2 Sheets—Sheet 1

G. PRESTON.

Griper-Motion for Printing-Machines.

No. 206,131. Patented July 16, 1878.

Fig. 1.

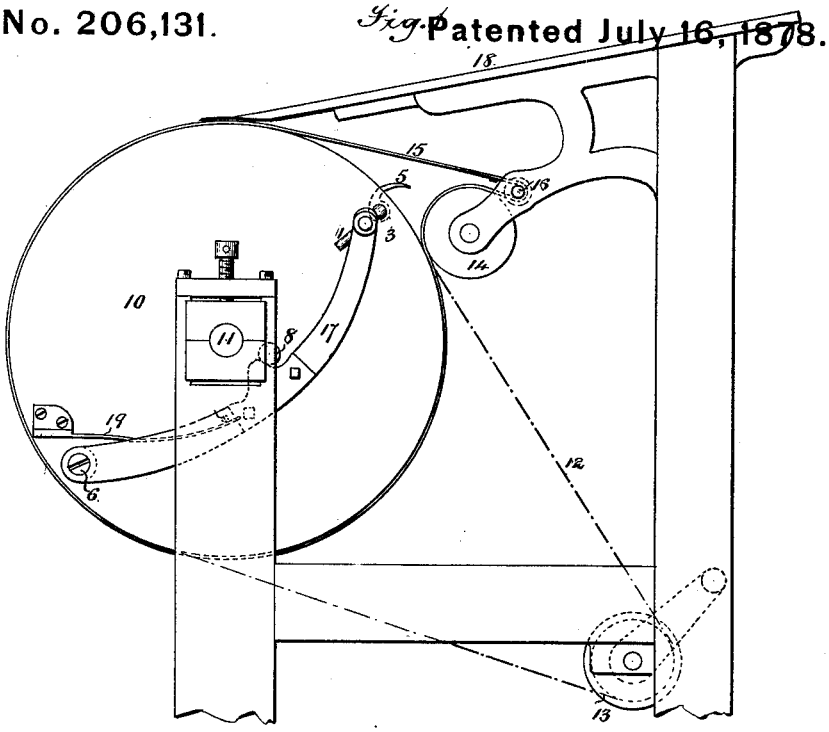
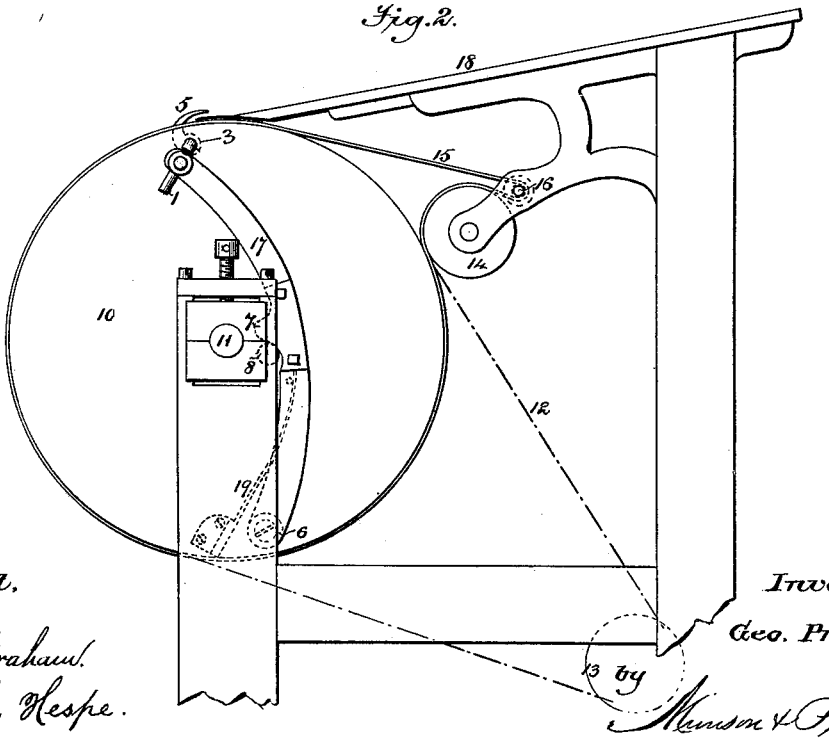


Fig. 2.



Attest,

Geo. H. Graham.

Wm. C. Hespe.

Inventor,

Geo. Preston,

by Munson & Philipp

Attys.

2 Sheets—Sheet 2.

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Griper-Motion for Printing-Machines.

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Fig. 3.

