(No Model.)

G. C. B. GRAHAM.

PERFORATING ATTACHMENT FOR PRINTING PRESSES.

No. 492,794. Patented Mar. 7, 1893.

Fig. 1.

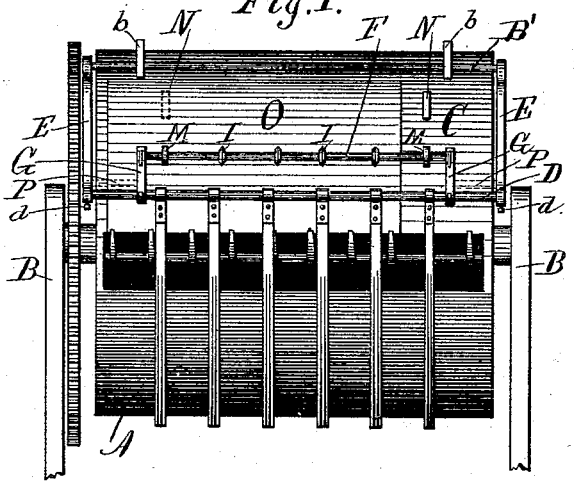


Fig. 3.

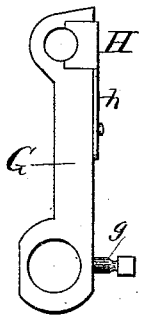


Fig. 2.

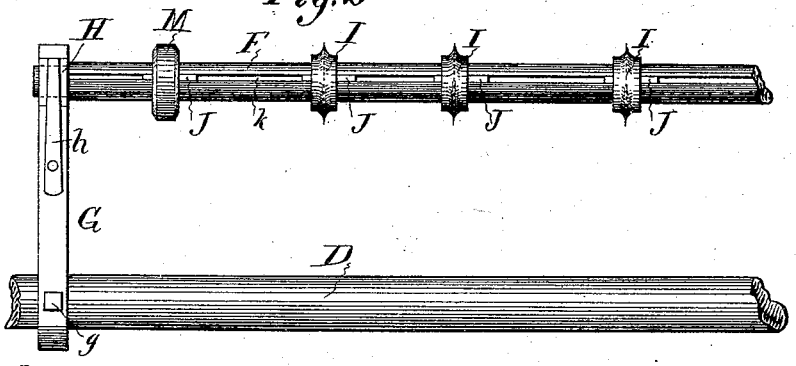


Fig. 5.

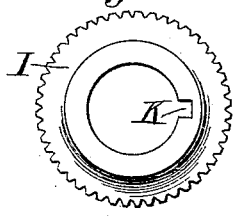


Fig. 6.

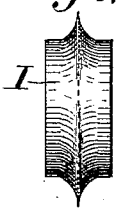


Fig. 7.

Fig. 4.

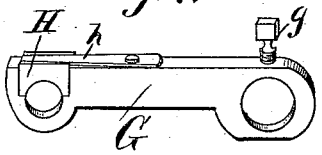
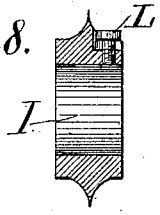


Fig. 8.



WITNESSES:

Edw. F. Simpson, Jr.

Jacob N. Belt.

INVENTOR

George C. B. Graham,

BY J. C. Peyton

ATTORNEY.

UNITED STATES PATENT OFFICE.

GEORGE C. B. GRAHAM, OF MEMPHIS, TENNESSEE.

PERFORATING ATTACHMENT FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 492,794, dated March 7, 1893.

Application filed April 26, 1892. Serial No. 430,688. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. B. GRAHAM, of Memphis, in the county of Shelby and State of Tennessee, have invented certain new and useful Improvements in Perforating Attachments for Printing-Presses, of which the following is a specification.

My invention relates to improvements, as hereinafter claimed, in that class of attachments applicable to cylinder printing and lithographic presses, for perforating sheets of paper when being printed or lithographed, to facilitate the separation of the sheets upon predetermined lines; and my objects are to provide a strong, durable, readily applied and efficiently operating press-attachment for perforating paper in lines of any desired number, lengths and distances apart, and which shall be adapted to be automatically thrown out of operation at intervals as desired, to intermit the perforations, and also be adapted to be adjusted and secured in inoperative position, leaving the press free to be used, without obstruction, for work in which the perforations are not required.

The accompanying drawings show my improvements as applied in the way I prefer to a press of appropriate construction, parts only of the press being shown, illustration of the omitted portions thereof not being necessary to convey a proper understanding of the invention.

In the drawings, Figure 1 is a view in end elevation, showing the impression cylinder, tympan, fender bar or tape-carrier, &c., with my improved attachment secured to the fender bar. Fig. 2 a view in elevation, on an enlarged scale, showing, in part, the attachment and fender bar separate from the press. Fig. 3 is a side view, and Fig. 4 a view in perspective of one of the supporting arms of the attachment. Figs. 5, 6, 7 and 8 are detail views, on a larger scale, Figs. 5 and 6, showing, respectively, a side and an edge view of one of the perforations; Fig. 7 an edge view of one of the lifters; and Fig. 8 a perforator of slightly modified construction.

