

(No Model.)

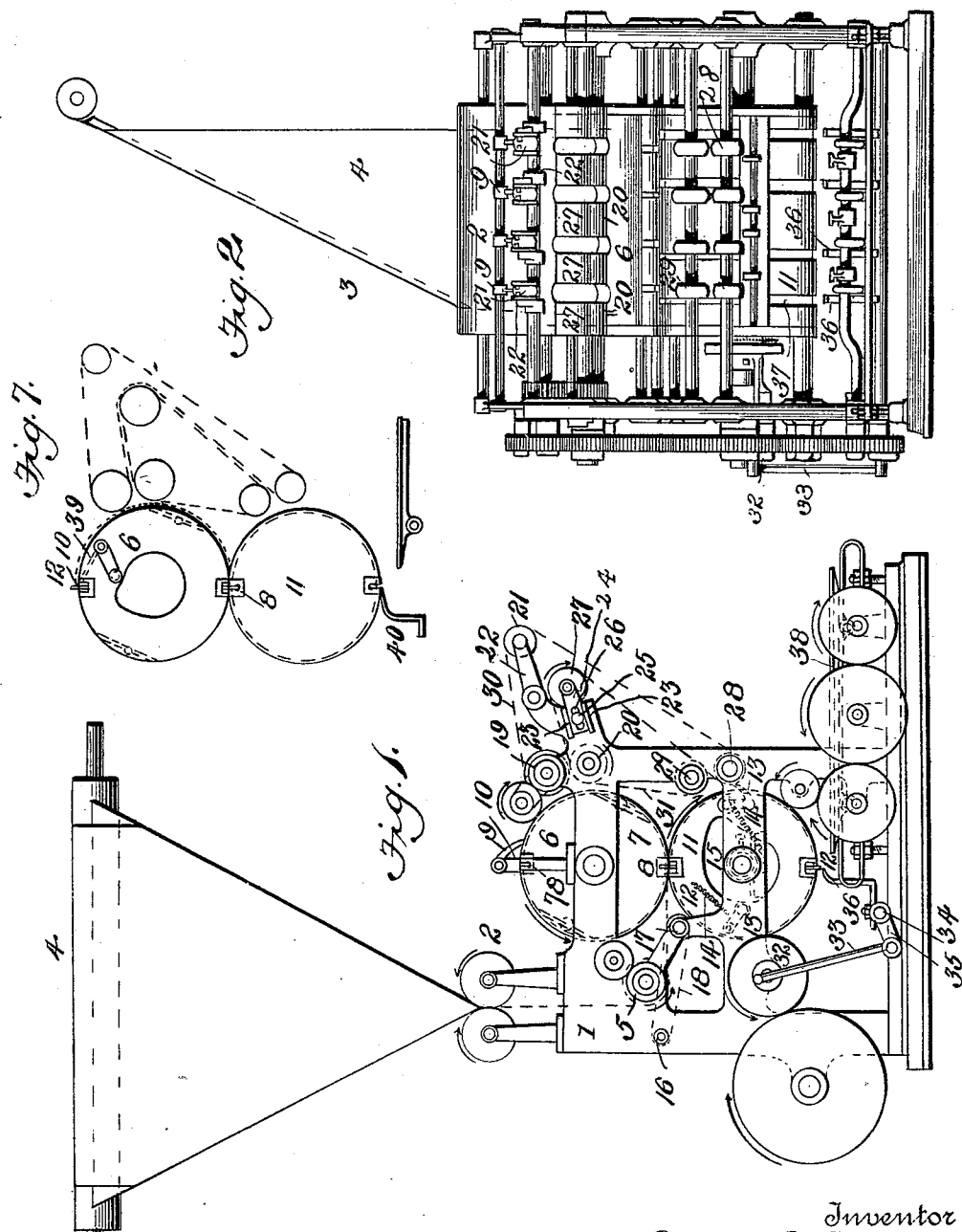
2 Sheets—Sheet 1.

S. G. GOSS.

FOLDING AND DELIVERY DEVICE FOR PRINTING PRESSES.

No. 544,354.

Patented Aug. 13, 1895.



Witnesses
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(No Model.)

