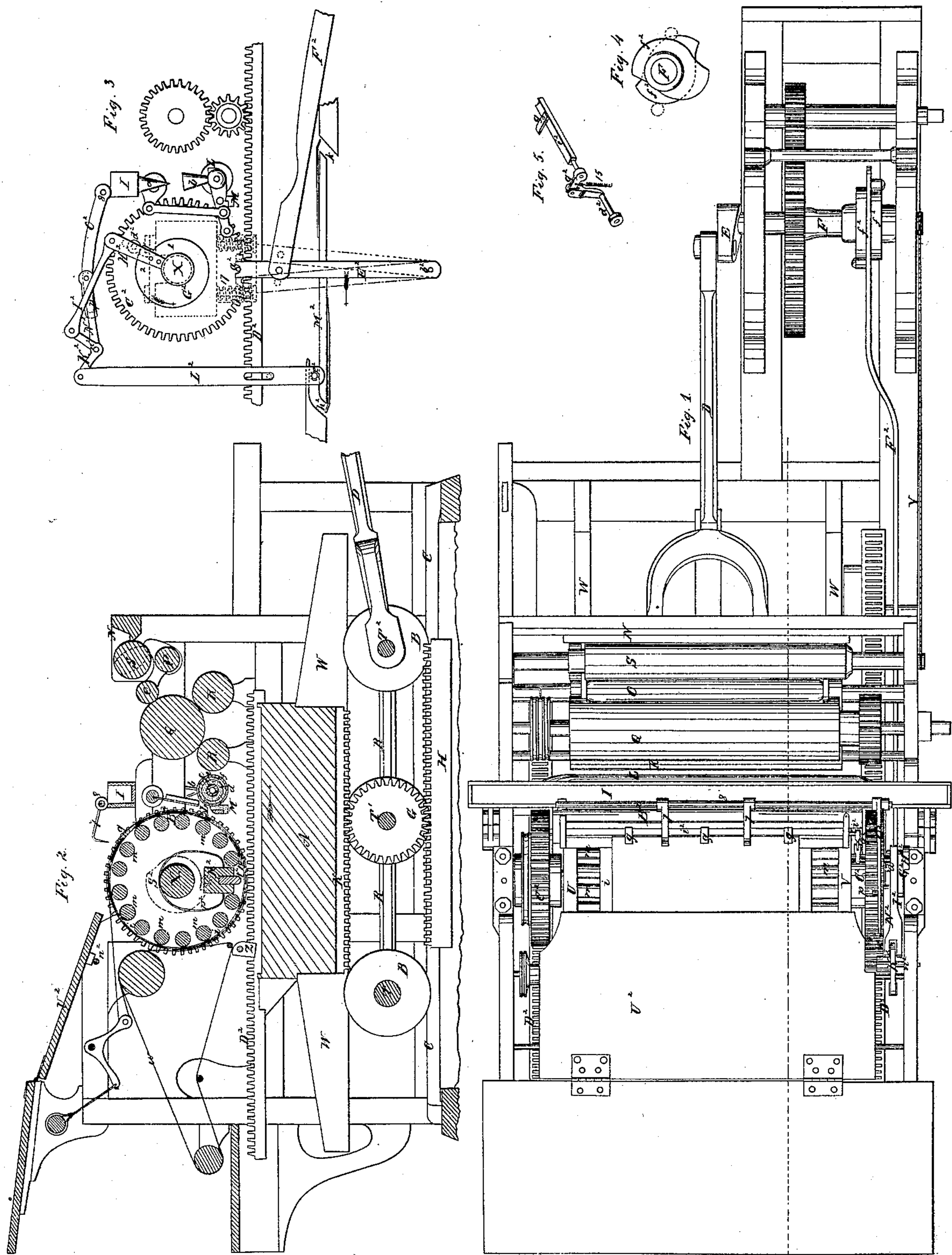


W. H. Stubbe.
Damping Mach.
N^o 22,519. Patented Jan. 11, 1859.



UNITED STATES PATENT OFFICE

WM. H. STUBBE, OF BOSTON, MASSACHUSETTS.

LITHOGRAPHIC-PRINTING PRESS.

Specification of Letters Patent No. 22,519, dated January 4, 1859.

To all whom it may concern:

Be it known that I, WM. H. STUBBE, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Lithographic-Printing Press, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, is a plan of my machine. Fig. 2, a vertical section through the same. Figs. 3, 4 and 5 details to be referred to hereafter.

My invention has for its object to perform the operations of moistening and inking the stone, and of taking the impression upon the paper all by machinery and my invention consists in an automatic machine for the purpose of effecting the same which I will now proceed particularly to describe.

