

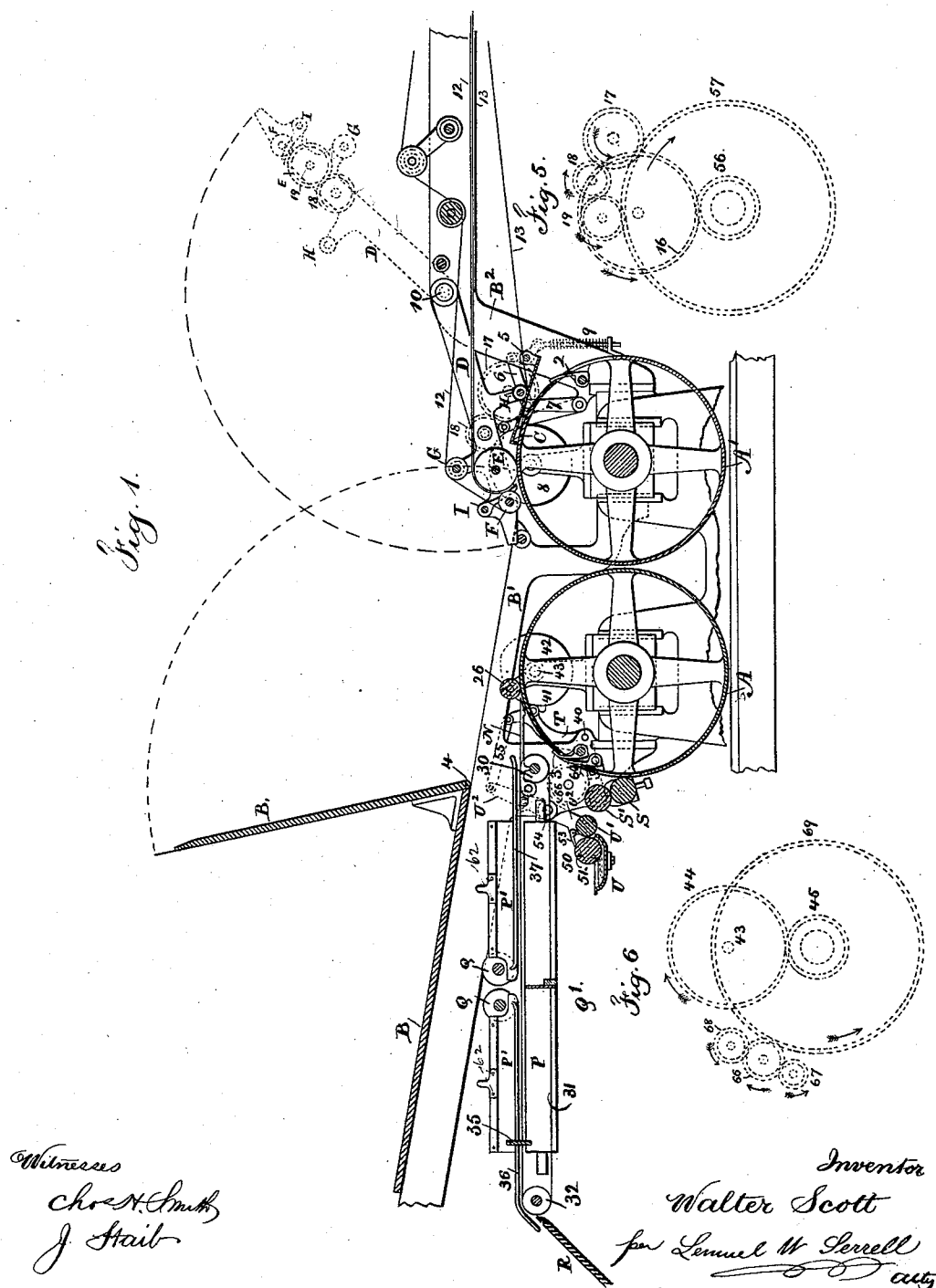
(No Model.)

