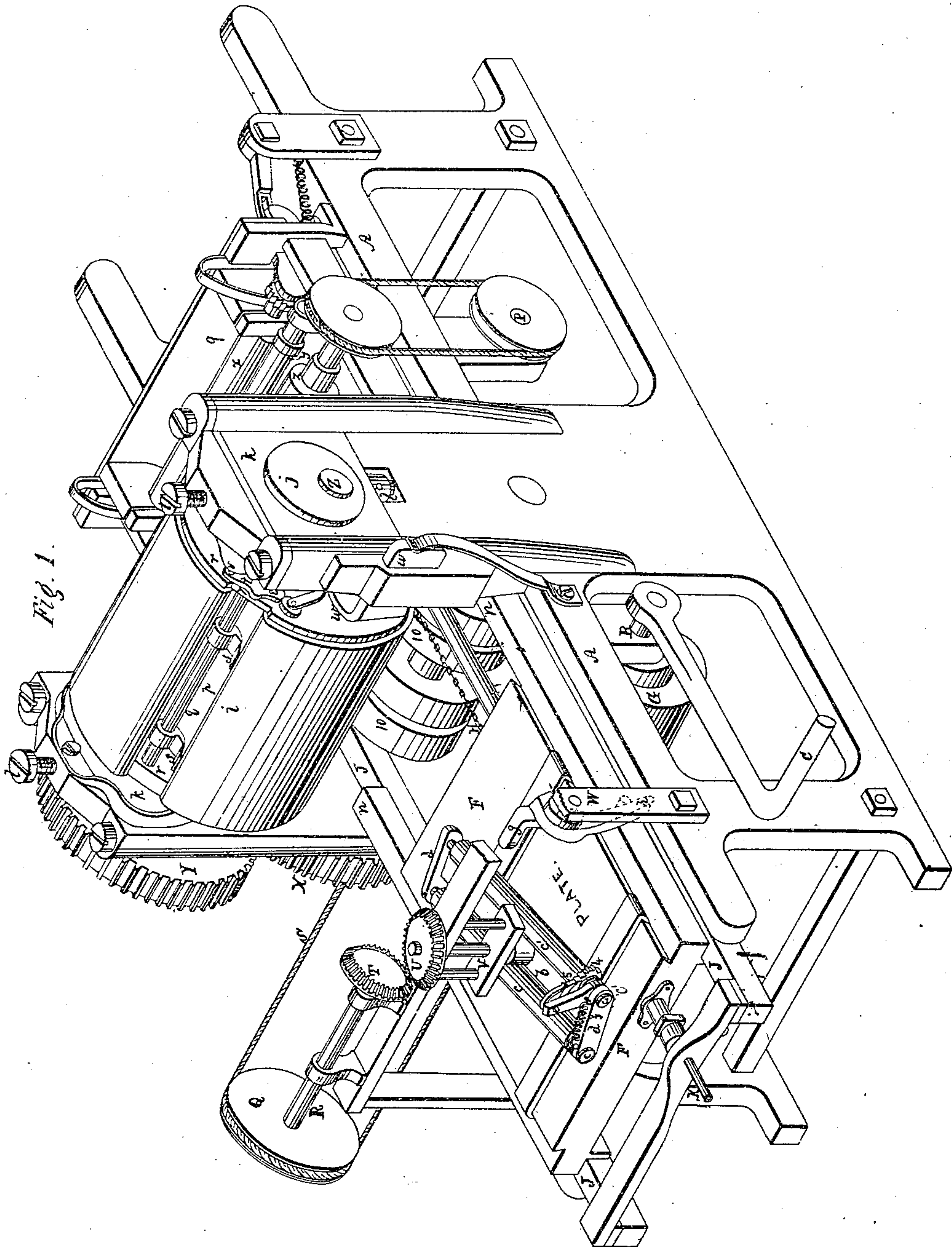


L. STEWART & J. McCLELLAND.  
COPPER PLATE PRINTING PRESS.

No. 16,952.

Patented Mar. 31, 1857.



L. STEWART & J. McCLELLAND.  
COPPER PLATE PRINTING PRESS.

No. 16,952.

Patented Mar. 31, 1857.

