2 Sheets—Sheet 1.

H. MONTGOMERY.

ROTARY PRINTING-MACHINE FOR PRINTING ON BOARDS.

No. 193,538. Patented July 24, 1877.

Fig. 1.

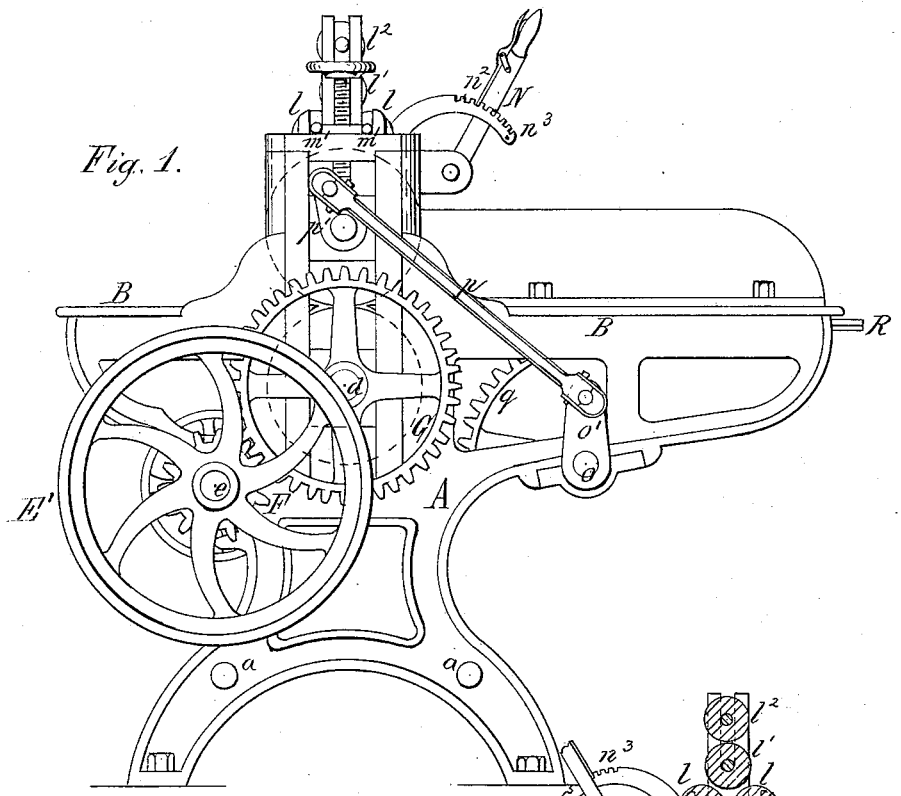


Fig. 6.

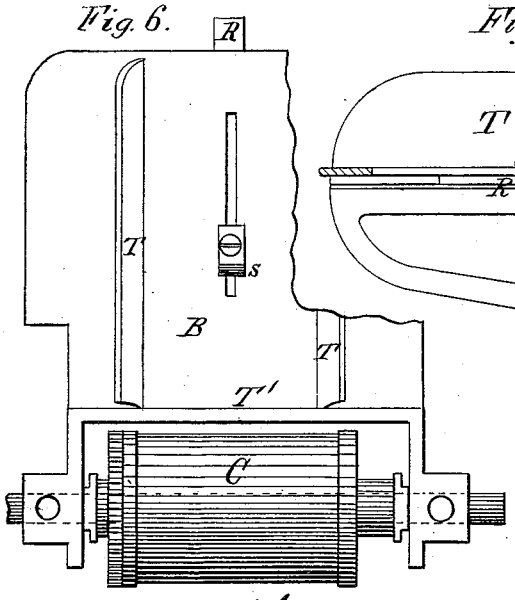
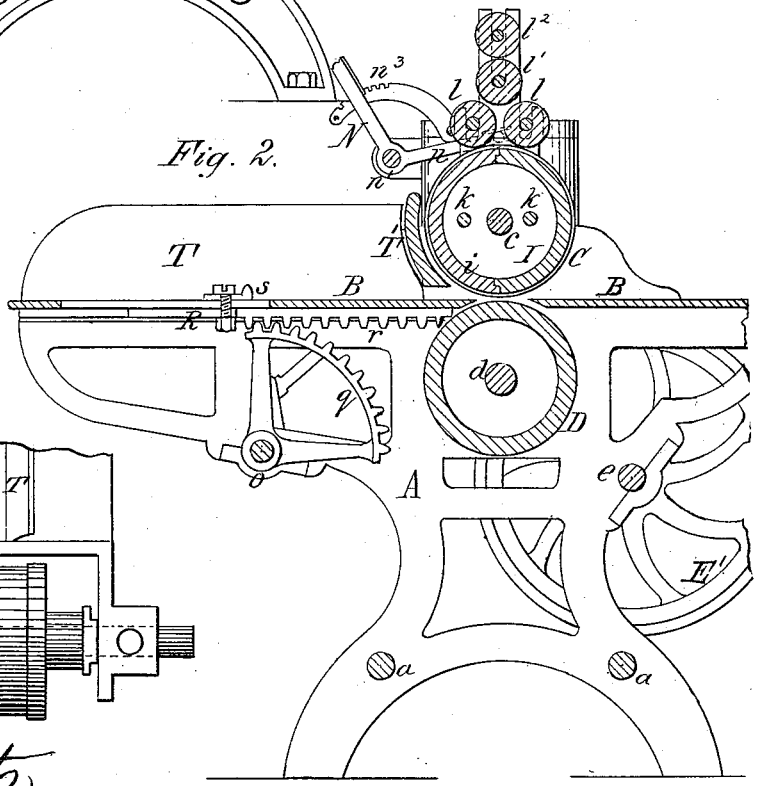


Fig. 2.