A suitable paper supporting cylinder is represented as consisting of an ordinarily constructed impression cylinder A mounted to rotate in the partly-shown press frame B, and provided as usual with a tympan C; and a rock shaft B′ carrying paper gages *b* is suitably mounted in the frame in well known way. A tape-carrier or fender bar D parallel with the axis of rotation of the impression cylinder, is shown as secured at its ends to side arms E of the frame. By the employment of set screws *d d* the fender bar may be rigidly secured in sockets in the side arms, and is rendered detachable. It is of course to be understood that all essentials of a fully organized printing or lithographic press are provided, and further description thereof is unnecessary.

The perforating attachment is as follows—A shaft F is adjustably and yieldingly secured parallel with the impression cylinder and fender bar D. The shaft is shown as thus secured by supporting arms G G engaging with the fender bar. Sockets or bearings at the inner ends of these supporting arms and set screws *g g* provide for adjustment so that the shaft F carried at the outer ends of the arms may be held in either operative or inoperative position. The automatic yielding or self-adjustment of the attachment shaft, is provided for by mounting it at its ends in divided bearings in the supporting arms, the top or outer portion H of each bearing being adapted to yield by means of a spring *h* secured to the supporting arm and pressing upon this portion of the bearing.

Adjustable and detachable perforators I are secured, in any desired number, to the attachment shaft. These perforators are each secured in desired position by means of a key J engaging with a notch K in the hub of the perforator and with a longitudinal groove *k* in the shaft, or in equivalent way, as by the employment of a set screw L shown in Fig. 8. The perforators are of wheel or disk form, and are provided around their peripheries with tapering or wedge shaped teeth brought to cutting edges at their extremities. Disks or wheels M with smooth peripheries are, like the perforators, adjustably fixed upon the attachment shaft. Two such disks are shown, one between each end of the shaft and the perforators thereon. These disks serve to lift the shaft and throw the perforators out of action at intervals as desired, and they are of slightly less diameter than the perforators, the diameter of the perforators exceeding

that of the plain disks to an extent sufficient to allow of the proper penetration of the paper by the perforating teeth without their work being interfered with by the contact of the lifting disks with the tympan.

The operation of the attachment is as follows: The attachment shaft is adjusted for work by loosening the set screws which clamp its supporting arms upon the fender bar, rocking these arms to move the shaft toward the impression cylinder to the proper distance to bring the perforators to act upon the paper upon the tympan when presented to them, and then tightening the set screws to hold the supporting arms in position. Pieces of pasteboard, or the like, having been secured by pasting, as is well understood, upon the tympan so as to form temporary lifters or wipers N to act upon the plain disks upon the shaft, the press is set in motion and the paper O fed thereto is presented upon the tympan to the action of the perforators before it passes on to the point at which it is printed or lithographed. The pressure upon the shaft by its spring bearings forces the perforator teeth into and through each of the successively presented sheets of paper, the shaft rotates, and the perforating action continues until the wipers N, arranged so that the disks M are in their paths of travel, are presented to those disks, and, acting on them, raise the yielding shaft and intermit the perforating action. The wipers obviously may be of any desired length and number, according to the extent to which the lines of perforations are to be interrupted and the number of such interruptions, it only being necessary that the wipers be arranged correspondingly in two lines so that the wipers of the respective lines shall in turn be presented to and act each upon its respective lifting disk M and that at the same time one lifting disk is being acted upon by a wiper, the other lifting disk shall be acted upon by a similar wiper.

In some cases a single wiper or line of wipers, and but one disk to be operated thereby, might be used. Other modifications might also be made without departure from essential features of my invention; such for instance as suitably applying proper lifters to an appropriate paper supporting cylinder unprovided with a tympan; and the mounting of the attachment otherwise than upon the fender bar; say, upon studs or short arms P projecting from the side arms E as represented in dotted lines in Fig. 1, or in other equivalent and suitable way so long as the attachment is yieldingly held to its work and is adapted to rock about an axis parallel with that of the cylinder supporting the paper.

It will be seen that my improved attachment is adapted to be readily applied to many of the presses of standard manufacture, and that when its use is not desired it may be rocked into inoperative position and secured out of the way, or be entirely removed from the press.

I claim as my invention—

1. The combination with the paper supporting cylinder provided with lifters, of the rotary shaft carrying perforating and lifting disks, and supports yieldingly carrying the shaft and by which it is connected with the press, substantially as set forth.

2. The perforating attachment for presses, having the shaft provided with perforating and lifting disks and arms by which said shaft is yieldingly supported and by which it is adapted to be secured to a press and to be rocked about an axis parallel with that of the impression cylinder of the press, substantially as set forth.

3. The combination of the shaft, the arms by which it is attached to a press and yieldingly supported, perforating disks, lifting disks, and means by which to adjustably secure said disks upon the shaft, substantially as set forth.

4. The combination with a press provided with the paper supporting cylinder and fender bar, of the rotary shaft, adjustably secured perforating disks on the shaft, supports by which said shaft is connected with and adapted to be rocked about the fender bar into operative and inoperative position, and means by which to secure said supports in their adjusted position, substantially as set forth.

In testimony whereof I have hereunto subscribed my name.

GEORGE C. B. GRAHAM.

Witnesses:
GUS. FLEMING,
CHARLEY BAKER.