(12) **United States Patent**
Dodge

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(54) **PRINTING , ART OF**

(76) Inventor: **William M. Dodge**

William M. Dodge

Letters Patent

The schedule referred to in these Letters Patent and making part of the same containing a description in the words of the said William M. Dodge himself of his improvements in the art of printing ——

His improvement consists in the construction and use of Types and apparatus for printing

These types are in some respects similar to those in common use; but the mode of producing the pressure is by means of rollers acting in sockets or on inclined planes as in substitution for the screw. The rollers are cylindric elliptic-conical according as the construction of the type requires but the sections may be either made sections of either the same figures retaining the same of the two opposite sides of said figures or have the two opposite sides upon which the pressure is exerted either cylindric conic or cylindric and partly conic sockets or cavities of a corresponding shape; and while one of these cavities is stationary the other or others of them must be moveable so that it have a lateral motion given it changing the perpendicular distance between the two cavities that is when applied to the printing press, it allows the moveable cavity to rise or fall by the motion of the bar. This type has a cylindric cavity to be made on the top of the platform and another to be made directly over it in the middle of the head of the type and two of the above named pieces fitted into these cavities while the opposite sides of the sections come in contact when the platform is pressed sufficiently hard upon the type or types. The pieces are drawn nearly by a perpendicular direction and their sides which come in contact with each other by means of a cylindric cavity in the lower one and a semicircular projection on the upper one. To this part the bar is connected by a link so that when it is pushed forward the platform is forced down upon the type the bar

being secured to a perpendicular spindle which vibrates on hinges secured to one of the Checks or Sides of the proposed mill the link being connected to the bar by a joint as near the centre of motion as the construction which the sections require to move will admit.

The sections of a cone produce the same effect as those of a cylinder when the proportions are similar but are somewhat more difficult of application. I suppose the common bar and spindle to be used without the threads of the screw take the pair of iron cones eight & twenty four inches long and make a globular piece of steel on each end of these bars which may be termed the sections. Make globular cavities on the opposite sides of the bars and similar ones in the head of the proposed mill that these bars will fit into both cavities at once and extend from the head of the proposed mill to the bar then by moving the bar backwards in the usual way the sections will rise and fall. The sections should be so situated that when the bar is pushed inwards and the proposed Grooved Rings should stand on opposite sides of the spindle at equal distances from it and nearly perpendicular. The upper cavities may in all instances be made in the top of the sections instead of the head of the proposed mill. The weight of the platten &c may be supported with springs or other things

When complete cylindric cones or oval rollers are used sections of them retaining the curves of either of these figures the inclined planes or wedges as mentioned above and below the rollers or between them are to graduate the proposed grooves which the simplest form is to hold the steel on the rollers in such a manner as to form inclined planes on their surfaces which come in contact with these planes may be formed on the platten or on the head of the proposed mill. Similar separate wedges may be introduced above or below the rollers for the purpose of increasing or diminishing the pressure at pleasure.

The bar or lever may be used to move the rollers, as before described or any other mode of attaching the moving part of the rollers to any point in the bar which will give them the necessary motion

will answer the purpose. But the most effectual mode of providing for this is to let a perpendicular pin extend upwards from the common bar of the press pine to give the required motion) make a square hole in the brick which connects the bar with the rollers which hole should be so large as to prevent the pin from coming in contact with any part of it except the side against which the pin is exerted. By this means the pin rolls upon the surface against which the pressure is exerted. Instead of slipping in the usual way. The brick may be connected with pins extending from each end of the rollers in the same way as to avoid the friction at both ends as usual. Where there is considerable pressure and motion the parts which come in contact should be made of the best of steel and hardened and more upon bearings of circles and planes in the way described.

Another application in which the rollers may be used. In practice the improvement is to adapt the types to a cylinder by using spaces between the lines in the form of a wedge. These spaces should be so cast as to fit into the nicks in the types to prevent them from falling out of their places as the roller marches the spaces may likewise extend into the form in the chase to hold the type the more secure, or the type may be cast in form of a wedge so as to set around the roller without using the spaces form the circle. Small wires may be inserted into the nicks of the types and extend into the iron or chase and furniture to secure them instead of spaces. The types being set in the usual rolling of suitable size to contain one or more forms, each of the rollers are caused to revolve in contact with the face of the type. Blankets and tympan sheets of the usual kind are placed on those last mentioned the rolling which with those containing the type are so arranged that the paper to be printed passes between them. There be a sheet of paper to be straightened horizontally. Take one and place one of the type rollers on it and at the other end place the other type roller on the sheet. Move the table and down the forms