Witnesses

Chas. J. Buchheit

George H. Sykes

Henry Montgomery Inventor

By Edouard Wilhelm

Attorney.

2 Sheets—Sheet 2.

H. MONTGOMERY.

ROTARY PRINTING-MACHINE FOR PRINTING ON BOARDS.

No. 193,538. Patented July 24, 1877.

Fig. 3.

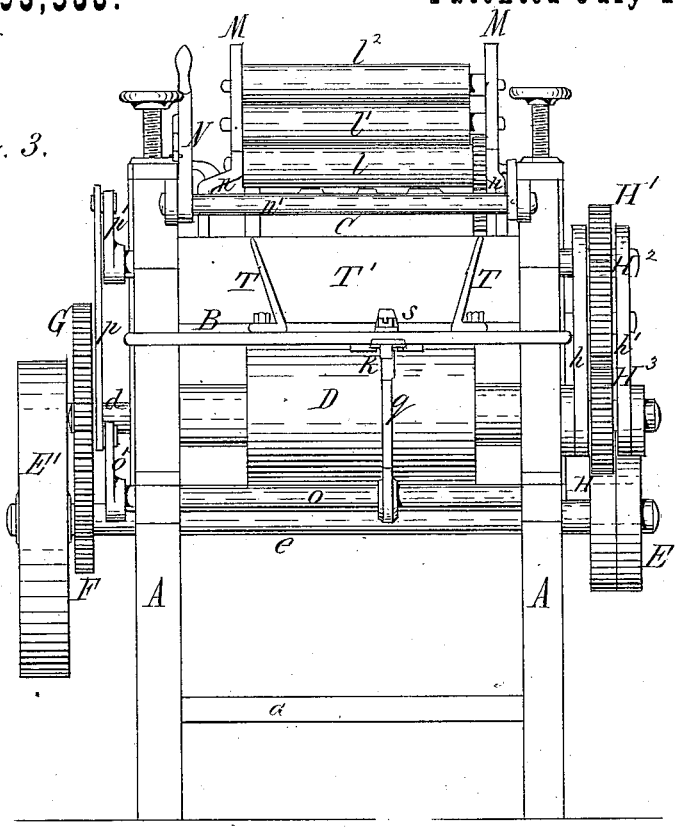


Fig. 4.

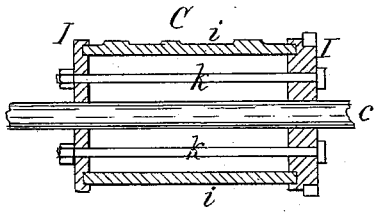
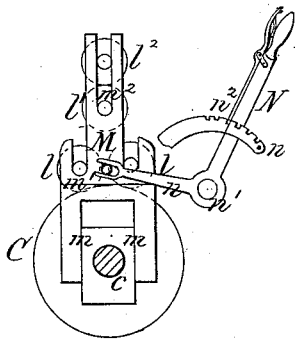


Fig. 5.



Witnesses
Chas. J. Buckheit
George H. Sykes

Henry Montgomery Inventor
By Edward Wilhelm
Attorney.

UNITED STATES PATENT OFFICE.

HENRY MONTGOMERY, OF BUFFALO, NEW YORK.

IMPROVEMENT IN ROTARY PRINTING-MACHINES FOR PRINTING ON BOARDS.

Specification forming part of Letters Patent No. **193,538**, dated July 24, 1877; application filed April 18, 1877.

To all whom it may concern:

Be it known that I, HENRY MONTGOMERY, of the city of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Rotary Printing-Machines for Printing upon Boards, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

Previous to my invention words designating the contents of soap, candle, and other packing boxes, as well as the manufacturer's address and similar matter, have usually been applied to the finished boxes by means of stencil-plates.

My invention relates to a machine for printing such matter upon the boards from which these packing boxes are made previous to nailing the boards together in the form of a box.

My invention consists of the particular construction and arrangement of the different parts of the machine, as will be hereinafter fully set forth.

In the accompanying drawing, consisting of two sheets, Figure 1 is a side elevation of my improved machine. Fig. 2 is a longitudinal section, and Fig. 3 an end elevation, thereof. Fig. 4 is a sectional view of the type-cylinder. Fig. 5 is a detached view of the inking-rollers and bearings. Fig. 6 is a detached plan view of the type-cylinder and stop-plate.

Like letters of reference designate like parts in each of the figures.

