No. 630,864. Patented Aug. 15, 1899.

L. C. CROWELL.

PAPER TAKING PIN.

(Application filed Feb. 13, 1899.)

(No Model.)

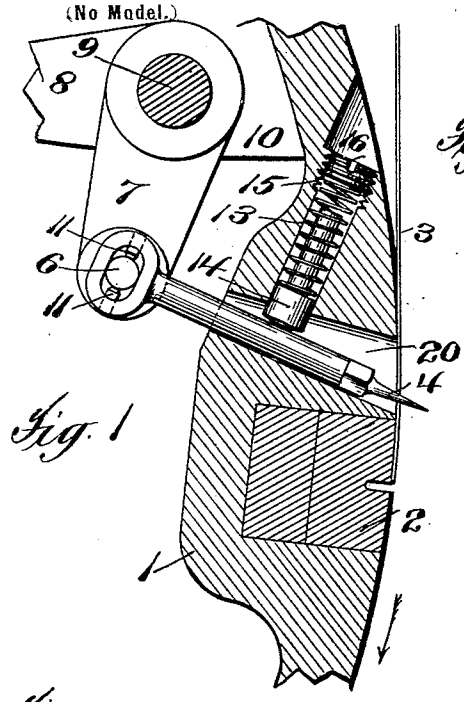


Fig. 1.

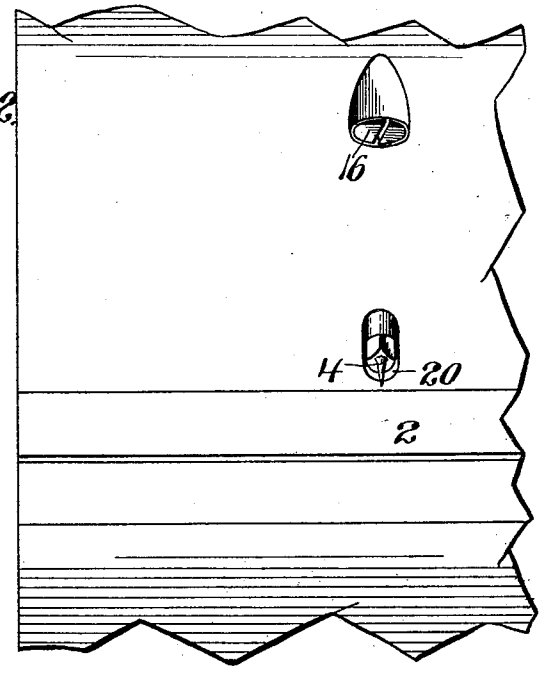


Fig. 2.

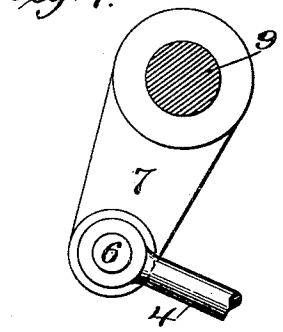


Fig. 4.

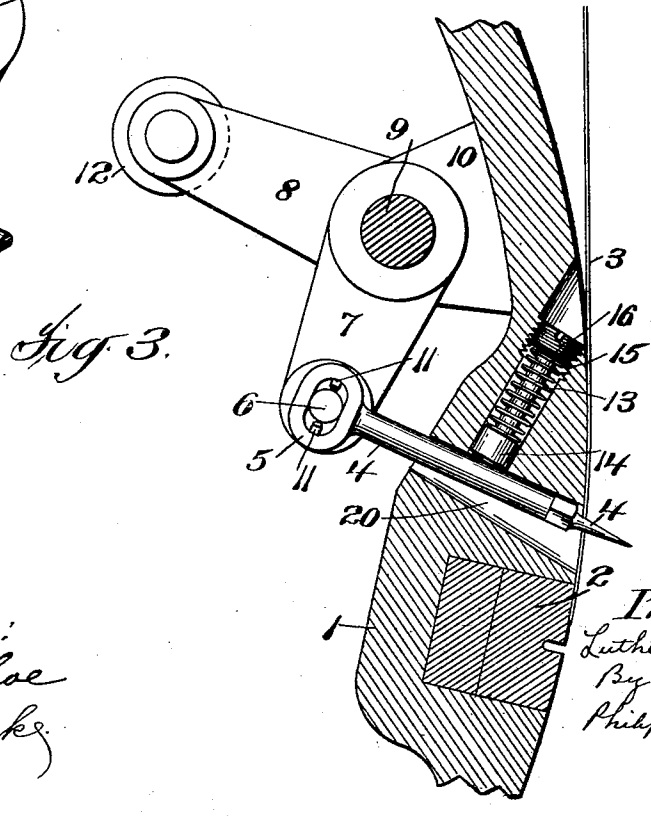


Fig. 3.

