

No. 657,147.

Patented Sept. 4, 1900.

G. R. WILLIS.

PRINTING, FOLDING, AND DELIVERY MECHANISM.

(Application filed Sept. 9, 1899.)

(No Model.)

2 Sheets—Sheet 1.

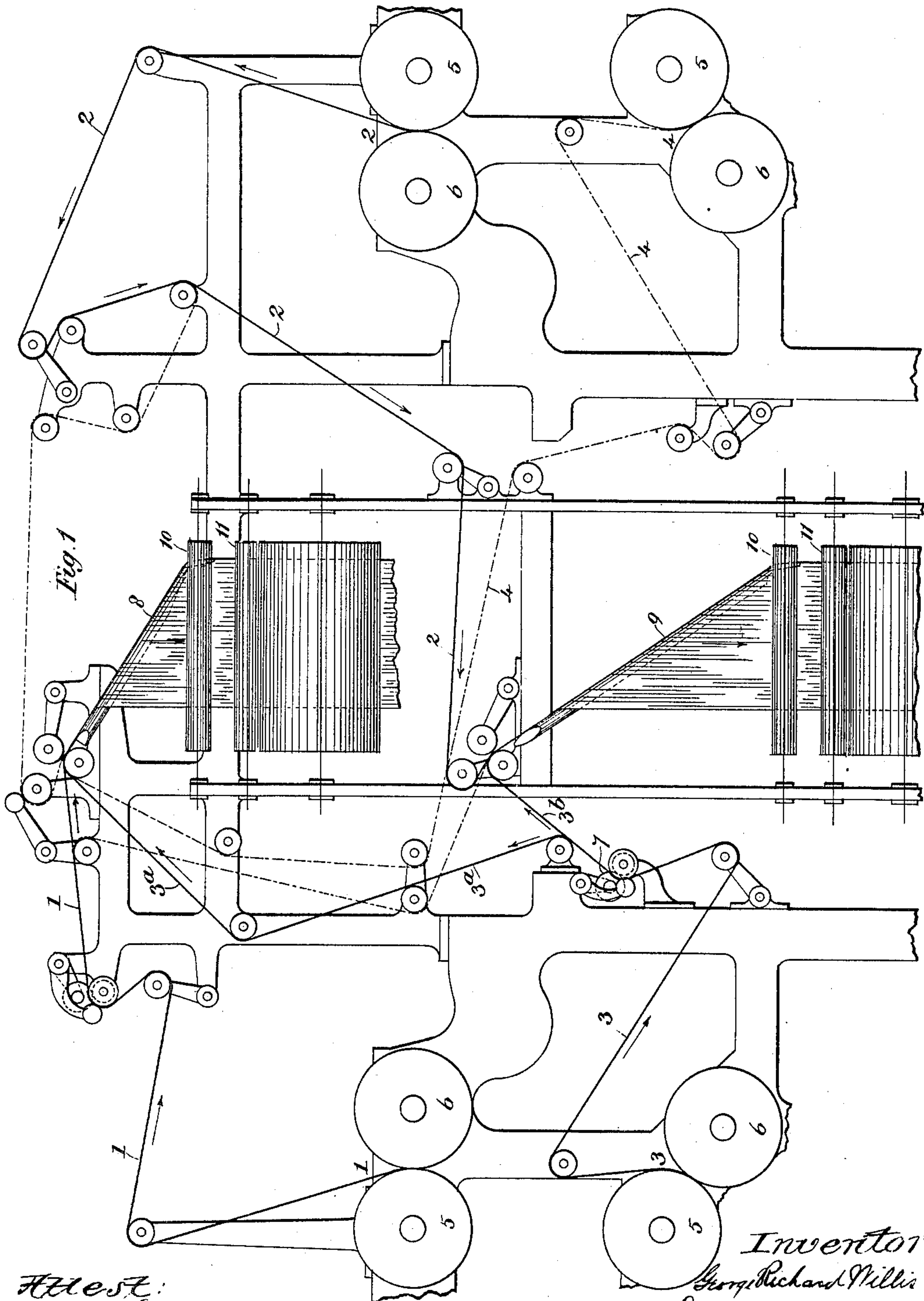


Fig. 1

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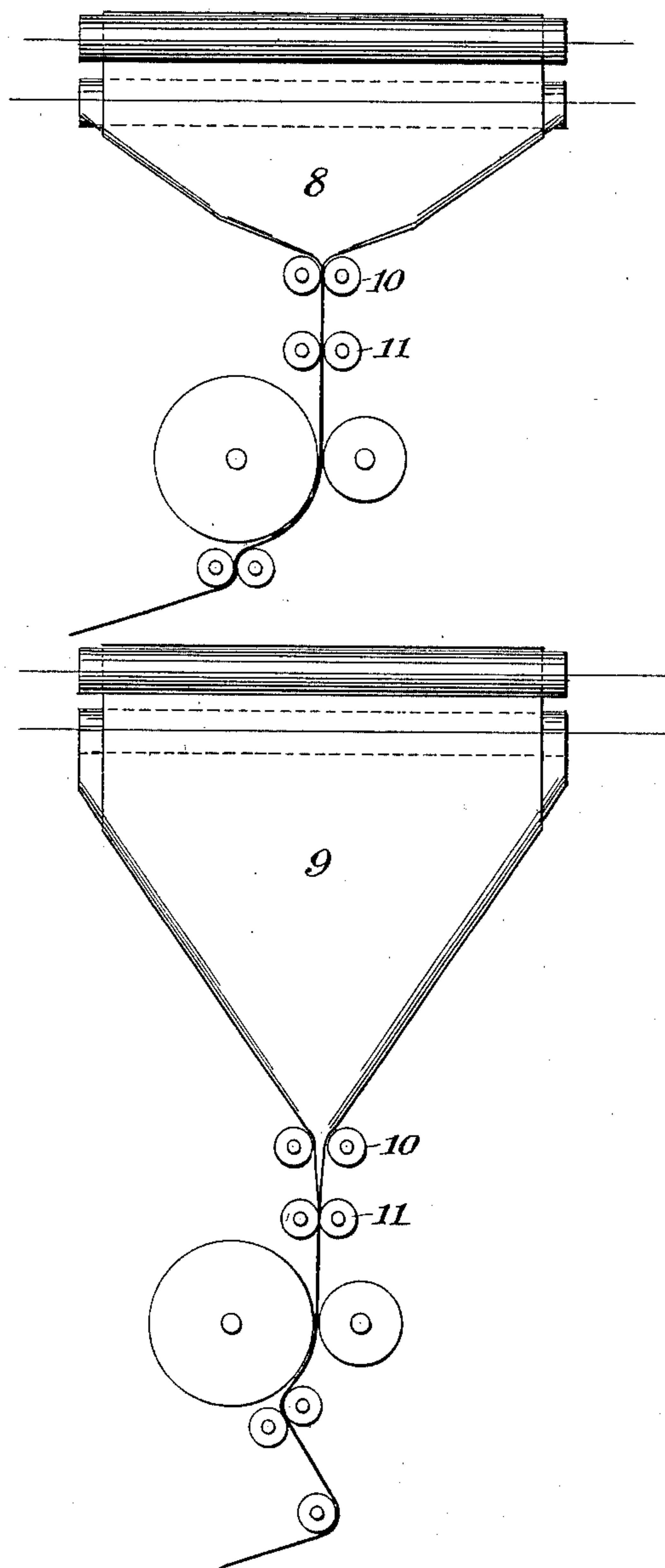
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(Application filed Sept. 9, 1899.)

(No Model.)

2 Sheets—Sheet 2.

Fig: 2.



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UNITED STATES PATENT OFFICE.

GEORGE RICHARD WILLIS, OF BRIGHTON, ENGLAND.

PRINTING, FOLDING, AND DELIVERY MECHANISM.

SPECIFICATION forming part of Letters Patent No. 657,147, dated September 4, 1900.

Application filed September 9, 1899. Serial No. 729,903. (No model.)

To all whom it may concern:

Be it known that I, GEORGE RICHARD WILLIS, engineer, of 30 Cromwell road, Brighton, in the county of Sussex, England, have invented certain new and useful Improvements Relating to Printing, Folding, and Delivery Machinery, of which the following is a specification.

In newspaper and pamphlet printing the printing mechanism is usually combined with slitting, associating, folding, cutting, and delivery mechanism, so that the printed web may be cut into sheets, associated when necessary, folded, and delivered as a folded product ready for distribution. A number of machines of this class will obviously take up a large amount of floor-space in the machine-room, and therefore it has been proposed to combine two or more printing mechanisms in one machine, each mechanism being arranged to print on a separate web of paper, and these printing mechanisms have been designed to supply one or more folding mechanisms provided with V-shaped formers, whereby with the assistance of folding-rollers a longitudinal fold has been given to the web before the sheet is cut off and preparatory to one or more transverse folds being given by means of tucking-blades and folding-rollers or in any other convenient manner, if desired, and before being delivered by suitable delivery mechanism. For the purpose of getting the greatest number of products from a machine of this character it has been proposed to employ four printing mechanisms and two folding mechanisms, and in order to get these multiple printing mechanisms in a sufficiently-small space the folding mechanisms have been somewhat crowded up and so placed as to be difficult of access for repairs when necessary and for other purposes. As it is most probable when a stoppage takes place that it is the folding mechanism which is at fault, a folding mechanism placed in an inaccessible part of the machine or too closely surrounded by other parts of the machine is a great objection and causes great inconvenience and waste of time in setting matters straight. I have therefore designed a machine in which the inconveniences above named will be overcome and in which a four-

page, a six-page, or an eight-page product may be produced singly or in duplicate, or products varying from a ten-page to a sixteen-page product may be produced singly, all the various products in which there are inside sheets having the same properly "in-set."