The lithographic stone X^3 is secured to the top of the carriage A and is raised to the required height by the introduction of boards or paper beneath it in the customary manner. The carriage is vibrated back and forth as follows—Six flanged wheels B, the axles T, T', T², of which are connected by the perches R, run upon rails C, and are traversed back and forth by the connecting rod D, and crank E, upon the driving shaft F. Upon the center of the shaft T' is a gear G, which engages with a stationary rack H, and a corresponding rack K, upon the bottom of the traveling carriage A. To each end of this carriage are secured timbers W, which rest upon the treads of the flanged wheels B, and thus by means of the gear G, and racks H and K, the carriage is traversed both forward and back a distance equal to double that moved by the wheels B. As the carriage with its stone thus traverses back and forth the operations of "wiping" (moistening) inking, and printing are performed in succession as follows—The water for moistening the stone is contained in the trough I, from which it drops through the funnel *a*, into a receiver *b*, there being a funnel and receiver upon each of the ends of the shaft of the moistening roller L; the shaft *c*, of this roll is made of copper tubing into which the water is admitted from the receivers *b*; this tube *c*, is pierced with holes to permit the water to flow through and saturate a covering of sponge *d*, which surrounds it—outside the sponge is a covering *f* of flannel and surrounding the whole are one or more thicknesses *e*, of cotton or linen

cloth. As the carriage moves in the direction of its arrow the surface of the stone bears against the moistening roll and the stone is wiped as required the roll being 60 revolved by the contact of the stone.

For the purpose of taking up the superfluous water from the moistening roll L, an absorber M, of sponge or other suitable material is placed immediately to the rear of it, and is raised and lowered with it. When the carriage moves in the direction of its arrow the moistener and absorber are allowed to drop upon the surface of the stone, but when the carriage returns in the opposite direction after the stone has been inked the moistener and absorber are raised clear of the stone by means not shown in the drawings, they are seen elevated in Fig. 2. 70

The absorber M in addition to taking up the superfluous water of the moistening roll serves also to "wipe" the advance and rear edges of the stone for the purpose of preventing them from taking ink as they pass the ink rolls. At Z, Fig. 2 is seen one of two wipers which are saturated with water and serve to moisten the side edges of the stone and in a similar manner prevent them from taking ink, they are carried by a transverse rod upon which they may be adjusted in position to suit stones of various widths. 85 As the carriage still moves in the direction of its arrow Fig. 2, the stone is inked as follows—The ink is contained within the trough N from which it is transferred by the rolls S, and O, to the vibrating distributing cylinder Q, by which the ink rolls R are served, and in contact with these latter the stone X^3 on the carriage A passes twice, once as it advances and again on its return—the roll S, is driven by a cord Y, from the main shaft F. P is a shaft on which the arms that carry the roll O, are hung. I will now describe the manner in which the paper is fed to the stone and passed beneath the scraper for the purpose of producing the impression. 100

The paper is introduced by the attendant into nippers *g*, which are operated as follows: U and V, are stationary heads secured to a fixed shaft X, these heads do not revolve, they carry a number of rollers *m*, which together form a cylinder that supports a revolving tympan *i* of sheet metal, which together with the nippers *g*, are secured to a sheet of stouter metal B² which extends the whole length of the cylinder of 110

rollers, as seen in Fig. 1. Upon each end of the shaft X, is a gear C^2 , which is revolved by racks D^2 upon the carriage A, one of the racks being seen in Fig. 2—to
 5 each of these wheels is connected one end of the metal plate B^2 and thus as the gears C^2 are revolved the plate is carried around the drum and with it the tympan and nippers. This revolution of the gears, plate
 10 and tympan takes place only in one direction, while the carriage is running back after the ink has been applied to the stone. When the carriage advances after an impression has been taken the racks D^2 are dis-
 15 engaged from the gears C^2 so that the latter remain stationary in the following manner. A portion of the teeth of the gears C^2 are cut away at 10 Fig. 2, so that on the arrival of the nippers g into position to receive a
 20 sheet of paper the toothless portion of the gears shall be opposite to the racks D^2 and the parts remain in this position until after the stone has again been inked and returns to give another impression. The motions
 25 of the gears C^2 during this part of the operation are governed as follows: One of the gears C^2 , carries upon its outside face and directly over the part where the teeth are cut away a pin a^2 , which at certain times
 30 enters a notch in the end of a lever E^2 , pivoted at b^2 to the framework. The position of this lever is governed by two corresponding cams f^2 seen detached and in elevation in Fig. 4, and which are set counter
 35 to each other upon the shaft F, these cams are partly concentric and partly irregular so that motion is imparted through the rod F^2 to the lever E^2 , as follows: As the gear C^2 , revolves the lever E^2 is thrown by its cams
 40 f^2 , into the position seen dotted in Fig. 3, and the pin a^2 , falls into the notch in its extremity—the cams f^2 , are so shaped that the lever E^2 , follows the motions of the pin until it arrives into the position seen in
 45 black in Fig. 3, when the toothless portion of gears arriving opposite to the rack the gears remain stationary while the carriage completes its motions. At the same time the cams f^2 being both concentric the lever E^2 ,
 50 is held stationary and the gears with the tympan are held for the time immovable and before they can be again set in motion the gears must be revolved sufficiently to engage them with the racks—this is effected
 55 by the cams f^2 which now move the lever E^2 , in the direction of its arrow into the position shown in red Fig. 3, until the gears and racks once more engage, when the former are caused to make another revolution
 60 as before.