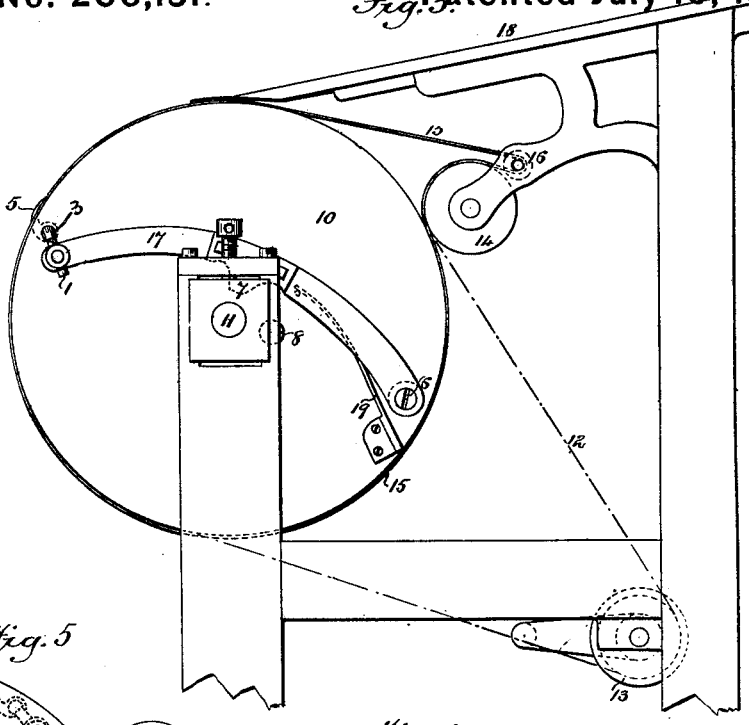


Fig. 5

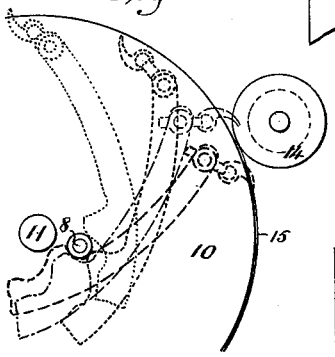


Fig. 4.

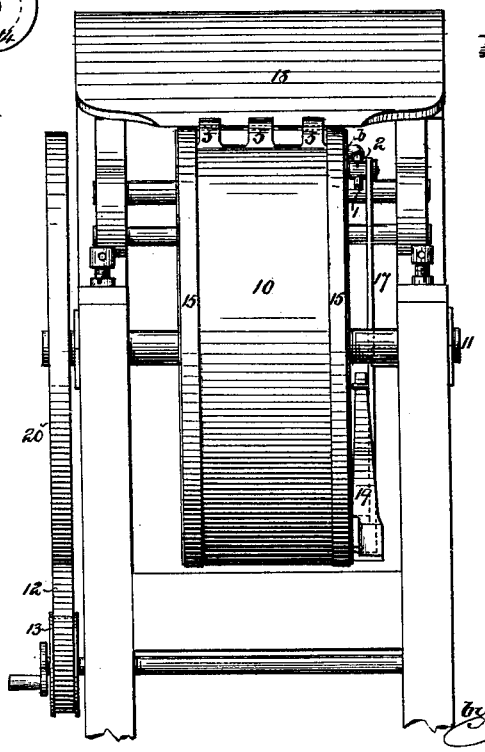
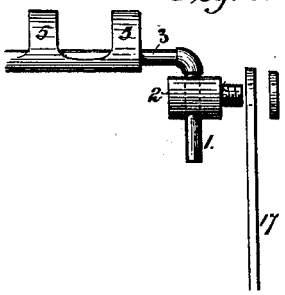


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE PRESTON, OF BROOKLYN, ASSIGNOR TO R. HOE & CO., OF NEW YORK, N. Y.

IMPROVEMENT IN GRIPER-MOTIONS FOR PRINTING-MACHINES.

Specification forming part of Letters Patent No. **206,131**, dated July 16, 1878; application filed January 24, 1878.

To all whom it may concern:

Be it known that I, GEORGE PRESTON, of the city of Brooklyn, county of Kings, State of New York, have invented an Improvement in Griper-Motions for Printing-Machines, of which the following is a specification:

It has long been desirable to obtain, and it is the object of this invention to provide, an automatic mechanism for operating the gripers of printing-machines, the movements of which mechanism and gripers shall be comparatively noiseless, while their construction is simple and effective. Attempts have been made to attain this end; but they have been only partially successful or embodied in complex mechanism.

The accompanying drawings, illustrating my improvement, show, in Figure 1, a side elevation of a portion of a printing-machine, the gripers standing in the open position they occupy just after having delivered a sheet to the receiving-cylinder. Fig. 2 is a similar view, showing the gripers partially closed in the movement they make in seizing a sheet. Fig. 3 is a similar view, showing the position of the gripers and their operating mechanism after having seized a sheet. Fig. 4 is an end elevation of Fig. 2. Fig. 5 illustrates the varying position of the gripers in their operation of opening and closing, and Fig. 6 shows parts of the mechanism in detail.

