

(No Model.)

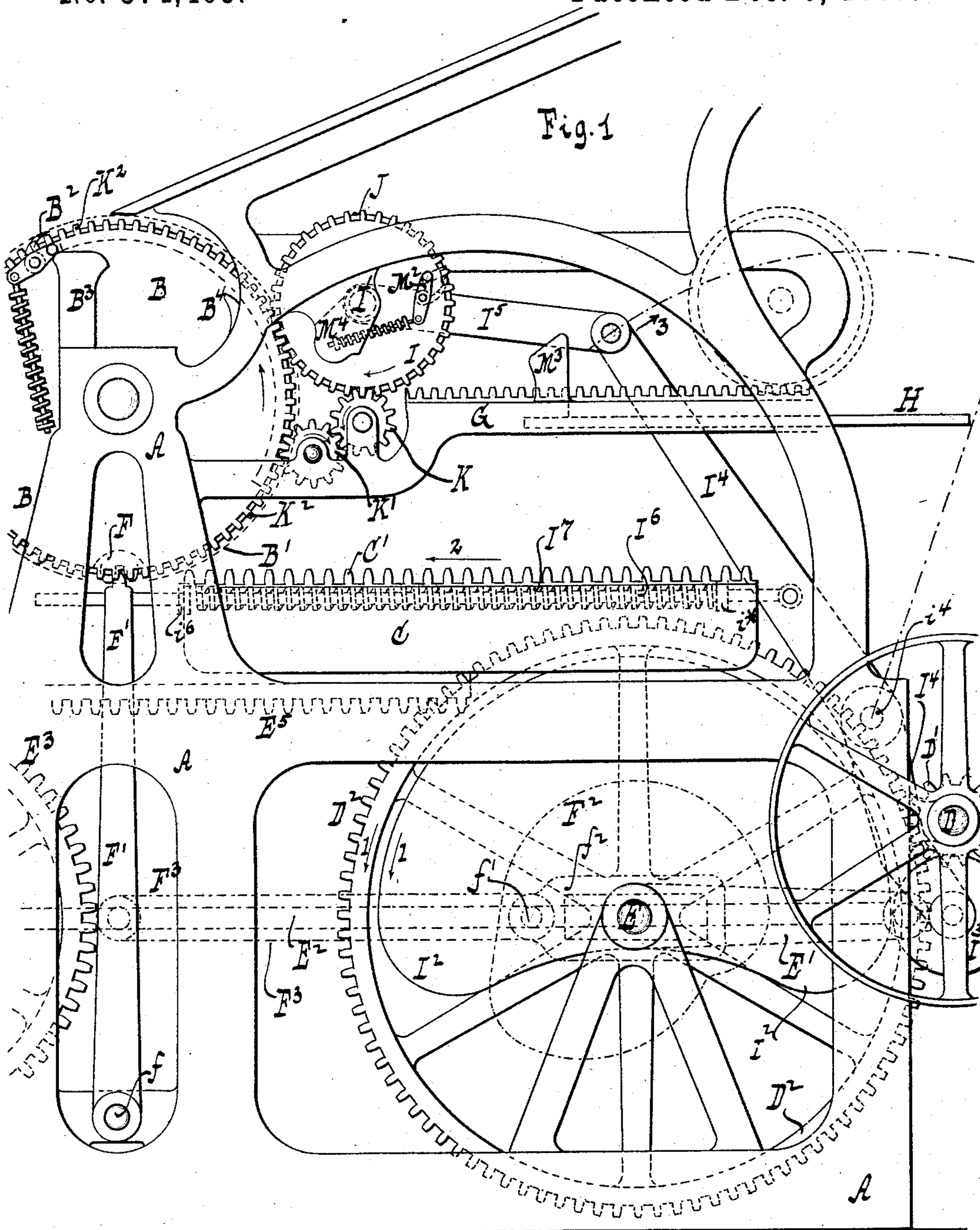
3 Sheets—Sheet 1.

G. P. FENNER.

SHEET DELIVERY APPARATUS FOR PRINTING MACHINES.

No. 374,465.

Patented Dec. 6, 1887.



WITNESSES:

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Van Sautwood & Hauff
his ATTORNEYS

(No Model.)

