

J. W. READ.
HAND PRINTING PRESS.
APPLICATION FILED NOV. 6, 1909.

Patented Feb. 21, 1911.

2 SHEETS—SHEET 1.

984,968.

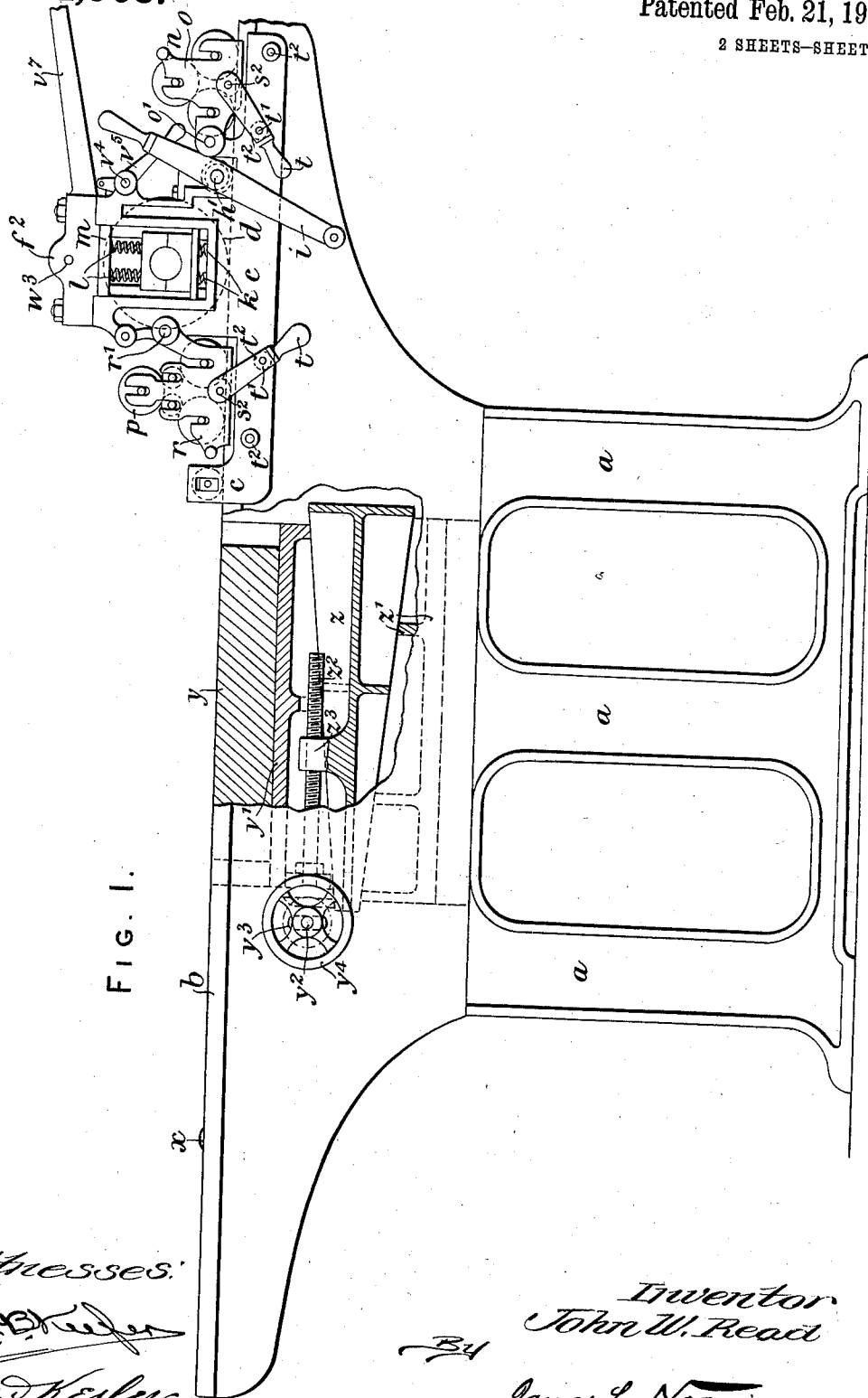


FIG. 1.

