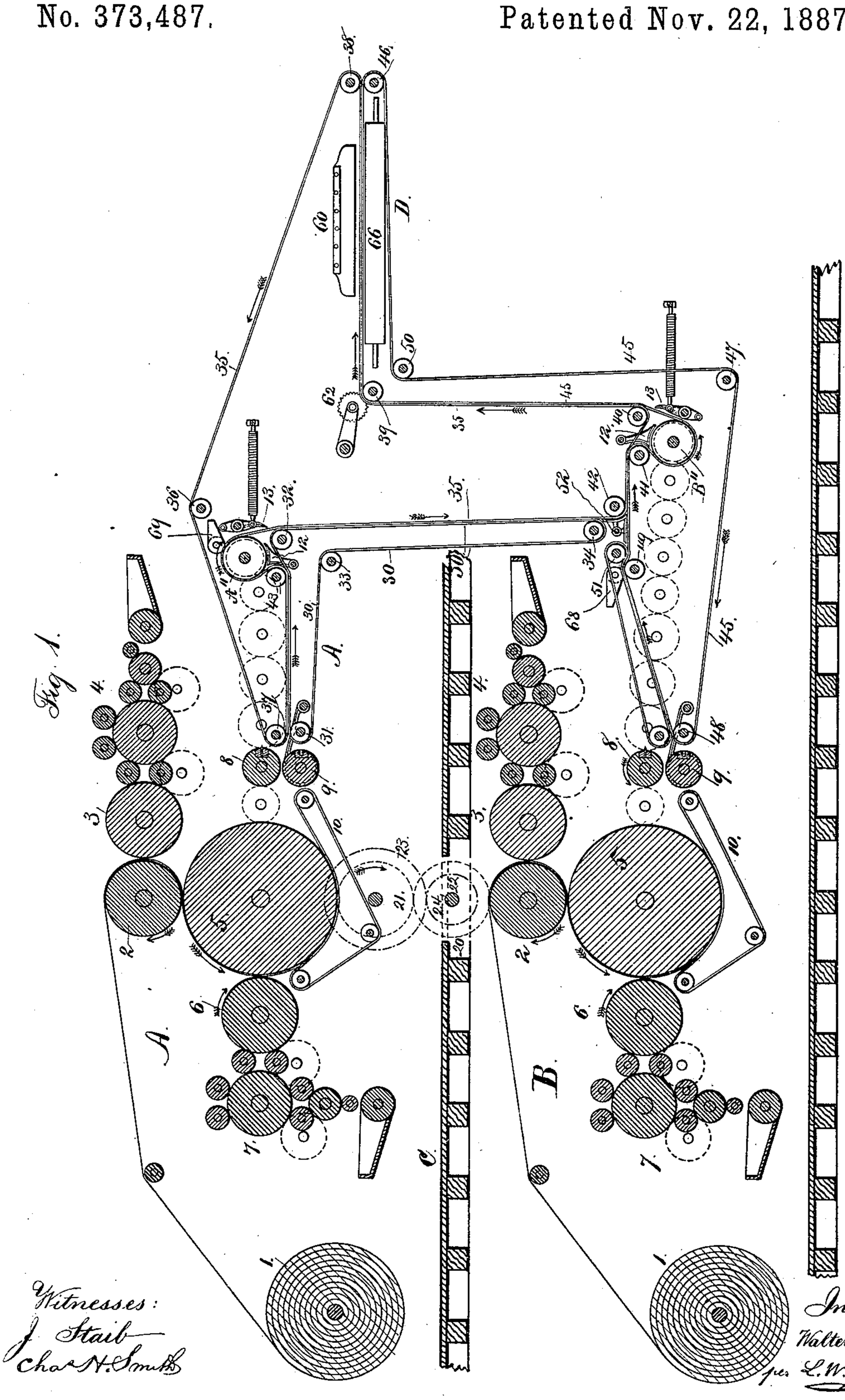
(No Model.) 2 Sheets—Sheet 1.

W. SCOTT.

ROTARY PRINTING MACHINE.