3 Sheets—Sheet 2.

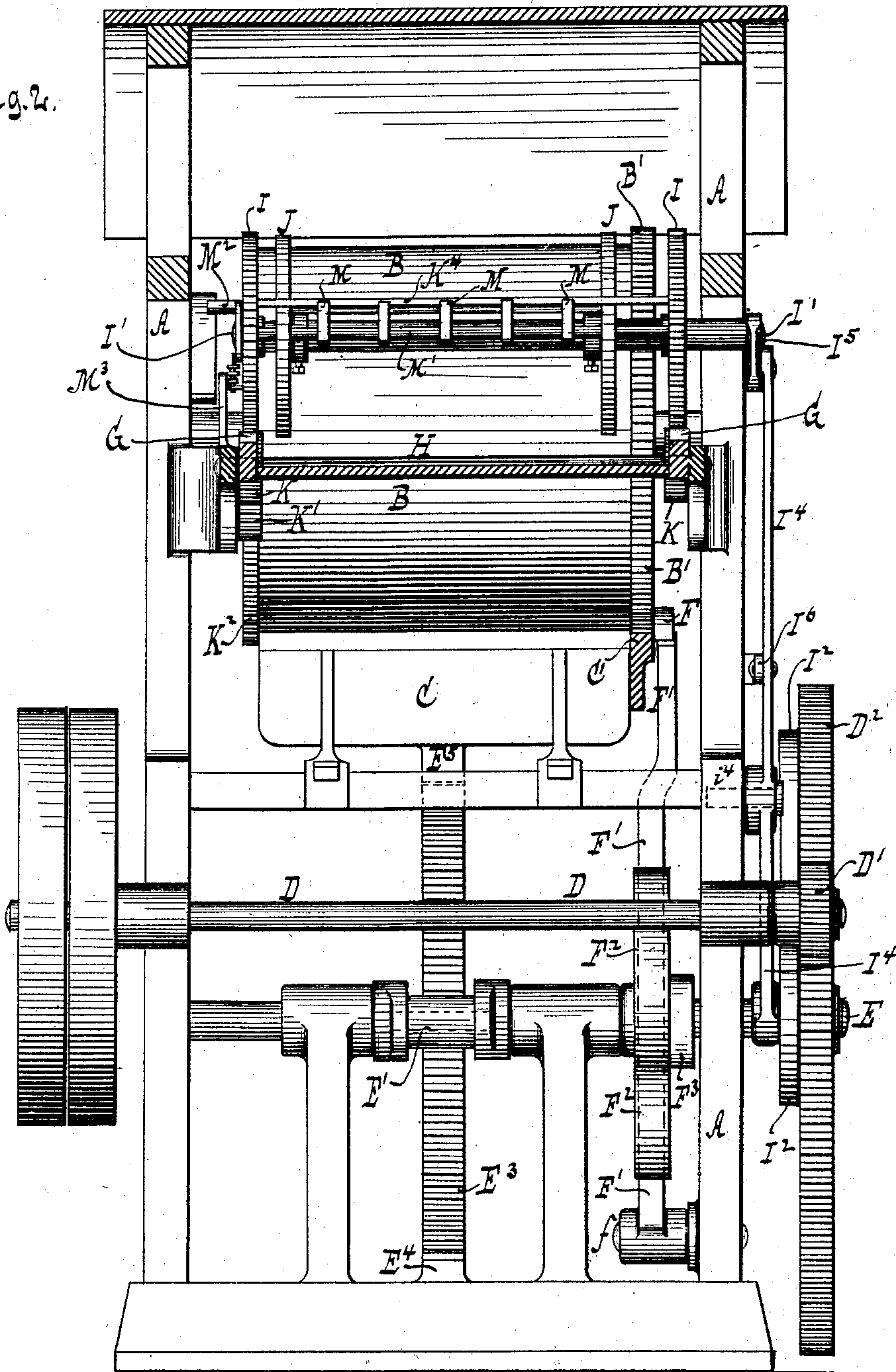
G. P. FENNER.

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Fig. 2.



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3 Sheets—Sheet 3.

