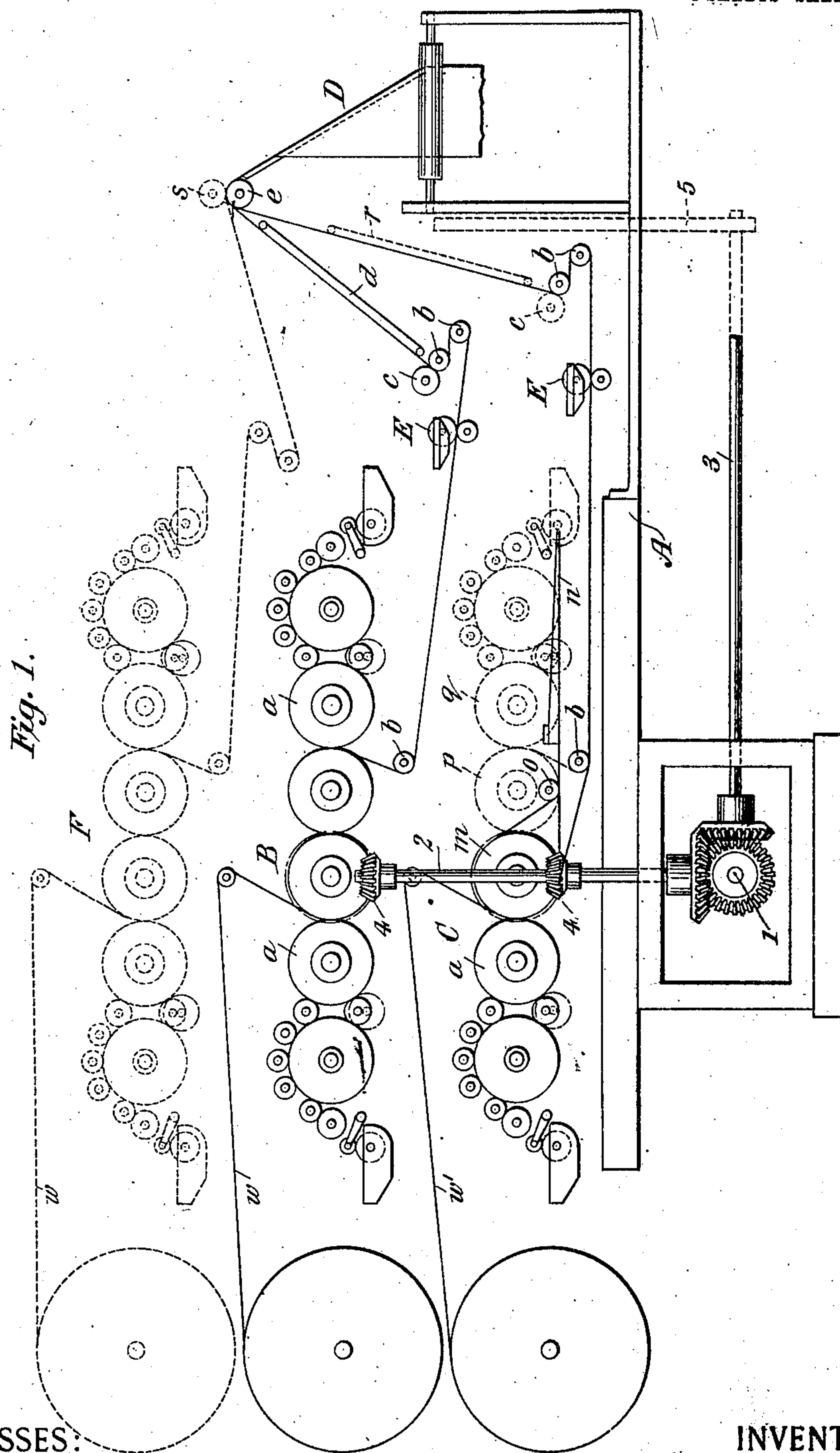


No. 837,130.

