

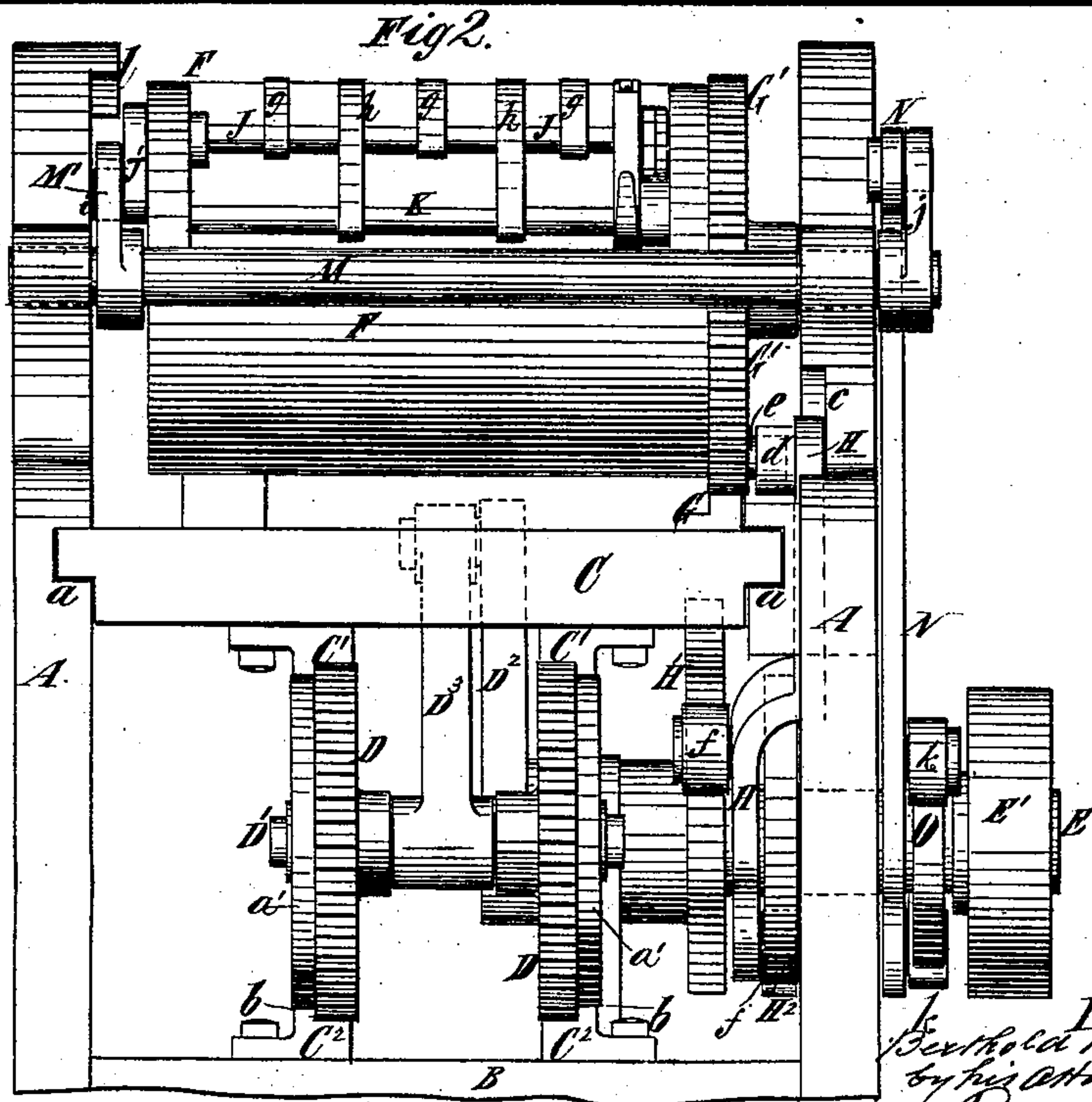
