

No. 671,377.

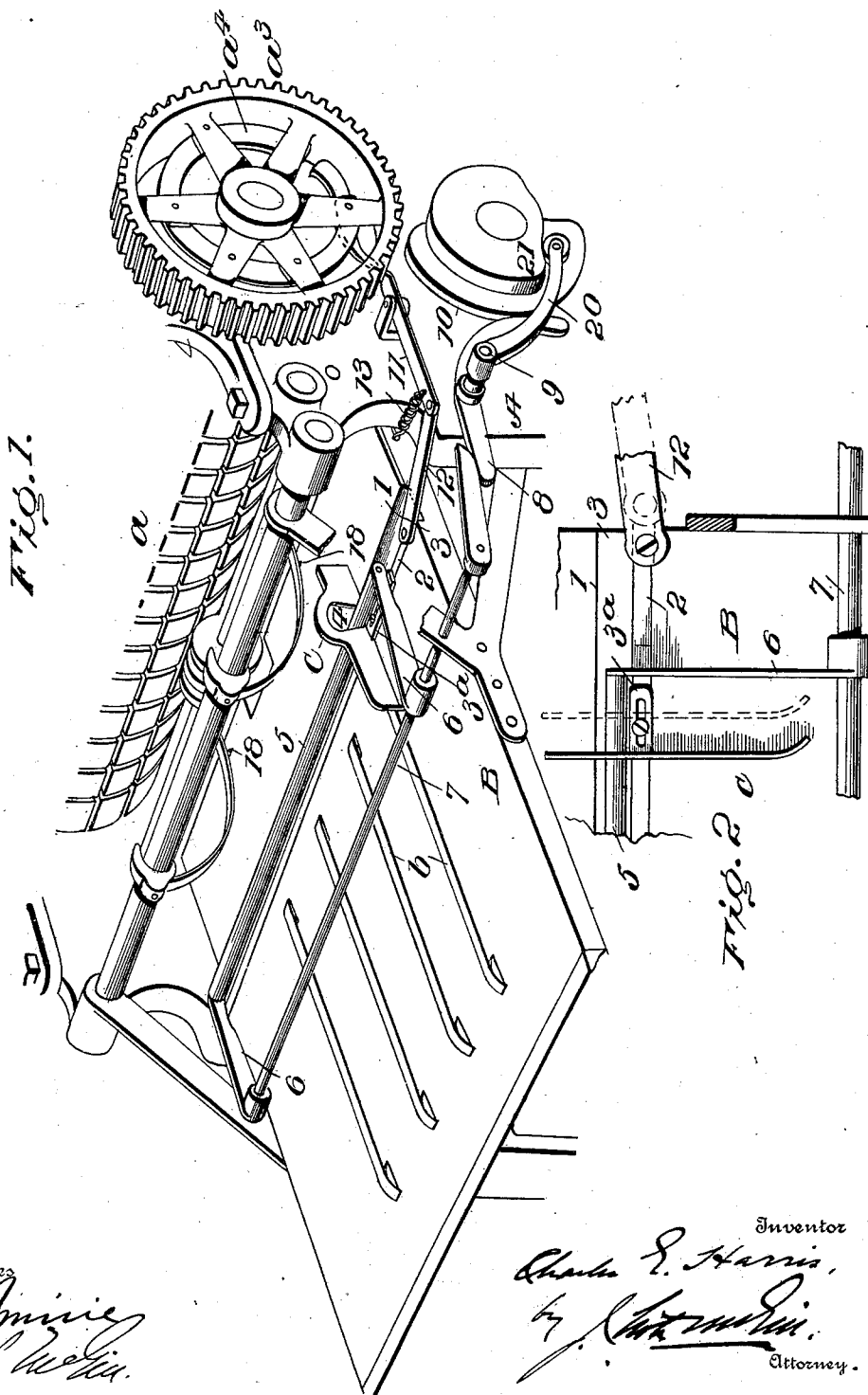
Patented Apr. 2, 1901.

