

(No Model.)

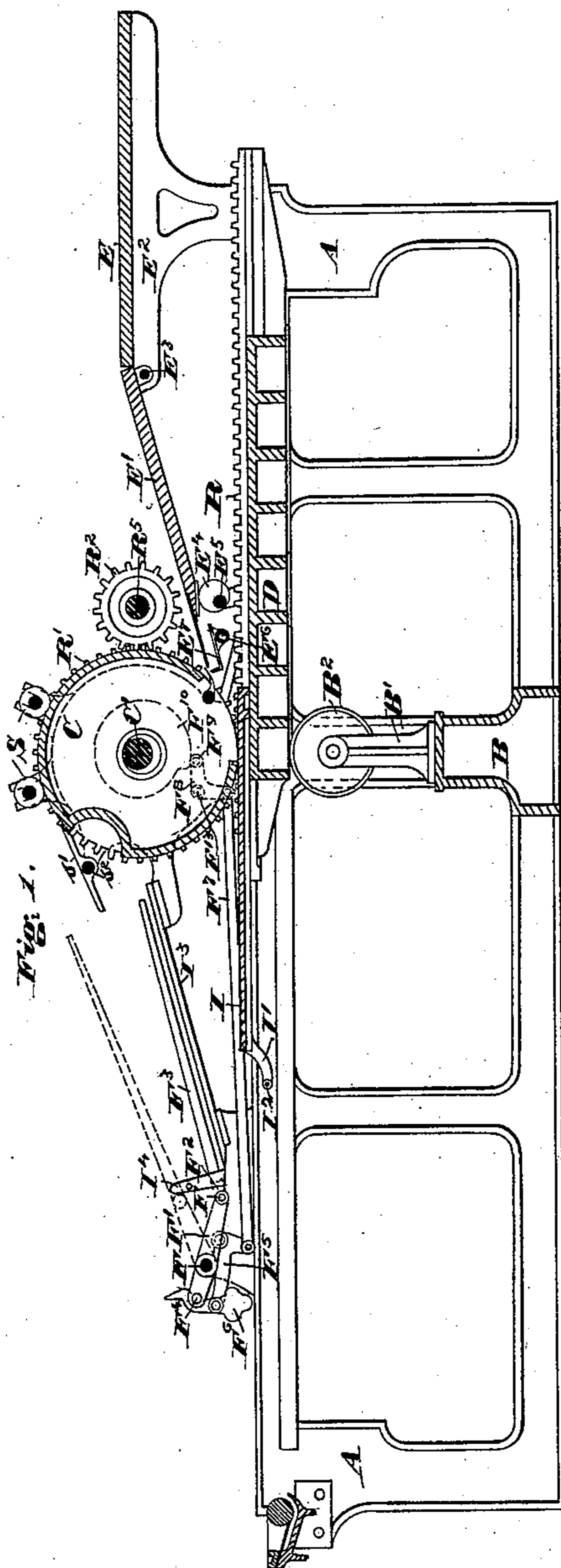
