

W. SPALCKHAVER.
WEB PRINTING MACHINE.

No. 567,051.

Patented Sept. 1, 1896.

Fig. 2.

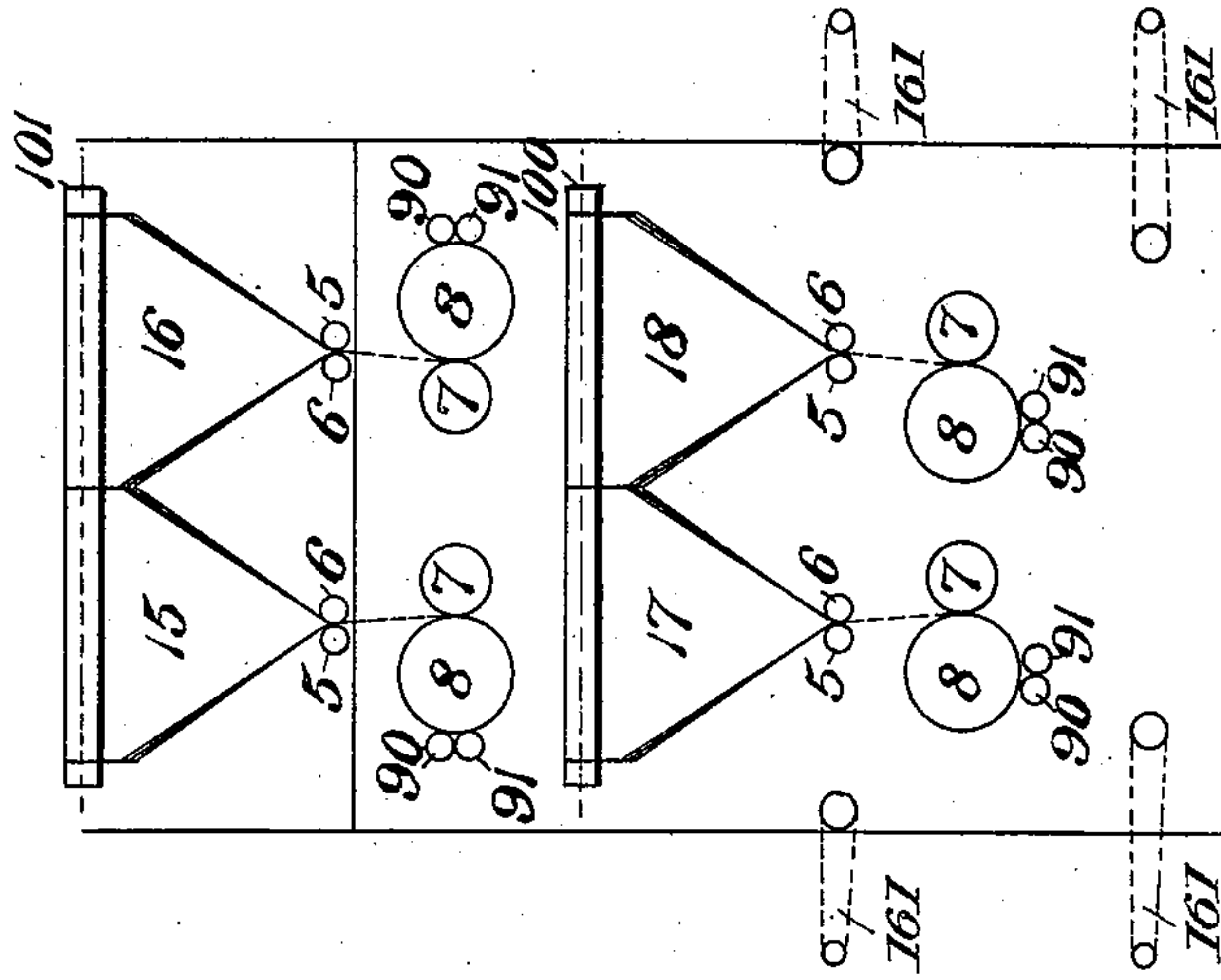
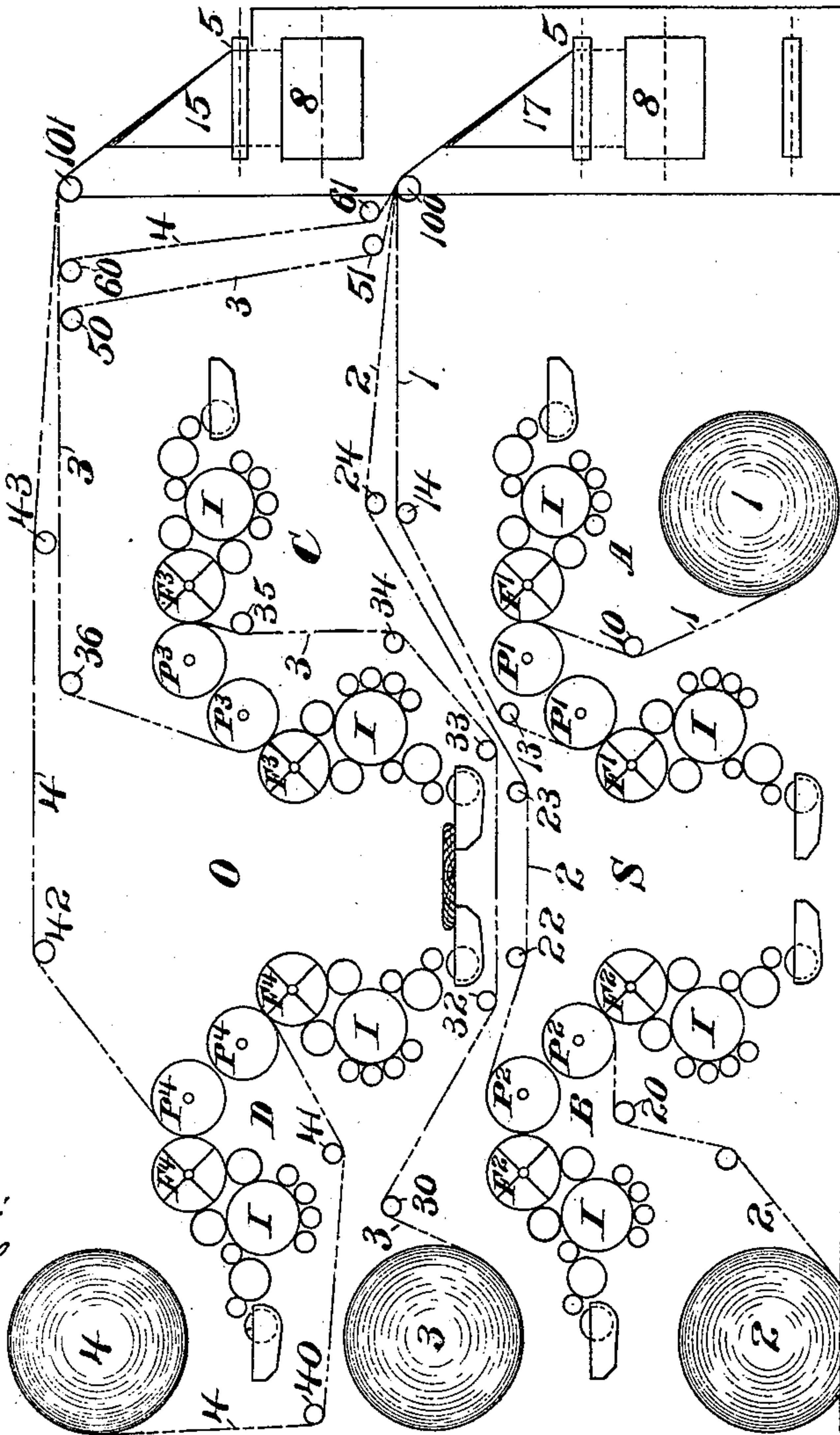


