

(No Model.)

J. T. HAWKINS.

GRIPPER MOTION FOR CYLINDER PRINTING MACHINES.

No. 350,197.

Patented Oct. 5, 1886.

Fig. 3.

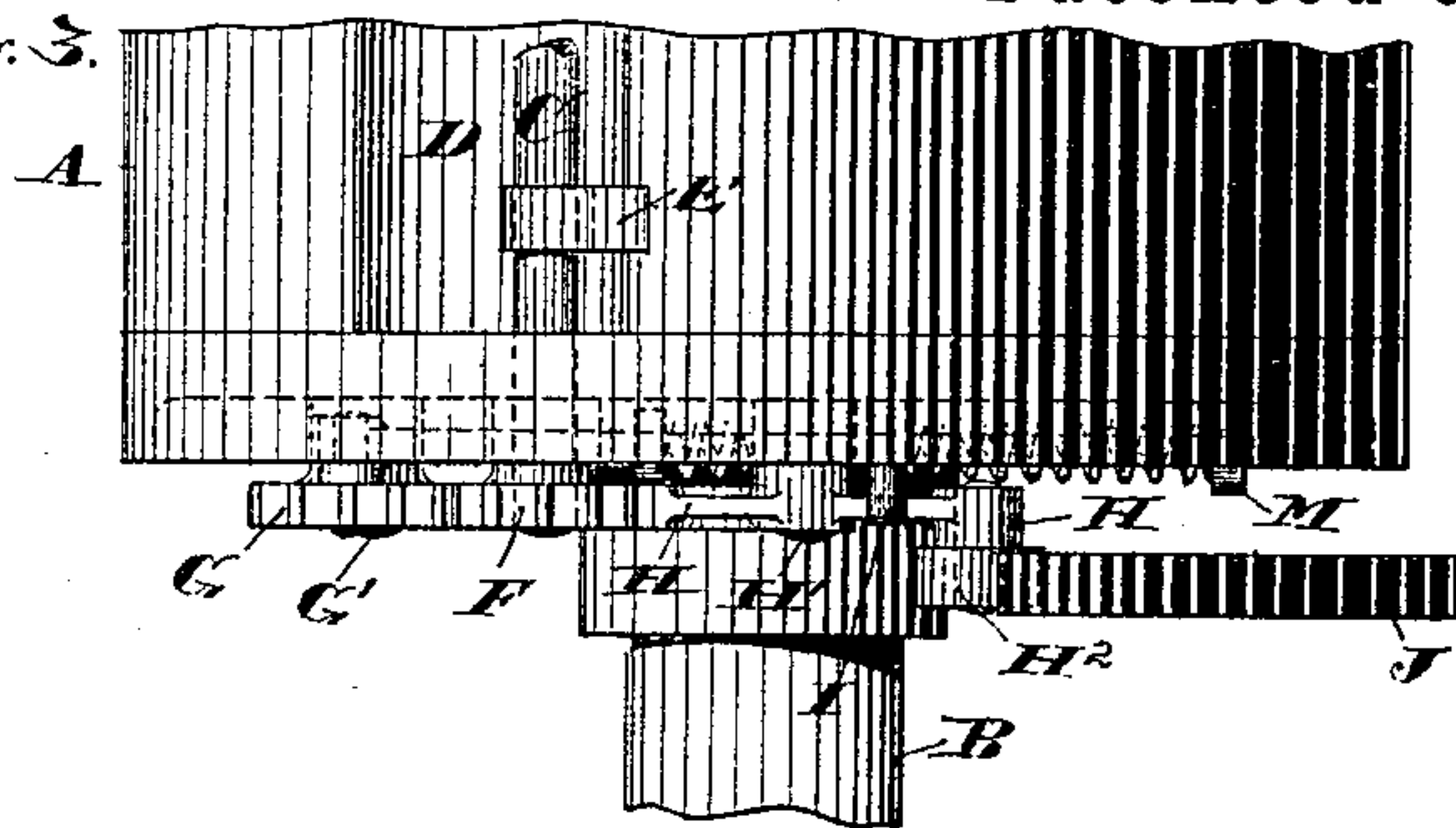


Fig. 2.