Attest:
C. G. Kehoe
A. W. Bourke.

Inventor
Luther C. Crowell
By
Philipp Phelps Sawyer
Atty's

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LUTHER C. CROWELL, OF NEW YORK, N. Y., ASSIGNOR TO ROBERT HOE, THEODORE H. MEAD, AND CHARLES W. CARPENTER, OF SAME PLACE.

PAPER-TAKING PIN.

SPECIFICATION forming part of Letters Patent No. 630,864, dated August 15, 1899.

Application filed February 13, 1899. Serial No. 705,364. (No model.)

To all whom it may concern:

Be it known that I, LUTHER C. CROWELL, a citizen of the United States, residing at New York city, county of Kings, and State of New York, have invented certain new and useful Improvements in Paper-Taking Pins, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in the pins which are used in the folding and cutting cylinders of printing machinery and some other analogous machines for the purpose of forwarding or controlling sheets or webs of paper or other analogous material.

Pins of the character heretofore referred to are usually mounted in cylinders and are protruded beyond the surface of the cylinders by suitable mechanism in order to impale the sheet or web to carry it forward. At the proper time the pins are withdrawn from the sheets or webs in order to release the same. It occurs in certain classes of mechanism for handling webs, and especially in printing machinery, that there is a slight variation between the speed of the web or sheet which is to be taken by the pins and the speed of the pins. This variation may be due either to the fact that the web or sheet travels a trifle slower than the surface speed of the cylinder which carries the pins or to the fact that when the pins are protruded beyond the surface of the cylinder they have a slightly-greater circumferential distance to travel than the surface of the cylinder, and consequently travel somewhat faster than the cylinder. The difference in speed between the travel of the webs or sheets and that of the pins, whether it be due to the causes mentioned or to other causes, results in a slight tearing or slitting of the webs or sheets at the points where the pins are inserted. These slits or tears, while not of great extent, are sufficient to disfigure the material.

It is the purpose of this invention to so mount the taking-pins of the cylinders of printing-machines or other machines for handling material analogous to paper as to avoid the objectionable tearing hereinbefore referred to.

With these and other objects in view the invention consists in certain parts, improvements, and combinations, such as will be hereinafter described, and fully pointed out in the claims hereunto appended.

In the accompanying drawings, which form a part of this specification, Figure 1 is a sectional detail of a portion of a pin-carrying cutting-cylinder for paper or other analogous material, showing the improved manner of mounting the pins, the pins being in the position which they occupy at the time when they take the sheet or web. Fig. 2 is a plan view of the construction shown in Fig. 1, the web of material being omitted. Fig. 3 is a view similar to Fig. 1, but with the pins in a different position. Fig. 4 is a detail view of a modified form of the connection between the pins and their carrying-studs.

In the accompanying drawings, 1 indicates a portion of a cutting-cylinder which acts as a carrier for the pins, such a cylinder having been selected for the purpose of convenience in order to illustrate the invention. 2 represents the ordinary grooved cutting-block carried by such cylinder, and 3 represents a sheet or web of paper or other analogous material.

One of the paper-taking pins is indicated at 4. The pins are mounted so as to play through slots 20 in the cylinder, and each pin is preferably provided with a slotted extension 5, which embraces a stud 6, carried upon an arm 7. A series of these arms, one for each pin, is preferably provided, the arms being carried on a rod 9, which is mounted in ears 10 on the cylinder. The rod 9 is provided with an arm 8, which preferably carries an antifriction-roll 12, which runs on a suitable cam, (not shown,) such cams being a common feature in mechanisms of this description. The connection between the extension 5 and the stud 6 is a loose connection, which permits of a slight axial movement of the pins with relation to the studs. In the form shown in Fig. 3 the extension 5 has an elongated slot and screws 11 are tapped through the ends of the slotted extension and bear against the stud 6. These screws serve to adjust the position of the pins with reference to the studs and also may act to cause a slight friction, so that the pins will turn

less easily on the studs. In the form shown in Fig. 4 the extension 5 is provided with a circular orifice in which the stud 6 fits loosely enough to permit the desired play.

The cylinder is also provided with a series of perforations 13. Located in these perforations are headed pins 14, the stems of said pins being surrounded by light springs 15, which bear against the heads of the pins at one end and against the screw-plugs 16 at the other end. The screw-plugs engage screw-threads in the perforations 13 and serve to adjust the tension of the springs, as well as to afford a bearing-surface for them. The springs and plugs serve to back up the paper-taking pins, and the axial movement which has been referred to as occurring between the shanks of the pins and the studs 6 of the arms by which they are operated takes place against the stress of the springs. It may be here remarked that while the plugs are preferably used in connection with the springs they may, if desired, be omitted and the springs be used alone.