3 Sheets—Sheet 1.

W. SCOTT.
PRINTING PRESS.

No. 588,487.

Patented Aug. 17, 1897.



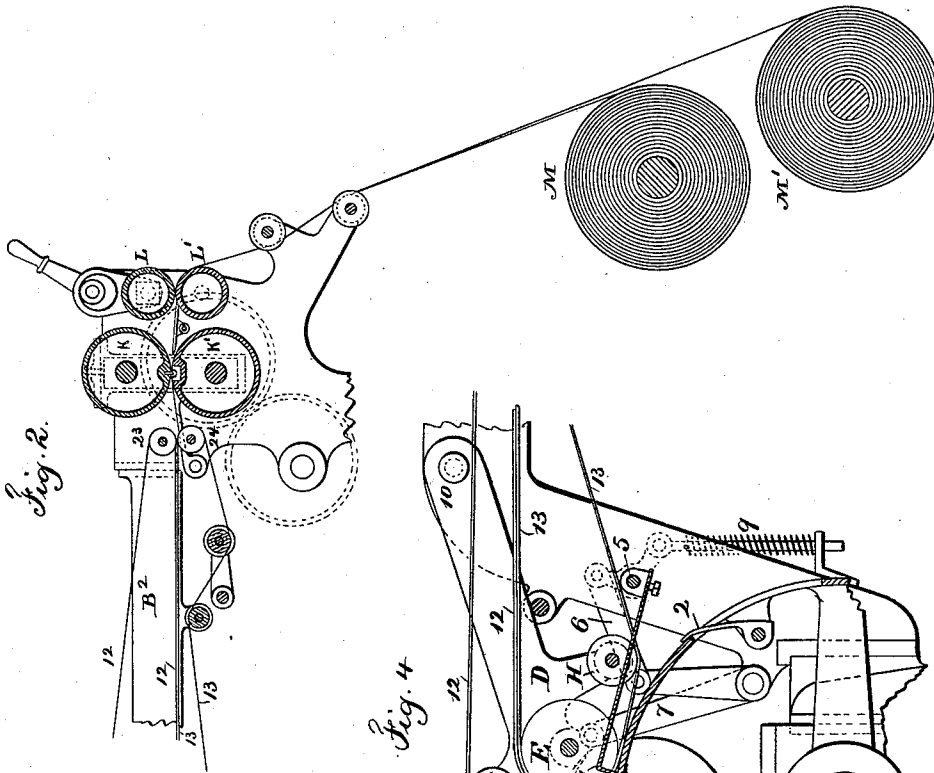
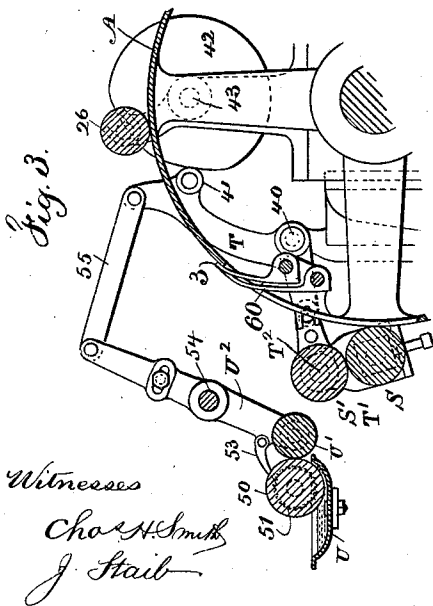
(No Model.)