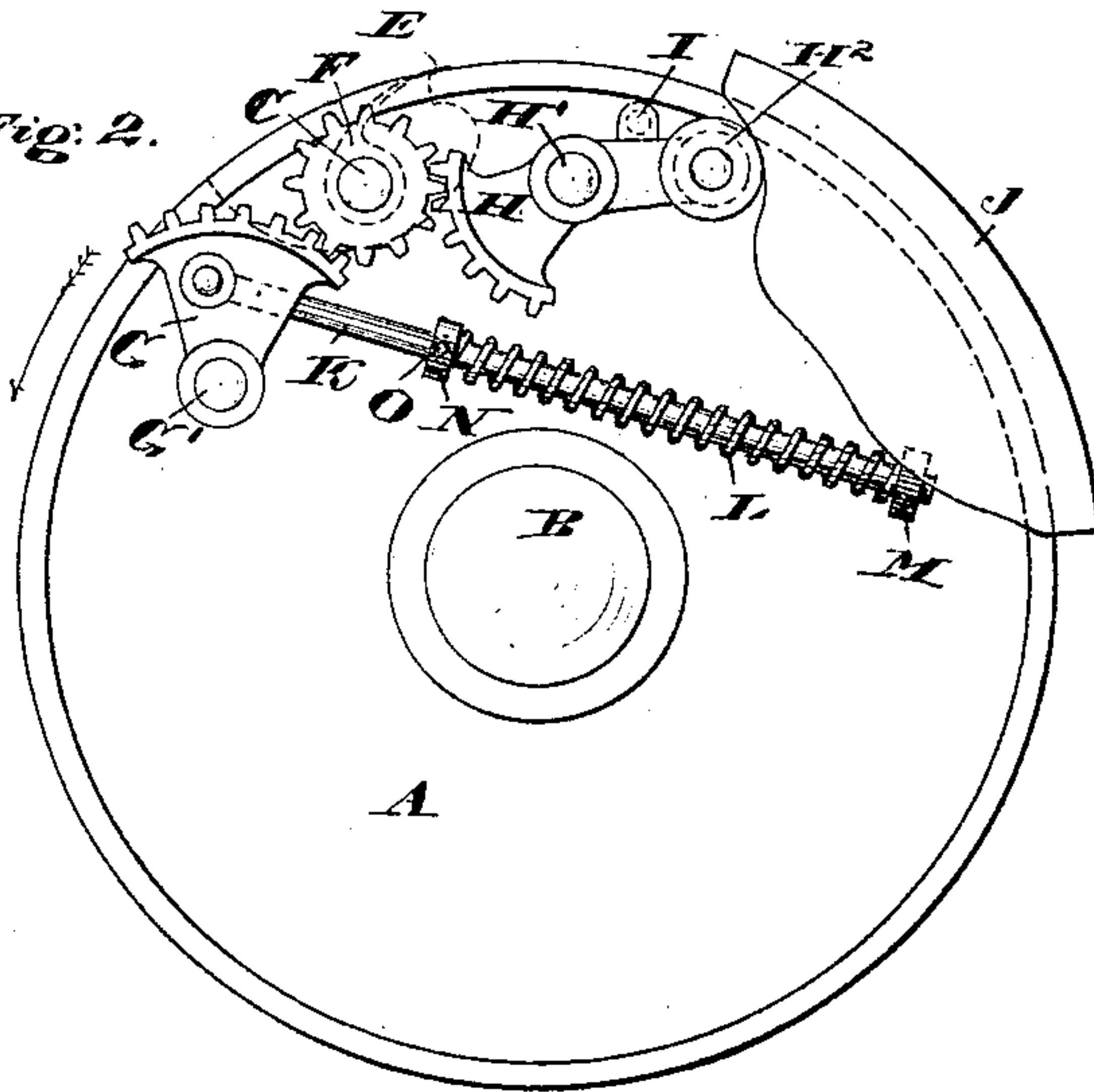
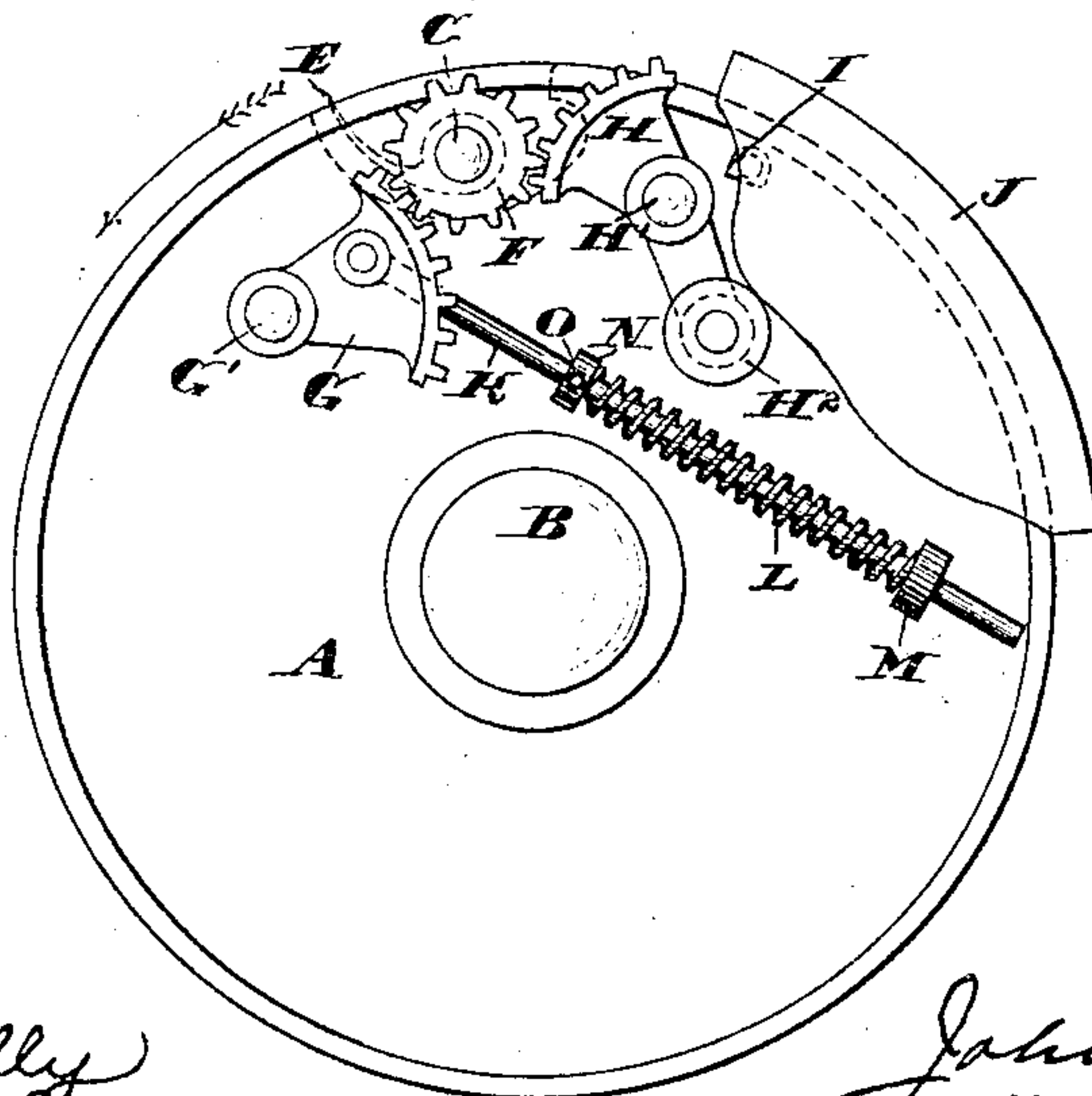