It now remains to be shown how the nippers g , are opened and closed. Their movable jaws are attached to a rod i^2 which is connected by a jointed arm g^2 with a pin d^2
 65 that passes through a slot in one of the

gears C^2 and rests upon the periphery of a cam G^2 Fig. 3 that is loose upon the stationary shaft X, this cam is concentric and of such a diameter from 1, to 2, that the
 70 nippers are allowed to remain closed, but on the pin ascending the eccentric portion 2, the nippers are opened and remain so until just before the gears C^2 and tympan com-
 75 mence again to move, when the cam G^2 , receives a motion in the direction of its arrow sufficient to allow the pin d^2 to be drawn down upon the cam at 1, by a spring 15, Fig.
 5, whereby the nippers are closed, ready to make another revolution. This motion of
 80 the cam G^2 , to close the nippers is effected as follows: H^2 is an arm attached to the cam and connected by the link I^2 to a bell crank lever K^2 pivoted at n^2 , to the other arm
 85 of the lever K^2 , is attached the pendant bar L^2 which is raised and lowered for the purpose of imparting the required movements to the cam G^2 by a switch M^2 , upon the side
 90 of the carriage. A pin e^2 upon the end of the bar L^2 passing out of the switch beneath the spring h^2 and thus moving the cam and
 95 closing the nippers and on the arrival of the carriage at the other end of its traverse the pin e^2 enters the switch at h^2 , and again moves the cam into a position ready to close the nippers when it is again moved as before
 explained.

In Fig. 1 are seen in plan two stops 7, which arrest the sheet of paper at the proper point as it is fed by the attendant,
 100 to be grasped by the nippers—one of these stops is seen in elevation in Fig. 2, they are dropped in contact with the tympan when a sheet is to be fed to the nippers, and are raised clear of it before it com-
 105 mences to revolve as follows: Attached to the vibrating shaft of the bell crank lever K^2 (Fig. 3) is an arm N^2 on the end of which is a pin that plays in a slot p , in the arm O^2 , fixed upon the shaft 8, to which
 110 the stops are attached, and thus whenever the pin e^2 upon the bar L^2 drops out of the switch at h^2 the stops are raised and when this pin enters the switch at h^2 the stops
 7 drop upon the tympan.

It now remains to explain the manner in
 115 which the scraper is caused to descend upon the tympan and force the paper down upon the stone to take the impression.

It has already been explained that the rollers m remain stationary except so far
 120 as they may be revolved upon their own axes by the passage of the metallic tympan around them. Between the two lower rolls of the set is a timber or block R^2 which carries the scraper t^2 this block is held up
 125 so that the scraper shall not come in contact with the tympan by springs which hang upon the shaft X (one of which is seen at p^2 Fig. 2) it is depressed however
 130 for the purpose of forcing the scraper down

upon the stone by means of cams S^2 attached to the gears C^2 and revolving therewith, one of these cams is shown in red in Fig. 2.

5 w are cords by which the printed sheet is led out of the machine in the customary manner, and U^2 is a table for holding the unprinted paper.

10 The cylinder of rollers and its shaft X , are hung in bearings which are connected with the framework by springs 17, shown in red Fig. 3, that the stone may not be broken by the too great rigidity of the scraper or the parts which actuate it.

15 I have spoken of the tympan i as made of sheet metal, leather may however be used instead.

Operation: The parts being in the position represented in Fig. 1, and the carriage 20 moving in the direction of its arrow (Fig. 2) the stone passes first under the "wiper" L , and is then inked as described, while this is going on the toothless portion 10 of the gears C^2 being opposite to the racks D^2 the 25 tympan and nippers remain stationary, the nippers being retained open by the pin d^2 resting upon the portion of the cam G^2 of largest diameter, and the stops rest upon the tympan, occasion is taken of this state of 30 things to introduce a sheet of paper to the nippers and the next instant as the carriage proceeds in the same direction the pin upon the bar L^2 passes out of the switch M^2

upon the carriage the nippers are closed 35 by the sudden motion of the cams G^2 and the stops 7, are raised to permit the revolution of the tympan. The cams f^2 upon the shaft F now move the lever E^2 in the direction of its arrow and engage the gears 40 C^2 with the racks D^2 and as the carriage now commences to return the gears are revolved and the nippers and tympan are carried around whereby the paper is brought 45 in contact with the stone. The cams S^2 now force down the scraper upon the tympan which presses the paper down upon the stone and the impression is taken.

What I claim as my invention and desire to secure by Letters Patent is—

1. I claim the cylinder of rollers m in 50 combination with a revolving tympan and scraper operating as set forth for the purpose described.

2. I claim the method of interrupting the motion of the gears C^2 and of again en- 55 gaging them with the rack by means of the cams f^2 lever E^2 and pin a^2 operating in the manner set forth.

3. I claim hanging the parts which operate the scraper on springs 17 in the manner 60 substantially as specified.

WM. HERRMANN STUBBE.

Witnesses:

THOS. R. ROACH,

THOS. L. GLOVER.