Witnesses:

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Inventor
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By
James L. Norris

att.

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2 SHEETS—SHEET 2.

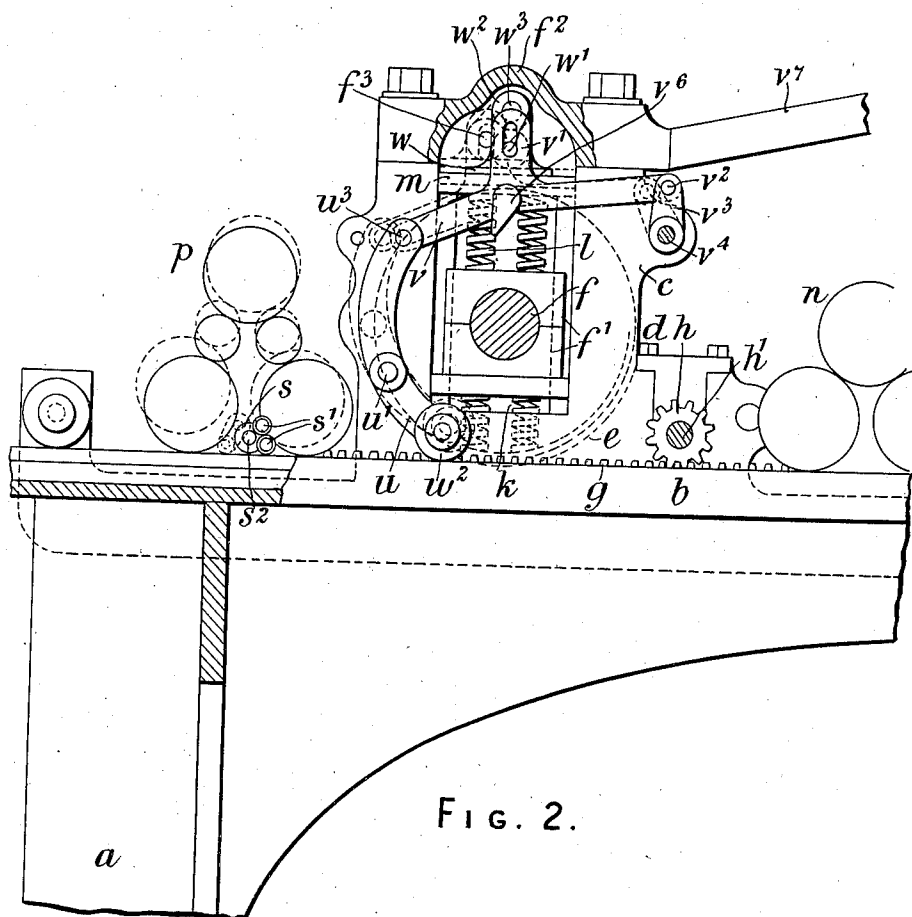


FIG. 2.

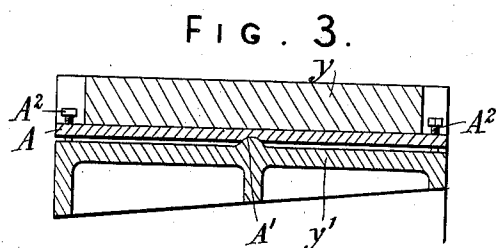


FIG. 3.

Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN W. READ, OF LONDON, ENGLAND.

HAND PRINTING-PRESS.

984,968.

Specification of Letters Patent. Patented Feb. 21, 1911.

Application filed November 6, 1909. Serial No. 526,575.

To all whom it may concern:

Be it known that I, JOHN WOGDON READ, subject of the King of Great Britain, residing at 3 Great Winchester street, in the city of London, England, lithographic printer, have invented a certain new and useful Hand Printing-Press, of which the following is a specification.

