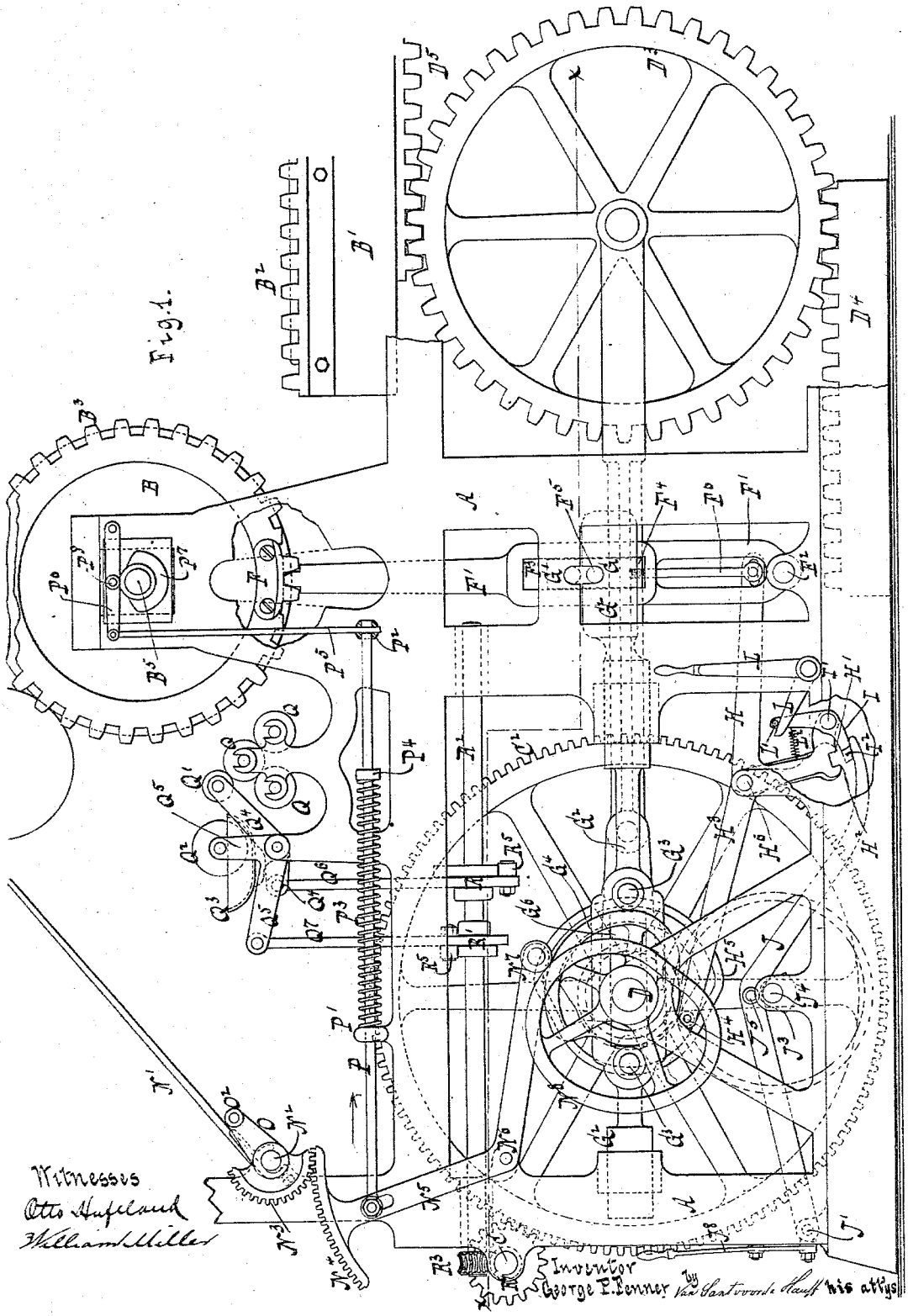
(No Model.) 3 Sheets—Sheet 1.

G. P. FENNER.

PRINTING MACHINE.

No. 301,703. Patented July 8, 1884.

Fig. 1.



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(No Model.) 3 Sheets—Sheet 2.

