C. POTTER, Jr.

Printing-Presses.

No. 131,702. Patented Sep. 24, 1872.

Fig: 1,

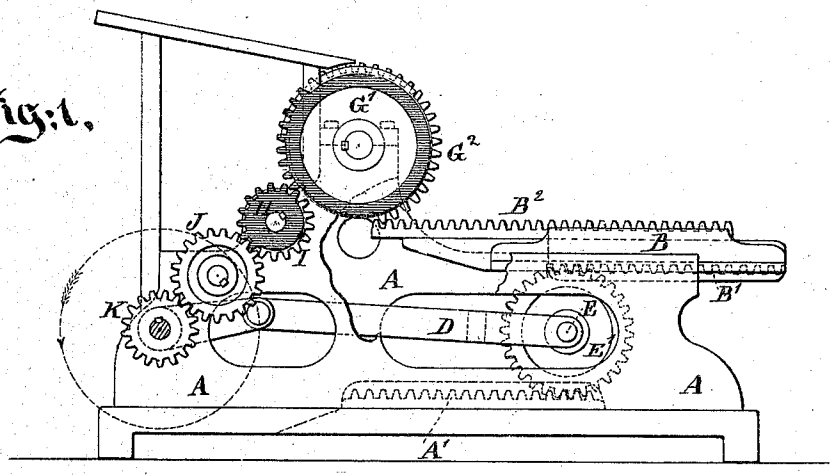


Fig: 2,

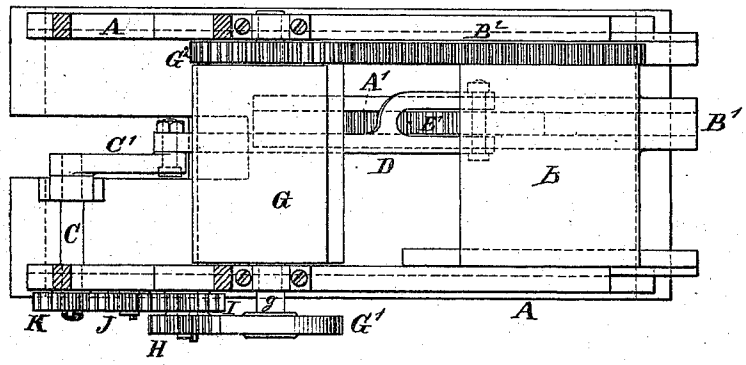
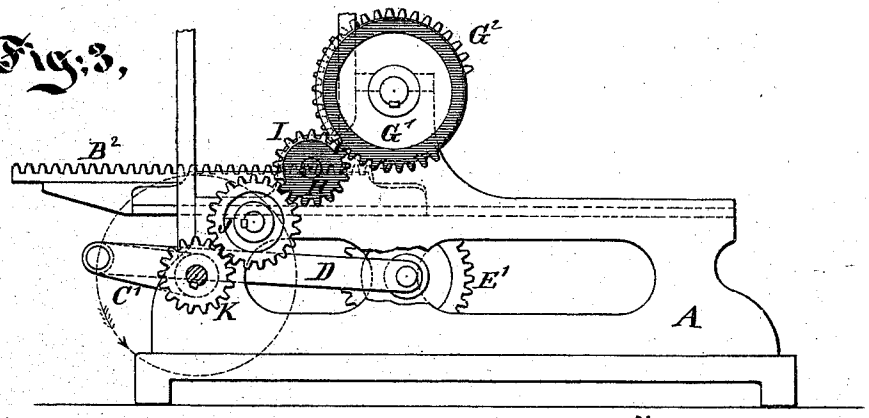


Fig: 3,



Witnesses:

Arnold Hornaman.

Wm. C. Dey

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UNITED STATES PATENT OFFICE.

CHARLES POTTER, JR., OF PLAINFIELD, NEW JERSEY.

IMPROVEMENT IN PRINTING-PRESSES.

Specification forming part of Letters Patent No. **131,702**, dated September 21, 1872.

To all whom it may concern:

Be it known that I, CHARLES POTTER, Jr., of Plainfield, Union county, New Jersey, have invented an Improvement in Printing-Presses, of which the following is a specification:

The invention applies to that class of cylinder printing-presses in which a plane bed of type is reciprocated forward and backward, and the paper is presented thereto and pressed thereon by means of what is technically termed a cylinder, but which has a portion of the cyl indrical surface reduced in diameter so as not to touch the type while that side of the cylinder is presented. This invention accomplishes by simple mechanism what has heretofore required greater complication. It is a cheap and complete means of providing the required two kinds of motion for the cylinder. It is important in this class of presses, that the motion of the cylinder and that of the reciprocating bed shall exactly coincide in velocity during the period while the printing is being performed. To this end they are geared together. In this invention the cylinder is operated during this period from the bed, which latter is moved by a connecting-rod from a crank. It will be obvious that the motion thus imparted from a crank and connecting-rod will be quick at certain points in the motion and slow as the crank approaches its dead-points. The printing is accomplished while the bed is traveling inward under the cylinder. When the whole extent of the motion in that direction has been performed, with the proper pressure on the sheet from the cylinder, the bed returns idly during a period while the hollow side of the cylinder is presented thereto. My invention provides for continuing the rotatory motion of the cylinder slowly in the same direction as before, while the bed thus returns. It accomplishes this by taking hold thereof with a separate and independent train of mechanism. The gearing connecting the bed to the cylinder lets go just before the inward motion of the bed is extinguished, and the connection is resumed again just as the next inward motion of the bed is commenced. A very brief period before the connection of the cylinder with the bed is severed the other train of gearing is connected, and the same when the opposite change of condition occurs. The fact that both connections exist for a little period simultaneously requires that the exchange of motion shall take place at a period when the two motions coincide in velocity.

The following is a description of what I consider the best means of carrying out the invention. The accompanying drawing forms a part of this specification and represents the novel parts, with so much of the ordinary parts as is necessary to indicate their relation thereto.

Figure 1 is a side elevation of the press, with a portion of the framing broken away to better show the interior construction. Fig. 2 is a plan view of the same. In both these figures the bed is just commencing its inward motion. It is commencing to gear with and impart motion to the cylinder. Fig. 3 is a side elevation, with a portion broken away, showing all the parts in a different position. The bed is near its extreme inward position. It is just ceasing to control the motion of the cylinder.

Similar letters of reference indicate like parts in all the figures.

A is a fixed frame-work of cast-iron or other suitable material, provided with supports for the several shafts, with ways for the reciprocating bed B, which latter is operated backward and forward by a train of connections from the crank C′ on the driving-shaft C. It will be understood that this driving-shaft is turned by a steam-engine or other suitable power, (not represented,) and that the connecting-rod D, instead of taking hold directly of the bed, operates, through the medium of a gear-wheel, E′, and of a fixed rack, A′, mounted below, so as to give an extent of reciprocating motion to the bed B twice as great as the throw of the crank. This is a common motion, and will be readily understood. The cylinder G, properly blanketed, is provided with two partial gear-wheels or segments, G^1 and G^2. The segment G^2 meshes into a rack, B^2, on the upper surface of the bed B. During the whole period while the motion of the cylinder should coincide with the motion of the bed the segment G^1 meshes into a wheel on segment H, belonging to an independent train of mechanism, and motion is communicated through this train during the period while the cylinder is disconnected from the bed. This segment H

is fixed on the side of a gear-wheel, I, which receives motion through an intermediate wheel, J, from a gear-wheel, K, fixed upon the driving-shaft C. The latter revolves uniformly, imparting a corresponding constant slow motion to the segment H. When the bed B has been drawn inward to nearly its full extent, and is moving with a corresponding slow motion, the segment G^1 ceases to connect with the rack B^2, and the segment H takes hold of and forms an operative connection with the segment G^1. After this change of conditions the cylinder G continues to revolve slowly in the same direction as before, receiving its motion from the segment H, while the crank C′, having passed its inward center, traverses the bed B outward to its extreme outward position, and commences to move it inward again. At the moment when its return motion is just quick enough to equal the slow rotation of the cylinder the segment H ceases to act upon the segment G^1, and the rack B^2 commences to again control the motion of the cylinder G by meshing again with the segment G^2.

The invention allows the use of a smaller cylinder than any before known to me, because the space or portion of the cylinder G which is sunk or cut away may be very small. While dispensing with the complication heretofore employed to attain an approximation to this condition, it also affords facilities for great changes of conditions in the same framing. I can use a larger or smaller crank, and a larger or smaller cylinder in the same frame, and thus produce, practically, different sizes and capacities of presses with less expenditure of capital for patterns. Its capacity for easy changes also allows me to employ an adjustable crank in place of the fixed crank C′. Some kinds of work require great space for ink-rollers, and thus render necessary a very long travel for the bed. This can be provided for with facility, by my invention, by introducing a longer crank, C′, and correspondingly changing the other parts. The only changes that are required in my gearing under such conditions are to substitute a segment, G^1, of greater or less diameter, and to correspondingly change the diameter of the segment H.

It will be understood that there may be any desired provisions for printing, fitting, nipping, and flying the sheets, as also for supporting the bed to introduce friction-rollers, &c.

I claim as my invention—

The segments G^1 G^2 on the cylinder G, in combination with the rack B^2 on the bed, and with the segment H on the independent train of mechanism, all arranged for joint operation, substantially as herein specified.

In testimony whereof I have hereunto set my hand this 8th day of July, 1872, in the presence of two subscribing witnesses.

CHARLES POTTER, JR.

Witnesses:

THOMAS D. STETSON,

WM. C. DEY.