My invention has for its object a new or improved hand lithographic printing press which is also suitable for transferring to stone and for letterpress purposes, by means of which "short runs" may be more economically dealt with than is possible with the present hand presses and power driven machines.

According to my invention I adapt for the purpose of lithographic transferring and printing, as well as for letterpress printing, what is known in the letterpress printing trade as the Soldan "Lightning" self-inking proof press. In this type of press the cylinder, with which the paper travels, is mounted in a carriage which carries the inking roller, the carriage being movable along bearers so as to pass over the type or printing blocks carried upon the bed, the height of which is adjustable by means of a movable wedge plate. In adapting this type of press for lithographic purposes, I provide the carriage with a suitable damping appliance such as a roller or set of rollers fed with water from a suitable source, the damping appliance and the inking rollers being mounted in frames which are capable of being raised to and from the surface of the lithographic stone or other lithographic surface. In order to accommodate the varying thicknesses of the stones or the like and to raise and lower the same when required, I increase the depth of the bed and provide for a greater amount of vertical adjustment which, it will be understood, must be of accurate parallel description; or the cylinder may be provided with sufficient adjustment with regard to the carriage for the same purposes, or both the bed and the cylinder may be adjustable. Preferably, means are provided whereby on the return movement of the carriage over the stone or the like the cylinder is raised above the surface of said stone or the like; and means are also provided whereby the inking rollers and damping appliance may be retained in their raised position, so that the cylinder may be used for the purpose of transferring

to the stone or the like the matter to be printed. It will be obvious that by extending the bearers and by providing a duplicate set of inking rollers and dampers at the respective sides of the cylinder, the press may be arranged to yield a print in both directions of travel, suitable feeding tables or surface being provided at both ends of the press and the sets of inking rollers and dampers being alternately raised according to the direction of travel by suitable means preferably of the automatic type.

In the accompanying drawings Figure 1 is a side elevation, partly in section, of a lithographic transferring and printing press constructed according to my invention, Fig. 2 is a sectional view, drawn to a larger scale, illustrating the adjustments or vertical movements of the cylinder and the inking and damping rollers. Fig. 3 is a modification of a detail.

The general construction of the proof press is well known to letterpress printers, and may be shortly described as follows:—A suitable supporting framework *a* is provided at its upper part with a pair of channel bearers *b* one at each side, upon which the carriage *c* is carried and guided during its travel from end to end. The carriage *c* has mounted therein the ink distributing rollers and the impression cylinder *d* which is rotated by spur wheels *e* fixed to the cylinder shaft *f* meshing in toothed racks *g* fixed in the channels of the bearers *b* so that the pitch line lies in the same plane as that of the bearers. The carriage *c* is driven along the bearers by a pair of pinions *h* journaled in the sides of the carriage and meshing with the racks, the pinion shaft *h'* being rotated by a crank handle *i*. The bed upon which the galleys or forms of type are placed is adjustable by means of a movable wedge plate to a comparatively limited extent and is located in the middle between the bearers. For lithographic printing it is necessary of course that such a press should have a damping appliance, and I have found that certain other additions and modifications are essential chiefly owing to the different nature of the surface to be printed from and to various operations in the lithographic printing process which are not present in letterpress work. For example the cylinder is resiliently supported in addition to the pressure being applied thereto through springs or other resilient means; and both the inking

and damping rollers must be capable of being raised if the press is to be efficient in use.

