C. W. HARROLD.

DELIVERER FOR PRINTING PRESSES.

APPLICATION FILED FEB. 16, 1915.

1,281,359.

Patented Oct. 15, 1918.

2 SHEETS—SHEET 1.

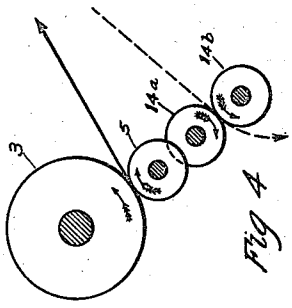


Fig 4

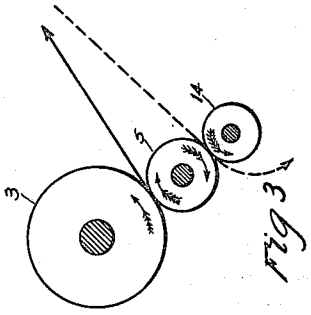


Fig 3

Fig 1

WITNESSES:

Francis P. Regnier

Arthur L. Probey

INVENTOR.

CHARLES W. HARROLD

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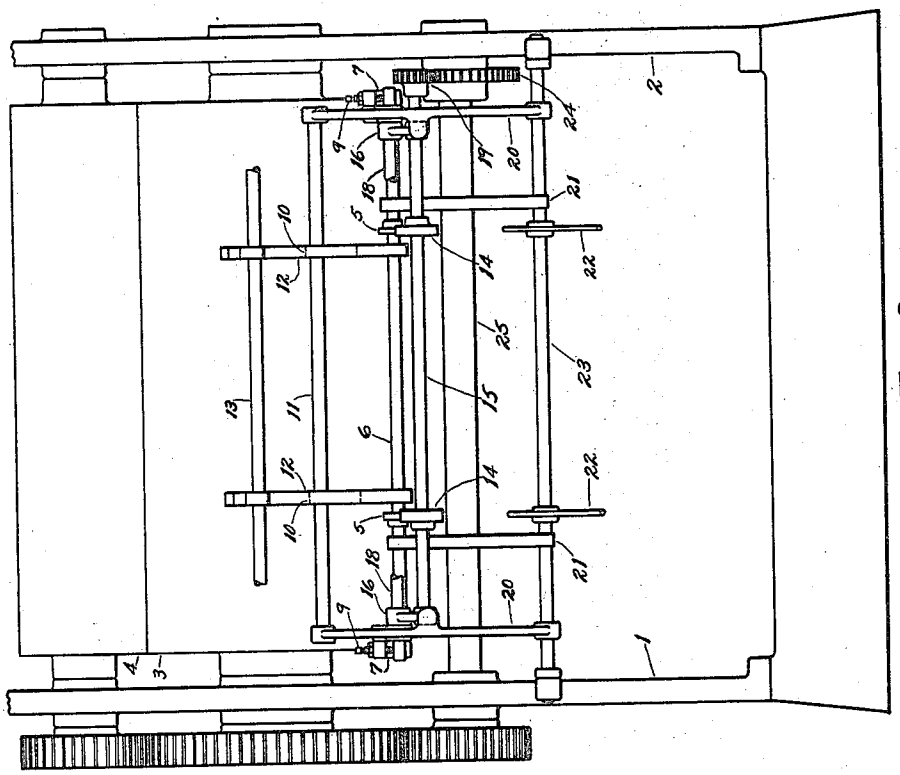


Fig 2

WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES W. HARROLD, OF WARREN, OHIO, ASSIGNOR TO THE HARRIS AUTOMATIC PRESS COMPANY, OF NILES, OHIO, A CORPORATION OF OHIO.

DELIVERER FOR PRINTING-PRESSES.

1,281,359. Specification of Letters Patent. Patented Oct. 15, 1918.

Application filed February 16, 1915. Serial No. 8,522.

To all whom it may concern:

Be it known that I, CHARLES W. HARROLD, of Warren, in the county of Trumbull and State of Ohio, have invented certain new and useful Improvements in Deliverers for Printing-Presses; 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.