are placed the separate rollers on which are wound the blanket &c. these are all to be connected together by cog wheels that they may move in exact concert so that the register is made more perfect than it can be in the usual way. One of the cog wheels be connected with the type roller by screws so that the position can be changed at pleasure in making register. Sometimes sheet may be passed between these rollers and printed with great despatch on both sides by first winding it upon a roller, while nothing it and then passing it between those above described. and after bearing them it may be either wound up on another roller or passed off to dry in the same manner as it is done in the paper staining business. Each of the type rollers is supplied with ink by three or more rollers having woollen cloth wound round them and covered with the same leather or skins with which the common printing rollers are covered, these revolve in contact with the face of the letters and are supplied by another roller which passes to and fro round the outside of the whole touching each as it moves. This may be effected by other distributing rollers revolving in their axles by the motion of either of the types first mentioned to which the ink is supplied by a common brayer or by a cylindric brush revolving in a trough containing ink. The ink may be equalized on the distributing rolling by a small roller moved by machinery or by hand backwards and forwards across them or it may be equalized in this manner on a board, and then applied to the rollers.

The other apparatus belonging to the Subscribers improvement in the art of printing is described as follows: The bed and platten of the press are to be each of the size of the forms to be printed. The bed is placed horizontally obliquely or perpendicularly and the platten is hinged to it in the same manner and to answer the same purpose as the common hympan; and when it is brought down on the form the impression is produced by an application of the power above described upon the end of the platten opposite to the hinges. The platten is then raised and the sheet removed in the usual way

or there may be the frisket of the common kind hung to the side
may tympan without covering by a hinge or hinges extending
from the middle one of the frisketts which are hinged together at
the end and passed or crossed in the usual way. The sheet
being between the frisketts can be placed on the form first one
side down and then the other by turning them upon the hinges
The frisketts are held together by a slight catch and the sheet held
in by steel pins and corresponding holes in the frisketts. In this
case the blanket and tympan sheet are attached to the platten
whether as hinges as before mentioned or is suspended in the usual
way. But in case of printing to the sides of the paper as above before
it is removed from the frisketts the tympan sheets should be longer
than usual and reaches or more laterally upon the face of the plat
ten so as to prevent the ink which adheres to the printing the
paper while printing and a cylinder brush or roller may be used
to remove or absorb the ink as the tympan sheet passes to and fro
in contact with it. For the purpose of changing the tympan sheet
as above one method is to have the rollers one at each end of the
platten on which the tympan sheet which may be of cotton linen
or other cloth or paper may be alternately wound by the movement
of the press.

The ink may be supplied by rollers as follows. Prepare two
or more rollers as before described and hang them in a frame to which
is fixed [illegible] with a rod or rods of suitable length and give to move the
rollers forward and back over the form. The rod may be moved
by a spur cog wheel working on a shaft in the rear of the press which
will mesh into a rack or cogs on the rod. The wheel may be put
in motion by a bevel cog wheel on the same axle which may
be worked by another bevel wheel connected to the back hinge of
the platten. These may all be steel cogs wheels of suitable size to
produce the required motion or any other plan may be adopted
to produce a lateral motion in the rollers by the motion of the
press. The distributing rollers placed at the back of the form may

may be turned by a bevel cog wheel on one of their axles, meshing into a larger wheel also on the back hinge of the blades. These rollers being in contact will both have together and ensure an equal distribution of ink. The ink may be supplied to these rollers as before described by a reciprocating brush or otherwise. The ink may be equalized on all parts of the rollers which pass over the form by their rolling over a horizontal board which is moved slowly in a vertical circle by the motion of the press.

The claims of the work to which the Subscriber has contemplated applying the foregoing principles are as follows: The mode of producing pressure before described is applicable to all descriptions of presses. Where it is necessary to continue the pressure a considerable distance the diameter of the rolling or working surfaces plungers &c. should be increased accordingly. But where a more sudden pressure is required such as for coining &c. the diameter of the component parts must be proportioned to the distance which the effect which produces the effect is required to move. These remarks will determine the particular application which among the foregoing is best adapted to the required operation. Will readily suggest themselves to the skilful artist who employs the machine. In the preceding specification there may be pointed descriptions of parts of machinery common to the parts belonging to others which are introduced merely to illustrate the principles originating with and applied by the Subscriber to the purposes stated and for which alone he claims an exclusive right

William C McCredge

Witnesses
Jno Hagner
Jno H Hare

Evd.
HGF

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DRAFTSMAN'S DIVISION.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

DEPARTMENT OF THE INTERIOR,

United States Patent Office,

Washington, D. C., ..., *189*....

SIR:

The printed copies *of Patent No.* W. M. Dodge March, 1863

are *exhausted.*

As soon as printed a copy will be mailed you to complete your order.

By direction of the Commissioner:

Very respectfully,

Chief Clerk.

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United States Patent

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