

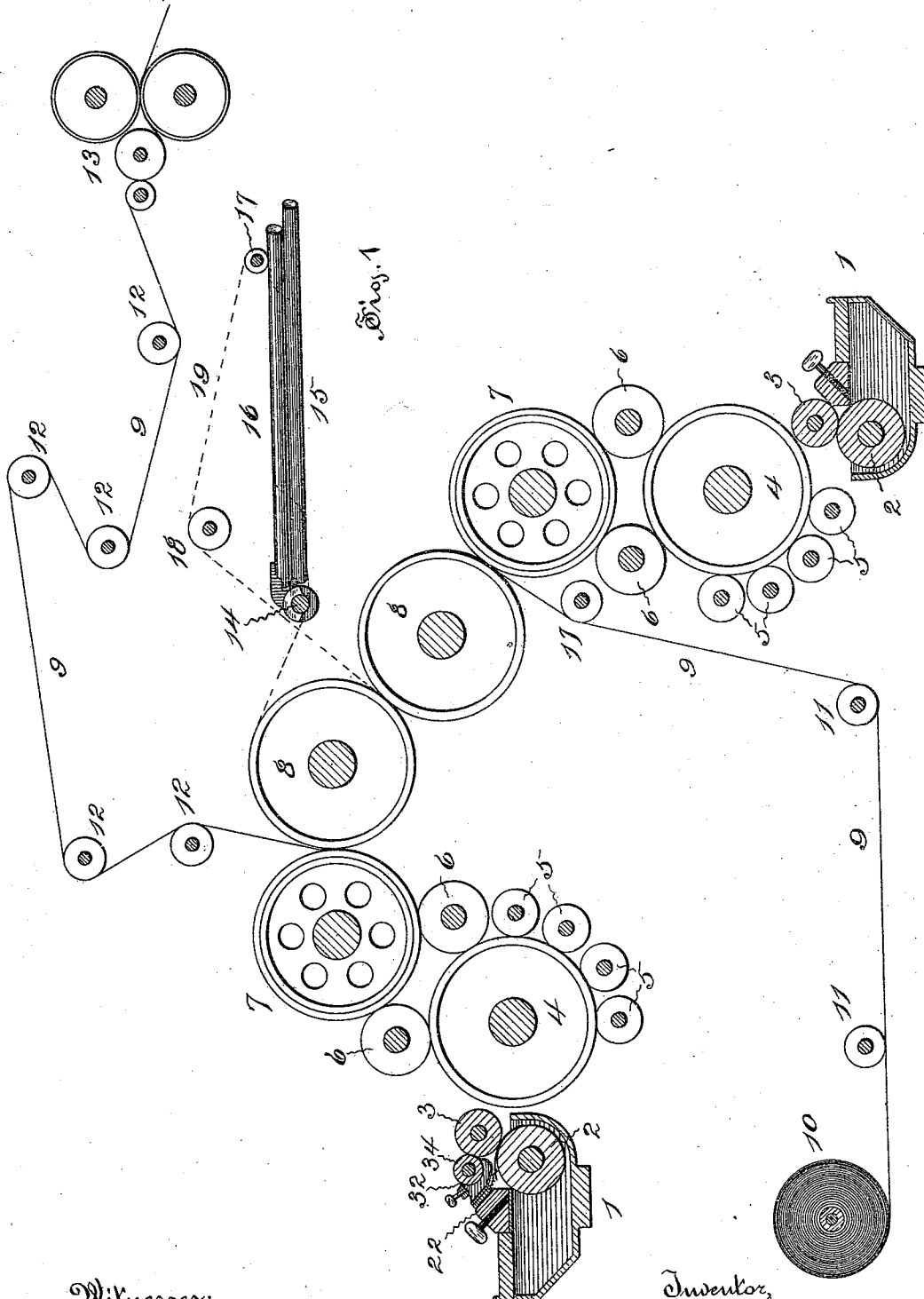
(No Model.)

5 Sheets—Sheet 1.

F. C. STOCKHOLM.
PRINTING PRESS.

No. 546,718.

Patented Sept. 24, 1895.



Witnesses:
Geo. H. Smith.
E. J. Hyde.