No. 373,487. Patented Nov. 22, 1887.



(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

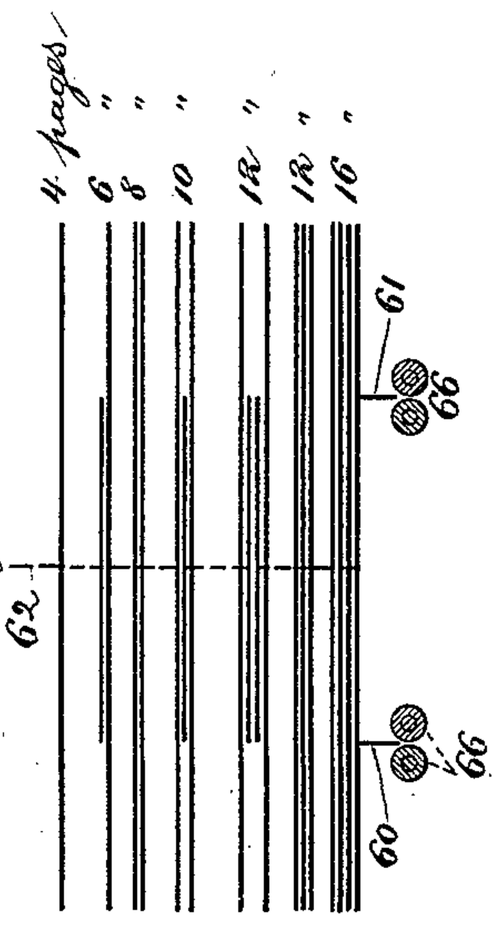


Fig. 4.

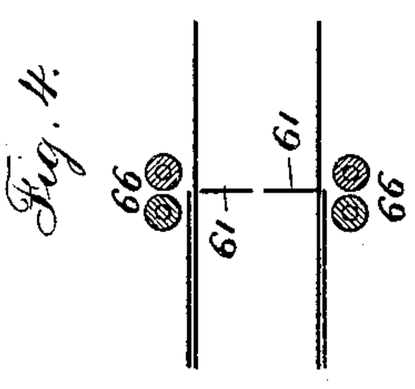
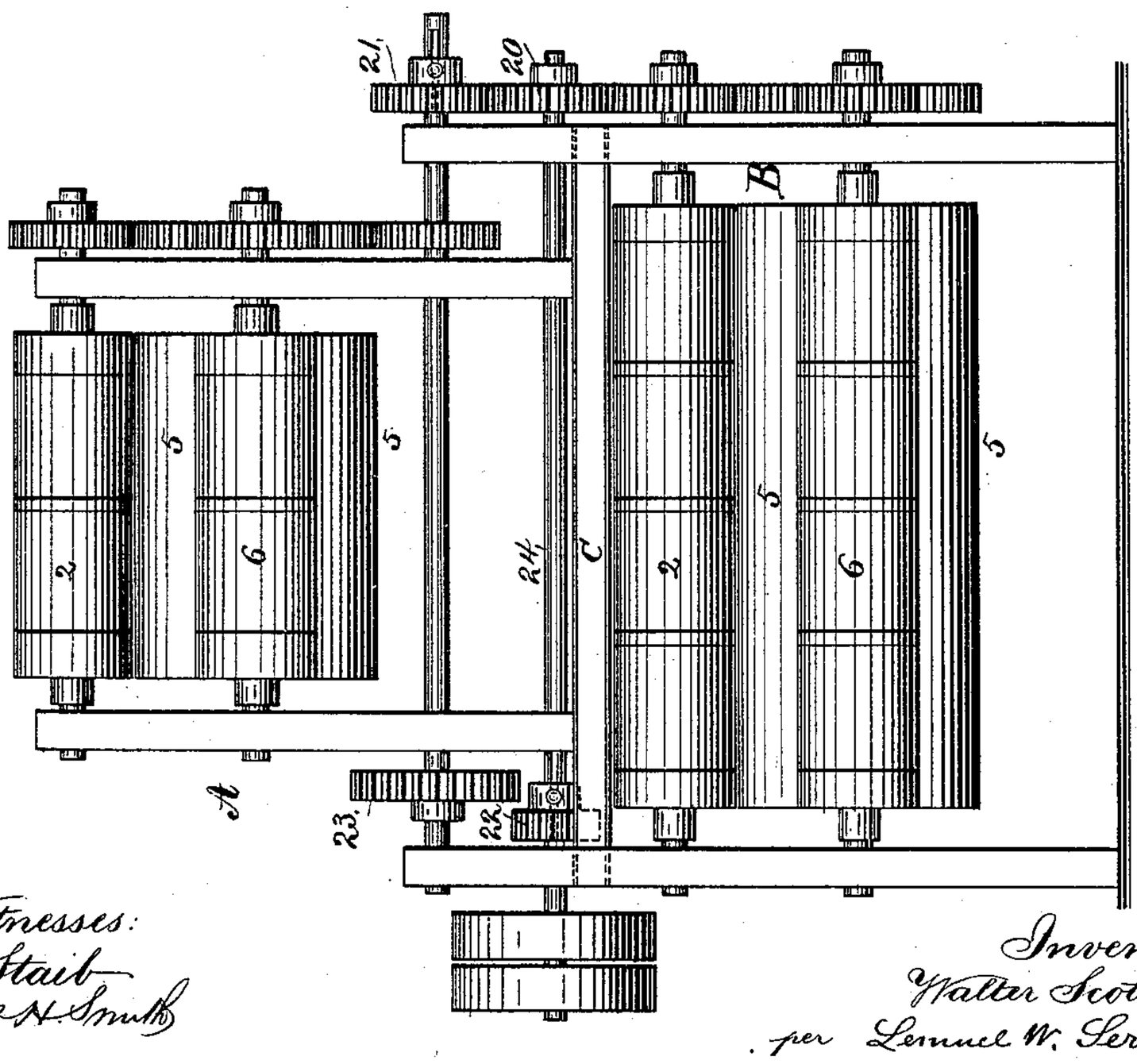