C. G. HARRIS.
SHEET REGISTER.

(Application filed Mar. 27, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
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UNITED STATES PATENT OFFICE.

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SHEET-REGISTER.

SPECIFICATION forming part of Letters Patent No. 671,377, dated April 2, 1901.

Application filed March 27, 1900. Serial No. 10,341. (No model.)

To all whom it may concern:

Be it known that I, CHARLES GRANT HARRIS, of Niles, in the county of Trumbull and State of Ohio, have invented certain new and useful Improvements in Sheet-Registers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention contemplates certain new and useful improvements in means for effecting the side register of sheets of paper or other stock as the same are being fed to a printing or other machine.

The object of the invention is to provide simple and efficient means capable of being easily operated and which will insure the proper positioning of a sheet before it is taken up to be fed to the press.

The invention comprehends the employment of means for crimping or corrugating and holding each sheet of paper or other stock while crimped or corrugated against the top of a receiving-table and means whereby when the sheet is so crimped it will be bodily moved laterally to its line of travel to the machine until it is properly positioned to be fed forward. The idea of means includes, preferably, a groove in or on the table-top transversely to the line of travel, a rod or other suitable device for crimping the sheet by depressing it in the groove, and a side-registering plate, said plate and crimping device being relatively adjustable—that is, the plate may be moved into engagement with the edge of the sheet while crimped, or if such plate be stationary the sheet is moved bodily by moving longitudinally the depressing device or by imparting a like movement to a slide within the groove, between which and the said device the paper is located, thus bringing the edge of the sheet against the side-registering plate. The crimping device may be elevated when the sheet is taken up by the feed-rolls, and at the same time stops with which the forward edge of the sheet is caused to register will be moved out of the way.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective, showing a portion of a printing-press equipped with the present improvements. Fig. 2 is an enlarged plan view with parts broken away. Fig. 3 is a longitudinal sectional view through a portion of the sheet-receiving table. Fig. 4 is a perspective view showing a modified form in which the strip in the table-groove is designed to be moved longitudinally. Fig. 5 is a similar view showing the arrangement employed when the depressing-bar is to be moved longitudinally.

Referring to the drawings, A designates the frame of a printing-press, parts only of which are shown.

While the improvements are indicated as applied to a Harris automatic press, yet the use or application of the invention is not restricted.

a is the type-carrying cylinder; a', the impression-cylinder; a², the feed-rolls, and a³ one of the wheels of the train of gearing. (Not shown.) On the spokes of this wheel is a cam a⁴ in the form of a ring with disconnected ends between two of the spokes.

B is the receiving-table, which may be provided with tapes b, mounted on suitable rollers journaled in the table-top. In the upper surface of this table, at the forward ends of the tapes and at right angles to the line of travel to the press, is a groove or recess 1. This may be formed in the table-top or in a separate piece affixed to or set in the latter. Within this groove, adjacent to one of its walls, is a bar 2, which is approximately square in cross-section, said bar extending throughout the length of the groove. In the balance of the space in the latter between the bar 2 and the forward wall of the groove is fitted a strip 3, extending the length of the groove.

C is a plate forming a side-registering device, which extends across the groove at right angles thereto and is secured at any desired point to the bar 2, preferably by a removable screw passed through a slotted extension 3^a. In this plate C is an opening 4 to accommodate a cross rod or roller 5, supported at its ends by arms 6, fast on a rock-shaft 7. This shaft is rocked just sufficient to raise the rod 5 so that it will release its hold on a sheet of