Inventor,
Frank C. Stockholm, by
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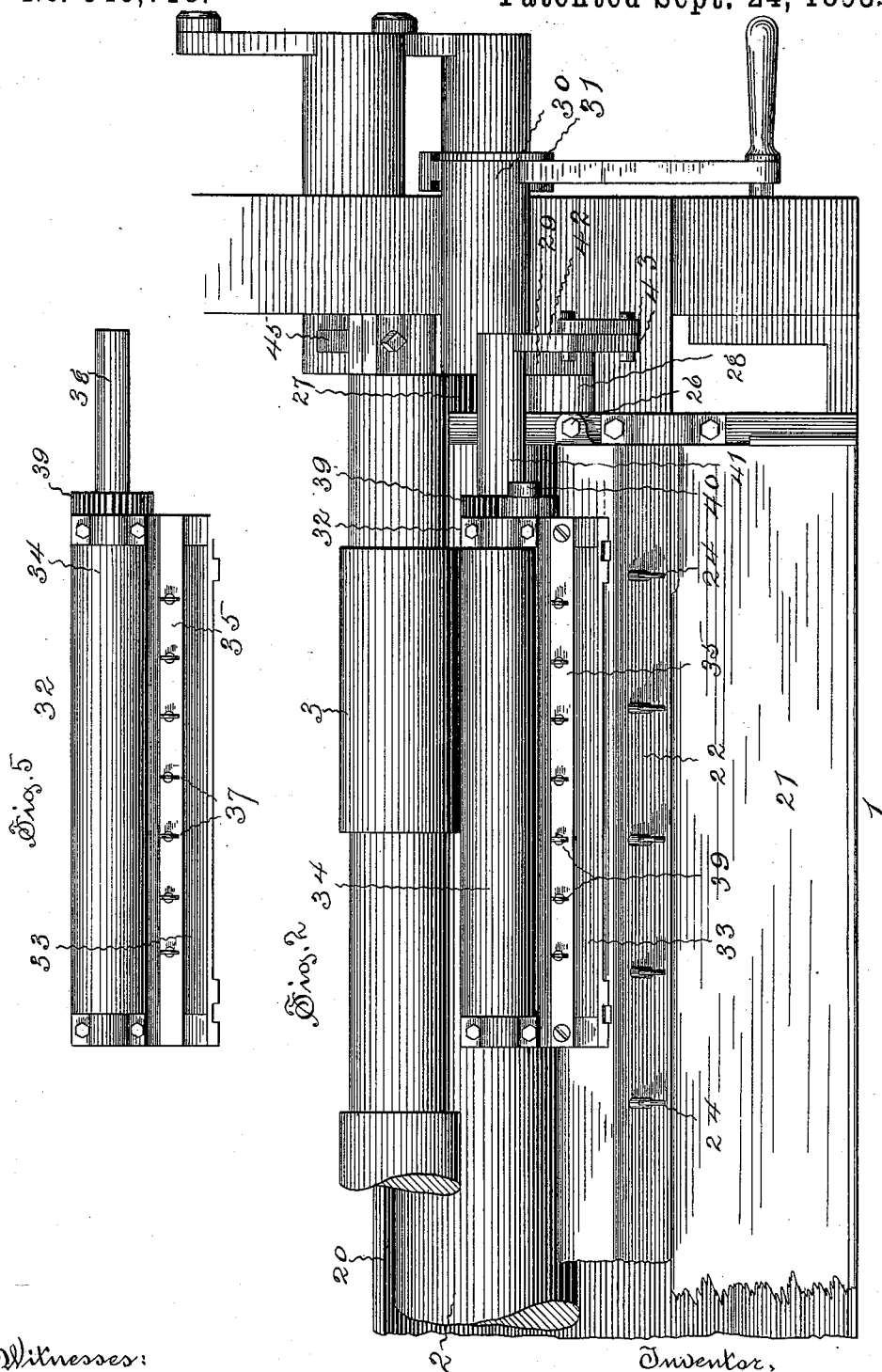
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5 Sheets—Sheet 2.

F. C. STOCKHOLM.
PRINTING PRESS.

No. 546,718.

Patented Sept. 24, 1895.



