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C. W. HARROLD

CHAIN DELIVERY

Filed Sept. 12, 1921

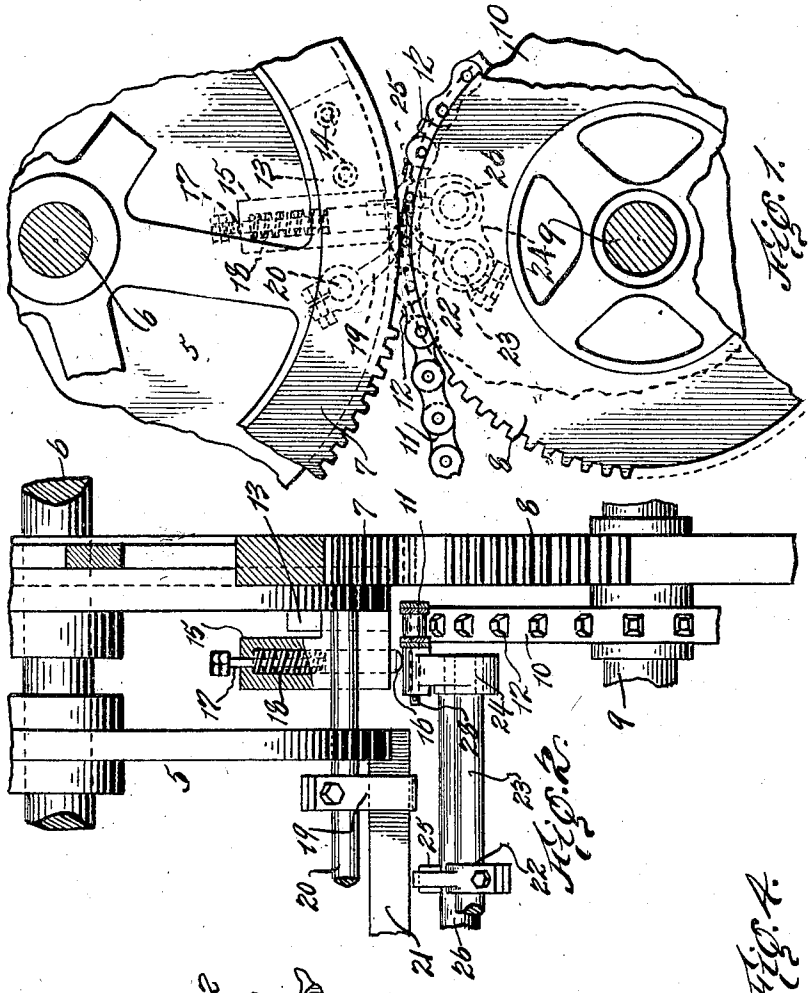


Fig. 1.

Fig. 2.

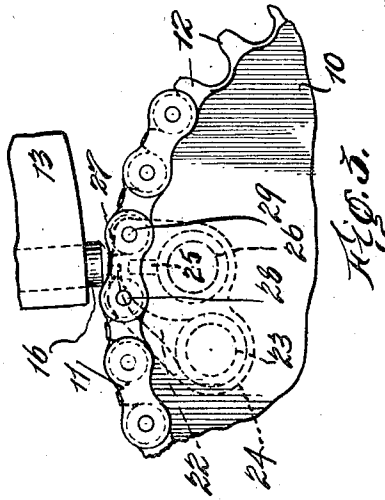


Fig. 3.

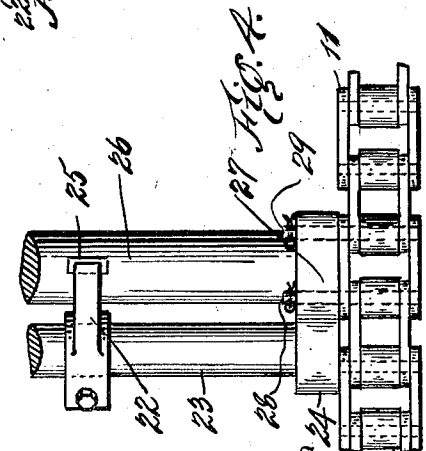


Fig. 4.

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UNITED STATES PATENT OFFICE.

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CHAIN DELIVERY.

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To all whom it may concern:

Be it known that I, CHARLES W. HARROLD, a citizen of the United States, residing in the city of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Chain Deliveries, of which the following is a specification, reference being made to the accompanying drawings, forming a part thereof.

