

No. 631,745.

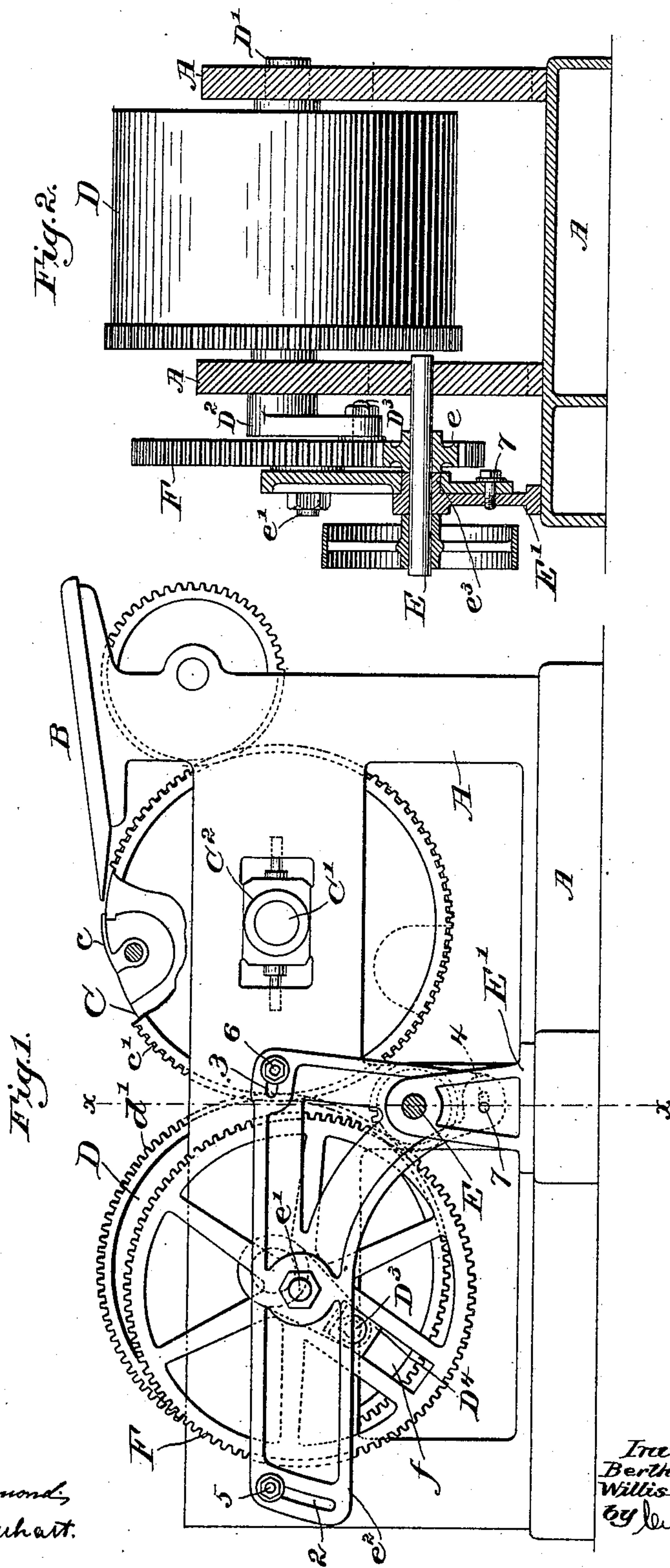
Patented Aug. 22, 1899.

B. HUBER & W. K. HODGMAN.

PRINTING PRESS.

(Application filed Nov. 29, 1898.)

(No Model.)



Witnesses.  
Thomas J. Drummond,  
James M. Hughes.

Inventors.  
Berthold Huber  
Willis K. Hodgman.  
by Crosby Gregory,  
attys.



# UNITED STATES PATENT OFFICE.

BERTHOLD HUBER AND WILLIS K. HODGMAN, OF TAUNTON, MASSACHUSETTS, ASSIGNORS TO THE HUBER PRINTING PRESS COMPANY, OF SAME PLACE.

## PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 631,745, dated August 22, 1899.

Application filed November 29, 1898. Serial No. 697,753. (No model.)

*To all whom it may concern:*

Be it known that we, BERTHOLD HUBER and WILLIS K. HODGMAN, residents of Taunton, in the county of Bristol, State of Massachusetts, have invented an Improvement in Printing-Presses, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 This invention relates to that class of printing-presses having a plurality of rotating cylinders, one being usually designated the "impression-cylinder," it being provided with suitable grippers to take the sheets to be  
15 printed, and another cylinder designated as the "form" or "plate" cylinder. Heretofore in this class of press, as illustrated in United States Patent No. 350,056, dated September 28, 1896, these cylinders are rotated  
20 continuously at a uniform speed; but at a high rate of speed the gripper mechanism is at times liable to operate inaccurately, it starting the sheets suddenly from the feed-board, the sudden or uneven starting being  
25 apt to cause a slight variation in the position of the sheet on the impression-cylinder, so as to cause a slight non-register, which is objectionable, for the better and more accurate the register the better and more desirable the  
30 press. In another United States patent, No. 608,153, dated July 26, 1898, the plate or form cylinder is adapted to be rotated at a uniform speed at all times, but the impression-cylinder is rotated at a varying speed, the speed  
35 of the impression-cylinder being the slowest at the time the grippers act to take the sheet from the usual feed-board.

Being desirous of producing a press having the highest state of efficiency both as to speed  
40 and correctness of register, so that it may be readily adapted to the work to be done, we have aimed to produce a press in which the impression and the form or plate cylinders may not only be driven at a uniform speed,  
45 but also be driven in unison at a varying speed during each rotation, such a form of press being highly advantageous for use in printing establishments where work is changing.

50 We have attained the object of our invention by the construction of the press to be herein described. In this novel press the im-

pression-cylinder has usual grippers to take the sheet and the form or plate cylinder is connected with it by gearing, so that said two  
55 cylinders always move in unison; but we have added to these old parts a driving mechanism which may be so set or adjusted that the two cylinders may be driven at a uniform rate of speed during each rotation or they  
60 may be driven at a varying rate of speed, that depending upon the amount of time it is desired to afford for the grippers to act to take the sheet easily and uniformly from the feed-board, or it will be understood that the cyl-  
65 inders may be moved more or less slowly during the time the grippers are acting to take the sheet. This variation may be within any desired range and in some instances would practically slow down the speed to about two-  
70 thirds of its uniform speed during the gripping action, so that, provided the press was running at a uniform speed of eighteen hundred revolutions per hour, the effect of changing the speed of the cylinders to a varying  
75 speed would reduce such speed at the time the sheet is taken by the grippers to a speed equal to twelve hundred revolutions per hour, and it will therefore be seen that by using  
80 the driving mechanism to be herein described the same quality of work so far as regards register can be done at eighteen hundred sheets per hour as could be done at the uniform rate of speed of twelve hundred sheets  
85 per hour.

Figure 1, in side elevation, represents a sufficient portion of a well-known form of press with our improvements added to enable our invention to be understood. Fig. 2 is a section of Fig. 1 in the line *x*, looking toward the  
90 left.

Referring to the drawings, A represents the framework of a press; B, the usual feed-board; C, the impression-cylinder, having  
95 usual grippers *c* to take the sheet from the feed-board; D, the form or plate cylinder, and *c' d'* toothed surfaces connected, respectively, with the impression-cylinder and the form or plate cylinder, by which they are made  
100 to rotate in unison.

The impression-cylinder has its shaft *C'* shown as mounted in a movable bearing or box *C''*, adjustably supported in a slot in the framework. The form or plate cylinder shaft



D' is also adapted to rotate in suitable bearings of the framework, and said shaft outside the framework, as herein shown, is represented as provided with a crank-arm D<sup>2</sup>, having a crank-pin D<sup>3</sup>, provided with a suitable follower or loose block D<sup>4</sup>.