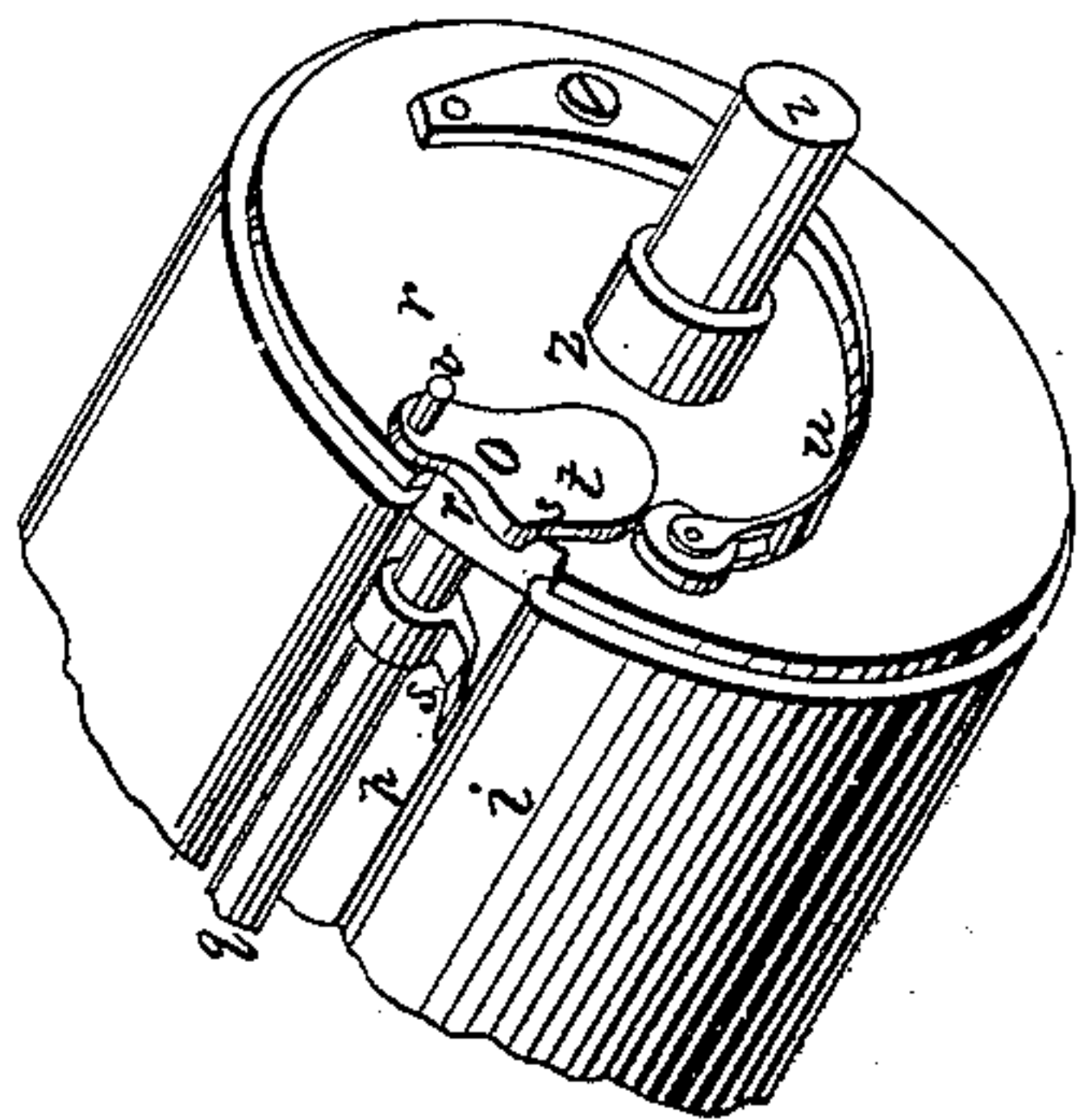