PATENTED NOV. 27, 1906.

W. SCOTT.
PRINTING MACHINE.
APPLICATION FILED FEB. 21, 1903.

4 SHEETS--SHEET 1.



WITNESSES:
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Geo. B. Hemming.

INVENTOR
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By his Attorney,
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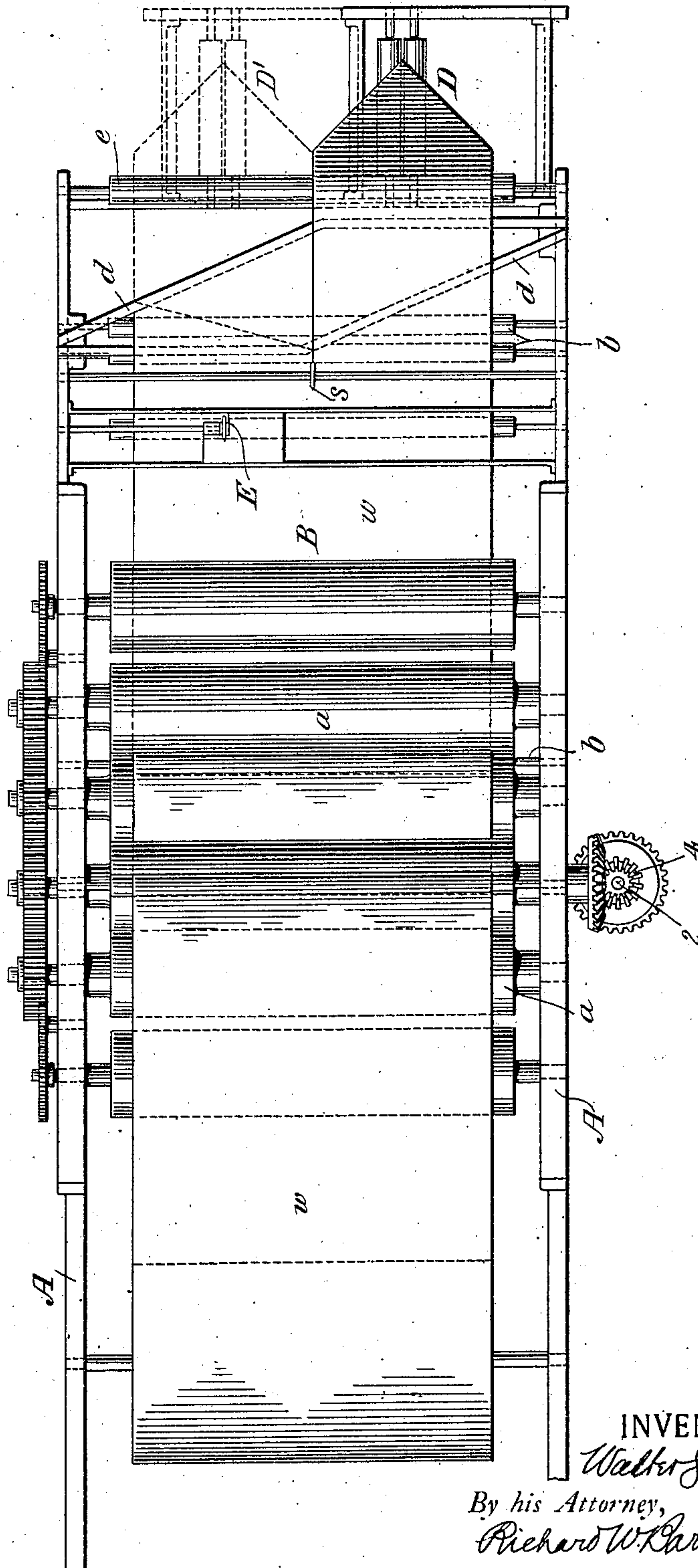
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4 SHEETS—SHEET 2.

Fig. 2.



