

No. 801,577.

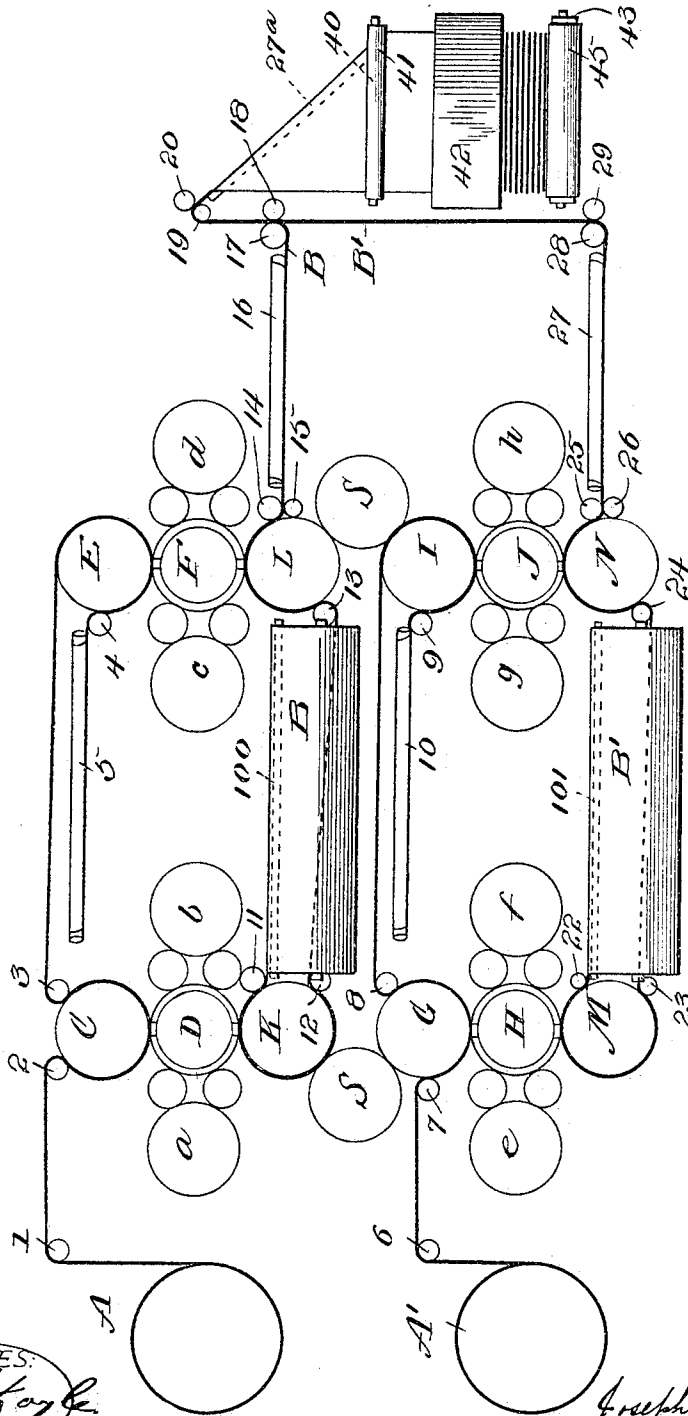
PATENTED OCT. 10, 1905.

J. L. FIRM.
PRINTING PRESS.

APPLICATION FILED FEB. 2, 1905.

4 SHEETS-SHEET 1.

Fig. 1.



WITNESSES:

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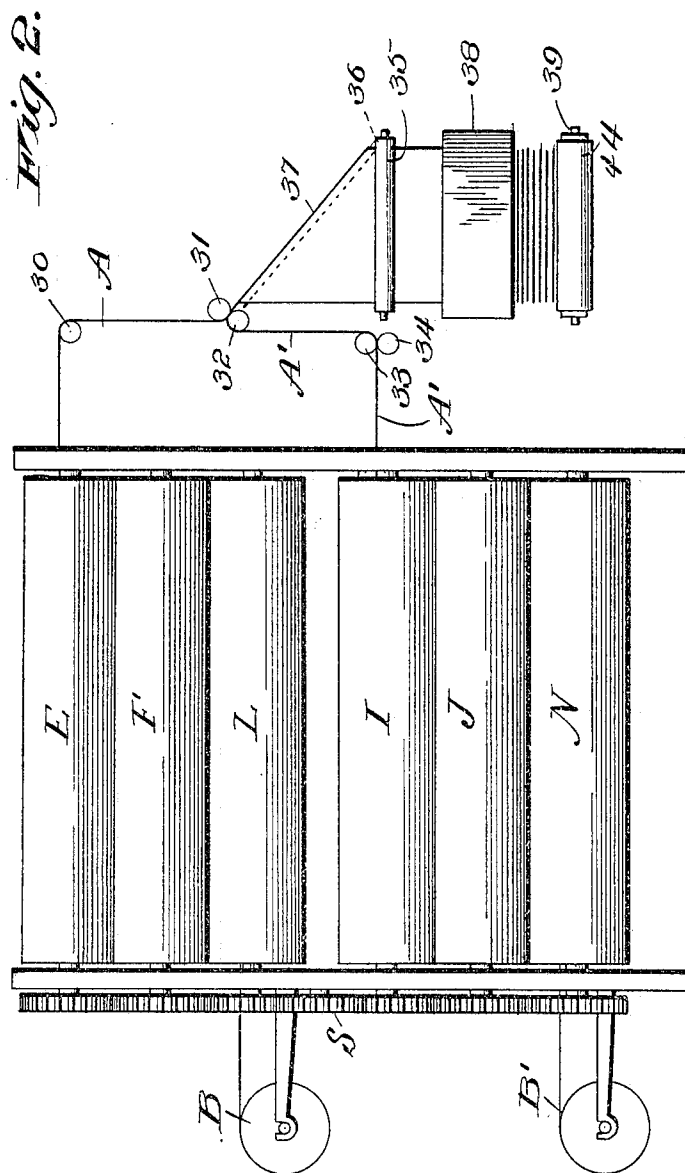
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4 SHEETS—SHEET 2.



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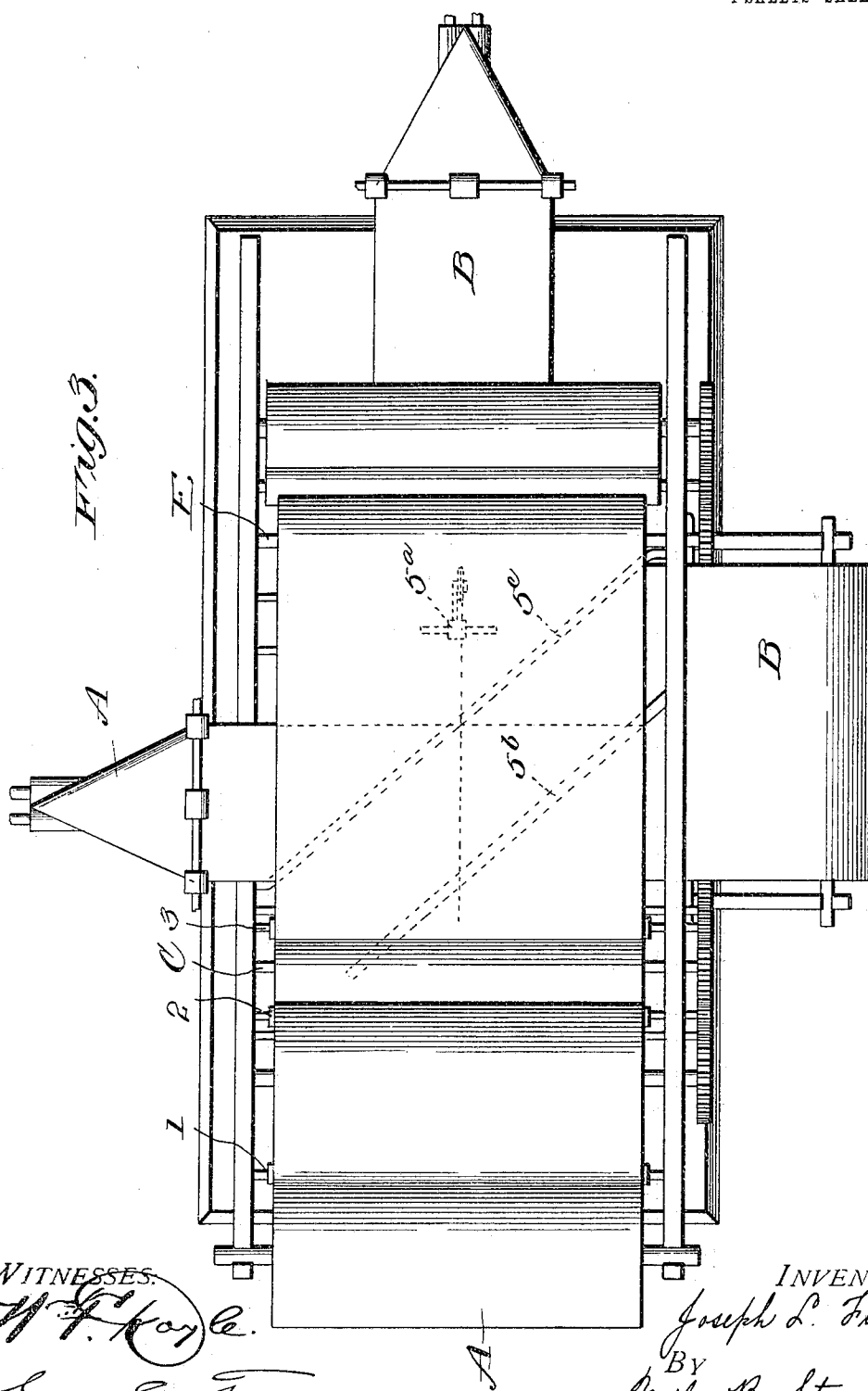
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. 6.