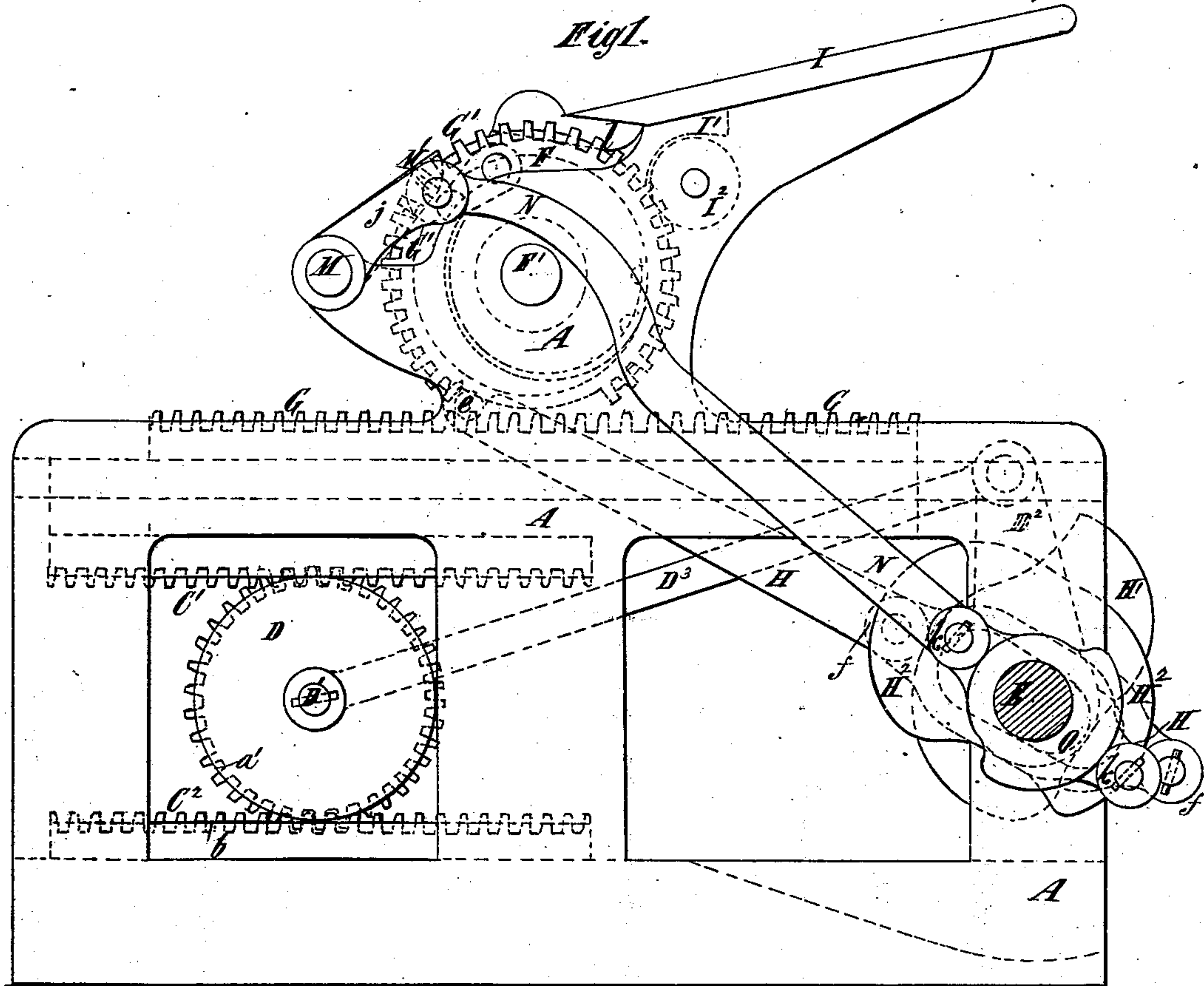
(No Model.)