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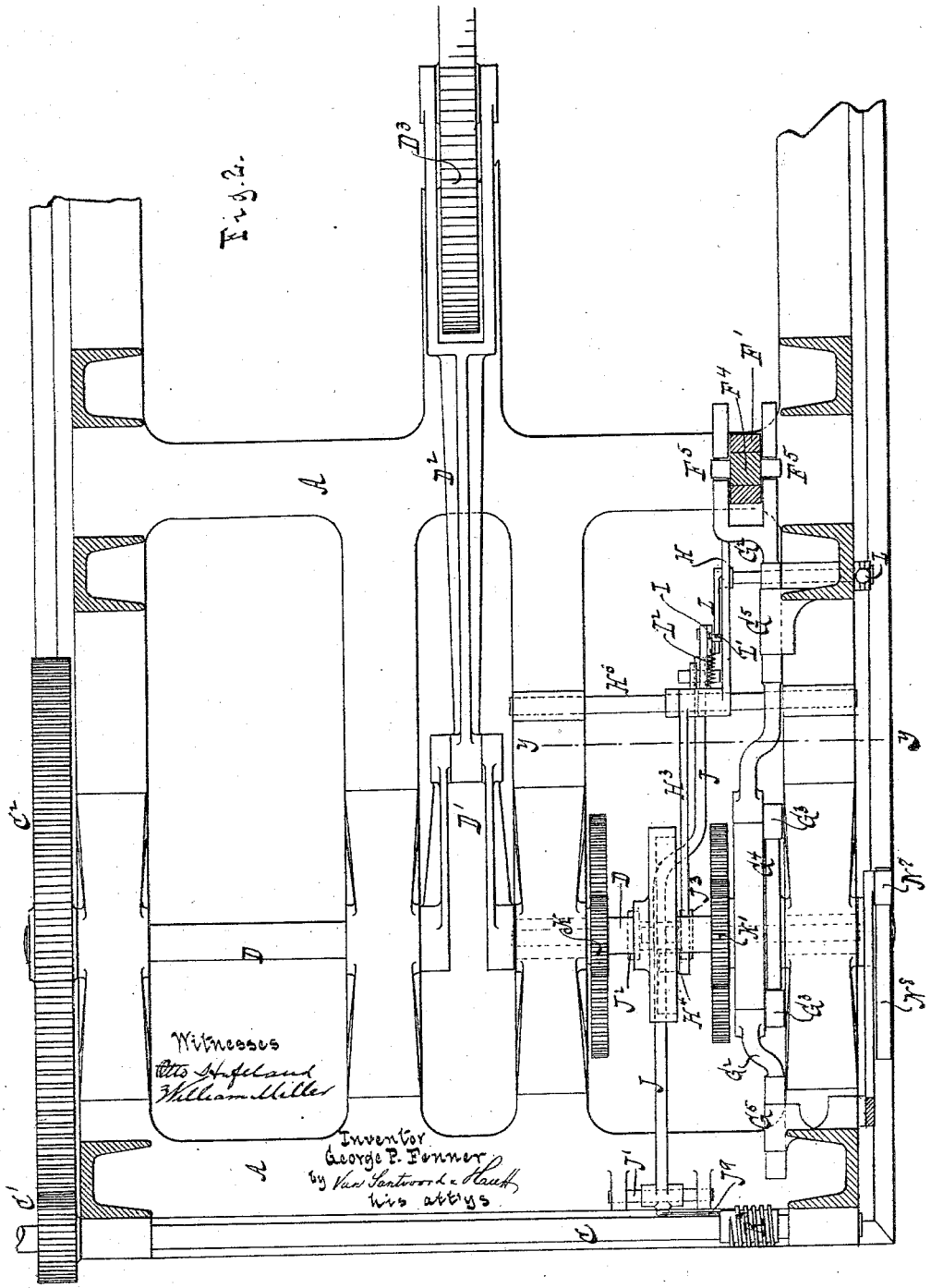
Fig. 2.



(No Model.) 3 Sheets—Sheet 3.