Fig. 1.



Witnesses:
Francis P. Reilly
James E. Keese

Inventor:
John T. Hawkins
by
P. M. Voorhees
Attorney.

UNITED STATES PATENT OFFICE.

JOHN T. HAWKINS, OF TAUNTON, MASSACHUSETTS.

GRIPPER-MOTION FOR CYLINDER PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 350,197, dated October 5, 1926.

Application filed July 10, 1885. Serial No. 171,233. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. HAWKINS, of Taunton, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Gripper-Motions for Cylinder Printing-Machines, which invention or improvements are fully set forth and illustrated in the following specification and accompanying drawings.

The object of this invention is to provide a gripper-motion for the cylinder of a printing-machine, which shall permit of the grippers being opened and closed through so considerable an arc as to bring the points of the grippers, when the same are open, below or within the circumference-line of the cylinder; to accomplish this so gradually as to avoid a too sudden motion and consequent noise; to keep the pressures upon the gripper rock-shaft at all times in one direction, so that as its journals wear there will be no lost motion to affect accurate register; to so compensate for the accumulated resistance of the spring used that its action shall be greatest to rotate the gripper shaft and press the grippers upon the sheet when the grippers are closed and least when the grippers are open, and thus through this compensation to avoid excessive wear of roller and cam, the least pressure coming on the cam when the roller is on the rise and the grippers open, and also to thus utilize a spring of but a small total compression.

The invention consists of the parts and combinations of parts, as hereinafter described, and set forth in the claims.

In the accompanying drawings, Figure 1 is an end elevation of the impression-cylinder of a printing-machine, showing the several parts in position with the grippers open. Fig. 2 is a similar elevation showing the grippers closed. Fig. 3 is a view in plan of part of one end of the cylinder with the parts in the positions shown in Fig. 2.

In said figures the several parts are respectively indicated by letters as follows:

A is the cylinder; B, its journal or shaft.

