(No Model.)

M. GALLY.

STOP MOVEMENT FOR PRINTING, EMBOSSING, AND POWER PRESSES.

No. 287,821. Patented Nov. 6, 1883.

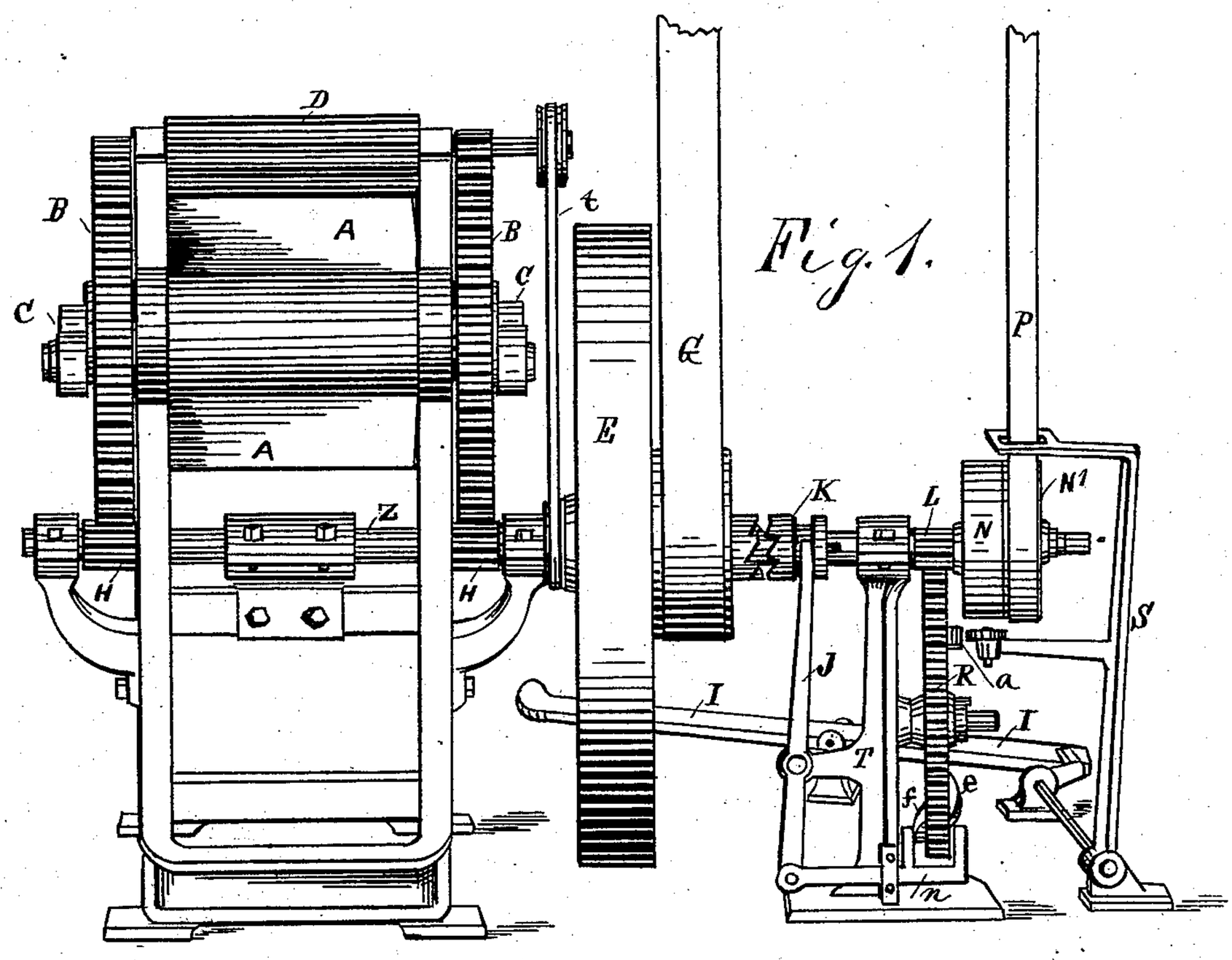

Fig. 1.