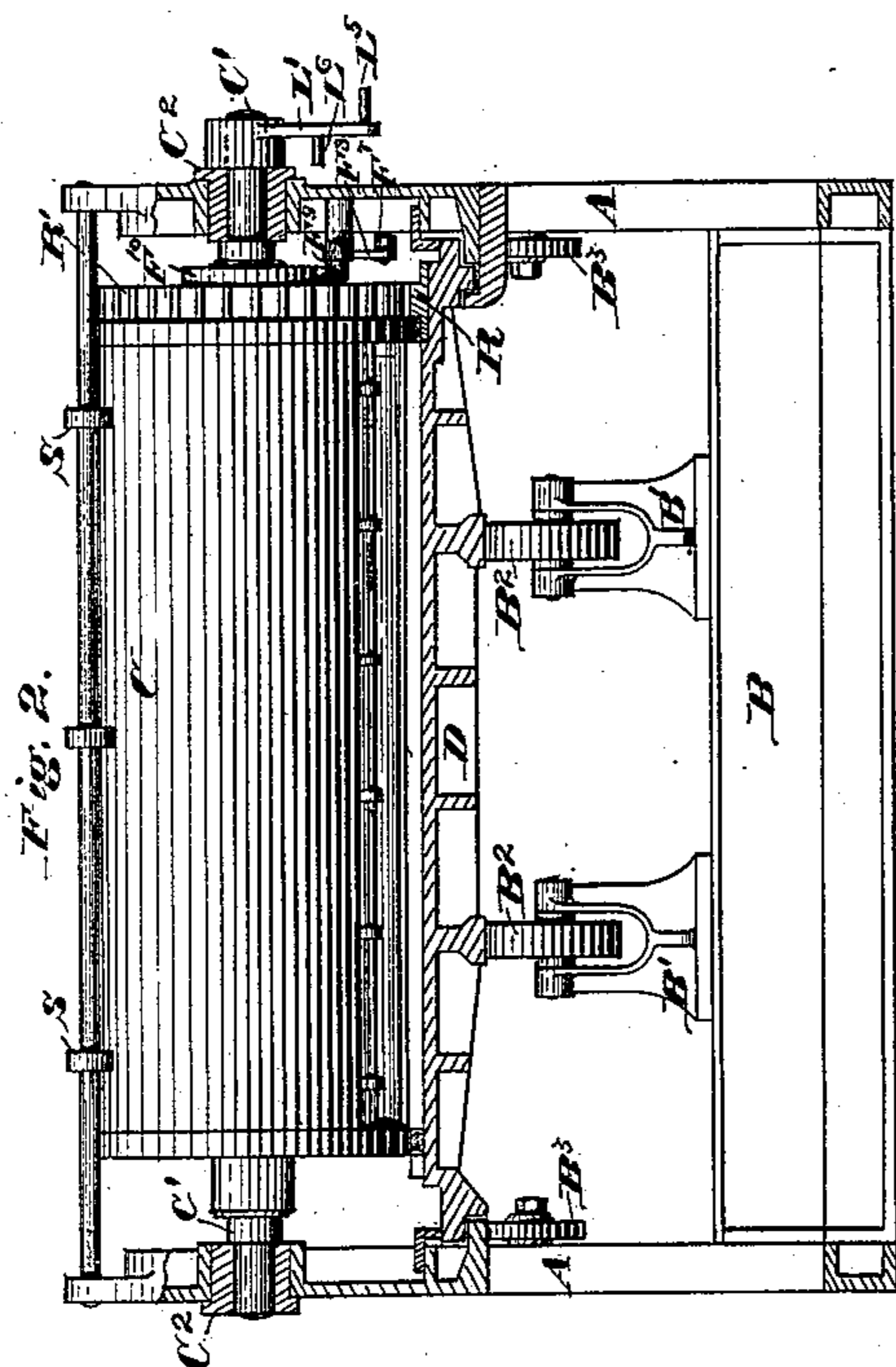
J. T. HAWKINS.