2 Sheets—Sheet 1.

B. HUBER.
Printing Machine.

No. 243,047.

Patented June 14, 1881.



Witnesses
J. H. Hayes
J. H. Kane

Inventor:
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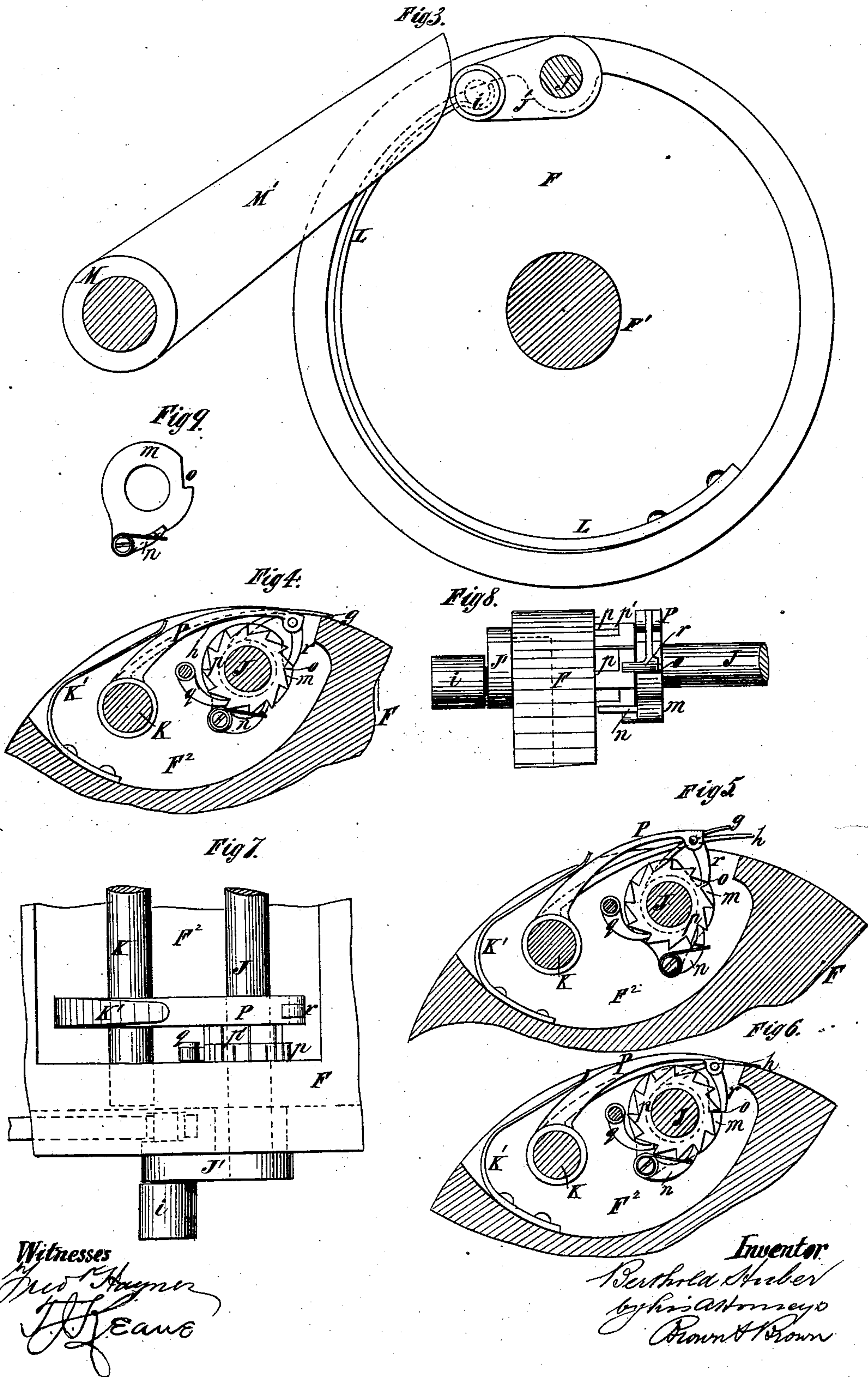
(No Model.)

2 Sheets—Sheet 2.

B. HUBER.
Printing Machine.

No. 243,047.

Patented June 14, 1881.



UNITED STATES PATENT OFFICE.

BERTHOLD HUBER, OF TAUNTON, MASSACHUSETTS.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 243,047, dated June 14, 1881.

Application filed March 7, 1881. (No model.)

To all whom it may concern:

Be it known that I, BERTHOLD HUBER, of Taunton, in the county of Bristol and State of Massachusetts, have invented new and useful
5 Improvements in Printing-Machines, of which the following is a specification.

My invention relates to that class of stop-cylinder machines in which the printed sheet is delivered between a series of rollers and a
10 guide or guides, the head of the sheet being lifted up by lifter-fingers to engage with the guide or guides, and being stripped from the cylinder by said guide or guides as the cylinder moves past the same. In such a machine
15 the griper-fingers, which hold the head of the sheet to the cylinder and draw it forward as the cylinder turns, must be raised twice during each revolution of the cylinder—once to take the fresh sheet, and once to permit of the
20 sheet being lifted by the lifter-fingers to engage with the guide or guides. The lifter-fingers, on the contrary, need only be lifted once in each revolution—that is, when the sheet is to be lifted to cause it to pass over the guide
25 or guides—and when the cylinder is taking the fresh sheet the lifter-fingers are held closed by the action of a spring.

My invention consists in a novel combination of parts in a machine in which the griper-fingers are opened twice during each complete
30 revolution of the machine and the lifter-fingers only once, whereby the lifter-fingers are operated from the griper rod or shaft at each alternate oscillation thereof and held inoperative at each intermediate oscillation of said
35 rod or shaft.

