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K. VICUM

SHEET FEEDING AND DELIVERING APPARATUS FOR PLATEN PRINTING PRESSES

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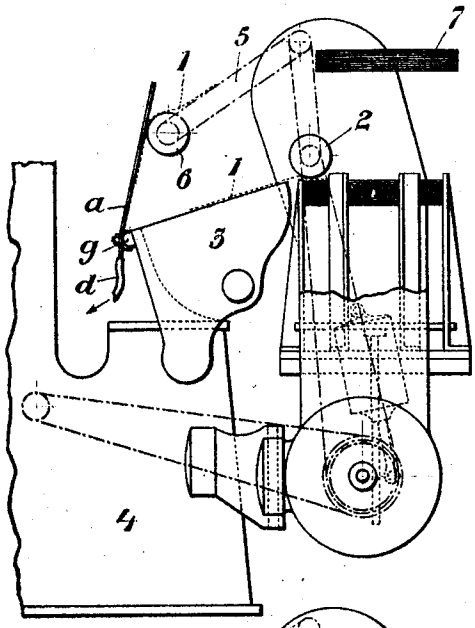


Fig. 1.

Fig. 2.

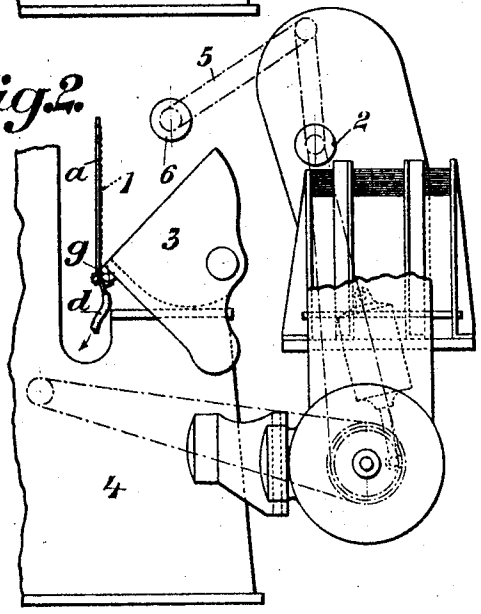
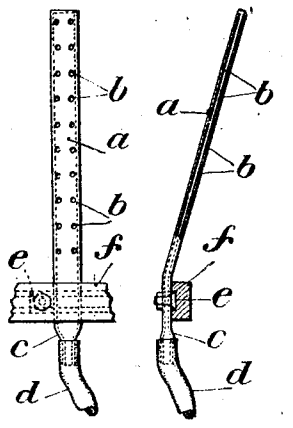


Fig. 3. Fig. 4.



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SHEET FEEDING AND DELIVERING APPARATUS FOR PLATEN PRINTING PRESSES.

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In sheet feeding and delivering apparatus the paper-sheets are, after having been printed upon, frequently sucked off the platen by means of transport disks of the upper carrying arms which are lowered on the platen and have star-shaped bores, the paper-sheets being conveyed into their initial position as the supporting arms are moving back. This lifting of the sheets and conveying of the same presents serious inconveniences because the lowering of the conveying disks onto the platen with a comparatively strong shock or jar frequently injures the printed surfaces as they are being conveyed with the unprinted surface uppermost. These inconveniences are avoided or overcome by this invention, in a simple manner by pivotally mounting on the platen hollow grippers which securely hold the printed sheet, which are placed on the platen when this platen comes into contact with the bed, a vacuum acting upon said sheet at and during the return movement of said platen so that the sheet is held or lifted from the platen and brought into the range of the rotating stationary disks provided with star-shaped bores with the result that the printed sheet is further conveyed by these disks with the unprinted side thereof against said disks. The grippers are so arranged on the platen that they can rotate and be shifted in longitudinal direction. The grippers are also hollow and have suction holes in their sides which face the platen through which holes the vacuum, applied through a flexible hose from any suitable air-pump acts at the desired moment upon the sheet to be lifted from the platen. The transport disks have their hollow spindles rotatably but otherwise mounted in arms rigid on the machine-frame. Owing to this arrangement, a steady and efficient running of the platen printing press, free from shocks, is obtained. While the printing sheet is being conveyed to the delivering pile or stack, a fresh sheet can be fed onto the platen. By these arrangements the advantage is further obtained that the sheets, which have been printed and lifted from the platen by the grippers, are conveyed with the unprinted side laid against the conveying means so that effacing or damaging of the printed side is avoided, this not having been possible in any of the platen printing presses of known type in which the printed sheets are conveyed from the platen with the printed side turned towards the transport means.