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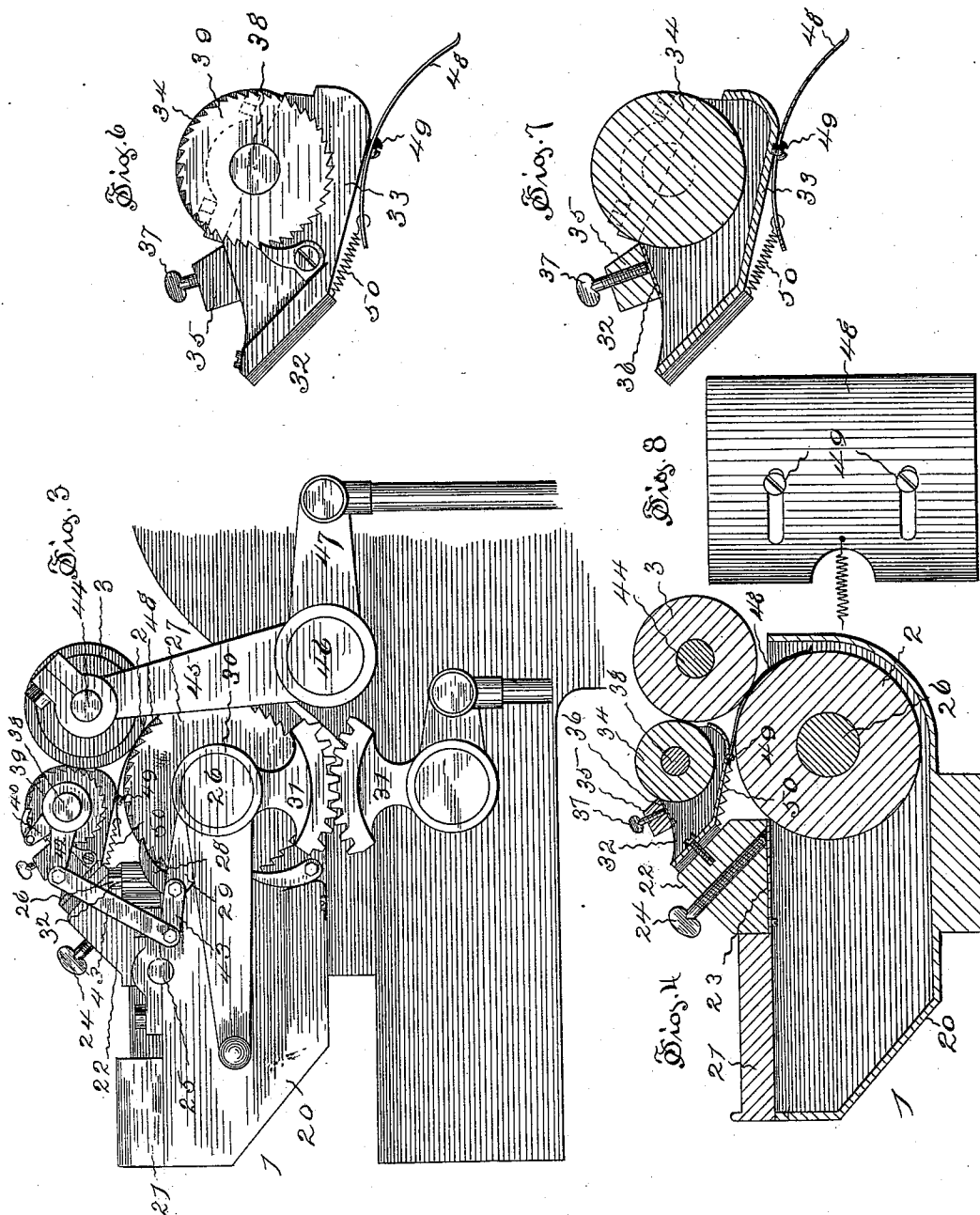
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F. C. STOCKHOLM.
PRINTING PRESS.

No. 546,718.

Patented Sept. 24, 1895.



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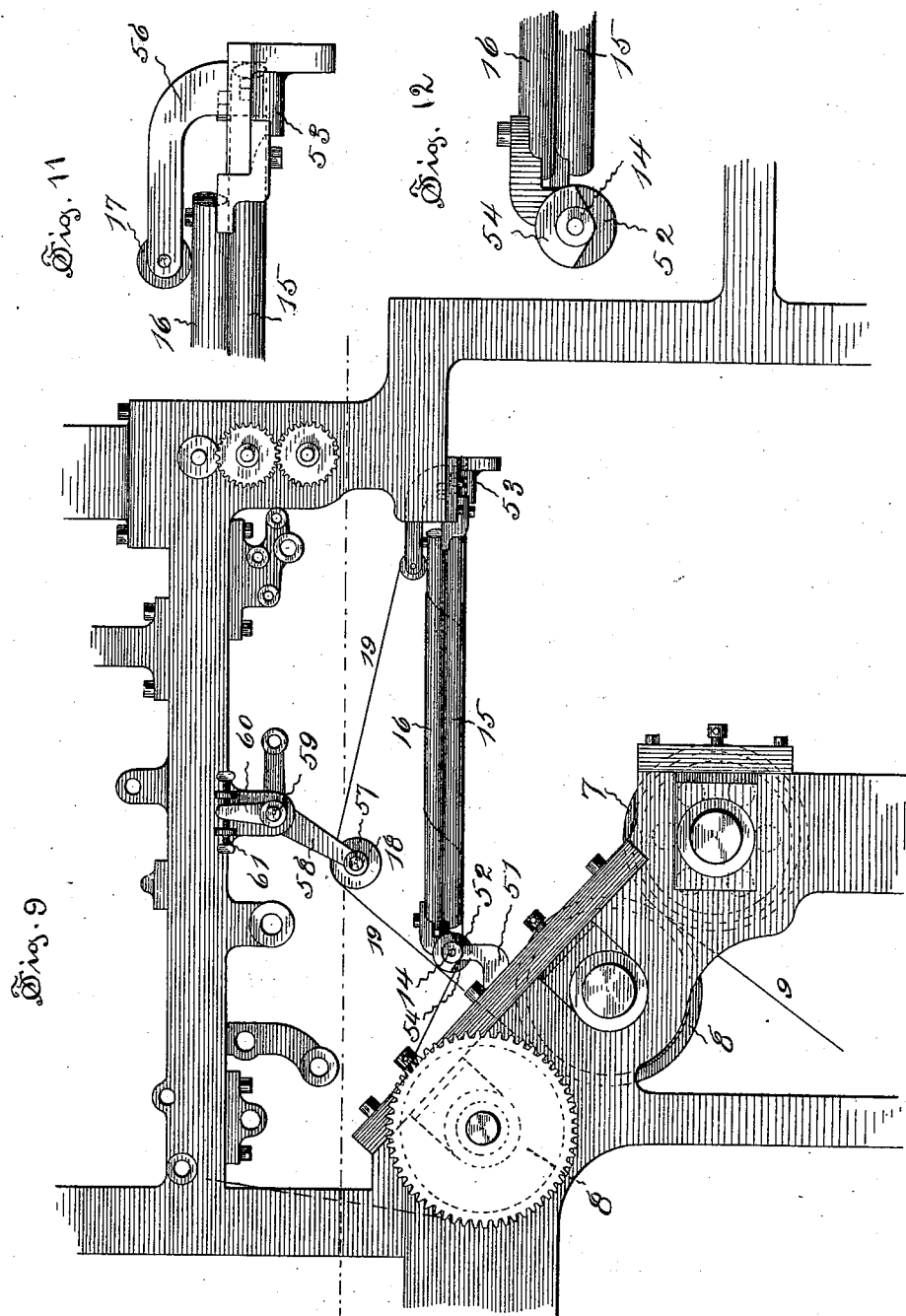
(No Model.)