In an application for patent Serial No. 8,523, filed February 16, 1915, by Carl G. Pritchard there is shown and described a deliverer for printing presses whereby a sheet as is leaves the impression-cylinder passes into a guidway, and when the tail end of the sheet is free of the press-cylinder the direction of travel of the sheet is reversed, the sheet, according to the particular means shown in said application, passing by gravity from the guideway, tail end first, and by means of additional guides is discharged in an inverted or reversed position, that is to say, with its printed side up. Such deliverer is especially adaptable to multicolor printing presses handling sack-tubes, cardboard or other relatively stiff paper, rendering the use of complicated conveyers unnecessary and lessening the danger of smearing.

The primary object of the present invention is to provide means for positively discharging each sheet from the receiving guideway.

In the accompanying drawings, Figure 1 is a view in side elevation. Fig. 2 is an end view. Fig. 3 is a diagrammatic view. Fig. 4 shows a slight modification.

Referring to the drawings, 1 and 2 designate the sides of the press-frame; 3 the impression cylinder; 4 the type or plate-carrying cylinders; 5 guide- or take-off rolls; and 6 a shaft on which these rolls are mounted and on which they may be shifted longitudinally thereof to suit the size of sheet or its margins. The shaft 6 is mounted in bearings 7 pivoted on studs 8 and having extended portions carrying set-screws 9 by which the movement of the guide-rolls 5 toward the impression cylinder may be limited. The strippers 10, of known construction, are mounted on a cross-bar 11.

The upper guides by which the sheets are received as they are discharged from the impression cylinder by take-off rolls 5, are shown in the form of rearwardly inclined members 12 set at an angle to a vertical plane passing through the longitudinal axis of the impression-cylinder and carried by a fixed bar 13. The members 12 may be set at any desired angle.

14 are coöperating guide-rolls which are mounted upon a shaft 15 upon which they may be shifted longitudinally so as to be in line with take-off rolls 5. The plane of the upper guides 12 is about in line with the point of contact of rolls 5 and 14 so that a sheet in such guides will pass by gravity into the bite of said rolls. The shaft 15 is rotatable in bearings 16 which swing freely from a cross-bar 18, and said rolls 14 are normally held in contact with the take-off rolls 5, and the latter in contact with the impression cylinder by means of springs 17 acting against bearings 16. The cross-bars 11 and 18 are fixed to the side members of an auxiliary frame 20 mounted on a tie-rod or shaft 23 supported by the press frame. By this arrangement the entire delivery mechanism may be swung down, away from the impression cylinder, to allow of access to the latter, but when in its normal position it may be securely held by any suitable means, not shown.

The coöperating rolls 14 and their shaft 15 are positively driven by means of intermeshing gear wheels 19 and 24, the former being on shaft 15 and the latter on a shaft 25 and driven by the gear train of the press.

The lower guides for reversing each sheet as it is discharged from the upper guides is shown as composed of two members 21 and 22 adjustably mounted on shaft 23, the inner end of the guide member 21 intersecting the plane of contact between take-off rolls 5 and coöperating rolls 14. The stock as it is discharged from the lower guides is received on an ordinary receiving-board 26 or a conveyer or other receptacle. I have shown the upper guides as having stops 27 for limiting the travel of the sheets, but these stops are not essential.

In practice, the article such as tubes or

relatively stiff paper or card-board (all of which I comprehend by the designations "sheet") after being printed upon and engaging the take-off rolls 5 and being stripped from the impression cylinder will pass upwardly onto the inclined guides 12 until the tail of the sheet clears the take-off rolls 5, whereupon such tail ends, either by momentum or by the mechanical action of the contact rolls, or by gravity, will be carried between such rolls and the coöperating rolls 14, tail end first, being guided by the upper guide-members 12. The sheet is then fed, tail end first, by the coöperating rolls against the lower guides by which it is inverted and delivered printed side up onto the receiver 26. The reversing of the travel of the sheet is thus effected by the two sets of rolls which so revolve as to form two couples which will drive the sheet first in one direction and then in the other, the sheet entering the first couple (the impression cylinder and take-off rolls 5) head end first and entering the second couple (take-off rolls 5 and coöperating rolls 14) tail end first.