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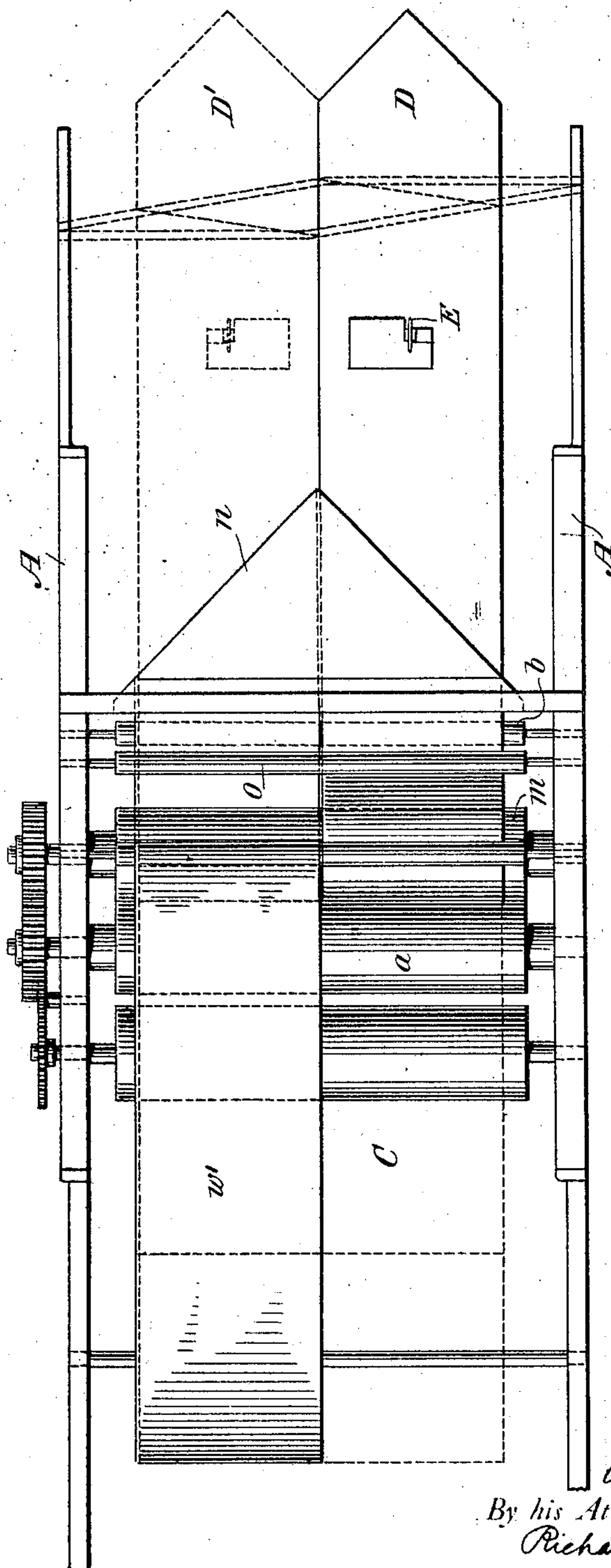
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4 SHEETS—SHEET 3.

Fig. 3.



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4 SHEETS—SHEET 4.