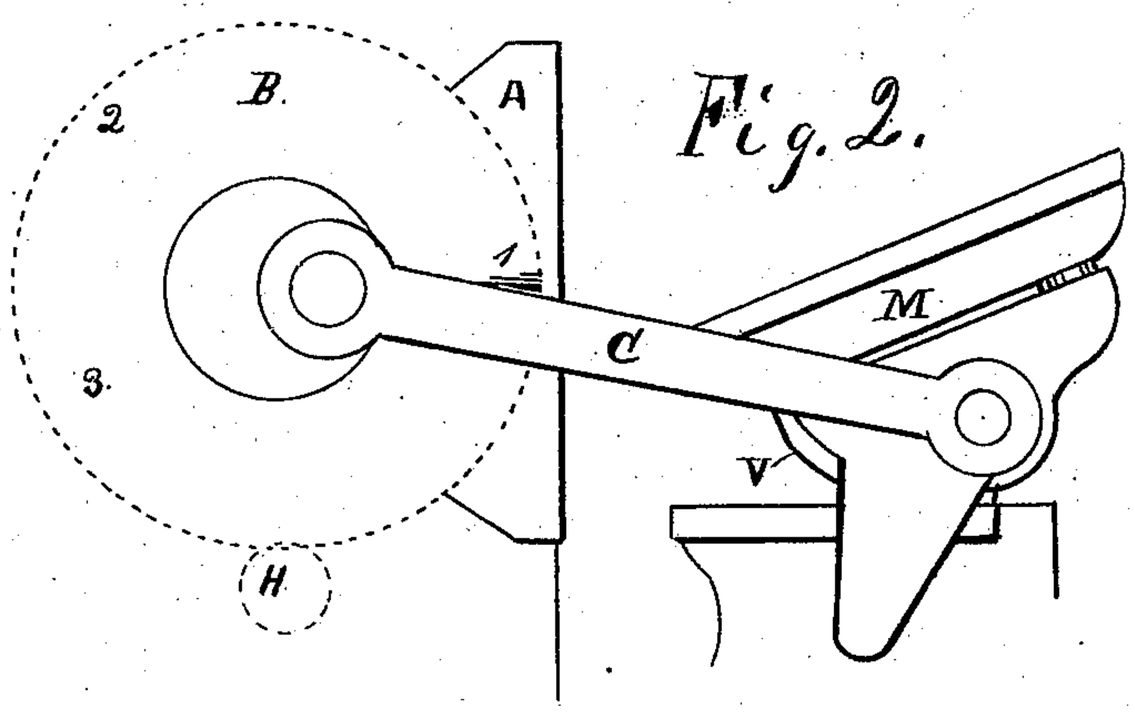

Fig. 2.

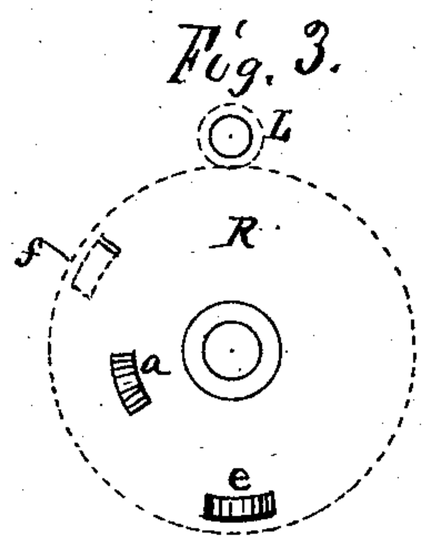

Fig. 3.

Witnesses:

R. A. Gally.

Wm. A. Gally.

Merritt Gally,

Inventor.

UNITED STATES PATENT OFFICE.

MERRITT GALLY, OF NEW YORK, N. Y.

STOP-MOVEMENT FOR PRINTING, EMBOSSING, AND POWER PRESSES.

SPECIFICATION forming part of Letters Patent No. 287,821, dated November 6, 1883.

Application filed May 23, 1883. (No model.)

To all whom it may concern:

Be it known that I, MERRITT GALLY, a citizen of the United States, and a resident of New York city, in the county and State of New York, have invented a new and useful Improvement in Stop-Motions for Printing-Presses, Embossing, Stamping, and Cutting Machines, of which the following is a specification.

In the accompanying drawings, Figure 1 is a rear view of a press for printing, embossing, or stamping, showing the gearing, fly-wheel, driving-belts, clutch, shifters, &c., and other parts of the stop-movement. Fig. 2 is a side view of the bed and platen of the press, with impression crank-wheel and draw-bar; and Fig. 3 is a diagram showing the position of the shifting-cams of the shifting-wheel.