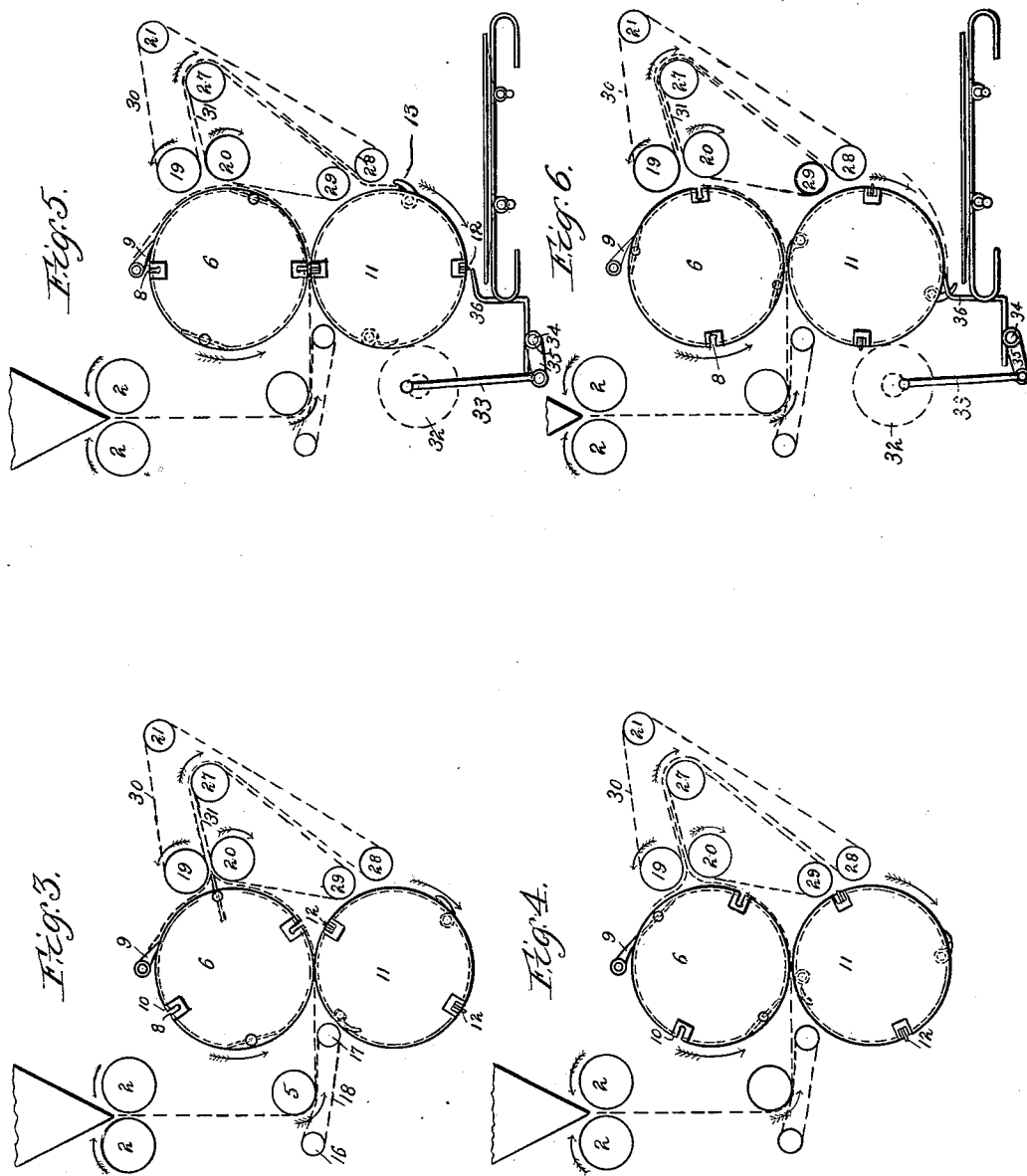
2 Sheets—Sheet 2.

S. G. GOSS.

FOLDING AND DELIVERY DEVICE FOR PRINTING PRESSES.

No. 544,364.

Patented Aug. 13, 1895.



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UNITED STATES PATENT OFFICE.

SAMUEL G. GOSS, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE GOSS PRINTING PRESS COMPANY, OF SAME PLACE.

FOLDING AND DELIVERY DEVICE FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 544,354, dated August 13, 1895.