5 Sheets—Sheet 4.

F. C. STOCKHOLM.
PRINTING PRESS.

No. 546,718.

Patented Sept. 24, 1895.



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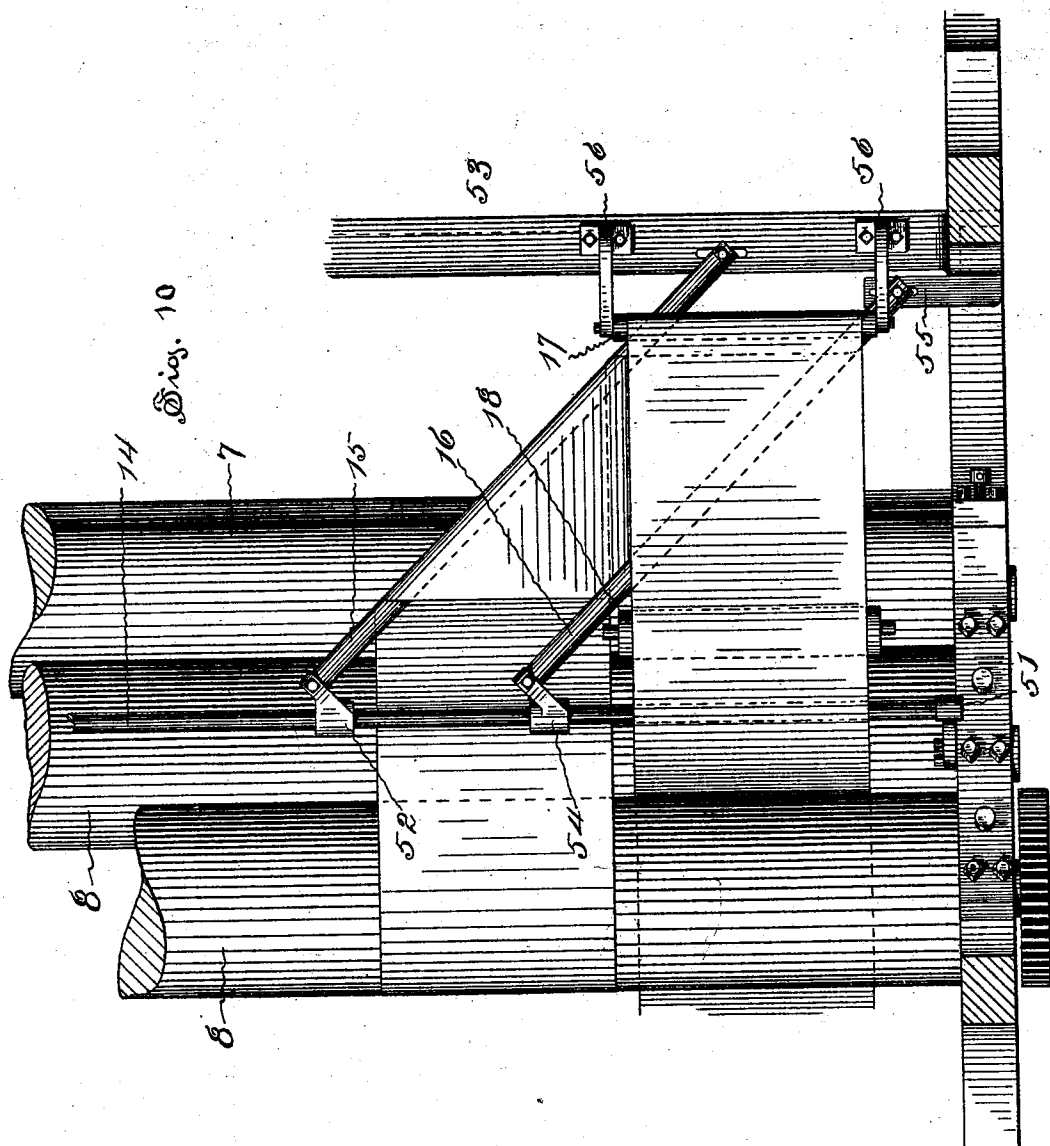
(No Model.)