3 Sheets—Sheet 2.

W. SCOTT.
PRINTING PRESS.

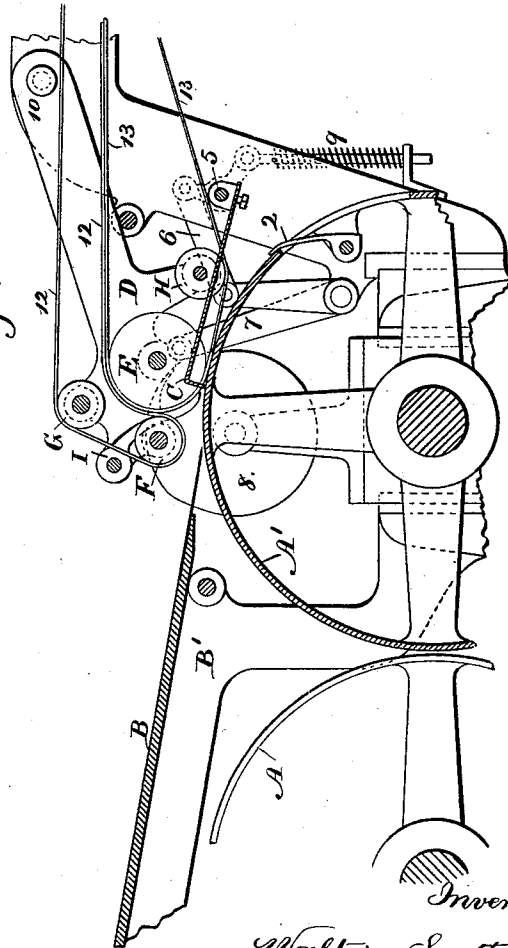
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Witnesses
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Fig. 4



Inventor
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(No Model.)

3 Sheets—Sheet 3.

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Fig. 7.

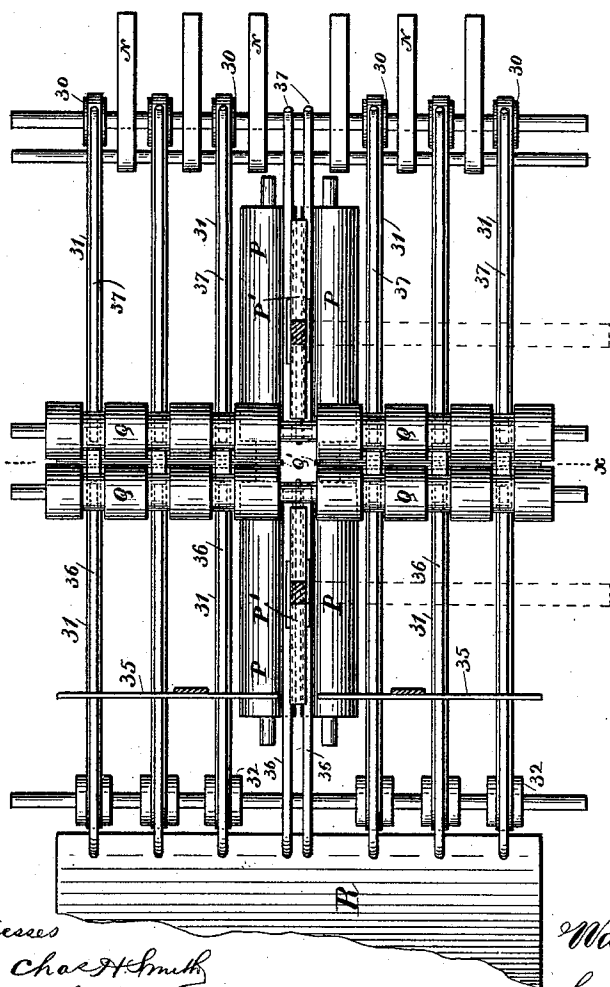
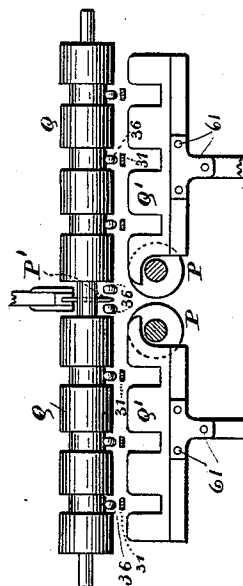


Fig. 8.



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UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 588,487, dated August 17, 1897.

