R. C. SEYMOUR.

PRINTING PRESS.

APPLICATION FILED JUNE 10, 1908.

908,158. Patented Dec. 29, 1908.

2 SHEETS—SHEET 1.

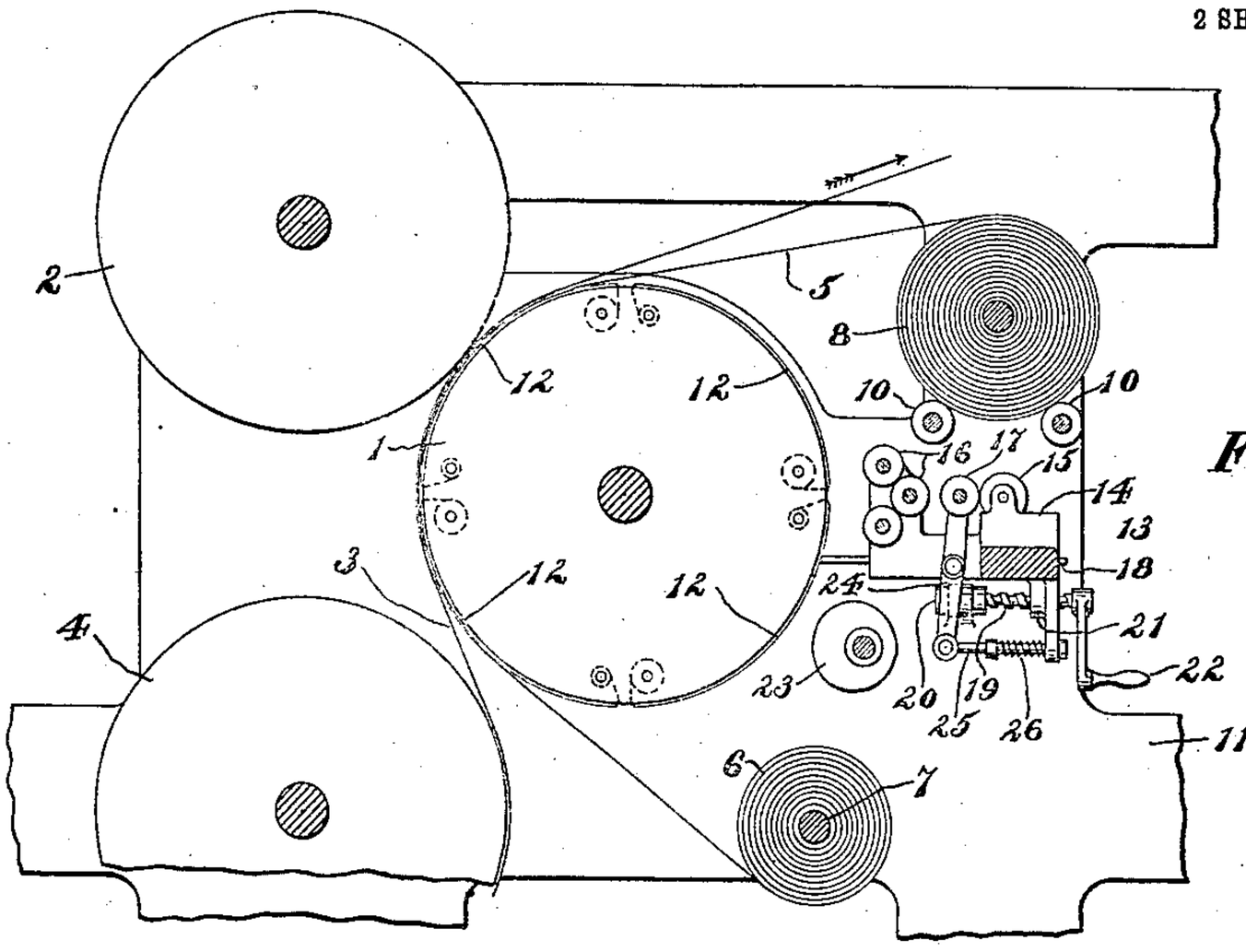

Fig. 1.