Fig. 2.



Witnesses:
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Chas. H. Smith

Inventor
Walter Scott
per Lemuel W. Serrell Attys

UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

ROTARY PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 373,487, dated November 22, 1887.

Application filed September 20, 1886. Serial No. 214,006. (No model.)

To all whom it may concern:

Be it known that I, WALTER SCOTT, of Plainfield, in the county of Union and State of New Jersey, have invented an Improvement in Rotary Printing-Machines, of which the following is a specification.

In printing newspapers it is often desirable to add a sheet or supplement, and some weekly papers are larger than the daily papers published by the same parties.

The object of the present invention is to connect two printing-presses with sheet-delivery and folding devices in such a manner that the presses can be run together when desired, and part of the paper will be printed on one press and the remainder on the other press, and the two will be brought together and laid in the proper positions for folding, and when desired the two presses can be run separately, thus allowing for the two presses being used to the best advantage for the publisher, either by running them jointly or separately.

In the drawings, Figure 1 is a diagrammatic view longitudinally of the two presses. Fig. 2 is an end view illustrating the relative positions of the presses, the rolls of paper and inking devices being removed. Fig. 3 indicates the different positions in which the sheets from the two presses can be brought together, and Fig. 4 represents the directions in which the folding-blades can be made to act.

The upper press, A, and the lower press, B, are of ordinary construction, except in the particulars hereinafter noted, and they are shown as duplicates one of the other, except that the upper press, A, is shown in Fig. 2 as narrower than the lower press, B. They may, however, be alike, or either one may be adapted to any desired kind of book, job, or newspaper work, so long as the sizes and arrangements of the parts permit the two presses to be worked together, as herein described.

The rolls of paper are shown at 1 1, the impression-cylinders at 2 2 for the first impression, the form-cylinders at 3 3, the inking and distributing rollers at 4 4, and at 5 5 are the conveying and second impression cylinders or drums. The second form-cylinders are shown at 6 6, and the inking devices for the same at 7 7.