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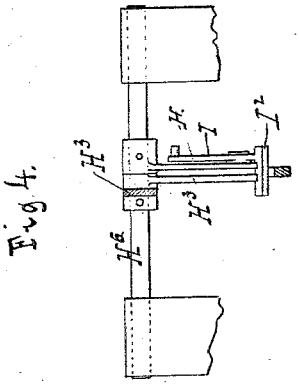
Fig. 4.



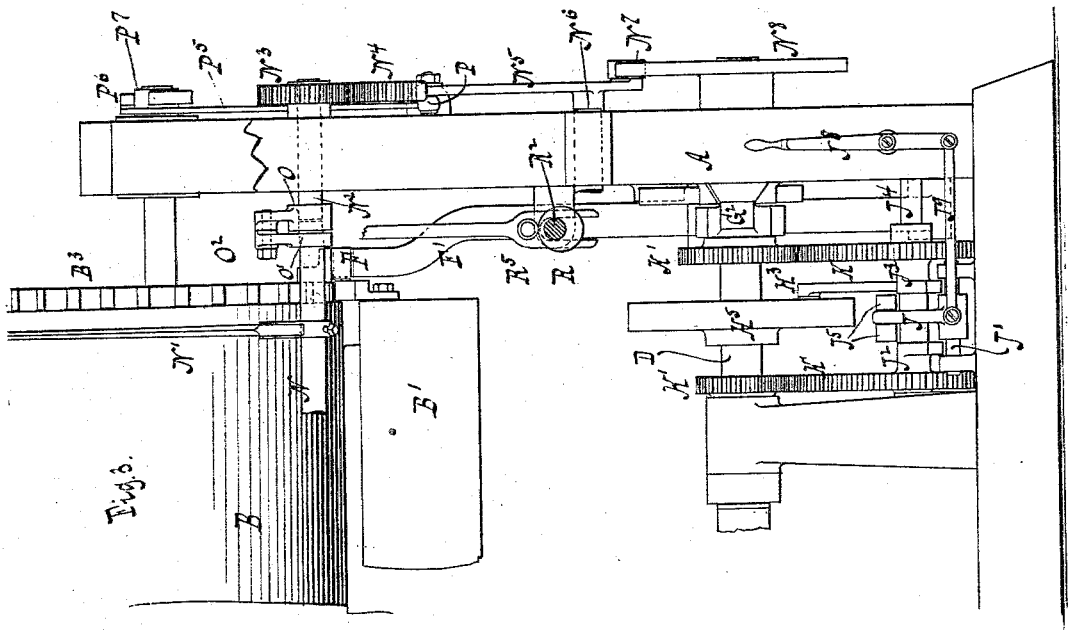


Fig. 5.

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UNITED STATES PATENT OFFICE.

GEORGE P. FENNER, OF NEW LONDON, CONNECTICUT.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 301,703, dated July 8, 1884.

Application filed November 8, 1883. (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 Printing-Machines, of which the following is a specification.

This invention relates to stop-cylinder printing-presses for lithographic and other purposes; and it consists in certain novel means for checking, holding, and starting the impression-cylinder, whereby, among other things, the intervals of motion of the cylinder may be varied relatively to the motion of the traveling bed, without altering the press.

This invention is illustrated in the accompanying drawings, in which Figure 1 is a side elevation with parts of the frame broken away. Fig. 2 is a horizontal section on the line *x x*, Fig. 1. Fig. 3 is an end view, partly in section, looking from the left-hand side of Fig. 1, and omitting one side of the machine. Fig. 4 is a detail cross-section on the line *y y*, Fig. 2.

Similar letters indicate corresponding parts.