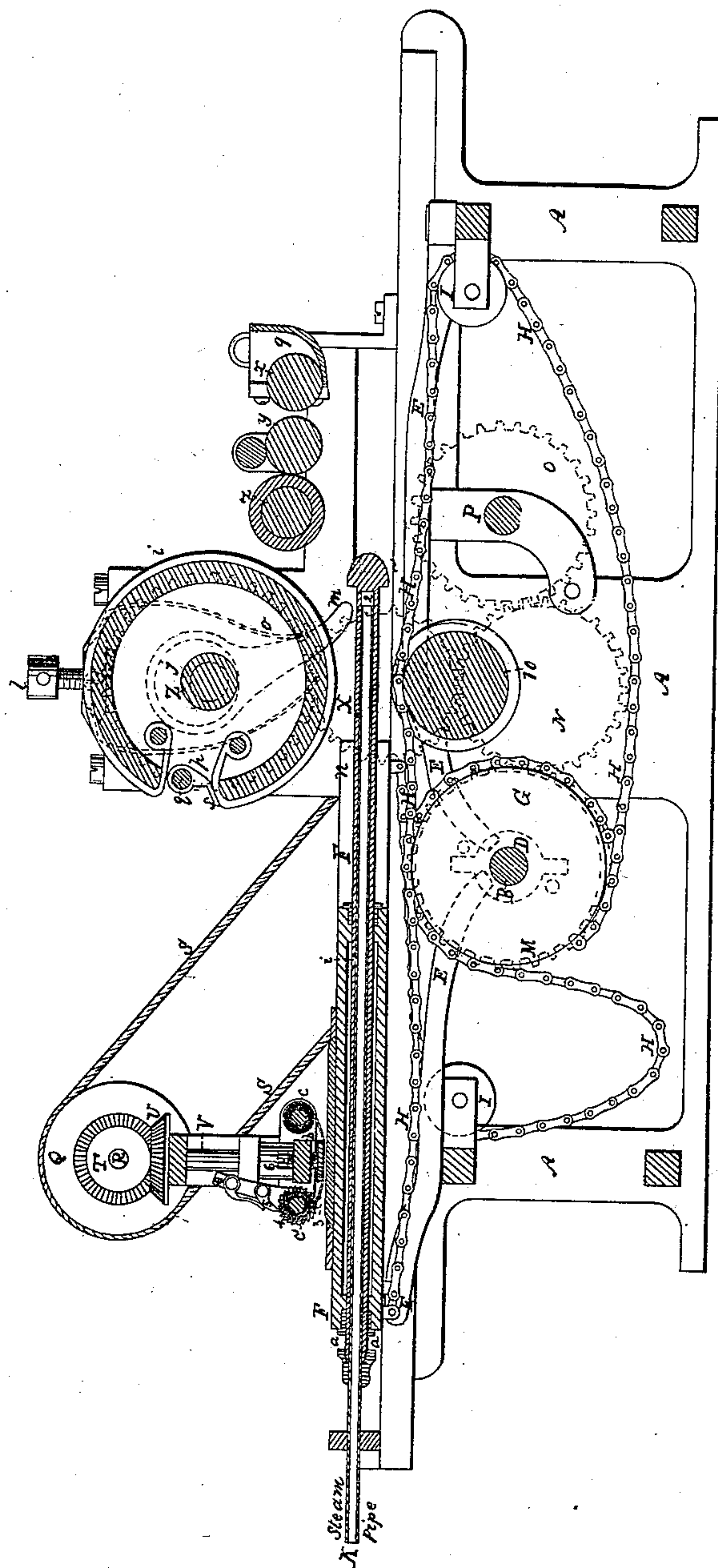