C is the gripper rock-shaft, journaled in the cylinder-heads, and D a gap in the cylinder, within which the grippers E operate.

F is a spur-pinion secured to one end of the gripper rock-shaft C.

G is a toothed sector oscillating upon a stud,

G', secured in the cylinder-head and engaging the spur-pinion F.

H is a two-armed sector-lever oscillating upon a stud, H', secured in the cylinder-head, one arm forming a toothed sector similar to G, and also engaging the spur-pinion F, the other arm carrying a roller, H². I is a stop secured in the cylinder-head to limit the motion of the sector-lever H in the direction for closing the grippers.

J is a cam of suitable form secured to a stationary part of the machine or made automatically movable in and out of the line of contact with roller H², as may be necessary for a cylinder making one or more than one revolution to an impression, as is done in several well-known ways.

K is a rod pivoted to the sector G, carrying a helical spring, L. The spring L reacts upon a lug, M, projecting from the cylinder-head, and is adjusted in compression by a collar, N, and set-screw O. The rod K slides through a hole in the lug M.

Obviously, the cam J may be made on the rise and fall such as to consume any desired time in opening or closing the grippers.

The operation of the parts is as follows: With the cylinder revolving in the direction indicated by the arrows, when the roller H² enters upon the cam J it causes the lever H to oscillate and its sector to rotate the pinion F, and with it the gripper rock-shaft C, opening the grippers E. Said grippers may thus be retained in the open position for any desired distance or time, depending upon the length of that part of the cam J which is concentric with the cylinder. This operation is resisted by the spring L through the rod K and sector G. In said operation of opening the grippers the pressures of the sector-lever H and the sector G upon the teeth of the pinion F are both in about the same outward direction, keeping the gripper rock-shaft pressed outward radially from the cylinder, so that if this journal becomes worn no lost motion will ensue. The grippers are closed by the action of the spring L, as permitted by the roller H² passing down the fall of the cam J and arriving at the position shown in Figs. 2 and 3, the pressure on the gripper rock-shaft journal being in the same direction as when opening. With the lever H resting against the stop I,

and the grippers closed, as in Figs. 2 and 3, the gripper rock-shaft is still pressed outward in its bearings by the action of the spring L and the reaction of the stop I.

5 I do not confine myself to the use of a spring and spring-rod—such as K and L—pivoted between the fulcrum-stud G' and the teeth of a sector, as G, as it is obvious that the sector G may be made as a two-armed lever, and an
10 extension or pulling spring be pivoted to the outer arm; or that said form of spring may be used for imparting the motions and pressures to the sector G in the direction required. Neither do I confine myself to the making of the
15 sector H in the form of a two-ended lever, with its free end carrying a roller engaging a cam with its working-face turned toward the center of the cylinder, as it is obvious that such a roller, as H², may be journaled on a stud se-
20 cured to the sector H between the fulcrum-stud H' and the sector-teeth, working upon a cam whose working-face is turned outward, and that both such modifications will be in all essentials the same in effect or results pro-
25 duced as the arrangement shown. It is also obvious that the offices of the roller and cam and the spring may be reversed, so that the spring may act to open, while the cam and roller act to close, the grippers, without de-
30 parting from the principle of this invention.

Having thus fully described my said improvements as of my invention, I claim—

1. In the gripper-motion of the cylinder of a printing or other machine, the combination
35 of a spur-pinion, as F, secured to a gripper

rock-shaft, and two sectors, as H and G, fulcrumed on the cylinder-head by studs, as G' and H', and engaging the said pinion, one of said sectors being operated by a cam and roller, as J and H², and the other by a spring, 40 whereby the said gripper rock-shaft is oscillated through a considerable arc in opening and closing the grippers, while being constantly pressed against one and the same side of its bearing, substantially as and for the purposes
45 set forth.

2. In combination with the cylinder of a printing or other machine, a gripper-motion consisting of a gripper rock-shaft, as C, carrying grippers, as E, a spur-pinion, as F, se- 50 cured to said gripper rock-shaft, a sector, as H, fulcrumed in the cylinder-head by a stud, as H', engaging said pinion and carrying a roller, as H², said roller engaging a suitably-formed cam, as J, and a second sector, as G, 55 also fulcrumed in the cylinder-head by a stud, as G', engaging said pinion and operated so as to keep the said roller H² in contact with said cam by means of a spring, as L, and rod, as K, whereby said parts all co-operate to open 60 and close said grippers at the desired times, while keeping the said rock-shaft at all times in contact with one and the same side of its bearing, substantially as and for the purposes set forth.

JOHN T. HAWKINS.

Witnesses:

ELISHA T. JACKSON,
ALBERT J. PARK.