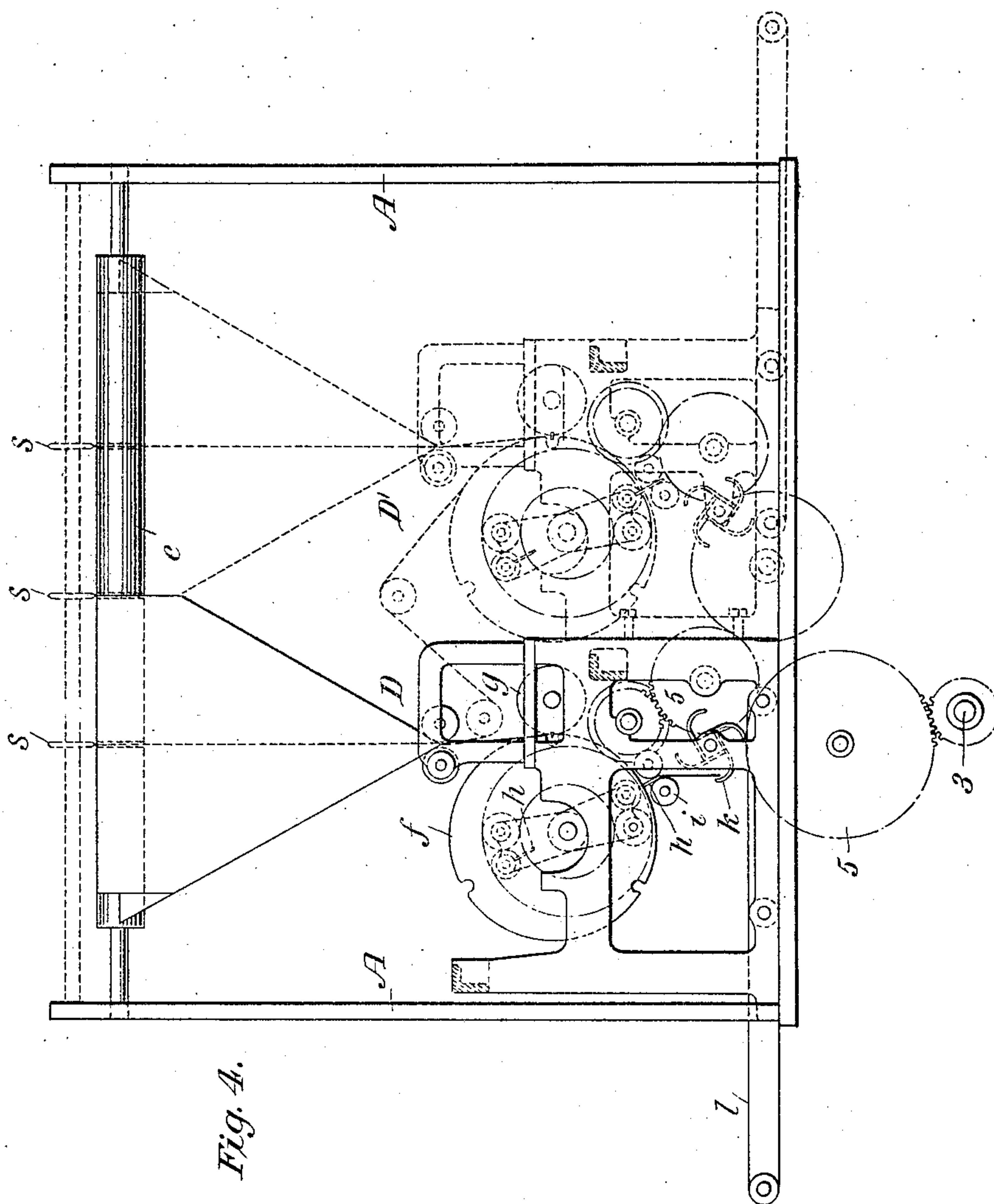


Fig. 4.

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UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

PRINTING-MACHINE.

No. 837,130.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed February 21, 1903. Serial No. 144,401.

To all whom it may concern:

Be it known that I, WALTER SCOTT, a citizen of the United States, and a resident of Plainfield, in the county of Union and State of New Jersey, have invented a certain new and useful Improvement in Printing-Machines, of which the following is a specification.

It not infrequently occurs that publishers of newspapers, periodicals, or other publications find it necessary to increase the capacity of their printing machinery, both as to the speed at which it is run and as to the number of pages or sheets in the product. Such increase usually necessitates the discarding of good machinery in use and its sale at a loss; also the tearing out of old and the building of new foundations for the new and larger machine, besides many other expenses incident to the change, to say nothing of the annoyance and loss through having to have the printing done elsewhere than in the regular establishment.