5 Sheets—Sheet 5.

F. C. STOCKHOLM.
PRINTING PRESS.

No. 546,718.

Patented Sept. 24, 1895.



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UNITED STATES PATENT OFFICE.

FRANK C. STOCKHOLM, OF HARTFORD, CONNECTICUT.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 546,718, dated September 24, 1895.

Application filed June 8, 1895. Serial No. 552,111. (No model.)

To all whom it may concern:

Be it known that I, FRANK C. STOCKHOLM, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Printing-Presses, of which the following is a specification.

The invention relates to the class of web-perfecting printing-presses, and the object is to provide a simple and cheap apparatus that can be easily built with or can be quickly applied to such a press, whereby any desired column, portion of a column, or spot of the paper may be printed with an ink of different color from that used for the main body of the sheet.

This invention resides in a press having a main ink-fountain with supply-roll, distributing-cylinder, and form-roll for supplying the regular ink to the form-cylinder for printing the main body of the sheet, with a supplemental ink-fountain so attached to or connected with the press that while the supply-roll receives its regular supply of the usual ink from the main ink-fountain roll portions of the supply-roll will also at the same time receive a supplemental supply of colored ink from the supplemental ink-fountain roll. The press also having means for turning back the desired part of the paper web after the body portion has been printed with the usual ink, so that it will pass to another section of the form-cylinder where it will receive the impression of the form that has the matter which is to be printed in color in the column or spot intended to be thus conspicuously distinguished from the body of the sheet.

Referring to the accompanying drawings, Figure 1 shows a diagrammatic side elevation of the fountains, impression-cylinders, rolls, and bars of a Hoe web-perfecting double press that embodies the invention. Fig. 2 is an enlarged plan of the supplemental fountain and one end of the main fountain of such a press. Fig. 3 is an end elevation of the parts shown in Fig. 2. Fig. 4 is a sectional elevation of the main and supplemental fountains. Fig. 5 is a detail plan of the supplemental fountain. Fig. 6 is an end view of the same. Fig. 7 is a transverse section of the supplemental fountain. Fig. 8 is a bottom view of the shield that is attached to the supplemental

fountain. Fig. 9 is a side elevation of a portion of the frame of the press, showing the location of the turning-bars. Fig. 10 is a plan of one side of that part of the press which is shown in Fig. 9. Fig. 11 is a detail view showing the manner in which the outer ends of the turning-bars are supported. Fig. 12 is a detail view showing the manner of supporting the other ends of these bars.

In the views this invention is shown in connection with a Hoe double perfecting web-press of common construction—that is, such a press as is capable of printing a sixteen-page paper or two webs of fourteen ordinary columns each, and the general arrangement of the inking and printing parts and the travel of the web is illustrated in Fig. 1. In this view 1 represents the main ink-fountains that contain the ordinary ink, usually black. There are usually two of these main ink-fountains, one for each form-cylinder. 2 are the main ink-fountain rolls that are revolved in the fountains; 3 the supply-rolls that move from the fountain-rolls to the distributing-cylinders 4 and carry ink from the former to the latter, upon which the ink is distributed by the usual vibrators 5. 6 are the form-rolls that revolve in contact with the peripheries of the distributing-cylinders and the form-cylinders 7 and receive ink from the distributing-cylinders and supply it in quantities to the plates or forms on the form-cylinders, and 8 are the impression-cylinders that press the webs against the plates or forms for receiving the printing impression.

When single or double webs are used in the usual manner for common printing in a single color, the paper 9 travels from the rolled web 10 about the idle or guide rolls 11 to the first-impression cylinder, there receiving the imprint of the first form-cylinder. The paper then passes partly around the first-impression cylinder to the second-impression cylinder, and after receiving the imprint of the second form-cylinder passes around the guide-rolls 12 to the cutters 13, which separate the printed paper into sheets and pass the sheets to the ordinary folders.