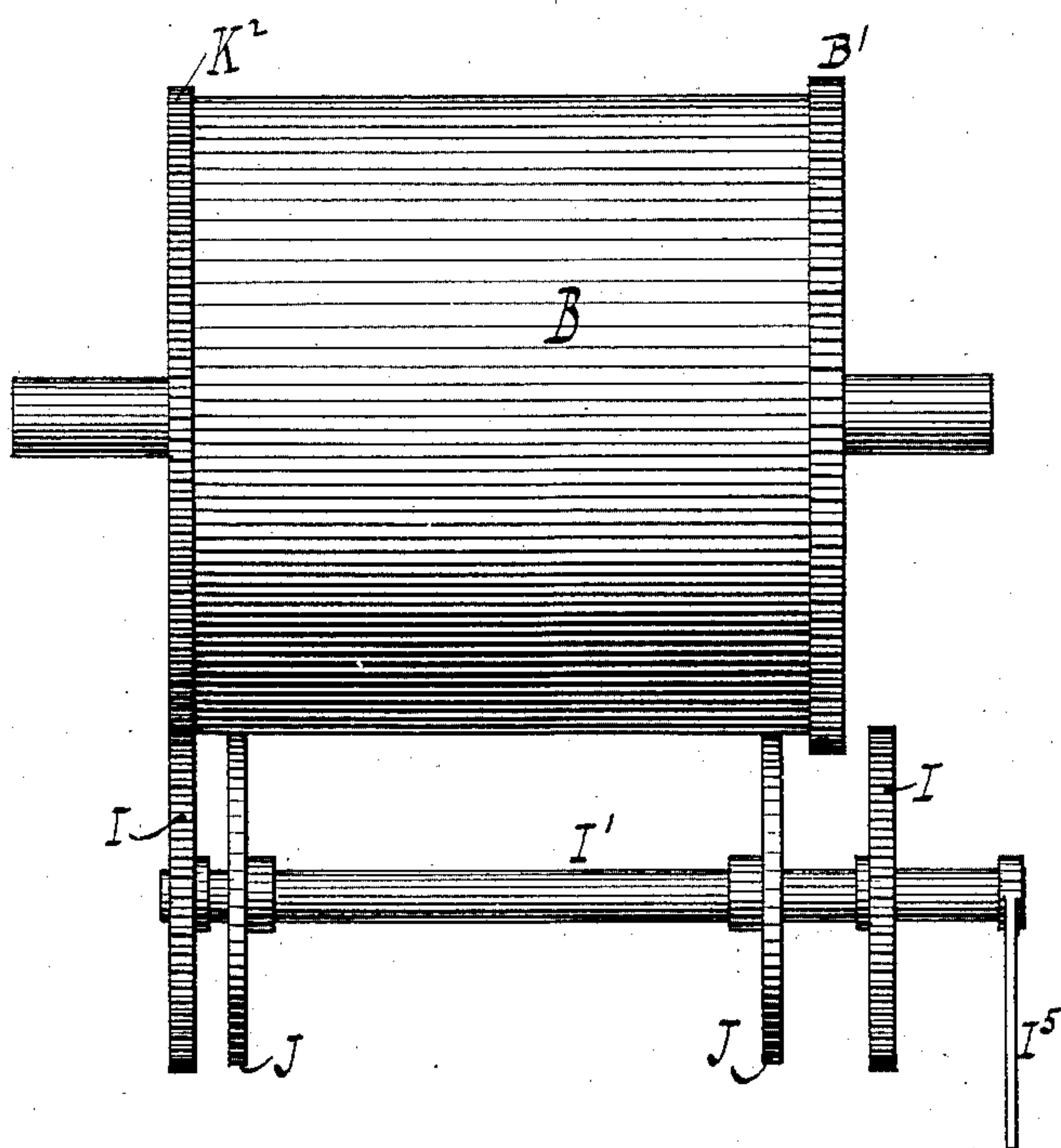
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Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE P. FENNER, OF NEW LONDON, CONNECTICUT.

SHEET-DELIVERY APPARATUS FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 374,465, dated December 6, 1887.

Application filed June 24, 1886. Renewed October 15, 1887. Serial No. 252,485. (No model.)

To all whom it may concern:

Be it known that I, GEORGE P. FENNER, a citizen of the United States, residing at New London, in the county of New London and State of Connecticut, have invented new and useful Improvements in Sheet-Delivery Apparatus for Printing-Machines, of which the following is a specification.