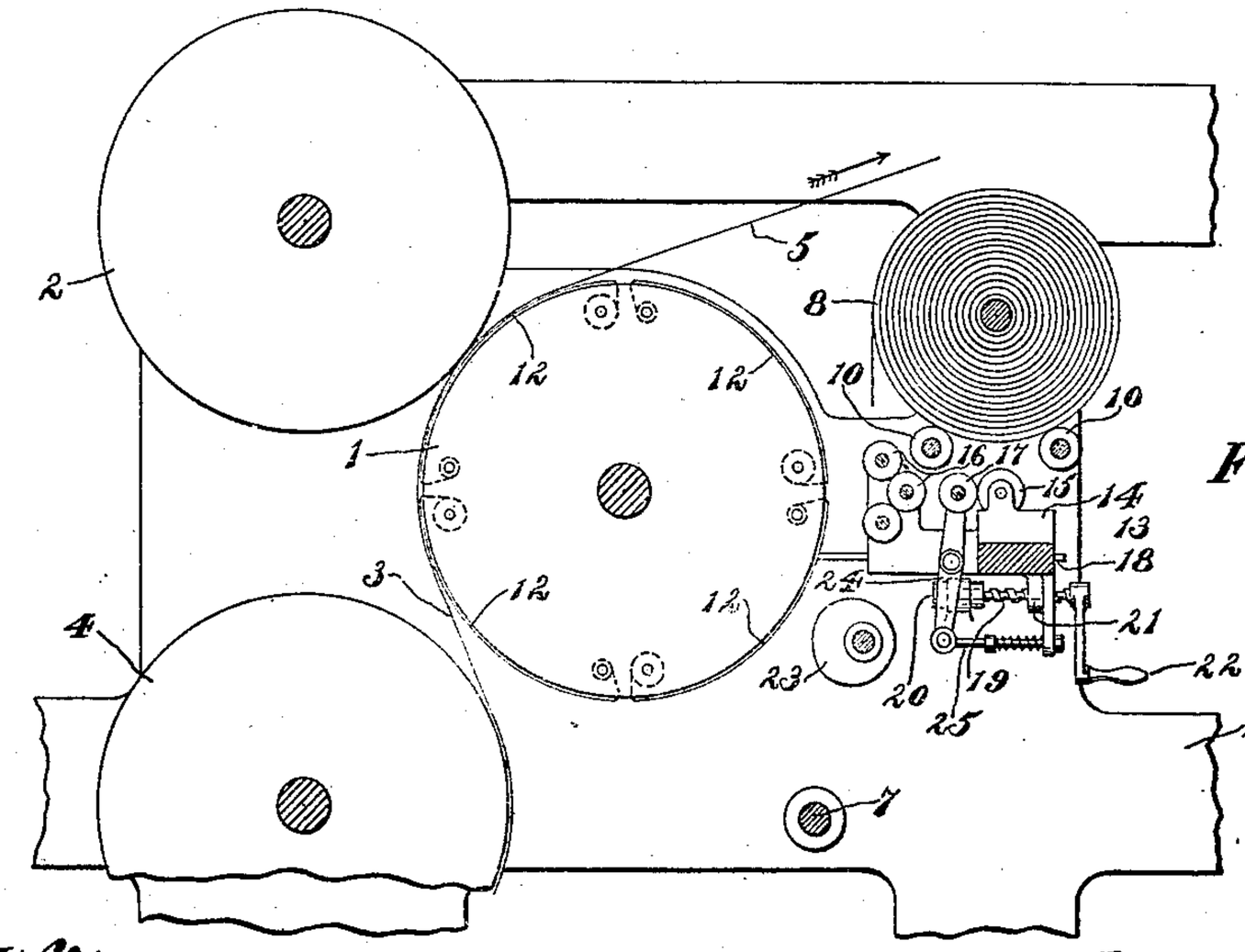

Fig. 2.