The primary object of the present invention is to avoid these expenses, interruptions, and annoyances and to provide a machine which can be added to from time to time, according to the requirements of the purchaser, so as to enable the user to produce a publication containing a greater number of pages or sheets, or to produce it at a greater rate, or to produce a greater number of pages at increased speed without the necessity of discarding any substantial portion of the original structure, without requiring any material change in the way of foundations or driving mechanism, and without interfering to any great extent with the use of the original machine while the additions or changes are being made.

To these and other ends the invention consists of features of construction, arrangements, and combinations of devices hereinafter described, and more particularly pointed out in the appended claims.

One form of the invention is illustrated in the accompanying drawings, forming part hereof, in which—

Figure 1 is a side elevation, with parts omitted, of a printing-machine in which the invention is embodied, the parts in full lines indicating the original machine and the parts in dotted lines indicating additions that may be made at any time. Fig. 2 is a plan view of the same. Fig. 3 is a plan view of the

lower press shown in Fig. 1, and Fig. 4 is an end view of the folding mechanism indicated in the other figures.

In the drawings the parts in full lines indicate the parts of the original machine, while the parts in dotted lines indicate parts that may be added at any time after the machine is erected and in use.

The reference A designates a framework in which the moving parts are mounted in manners appropriate to each. This framework is provided in the first place with the bearings, tapped holes, &c., for the cylinders, rolls, and gearing for a plurality of double-width perfecting-presses and also for a web-turner and guide-roll above the same, the last two being located in the place of and being removable so as to be replaced by a printing-couple at any time, so as to convert a perfecting double-width printing-couple into a double-width perfecting-press. This framework is also arranged so as to provide for the addition of a folding and delivery mechanism at any time, as well as with a folding and delivery mechanism in the first instance. Provision may also be made for the addition of other framework to accommodate one or more perfecting-presses above those originally provided for, whereby a quadruple may be changed to a sextuple or higher order machine.

B C indicate original printing-presses, and D a folding and delivery mechanism erected as a part of the original machine. The press B comprises two double-width printing-couples arranged to perfect a double-width web, as *w*, without turning or reversing. The form-cylinders *a* of press B are arranged to have four forms abreast thereon with their columns running around the cylinders and there being two plates in such case in each zone of each cylinder. The web *w* after being printed upon both sides passes about guide and register rolls *b* and is split longitudinally by a slit *c*, after which one longitudinal half of the web is associated with the other half by the bars *d*. The associated web-sections then pass over the roller *e* of the longitudinal folder D and are then folded lengthwise and severed into lengths or cuts by the cylinders *f g*. The cylinder *f* is provided with three sheet-receiving surfaces and with two folding-blades *h*, as in my Letters Patent of the United States dated December 1, 1896, and bearing No. 572,280, to which

reference is made for a more complete description of the construction and operation of this particular form of folding mechanism; or other forms of folding and collecting mechanism may be substituted for that above mentioned. The blades *h* fold off the cuts between rollers *i*, which transfer the folded products to the S-fly *k* and these to the traveling tapes *l*.

The press C (shown in full lines) comprises a single printing-couple, the cylinders *a m* thereof being of the same length as the cylinders of the press B. The web *w'* for the press C may be one-half or one-quarter of the width of the widest web used on the press B and receives impressions from forms at one end of the cylinder *a*, then passes around the web-turner *n* and under a roller *o*, and then over cylinder *m* and down between the cylinders *a m* to receive impressions from forms on the other end of the cylinder *a*. This web then passes about guide and register rolls *b* to the roller *e* of the folder. Suitable paste-applying devices *E* may be used to apply longitudinal lines of paste to the webs *w* and *w'* to unite them.