These drawings show so much of a printing-machine as is necessary to illustrate the application of my improved griper attachment thereto; and as my improvement is applicable to such machines as have a sheet-supporting cylinder, it is, of course, obvious that said cylinder may work in connection with a type-cylinder, a reciprocating bed, or other device supporting a printing-surface. Furthermore, it is to be understood that my improved griper attachment may be applied to any sheet-carrying cylinder, whether said sheet is to be printed or otherwise manipulated by said cylinder and its co-operating devices—such, for instance, as the cylinder forming part of the machine illustrated in the patent granted to S. D. Tucker, December 14, 1875, No. 171,196.

In order to a full understanding of its construction and operation, this griper attachment will now be described in its connection with the cylinder of a printing-machine shown in the drawings.

The cylinder 10 is supposed to be the impression-cylinder of a printing-machine, which cylinder is ordinarily driven by a toothed wheel attached to its shaft 11, and commonly works in connection with a reciprocating type-bed. (Not shown.) This cylinder is, however, here shown as driven by a band, 12, running from a pulley, 13, over a driving-wheel, 20.

A receiving-cylinder, 14, is also shown, the same being located at the rear side of the cylinder 10, as is usual, and sets of tapes 15, which pass around the impression-cylinder 10, over the receiving-cylinder 14, and around a roller, 16, are provided for the purpose of conducting the sheet from the cylinder 10 to the cylinder 14.

The gripers 5 are fast upon a shaft, 3, which turns in bearings provided for it in the heads of the cylinder 10, and also protrudes from one head of the cylinder, as is common, to facilitate its connection with the mechanism which rocks it, and causes the said gripers to open and close. This shaft 3 is provided with a rock-arm, 1, fast to its projecting end, and standing at right angles to its axis. This rock-arm 1 (preferably round) extends through and plays freely in the socket of a hub, 2, which is pivoted to one end of a lever, 17, so as to turn freely therein.

The lever 17 is jointed at its opposite end by a pivot, 6, fixed in the head of the cylinder 10 at a point diametrically opposite to that occupied by the griper-shaft 3. It is curved to clear the shaft 11 of the cylinder, and is provided near its center with a projecting cam, 7, which co-operates with a stud or tappet, 8, fixed to the bearing of the cylinder, so as to always be in proper position with it to cause the lever 17 to vibrate, as will be hereinafter explained.

The lever, when in the position shown in Fig. 3, is sustained by the tension of the spring 19, which thus presses the griper rock-arm 1 into its foremost position. Consequently the griper-shaft, which it controls, holds the gripers closed, as in said figure, in which position they clamp the sheet overlying the tapes 15 upon

the surface of the cylinder. When the said cylinder has so far rotated as to bring the gripers 5 opposite to the receiving-cylinder 14, over which the tapes 15 lead the sheet, the cam 7 on the lever 17 will abut against the stud or tappet 8, and the rotation of the cylinder 10 will cause the cam 7 to rock the said lever 17 outward, thus pressing back the spring 19, drawing the hub 2 rearward, and causing it to oscillate and vibrate the arm 1, to rock the shaft 3 and open the gripers 5 to release the sheet. While the cylinder 10 continues to rotate, and is carrying the gripers from the point occupied by the receiving-cylinder 14 to that occupied by the end of the feed-table 18, the cam 7 continues to ride upon the surface of the stud or tappet 8, and the gripers remain open, the different positions they occupy in this movement being illustrated in Fig. 5.

When they have passed the end of the feed-board 18, the lower part of the cam 7 will pass over the stud or tappet 8, thereby permitting the said gripers, by the pressure of the spring 19, to close quickly, as in Fig. 2, to seize the edge of a sheet lying ready upon the feed-table.

The stud or tappet 8 may, of course, have a friction-roller upon it, and the cam 7 may be formed upon the lever 17 in a single piece therewith, or be a separate plate adjustable thereon; or the lever 17 may carry the stud, and the cam 7 may be fixed to the bearing of the cylinder.

By this improved mechanism the movement of the griper-shaft is constantly controlled by the spring 19, the cam on the lever 17, and the stud 8, so that at no time, when opening or closing, are the gripers free to descend unopposed onto the surface of the cylinder 10, strike the same a percussive blow, and produce the objectionable noise, as is commonly done in the ordinary cylinder-press. On the contrary, the movements of the lever 17, produced by its controlling-cam 7, stud 8, and spring 19, are such that it has no free movement, but is constantly controlled by the said mechanisms until the gripers are closed and the said cam has passed free from its operating-stud 8. This griper attachment therefore operates in such a manner that it not only efficiently opens and closes the gripers, but so controls their movements that they descend and seat themselves upon the cylinder 10 without striking the same forcibly, and hence without producing any noise.

Having thus described my invention, what I desire to secure by Letters Patent is—

The combination, with the griper-shaft 3, of the rock-arm 1, hub 2, and controlling-lever 17, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE PRESTON.

Witnesses:

N. WALTER ANTHONY,

CHAS. W. CARPENTER.