When a single web and one-half a web are used, as is common in printing a twelve-page paper, and it is desired to print columns or spots in colors, according to this invention

both webs are made to travel to the first-impression cylinder and receive the usual first impression, and then after passing to receive the imprint of the second form-cylinder the full web may pass to the guide-rolls and be conducted to the cutters, as above described and shown in full lines in Fig. 1, while the one-half web may be caused to travel around the second-impression cylinder and under a bar 14, that extends across from side to side of the frame of the press. From this bar 14 the paper passes under and over the first turn-bar 15, that directs it at right angles to its former direction of movement to the second turn-bar 16, that again directs it at right angles to a direction parallel with its former movement. From this second turn-bar the paper is drawn around a roll 17, over a roll 18 and again back into the press between the first and second impression cylinders, but this time in a different line from that in which it left the second-impression cylinder. This travel of the paper is illustrated by the dotted line 19 in Fig. 1 and also in Figs. 9 and 10. After passing between the first and second impression cylinders the paper receives an imprint on the blank space left for the purpose from a new section of the second form-cylinder, the form of which is set so as to imprint in the desired column or spot that was left blank by the other forms the matter that is to be made particularly conspicuous, and this form is inked to print in the distinguishing color, usually red. The one-half web then passes around the guiding-rolls to the cutters and folders, as usual. Of course, if a single web is used it may be passed around under and over the turn bars and rolls, which may be sufficiently lengthened for that purpose, instead of being sent directly to the cutters and folders, so as to pass back into the press to a portion of the form-cylinder that is set and inked to print spots in colors, and then the paper may be sent, as usual, to the cutters and folders.

The main ink-fountains shown, Figs. 1, 2, 3, and 4, are long shallow troughs 20, that extend from side to side of the frame of the press. Over a portion of each of these is a cover 21, that may be readily removed for allowing the troughs to be filled with the regular black ink that is to be used to print the body of the sheet. Extending from end to end of the trough alongside of the cover is a bar 22, to the bottom of which is attached a plate 23, usually of sheet-steel, which is located to act as a scraper and prevent an excessive quantity of ink from being carried up by the fountain-roll. In perforations in this bar are a number of set-screws 24, that are provided for adjusting the scraper-plate toward the fountain-roll. The bar with the set-screws is supported at each end by a pivot 25, so that when the bolt 26, that holds the bar down is released the bar with the scraper may be oscillated away from the fountain-roll. The fountain-roll is mounted on shaft

26, bearing a ratchet-wheel 27, that is intermittently moved by a pawl 28, attached to an arm 29, projecting from a sleeve 30, which is oscillated by segmental gears 31, that are themselves oscillated by the usual rocker-arm and reciprocating rod in a manner common to this class of presses, Figs. 2, 3, and 4. By means of this mechanism the fountain-roll is intermittently revolved in the fountain and its surface kept well supplied with ink.

In the press embodying the invention illustrated the supplemental fountain 32 is shown as secured in place on one surface of the bar 22—that is, on the top of the main fountain which supplies ink for the second form-cylinder, Figs. 2, 3, and 4. This supplemental fountain has a shallow trough 33, that will contain the colored ink that is to be printed in the particular localities, and this trough is preferably held by screws to one of the inclined surfaces of the bar 22, in line with the form on the form-cylinder that is provided with the matter to be made conspicuous. In this trough 33 is a fountain-roll 34, that revolves in the colored ink, and along the top of the trough is a bar 35, supporting an adjustable scraper-plate 36 and set-screws 37 for adjusting the scraper, Figs. 6 and 7. On one end of the shaft 38, that supports this fountain-roll 34, is a ratchet-wheel 39, that is intermittently rotated by a pawl, which is moved by an arm 40, projecting from a sleeve 41, oscillated by an arm 42, rocked by links 43, these links being connected with the arm 29, that bears the pawl 28, which rotates the main-fountain-roll ratchet 27, Figs. 2 and 3. By means of this arrangement the main-fountain roll and the supplemental-fountain roll are rotated together by the same mechanism.

The supplemental-fountain roll 34 is only of such length as to furnish ink to the supply-roll for inking the portion of the form that is to be colored. The supply-roll 3 is mounted on a shaft 44, held in bearings at the ends of arms 45, projecting from sleeves mounted so as to oscillate on a shaft 46, the sleeves being oscillated by rocker-arms 47, that are rocked in the usual manner, Figs. 2 and 3. This mechanism oscillates the supply-roll from the fountain-roll to the distributing-cylinder, so as to carry ink from the former to the latter.

The supplemental fountain is so located in relation to the main fountain that when the supply-roll moves up and makes contact with the main-fountain roll for receiving its supply of the usual ink for the form which prints the body of the sheet the supply-roll also makes contact with the inking-roll of the supplemental fountain, Figs. 2, 3, and 4. The supply-roll usually has a portion of its surface cut away, Fig. 2, so as to take ink from the supplemental-fountain roll only in line with the portion or portions of the form that are to print in colors, and attached to the under side of the supplemental fountain and

curved down over the main-fountain ink-roll, is a shield 48, that prevents the supply-roll from making contact with the main-fountain ink-roll and becoming smeared with the black ink in that locality where it is designed that it should receive the colored ink, Figs. 3 and 4. This shield 48 is made of a thin sheet of metal and is preferably held to the supplemental fountain by screws 49, that pass through slots in order that the shield may have a limited movement. A spring 50 is connected to the shield to draw it in one direction, Figs. 6, 7, and 8.