A A represent the side frames of the machine, connected by cross-stays *a*, and B the horizontal table or bed, arranged between the frames A, and made in two parts, leaving an open space between them, as clearly shown in Fig. 2. C is the type-cylinder, arranged above the table B in the open space between the two portions thereof, and D a pressure-roller, arranged underneath the type-cylinder, so as to support the board while the impression is taken.

e represents the driving-shaft, provided at one end with a driving-pulley, E, and at the opposite end with a fly-wheel, E′, and gear-wheel F. The latter meshes with a gear-wheel, G, mounted on the shaft *d* of the pressure-roller D. H is a gear-wheel secured to the opposite end of the shaft *d*, and H^1 a gear-wheel mounted on the shaft *c* of the type-cylinder. The wheels H H^1 are connected by two intermediate gears, H^2 H^3, mounted in links *h h′* in an ordinary manner, so as to permit of the raising and lowering of the type-cylinder without breaking the contact of the gear-wheels.

The type-cylinder is composed of a cylindrical shell, *i*, on which the type is cut, or to which it is secured, and two heads, I I, overlapping the ends of the shell *i*, and clamped together by longitudinal bolts *k*, so that upon loosening these bolts the shell *i* can be turned within the heads I I, to adjust the position of the type with reference to the feed-motion. The shell *i* is preferably divided into two parts longitudinally, one being made large enough to receive all the type, while the other part is made smooth.

l l are the inking-rollers running in contact with the type-cylinder C, and l^1 l^2 the rollers conveying the ink from the fountain or table to the rollers *l*. The rollers *l* l^1 l^2 are mounted in bearings M, arranged so as to slide in vertical ways *m*, so that the rollers can be raised from the type-cylinders when required.

The bearings M are raised and lowered by means of arms *n*, mounted on a rock-shaft, n^1, which latter is actuated by a lever, N, provided with a spring-catch, n^2, engaging with a notched segment, n^3, so as to be readily held in any desired position.

The slots or recesses m^1, in which the journals of the lower rollers *l* turn, are made deeper than the slot m^2, in which the upper rollers l^1 l^2 turn, so that in raising the bearings M the upper rollers l^1 l^2 will be raised from the lower rollers *l* before the latter will be lifted from the type-cylinder C. By this means the contact between the roller l^1 and the lower rollers *l* can be broken without raising the latter from the cylinder C. This arrangement of the inking-rollers permits the supply of ink to the type-cylinder to be cut off by a slight movement of the lever N when the machine runs empty, thereby doing away with the necessity of stopping the machine altogether when the supply of boards runs out temporarily.

o represents a rock-shaft arranged under

the feed end of the table B, and provided with an arm, o', which is actuated by a rod, p, from a crank, p', mounted on the shaft c of the type-cylinder.

q is an oscillating gear-segment, secured to the shaft o under the table B, and R the reciprocating feed-bar arranged under the latter, and provided on its under side with a gear-rack, r, meshing with the segment q. s is a claw or shoulder secured to the upper side of the feed-bar R, so as to project through the table B, the latter being provided with a longitudinal slot, in which the claw s moves forward and backward. T T represent two longitudinal guide-plates, secured to the table B for holding the boards against lateral displacement, and T′ a transversely-arranged stop-plate, secured by return ends to the boxes of the cylinder C, between the ends of the plates T T and the type-cylinder, and having its lower edge arranged at a short distance above the table B, so as to permit one board at a time to pass underneath the plate T′ to the type-cylinder, the arrangement being such that as the cylinder is adjusted to print boards of different thicknesses the stop-plate T′ will be correspondingly adjusted.

Power being applied to the driving-shaft, the cylinders C D and the inking rollers are set in motion, together with the feed mechanism.

The boards to be printed upon are placed between the guide-plates T T, with their ends resting against the stop-plate T′. The claw s being made of less length than the thickness of the boards operated upon, it takes in its forward movement the lowest board, and feeds the same between the cylinders C D, which immediately seize the board and apply the impression in an obvious manner. During the return movement of the claw s the boards remain stationary.

My improved machine is comparatively simple in construction, and prints the boards very rapidly, while requiring very little attention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for printing upon boards, the combination, with the type-cylinder, made adjustable, as described, of the stop-plate T′, secured to the boxes of the cylinder and adjustable therewith, as and for the purpose set forth.

2. The combination, with the type-cylinder C, of the inking-rollers l l^1 l^2, supported in movable bearings M, having the notches m^1 of the lower rollers l made deeper than the notch m^2 of the upper rollers, so that the rollers l^1 l^2 can be raised from the lower rollers without raising the latter from the type-cylinder, substantially as and for the purpose hereinbefore set forth.

3. In combination with the adjustable type-cylinder C and stop-plate T′, arranged as described, the table B, reciprocating feed-bar R, and longitudinal guide-plates T, substantially as and for the purpose set forth.

4. The combination, with the type-cylinder C and reciprocating feed-bar R, provided with gear-rack r, of the rock-shaft o, arm o', rod p, crank p', and gear-segment q, substantially as and for the purpose hereinbefore set forth.

HENRY MONTGOMERY.

Witnesses:

EDWARD WILHELM,

GEORGE H. SYKES.