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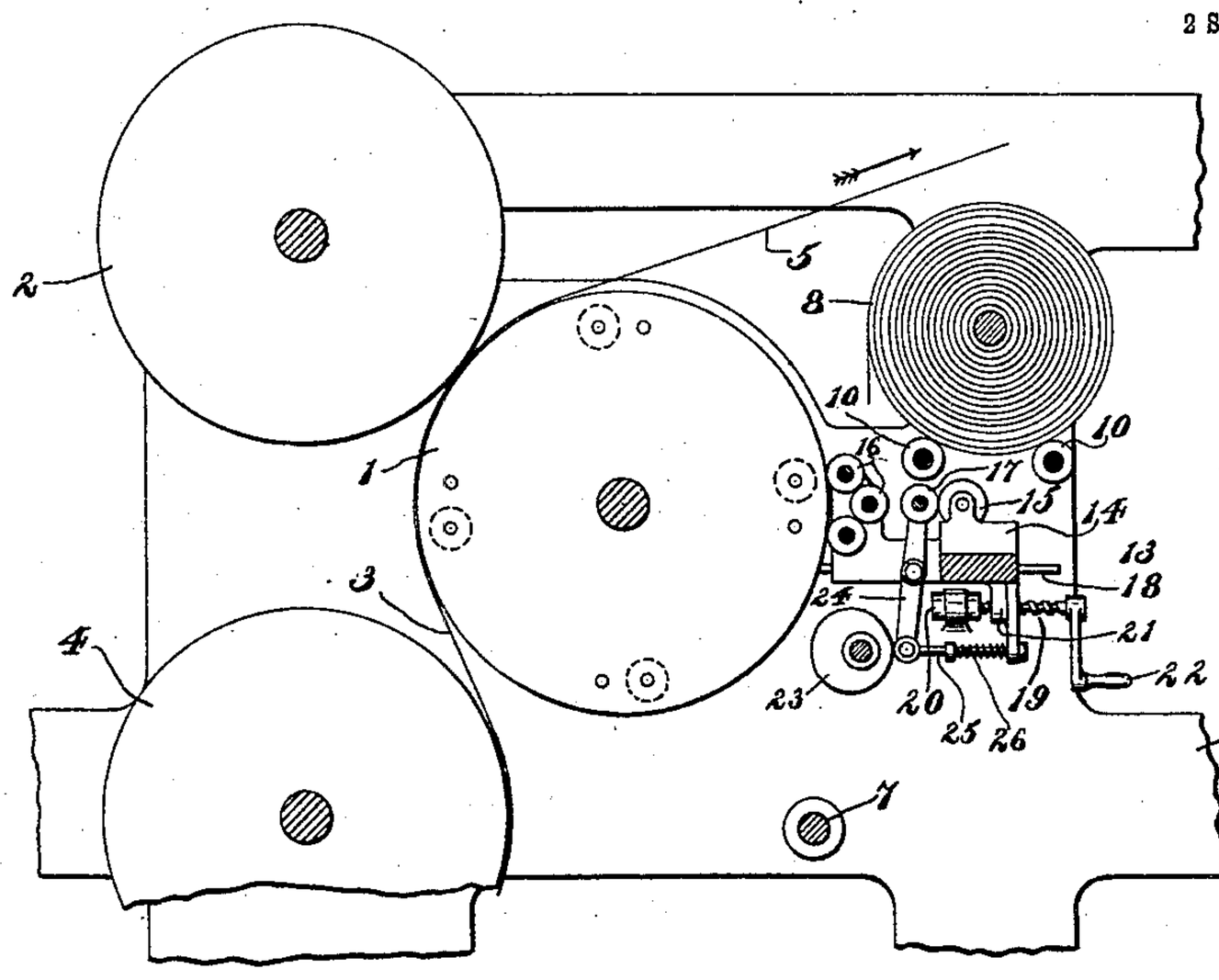
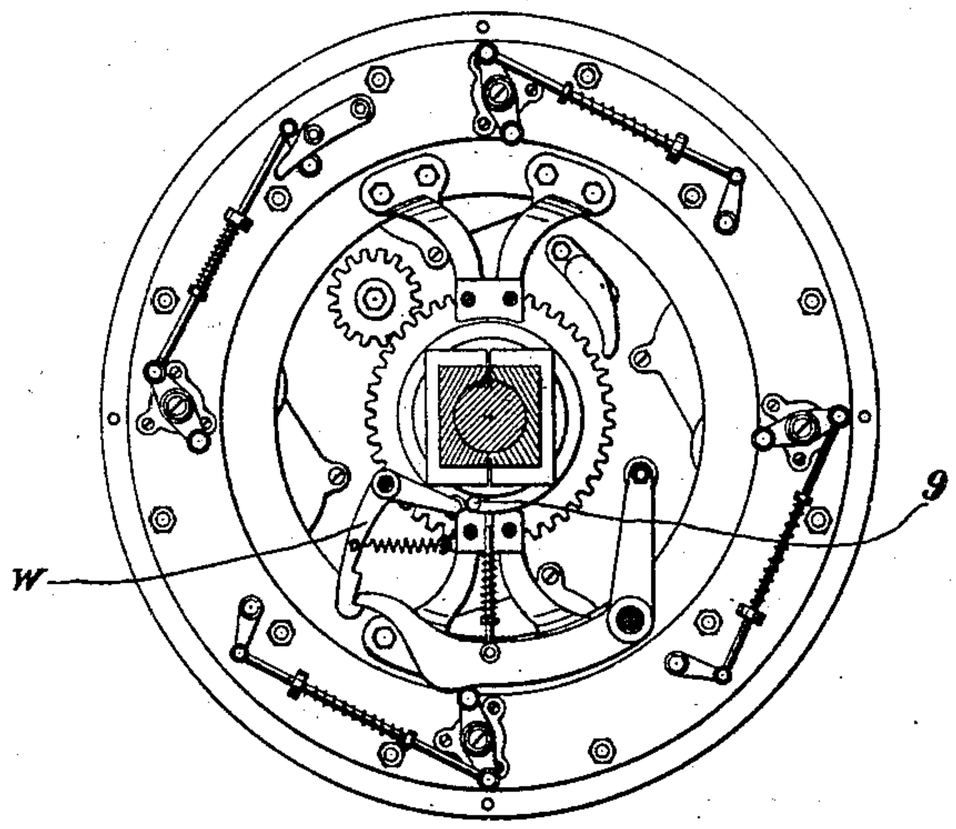


