(No Model.) 2 Sheets—Sheet 1.

H. A. W. WOOD.

PRINTING MACHINE.

No. 589,519. Patented Sept. 7, 1897.

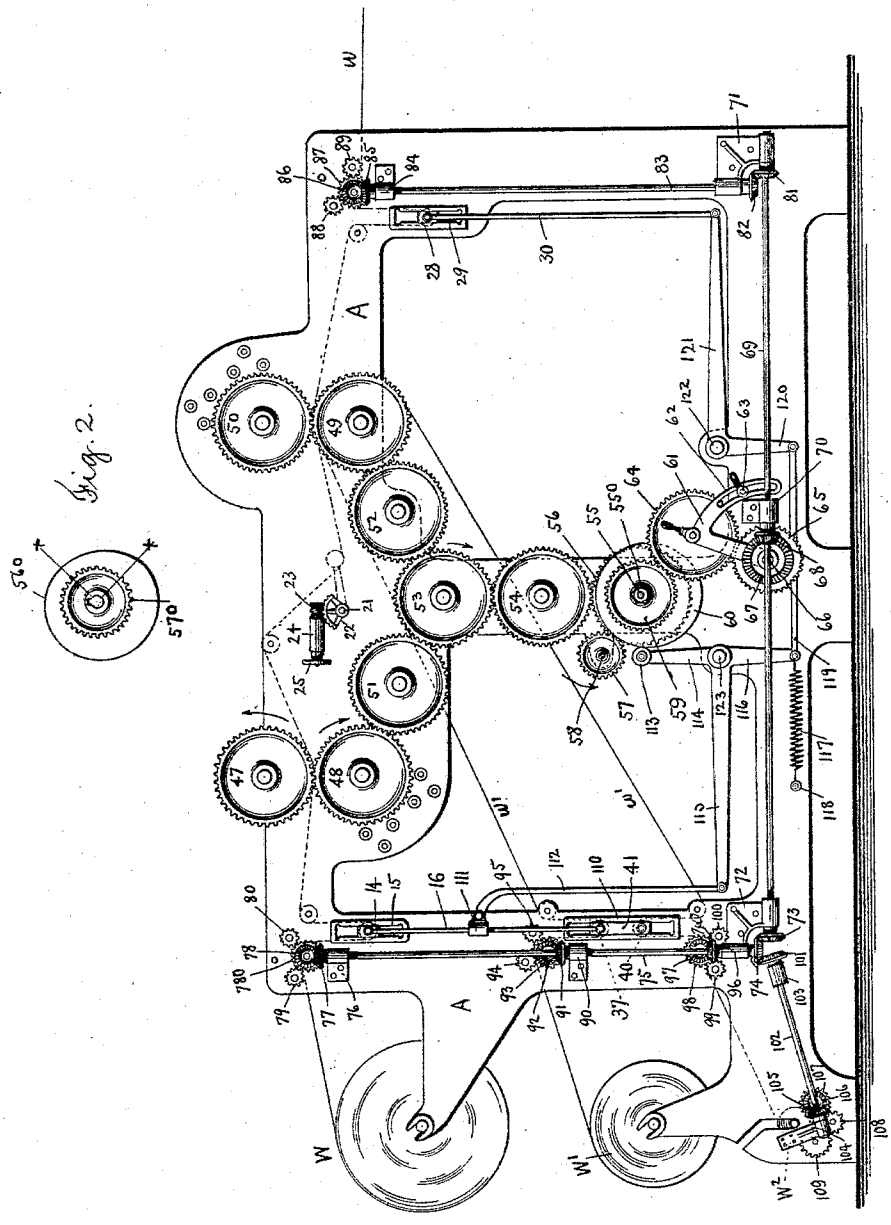


Fig. 1.

Fig. 2.

Witnesses.
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Inventor.
H. A. W. Wood,
By Smithgate & Smithgate
Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.)

2 Sheets—Sheet 2.

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PRINTING MACHINE.