An embodiment of the invention is illustrated, by way of example, in the accompanying drawing in which

Figs. 1 and 2 show in side-elevation different positions of the cradle and of the grippers.

Fig. 3 shows in elevation the gripper viewed from the cradle.

Fig. 4 shows the gripper in longitudinal section in side-elevation.

The sheets 1 are delivered one at a time to the cradle, by the rotary suction transport disks or rollers 2, the bore of each of which is star-shape, and, when the platen 3 is being placed or laid against the bed of the press 4, the sheet is held on the platen 3 at the given moment by the grippers *a*. That is, the disk is a rotary suction member with a central bore having radiating inlets from the periphery. The grippers *a* are pivoted to the farther edge of the platen and are hollow and have in the face towards the platen suction holes *b* and each of said grippers has a mouth-piece *c* on which a hose *d* is placed. The grippers *a* are arranged so that they can be shifted and adjusted in longitudinal direction by a dove-tailed groove *e* of a guide-bar *f*. The guide-bar *f* is pivotally mounted on the platen 3 by a hinge *g*. The arms 5, which carry the rotary suction transport-disks 6, are rigidly fixed on the machine so that the transport-disks 6 stand permanently stationary relatively to the platen.

The lifting of the sheets from the supply stack, and the conveying of the same to the delivering stack is carried out as follows:— After the printing of the sheet is terminated and the platen is started in its reverse movement a vacuum is produced automatically within the hollow grippers *a*, said vacuum being transmitted through the suction-holes *b* to the printed sheet. When the platen 3 moves away from the bed, the sheet is held by the grippers and lifted off the platen.

During this movement of the platen away from the bed the hinge 9 of the grippers *a* is raised by the rocking movement of the platen toward the suction transporting discs 6 and the grippers are rocked on said hinge until the ends of the grippers contact with said discs and said discs roll over the grippers to a point at a distance from the free

ends of the latter, as shown in Fig. 1. At this moment the vacuum in the grippers *a* is automatically released and a vacuum is produced in the bores of the transport disks 6, whereupon by the rotation of the transport disks 6 the printed sheet is conveyed, by the discs 6 to the delivering stack 7. The lifting of the sheet from the grippers *a* by the transport-disks 6 takes place when the platen 3 has arrived in its initial position and receives a fresh sheet through the medium of the rotary suction transport disks 2.

An extraordinarily rapid operation of the printing press is thus obtained. Smudging or damaging of the printed sheet-side is avoided, as the printing face is lying between the grippers and under these gripper-faces no impression can take place.

After the sheet has been transported from the point of impression to the rotary suction transport-disks 6, the unprinted back of the sheet is laid against these transporting disks 6 so that during the conveying to the stack 7 the printed side is on top and consequently neither smudging nor damaging of this printed side can occur.

I claim:—

1. A sheet feeding and delivering apparatus for platen printing presses, comprising in combination with the platen, hollow grippers pivotally mounted on said platen for holding the sheet during the forward movement of the platen, means for producing vacuum in said hollow gripper when said platen is returning into its initial position to lift the printed sheet from the platen, and a rotatable suction device for receiving the printed sheet from the gripper and for conveying the printed sheet with the printed side uppermost.

2. A sheet feeding and delivering apparatus as specified in claim 1, in which the grippers are hollow and have suction-holes in the side facing the platen, and the grippers have a hose connected thereto for producing a vacuum therein to act through said suction holes upon the sheet on the platen and lift the sheet from said platen.

3. The combination with a printing press having a bed and a swingingly mounted platen, of paper feeding mechanism, including rotary intermittently acting suction means for delivering one sheet at a time to the open platen, sheet-holding and removing means hingedly connected to the platen, and operable to hold the sheet as the platen is moved toward the bed, said sheet-holding and removing means having suction devices operative when the platen moves away from the bed to grip and remove the sheet from the platen, and rotary suction means in the path of said sheet-holding and removing means for removing the printed sheet from the latter and delivering said printed sheet to a stack.

4. The combination with a printing press having a bed, a swingingly mounted platen, and a fixed frame disposed adjacent to the platen, of a paper feeding mechanism including a rotary suction device carried by said frame for placing sheet upon the platen when moved away from the bed, a second rotary suction device operative to remove the sheet from the platen and placing it in a stack, and combination suction and mechanically operated means carried by the platen for holding the sheet upon the platen during its movement toward the bed and operative to suctionally engage the sheet to remove the same from the platen during the movement of the platen from the bed and to deliver said sheet to the second-mentioned rotary suction device.

In testimony whereof I have hereunto set my hand.

KARL VICUM.