machine or impressions of the plate against the blanket-roll. As the tension produced by the friction-driver operates constantly, it is capable of reversing the roll with less tension than that required to actuate the roll by a weight, which must be made great enough to overcome its own inertia and that of the blanket-roll before it can move the latter. The blanket may therefore with this invention be reversed with less strain and velocity than by a weight, and its motion may be arrested by a stop with less jar than when reversed by a weight. It is obviously immaterial how the blanket be connected with the winder which reverses it or the winder connected with the friction-driver.

What is claimed herein is—

1. In a plate-printing machine, the combination, with the blanket-roll rotated alternately in opposite directions and a continuously-rotating shaft upon the machine, of a blanket attached at one end to the blanket-roll and at the other end by a tension-piece to a suitable winder, and a friction-driver connecting the winder with the rotating shaft, the friction-driver being rotated at a suitable speed to wind up the blanket between the successive strokes or oscillations of the blanket-roll and one part of the friction-driver being reversed at each of such strokes, as and for the purpose set forth.

2. In a plate-printing machine, the combination, with the reversible blanket-roll, of a pressure-roll and a rotating shaft to drive the same, a blanket attached at one end to the blanket-roll, a tension-piece attached to the free end of the blanket, a winder to roll up such tension-piece, a continuously-rotating friction-driver attached to such winder, and a connection, as the cord *i* and pulley *h* upon the shaft *g*, for rotating such friction-driver when the machine is in operation, substantially as herein described and set forth.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

ULRICH EBERHARDT.
HENRY E. EBERHARDT.
FRED L. EBERHARDT.

Witnesses:

JOS. B. PIERSON,
THOS. S. CRANE.