Application filed March 8, 1896. Serial No. 342,902. (No model.)

To all whom it may concern.

Be it known that I, WALTER SCOTT, a citizen of the United States, residing in the city of Plainfield, county of Union, and State of New Jersey, have invented an Improvement in Printing-Presses, of which the following is a specification.

The object of this invention is to adapt the feeding mechanism for a press to either a web passing into the press and cut off in sheets before reaching the impression-cylinder or to sheets passing into the press from a table and fed by hand; and it consists in the construction of the parts and the method of feeding the paper to the press, as hereinafter set forth.

In this present invention I am enabled to pass in a single sheet by hand and print the same on one or both sides before reaching the point of delivery, or I am enabled to pass in a single sheet automatically as cut from a web and print the same on one or both sides before reaching the point of delivery, or two webs may be made use of cut up into sheets and passed in together into the press and printed first on one side and then on the other, so as to deliver two products, each one of which is printed only on one side, and I construct the parts that hold the feeding-in webs in such a manner that they may be turned back out of the way when feeding by hand or to give access to the impression-cylinder for applying the tympan or for regulating the impression.

In the drawings, Figure 1 is a sectional elevation representing the parts made use of in connection with a two-cylinder printing-press, excepting the paper-feed and cutters. Fig. 2 is a sectional elevation of the devices for feeding and cutting the web or webs of paper. Fig. 3 is a sectional elevation in larger size of a portion of the second impression-cylinder and the devices for oiling the same. Fig. 4 is a sectional elevation, also in larger size, of the first impression-cylinder and devices connected therewith. Figs. 5 and 6 show by dotted lines the gearing connected with the first and second impression-cylinders, respectively. Fig. 7 is a diagrammatic plan view of the folding devices, and Fig. 8 is a diagrammatic section at the line *xx* in Fig. 7.

The impression-cylinders A and A' are of any ordinary character, and the printing may be performed by types upon a reciprocating bed, or type-cylinders may be made use of in any desired or well-known manner, and it is to be understood that the grippers 2 convey the sheet around with the first impression-cylinder A' and that an impression is given upon such sheet and the advancing end thereof is received by the grippers 3 upon the second impression-cylinder A, and it is carried up over such cylinder A and then down, and it receives the impression beneath such cylinder A, and then the sheet is carried up and delivered from the top of this cylinder A, as hereinafter set forth.

The feed-table B is made in two parts, hinged together at 4, so that the lower portion of such feed-table can be swung back upon the hinges 4 to give access to the impression-cylinders A and A', and in the form represented in Fig. 1 this feed-table will be thrown back when the sheets are fed in automatically from a roll, in order that its lower end may be out of the way of the rollers and tapes, and at C is a gage, the end of which is adapted to receive the edge of the paper when fed by hand, and this gage is raised at the proper time to allow the sheet to pass beneath it by the rock-shaft 5, link 6, lever-arm 7, and cam 8, there being a spring 9 to press down the end of the gage at the proper moment when the cam allows this to be done.

The framework of the machine is to be of any desired character. It is preferable to make use of arms B', extending out from the frame beneath the edges of the feed-table B, and also to provide arms B², extending out from the frame at the opposite side of the cylinder A' for the reception of the rollers or pulleys for the conveying-tapes, and at D are swinging frames, hinged at 10 to the frame B², so that it may be turned down over the impression-cylinder A' or swung back into the position indicated by dotted lines in Fig. 1, and between the swinging frames D are the rolls E F G H for the sets of endless tapes or belts 12 and 13, and it is preferable to drive the cam 8 by the gear-wheel 16, that receives its motion from the pinion 56 upon the shaft of the impression-cylinder A' and to drive the roller E by motion from the gear 57 upon

the cylinder A', which gear 57 gives motion to the gears 17, 18, and 19, the latter being on the shaft of the roller E, and it is now to be understood that the sheet or sheets that are fed in automatically from the cutting apparatus are brought between the sets of tapes or belts 12 and 13 around the roller E and down to the surface of the impression-cylinder A', the belts 13 being in contact with the surface of the cylinder A' between the rolls E and H, and it is also preferable to make use of concave guide-fingers I to insure the proper movement of the sheet as it is brought to the surface of the impression-cylinder.