In the accompanying drawings I have shown at Figure 1, in diagrammatic form, so much of a printing-machine as is necessary to illustrate my invention. Fig. 2 is a front view of the formers.

The machine is designed for four printing mechanisms 1 2 3 4, the mechanisms 1 and 3 being at one end or side of the machine and mechanisms 2 and 4 being at the other end or side of the machine. Each of these mechanisms is indicated in the drawings by two circles 5 and 6, one of which represents an impression-cylinder and the other a type-cylinder, and is provided with a roll or web of paper, (not shown,) the usual inking mechanisms, (also not shown,) and series of guide-rollers, tension-rollers, and other necessary and usual accessories, which need not be further specified. The printing mechanisms, it will of course be understood, are of the type adapted to print both sides of the web, although indicated by only one pair of cylinders. Printing mechanism 3 is, in addition, provided with a rotary slitter 7 for slitting the web longitudinally for the purpose to be presently explained; but it is obvious that the other mechanisms may have slitters, if desired. The web of paper appertaining to each printing mechanism is numbered with the same number as the mechanism, and the direction of travel is indicated by the arrows. As the machine will be more particularly described in connection with the production of a six-page product in duplicate, webs 1, 2, and 3 are indicated by full lines, while the course of web 4 when in use is indicated by dotted lines only, as not being required for the special product in view.

8 and 9 represent two V-shaped "formers," of the usual type, arranged one above the other between the two pairs of printing mechanisms and having their center lines coincident with the center lines of the webs of paper. These formers may be arranged to face in the

same direction or in opposite directions, so long as they are placed one above the other.

10 and 11 are the folding-rollers in connection with the two formers 8 and 9, and these 5 rollers are at right angles to the printing-cylinder.

To produce a four-page product in duplicate, either webs 1 and 2 or 1 and 3 or other combination may be used, each web being 10 conveyed to a separate former. To produce a six-page product in duplicate, webs 1, 2, and 3 may be used. For a six-page product it is desirable to inset the extra two pages, and this inset will be supplied from web 3, 15 which will be slit longitudinally by the slitter, and one half-web will be carried to and associated with web 1, while the other half-web will be associated with web 2, the associated web and half-web in each case being 20 conveyed to different formers. It will be seen in Fig. 1 that web 1 is being guided to former 8, that the half-web 3^a is meeting it at the same former, and that the web 2 is being taken to former 9, where the half-web 3^b 25 meets it. For an eight-page product in duplicate webs 1 and 2 or 1 and 3 will go to former 8 and webs 3 and 4 or 2 and 4 to former 9. For a ten-page product webs 1 and 2 and a half-web 3 may be employed and taken to 30 one or other of the formers, as may be desired. For a twelve-page product webs 1, 2, and 4 may be used with one former. For a fourteen-page product webs 1, 2, and 4 and a half-web 3 will be used, while for a sixteen- 35 page product all four webs will be employed,

the webs in both cases being conducted to one former, where they will be associated and folded with the longitudinal fold.

By the arrangement of machine above described the folding mechanisms are conveniently placed between two sets of duplicate 40 printing mechanisms and in such a manner that the attendant or mechanic can easily get at them in case of repairs being required or for other purposes. 45

The delivery mechanism may be of the usual character, and as it forms no part of this invention is not shown in the drawings.

Having now particularly described and ascertained the nature of my invention and in 50 what manner the same is to be carried out, I declare that what I claim is—

In a web printing and folding machine, the combination of a pair of printing mechanisms at one side or end of the machine, another pair of printing mechanisms at the 55 other side or end of the machine, and a pair of "former" folding mechanisms arranged one above the other, and between the two pairs of printing mechanisms, the said "formers" 60 having their center lines coincident with the center lines of the webs of paper, each being provided with further folding and delivery mechanisms of suitable character substantially as described.

Brussels, Belgium, August 28, 1899.

GEORGE RICHARD WILLIS.

Witnesses:

GUST PIERRY,

GREGORY THELAN.