2 Sheets—Sheet 1.

SHEET DELIVERY APPARATUS FOR PRINTING MACHINES.

No. 333,071.

Patented Dec. 22, 1885.



Witnesses:
Francis P. Reilly
James E. Keese

Inventor:
John T. Hawkins
By: R. M. Voorhes
Attorney.

(No Model.)

J. T. HAWKINS.

2 Sheets—Sheet 2.

SHEET DELIVERY APPARATUS FOR PRINTING MACHINES.

No. 333,071.

Patented Dec. 22, 1885.

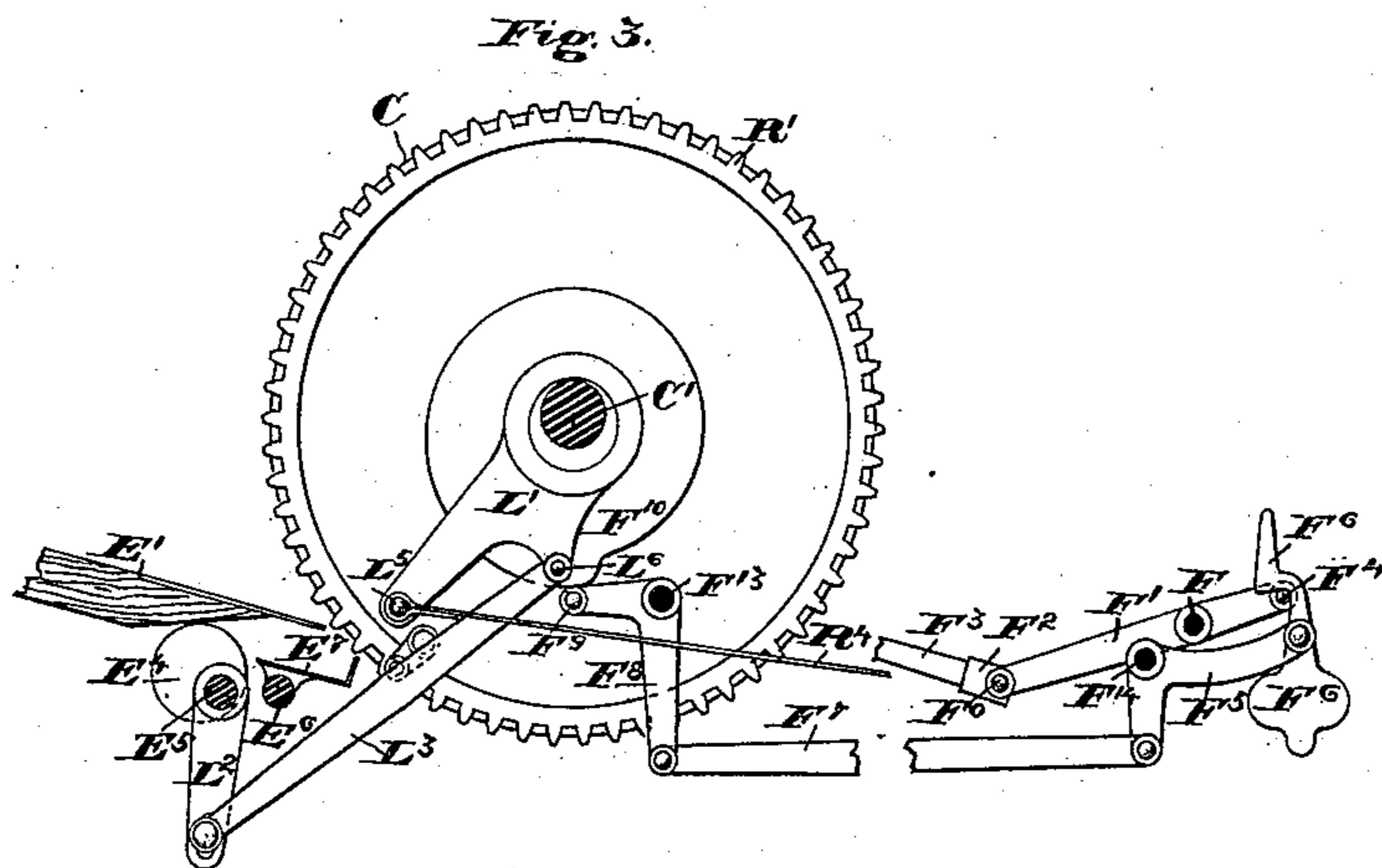


Fig. 5.