The presses B C and folder D and the delivery are driven from any suitable shaft, as shaft 1, by shafts 2 3 and suitable gearing 4 5. The web-turner *n* and roller *o* are removable and may be removed when desired in order that an additional printing-couple *p q* may be mounted in the frame A for the purpose of converting the press C into a double-width perfecting-press similar to the press B. When this substitution is made, a slitter *c* and turner-bars *r* are also added, provision having been made in the first instance therefor, whereby the web *w'* may also be double-width and be split into sections which may be associated by the bars *r* before they reach the roller *e*. Provision may also be made for the addition of one or more double-width perfecting-presses above the press B, as indicated by the dotted lines of a press F in Fig. 1. In this event the shaft 2 may be replaced by a longer one and suitable gears be used to drive such additional press or presses from the shaft 2, or each press may have its own independent driving mechanism and the presses be arranged to be coupled together either directly by gearing or indirectly through the coupling together of their driving mechanisms, as in my pending application for Letters Patent, Serial No. 546,316, filed April 19, 1895. Provision is also made for the addition of one or more folding, cutting, and delivery mechanisms. Thus in Figs. 2, 3, and 4 an additional mechanism of this nature is indicated at D' in dotted lines, and I may add that other folding, cutting, and delivery mechanisms may be placed above the folders D D', as in my said application Serial No. 546,316.

The arrangement shown in full lines in the drawings allows of the production and delivery of copies containing four, six, eight, ten, and twelve pages when the plates in each zone are duplicates and there is no collection of cuts by the cylinder *f* and of double these numbers of pages when the plates in each zone are unli *e* and there is collection of cuts by the cylinder. The replacement of turner *n* and roller *r* by a printing-couple, as described, capacitates the machine for the production of copies containing the above-named numbers of pages and also for the production of copies containing fourteen and sixteen pages when there is no collecting and double these numbers when there is collecting. By the addition of the folding, cutting, and delivering mechanism D' the speed or number delivered is, in some cases, doubled. By adding a double-width press F copies containing the above numbers of pages as well as copies containing thirty-six, forty, forty-four, and forty-eight pages may be delivered by various combinations, as will be understood by those accustomed to the use of rotary presses.

It is obvious that any press placed above the press B may be either a perfecting-press or one adapted to print in two or more colors on one side of the web while printing in but one color on the other side thereof, or it may print in a plurality of colors on both sides of such web.

It is noted that the conversion of the triple press (shown in full lines in the drawings) into a quadruple by the substitution of the couple *p q* enables the press to produce fourteen and sixteen page copies at the same rate of speed as the triple will produce twelve-page products and that if an additional folder be added four, six, and eight page products may be produced at double the former rate, ten, twelve, fourteen, and sixteen page products at the former speed, all sheets in both cases being inserted before folding, and two of each of the last-named numbers may be onset or collected and folded off as signatures containing twenty, twenty-four, twenty-eight, and thirty-two pages at a speed of half the number of copies. The addition of another press, thus converting the quadruple into a sextuple machine, enables the machine to deliver copies containing a greater number of pages to be delivered at the same rate as the quadruple delivered copies containing a lesser number of pages.

By having the columns of the pages running lengthwise of the form-cylinders of the presses and the pages about half the width four plates in each zone of each cylinder may be used, signatures containing double the number of pages mentioned above may be produced, and by using slitters, as at *s*, these will be delivered in book form with the leaves cut open.

It will be noted that the folder D' is merely put in position and bolted down and to the framework and that in so doing it will be connected to the gearing which drives the folder D, whereby no change in or interference with the folder D is required. It will also be noted that the webs of paper once folded or slit and associated by the formers may be associated by leading them from one folder to the other, as indicated in dotted lines at *t*, thereby associating the products of both longitudinal folders and delivering them to one cutting and folding mechanism, by which they may or may not be collected.