When the supply-roll moves up for taking its supply of ink from both the main-fountain roll and the supplemental-fountain roll, it makes contact with the periphery of the main-fountain roll for receiving the black ink along its length except where the shield is interposed, and there it makes contact with the shield and also with the roll of the supplemental fountain for taking a supply of colored ink. The main-fountain roll is revolved, as above specified, when the supply-roll is up and presses the curved shield against its surface, and then this rotation of the main-fountain roll causes the shield to be drawn forward with it, which, of course, insures that the supply-roll shall revolve so as to properly take its supply of ink from the main-fountain roll and also from the supplemental-fountain roll. When the supply-roll moves away to carry the ink to the distributing-cylinder, the frictional pressure on the shield being released, the shield is drawn back to normal position by its spring, Figs. 3, 4, 6, 7, and 8. By means of this arrangement the usual ink is taken from the main-fountain roll for inking the form for the main body of the sheet, as usual, and at the same time the same supply-roll takes colored ink from the supplemental-fountain roll for inking that portion of the form on the form-cylinder that is to print the matter in color, the shield preventing the contact between the supply-roll and both the colored-ink roll and the black-ink roll along the same portion of the surface of the supply-roll, and the supply-roll being cut away for a short distance prevents any carrying of the two different colors of ink to the distributing-cylinder in such manner that they would become intermixed by the action of the spreading vibrators.

As previously stated, when the web is to be printed in the regular manner with one color the paper travels from the second-impression cylinder to the rollers that conduct it to the cutters and folders; but when a portion is to be printed in color that portion of the web that is to receive the color is made to pass around the second-impression cylinder and under the bar 14, which is supported at its ends by bearings in brackets 51, secured to the side frames of the press, Figs. 9 and 10. After passing under this bar 14 the web passes under and over the first turn-bar 15, which extends at an angle of forty-five de-

grees with the bar 14 and is supported at one end by the bracket 52 on the bar 14 and at the other end by a cross-bar 53 of the frame. From this first turn-bar 15 the paper passes under and over the second turn-bar 16, that extends parallel with the first turn-bar, and therefore is at an angle of forty-five degrees with the bar 14. This latter bar is supported at one end by the bracket 54 on the bar 14 and at the other end by the bracket 55, secured to the side frame of the press. These bars direct the paper as it comes from the second-impression cylinder first at right angles and then back in the same direction, but in a different line. From the second turn-bar 16 the paper passes under the roll 17, that is held by brackets 56, projecting from the cross-bar 53 of the frame, and from this latter roll the paper passes over the roll 18 and back into the press between the first and second impression cylinders, Figs. 9 and 10. The ends of the turn-bars are preferably held by bolts passing through slots so that they may be quickly adjusted to the proper angle to turn the web from one line to another, and the roll 18 is preferably held by bearings 57, that are formed in the ends of levers 58, held to a shaft 59, having an arm 60, that may be adjusted by set-screws 61, Fig. 9, in order that the length of travel of the paper may be accurately determined to insure that the spaces left blank will correctly register with the form that is to print in colors.

By means of this simple apparatus herein shown and described, that can be readily and conveniently built with or applied to a press, one, two, or more columns, portions of columns, or spots can be accurately printed in colors to render them more conspicuous than the main body of the sheet. This arrangement does not require the building of a large amount of machinery nor a supplemental press. Its use obviates the task of cleaning out the ink-fountains and running the paper through a second time, as has heretofore been necessary, for when it is desired to print a column this attachment may be used and the paper run back before it is sent to the cutters and folders. It also obviates the necessity of the use of an additional press or impression and form cylinders. The adjustments of the press as originally set up need not be disturbed and the regular supply-rolls can be used; but with the mechanism shown and described at least five columns of a web may be imprinted in colors, or any spots may thus be printed to make certain matter more conspicuous.

As the part of the press which is applied to accomplish the object of this invention is readily and accurately adjusted and need not be disturbed, and as it is not required to change the adjustment of the other parts of the press, the colored matter can be accurately struck into the space left for it when the main body of the paper is being printed.

I claim as my invention—

1. In combination with the inking and printing mechanism of a web printing press, a main ink fountain extending the full width of the press and containing ink of one color, a supplemental ink fountain located adjacent to the main ink fountain on the same side of the press for supplying ink to the same cylinder, extending only a portion of the width of the press and containing ink of another color, and means for preventing the ink from the main ink fountain from being supplied in line with the ink supplied by the supplemental ink fountain, substantially as described and for the purpose specified.