My invention relates more particularly to certain improvements in delivering mechanisms used in connection with printing or other like machines for taking sheets or stock from the revolving impression or transfer cylinders, and transferring same to the chain delivery mechanisms usually employed to carry the successive sheets to a pile-receiving table.

The objects of my invention are, among other things, to provide a simple and effective attachment for such chain deliveries whereby the chains carrying the gripper bars may be steadied and held firmly in place on their sprockets when such gripper bars receive sheets from the impression or transfer cylinder of the printing-press. Experience has shown that when the grippers on the delivery are opened to receive the leading edge of the sheet, the spring tension on their supporting shaft tends to rock or tilt the shaft bearings which are carried and guided only by the more or less flexible supporting chain links passing around such delivery sprocket wheels. Such vibration is undesirably increased at the point where the delivery grippers meet with the cylinder grippers in transferring the sheets so that the edges of the sheet are frequently torn because of such vibration along the line of transfer of the successive sheets. By the use of my improved attachment on such chain deliveries the supporting chain links are firmly pressed to the bottom of their coacting sprocket teeth at the point of the gripper transfer during the entire period the leading edge of the sheet is passing from the impression or transfer cylinder to the delivering mechanism proper, thereby steadying the chain delivering bars with these grippers when receiving the successive sheets and also preventing the likelihood of torn sheet edges.

With these and other objects in view, my invention is shown in a preferred embodiment of the accompanying drawings in conjunction with part of a skeleton transfer-cylinder of a rotary press, the same serving to fully explain the invention which may also be employed with like advantages in conjunction with the impression-cylinder or other rotary member of a printing or other like machine.

In the drawings Figure 1 is a fragmentary side view showing one end only of a transfer-cylinder of a rotary press equipped with my improved attachment;

Figure 2 is an end view thereof;

Figure 3 is an enlarged fragmentary detail view looking from the right in Fig. 2, of a portion of a delivering chain sprocket wheel, and the chain operated thereby; and

Figure 4 is a plan view thereof.

Similar numerals refer to similar parts throughout the several figures.

Referring to Figs. 1 and 2, the skeleton transfer-cylinder 5 is mounted on the shaft 6 which carries the gear 7 in mesh with the gear 8 mounted on the shaft 9 which carries the forward sprocket wheel 10 of the usual chain delivering mechanism, the chain 11 passing around the sprocket 10 and being driven thereby through engagement with the sprocket teeth 12. Attached to the inner side of the outer member of the transfer-cylinder 5 is the left-hand bracket 13 secured to the cylinder by the screws 14 shown in Fig. 1; the bracket 13 carries the radially disposed hollow barrel 15 within which is slidably mounted the plunger 16 held in predetermined position by the screw-bolt 17 about which is coiled the spring 18 bearing on the head of the plunger and also on the base of the barrel 15 as shown in Figs. 1 and 2 normally to force the point of the plunger outwardly until the head of the bolt 17 contacts with the barrel 15. Similar devices are arranged on the opposite side of the machine, but it is unnecessary to show or describe same since they are corresponding duplicates of those parts shown herein.

Any suitable form of grippers may be used on the transfer-cylinder 5. In the embodiment shown the grippers 19 mounted on the rock-shaft 20 coact with the cross-bar 21 secured to the transfer-cylinder as shown whereby the sheet is carried to grippers 22 of the delivering mechanism. The grippers 22 are mounted, as is customary, on the spring-tensioned rock-shaft 23 which is journalled in the bearing 24, and

coact with the lug 25 carried by the cross-rod 26 secured to the bearing 24. The bearing 24 carries on its outer side the flat plate 27 which is adjustably secured on the chain 11 by the pins 28 and 29 as shown in Fig. 4. Such delivery gripper devices are so located on the chains 11 as to register with the grippers 19 to transfer the sheets from the transfer-cylinder 5, with the plate 27 in substantially the same plane as the outer plane of the chain 11 as shown in Fig. 2, and adapted to register with the spring-pressed plunger 16 on the cylinder 5.