The letter A designates the press-frame, having suitable bearings for the impression-cylinder B and suitable guideways (not shown) for the traveling bed B′. At one end of this frame is arranged the driving-shaft C, from which motion is transmitted by gear-wheels C′ C² to the main shaft D, and from this shaft motion is in turn transmitted by the usual crank, D′, and connecting-rod D² to the rack-wheel D³, which gears into two racks, D⁴ D⁵—one fixed to the base of the machine, and the other to the traveling bed, for imparting a reciprocating motion to the latter, in the usual manner. The impression-cylinder B receives its motion from the traveling bed B′ through a second rack, B², fixed to the bed to gear into a cog-wheel, B³, of the cylinder, also in the usual manner, a portion of the cogs of this wheel being cut away, as shown in Fig. 1, leaving a space through which the bed may travel under the wheel without turning it when the cylinder is at rest. At a point opposite to the space left in the wheel B³, as last stated, the impression-cylinder B carries a catch, F, which is radial thereto, and adapted to engage with one end of a catch-lever, F′, having its fulcrum at the other end in a stud, F², of the press-frame, and having a longitudinal slot, F³, in which is fitted a block, F⁴, constituting a key, as hereinafter explained. From this key F⁴ projects laterally, and in this example on two opposite sides, a locking-pin, F⁵, which is adapted to alternately enter either of two recesses, G G′—one formed in a rod, G², and the other in the press-frame, at such points that under certain conditions these recesses are brought opposite to each other, as shown in Fig. 1. The rod G² is a medium for operating the catch-lever F′, and straddles this lever at one end, where it is bifurcated, as shown in Fig. 2, while at the other end the rod carries two roller-studs, G³, through both of which it engages a cam, G⁴, of the main shaft D, so that the rod receives a reciprocating motion from such shaft. Said catch-lever-operating rod G² rests in guides G⁵ of the press-frame, and in a proper part of the rod is formed a longitudinal slot, G⁶, (see Fig. 1,) for allowing it to clear the main shaft.

To the key F⁴ of the catch-lever is connected, as by means of a link, F⁶, one arm of an adjusting-lever, H, in the other arm of which is a notch, H′, corresponding to a notch, H², in one arm of an impelling-lever, H³, the other arm of which carries a roller-stud, H⁴, entering a grooved cam, H⁵, of the main shaft D, whence the impelling-lever last mentioned receives an oscillating motion, the other or adjusting-lever, H, remaining stationary under normal conditions. Both levers H H³ are fulcrumed on a shaft, H⁶, and those arms thereof containing the notches H′ H² are equal in length to each other, so that the notches which are at the extremities of the arms may register with each other in a certain position of the levers. When the adjusting-lever H is at rest, the key F⁴ of the catch-lever F′ adjusts itself to bring the locking-pin F⁵ into the recess G of the catch-lever-operating rod G², as shown in Fig. 1, and by this means the catch-lever is united to the operating-rod to share its motion, in which motion such lever takes the proper positions for engaging the catch F to stop the cylinder, or for disengaging the catch to start the cylinder, in the usual manner. When in the motion of the impelling-lever H³ the notch thereof registers with the notch of the adjusting-lever H, these levers are interlocked by means of a latch, I, which enters the notches at the proper moment, and in the ensuing motion of the adjusting-lever, derived

from the impelling-lever, the key F^4 of the catch-lever is lifted to bring the locking-pin F^5 out of the recess G of the catch-lever-operating rod, and into the recess G′ of the press-frame, whereby the catch-lever is not only disconnected from the operating-rod, but also locked in position, so that the operating-rod may continue its motion without acting on the lever. In order to adapt the lever-interlocking latch I to the motion of the adjusting-lever H jointly with the impelling-lever H^3, it is pivoted to the adjusting-lever, as at I′; and for the purpose of engaging the lever-notches the latch is provided with a toe, I^2, (best seen in Fig. 5,) at one end. Said motion of the adjusting-lever H is regulated by means of the cam H^5 of the impelling-lever to take place when the impression-cylinder has reached the stopping-point, and inasmuch as the catch-lever F′ is locked at that period it performs the function of stopping the cylinder. Said motion of the adjusting-lever H is also regulated by the same means to keep the catch-lever F′ in a locked position, and thereby hold the impression-cylinder stationary until the adjusting-lever is disconnected from the impelling-lever H^3 by the withdrawal of the interlocking latch I from the lever-notches, which takes place at fixed intervals, as next explained. The latch I engages with one end of a locking-lever, J, which has its fulcrum at the other end in a shaft, J′, and is capable of moving laterally on this shaft to alternately engage either of two stop-cams, J^2 J^3, whence it receives a vibrating motion of the proper nature to set the latch and keep the adjusting and impelling levers H H^3 interlocked by its means during the required period.