2. In combination with the supply roll, distributing cylinder, form roll and form and impression cylinders of a web printing press, an ink fountain extending the full width of the press for supplying ink to a supply roll, a supplemental ink fountain located adjacent to the main ink fountain on the same side of the press, extending only a portion of the width of the press for supplying ink of a different color to a portion of a supply roll, and means for preventing the ink from the main ink fountain from being supplied in a line with the ink supplied by the supplemental ink fountain, substantially as specified.

3. In combination with the inking and printing mechanisms of a web printing press, a main ink fountain extending the full width of the press and containing ink of one color, a removable supplemental ink fountain extending only a portion of the width of the press and containing ink of another color, a shield located between the main ink fountain discharge and the supplemental ink fountain discharge for preventing the supply of ink from the main ink fountain in line with the supplemental fountain, and turn bars for directing paper from one line of movement back into the press in a reversed direction in another line of movement, substantially as specified.

4. In combination with a supply roll, distributing cylinder, form roll and form and impression cylinders of a web printing press, an ink fountain extending the full width of the press for supplying ink to a supply roll, a removable supplemental ink fountain extending only a portion of the width of the press for supplying ink of a different color to the same supply roll, a shield adjacent to the supply roll for preventing the main ink fountain from supplying ink to that portion of the supply roll which is supplied with ink by the supplemental ink fountain, and turn bars in the press for directing the web from one section of the impression cylinder to another section, substantially as specified.

5. In combination with the supply roll, distributing cylinder, form roll and form and impression cylinders of a web printing press, a main ink fountain extending the full width of the press and adapted to supply ink to the entire length of a supply roll, and a supplemental ink fountain extending only a part of

the width of the press and adapted to supply different colored ink to a portion of the same supply roll, and a shield adjacent to the supply roll for preventing the main ink fountain from supplying ink to that portion of the supply roll which is supplied with ink by the supplemental ink fountain, substantially as specified.

6. In combination with the supply roll, distributing cylinder, form roll and form and impression cylinders of a web printing press, a main ink fountain for supplying ink to a supply roll, and a supplemental ink fountain mounted on the main ink fountain for supplying ink of a different color to the supply roll, substantially as specified.

7. In combination with the supply roll, distributing cylinder, form roll and form and impression cylinders of a web printing press, a main ink fountain for supplying ink to the supply roll, and a supplemental ink fountain for supplying ink of a different color to the same supply roll, and a shield located over a portion of the main fountain roll to prevent that portion from making contact with the supply roll, substantially as specified.

8. In combination with the supply roll, distributing cylinder, form roll and form and impression cylinders of a web printing machine, a main ink fountain having a fountain roll for supplying ink to the supply roll, a supplemental ink fountain having a fountain roll for supplying ink of a different color to the same supply roll, and a shield located over a portion of the main fountain roll to prevent that portion from making contact with the supply roll, said supply roll having a portion of its periphery cut away to prevent an intermixture of the different inks, substantially as specified.

9. In combination with the supply roll, distributing cylinder, form roll and form and impression cylinders of a web printing press, a main ink fountain having a fountain roll for applying ink to the supply roll, a supplemental ink fountain having a fountain roll for supplying ink of a different color to the same supply roll, and a movable shield located over a portion of the main fountain roll to prevent that portion from making contact with the supply roll, said shield being adapted to be moved in one direction by the rotation of the main ink fountain roll and in the opposite direction by a spring, substantially as specified.

10. In combination with the supply roll, distributing cylinder, form roll and form and impression cylinders of a web printing press, a main ink fountain having a fountain roll mounted on a shaft for supplying ink to the supply roll, a supplemental ink fountain mounted adjacent to the main fountain and having a fountain roll for supplying ink to the supply roll, and lever connections between the main fountain roll shaft and the

supplemental fountain roll shaft whereby both shafts are rotated by the same mechanism, substantially as specified.

5 11. In combination with the supply roll, distributing cylinder, form roll and form and impression cylinders of a web printing press, a main ink fountain for supplying ink to the supply roll, a supplemental ink fountain mounted on the main ink fountain for supplying ink of a different color, to a portion of the same supply roll and a pair of turn bars extending parallel with each other at an angle of forty five degrees to the line of movement of the paper around the impression cylinders, substantially as specified.

5 12. In combination with an ink fountain and supply roll of a printing press, a supplemental ink fountain consisting of an ink

trough, a rotatable fountain roll, an adjustable ink scraper, and a shield extending outwardly from the supplemental fountain, substantially as described and for the purpose specified. 20

13. In combination with the ink fountain and supply roll of a printing press, a supplemental ink fountain consisting of a trough, a rotatable fountain roll in the trough, an adjustable ink scraper borne by the trough, a thin shield loosely connected with the bottom of the trough, and a spring for retaining the shield in normal position, substantially as described and for the purpose specified. 25 30

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