Fig. 1.



Attest:
Gustav Borch
Notary Public

Inventor:
William Spalckhaver
by
Charles Munson
& Phelps
Attys

W. SPALCKHAVER.
WEB PRINTING MACHINE.

No. 567,051.

Patented Sept. 1, 1896.

Fig. 4.

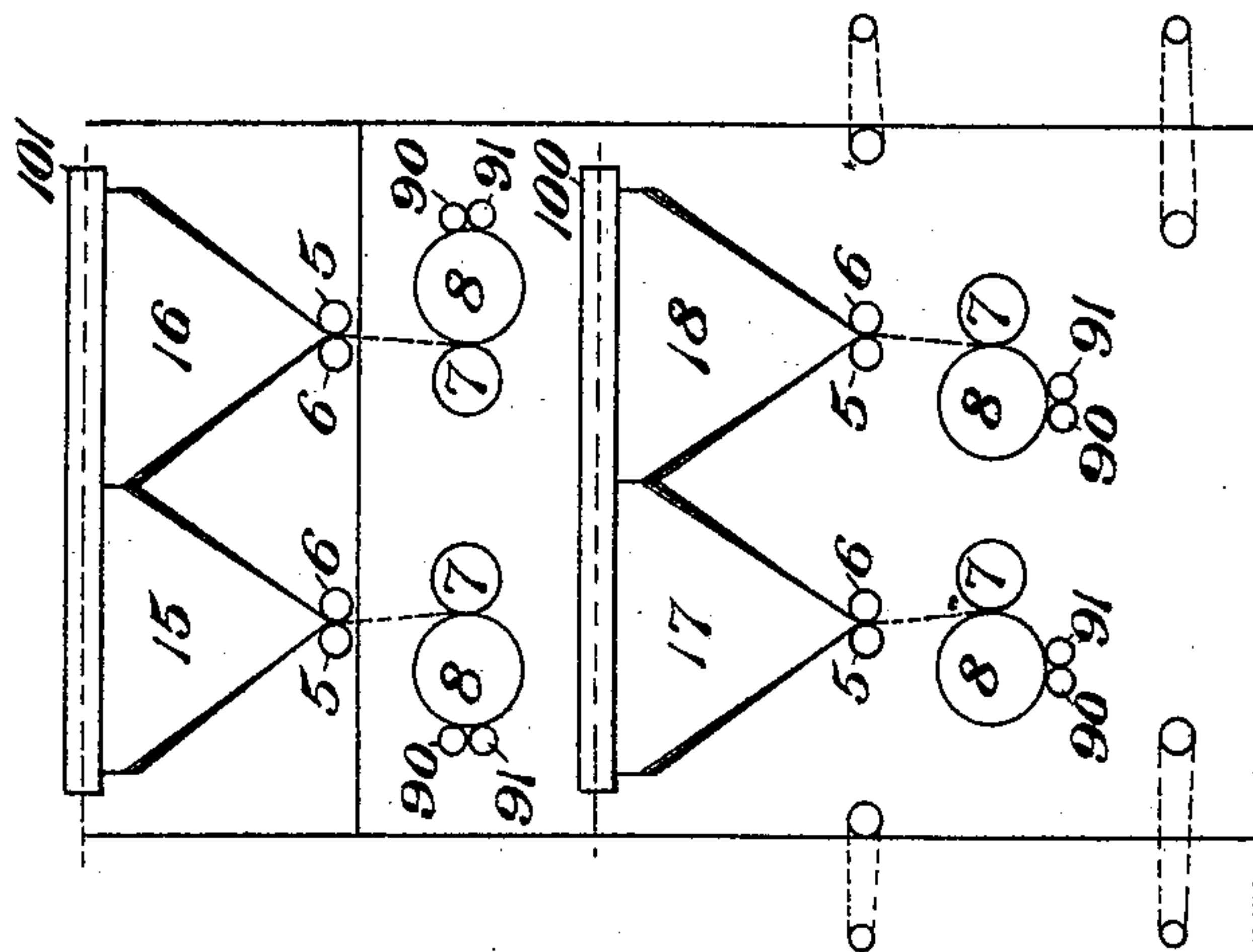
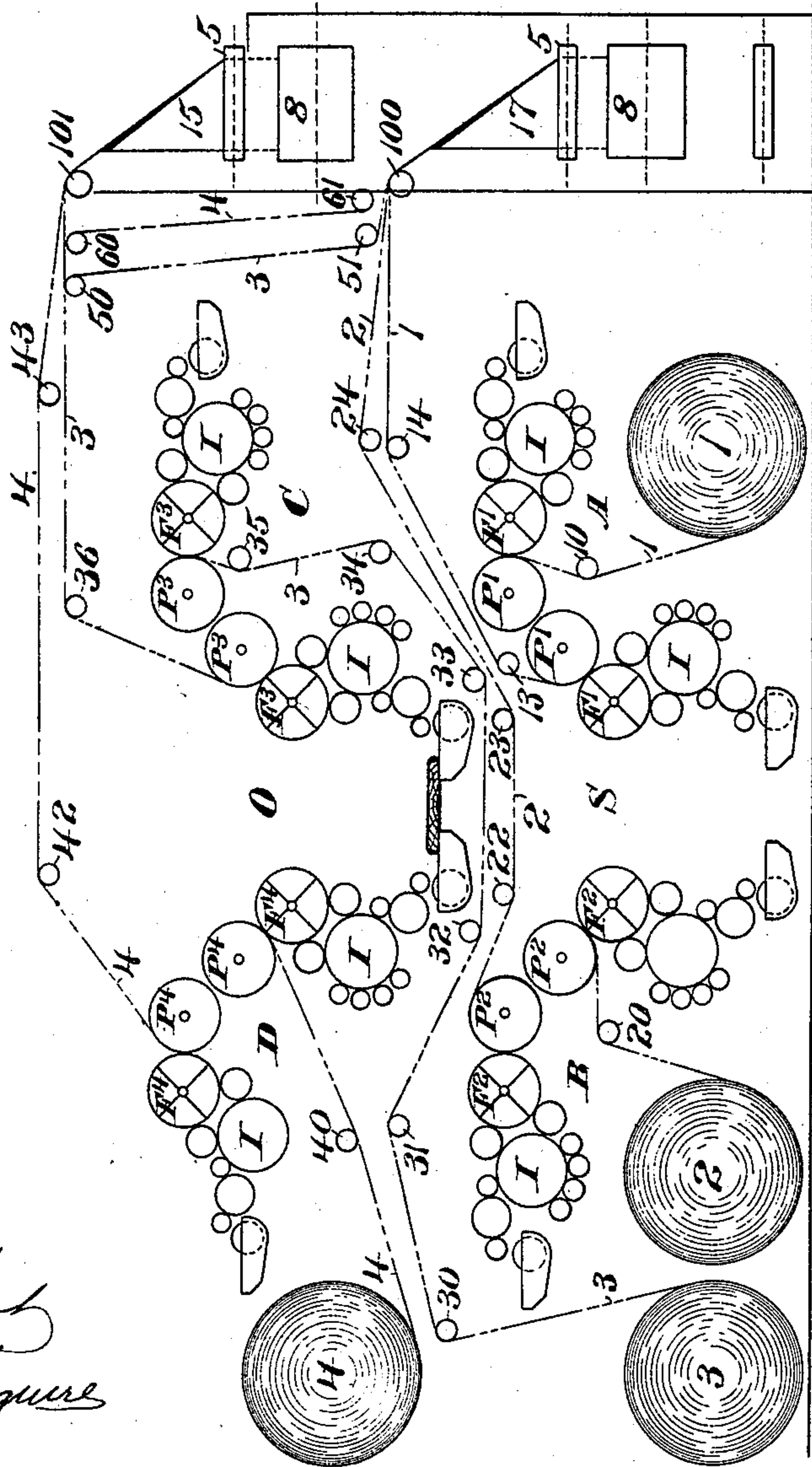