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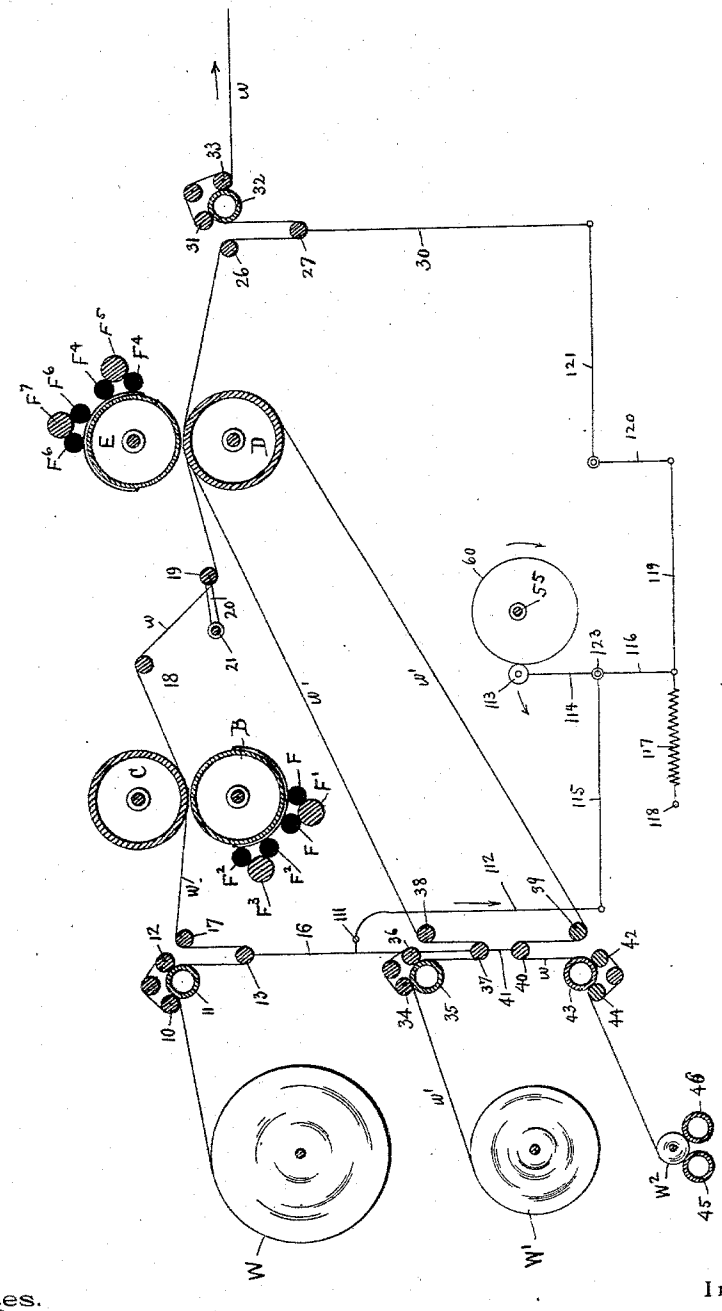


Fig. 3.

Witnesses.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY A. WISE WOOD, OF NEW YORK, N. Y., ASSIGNOR TO THE CAMPBELL PRINTING PRESS AND MANUFACTURING COMPANY, OF SAME PLACE.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 589,519, dated September 7, 1897.

Application filed January 14, 1895. Serial No. 534,893. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. WISE WOOD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Improvement in Printing-Machines, of which the following is a specification.

The aim of this invention is to improve the operation of rotary web-presses in which the web is withheld for a part of the revolution of the type-cylinders, and relates to means for providing an improved way of handling an offset-web in connection with such mechanism.

Referring to the accompanying two sheets of drawings, forming part of this application, Figure 1 is a side elevation of a machine with my invention applied thereto. Fig. 2 is an elevation of the change gear and cam, and Fig. 3 is a longitudinal sectional elevation of the mechanism.

Referring to the drawings and in detail, A represents a suitable framework in which are mounted two printing-couples, as the type-cylinder B and impression-cylinder C and the type-cylinder E and the impression-cylinder D, and arranged to act with these printing-couples are any of the usual inking devices, as F F' F^2 F^3 and F^4, F^5, F^6, and F^7.

The type-cylinders B and E are adapted, by any of the usual mechanisms not necessary here to show, to receive plates of various sizes circumferentially, so that the whole or part of the circumference of the type-cylinders may be used.

In presses of this character, when only part of the surface of the type-cylinders is to be used, the web is withheld during the non-printing period.

It has been found in this class of web-presses that during this non-printing period the offset and the combing of the second cylinder on the stationary or withheld web or the freshly-printed surface thereof is objectionable. I remedy this evil by leading an offset-web around the second impression-cylinder and moving the offset-web in unison with the web to be printed and by providing a mechanism for manipulating the offset-web separately from and independently of the mechanism for manipulating the web to be printed. By this means the offset-web will receive the combing and will itself never slide beneath the printed web.