What is claimed is—

1. A printing-machine having its framework arranged to receive the cylinders, rolls, and gearing of a plurality of double-width perfecting-presses and also to receive a web-turner and a web-guide roll adjacent to said turner, said turner and guide being located in the place for and being replaceable by a printing-couple and vice versa, a double-width perfecting-press mounted in said framework, a double-width printing-couple mounted in said framework and from which the web-turner receives and to which said turner returns a narrow web around said guide, and folding, cutting, and delivery mechanism mounted in said frame.

2. A printing-machine having its framework arranged to receive the cylinders, rolls, and gearing of a plurality of double-width perfecting-presses, a plurality of folding, cutting, and delivery mechanisms, a web-turner, and a web-guide adjacent to said turner, said turner and guide being located in the place for and being replaceable by a printing-couple and vice versa, a double-width perfecting-press mounted in said framework, a double-width printing-couple mounted in the framework and from which the web-turner receives and to which said turner returns a narrow web around said guide, and a folding, cutting, and delivery mechanism arranged at one side of the longitudinal center line of said machine, whereby another folding, cutting, and delivery mechanism may be placed by the side thereof.

3. A printing-machine consisting of two printing-couples arranged to perfect a web three or four pages wide, a slit to split said web, angle-bars for associating the web-sections one above another at one side of the machine, and a four-page-wide printing-couple placed underneath the first-mentioned machine and arranged to print a one or two page wide web on one side, to turn and reverse said web by means of a triangular turner placed underneath the second printing-couple of the first machine and thereby to present it again to said four-page-wide couple so as to have the other side thereof printed, and delivering said web underneath and associating it with the web-

sections from the upper printing-machine, and the entire machine being arranged and constructed so that another printing-couple, four pages wide, can be added in place of said triangular turner, thereby increasing the capacity of the entire machine.

4. A printing-machine consisting of two printing-couples arranged to perfect a web three or four pages wide, a slit to split said web, angle-bars for associating the web-sections so produced one above another at one side of the machine, a printing-couple placed underneath the first printing-couple of the first-mentioned machine and arranged to print one or two pages on one side of a web, to turn and reverse said web by means of a triangular turner placed underneath the second printing-couple of the first-mentioned machine, thereby presenting said web again to said printing-couple so as to print the other side of said web, and delivering the perfected web underneath and associated with the webs from the upper printing-machine, the entire machine being arranged and constructed so that another printing-couple can be added in place of the said triangular turner to increase the capacity of the machine, the rolls of paper being at one end of the entire machine, and a longitudinal folder and transverse cutting and folding mechanism at the other end thereof.

5. A printing-machine consisting of two printing-couples arranged to perfect a web three or four pages wide, a slit to split said web, angle-bars for associating the web-sections so produced one above another at one side of the machine, a four-page-wide printing-couple placed underneath the first printing-couple of the above-mentioned machine, a triangular turner and web-reverser placed underneath the second printing-couple of the first-mentioned machine for turning and reversing the web from the lower printing-couple and again presenting it thereto to be printed on the other side, guides for delivering the lower web underneath and associated with the upper web-sections, and a longitudinally-folding and transversely cutting and folding devices placed at one side of the machine, the frame being constructed and arranged to have another longitudinal folder with transverse cutting and folding devices placed alongside the first-mentioned folding and cutting devices to increase the output of the entire machine.

6. A printing-machine consisting of two printing-couples arranged to perfect a web three or four pages wide and of one four-page-wide printing-couple arranged to perfect a web one or two pages wide, and a longitudinal folder with transverse cutting and folding devices placed at one side of said machine, with a slit and angle-bars for associating sections of the wider web, the frame of the machine being constructed and ar-

ranged to provide for the addition of another printing-couple to convert the perfecting-couple to a press for perfecting a three or four page wide web, of angle-bars for such
5 converted press, and of another longitudinal folder and transverse cutting and folding devices at the other side of the machine.

Signed at New York, in the county of New York and State of New York, this 13th day of February, A. D. 1903.

WALTER SCOTT.

Witnesses:

W. A. FERGUSON,
CHAS. W. SINNOTT.