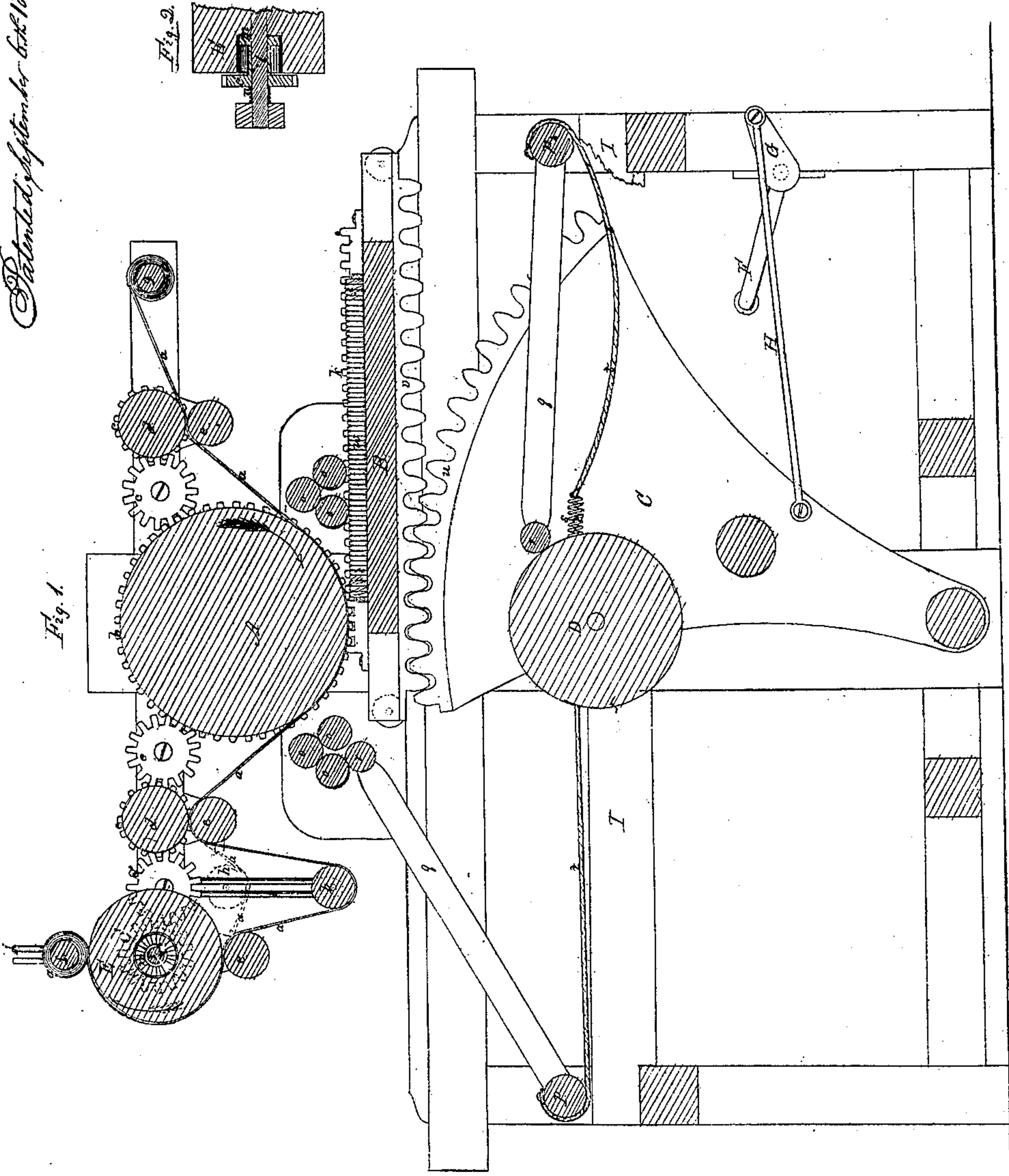


No. 9993—

Charles Montague's Improved Printing Press.

Patented September 6th 1883.

Fig. 1.





# UNITED STATES PATENT OFFICE.

CHARLES MONTAGUE, OF PITTSFIELD, MASSACHUSETTS.

## IMPROVEMENT IN PRINTING-PRESSES

Specification forming part of Letters Patent No. 9,993, dated September 6, 1853.

*To all whom it may concern:*

Be it known that I, CHARLES MONTAGUE, of Pittsfield, in the county of Berkshire and State of Massachusetts, have invented a new and Improved Printing-Press for Printing on a Continuous Sheet; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a longitudinal vertical section of the press, and Fig. 2 a section of a detached part thereof.

Like letters designate corresponding parts in both figures.

I make use of a horizontal bed B, to which a reciprocating motion is imparted by two vibratory levers (one of which C is shown in Fig. 1) connected therewith by racks *u v*. Vibratory motion is communicated from the power applied at F to said driving-levers by a crank G and connecting-rod H or other suitable means.