My invention relates to improvements in sheet-delivery apparatus adapted more especially for printing-presses, and has for its object to provide novel and efficient mechanism for taking the sheets from the impression-cylinder and depositing them properly on a suitable table or support. This object I accomplish in the manner and by the means hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of a printing-press containing my invention. Fig. 2 is an end elevation of the same, partly in section. Fig. 3 is a detail view of an impression-cylinder and carrying-reel.

Similar letters indicate corresponding parts.

The letter A designates a suitable supporting-frame.

B is an impression-cylinder, and C is a type-bed, both placed in proper relation to one another.

D is a driving-shaft, which, by means of gear-wheels D' D², transmits motion to the main shaft E. The shaft E, by means of a crank, E', and rod E², imparts motion to the traveling rack-wheel E³, which meshes into a stationary rack, E⁴, Fig. 2. The rack-wheel E³ engages with a suitable rack, E⁵, attached to the type-bed C, and imparts a reciprocating motion to the type-bed. A rack, C', on the type-bed is suitably arranged to engage with a cog-wheel, B', of the impression-cylinder B and to impart motion to the said cylinder B. In the case of stop-cylinder presses a portion of this cog-wheel B' is cut away, so as to permit the type-bed C to travel while the cylinder is at rest during certain intervals.

The cog-wheel B' is indicated in Fig. 1, chiefly by dotted outlines.

The impression-cylinder is provided with a catch or lug, F, which is adapted to be engaged by a catch-lever, F', which operates to check, hold, and start the impression-cylin-

der B in any well-known manner. In the example shown in the drawings the catch-lever F' is properly pivoted or fulcrumed, as at f, and is vibrated or moved by a cam, F², and a rod, F³. The rod F³ is connected at one point to the lever F', and said rod F³ has a roller-stud, f', or other suitable appliance for engaging in a suitable way the cam F². Part of the rod F³ is slotted or bifurcated, so as to clear the main shaft E, and is provided with a block, f².

The impression-cylinder is provided with suitable grippers, B², for holding the sheet to be printed upon the cylinder. The grippers B² are operated by springs and by cams or posts B³ B⁴, suitably arranged in any well-known manner.

G G are racks secured to the frame A, and said racks G G are engaged by gear-wheels I I, which gears, with their shaft I', support a carrier-reel, J J, which is constructed to receive the printed sheet from the impression-cylinder B. The gear-wheels I I are adapted to engage at proper intervals with a revolving support, K, which in the example shown in the drawings is a gear-wheel which receives motion from the impression-cylinder B through the gear K'. The gear-wheels I I and the carrier-reel J thus receive a rotary motion. The carrier-reel J, as seen in the drawings, is formed of two disks. By making said disks adjustable toward or from one another on the shaft I, said carrier-reel J can be adjusted for varying width of sheets.

To the main shaft E is secured a suitable cam, I², which engages with a roller-stud, I³, on a lever, I⁴. The lever I⁴ is properly fulcrumed or pivoted, as at i⁴, and said lever I⁴ connects by a link, I⁵, with the shaft I', carrying the gears I I. A rod, I⁶, extends through a socket, i⁶, on the frame of the press and is connected to the lever I⁴. The rod, I⁶, has a collar, i⁸, which is subjected to the action of a spring, I⁷, in such a manner that the roller-stud I³ of the lever I⁴ is continually kept in engagement with the cam I². Other known means may, however, be employed to keep the roller-stud I³ in engagement with the cam I².

The gear-wheels I I have bearings for a gripper-shaft, M', on which shaft are mounted grippers M. The grippers M are operated by a lever, M², fulcrumed on one of the gear-

wheels I and subjected to the action of a spring in any well-known manner.

Trip-cams M^3 M^4 , suitably fixed to the device, operate the lever M^2 and grippers M at proper intervals. The grippers M impinge upon a suitable rod or blade, K^4 , properly attached to the gear-wheels I, so that the edge of a sheet can be held between the grippers M and the blade K^4 .

10 Instead of a rod, K^4 , a radial web or partition can be employed extending from the shaft I' toward the circumferences of the gear-wheels I. To allow room for such a partition the disks, which in this case form the reel J, will have to be slotted.