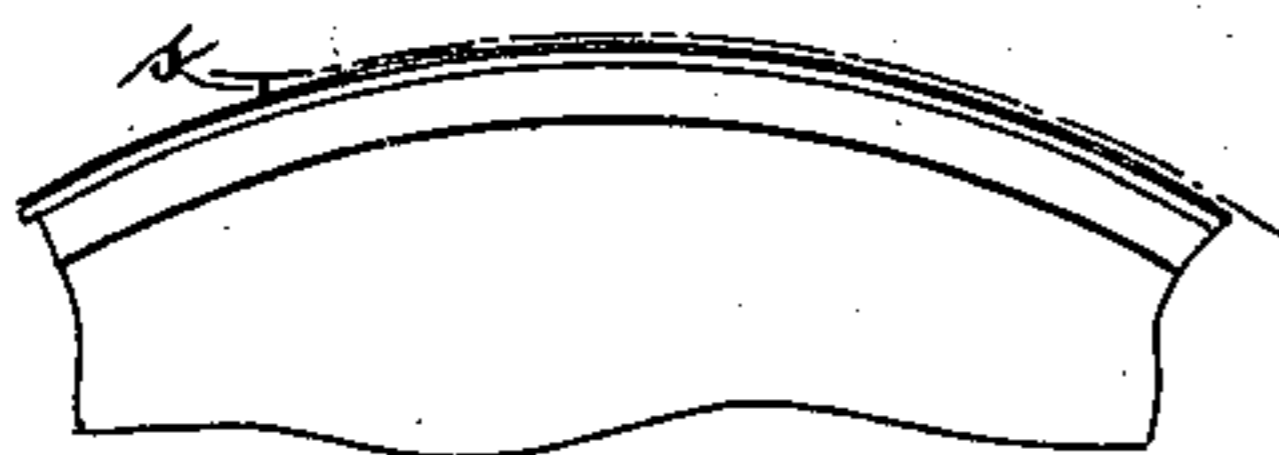
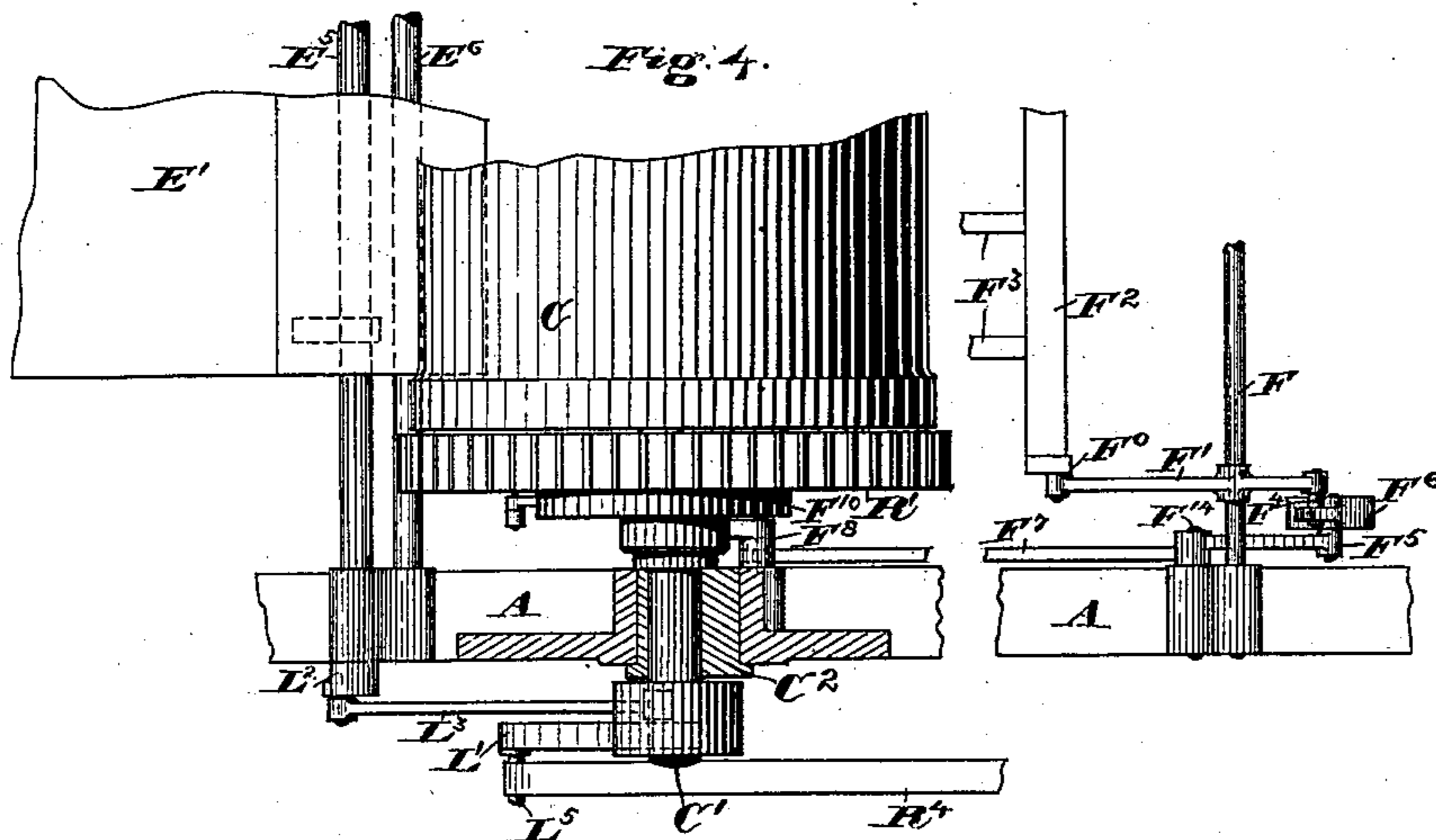
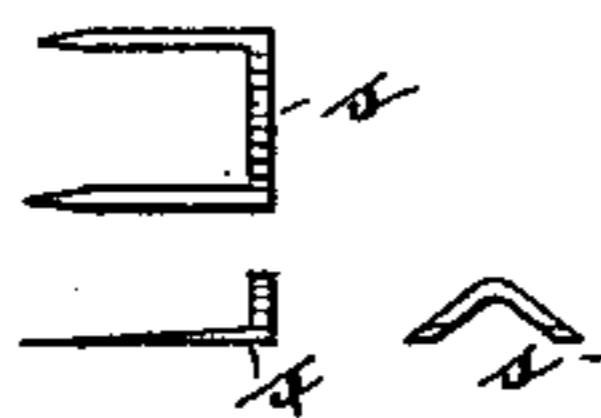


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN T. HAWKINS, OF TAUNTON, MASSACHUSETTS.