paper by it held depressed in the table-groove. This may be accomplished by an arm of said shaft engaging a lever 8, loosely fulcrumed on a shaft 9 and engaged by a cam 10. In the form shown in Figs. 1 and 2 the side registering is effected by the lateral movement of the plate C through the longitudinal movement of bar 2, while in the forms shown in Figs. 3, 4, and 5 the plate C and its bar 2 remain stationary, the lateral movement of the sheet being effected according to the form shown in Figs. 3 and 4 by the longitudinal movement of the strip 3 and according to the modification in Fig. 5 by the longitudinal movement of rod 5. These movements to effect the side register may be accomplished by any suitable means. In Fig. 1 I have shown a lever 11 connected by a link 12 to one end of bar 2, one arm of said lever being so bent as to be normally engaged by the cam α^4 of wheel α^3 . When the space between the disconnected ends of this cam is opposite the end of the lever, the latter is moved by the tension of a spring 13 in such manner as to effect the inner lateral movement of the side-registering plate as the bar 2 is moved longitudinally. In Fig. 4 the lever 11 is connected directly to an arm 14, projecting from one end of the strip 3. Any suitable cam, as that indicated at 15, Fig. 5, may be employed for imparting a longitudinal movement to bar 5 and its supporting-shaft. The strip 3 may be provided with small contact-pieces 16 to insure the lateral movement of the sheet when the strip is moved longitudinally, as shown in Fig. 4, and for the same purpose the rod 5, Fig. 5, may be provided with small rings 17.

In practice it is necessary to arrest the forward movement of a sheet while and until it is positioned. For this purpose I employ stops 18 in the form of arms 19, having up-turned ends projecting through openings in the table-top, said arms being fast on shaft 9, which at one end carries an arm 20, a roller in the end of which is engaged by a cam 21. The cams 10 and 21 may be formed in one piece, with their contours so arranged that as the cam 10 effects the elevation of the depressor-rod the cam 21 will cause the lowering of the stops, thus permitting the paper to be taken up and fed forward by the feed-rolls α^2 .

The operation is as follows: As a sheet is received from a feeder (not shown) it is carried forward by the tapes b , and passing over the groove and beneath the depressor-rod, the latter being raised sufficiently for the purpose, the sheet advances until arrested by the stops 18. At this moment the rod 5 is lowered, causing the paper to be slightly depressed into the groove, thereby forming a crimp or corrugation therein transversely of the table. As this occurs the bar 2 and plate C are moved inward through the action of spring 13, and while the upper forward edge of the bar will have frictional contact with the paper, which is still held depressed, it is

insufficient to move the paper laterally against the resistance of the friction of rod 5 and the forward edge of the groove; but when the plate C strikes the side edge of the sheet it overcomes the friction thereon and carries the sheet laterally until properly positioned. The paper having been crimped or corrugated by being pressed in the groove, it is stiffened, while the corners or edges of the groove and the slide-bar 2 act as guides to hold the paper in a perfectly rigid position as regards any displacement forward or back or any twist in the paper, thus making its lateral movement perfectly true and only so far as it is forced by the plate C, the friction-rod and groove being sufficient to prevent any over movement from inertia or back movement in the return of slide C and its bar. Thus the sheet is held perfectly in position by the rod 5 until the feed-rolls feed it forward to the press-cylinders. As this occurs the stops 18 are lowered, and at the same time the rod 5 may be raised from the groove, or this latter movement may be postponed if it is desired that the rod 5 assist to smooth out the sheet as it is being carried forward by the feed-rolls, in which event said rod will be free to rotate in its supporting-arm. According to the form shown in Figs. 3 and 4 the bar 2 and slide C remain stationary, the lateral movement of the sheet being effected by the longitudinal movement of the strip 3, while in the form shown in Fig. 5 the side registering of a sheet is accomplished by the longitudinal movement of the rod 5 while it holds the paper depressed in the groove.

The means employed for carrying out this invention are extremely simple, and the moving parts are very light. The normal position of the latter is such that they interpose no obstacle to the free passage of the sheets in entering.

By crimping or corrugating each sheet the paper is stiffened, making it possible to move up a close side register, and at the same time creases which may be in the sheet are removed, with the result that a closer side register is had with many sheets, which it would otherwise be impossible to obtain even if such sheet be positioned by hand, since when a sheet has a crease or fold it is liable to move a little one way or the other when engaged by grippers unless such crease or fold is ironed out in some way at the front of the sheet.