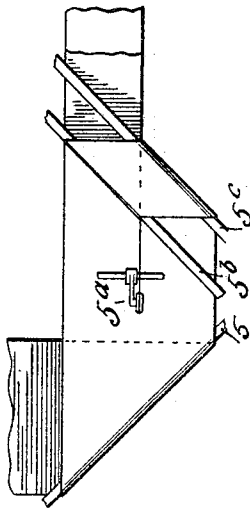


Fig. 7.

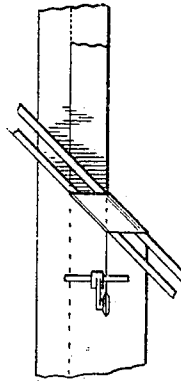


Fig. 4.

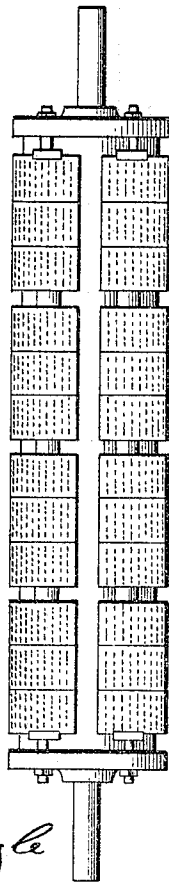
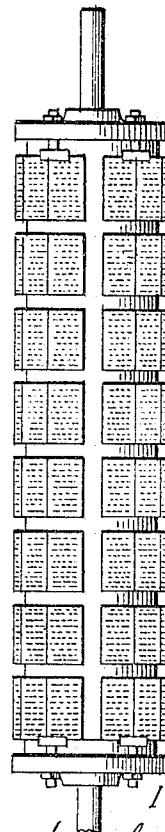


Fig. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOSEPH L. FIRM, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE GOSS PRINTING PRESS COMPANY, OF CHICAGO, ILLINOIS.

PRINTING-PRESS.

No. 801,577.

Specification of Letters Patent.

Patented Oct. 10, 1905.

Application filed February 2, 1905. Serial No. 243,862.

To all whom it may concern:

Be it known that I, JOSEPH L. FIRM, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Printing-Presses, of which the following is a specification.

My invention relates to an improvement in printing-presses, and comprises the novel features hereinafter described, and particularly pointed out in the claims.