Application filed September 19, 1893. Serial No. 485,931. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL G. GOSS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Folding and Sheet-Delivery Apparatus for Printing-Presses, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is an end elevation. Fig. 2 is a side elevation viewed from the right of Fig. 1. Figs. 3, 4, 5, and 6 are diagrams showing the passage of the web and sheets through the cutting, folding, and delivering apparatus and the different positions of the parts during the passage of said web and sheets; and Fig. 7 is a detail showing a modification of cylinders 6 and 11.

My invention relates to folding and sheet-delivery apparatus for web-perfecting presses, and the object of my invention is to provide new and improved delivery apparatus by which the web will be folded transversely, severed into sheets, and again folded and delivered.

It has for a further object the improvement of the delivery mechanism by combining the cutting and delivery cylinders in one cylinder.

It has for a further object the improvement of the stripper mechanism, by which the strippers may be lowered to permit the passage of the cutting-blade on the delivery-cylinder and raised again at the proper time to strip the sheet from the delivery-cylinder. These objects I accomplish as hereinafter specified, and as illustrated in the drawings. That which I regard as new will be set forth in the claims.

In the drawings, 1 indicates the supporting-frame, which is of any suitable construction. 2 indicates coacting creasing-rollers mounted above the supporting-frame and having their axes upon the same horizontal plane.

3 indicates the folder, which is of the usual V-shaped form, over which the web 4 passes. The apex of the folder is brought down close to and between the creasing-rollers 2, as shown in Fig. 1.

5 indicates a roller, which is journaled in the frame 1 below the creasing-rollers 2.

6 indicates a cutting and folding cylinder, which is provided with folding-blades 7, which, as they are of the ordinary pattern and operate in the usual manner, do not require particular description. The cutting and folding cylinder 6 is provided at opposite portions of its periphery with grooves 8, extending longitudinally of said cylinder.

9 indicates strippers, which are mounted upon the frame 1 and bear upon the upper surface of the folding-cylinder 6 to strip the sheet, as hereinafter described.

10 indicate impaling-pins, which impale the web as it passes under the cylinder 6, as hereinafter described.

11 indicates a combined cutter and delivery cylinder coacting with the folding-cylinder 6 and journaled in the frame 1 below said folding-cylinder 6. The cylinder 11 is provided upon opposite portions of its periphery with cutting-blades 12, which are adapted to fit into the grooves 8 of the cylinder 6, and extend longitudinally of the cylinder 11.

13 indicates grippers mounted in the cylinder 11 opposite one another and actuated by springs 14 and cam 15. The grippers, springs, and cam are of the ordinary construction and operate in the usual manner, and it is not necessary to describe them particularly here.

16 indicates a roller journaled in the frame 1, having its axis outside of and somewhat below the axis of the roller 5.

17 indicates a roller journaled in the frame 1 below and inside of the roller 5.

18 indicates tapes passing around the rollers 16 and 17.

19 and 20 indicate coacting folding-rollers journaled in the frame 1 outside of and at a suitable distance from the folding-cylinder 6.

21 indicates a roller, which is journaled upon arms 22, projecting outward from the frame.

23 indicates guides, which are secured upon the outside of the framework upon each side of the frame.

24 indicates arms, which slide in the guides 23 and are secured by set-screws 25, passing through slots 26 in said arms 24.

27 indicates a roller, which is journaled in the outer ends of the arms 24. By sliding the arms 24 in or out the roller 27 may be adjusted so as to cause the sheets to register.

5 28 indicates a roller journaled in the framework 1 opposite and outside of the cylinder 11.

29 indicates a roller, which is journaled in the frame 1 above and somewhat inside of the roller 28.

10 30 indicates tapes, which pass over the rollers 19 21 28 and bear against the outer surface of the roller 27.

31 indicates tapes, which pass over and outside of the rollers 20 27 29. The arrangement 15 of the tapes is best seen in the diagram Figs. 3, 4, 5, and 6.

32 indicates a wheel, which is journaled upon the outside of the frame 1.

20 33 indicates a connecting-rod, the upper end of which is pivoted eccentrically upon the wheel 32.

34 indicates a shaft, which is journaled in the frame 1 at the bottom.

25 35 indicates a crank, which is rigidly secured upon the outer end of the shaft 34. The outer end of said crank is pivotally connected with the lower end of the connecting-rod 33.