SHEET-DELIVERY APPARATUS FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 333,071, dated December 22, 1885.

Application filed June 22, 1885. Serial No. 169,353. (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 Sheet-Delivery Apparatus for Printing-Machines, which invention or improvements are fully set forth and illustrated in the following specification and accompanying drawings.

10 The object of this invention is to automatically deliver the sheets from the top of an oscillating printing-press cylinder with the last-printed side up, upon a delivery-board without the use of an oscillating fly.

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

In the accompanying drawings, Figure 1 is a longitudinal vertical section, and Fig. 2 a transverse vertical section seen from the right-hand end of Fig. 1, of so much of a cylinder printing-press as is necessary to illustrate the invention, said press having been more fully illustrated in my application bearing the Serial No. 124,297, filed March 15, 1884. Fig. 3 is an enlarged elevation of the principal parts operating the delivery. Fig. 4 is a sectional view of said parts in plan. Fig. 5 shows a portion of the periphery of the cylinder with the sheet upon it and the means employed to support the tail of the sheet slightly away from contact with the cylinder. Fig. 6 shows in three views the sheet-supports fully described in the above-named application, Serial No. 124,297.

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

A are the main frames.

40 B is the main cross stay or girder immediately under the cylinder.

C is the impression-cylinder.

D is the type-bed.

B' are brackets carrying two rollers for the support of the type-bed in its central parts.

45 B² are rollers upon which the central roller-ways of the bed run.

B³ are rollers running on studs in the frames A, upon which the outer roller-ways of the bed run.

50 R is a toothed rack secured to the bed D.

R' is a toothed gear secured to the cylinder C, engaging rack R.

R² is a toothed pinion carried on the shaft R⁵, also journaled in the frames A and engaging the gear R'. Upon the shaft R⁵ a hand-crank may be placed, by means of which the cylinder C, and with it the bed D, may be operated in both directions. There are stops for limiting the motion of the bed D at the end of the stroke. (Not shown.)

50 E is a platform for the paper, and E' the feed-board, hinged at E³ in the brackets E².

E⁴ are a pair of eccentric cams secured to a shaft, E⁵, journaled in the frames A, upon which the free end of the feed-board rests.

65 E⁶ is a shaft journaled in the frames A, to which are secured the sheet guides or gages E⁷.

F is a rock-shaft journaled in the frames A. Upon shaft F are secured a pair of levers, F'.

70 Pivoted in the long arms of levers F' by a stop-joint, F⁰, is a bar, F², carrying a series of fingers, F³, resembling the ordinary oscillating fly. The short arm of lever F' carries a stud, F⁴.

75 F⁵ is a bell-crank lever oscillating upon a stud, F¹⁴, fixed in one of the frames A. Pivoted to the horizontal arm of bell-crank F⁵ is a weighted hook-catch, F⁶, engaging at the proper times the stud F⁴. To the vertical arm of bell-crank lever F⁵ is articulated a connecting-rod, F⁷, whose other end is similarly articulated to the vertical arm of another bell-crank, F⁸, which also oscillates upon a stud, F¹³, fixed in one of the frames A. The horizontal arm of bell-crank F⁸ carries a roller, 85 F⁹, which engages a cam, F¹⁰, secured to the wheel R'.

I is the ink-plate, secured to the bed D. Projecting from the ink-plate I is a bracket, I', having a roller, I², which engages the lower end of the weighted hook-catch F⁶ on the retrograde or non-printing stroke of the bed D, operating to disengage the hook F⁶ from the stud or pin F⁴.

95 I³ is the receiving-board on which the printed sheets are delivered.

I⁴ is a sheet-stop made adjustable upon said board, if desired, and slotted at the proper places to allow the fingers F³ to pass downward through such slots.