The main or driving shaft E, suitably supported in the framework and in a strand E', has fast upon it a pinion e, which engages the teeth of and rotates a driving device or gear F, shown as supported upon a stud e', carried by a frame or bearing e<sup>2</sup>, which has as its fulcrum a hub e<sup>3</sup>, projected from the stand E', constituting one of the bearings for the shaft E. This stand or frame is slotted, as at 2 3 4, to receive, respectively, set-screws 5 6 7, so that by loosening said screws the said frame or bearing may be adjusted axially about the shaft E. This frame may be put in such position that the stud e' will stand substantially central with relation to the shaft D', or the frame may be adjusted to place said stud e' more or less eccentric with relation to the shaft D'. The drawings show the frame adjusted into position to place the stud e' at its greatest distance from the center of rotation of the shaft D'.

The driving wheel or device F has a slot f, in which enter the crank-pin and box referred to, and as the driving-wheel is rotated the slotted part thereof acting on the crank-pin or block causes the form or plate cylinder to be rotated by the driving wheel or device, and inasmuch as the impression-cylinder and form or plate cylinder are geared together it follows that the impression-cylinder partakes of the movements of the form or plate cylinder and is moved in unison with it.

When the stand or bearing constituting the means for supporting the driving wheel or device F is so located as to place the stud e' substantially central with relation to the shaft D', then the driving device will rotate both the form or plate cylinder and the impression-cylinder in unison and at the same speed throughout each rotation; but when the stand or bearing e<sup>2</sup> is adjusted to place the stud e' eccentrically with relation to the shaft D' then in such case the speed of each rotation of the form or plate cylinder and the impression-cylinder will be varied, and the variation will be greater in accordance with the greater eccentricity of rotation of the stud e'. When the location of the driving device is eccentric with relation to the form or plate cylinder, then the surface speed of the said cylinder and the impression-cylinder will be slowed down more or less just at the time that the grippers e are acting to take the sheet, as stated.

It is of great moment and a matter of great practical advantage and utility to be able to run the press at times at a uniform speed of rotation throughout and at other times to vary the speed of each rotation, as thereby the press is adapted to do a greater variety of good work.

This invention is not limited to the exact

shape shown for the stand or for the driving device, as instead any other usual or known equivalent means may be employed. We are not aware, however, that prior to this invention a press has ever been made wherein the user had it within his control to drive the cylinders at a uniform speed or at a variable speed, according to the work to be performed, and hence this invention is considered to be a broad one and is not limited to the exact device or mechanism shown by which to control the variations of speed at each rotation.

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

1. In a rotary printing-press wherein the sheets to be printed are fed separately to grippers carried by the impression-cylinder, driving mechanism adapted to drive the cylinders at a uniform speed or at a varying speed for the purpose specified.

2. In a rotary printing-press, an impression-cylinder having suitable grippers to take the sheets to be printed and a cooperating form or plate cylinder, gearing to move them in unison, and driving mechanism in operative engagement with one of said cylinders, said driving mechanism being adjustable whereby said cylinders may be driven at a varying speed during each rotation, or at a uniform speed during each rotation, substantially as described.

3. In a rotary printing-press, an impression-cylinder having suitable grippers to take the sheets to be printed, and a cooperating form or plate cylinder, gearing to insure the movement of the impression-cylinder and form or plate cylinder in unison, driving mechanism consisting of a toothed wheel, a pin-and-slot connection between said wheel and one of said cylinders, and an adjustable stand supporting the center of motion of said gear, and a pinion driving said gear, to operate substantially as described.

4. In a printing-press, an impression-cylinder provided with grippers to take sheets to be printed, and a cooperating form or plate cylinder and toothed gearing uniting the same to insure their rotation in unison, a driving-shaft having a pinion, a frame adjustable about the center of said driving-shaft and provided with a stud, a driving-gear mounted on said stud, a pin-and-slot connection between said driving-gear and one of said cylinders, and means to adjust said frame to place the said stud in a more or less eccentric position with relation to the center of rotation of the cylinder to be driven by it, to operate substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

BERTHOLD HUBER.  
WILLIS K. HODGMAN.

Witnesses:

SAML. L. HODGMAN,  
FREDK. M. ATWOOD.