The press is particularly an improvement on the press patented to me, No. 677,818, dated June 18, 1901.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

With my present invention the same number of pages may be printed by the employment of just half the number of forms. For instance, when four copies of sixteen-page newspapers ordinarily require sixty-four forms or plates they may on my present press be printed from thirty-two forms or plates. In addition by the use of my present invention supplement pages may be printed and assembled as separate signatures.

In many of the large newspaper-offices the time consumed in making the necessary matrices is considerable and is a constant expense.

In the accompanying drawings, Figure 1 is a diagrammatic side sectional elevation of the press. Fig. 2 is an end elevation. Fig. 3 is a plan. Figs. 4 and 5 are plans of form-cylinders, showing two ways of grouping the forms. Figs. 6 and 7 are details in plan showing the manner of combining the different web-sections.

The construction and operation will be evident from the following description, showing the travel of the webs.

The web A passes over the rollers 1 2 to impression-cylinder C and is printed upon by form-cylinder D. Thence it passes over the roller 3 to impression-cylinder E and is printed upon the opposite side by form-cylinder F, thence over the roller 4 and over the bar 5 and is slit by the slit 5^a, and thence over the bars 5^b and 5^c, thence over the roller 30 and between 31 and 32, where it meets the web A'. This web A' has passed from its

roll over the rollers 6 and 7 to impression-cylinder G and is printed upon by form-cylinder H. Thence it passes over the roller 8 to impression-cylinder I and is printed upon its opposite side by form-cylinder J, thence over the roller 9 and over the bar 10 and is slit by a slit, and thence over turning bars and between the rollers 33 and 34, thence over the roller 32, when it meets the web A and passes with it between the rollers 31 and 32 over the former 37, thence between the rollers 35 and 36 to the folding-cutter 39, thence to the roller 39, which delivers the papers folded in one product over an apron 44. The sets of printing mechanisms above described have an end feed of the web and side delivery. They are associated with other sets having a side feed and end delivery, now to be described. The web B is placed at the side of the machine, and the web passes over a roller to a turning-bar 100, thence under a roller 11 to impression-cylinder K and is printed upon by form-cylinder D. Thence it passes over the roller 12 and under roller 13 to impression-cylinder L and is printed upon its opposite side by form-cylinder F. Thence it passes under the roller 14 and is slit by a slit 15. Thence it passes over the bar 16 and between the rollers 17 and 18 and over 19 and under 20, where it meets the web B'. This passes from its roll at the side of the machine adjacent the lower group over a roller to a bar 101, thence under a roller 22 to impression-cylinder M and is printed upon by form-cylinder H. Thence it passes over the roller 23 and over 24 to impression-cylinder N and is printed upon by form-cylinder J on its opposite side. Thence it passes under the roller 25 and is slit by the slit 26. Thence it passes over the bar 27 between the rollers 28 and 29, thence between the rollers 17 and 18, where it meets the web B and passes with it between the rollers 19 and 20 to the former 27^a, where it is folded longitudinally, thence between the rollers 40 and 41 to the folding-cutter 42, thence to the apron 45, which passes over a roller 43. These mechanisms make four copies of sixteen-page papers complete.

a b c d e f g h are inking-cylinders of the ordinary construction; but to make the plate-cylinders more easy to get at the inking-cylinders *a, d, e, and h* may be removed in the

manner shown in United States patent to me, dated May 8, 1900, No. 648,938.

By the United States patent granted to me and dated June 18, 1901, No. 676,816, I show
 5 two printing mechanisms side by side. In practice I find that space required is quite an object, where it is an easy matter to get head-
 room, but not so easy to get space, and to accomplish this object I place the different print-
 10 ing-couples over the other and gives me a more compact machine. Also in placing the folders one at the side and one at the end is quite an advantage. In printing ten - page
 papers two quarter - width webs are used,
 15 one in each half of the press, and in making twelve-page papers two half-width webs are used, and no slitting or second turning of the webs is required. In making fourteen-page
 papers two three-quarter-width webs are used,
 20 which are slit and turned, as in making eight-page papers and as illustrated in Fig. 7, the webs A' and B' making four copies of six-
 page papers and being combined with the webs A and B, which are producing eight-
 25 page paper, in the same manner in which the webs are combined when producing sixteen-
 page papers. In all sizes of papers eight pages are printed on one half of the press and the remainder upon the other half, and if the
 30 remainder is less than eight pages a web of less than full width is used for their production, as above stated. In printing eight-page
 papers one side only of the press might also be used if additional folding mechanisms were
 35 provided. The respective couples in both upper and lower groups are geared together by gears, (shown at S.)