The operation of my attachment is substantially as follows: When the cylinder 5 is revolving in a clockwise direction, the sprocket 10 is rotating in an anti-clockwise direction in Figs. 1 and 3 with the chain 11 passing from right to left; as the delivery grippers 22 are opened by the usual devices to take the sheet from the cylinder grippers 19, the projecting head of the plunger 16 contacts with, and yieldingly bears on, the plate 27 which at once forces the plunger 16 inwardly in the barrel against the coil spring 18 as shown in Figs. 1 and 2. The compression of the spring 18 reacts on the plate 27 to press the adjacent links of the chain 11 yieldingly but firmly to the bottom of the sprocket teeth 12, thereby steadying the delivery-grippers 22 mounted on the shaft 23 during the entire period such grippers close on the leading edge of the sheet which has just been released from the transfer-cylinder or other rotary sheet-carrier. After the plate 27 and plunger 16 have passed out of contact through the rotation of the cylinder 5 and sprocket 10, the head of the plunger projects outwardly again, the extent of the projection from the periphery of the cylinder 5 being regulated and adjusted by the screw-bolt 17 to meet the requirements in the varying sizes of cylinders and delivery mechanisms.

As hereinbefore explained my improved attachment may be used in connection with any rotary or revolving member on a printing or like machine coacting with the chain delivery, and hence may be employed successfully on two sheet-carriers, as for example from the vertical to the horizontal position of the common form of pile delivery on a large printing press; also my attachment may be used at the point of transfer from a chain carrier to a rotating cylinder. Likewise my spring-plunger device may be mounted on the ends of a gripper bar instead of the cylinder 5 in which case both chain carriers would be steadied by being firmly pressed against their respective sprockets during the period of transfer of the successive sheets. At times my improved attachment may be successfully used whenever the gears 7 and 8 are in loose mesh with a certain amount of play between them tending to vary the relative position of the successive gripper bars as they take sheets from the cylinder 5; my spring plunger device under such conditions would actually operate to steady both the cylinder 5 and the gripper bar so that they would rotate in unison while the sheet is being transferred.

I claim as my invention:

1. In a delivery, a pair of coacting sheet-carriers and means mounted on one carrier to steady both carriers while transferring the sheet.

2. In a delivery, a pair of coacting sheet-carriers rotating in unison and means mounted on one carrier to steady both carriers while transferring the sheet.

3. In a delivery, a pair of coacting sheet-carriers and adjustable means mounted on one carrier to steady the other carrier while transferring the sheet.

4. In a delivery, a pair of coacting sheet-carriers and means mounted on one carrier to yieldingly steady the other carrier while transferring the sheet.

5. In a delivery, a pair of coacting sheet-carriers rotating in unison and means mounted on one carrier to yieldingly steady the other carrier while transferring the sheet.

6. In a delivery, a cylinder of a printing or like machine, a sheet carrier rotating in unison with the cylinder, and adjustable means carried by the cylinder to steady the carrier while transferring sheets from the former to the latter.

7. In a delivery, a cylinder of a printing or like machine, a sheet carrier rotating in unison with the cylinder, and means carried by the cylinder to yieldingly steady the carrier while transferring sheets from the former to the latter.

8. In a delivery, a cylinder of a printing or like machine, a sheet carrier comprising an endless chain rotating in unison with the cylinder, a sprocket for driving said chain, and means carried by said cylinder for pressing said chain on said sprocket while transferring sheets from the former to the latter.

9. In a delivery, a cylinder of a printing or like machine, a sheet carrier comprising an endless chain rotating in unison with the cylinder, a sprocket for driving said chain, and means carried by said cylinder for yieldingly pressing said chain on said sprocket while transferring sheets from the former to the latter.

10. In a delivery, a cylinder of a printing or like machine, a sheet carrier comprising an endless chain rotating in unison with the cylinder, a sprocket for driving said chain, and means comprising a spring-pressed plunger carried by said cylinder for yieldingly pressing said chain on said sprocket while transferring sheets from the former to the latter.

11. In a delivery, a cylinder of a printing or like machine, a sheet carrier comprising an endless chain rotating in unison with the cylinder and having sheet-grippers thereon, a sprocket for driving said chain, a plate mounted on said chain in alinement with grippers, and a spring-pressed plunger carried by said cylinder to coact with said plate to press said chain on said sprocket when said grippers receive the sheet.

12. In a delivery, a cylinder of a printing or like machine, a sheet carrier comprising an endless chain rotating in unison with the cylinder, a sprocket for driving said chain, means carried by said cylinder for pressing said chain on said sprocket while transferring sheets from the former to the latter, and means to adjust the pressure of said cylinder-carried means on said chain.

CHARLES W. HARROLD.