For the above purposes, the bearing blocks f' which carry the cylinder shaft f are supported on springs k , and the pressure is applied through springs l arranged between the blocks f' and pressure plates m . The means for applying the pressure to the plates will be described hereafter. The damping rollers n are mounted in a frame o which is pivoted at o' to the carriage c , and the inking rollers p are similarly mounted in a frame r which is pivoted at r' to the carriage c . Both of these frames o and r are provided with means for raising their respective rollers out of contact with the printing surface when required and in the example shown this is effected by cams or eccentrics s fitted with antifriction rollers or wheels s' , the cams s being fixed on the spindles s^2 mounted in the frames o and r and rotated into position by the side handles t . The handles are preferably each provided with a stud t' which may engage in sockets or recesses t^2 formed in the side of the carriage c for the purpose of determining the position of the cam s with respect to the outer bearer surfaces.

As before mentioned, a yielding pressure is applied to the cylinder such as by the interposition of springs l between the pressure plates m and the bearing blocks f' . The means for applying the pressure should be such that the pressure may be instantly relieved so as to enable the cylinder d to rise sufficiently to be out of contact with the printing surface yet permitting its spur wheels e to remain in mesh with the racks g . In Fig. 2 a system of levers and links is employed at both sides of the carriage to effect the object. u is a lever pivoted at u' to the carriage and carrying at one end an antifriction wheel u^2 which runs upon the inner bearer surface. The other end of the lever u is pivoted at u^3 to a link v which is formed with a slotted projecting arm v' and is pivotally connected at v^2 to an arm v^3 fixed to a shaft v^4 provided with a handle v^5 (Fig. 1). w is a pressure foot which is pivoted upon a pin w' fixed in a radius suspension link w^2 which is pivoted at w^3 to the cap f^2 of the cylinder bearing frames. One end of said pin w' projects into the slot of the arm v' and the other end of said pin w' works in a slot f^3 formed in the side wall of the cap f^2 . The full lines show the position when pressure is being applied, and the dotted lines indicate the position when the pressure is relieved. To effect the release of the pressure, a pair of stops or inclines x (Fig. 1) are fixed to the top surface of the inner bearers, so that when the carriage reaches that part of the press, the wheels u^2 of the levers u rise upon the stops x and rock the levers u about their fulcrum u' ,

thereby drawing the link v forward and displacing the pressure foot w , the cylinder c then rising under the influence of the springs k . The parts remain in the released position during the return motion of the carriage, when pressure is again applied by partially rotating the shaft v^4 by means of the handle v^5 . The link v is formed with the tappet v^6 which is arranged to actuate the grippers of the cylinder, as is known in the proof press, to grip the paper fed thereto by hand from the feeding table v^7 immediately before the commencement of the forward motion of the carriage. As in the proof press above referred to, the paper wraps around the cylinder and after receiving the impression is delivered at the top.

The lithographic stone or the like y is supported upon a bed y' which is adapted to rise and fall between guides on the side frames a . The bed is carried by a wedge plate z of suitable construction which works upon a cross plate z' fixed to the side frames. The bed, wedge plate, and cross plate are preferably of cellular or box formation as shown to secure the desired rigidity. The bed y' carries at one end a shaft y^2 in suitable brackets, the shaft projecting through a slot y^3 in the side frame a and being fitted with a hand wheel y^4 . The shaft y^2 also has fixed to it a bevel wheel meshing with a bevel wheel on the end of a screw z^2 which works through an internally screw-threaded boss z^3 fixed to the wedge z . By adjusting the position of the wedge z by means of the hand wheel y^4 , the bed y' is raised or lowered as required. The bed y' is preferably provided with means whereby its upper surface may be adjusted to an inclined position in order to accommodate those stones which are thicker at one end or side than the other, and thereby bring the prepared surface of the stone to the proper level. For this purpose I may provide a bed plate A which is supported upon a central boss A' its inclination being regulated by means of adjusting screws A^2 or equivalent device, see Fig. 3.