I have shown the frames B² as extending to the cutting-cylinders K K', between which the paper is fed by the feed-rollers L L', and these are adapted to cut sheets of any desired length, and they are preferably made so that the length of sheet can be changed as required from time to time, and a reference is hereby made to my Patent No. 411,535 for devices adapted to give motion to the feed-rolls for varying the length of the sheet and to the cutters for cutting off such sheets as they pass between them, and I have represented two rolls of paper M M', the webs from which pass through between the feed-rolls L L', and it is to be understood that either one roll of paper may be used or two rolls, as desired, and the web or webs of paper pass in between the belts 12 and 13 at the rolls 23 and 24.

The operation of the parts thus far described is as follows: The web or webs of paper pass between the feed-rolls L L', and the proper length is fed in for each revolution of the impression-cylinder A' and the sheets are cut off successively by the cutting apparatus K K', the sheets passing on between the sets of tapes or belts 12 13 and, passing over the roll E, the advancing ends of the sheets are pressed to such roll by the tapes or belts 12 passing around the roll F, and the concave guide-fingers I pass the sheets in between the roll E and the impression-cylinder A', and the grippers 2 grasp the sheet and carry the same around the impression-cylinder, and the printing operation is performed. During this operation the gage C is lifted automatically out of the way of the advancing end of the sheet, or it may be disconnected, if desired. Where the second impression is to be given, the advancing end of the sheet is transferred to the grippers 3 upon the second impression-cylinder A', and by said grippers the sheet is carried up over the impression-cylinder A and then down beneath the same to receive the second impression, and then the advancing end of the sheet is carried up over the impression-cylinder A and delivered upon the bridge-bars N to the apparatus next described, and the roller 26, pressing upon the sheet, causes such sheet to continue to move with the impression-cylinder A after the grippers have been opened, so that the sheet travels over the bridge-bars N to the receiving or folding

apparatus and the grippers pass along ready to receive the next sheet from the impression-cylinder A'.

If a single web of paper is fed in and cut into sheets, the sheets will be printed on both sides when the two impression-cylinders A and A' are made use of, and where two webs are fed in and the two sheets passed along together through the press one is printed on one side and the other on the other side and the two sheets pass off together from the impression-cylinder A over the bridge-bars N. If now the tympan on the impression-cylinder A' requires attention, the swinging frame D and the rolls and tapes or belts carried by them are turned back upon the joints 10, and if it is desired to feed into the press separate sheets by hand the feeding-table B is swung down so that its end is adjacent to the top of the impression-cylinder A' and the sheets are fed in successively against the gage C and the grippers 2 grasp the sheet, as before described.

In delivering the sheets from the printing-press they sometimes require to be folded and sometimes to be laid out flat and sometimes they require to be folded longitudinally and in other instances transversely. I arrange the delivering apparatus so as to accomplish these objects according to the required condition for the sheet as discharged from the press. Adjacent to the bridge-bars N is the roller 30, with the sets of tapes or belts 31 to the roller 32, and adjacent to these tapes or belts 31 and parallel with them are the folding-rolls P, that are central to the sheet as delivered, and above these rolls are the folding-blades P', all of which are of any usual or desired character, and these blades P' receive their motion at the proper time by any suitable mechanism, and there are also transverse folding-rolls Q above the sets of belts 31, and upwardly-moving transverse folding-blades Q' acting in connection with the rolls Q, and there is a movable fence or stop 35 for the end of the sheet, and there are by preference the stationary guide-bars 36 37 over the tapes or belts 31 and parallel with them, so that the sheets as they are delivered from the cylinder A pass over the bridge-bars N upon the tapes or belts 31 and are by them carried along beneath the stationary guides 36 and 37 to the gage or fence 35, and if the sheet is to be folded longitudinally the same is carried downwardly between the rolls P by the blades P'. If the sheet is to be folded transversely, it is carried upwardly between the rolls Q by the blades Q', and it will be understood that these rolls P and Q may be running continuously without detriment, and that to bring into action either one folded apparatus or the other it is only necessary to connect with the moving mechanism either the blades P' or the blades Q', or, if desired, either the blades P' or the blades Q' may be unbolted or disconnected from their actuating-arms by removing the screws at 61 or 62.