In doing very heavy work on a press for printing, embossing, stamping, or the like, it is desirable that the press be run at very high speed and have a very heavy fly-wheel for carrying it over the impression. It is often the case that there is not a sufficient period of rest to the movable bed or platen between the times of impression to properly lay or prepare the work for each successive impression. In a press with an ordinary impression-toggle for producing the impression the toggle is usually constructed so that it can be thrown out of connection and one or more impressions skipped, leaving the bed or platen on which the work is to be laid quiet until another impression is needed, during which time all the remaining machinery is kept in motion. It is difficult in presses having a crank-impression, or any continuously-moving impression mechanism, to construct a throw-off for the platen that will leave it for an indefinite period of rest with all of the remainder of the machinery kept in motion, and at the same time retain sufficient strength for the impression. Stopping and starting the press by stopping and starting the fly-wheel for each impression is impracticable, and stopping and starting the machinery of the press by suddenly disconnecting and connecting it with a continuously-revolving fly-wheel produces a disagreeable stroke and unsafe jar of the machinery.

In connection with the press shown in the drawings, I have an automatic throw-off, which, at the time the platen reaches its position for receiving the article to be printed, stamped, or cut, frees the driving-shaft of the press from connection with the continuously-revolving fly-wheel E, Fig. 1, and all the machinery of the press driven by this fly-wheel and its shaft stops its movement until another impression is desired. The fly-wheel E is driven by belt G. It is necessary to have this belt wide and very taut, in order to secure power for driving the press over the impression. I use the power transmitted by belt G and fly-wheel only during that portion of each entire movement of the press which carries the impression crank-wheels over the "nip," which in Fig. 2 comprises that arc of the circle of movement of the crank-wheel B which lies between 2 and 3. From 3 to 1 the movement of the press is produced by the independent pulley N and belt P, and as there is no fly-wheel in connection with the machinery of the press connected to the driving-shaft during this movement, the press is easily and suddenly stopped by the automatic shifter S at the moment the platen reaches its position to receive the article to be printed or stamped. There are two automatic shifters in the mechanism. The shifter J operates automatically for connecting and disconnecting the clutch K of the driving-shaft Z with the fly-wheel E, and the shifter S operates automatically for stopping the movement of driving-shaft Z. A foot-lever, I, or other appropriate device connects with shifter S, by means of which the operator shifts the belt P from loose pulley N′ to tight pulley N whenever he wishes the press to make a movement for an impression. The impression gear-wheels B are geared to shaft Z by means of pinions H H, and shifting-wheel R is geared to the same shaft, Z, by means of pinion L. Wheel R moves only when wheel B is in motion, and they have an equal number of revolutions. Wheel R has on it three shifting-cams, *a e f*, which, in relation to the shifters, correspond with the positions of rest and movement 1 2 3 of wheel B, Fig. 2. Cams *e* and *f* operate in connection with the fork *n* or two arms of shifter J. The speeds of fly-

wheel E and pulley N are equal. When the operator wishes to start the press for an impression while the heavy fly-wheel is under full speed, he operates shifter S by means of foot-lever I, throwing belt P from loose pulley N′ to tight pulley N. By moving the shifter S carefully, the press is started, by means of driving-shaft Z, quietly and without jar, and the impression-wheels revolve through the arc from 1 to 2. At this movement cam *e* of shifting-wheel R reaches the fork *n* of shifter J and automatically throws the clutch K of shaft Z into connection with the fly-wheel E, which carries the press over the impression while the impression-cranks are passing through the arc from 2 to 3. When the cranks reach 3, the cam *f* reaches the fork *n* of shifter J, and the clutch K is automatically disengaged, leaving the power of belt P alone to carry the machinery of the press until the impression-cranks reach the point of rest at 1, when cam *a* automatically shifts belt P onto its loose pulley by means of a return movement of shifter S, and the motion of the press is stopped, having made one entire movement. Fig. 3 shows the position of the cams on wheel R.

When inking apparatus is used on the press, the ink-distributing cylinders D are kept in motion by means of the belt *t*, connecting with the pulley forming a part of the hub of fly-wheel E.