In the accompanying drawings, Figure 1 represents a side view of a machine embodying my invention, a driving-pulley only being
40 removed and the shaft being in section. Fig. 2 represents an end view taken from the front of the press. Fig. 3 represents upon a larger scale an end view of the cylinder and mechanism through which the oscillation of the
45 griper rod or shaft is effected. Fig. 4 represents a partial transverse section, upon the same scale as Fig. 3, of the cylinder, showing the mechanism for operating the griper and lifter fingers. Fig. 5 represents a similar section,
50 showing the parts in a different position. Fig. 6 represents a similar section, showing the parts

in still another different position. Fig. 7 represents a plan of the end portion of the cylinder and of the mechanism shown in Figs. 4, 5, and 6. Fig. 8 represents a view of such
55 mechanism taken lengthwise of the griper shaft or rod, and Fig. 9 represents a side view of the devices whereby motion is imparted from the griper shaft or rod to the lifter-shaft.

Similar letters of reference designate corresponding parts in all the figures.

Referring, first, more particularly to Figs. 1 and 2, A represents the side frames of my machine, and B a foundation plate or base, to
65 which said side frames are bolted, and which supports the operating mechanism of the machine.

C designates the bed of the machine which carries the form, and which is movable horizontally in guides consisting of grooves or ways
70 *a* in the side frames. Upon the under side of the bed are secured two racks, C', and immediately below said racks and secured to the bed-plate or base B are other racks, C², which are stationary.

Between each rack C' and its opposite stationary rack, C², is a gear-wheel, D, which engages with both racks and has a smooth tread,
80 *a'*, of a diameter equal to the pitch diameter, which rolls upon ways *b* on the racks C' and C², thus making the movement of the press smooth and uniform. The two wheels, D, are mounted upon a shaft, D', to which a reciprocating motion is imparted by a crank, D², upon
85 a driving-shaft, E, and acting through a rod or pitman, D³. The shaft E may be rotated by a belt upon a pulley, E', (shown in Fig. 2,) and by the two pairs of racks and reciprocating gear-wheels. It will be understood that the
90 travel of the crank D² is doubled when motion is imparted to the bed.

F designates the cylinder, which is mounted upon journals F', fitting in bearings in the side frames, A, and to which motion is imparted
95 from the bed C. Upon the upper side of the bed is secured a rack, G, and upon one end of the cylinder is fixed a spur-wheel, G', which engages with said rack and thus transmits motion from the bed to the cylinder during the
100 forward movement of the bed. The cylinder must, however, stand still during the backward movement of the bed, and this is provid-

ed for by cutting the teeth away from a portion of the spur-wheel G' , so that when the mutilated portion comes opposite the rack G the bed can move without imparting motion to the cylinder. Some mechanism must be employed for holding the cylinder stationary during the backward movement of the bed, and for starting it forward to cause the gear-wheel G' to engage with the rack G when the bed commences its forward movement. Any suitable mechanism may be employed, but that here represented consists of a rod, H , which is reciprocated in a slideway, c , in one of the side frames, A , as seen in Fig. 2, and which has in its end a bearing, d , which receives a pin, e , projecting from the cylinder F . The lower end of the rod H is slotted or bifurcated to pass over the shaft E , and a longitudinal movement is imparted to it by means of cams H' H^2 , which engage with rollers f upon opposite sides of the shaft. The press so far as described forms no part of my invention, but is described in order to make clear the operation of the parts which embody my invention.

I designate the feed-table, and I' designates curved guides upon the under side thereof, between which and the rollers I^2 the printed sheet is delivered under the feed-board.

Referring, now, more particularly to Figs. 3 to 9, inclusive, it will be seen that the cylinder F is constructed with the usual cavity, F^2 , in its side, in which are arranged a griper rod or shaft, J , carrying griper-fingers g , and a second shaft, K , arranged parallel with the griper-shaft and carrying lifter-fingers h . Upon the end of the shaft J on which are the griper-fingers g is an arm or crank, J' , and in the end thereof is inserted a pin which has upon it a roller, i , on the outside of said arm or crank, and which projects sufficiently upon the inner side of said arm or crank to receive the end of a bent spring, L , which is contained within the recessed end of the cylinder F and exerts a constant outward pressure upon the roller i . The arm or crank J' projects upon the opposite side of the shaft J to the griper-fingers g , and hence the outward pressure of the spring L serves to hold the grippers tightly upon the cylinder above the edge of the sheet.