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

RALPH C. SEYMOUR, OF LARCHMONT, NEW YORK, ASSIGNOR TO GOSS PRINTING PRESS COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

PRINTING-PRESS.

No. 908,158. Specification of Letters Patent. Patented Dec. 29, 1908.

Application filed June 10, 1908. Serial No. 437,733.

To all whom it may concern:

Be it known that I, RALPH C. SEYMOUR, a citizen of the United States, and residing at Larchmont, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Printing-Presses, of which the following is a specification.

The invention relates to perfecting rotary printing presses and more particularly to devices for securing an excellent impression or print on the side printed by the second couple.

Objects of the invention are to secure high press speeds and at the same time such handling and treatment of the freshly printed side of the web during the printing of the second side as will insure high grade work; to produce an arrangement and coaction of offset devices with the press and printed web which will effect said result; to prevent accumulating and caking of ink upon the parts of the press and thereby preventing bad impression, battering of the plates, or other mischievous results.

These and other objects of invention will in part be obvious and will in part more fully appear herein.

The invention consists in the novel arrangements, combinations, parts, constructions and improvements herein shown and described.

The accompanying drawings, referred to herein and forming a part hereof, illustrate one embodiment of the invention, the same serving in connection with the description herein to explain the principles of the invention.

Of the drawings: Figure 1 is a view, somewhat diagrammatic, showing the offset web and shifting tympans run together; Fig. 2 is a view of similar kind showing the tympan sheets operative without the offset web or oil wiper mechanisms; Fig. 3 is a similar view showing the oil wiping mechanism operative, either with or without the tympans; and Fig. 4 is an elevation showing a form of tympan shifting devices.

Referring to the embodiment illustrated by way of example in the accompanying drawings, the impression cylinder of the second couple of a perfecting rotary press is indicated by the reference numeral 1 and its form cylinder by 2. The web 3 coming from the first couple freshly printed on one side is directed between the cylinders 1 and 2 to have the second side printed. One of the cylinders of the first couple is indicated generally by the reference numeral 4. The web 3 may be considered as running through the press with the arrow in Fig. 1. An offset web 5 is shown together with its supporting mechanism, comprising a roll 6 carried by a support 7 and a roll 8 upon which the offset web is wound from the roll 6. Any suitable means may be provided for giving travel at the proper speed to the offset web and in the present embodiment friction driving rolls 10, of a well-known construction, are shown for this purpose.

It will be understood that the offset web is arranged to pass through the printing couple, one side of the web being in contact with the previously printed side of the sheet or web 3 while the other side of the sheet or web 3 is being printed, that is, perfected by the cylinders 1 and 2. It will be understood also that the offset web 5 is reversibly mounted in the press frame. That is, after the web is completely wound upon either roll, it can be again led through the printing couple with the sides thereof in the same relation or reversed as desired. For this purpose, the support 7 may be detachable from the frame 11 of the press upon which it is carried. It will be seen therefore that the rolls may be taken off and interchanged and also changed end for end, the offset sheet being thus run and rerun with either face toward the freshly printed sheet or web as it passes through for the second impression. The invention contemplates also providing a surface for coacting with the other side of the offset web, that is the side away from the printed sheet or web 3, as it passes over the impression cylinder 1. Said surface may act merely as an absorbing medium for the superfluous ink that may be adherent upon the surface of the offset web 5 and which, if left thereon, changes into hard flakes or cakes. This caked ink is productive of great mischief both by producing unevennesses in the impression surface or, in other words, spoiling the "make-ready", thus marring the impression, and also by battering or producing small dents in the printing plates.