The stop-motion as described has advantages over that even of toggle-presses. In the toggle-press the toggle can be thrown into connection only at certain times, and if the operator is ready for an impression an instant after the time for locking the toggle is passed, he must wait the entire period of time for another complete movement of the press before he can get an impression. Besides this disadvantage, the operator is disturbed in his work by being obliged to constantly watch the movement of the machinery to know just where he can throw in the toggle. With my invention the operator can start the movement of the platen at any instant without losing a moment. There is no jar or stroke in the operation of the mechanism, as when the time for clutching the fly-wheel arrives, fly-wheel and machinery are both at operating-speed.

I make the cam *a* removable from wheel R, so that if it is desirable to make an impression in the time of every ordinary movement of the press, the machinery will not be automatically stopped.

If it is desirable to run the press at a high rate of speed to produce a striking impression and have the impression occur at intervals of time not corresponding with the single entire rotation of the shaft of the press, I accomplish it by connecting with the hub of loose pulley N′ a gear similar in its operations to L R, which shall at certain intervals of time, shift belt P onto its tight pulley N. Interchangeable gears can be used for this purpose, corresponding with different intervals of time, to accommodate different kinds of work or the capacity of different feeders. It will be seen that even for toggle-presses, time will be saved by using the stop-motion herein described. This modification is not herein illustrated or claimed.

Features of the press shown in the drawings but not necessarily operating in connection with the stop-movement I reserve for another application.

What I claim as my invention in a stop-motion for printing-presses, embossing, stamping, or cutting machines, is—

1. In the mechanism for the stop-motion, the combination, with the clutch for connecting the driving-shaft to the continuously-rotating fly-wheel, of an automatic shifting device operated by power independent of the movement of the fly-wheel.

2. The combination, with the continuously-revolving fly-wheel, the driving-shaft of the machine, and the clutch therefor, of mechanism, substantially as described, for operating said clutch, said mechanism being geared to the driving-shaft, as set forth.

3. The combination, with the continuously-rotating fly-wheel, the driving-shaft of the machine, and a clutch therefor, of power mechanism, substantially as described, independent of the movement of the fly-wheel for operating said clutch, as set forth.

4. The combination, with the continuously-rotating fly-wheel, the driving-shaft of the machine, and a clutch therefor, of an automatic device, substantially as described, for automatically engaging and disengaging the clutch.

5. The combination, with a continuously-revolving fly-wheel, the driving-shaft, and the clutch therefor, of mechanism, substantially as described, for operating said clutch, and a device, substantially as described, for throwing said mechanism into and out of operation automatically, as set forth.

6. The combination, with the continuously-rotating fly-wheel and the driving-shaft of the machine, an automatic clutch therefor, and a device, substantially as described, under the control of the operator, for bringing into action the mechanism which operates the automatic clutch, of an automatic mechanism, substantially as stated, for discontinuing the movement of the mechanism which operates the automatic clutch.

7. The combination, with the continuously-rotating fly-wheel, the driving-shaft of the machine, and a clutch therefor, of an automatic shifter for engaging and disengaging the clutch, a belt with tight and loose pulley for operating the shifting mechanism, and an automatic shifter for throwing the belt from tight to loose pulley.

8. The combination, with the continuously-rotating fly-wheel, the driving-shaft of the machine, and an automatic clutch for connecting and disconnecting the fly-wheel and driving-shaft, of an automatic mechanism for operat-

ing the device, constructed, substantially as described, to have such a relation to the movements of the machine that the fly-wheel shall be connected with driving-shaft only during a certain part of each entire movement of the machine.

9. The combination of a continuously-rotating fly-wheel, the driving-shaft of the machine, and an automatic clutch for connecting the fly-wheel and driving-shaft, constructed, substantially as described, to operate between the time of starting of the machine and the time of the heavy pressure of the machine, which requires the momentum of the fly-wheel.

10. The combination, with the continuously-rotating fly-wheel, the driving-shaft of the machine and its driving mechanism, and an automatic clutch for connecting the fly-wheel and driving-shaft for the period of impression, of an automatic device, substantially as described, for stopping the movement of the driving-shaft for the time of rest of the bed or platen which receives the article to be printed or stamped.

11. The method herein described of driving a press, which consists in propelling the mechanism by one power device and automatically throwing into operation a second power device to assist it past the nip, substantially as set forth.

12. The combination, with the continuously-rotating fly-wheel, the driving-shaft of the machine, and an automatic device, substantially as described, for connecting and disconnecting the fly-wheel and driving-shaft, of ink-distributing apparatus connected with the fly-wheel.

MERRITT GALLY.

Witnesses:
ROBERT A. GALLY,
WM. A. GALLY.