For transferring to the stone, the transfer sheet is laid upon the prepared surface of the stone in the usual manner; the inking and damping rollers are raised and secured in that position, and the carriage is then run forward and backward so that the cylinder exerts an even pressure over the surface of the stone until the transfer is effected. The processes of stripping off the sheet and inking up are then carried out, the latter being effected by hand or by the inking rollers on the carriage. When the stone is ready for printing and damped the paper is laid upon the table v^7 and fed forward to the cylinder grippers, the handle v^5 is then depressed closing the grippers and bringing pressure to bear upon the cylinder. The

working handle i is then rotated, driving the carriage forward over the stone, the inking rollers preceding the cylinder and the damping rollers following. On reaching a
 5 predetermined position, the printed paper is delivered to hand, and the pressure on the cylinder is relieved by the contact of the lever wheels u^2 with the stops or inclines. On the return motion, the damping and inking rollers again pass over the printing surface, the cylinder being raised to prevent
 10 contact. The operation is repeated for each impression or copy.

For letter-press work, the bed is raised to
 15 the required level to receive the form, the inking rollers are changed for others, and the damping appliance is raised or removed bodily from the carriage.

I claim:—

20 1. In a hand press for lithographic transferring and printing and for letter-press printing, the combination with a cylinder mounted in a hand propelled carriage and rotated by spur-wheels meshing with racks
 25 on the framework, of adjustable resilient pressure mechanism for said cylinder, a hand regulating device for applying the pressure, a releasing mechanism to remove the pressure, and resilient supports for said
 30 cylinder adapted to raise the cylinder above the printing level when the pressure therein is released, as set forth.

2. In a hand press for lithographic transferring and printing and for letter-press
 35 printing, the combination with a cylinder mounted in a hand propelled carriage and rotated by spurwheels meshing with racks on the framework, of adjustable resilient pressure mechanism for said cylinder, a
 40 hand pressure applying device, a pressure releasing mechanism, resilient supports for said cylinder adapted to raise the cylinder when the pressure is released, a frame connected to the carriage carrying the inking
 45 rollers a frame connected to said carriage carrying the damping device, and raising devices for said frames, as set forth.

3. In a printing press of the type set forth, in combination, a support, a bed for
 50 the stone or type, a carriage movable from end to end of the support and in its movement traversing the bed, an impression cylinder supported by the carriage and rotatable continuously with the movement of the
 55 carriage from one end of the support to the other, the cylinder having two positions, in

one of which it contacts with the stone or type and in the other of which it is distant from the stone or type, means operable automatically when the carriage reaches the
 60 limit of its forward movement to produce the displacement of the cylinder to the position wherein it is distant from the stone or type, a frame pivotally mounted at the forward end of the carriage and carrying inking rollers, a frame pivotally mounted at
 65 the rearward end of the carriage and carrying the damping rollers, and manually operable means for producing pivotal displacements of the frames.
 70

4. In a printing press of the type set forth, in combination, an impression cylinder and a bed for the stone or type, the cylinder and the bed having relative reciprocatory movement, springs for moving the cylinder
 75 to a position wherein it is distant from the stone or type, springs arranged in opposition to the first springs, a pressure foot associated with the last-named springs, mechanism to cause the pressure foot to bear
 80 against or to withdraw pressure from the last-named springs, a hand lever for causing the mechanism to perform the first function, and a stationary cam for causing the mechanism to perform the second function.
 85

5. In a printing press of the type set forth, in combination, a cylinder frame, an impression cylinder, spring supports for the shaft of the cylinder, springs working in
 90 opposition to the spring supports, a pressure foot bearing against the last named springs, means for moving the pressure foot to put pressure on or to withdraw pressure from the last named springs and comprising a lever pivoted between its ends, a rock
 95 shaft having an arm, a link connecting the lever and the arm and having a slotted extension, a part stationary with relation to the cylinder and having a slot which extends at an angle to the slot in the extension and
 100 a pin provided on the pressure foot and projecting into both of the slots, and a stone or type bed with relation to which the cylinder is reciprocatory.

In testimony whereof I have hereunto set
 my hand in presence of two subscribing
 witnesses.

JOHN W. READ.

Witnesses:

WALTER I. SKERTEN,
 GEO. J. B. FRANKLIN.