The web to be printed, *w*, is led from a web-roll W through a continuously-running feeding-in mechanism, as 10, 11, and 12, and coacting tapes to a feeding-in looper 13. This looper 13 is mounted in suitable boxes 14, mounted in ways 15 on the frame of the machine, and connected to the two ends of the looper are the rods 16, which also connect to the boxes 41, hereinafter referred to. From the looper 13 the web is led over the roll 17, then between the first printing-couple, then over the roll 18, and then under the roll 19. One of these rolls, as 19, may be made adjustable for the purpose of obtaining register between the two printing-couples.

As shown, the roll 19 is mounted in arms 20, secured upon shaft 21, which has upon its end a sector 22, which may be actuated by the worm 23, mounted in the bracket 24, by hand-wheel 25. From the register-roll 19 the web is led through the second printing-couple to a roll 26, then to the looping-out roller 27, mounted in boxes 28, arranged in bearings 29 on the main frame. Connected to the ends of the feeding-out looper are the arms 30. From the looper 27 the web is delivered by the cylinders 31, 32, and 33 and coacting tapes to any of the ordinary delivery or feeding mechanisms. The offset-web *w'* is led in from an offset-web roll W' into a feeding-in device, as cylinders 34, 35, and 36 and suitable tapes, to a looper 37, also arranged in the arms 16. From the looper 37 the offset-web passes around a roll 38, then around the second impression-cylinder D, then around a roll 39, around a feeding-out looper 40, then through a continuously-running feeding-out device, as cylinders 42, 43, and 44 and suitable tapes, and then to a suitable rewinding device, as rollers 45 and 46, where the offset-web is rewound into a roll W^2. By this means it will be seen that I have provided an entirely independent mechanism for manipulating the offset-web, so that the entire strain due to the combing of the second impression-cylinder will not affect or displace the web to be printed. This is a very advantageous construction, as it will allow the main web to run very easily

and smoothly through the printing mechanism.

The combing of the first impression-cylinder is not so material and may be neglected, as the first impression-cylinder turns against a clean side of the web and not against a freshly-printed side of the web, as would be the case if no offset-web was used between the web to be printed and the second impression-cylinder.

I may use the same adjusting mechanism to adjust the length of a sheet printed on the main web and the feed of the offset-web, and one way of carrying this out is by the gearing shown in this case.

The printing-couples are geared together by gears 47, 48, 50, 49, 51, 52, and 53, as shown. A gear 54 meshes into gear 53, and gear 54 is driven from a gear 56, mounted on a shaft 55, which I term the "main" shaft of the machine. The gear 56 is driven by a pinion 57 from a power-shaft 58. The end of the shaft 55 is keyed, and fitting on the end of the same is a change gear and cam 59 and 60, preferably made in one integral piece, and from this changeable piece the entire web-manipulating mechanisms for both the web to be printed and the offset-web are driven. The change gear and cam may be varied by removing the nut 550.

A sweep 61, having an extending arm 62, is mounted upon a shaft 66 and carries an intermediate 64, which can be set by means of clamping device 63 to engage whatever sized gear is put upon the shaft 55. This intermediate engages a gear 65, also turning with which is a bevel-gear 67, which meshes with and drives a bevel-pinion 68, secured upon the shaft 69, mounted in bearings 70, 71, and 72.