I claim as my invention—

1. The combination with a printing or other machine and a receiving-table, of a device extended transversely of the table, means for moving said device bodily against and away from the table for temporarily crimping or corrugating each sheet transversely as it passes over the table, and means independent of said device for effecting the side register of such sheet while it is so crimped or corrugated.

2. The combination with a printing or other machine and a receiving-table, of a device for

temporarily crimping or corrugating each sheet transversely of the table as it passes thereover, means for moving said device bodily against and away from the table, a side-registering device, and means for moving the latter against the side edge of the sheet as it is held crimped or corrugated, said side-registering device being independent of the crimping device and movable without affecting the latter, as set forth.

3. The combination with a printing or other machine, and a receiving-table having a groove at right angles to the line of travel of the sheets to the machine, of a device capable of being moved bodily against and away from the table for depressing a sheet of paper in said groove, a side-registering device, and means for moving the sheet laterally while it is held depressed in the groove.

4. The combination with a printing or other machine, and a receiving-table having a groove at right angles to the line of travel of a sheet to the machine, of a device for depressing a sheet of paper in said groove, for periodically raising said device out of the groove, a side-registering device, and means for moving the latter against the side edge of the sheet while it is held depressed in the groove.

5. The combination with a printing or other machine, and a receiving-table having a groove at right angles to the line of travel of the sheets to the machine, of a bar located in said groove fitted against one of the walls thereof, a side-registering device mounted on said bar and extending at right angles to said groove, a device for depressing a sheet of paper in said groove between said bar and the opposite edge of the groove, and means for moving the sheet of paper laterally while it is held depressed whereby its side edge and said device will be brought into engagement with each other, as set forth.

6. The combination with a printing or other machine, and a receiving-table, of stops for arresting the forward edge of a sheet of paper, means for crimping or corrugating a sheet transversely of said table, a side-registering device independent of said former device, means for moving the sheet laterally while it is crimped or corrugated, and means for removing said stops after the sheet has been properly positioned.

7. The combination with a printing or other machine, and a receiving-table having a groove at right angles to the line of travel of the sheets to the machine, of a rod extended transversely of the table and designed to be moved into

and out of said groove, means for operating said rod, a side-registering device, and means for moving each sheet laterally while it is held depressed by said rod, substantially as set forth.

8. The combination with a printing or other machine, and a receiving-table having a groove at right angles to the line of travel of the sheets to the machine, of a rod extended transversely of the table and designed to be moved into and out of said groove, means for operating said rod, a side-registering device, and means for moving the latter against the side edge of a sheet held depressed by said rod, substantially as set forth.

9. The combination with a printing or other machine and a receiving-table having a groove at right angles to the line of travel of the sheets to the machine, of a bar fitted in said groove against one wall thereof, a plate secured on said bar, a friction-rod designed to engage a sheet and depress it in said groove, means for raising and lowering said rod, and means for reciprocating said bar and plate, as set forth.

10. The combination with the table having a groove therein, of a bar fitted in said groove against one of the walls thereof, a plate mounted on said bar and extended across said groove at right angles thereto, said plate having an opening formed therein, a rock-shaft having arms, a friction-rod supported by said arms and extended through said opening, means for reciprocating said bar, and means for rocking said shaft, substantially as set forth.

11. The combination with a table having a groove therein, and also provided with openings near its forward end, of a bar movable longitudinally in said groove, a plate mounted on said bar at right angles to the groove, a shaft having arms secured thereon, said arms having upturned ends projecting through the openings in the table, an arm on the end of said shaft, a cam for engaging said arm, a spring-held lever connected to said sliding bar, means for operating said lever, a friction-rod movable above said groove, a shaft carrying said rod, a second lever, a cam for acting thereon, and an arm on said rock-shaft designed to be engaged by said lever, substantially as set forth.

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

CHARLES GRANT HARRIS.

Witnesses:

A. M. HENDERSON,
F. G. ALLEN.