Fig. 3.

Fig. 2.





# UNITED STATES PATENT OFFICE.

LINUS STEWART AND JOHN McCLELLAND, OF WASHINGTON, DISTRICT OF COLUMBIA,  
ASSIGNORS TO McCLELLAND & McCLELLAND.

## MACHINE FOR PRINTING FROM ENGRAVED PLATES.

Specification of Letters Patent No. 16,952, dated March 31, 1857.

*To all whom it may concern:*

Be it known that we, LINUS STEWART and JOHN McCLELLAND, of Washington city, in the District of Columbia, have invented certain new and useful Improvements in Copper-Plate Printing-Presses; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part thereof, in which—

Figure 1 represents a perspective view of the press. Fig. 2 represents a vertical longitudinal section through the same. Fig. 3 represents in perspective one end of the pressing roller with the mechanism for controlling the nippers.

Similar letters of the alphabet where they occur in the separate figures, denote like parts of the press, in all of them.

To enable others skilled in the art to make and use our invention we will proceed to describe the same with reference to the drawings.

A substantial frame A, capable of sustaining the parts to be hereafter described, being provided, motion may be communicated to the shaft B, by means of the crank C, when used as a hand press, or by a belt passing around a pulley on said shaft and around a pulley connected with any first mover, when used as a power press. The shaft B extends entirely across the press, and has upon its central portion a clutch D, (dotted lines in Fig. 2), in a groove in which clutch two levers E E project, and extend one to each end of the frame. These levers are alternately struck by a pin, projecting below the bed F, as said bed traverses from end to end of the frame, and throw the clutch against one or the other of two loose drums G, G, (Fig. 1), which are arranged also on the shaft B, so as to cause said drum for the time being to rotate with said shaft, while its fellow is loose thereon. To each one of the drums G, G, is attached one end of a chain H, and after taking a turn around the drum, said chains extend respectively, to different ends of the frame, and passing over friction pulleys I, I, thereon return again and are attached to the ends of the bed F, so that whichever of the drums G may be clutched to the rotating shaft B for the time being shall by means of its chain move the bed to one end of the frame, the clutch being then, by the pin or stud and

one of the levers E, thrown against the other drum it in turn moves with the shaft B, and carries back said bed to the other end of the frame, and thus the bed receives its traverse motion.

The bed F, which carries the copper plate from which the impressions are to be taken moves upon suitable ways J on the frame, and travels on said ways from the inking to the wiping apparatus, and to the pressing roll, at stated intervals, by the devices above mentioned. The bed is moreover hollow, and a steam, hot water, or heated air, pipe K, extends into said bed to give it the necessary degree of warmth or heat, which the copper plate requires to give perfect impressions. As the bed has a long traverse movement, and the steam pipe K, cannot move with it, there must be a nice connection made between them that will admit steam into the bed, and at the same time prevent it from escaping from the pipe. To do this, we inclose the steam pipe in another loose pipe, which is packed as at a, Fig. 2, both to the steam pipe, and to the bed. An opening 1 is made from the outer pipe, leading into the hollow part of the bed, and the steam pipe K, terminates short of the length of the outer tube as at 2, so that when the opening 1, comes opposite the end of the steam pipe 2 there is free passage for the steam into the interior of the hollow bed. Of course hot water, or heated air may be introduced in a similar manner if found desirable to use these instead of steam.

On the opposite end of the shaft B, from the crank C, is a gear wheel M, which takes into and turns another gear wheel N (in red dotted lines Fig. 2,) said gear wheel N being an intermediate wheel to carry motion to another gear O (also in red dotted lines) on a shaft P, which also extends across the frame. To the face of the wheel N, is secured a pulley around which and around a pulley Q, on a shaft R, passes an endless belt S, for giving motion to said shaft R. Upon the end of the shaft R, is a bevel wheel T, which takes into and gives motion to, another bevel gear U, on the upper end of a vertical shaft V. To the lower end of this shaft V, is hung the wiping or cleaning apparatus for cleaning the copper plate, said apparatus revolving with the vertical shaft V.

The cleaning apparatus is made and oper-



ates as follows:  $b$ , is a plate fastened to the lower end of the shaft  $v$ , and  $c, c'$ , are two rollers hung in the end pieces  $d, d'$ , which are attached to the ends of said plate  $b$ .

5 Around one of these rollers ( $c$ ) is wound a wiping cloth of any suitable material, and length, and the end of said cloth is then passed down underneath an adjusting plate 3, which is below the plate  $b$ , and thence up, and fastened to the other roller  $c'$ , as seen in section in Fig. 2. On the roller  $c'$ , is a ratchet wheel 4, in which a spring pawl 5, works, so as to turn said roller  $c'$  on its axis, and cause it to draw the cloth from the other roller  $c$ , and wind it up upon itself. The pawl 5 is hung to an arm  $e$ , which is controlled by a spring  $f$ . To the upright piece  $w$ , is hung a trigger  $g$ , which is brought into action by the bed or carriage striking against its lower end  $h$  (and which is thrown out of action by the recoil of a spring when the bed returns). As the rollers revolve by the shaft  $v$ , the arm  $e$ , is brought into contact with the trigger  $g$ .