In some instances the sheets have to be delivered without folding, and this is easily done in my improved press without any change except to disconnect or hook up the blades P' and Q' from the moving mechanism, so that they may remain stationary and to lift or swing the fence or gage 35 out of the way, in which case the sheets continue to travel along upon the belts 31 over the roll 32 to any suitable receiving or delivery device, such as the incline R, from which the sheets are taken by a fly or similar well-known delivering mechanism.

In some of the better qualities of printing and upon perfecting-presses it is found to be advantageous to apply to the surface of the second impression-cylinder an oily substance for the purpose of preventing a transfer to the surface of such cylinder of the ink from the first impression. I have arranged the parts as next described for the purpose of conveniently applying this oil to the surface of the cylinder A without interfering with the delivering mechanism for the sheets of paper.

The roll S is adapted to be brought into contact with the cylinder A, and the roll S' is adjacent to and in contact with the roll S, and these rolls S S' are between levers T' upon a fulcrum-shaft T², and one of the levers T' is acted upon by the lever T, that has its fulcrum 40 upon the frame of the machine, and there is a roller 41 upon the lever T, adjacent to the cam 42, that is upon the shaft or gudgeon 43 and receives its motion from the gear-wheel 44, driven by the pinion 45 upon the shaft of the impression-cylinder A, (see diagram Fig. 6,) so that this lever T is rocked by the cam 42, and this cam 42 makes one revolution for two revolutions of the cylinder A. Hence the roll S is brought into contact with the surface of the cylinder A as the sheet of paper is carried off above the bridge-bars N and the roll S is swung back out of contact with the cylinder A at the time the sheet is being carried over such cylinder A and down to receive the impression. There is a trough U of suitable size for holding oil and in which is a roller 50, having upon its end a ratchet-wheel 51, (see dotted lines, Fig. 3,) and the ductor-roll U' is supported by the vibrating levers U² on the rock-shaft 54, and upon one of which levers U² is a pawl 53, that acts against the ratchet-wheel 51 to move the same and the roll 50 around progressively, and the levers U² are swung with their rock-shaft 54 by the link 55, connecting with the upper end of the lever T and to an adjustable arm upon one of the levers U², and the extent of motion is such that the ductor U' is moved first into contact with the roller 50 in the oil-trough and then into contact with the roller S'. Thereby the proper quantity of oil is transferred from the ductor U' to the roller S', and it is preferable to give a continuous rotary movement to the rollers S S' by a gear-wheel 66, that gears into a wheel 67 upon the shaft

of the roller S', and said gear 66 receives motion from a gear 69 upon the shaft of the impression-cylinder A, which gear is the same size as said impression-cylinder. Thereby the rolls S S' will be moving at the same surface speed as the cylinder A', and when the roll S is in contact with the cylinder A its surface will be oiled by the roll S sufficiently to prevent the ink from the first impression on the sheet adhering to the surface of such impression-cylinder A. The gear 66 also gears into a wheel 68 upon the shaft of the roller 30 and thereby gives motion to the tapes 31. (See diagram Fig. 6.)

The roll S that applies oil is often called a "set-off" roller, and it moves at the same surface speed as the impression-cylinder, and the devices that bring it into contact and out of contact with such impression-cylinder are automatic.

It is to be understood that the throw-off fingers 60 upon the second impression-cylinder A are to be brought into action every second revolution to raise the advancing end of the sheet and cause it to pass over the bridge-bars N as it is delivered.