The operation of the device will be readily understood from the illustration and a brief description.

Fig. 1 shows the pins in the position which they occupy at the instant when they have been protruded by the movement of the rod which carries them and have passed through the web or sheet the leading end of which they are to take. At this time the pins are forced by the springs and plugs against the farther side of the slots 20 in the cylinder through which said pins pass. If the web or sheet and the surface of the cylinder are traveling at the same speed, there will be no movement of the pins other than that by which they are caused to impale the material. If, however, the pins are for any reason traveling slightly faster than the material, the springs will allow them to turn slightly with relation to the studs on which they are mounted and permit them to assume the position shown in Fig. 3, thereby preventing them from tearing the material, since by the time the pins have been moved to the other side of the aperture 20 the speed of the pins and material will have become equalized.

It will be understood that the springs 15 will be light springs, their strength and tension being, however, controlled by the weight of the web of material which the pins are to impale.

While the construction shown is a convenient and ready means for carrying the invention into effect, it is to be understood that the invention is by no means limited to such a construction. The gist of the invention resides in establishing such a connection between the pins and the devices for operating them as to permit a slight movement of the pins in a direction opposite to the direction of movement of the carrier in which the pins are mounted. The invention is to be understood, therefore, as embracing all means for effecting the result specified which fall within the spirit and scope of the claims hereunto appended.

What I claim is—

1. The combination with a carrier, of impaling devices mounted thereon, said devices being arranged to have a limited movement in a direction opposite to the movement of the carrier which movement is insufficient to release a sheet or web taken by the impaling devices, whereby a sheet or web may be taken by the impaling devices and forwarded thereby without being torn, substantially as described.

2. The combination with a carrier, of impaling devices mounted thereon, and operating means whereby said devices may be caused to take and release a web or sheet, the connection between the operating means and the impaling devices being such as to permit a limited movement of said devices in a direction opposite to that of the carrier said movement being insufficient to permit the release of a sheet or web taken by the impaling devices whereby a sheet or web may be taken by the impaling devices and forwarded thereby without being torn, substantially as described.

3. The combination with a rotating carrier, of impaling devices mounted thereon and operating means whereby said devices may be caused to take and release a web or sheet, the connection between the operating means and the impaling devices being such as to permit a limited movement of said devices in a direction opposite to that of the carrier said movement being insufficient to permit the release of a sheet or web taken by the impaling devices whereby a sheet or web may be taken by the impaling devices and forwarded thereby without being torn, substantially as described.

4. The combination with a carrier, of impaling devices mounted thereon, operating means whereby the devices may be caused to take and release a web or sheet, a loose connection between the operating means and the impaling devices, and means for controlling the movement permitted by said loose connection, substantially as described.

5. The combination with a rotating carrier, of impaling devices mounted thereon, operating means whereby the devices may be caused to take and release a web or sheet, a loose connection between the operating means and the impaling devices, and means for controlling the movement permitted by said loose connection, substantially as described.

6. The combination with a carrier, of impaling devices mounted thereon, operating means whereby the devices may be caused to take and release a web or sheet, a loose connection between the operating means and the impaling devices, and a spring for controlling the movement permitted by said loose connection, substantially as described.

7. The combination with a rotating carrier,

of impaling devices mounted thereon, operating means whereby the devices may be caused to take and release a web or sheet, a loose connection between the operating means and the impaling devices, and a spring for controlling the movement permitted by said loose connection, substantially as described.

8. The combination with a rotating carrier, of a set of impaling-pins, slots in the carrier through which the said pins work, the slots being larger than the pins, operating means whereby the pins are caused to move lengthwise of the slots to impale and release the sheet or web of material, the connection between the pins and the operating means being such as to permit the pins to move crosswise of the slots, and means carried by the carrier for controlling the last-named movement of the pins, substantially as described.

9. The combination with a rotating carrier having enlarged slots therein, a set of impaling-pins working in the slots, arms for causing a movement of the pins lengthwise of the slots, the pins being loosely connected to said arms, and a spring for controlling the amount of movement permitted by said loose connection, substantially as described.

10. The combination with a rotating carrier, of a set of impaling-pins, an arm to which the impaling-pins are loosely connected, a set of springs mounted in the carrier, and plugs carried by the springs and bearing against the pins, substantially as described.

11. The combination with a rotating carrier, of a set of impaling-pins, arms by which said pins are operated, there being a loose connection between the pins and the arms, springs for controlling the play permitted by said loose connection, and means for adjusting the tension of the springs, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

LUTHER C. CROWELL.

Witnesses:
F. W. H. CRANE,
GEO. M. BROWN.