The cams J^2 J^3 are arranged in juxtaposition on a shaft, J^4, and the locking-lever J engages the same by means of roller-studs J^5, applied to opposite sides of the lever to ride on the cams. Said cams J^2 J^3 moreover are left loose on their shaft, and are geared with the main shaft D, as by cog-wheels K K′, to receive a revolving motion of different speed, respectively, the speed of one being a multiple of the speed of the other, and the whole being so regulated with relation to the shape of the cams that when the locking-lever is in engagement with one cam the impression-cylinder B is held stationary, as before explained, during one interval of motion of the traveling bed B′, while when such lever is in engagement with the other cam the cylinder is held stationary during two such intervals, and inasmuch as it is only necessary to change the position of the locking-lever to vary these conditions, no alteration of the press is required.

For the purpose of adjusting the locking-lever J relatively to the stop-cams on its shaft, a hand-lever, J^8, and connecting-rod J^9, or any other suitable device, may be used.

The means thus far described for setting the latch I operate automatically; but in order to permit the impression-cylinder to be stopped for an indefinite period, provision is made for setting the latch also by hand, as follows: To a proper part of the press-frame is fulcrumed a hand-lever, L, one arm of which engages the latch I at the end opposite to the locking-lever J through a spur, L′, of the latch in such a manner that by a simple movement of the hand-lever the latch may be set to the required position to be held therein by fastening the lever or otherwise. In the example shown both the locking-lever J and the hand-lever L are left disconnected from the latch I, and a spring, L^2, is used to return the latch to an unlocked position; but such levers can also be connected to the latch.

The sheet-flier is here shown, and consists of the shaft N and arm N′, the shaft being attached to rock-shafts N^2, one of which has a toothed segment, N^3, engaging a like segment, N^4, on a lever, N^5, having a roller-stud, N^7, engaging a cam, N^8, on main shaft D. Cranks O O′, having screws and notches, detachably connect the shaft N to the rock-shafts.

I have illustrated in connection with the press a sheet-flier, N N′, and mechanism whereby the forward movement of the flier toward the cylinder is effected from the main shaft D; but such sheet-flier and operating mechanism are not herein claimed. I have also illustrated damping-rollers Q and means for supplying them with water; but neither do I herein claim such features, as all will constitute the subject-matters of separate applications for Letters Patent.

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

1. The combination, with the impression-cylinder and its catch, of the catch-lever, the catch-lever-operating rod, the key of the catch-lever having a locking-pin adapted to alternately enter recesses, one in the operating-rod and the other in the press-frame, and a means, substantially such as herein described, for automatically adjusting the key to such recesses.

2. The combination, with the impression-cylinder and its catch, of the catch-lever, the catch-lever-operating rod, the key of the catch-lever, the adjusting-lever having the key connected to one arm and a notch in the other arm thereof, the impelling-lever having a notch in one arm thereof to register with the notch of the adjusting-lever, the interlocking latch pivoted to the adjusting-lever to enter the lever-notches, and a means, substantially such as herein described, for setting the latch.

3. The combination, with the impression-cylinder and its catch, of the catch-lever, the catch-lever-operating rod, the key of the catch-lever, the key-adjusting lever, the impelling-lever, the lever-interlocking latch, the laterally-movable locking-lever engaging the latch, the stop-cams arranged in juxtaposition to receive the locking-lever alternately, and a means, substantially such as herein described, for imparting a revolving motion of different speed to the stop-cams, respectively.

4. The combination, with the impression-cylinder and its catch, of the catch-lever, the

catch-lever-operating rod, the key of the catch-lever, the key-adjusting lever, the impelling-lever, the lever-interlocking latch, and the hand-lever engaging the latch.

5. The combination, with the impression-cylinder and its catch, of the catch-lever, the catch-lever-operating rod, the key of the catch-lever, the key-adjusting lever, the impelling-lever, the lever-interlocking latch, the laterally-movable locking-lever engaging the latch, a means, substantially such as herein described, for imparting motion to the locking-lever, and the hand-lever engaging the latch.

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.