It is not necessary that the two couples for effecting the travel of the sheet alternately in opposite directions be formed as described, since such couples may be entirely independent of each other. For instance, as shown diagrammatically in Fig. 4, the discharge of the sheet after being delivered into the upper guides may be effected by coöperating rolls 14^a, 14^b, the take-off rolls 5 serving only to discharge the sheet into the upper guides. It is preferred, however, to utilize one set of rolls (5) for both couples, as shown in Figs. 1, 2, and 3 each sheet passing first over one side of the take-off rolls and then reversed by the opposite sides of such rolls in conjunction with the coöperating rolls 14. The rolls may be either positively or frictionally driven, and made of any suitable material, but I prefer that the take-off rolls have a rubber surface and be frictionally driven, while the coöperating rolls 14 preferably have a smooth surface and are positively driven. This affords an economical arrangement and is the least likely to cause damage to the sheet.

I claim as my invention:

1. In combination with a printing press having a rotary cylinder and means for stripping a sheet therefrom, an upwardly inclined stationary guide adapted to receive the sheet as it is stripped from the cylinder, rollers for discharging the sheet from said guide, and a second subjacent guide downwardly inclined and adapted to receive the sheet from said rollers on its reverse side.

2. In combination with a printing press having a rotary cylinder and means for discharging sheets therefrom, means for receiving each sheet as it is delivered from the cylinder, positively actuated means for discharging it, tail end first, from such receiving means, and means for inverting or reversing the sheets while being discharged.

3. In combination with a printing press having a rotary cylinder and means for discharging sheets therefrom, guides into which each sheet will be delivered from the cylinder, coöperating rolls for discharging each sheet from said guides, and means for directing the sheets as they pass from said rolls.

4. In combination with a printing press having a rotary cylinder and means for discharging sheets therefrom, guides into which each sheet will be delivered from the cylinder, rolls for feeding each sheet to and from said guides, and means for directing the sheets as they pass from said guides.

5. In combination with a printing press having a rotary cylinder and guides into which each sheet will be delivered from the cylinder, rolls in line with said guides with which the tail end of a sheet will engage after it leaves said cylinder, and by which the sheet is discharged from said guides, and coöperating guides by which a sheet is directed as it is discharged by said rolls.

6. In combination with a printing press having a rotary cylinder, and guides into which each sheet will be delivered from the cylinder, take-off rolls coöperating with said cylinder for discharging the sheets therefrom, coöperating rolls for discharging each sheet from said guides, tail end first, and means for directing each sheet as it is discharged from said guides.

7. In combination with a printing press having a rotary cylinder, and guides into which each sheet will be delivered from the cylinder, take-off rolls coöperating with said cylinder for discharging the sheets therefrom, and coöperating rolls engaging said take-off rolls for discharging each sheet, tail end first, from said guides.

8. In combination with a printing press and guides into which each sheet will be delivered, take-off rolls for engaging the impression cylinder, pivoted bearings for said take-off rolls, a second set of rolls for cooperating in discharging each sheet from said guides, tail end first, pivoted bearings for said second set of rolls, yielding means acting on said bearings, and means for directing each sheet as it is discharged from the first mentioned guides by said rolls.

9. In combination with a printing press having a rotary cylinder, and guides into which each sheet is delivered from the cylinder, a shiftable frame, take-off rolls having pivoted bearings mounted in said frame, a second set of rolls for coöperating with said take-off rolls, said second set of rolls having pivoted bearings mounted in said

shiftable frame, and springs acting on said bearings.

10. In combination with a printing press and guides for receiving each sheet delivered therefrom, rolls for coöperating in moving each sheet in alternate directions, and a second set of rolls for coöperating with the first mentioned rolls for moving the sheets in one direction, and means for reversing each sheet during its movement by the cooperation of said second set of rolls.

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

CHARLES W. HARROLD.

Witnesses:
F. M. SCHAIBLE,
F. W. DUNN.