If two qualities of paper are to be fed into the press simultaneously and each receives an impression, sheets of one quality can be passed in from the table B beneath the roll E, Fig. 4, with the front end against the gage C, and the second sheet will be laid upon the first by the tapes or belts 13, and the two can be carried together by the grippers of the cylinder A', and in this manner a saving can often be effected in running the press and particularly when two colors or qualities of sheets for book or pamphlet work are being printed, the one against the impression-cylinder A and the other against the impression-cylinder A', after which the two sheets are delivered as one product.

The devices represented in Fig. 4 are the same as those shown in Fig. 1, except that the positions of the parts are sufficiently changed to allow the feed-table to be turned down to its position at the same time that the rollers and belts are in position for conveying in sheets from a roll.

The devices herein shown and described for applying oil to the second impression-cylinder having been made the subject of a divisional application, Serial No. 370,123, filed November 3, 1890, patented November 24, 1891, No. 463,844, are only claimed herein in their combination with the other parts of the press.

I claim as my invention—

1. The combination with the feed-table B, and impression-cylinder A', of the sets of feeding tapes or belts 12 and 13, the roll E, above the impression-cylinder and adapted to be brought into contact with the same and around which the tapes or belts 13 pass, the roll F, adjacent to the roll E and around which the tapes or belts 12 pass, the frames D, joined at 10, and supporting the rolls E and F, and

adapted to be swung back from above the cylinder A', substantially as set forth.

2. The combination with the impression-cylinder A' of the frames D hinged at 10 and adapted to be swung back, the rolls E and F carried by such frames, the sets of feeding belts or tapes 12 and 13 passing around the respective rolls the gage C and the feeding-table B and adapted to be swung up out of the way or swung down above the cylinder A' for the purposes and substantially as set forth.

3. The combination with the impression-cylinder A' of a feeding-table B standing at an inclination from the impression-cylinder in one direction and sets of feeding-belts coming in the other direction rolls for such feeding-belts, a frame for supporting the rolls of the feeding-belts and hinges upon which such frame can be swung back when not in use and the guide-fingers I acting to direct the sheet supplied by the feeding-belts so that it may pass in beneath the roller E and in the same direction as the sheets that are fed by hand from the table B, substantially as set forth.

4. The combination with the impression-cylinders A A' and their grippers, of means for supplying the sheets to the cylinder A' the bridge-bars N adapted to receive the sheets as delivered from the cylinder A the set of tapes or belts 31 and the rollers 30, 32, for the same the longitudinal folding-blades P' and longitudinal folding-rolls P, the transverse folding-rolls Q and transverse folding-blades Q' and the movable gage or fence 35 and sheet-receiving device R substantially as specified

whereby the sheets as delivered from the cylinder A can be folded longitudinally or transversely or delivered without being folded, substantially as set forth.

5. The combination with the second impression-cylinder A and the bridge-bars N and sheet-delivery mechanism, of the oil-trough U beneath such delivery mechanism the rolls S S' the levers T for carrying the same the ductor-roll and its levers and the cam for giving motion to the ductor-rolls and the rolls S S' whereby the oiling-rolls are brought into action against the surface of the cylinder A as the sheet is delivered above them and swung out of action as the sheet passes around to receive the second impression, substantially as specified.

6. The combination with the impression-cylinders A A' and their grippers, of means for supplying the sheets to the cylinder A' the rollers and set of tapes or belts 31 for receiving the sheets as delivered from the cylinder A the longitudinal folding blades and rolls, and the transverse folding blades and rolls adapted to fold the sheet either longitudinally or transversely as it is moved along by the tapes or belts, or to be thrown out of action to allow the sheets to be delivered in an unfolded condition substantially as set forth.

Signed by me this 28th day of February, 1890.

WALTER SCOTT.

Witnesses:

GEO. T. PINCKNEY,
HAROLD SERRELL.