The webs of paper are conveyed to the cutting-cylinders 8 and 9 preferably by the tapes 10, passing around rollers, as usual, and at A″ B″ there are cylinders around which two or more sheets may be wrapped or imposed, and 12 represents the concave guides, and 13 the fingers for directing the second sheet around the imposing-cylinder. These parts and their mode of operation correspond to the devices shown in my application No. 211,788, filed August 25, 1886.

It is unnecessary to describe the operations of either press when used separately, as my present invention only relates to the means by which the sheets from the two presses are brought together and delivered to the folding device, which is shown at D, and may be of any desired character. I remark that usually the press A will be upon a floor, C, directly over the press B, for convenience in tending such press; but platforms may be used in place of floors.

The two presses, when running together, are connected by the gear-wheels 20 21 22 23 with the driving-shaft 24, and the wheels 21 22 are movable, so that when the wheels 21 and 20 are connected the presses will revolve at the same speed, and when these are separated and the gears 23 and 22 brought together the press A will rotate once for each two revolutions of the press B.

The ranges of tapes or belts 30 pass over the pulleys 31 32 33 34, and the range of tapes or belts 35 pass around the pulleys 36 37 43, imposing-cylinder A″, and pulleys 42, 40, 39, and 38, and the range of tapes or belts 45 pass around the pulleys 46 50 47 48 49 41, imposing-cylinder B″, and pulleys 40 and 39.

The parts are adjusted and fitted so that the sheet from B passes upon the belts 45 between 49 and 51, along below the stationary guide-bars 52 and rollers 42, and belts 35 around the rollers 41 and imposing-cylinder B″, and here the sheet is either carried around a second time and another sheet laid on the same, or else it passes off between the tapes 45 and the rollers 40 and their tapes 35 to the folding apparatus at D. In this way the press B can be run alone.

The printed sheets from the press A pass between the sets of tapes 30 and 35, along between the rollers 31 and 37, around the rollers 43, over the imposing-cylinder A″, where a

second sheet can be laid on the first, and then both sheets can be passed off together, or else each sheet can be passed off separately. In either instance the sheets pass down between tapes 30 and 35, between the guide-bars 52 and the rollers 42, and along between the belts 35 and 45, around the pulleys 41, imposing-cylinder B″, thence by the pulleys 40 over the pulleys 39 to the folding apparatus D. In this way the press A may be run alone.

When the two presses are run together, the parts are timed so as to bring the sheets from the two presses together, so that the sheets from A are laid upon the sheets from B.

In Fig. 3 the line upon which the folding-blade acts is indicated at 60 61, and at the dotted line 62 the position of the cutter 62, Fig. 1, is indicated. This cutter may be used to entirely separate the sheets longitudinally, if desired; or when this cutter is not used the first fold of the sheets will be on this central line, the second folds being in the lines of the blades 60 61.

Either press A or B can be used to print and deliver a four-paged paper when the press A is the same width as the press B. When the press A is half the width, the sheet delivered from the same will be two pages. When the forms on the press B are duplicated, then two four-paged papers can be printed on B, and they are cut apart by the cutter 62.

The manner in which the papers from the two presses may be brought together is illustrated in Fig. 3. The six-paged paper is made by one narrow sheet from A being imposed upon the wide sheet from B, the parts being timed so that the ends of the two sheets meet below the pulleys 42. If an eight-page paper is to be printed, the two sheets from B may be imposed one on the other as wrapped around the imposing-cylinder B″, or one sheet may come from B and another from A if the two presses are the same width. Where ten pages are to be printed, the press A is run at half speed, and the sheet from A meets the second sheet from B below the pulleys 42, and they are wrapped around B″, upon the first sheet from B, which has before been wrapped around B″, so that the sheet from A is between the two sheets from B, and then the sheets pass away together from B″ to the folding apparatus. Where twelve pages are to be printed, the presses are run at the same speed, and two sheets from A are wrapped around A″, and then pass together down between 30 and 35 and meet the second sheet from B below 42, and these are wrapped around B″ and upon the first sheet from B, which has before been wrapped around B″, so that the four sheets pass off together. Twelve pages may also be laid together in the same manner as ten pages, as before described, if the press A is the same width as B, and sixteen pages can be laid together with full-width presses by wrapping two sheets around A″, so that they pass down and meet the sheets from B.