30 36 indicates strippers, which are rigidly mounted upon the shaft 34 and extend forward and upward therefrom. As the wheel 32 is rotated by means of the gears which drive the machine, the crank 35 is raised and lowered, rocking the shaft 34, and thus raising and lowering the strippers 36. The manner in which this raising and lowering of the strippers is timed will be hereinafter described.

40 The operation of the apparatus, which will be best understood by reference to the diagram figures, is as follows: The web, passing over the V-shaped folder 3 and between the creasing-rollers 2, is folded longitudinally. It then passes downward under the roller 5, whence it is carried by the tapes 18 between the cylinders 6 and 11. As it passes between the cylinders the web is impaled upon the impaling-pins 10 and carried upward around the cylinder. At the proper time the cutting-blades 12 upon the cutter and delivery cylinder 11 coact with the grooves 8 to sever the web transversely. The cylinders are so timed as to sever the web transversely as the middle of the sheet comes opposite the opening 55 between the rollers 19 20. At the same time the folding-blades 7 are thrown outward, giving the sheet another fold transversely and thrusting it between the folding-rollers 19 20. At the same time the edge of the sheet is brought into contact with the strippers 9, freeing it from the impaling-pins 10. By the action of the tapes 30 31 the sheet is drawn between the rollers 19 20, completing the fold. In Fig. 3 the folding-blade is shown as thrown 60 outward to its farthest extent, and the stripper 9 has freed the sheet from the impaling-

pins, and the fold of the sheet is seen as just passing into the space between the folding-rollers 19 20. The folded sheet is then carried around between the tapes 30 31, over the 70 roller 27. Fig. 4 of the diagram figures shows the sheet farther advanced than is shown in Fig. 3 and passing between the rollers 19 20, its forward edge reaching nearly to the roller 27. The folded sheet is then carried by the 75 tapes 30 31 downward between the rollers 28 29, as is shown in Fig. 5. As its edge comes in contact with the surface of the cylinder 11 the grippers 13 seize the edge of the sheet and carry it downward around said cylinder. The 80 gripper is shown in Fig. 5 as seizing the forward end of the sheet. The sheet is then carried downward around the cylinder 11 until it is stripped from said cylinder by the action of the strippers 36, the mechanism for operating 85 the grippers being so timed as to release the sheet just as the strippers are brought up against the cylinder 11.

The operation of the strippers is as follows: In order to avoid contact with the cutting- 90 blade 12 as the cylinder 11 revolves, it is necessary to depress the strippers, and this is performed by the mechanism above described. The mechanism, consisting of the wheel 32, connecting-rod 33, shaft 34, and crank 35, is so 95 timed and arranged as to depress the strippers 36 a sufficient distance to permit the cutting-blades 12 to pass clear of them as they come opposite the strippers in the rotation of the cylinder 11. After the blade has passed, 100 the strippers are raised toward the cylinder 11 by the mechanism above described, their upper ends being raised into the grooves 37, which are cut in the surface of the cylinder 11 for that purpose. The upward movement 105 of the strippers is so timed that they will engage the edge of the sheet while their upper ends are resting in the grooves 37, and the downward motion of the strippers tends to assist in disengaging the sheet from the cylinder 11. When disengaged from the cylinder 110 11 it is deposited upon the delivery-table 38, which may be of any approved form.

In the drawings, Figs. 1 to 6, inclusive, I have shown the cutting-blade mounted upon 115 the delivery-cylinder 11 and the corresponding groove upon the folding-cylinder 6. It is obvious, however, that the cutting-blade may be located upon the folding-cylinder 6 and the groove upon the delivery-cylinder 11, in 120 which case, however, modifications of the stripping devices would be necessary. These modifications I have shown in Fig. 7. In this figure the cutting-blades 12 are mounted upon the folding-cylinder 6 and the groove 8 upon 125 the delivery-cylinder 11. In this arrangement the strippers 9 (shown in Figs. 1, 2, and 6) are not used; but in place thereof I place in the cylinder 6 interior strippers 39, which are operated by the usual cam mechanism, or 130 by any other well-known and approved form for operating such strippers. As these inte-

rior strippers are old and well understood in the art it is not necessary to describe them in detail; but they are so arranged as to be thrown upward and outward at the proper time, stripping the forward end of the severed sheet from the impaling-pins 10. In this latter arrangement also, instead of using the vibrating strippers 36 and the above-described mechanism for operating them, I use ordinary strippers 40, (see Fig. 7,) which rest constantly in the grooves 37 of the cylinder 11 and operate to strip the folded web from the delivery-cylinder 11. The delivery-cylinder 11 in Fig. 7 is provided with the same gripping mechanism as that shown in Fig. 1 and above described. This is not shown in the drawing in Fig. 7, which is only intended to be a diagram as far as cylinder 11 is concerned.