On one end of the shaft 69 is arranged a bevel-gear 73, which meshes with a bevel-gear 74 on shaft 75, arranged in bearings 76, 90, and 96, as shown. From this shaft, by means of bevel-gears 77 and 78 and gears 79, 780, and 80, the feeding-in device for the main web is continuously driven, and by means of bevel-gears 91 and 92 and gears 93, 94, and 95 the feeding-in device for the offset-web is continuously driven. On the other end of the shaft 69 is arranged a bevel-pinion 81, which meshes with and drives a pinion 82, secured on shaft 83, mounted in bearings 71 and 84. From this shaft, by means of bevel-pinions 85 and 86 and gears 87, 88, and 89, the continuously-running feeding-out device for the main web is driven. Arranged on the shaft 75 is a bevel-pinion 760, which drives a bevel-pinion 97, and by means of gears 98, 99, and 100 the continuously-running feeding-out device for the offset-web is driven. Meshing with the gear 74 is a bevel-pinion 101, arranged on the end of the shaft 102, mounted in brackets 103 and 104, and arranged on this shaft is a bevel-pinion 105, which meshes with a bevel-pinion 106, and by means of gears 107, 108, and 109 the rewinding device for the offset-web is driven. The loopers 37 and 40 are mounted in common brackets 41, arranged in the ways 110 in the main frame, as shown. The arms 16 have suitable adjustable connections 111, to which arms 112 are connected. Bearing against the cam 60 is a roller 113, mounted in the arm 114 of the bell-crank lever 114 115. This bell-crank lever is mounted upon a shaft 123, which extends across the press and has an arm 115 arranged on the oppoiste side of the same, similar to the arm 115 shown, so that the loopers are operated simultaneously from both sides of the machine or squared. Also extending from the bell-crank lever is an arm 116, which connects by link 119 to a bell-crank lever 120 121, mounted on a shaft 122, which bell-crank lever is attached to one arm 30. An arm 121 is preferably arranged on the back side of the shaft 122 and connected to the other arm 30, so that the feeding-out looper 27 will be operated from both ends or squared. A spring 117 is arranged between the arm 116 and a stationary point 118 and serves to keep the roller 113 against the cam 60, as shown.

The change cam and gear may be removed, if desired, and another cam and gear, as 560 570, may be substituted. By this gearing, which has been described at length, it will be seen that the entire web-manipulating mechanisms, both for the web to be printed and the offset-web, are driven entirely from the change gear and cam, so that by changing one piece the length of the sheet to be printed is varied, and at the same time the proper action of the offset-web is insured.

It also will be seen that the means for controlling and intermittingly withholding the offset-web are entirely independent from the means for withholding or controlling the action of the main web, so that the strain put on the offset-web will not affect either the web to be printed or its controlling mechanism.

Many other arrangements of gearing may be made to carry out the purposes of my invention.

My invention may be applied to a press in which the web to be printed is withheld or in which only one web or a portion of the web to be printed is withheld.

The details and arrangements herein described may be greatly varied by a skilled mechanic without departing from the spirit of my invention.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination in a rotary printing-press, of controlling means for intermittingly withholding the web to be printed, an offset-web interposed between the web to be printed and the second impression-surface and separate controlling means for intermittingly withholding the offset-web, substantially as described.

2. The combination in a rotary printing-press of controlling means for intermittingly

withholding the web to be printed, an offset-web interposed between the web to be printed and the second impression-surface and separate controlling means for intermittingly withholding the offset-web so arranged that the web to be printed and the offset-web will move in harmony, substantially as described.

3. The combination with a web-printing press in which the web to be printed is intermittingly withheld, of an offset-web interposed between the web to be printed and the second impression-surface, and means for controlling the offset-web so that the same will move in harmony with the main web, consisting of continuously-running feeding-in and feeding-out devices and looping devices, substantially as described.

4. The combination with a web-printing press in which the web to be printed runs intermittingly, of an offset-web interposed between the web to be printed and the second impression-surface, means whereby the length of the sheet printed may be varied and means whereby the offset-web may be adjusted to always move in unison with the web to be printed, substantially as described.

5. The combination with a rotary web-printing press in which the web to be printed is withheld during the non-impression period, of an offset-web interposed between the web to be printed and the second impression-surface and a single adjusting mechanism arranged to vary the length of the sheet that may be printed and to adjust the movement of the offset-web so that the offset-web will always move in unison with the web to be printed, substantially as described.

6. The combination with a rotary web-printing press, of controlling mechanism for the web to be printed consisting of continuously-running feeding-in and feeding-out devices and devices arranged so that the main web may be withheld during a non-impression period, an offset-web interposed between the web to be printed and the second impression-cylinder, controlling mechanism for the offset-web, consisting of continuously-running feeding-in and feeding-out devices and loopers, and a single adjusting mechanism adapted to vary the speed and action of the controlling mechanism of both the web to be printed and the offset-web, substantially as described.

7. The combination with a rotary web-printing press, of gearing whereby the printing-couples will be continuously rotated, mechanism for withholding the web to be printed during a non-impression period, an offset-web interposed between the web to be printed and the second impression-cylinder, controlling mechanism for the offset-web arranged so that the offset-web may move in harmony with the web to be printed, and a single adjusting mechanism adapted to vary the length of the sheet printed and to adjust the action of the offset-web so that the same will always move in unison with the web to be printed, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

H. A. WISE WOOD.

Witnesses:
JAS. H. CRAFT,
WM. J. DALY.