In certain of its features the invention contemplates providing an absorbing surface coacting with the reverse side of the offset web 5 which is changeable or shiftable. Portions

of the hard ink flaking off and becoming adherent upon the surface of the impression cylinder are thus not left to produce the evil effects indicated but the surface to which they are adherent is shifted or moved away, into the interior of the cylinder or otherwise. A new section of clean impression surface is thus brought into coaction with the offset web and when no longer in condition for the best service is also shifted in turn. The tympan sheet with the combination described need be shifted much less frequently than when the tympan itself coacts with the printed web. The slowing down of the press for the shifting operation therefore also occurs much less frequently and the output is accordingly increased. At the same time the offset web in contact with the printed web and passing through the printing couple is kept clear of caked ink and also in excellent condition to take the surplus ink of the web. This general arrangement is illustrated in Fig. 1 of the drawings. As shown herein the cylinder 1 is provided with shifting tympans 12. The tympan shifting mechanism may be of any particular form found convenient or desirable and as shown herein is of the general type shown and described in U. S. Patent No. 425,123. It will be understood, however, that the specific form of such mechanism is not material to the present invention. The mechanism shown in Fig. 4 will be understood from said Patent No. 425,123. By removing the pin 9, corresponding to the similarly marked part in the patent, the lever W is not actuated and the tympans are not shifted.

It will be understood further that with the devices and arrangements above described, the offset web may be run with the tympan shifting devices set inoperative and thus without the tympans being shifted, or with the tympans covered. It is, of course, in such case run as an ordinary offset web, without any slowing down of the press. It will be further understood also that if desirable in certain cases the offset web may be kept out of use and the tympan sheets run alone in the usual manner, as shown in Fig. 2. There is also shown in the drawings, and as embodying one feature of the invention, a suitable oil wiping mechanism 13 which may be rendered active or inactive with respect to the impression cylinder 1. Said oil wiping mechanism may be of any suitable or convenient form so far as concerns most features of the invention. As shown herein it comprises a fountain 14 with a fountain roll 15. Form or applying rolls 16 are further provided and a vibrator 17 working between them and the fountain roll. Suitable means for rendering said oil wiping mechanism active or inactive are provided. Said mechanism may be rendered inactive, if desired, by making the vibrator or applying rolls removable, or it might be done otherwise. The particular form of such means shown herein comprises devices for moving said mechanism to and from the impression cylinder. Said oil wiping mechanism is shown herein as mounted on guides 18 in the press frame. A screw rod 19 is also shown rotatably mounted upon the press frame 20 and in threaded engagement with a lug 21 upon the wiping mechanism 13. A handle 22 for rotating the screw rod to move the wiping mechanism may also be provided. A cam 23 is shown for operating the vibrator 17 through the lever 24 when the wiping mechanism is in the operative position with respect to the impression cylinder 1. Connected to the lever 24 is a rod 25 acted on by a suitable spring 26 for the purpose of holding the lever to its cam.

If desired, the oil wiping mechanism may be caused to act upon the surface of the tympan sheets to a very slight extent and thus a combined action may be obtained upon the surface of the offset web. The tympan sheet may thus be put in condition to absorb the superfluous ink upon the surface of the offset web, which later would cake and harden upon the surface of the web, as hereinbefore described, while at the same time the side of the offset web which contacts with the tympan sheet may be caused to exert a slightly repellent action upon the freshly used, or opposite side of the offset web as it is wound on to the roll 8. Thus the efficiency and longevity of the offset web are promoted while at the same time it acts to secure a better product at a high press speed, as a very slight action of the oil mixture is transmitted to the other side of the offset web.

A mild action of the oil wiper with the tympan sheet when the tympan is acting as the direct offset surface for the printed web may be had also. A nicely regulated action of this kind will cause the offset surface to take off surplus ink while preventing too much ink coming off and thus causing a gray print. It also serves to prevent re-offset to the printed web should the tympan surface become somewhat heavily charged just before shifting.

When work of a lower grade is desired the offset web may be removed, the shifting tympans may be protected by suitable means from the action of the oil wiping mechanism. This may be effected by their removal, by reeling them into the cylinder 1, or by covering them in a suitable manner, and the press be then run at high speed with only the oil wiping mechanism active. This general arrangement is shown in Fig. 3 of the drawings.