100 The cylinder C runs loosely upon eccentric journals formed on the rock-shaft C'.

C² are eccentric bushes or boxes in which the rock-shaft C' is journaled, made eccen-

rically for the purpose of adjusting the impression, as shown in the application filed by me December 26, 1883, bearing the Serial No. 115,603. Secured to the rock-shaft C' is a double-armed lever, L' . To a stud, L^6 , carried in the short arm of lever L' , is connected a connecting-rod, L^3 , whose other end is connected to a stud carried in a lever, L^2 , which latter is secured to the rock-shaft E^5 . To a stud, L^5 , carried in the long arm of lever L' , is articulated a strap or belt, R^4 , for operating the fountain-roller. (Not necessary to be further shown in illustrating this invention.) The small double-pointed staple-like pieces s , Fig. 6, are stuck in the tympan-sheet, usually covering the blanket or packing of the cylinder, so as to be just in position to have the tail of the sheet rest upon them, and which have elevated the tail of the sheet from the cylinder, as shown in Fig. 5. The pointed legs of the sheet-supports s are made to pass between the tympan-sheet and packing or blanket, and the pressure of the former on the latter secures them in place, as fully described in the first above-mentioned application. A series of stripper-fingers, s' , are secured to a stationary rod, s^2 , which in turn is secured to the ends of the frames A . The points of these fingers are to be so placed close to the cylinder so that when the cylinder is in position to commence to deliver the sheet, the tail end, as supported on the sheet-supports s , will enter upon them and be stripped by them from the cylinder as it rotates on the non-printing stroke.

S are a series of pressure-rollers for holding the sheet in contact with the cylinder's surface during the retrograde or non-printing stroke. With the parts in the position shown the fingers F^3 will lie upon the bank of delivered sheets upon the receiving-board I^3 . During the printing-stroke the cam F^{10} , through the connecting parts already described, allows the weighted hook-catch F^6 to drop, and thus raise the fingers F^3 to the position shown in dotted lines in Fig. 1, so that the next sheet may pass down under them and upon the receiving-board I^3 or the pile of sheets thereon, the stop-roller I^2 on the bracket I' , which may be made adjustable, having meanwhile passed clear of the lower end of the weighted hook-catch F^6 without striking it. The fingers F^3 will therefore remain in this position during so much of the retrograde revolution of the cylinder as suffices to carry the sheet down until the tail comes in contact with the stop I^4 , when the stop-roller I^2 is so located—the weight of the hook F^6 being now at its lowest position—that it engages the said hook at the moment that the tail of the sheet reaches the stop I^4 , tripping

the hook F^6 from the pin F^4 , and allowing the fingers F^3 to drop upon the sheet and spread it out evenly upon the board I^3 , where said fingers remain until the completion of the retrograde stroke, during which the cam F^{10} again raises the hook F^6 , so that it again engages the pin F^4 . It will be observed that this action of the fly is equally effective whether the pile of sheets be small or large.

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

1. In an oscillating-cylinder printing-machine in which the sheet is delivered from the cylinder tail first, a sheet-delivery apparatus consisting of a series of sheet-supports, as s , a series of pressure-rollers, as S , a series of stripper-fingers, as s' , an inclined receiving-board, as I^3 , and sheet-stops, as I^4 , substantially as and for the purposes set forth.

2. In a printing-press, in combination with its sheet-delivery apparatus, a sheet flattening and controlling apparatus consisting of a series of fingers, as F^3 , projecting from a bar, as F^2 , pivoted by a stop-joint to two levers, as F' , said levers being in turn pivoted to the machine and operated substantially as described, whereby said fingers are caused to lie upon the pile of sheets on the receiving-board whether there may be a small or a large pile of sheets upon the board, substantially as and for the purposes set forth.

3. In an oscillating-cylinder printing-press in which the sheets are delivered from the cylinder tail first, the combination of parts for automatically flattening out the sheets upon the receiving-board, consisting of a series of fingers, as F^3 , secured to a bar, as F^2 , pivoted by a stop-joint to two levers, as F' , secured to a rock-shaft, as F , a stud upon the free end of one of said levers engaging a weighted hook, as F^6 , a stop-roller, as I^2 , secured to the type-bed and engaging the lower part of said weighted hook, pivoted to the horizontal arm of a bell-crank lever, as F^5 , oscillating upon a stud, as F^{14} , a connecting-rod, as F^7 , pivoted at one end to the vertical arm of said bell-crank lever and at the other end to the vertical arm of another bell-crank lever, as F^8 , upon a stud, as F^{13} , secured to the frame or other fixed part of the machine, and a roller, as F^9 , upon the horizontal arm of said bell-crank, engaging a suitably-formed cam, as F^{10} , secured to said oscillating cylinder, whereby the sheets are automatically flattened out at the proper times upon a receiving-board, as I^3 , substantially as set forth.

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Witnesses:

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