It is to be understood that where the press A is full width a half-width web can be used by arranging the forms in the middle parts of the form-cylinders in said press A.

The dotted lines in Fig. 1 indicate the gear-wheels and trains of wheels that may conveniently be employed for connecting the respective parts, so that the motions may be positive and reliable. In cases where the press A is run at half the speed of the press B, by changing the gearing, as aforesaid, the gears that drive the belts 30 35 should be changed so as to maintain the proper speed of these belts. In instances where a narrow or single sheet and a double sheet have been folded together the narrow sheet has been made to lap past the folding-blade, in order that it may be caught by such blade near its edge and carried to the folding-rollers. In this case the sheets do not properly register. I avoid this difficulty by placing the single or half sheet between the two whole or double sheets, as indicated in Fig. 3, for a ten or twelve paged paper, or else the single or half sheet is next to the rollers 66, as shown in Fig. 4, in order that under all circumstances one edge of the single or half sheet may be in line with the folding-blade 61, and a whole or double sheet may be next to the blade, so that in folding the paper the whole or double sheet carries with it the edge of the single or half sheet down into the bite of the folding-rollers, and the operation is reliable and the register accurate.

By applying one or more paste-troughs and pasting-wheels in each press, as indicated at 68 and 69, paste can be laid in lines on the edges or centers of each sheet at the places where the folds are subsequently made, so that all the sheets can be pasted together. It is to be understood that these paste troughs and wheels are of any ordinary construction, and that the paste-trough 68 will require to be lifted while the first sheet is passing under it, because the paste would be applied to that side of the sheet which forms the outside of the fold in the group of sheets that form what is usually known as a "complete paper" or "signature." The tapes are to be so disposed as not to come upon the paste-lines.

I do not limit myself to the particular devices shown, as any desired character of imposing-cylinders may be used, and transfer-cylinders and grippers or rods are the well-known equivalents of tapes, and may be made use of for performing the same duties as some of the tapes.

In cases where two printing mechanisms have been used that print and deliver sheets between converging tapes, such tapes bring the sheets to a common point of delivery, at which the sheets or set of sheets are laid one upon another; but the sheet from one press cannot be laid between the two sheets from the other.

By the use of an imposing-cylinder (B″ or its equivalent) at or beyond the junction of the paths over which the sheets are brought from the two presses, the sheets can be laid upon

each other in any desired order and one sheet from one press laid between two sheets from the other press.

I claim as my invention—

1. The combination, with two printing-presses and the belts or tapes forming two paths for the sheets that come together into one path, of an imposing-cylinder, B″, arranged to receive the sheets from that one path and impose the same in whatever order they reach the cylinder from the respective presses, and a discharging mechanism to deliver the imposed sheets periodically, substantially as set forth.

2. The combination, with the two printing-presses, of the ranges 30, 35, and 45 of delivery-tapes and their respective rollers or pulleys, whereby one sheet of half width is laid upon and coincides with one half of a second sheet of double width, rollers next to the single sheet, and a folding-blade acting upon the middle of the wide sheet and on the line of one edge of the narrow sheet, to carry both sheets through the folding-rollers, substantially as set forth.

3. The combination, with two printing-presses for printing on two webs of paper, and cutters for separating the sheets, of changeable gearing to connect such presses and regulate their relative speeds, tapes, pulleys, and cylinders for conveying the printed and cut sheets from the two presses and bringing them together to form one paper or signature, and folding mechanism for folding the sheets after being brought together, substantially as set forth.

Signed by me this 15th day of September, A. D. 1886.

WALTER SCOTT.

Witnesses:
GEO. T. PINCKNEY,
WILLIAM G. MOTT.