That which I claim as my invention, and desire to secure by Letters Patent, is—

1. In a folding and sheet delivery apparatus for web perfecting presses, the combination with a cutting cylinder, and folding mechanism mounted therein and adapted to fold the web transversely, of a co-acting cutting cylinder, delivery mechanism mounted upon said cylinder and adapted to deliver the folded sheet from said cylinder, and devices cooperating with the folding mechanism to complete the fold and to transfer the sheet to the said delivery mechanism, substantially as described.

2. In a folding and sheet delivery apparatus for web-perfecting presses, the combination with devices for folding a web longitudinally, of a cutting and folding cylinder and a delivery cylinder cooperating therewith to sever the longitudinally folded web transversely, and devices cooperating with the cutting and folding cylinder and the delivery cylinder to complete the folding of the severed sheet and transfer it to the delivery cylinder, substantially as described.

3. In a folding and sheet-delivery apparatus for web-perfecting presses, the combination of a folding and cutting cylinder having folder devices, folders cooperating therewith for folding the web transversely, a cutter and delivery cylinder cooperating with the folding and cutting cylinder to sever the web, delivery devices carried by the cutter and delivery cylinder for delivering the folded sheet from said cutter and delivery cylinder, and mechanism for transferring the transversely folded sheet to the delivery devices of the cutter and delivery cylinder, substantially as described.

4. In a folding and sheet delivery apparatus for web-perfecting presses, the combination with a former, and co-operating fold-creasing rollers at the apex of the former to fold a web longitudinally, of a cutting and folding cylinder and a delivery cylinder cooperating therewith to sever the longitudinally folded web transversely, devices cooperating with the cutting and folding cylinder to fold the sheet transversely, and devices for transferring the

transversely folded sheet to the delivery cylinder, substantially as described.

5. In a folding and sheet-delivery apparatus for web-perfecting presses, the combination with a V-shaped former, and co-acting fold-creasing rollers at the apex thereof for folding the web longitudinally, of a cutting and folding cylinder and a delivery cylinder cooperating therewith to sever the longitudinally folded web transversely, devices cooperating with the cutting and folding cylinder and delivery cylinder to complete the fold of the severed sheet and transfer it to the delivery cylinder and mechanism for delivering the sheet from the latter, substantially as described.

6. In a folding and sheet delivery apparatus for web perfecting presses, the combination with a V-shaped former, and co-acting fold-creasing rollers at the apex of said former, whereby the web is folded longitudinally, of cutting and folding cylinder 6 provided with impaling pins 10, with longitudinal grooves 8 and with folding blades 7, a co-acting cutting and delivery cylinder 11 provided with longitudinal cutting blades 12 adapted to co-act with said grooves 8 in said cylinder 6, grippers 13 carried by said cylinder 11, mechanism for operating said grippers, cooperating folding rollers 19—20, tapes 30—31 adapted to carry said severed and transversely folded sheet and deliver the same upon said cylinder 11, and strippers 36 adapted to strip the sheets from said cylinder 11, substantially as described.

7. The combination with a cutting and folding cylinder, and a delivery cylinder cooperating therewith to sever the web transversely, and devices cooperating with the cutting and folding cylinder and the delivery cylinder to complete the folding of the severed sheet and transfer it to the delivery cylinder, of a rock-shaft, strippers mounted on the rock-shaft, and mechanism for rocking said shaft, whereby the strippers may be moved toward and from the delivery cylinder, substantially as described.

8. The combination with the cutting and folding cylinder 6, a delivery cylinder 11 co-acting therewith and provided with a cutting blade 12, and devices cooperating with the cutting and folding cylinder and delivery cylinder to complete the folding of the severed sheet and transfer it to the delivery cylinder, of a rock-shaft 34, strippers 36 mounted upon the rock-shaft, and mechanism for rocking the rock-shaft, whereby the strippers may be alternately moved away from the delivery cylinder to permit the free passage of the cutting blade and against said cylinder to strip the folded sheet therefrom, substantially as described.

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