The ink-rollers *o o o*, &c., for distributing the ink to the form *w* at each stroke of the bed are supplied with ink from a large roller D, situated below the bed, by means of traveling rollers *r r*, turning in the vibratory ends of conducting-arms *q q*, which are arranged and operated in the following manner, viz: They are attached to vibratory rollers *p p*, around which pass cords *t t*, as shown in Fig. 1, whose other ends are attached to a springs or other elastic holder secured to the driving-lever C in such a manner that the left cord *t* will be straightened and turn its roller *p*, so as to carry the left arm and roller *q* and *r* up to the left ink-rollers when the driving-lever C passes to the right, as shown in Fig. 1, while at the same time the right cord is loosened, so as to let down the right conducting-roller to the large roller D, and vice versa. The use of the spring *s* is to obviate the difficulty of adjusting a positive action of the lever C on said conducting-rollers with sufficient exactness and to produce an elastic pressure of the said conducting-rollers on their respective ink-rollers *o o o*.

The continuous sheet *a* is first wound around a roller *g* at one end of the press. It is then passed down under the pressure-cylinder A and thence up around a winding-cylinder E at the other end of the press, ready

to be wound upon a roller *f*, which rests on said cylinder E, turning and moving up and down in guides *j*, so that it may adjust itself to the different sizes it assumes as the sheet is received thereon. A cog-wheel *b* on one end of the pressure-cylinder communicates motion by the rack *k* from the bed to said cylinder and through cog-wheels *c c c c* precisely equal motion to two rollers *d d*, one on each side of the cylinder. The winding-cylinder E is geared by cog-wheels *c' c'* to the left-hand roller *d* in such a manner that its periphery will move just twice as fast as the peripheries of the cylinder A and rollers *d d*. Small rollers *e e e* are situated, respectively, below the cylinder E and rollers *d d*, so near as to hold the sheet *a*, which passes over them, in contact with said cylinders and rollers, as represented in Fig. 1.

The cylinder E is provided with a coupling device, by which it is caused to revolve only in one direction—viz., that indicated by the arrow in Fig. 1—and remains stationary during the opposite movement of the rest of the press. Any convenient and suitable device may be employed for that purpose. I usually employ that represented in the drawings and most clearly shown in Fig. 2, which is a central section of that end of the cylinder E to which the device is attached. The cog-wheel *c'* is provided with a short tube or elongated hub extending over the shaft *l* into a recess in the end of the cylinder, which tube terminates in a disk *m*, whose face is formed into a series of radial notches with perpendicular sides in one direction and oblique sides in the other direction, which fit into corresponding notches in reverse at the bottom of the recess of the cylinder. Said disk is pressed into the recess by a spring *n*, which thus couples the cog-wheel *c'* to the cylinder E when revolving in one direction, (indicated by the arrow in Fig. 1,) but allows it to slip without turning said cylinder when moving in the other direction.

Between the winding-cylinder E and the adjacent roller *d* is situated a feed-roller *h*, which rests upon the sheet or web of paper turning and moving up and down in slots or staples *i*. Said feed-roller is of a suitable weight to enable the friction of the rollers *d d* and *e e* and of the pressure-cylinder and form, when in motion, with the paper, to raise



said roller by straightening the sheet beneath it, but so that it will sink to the bottom of its slotted bearings and draw down the paper with it as soon as the rollers *d d* and pressure-cylinder cease to turn and the form leaves the paper at the end of each stroke of the bed.

The operation of the press is in the following manner, to wit: Suppose the press to be in the position in which the bed B is just beginning its left-hand stroke, as shown in Fig. 1. While it is performing this stroke the cylinders A E move in the direction indicated by the arrows, and that part of the sheet *a* which is under the pressure-cylinder moves with the same velocity as the periphery thereof; but the winding-cylinder E, moving with twice that velocity, not only takes up all of the sheet brought forward by the pressure-cylinder, but just as much more by straightening the slack under the roller *h*, thereby raising said roller and the paper beneath it to the position indicated by the dotted lines, Fig. 1. As soon as the bed comes to the end of its stroke and clears the pressure-cylinder A said roller *h* falls back to the bottom of its slots, and thereby brings forward enough of the paper from the roller *g* for an impression. Then when the opposite stroke of the bed is made the winding-cylinder E remain stationary and prevents the sheet from unwinding again; but that part of the sheet under the pressure-cylinder is carried back as much as the periphery of the pressure-cylinder moves or sufficient for one impression, thereby again bringing up the roller *h* to the position shown by the dotted lines. As soon as this stroke is finished the said roller again falls to the bottom of its slotted bearings and brings forward

again that portion of the sheet which was carried back and impressed in the last stroke, and the press thus assumes the same position, as shown in the drawings, ready for another forward stroke. By this arrangement an impression is taken at each stroke of the bed upon a continuous sheet. When one side of the said sheet has thus been printed, the roller *f* is put in the place of the roller *g* and the other side of the sheet printed, during which operation a device may be employed for cutting off each copy as fast as printed, instead of winding the sheet again upon a roller.

Having thus fully described my improved printing-press for printing on a continuous sheet, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The combination of the intermittently-winding cylinder E and feed-roller *h* or their equivalents with the reciprocating pressure-cylinder A, bed B, and rollers *d d* and *e e e*, arranged and operating in such a manner as to successively make an impression on the continuous sheet at each movement of the bed, substantially as herein set forth.

2. In combination with a double set of inking-rollers, the arrangement of the arms *q q* for inking both sets of rollers from a fountain placed vertically below the impression-cylinder, substantially as described.

The above specification of my new and improved printing-press signed by me this 23d day of March, 1853.

CHARLES MONTAGUE.

Witnesses:

J. S. BROWN,

GEO. A. C. SMITH.