In front of the cylinder F is a shaft, M , (see Fig. 1,) which has upon one end an arm, j ; and N designates a rod connected with said arm having a longitudinal movement imparted to it by a cam, O , upon the shaft E , which engages with rollers k upon the rod. By this means an oscillating motion may be imparted to the shaft M . Upon said shaft is a cam, M' , which projects in the path of the roller i upon the arm J' when it is not moved out of the way by the rod N .

The cylinder is so timed that it stops with the griper-fingers g in front of the feed-board I in proper position to receive a sheet, and remains in such position while the bed C is moving back. When the cylinder is in such position the roller i on the arm J' is borne upon

by the cam M' , and is thus deflected inward, oscillating the griper-shaft J and raising all the griper-fingers g , holding them raised to receive the sheet under them. Just before the cylinder commences to move forward the cam O , bearing upon one of the rollers k , actuates the rod N and raises the cam M' , permitting the spring L to move the arm J' outward to bring all the griper-fingers g tight down upon the sheet. It will be understood that during the operation of taking the sheet the lifter-fingers have been inoperative. As soon as the head of the printed sheet nearly reaches the guides I' and rollers I^2 , the roller i upon the arm J' bears upon a stationary cam, l , formed upon the frame, (see Figs. 1 and 2,) and raises the griper-fingers g to release the sheet. At the same time the lifter-fingers h are raised and lift the head of the sheet over the edge of the guides I' , and by the continued movement of the cylinder the sheet is stripped off and delivered between said guides and the rollers I^2 under the feed-board.

From the above it will be understood that the lifter-fingers h are only lifted at each alternate lift of the griper-fingers, or only when the sheet is being delivered, and the lifter-fingers are raised by each alternate oscillation of the griper-shaft J in a manner which I will now describe.

Upon the griper rod or shaft J is rigidly secured a hub or flange, m , so that it will turn with said rod or shaft, and upon the face of this hub or flange is a stud, upon which is pivoted a spring-actuated pawl, n . The said hub or flange is provided in one side with a notch, o , (see Fig. 9,) the purpose of which I will soon explain.

Upon the shaft J , between the hub or flange m and the end of the cylinder, is loosely fitted a ratchet-wheel, comprising two portions, p p' , the first of which has twelve or other even number of teeth, and the last of which has six, or just half the number of teeth of the first. The pawl n upon the hub or flange m is broad enough to engage with the portion p of the ratchet-wheel having twelve teeth; and q designates a stop-pawl which engages with and holds the ratchet-wheel against backward movement. At each oscillation of the griper-shaft J the pawl n upon the hub or flange m moves the ratchet-wheel p p' ahead one tooth, or one-twelfth of a revolution.

P designates an arm or lever rigidly secured upon the lifter-shaft K and held against rising by a spring, K' . The lever P carries at its end a spring-actuated pawl, r , which is over the hub or flange m , but which, also, as shown in Fig. 8, bears upon the part p' of the ratchet-wheel which has six teeth. The six teeth of the portion p' of the ratchet-wheel are coincident with alternate teeth of the portion p . If when the hub or flange m is oscillated the pawl r is intermediate between the teeth of the six-toothed portion p' of the ratchet-wheel, the end of said pawl is free to engage with the notch

o, and by the movement of the hub or flange one-twelfth of a turn the pawl, and with it the lever P, is raised to cause the lifter-fingers h to leave the cylinder, as shown in Fig. 5, sufficiently to raise the head of the printed sheet over the edges of the guides I'. If, however, as will occur at each alternate movement of the grippers, the pawl r is opposite one of the six teeth of the portion p' of the ratchet-wheel, said tooth will prevent the pawl from engaging with the notch o in the hub or flange m, and hence the lever P will not be raised, and the lifter-fingers will not be lifted.

I have not here shown any inking-rollers, as they form no part of my invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a printing-machine in which the gripper-fingers open and close twice during each complete revolution of the machine, the combina-

tion of a gripper shaft or rod, a ratchet-wheel loosely mounted thereon, and having upon one side of its face twice as many teeth as are on the other side, and which is advanced by a step-by-step movement, and mechanism, substantially as described, controlled by said ratchet-wheel for raising the lifter-fingers at each alternate raising of the gripper-fingers.

2. The combination of the cylinder F, the gripper-shaft J, means, substantially as described, for oscillating said shaft, a lifter-shaft, K, a hub or flange, m, fast on said gripper-shaft, provided with a notch, o, and carrying a pawl, n, the ratchet-wheel p p', loose on said gripper-shaft, and a lever, P, fixed upon said lifter-shaft and carrying a pawl, r.

BERTHOLD HUBER.

Witnesses:

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