In Fig. 4 the imposition of forms upon the form-cylinder is shown such as would be used
 40 in printing ordinary newspapers. In Fig. 5 forms of a smaller size are shown, such as would be used in printing a magazine supplement, which would be folded separately and
 inserted within the paper, but not pasted
 45 thereto, so that it may be removed for reading, if desired. The division of the plates on this cylinder is such that two or more of the plates occupy the same space as one of those
 such as shown in Fig. 4.

50 With this machine it is possible to print eight-page papers with one section and to print four, six, or eight page papers with the other section, which shall be folded and inset
 with the first section and yet be independent
 55 thereof, so that it may be removed for reading.

What I claim as new, and desire to secure by Letters Patent, is--

1. In a printing-press, the combination with
 60 two pair of superposed printing-couples each consisting of a single form-cylinder and two impression-cylinders, of means for conducting
 two webs through each pair, to print both
 sides thereof, and means for associating two

webs, one from each pair, and delivering the
 same at one side of the machine, and for associating the other two webs and delivering
 the same from another side of the machine.

2. In a printing-press, the combination with
 two superposed groups of printing mechan-
 70 isms, of means for conducting two webs through each of said mechanisms and print-
 ing both their sides, and means for associating and delivering together one web from
 each group.

3. In a printing-press, the combination with
 two superposed pairs of printing-couples each
 couple having one form-cylinder and upper
 and lower impression-cylinders, of two web-
 80 rolls at the end of the machine and two at the side, feeding respectively to the upper and
 lower impression-cylinders of each pair, to be printed on both sides by the form-cylinders,
 and means for delivering the end webs from
 the side of the machine and the side webs
 85 from the end thereof.

4. In a printing-press, the combination with
 two superposed groups of printing mechan-
 isms, each group having upper and lower sets
 of perfecting-couples, of end feeding-rolls
 90 supplying webs to one set of couples and side feeding-rolls supplying webs to the other set,
 and means to associate, cut and fold the webs from the respective upper sets, and from the
 respective lower sets, and to deliver the same
 95 separately.

5. In a printing-press, the combination with
 two superposed groups of printing mechan-
 isms each comprising two perfecting form-
 cylinders, and upper and lower impression-
 100 cylinders for each form-cylinder, of means to feed one pair of webs between the upper im-
 pression and the form cylinders of each group, and another pair between the lower im-
 pression and the form cylinders of each group,
 105 and means to separately associate and deliver the webs of the respective pairs.

6. In a printing-press, the combination with
 two superposed groups of printing mechan-
 isms, each group comprising a pair of couples,
 and each couple comprising a form-cylinder
 110 and upper and lower impression-cylinders, forming in all, two perfecting mechanisms,
 in each group, the respective couples of the upper group being geared to the respective
 115 couples of the lower group, of means to feed separate webs to each perfective mechanism,
 and means to deliver the same together.

7. In a printing-press, the combination with
 two superposed groups of printing mechan-
 isms, each group comprising a pair of couples,
 and each couple comprising a form-cylinder
 120 and upper and lower impression-cylinders, forming in all, two perfecting mechanisms,
 in each group, the respective couples of the upper group being geared to the respective
 125 couples of the lower group, of means to feed separate webs to each perfecting mechanism,

means to associate, cut and fold the four webs into two separate deliveries, each containing one web from each group.

5 8. In combination, two double printing-couples each composed of two form and four impression cylinders, all cylinders being parallel and each couple placed above the other in the same frame, turning-bars and a folding mechanism whereby half of the product of
10 each couple is delivered at the side and the

other half at the end of the machine, substantially as described.

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

JOSEPH L. FIRM.

Witnesses:

SIGNA FELTSKOG,
H. G. BATCHELOR.