15 When a sheet is to be delivered from the impression-cylinder B to the carrier-reel J, the carrier-reel is moved by the cam I^2 and lever I^4 toward the cylinder B. The gears I of the carrier-reel pass onto the rotating support K, as seen in Fig. 1, and the reel J is now caused to rotate by the rotation of the gear K^2 on the cylinder B. The grippers M of the carrier-reel J grasp the sheet on the impression-cylinder when an edge of said sheet has been passed within reach of said grippers M, and said sheet is thus taken off the cylinder B and wound onto the reel J. The reel J is then, by the action of the lever I^4 , moved in the direction of arrow 3, or away from the cylinder B and along the racks G. During this movement of the reel J the grippers M are actuated at the proper time by the cam or post M^3 , so as to release the sheet which detaches itself from the reel J, and as the reel J passes on in the direction of arrow 3 the sheet from the reel J comes to rest upon a table, H.

20 By having the reel J and cylinder B of proper respective size the circumference of the reel J when taking a sheet from the cylinder will be in contact with the circumference of the cylinder B, so that said sheet cannot bend or sag during its passage from the cylinder B onto the reel J. In Figs. 1 and 3 the cylinder B and reel J are shown in contact. As seen in Fig. 1, the reel J, when in contact with the cylinder B, receives motion from two sources, one being the engagement of the gear I of the reel with the gear K^2 of the impression-cylinder, and another being the engagement of the gear I with the rotating support K, which support in its turn receives motion through the gear K' from the gear K^2 of the impression-cylinder. It will of course be readily noticed that one of these sources of motion can be dispensed with without preventing the operation of the device. Thus, for example, the gear K' can be dispensed with, and as the gear I is revolved by the gear K^2 the rotating support K receives motion from the gear I. In this last-named case the support K, instead of being in the shape of gear-wheels, may be in the form of plain rollers or disks; or the gear I may be so arranged as not to come into engagement with the gear K^2 , in which case the gear K^2 imparts motion through the gear K' to the gear K,

from which gear K the gear I and reel J receive motion when the gear I is in engagement with the rotating support K.

The gear K' and the rotating support K can be suitably mounted in the frame A. The reel J, instead of consisting of two disks, may be in the form of a roller; but by having only disks which are arranged so as to come into contact with the edges of a sheet, smutting of the sheet is avoided. In the case of a stop-cylinder press the reel-support K, if it receives motion from the impression-cylinder, will have an intermittent rotary motion. If the rotating support receives motion from the gear I, said support will rotate only during those intervals that the gear I is rotated by the gear K^2 of the impression-cylinder, irrespective of whether the impression-cylinder rotates continuously or intermittently. The support K, as is seen, is stationary or mounted on an axle having stationary bearings.

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

1. The combination, with the impression-cylinder, of the carrier-reel J, having a shaft, I' , provided with a gear, I, the rack G, means, substantially as described, for moving the gear on the rack to and from the cylinder, and a rotating wheel, K, mounted in stationary bearings supporting the reel-shaft gear and located between the rack and the impression-cylinder.

2. The combination, with the impression-cylinder, of a carrier-reel movable in a right line to and from the cylinder, a rotating reel-supporting wheel, K, mounted in stationary bearings, and means, substantially such as described, for moving the carrier-reel to and from the cylinder and intermittently into and out of engagement with the rotating supporting-wheel.

3. The combination, with the impression-cylinder and the gear K^2 thereof, of the carrier-reel J, having a gear, I, adapted to engage with the gear on the impression-cylinder, and a rotating support for the carrier-reel mounted upon an axle the bearings of which are stationary, substantially as set forth.

4. The combination, with the impression-cylinder, of the carrier reel J, having a gear, I, and the rotating supporting-gear K, adapted to engage with the gear on the carrier-reel, substantially as described.

5. The combination, with the impression-cylinder having the gear K^2 , of the carrier-reel J, having a gear, I, adapted to engage the gear on the impression-cylinder, and a rotating supporting-gear, K, adapted to engage the gear on the carrier-reel, substantially as described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

GEORGE P. FENNER. [L. s.]

Witnesses:

HIRAM W. HUBBARD,
GEORGE COLFAX.