20 This causes the pawl 5 to advance the ratchet wheel 4, and turn the roller  $c'$ , and thus draw the wiping cloth from  $c$ , presenting a clean surface at every horizontal movement of the wiping rolls, the soiled cloth being wound up out of the way. To prevent this winding off and on, of the cloth when the bed and plate are at the other end of the press under the inking or pressing rolls, the trigger  $g$  is drawn away by its spring so that the arm  $e$  will not touch it, and consequently the drawing of the cloth from one roller to the other ceases when the plate is not underneath it. The under plate 3 is made adjustable on the upper one  $b$ , by means of the set screws 6 and the plate 3, may be made of indurated rubber, gutta percha, or other similar material, or a plate of such material may be placed under the plate 3, the object being to get friction enough between the cloth, and the copper plate to wipe off the ink. Whiting, or such other material as is used for cleaning copper plates, may also be introduced between the rolls, and over the cloth so that it will sift or shake through on to the said plate.

50 An intermediate gear wheel X, is placed between the gear N, and a cogged wheel Y, placed on the journal of the shaft Z, of the paper carrying and pressing roll  $i$ , to give motion to said roller. The journals of the roller  $i$ , are supported in eccentrics  $j, j'$ , at each of its ends, and these eccentrics are in turn supported in adjustable boxes  $k, k'$ , so that the roller  $i$ , may be adjusted vertically by the set screws  $l, l'$ , to give it the proper degree of pressure on the copper plate, when the impression is to be taken, and to rise and cease its rotation, when the said copper plate is traveling from the inking to the cleaning rolls to avoid contact with it. A

lever  $m$  is connected to each of the eccentrics, the lower ends of which extend down to the path of the side rails  $n, n'$  of the bed, so that when the bed returns, after its copper plate has been wiped, the ends of the said side rails will strike against said levers  $m$ , and turning the eccentrics  $j, j'$ , bring the roller  $i$ , hard down upon the plate so as to make the paper which said roller carries take the impression from the engraved plate.

75 When the pressing roller is thus drawn down, its gear wheel Y meshes with the intermediate gear X, and said roller has a rotary motion around its axis, but after the rails  $n$ , have passed from under the levers  $m$ , and released them, then a spring  $o$ , which bears against each of the levers  $m$ , pushes them back, and turning the eccentrics  $j$ , in a contrary direction, raise up the roller  $i$ , lifting its gear Y, out of the cogs of the intermediate gear X, and the roller remains stationary until the next similar return of the bed. The roller  $i$ , by this arrangement, is motionless while the engraved plate is receiving its ink, and during its passage to, and while operated upon by the wiping apparatus, and has motion communicated to it only when the impression is to be taken, which gives abundant time for the properly preparing and placing of the sheet upon the cylinder, said cylinder being covered with suitable soft, pliable, or elastic material to press the paper to the engraved plate. A paper table may be conveniently arranged over or near to the roller  $i$ , so that its nippers may catch and carry the sheets to the plate. A groove or depression  $h$  is cut longitudinally through the roller  $i$ , through which passes a shaft  $q$ , supported in the heads  $r, r'$  of the cylinder  $i$ . Upon this shaft  $q$ , may be arranged any suitable number of fingers or nippers  $s, s'$ , for catching and holding the paper to the roller  $i$ ; and outside of the roller head  $r$ , on said shaft, is placed a cam  $t$ , which is controlled to a certain extent by the spring  $u$ , which bears against each of its "throws" or depressions 7, 8, and when the nippers are open, or closed upon the paper, the cam and spring hold them in their positions. A stud  $v$ , is placed on the cam  $t$ , which, as the roller  $i$  turns strikes against a projecting piece  $w$ , which closes the nippers upon the sheet, and a similar projecting piece, is properly placed, for opening them after the sheet is pressed upon the engraved plate, the same cam  $t$ , holds the nippers whether open or closed.

$x, y, z$ , are inking rollers, and 9 the ink trough, but as these are of the common kind, it is needless to describe their construction and operation, as they are distinctly shown in the drawings.

10, are supporting rollers over which the chains H, pass.

Having thus fully described the nature



of our invention, what we claim therein as new and desire to secure by Letters Patent is—

5 1. Heating the plate, from which the impression is to be taken, by means of a hollow bed plate, into which steam is admitted, substantially as herein described.

10 2. We also claim the cleaning of the plate by means of a horizontally revolving cleaning apparatus in which a clean surface is constantly brought into contact with the

plate, at every revolution of the cleaner, substantially as described.

3. We also claim in combination with the fingers or nippers, the cam and spring, 15 which alike hold them whether open, or closed, substantially as described.

LINUS STEWART.

JOHN McCLELLAND.

Witnesses:

JOHN S. HOLLINGSHEAD,  
JOS. W. DAVIS.