It will be understood that a printing press has been provided by the invention having

the various kind of offset devices described; that said devices are combined and arranged so that each may be used singly as such devices are ordinarily used, and also so that they may be used in coöperation with each other to effect an enhancement in the quality and quantity of output from the press.

A press constructed in accordance with the principles of the invention has capabilities for doing many kinds of printing and can be changed or prepared for different classes of work by adjustments or movements of parts which are quickly effected by the pressman. The press has also the capability of furnishing various qualities or kinds of work at much higher speeds than is possible with presses as ordinarily constructed.

Other advantages in addition to those specifically pointed out herein are secured which will be obvious to those skilled in the art, or will be ascertained through practice with the invention.

What I do claim as my invention and desire to secure by Letters Patent, is:

1. A printing press including in combination a form cylinder and an impression cylinder constituting a printing couple, a plurality of shiftable tympan sheets carried by the impression cylinder, means for shifting said tympans which may be set to be operative or inoperative, an offset web and its supporting mechanism, said offset web being arranged to pass through the printing couple and having one side in contact with a previously printed side of a sheet or web the other side of which is being printed by said couple, and said offset web having its other side in contact with a tympan upon the impression cylinder, said offset web being reversibly mounted so that each side may be presented in each of said relations successively, oil wiping mechanism and means for rendering it operative or inoperative with relation to the impression cylinder, and means for protecting the tympan sheets from the action of the oil wiping mechanism when same is in operative relation with the impression cylinder, said parts being constructed and arranged so that the offset web may be run with the tympan sheets, and also with the shifting devices therefor operative, or the offset web kept out of use, the shifting devices set inoperative, the tympan sheets protected and the oil wiping mechanism moved into operative relation with the impression cylinder.

2. A printing press including in combination a form cylinder and an impression cylinder constituting a printing couple, a plurality of shiftable tympan sheets carried by the impression cylinder, means for shifting said tympans which may be set to be operative or inoperative, an offset web and its supporting mechanism, said offset web being arranged to pass through the printing couple and having one side in contact with a previously printed side of a sheet or web the other side of which is being printed by said couple, and said offset web having its other side in contact with a tympan upon the impression cylinder, said offset web being reversibly mounted so that each side may be presented in each of said relations successively, and oil wiping mechanism and means for rendering it operative or inoperative with relation to the impression cylinder.

3. A printing press including in combination a form cylinder and an impression cylinder constituting a printing couple, a plurality of shifting tympans carried by said impression cylinder, an offset web arranged to pass through the printing couple and having one side in contact with a previously printed side of a sheet or web the other side of which is being printed by said couple, and said offset web having its other side in contact around a portion of the periphery of the cylinder with a tympan upon the impression cylinder, said offset web being reversibly mounted so that each side may be presented in each of said relations successively, and devices for shifting a tympan sheet when out of engagement with the offset web.

4. A printing press including in combination a form cylinder and an impression cylinder constituting a printing couple, a shiftable tympan sheet carried on said impression cylinder, an offset web arranged to pass through the printing couple having one side in contact with a previously printed side of a sheet or web the other side of which is being printed by said couple and said offset web having its other side in contact with the tympan sheet upon the impression cylinder, said offset web being reversibly mounted so that each side may be presented in each of said relations successively, and an oil wiping device and means for rendering it operative or inoperative with relation to the impression cylinder.

5. A printing press including in combination a form cylinder and an impression cylinder constituting a printing couple, a shifting tympan sheet carried on said impression cylinder, means for shifting said tympan, and an offset web arranged to pass through the printing couple and having one side in contact with a previously printed side of a sheet or web the other side of which is being printed by said couple, and said offset web having its other side in contact with the tympan sheet over a portion of the periphery of the impression cylinder, said offset web being reversibly mounted so that each side may be presented in each of said relations successively.

6. A printing press including in combination a form cylinder and an impression cyl-

inder constituting a printing couple, a plurality of shiftable tympan sheets carried by the impression cylinder, an offset web and its supporting mechanism, said offset web being arranged to pass through the printing couple and having one side in contact with a previously printed side of a sheet or web the other side of which is being printed by said couple, and said offset web having its other side in contact with a tympan upon the impression cylinder, said offset web being reversibly mounted so that each side may be presented in each of said relations successively, and oil wiping mechanism and means for rendering it operative or inoperative with relation to the impression cylinder.

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

RALPH C. SEYMOUR.

Witnesses:
JOHN D. MORGAN,
KATHARINE SEXTON.