Fig. 3.



Attest:
Guthrie
Mellie Maguire

Inventor:
William Spalckhaver
by Philip
Nunson & Phelps
Attys

(No Model.)

3 Sheets—Sheet 3.

W. SPALCKHAVER.
WEB PRINTING MACHINE.

No. 567,051.

Patented Sept. 1, 1896.

Fig. 6

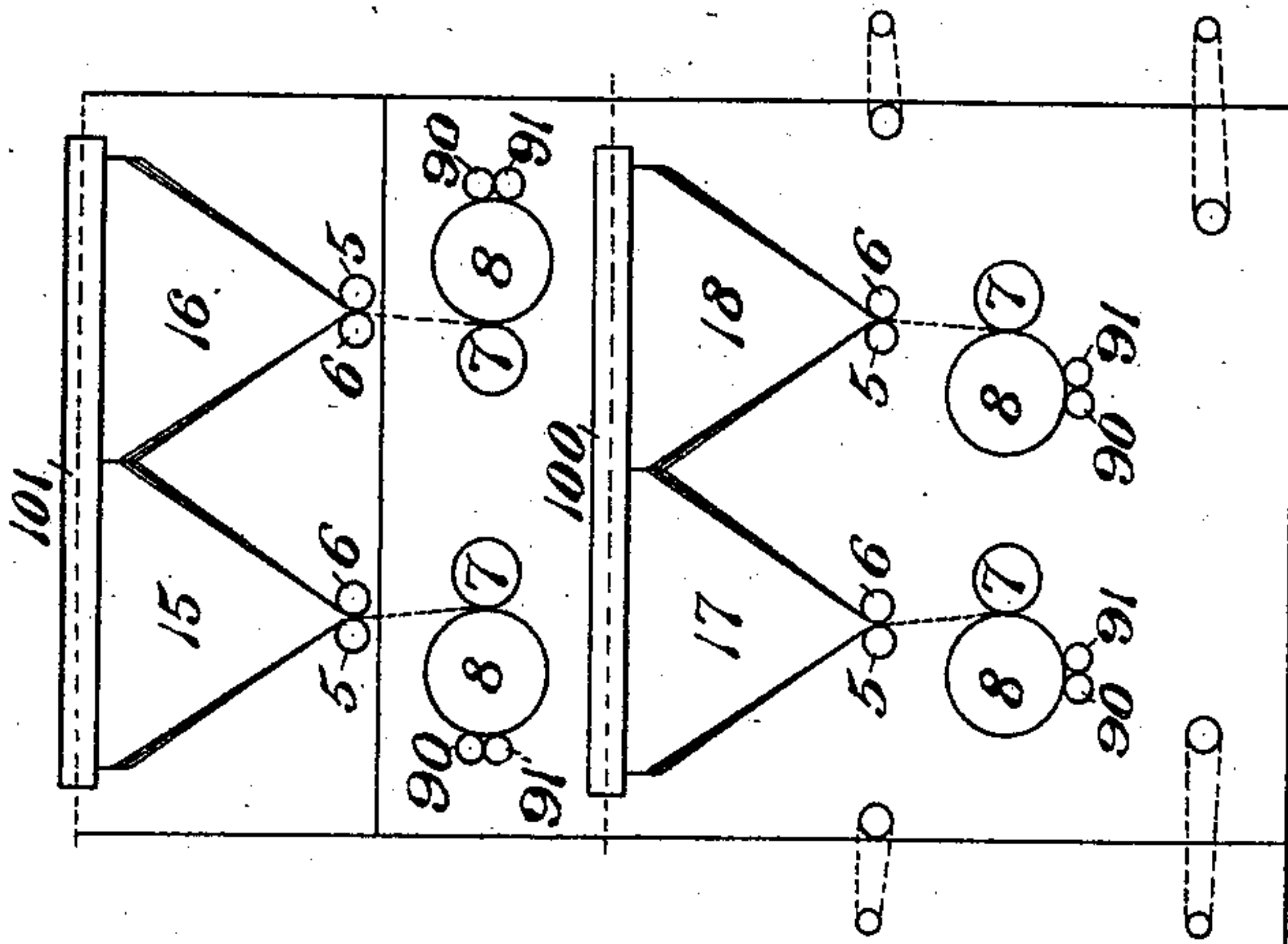
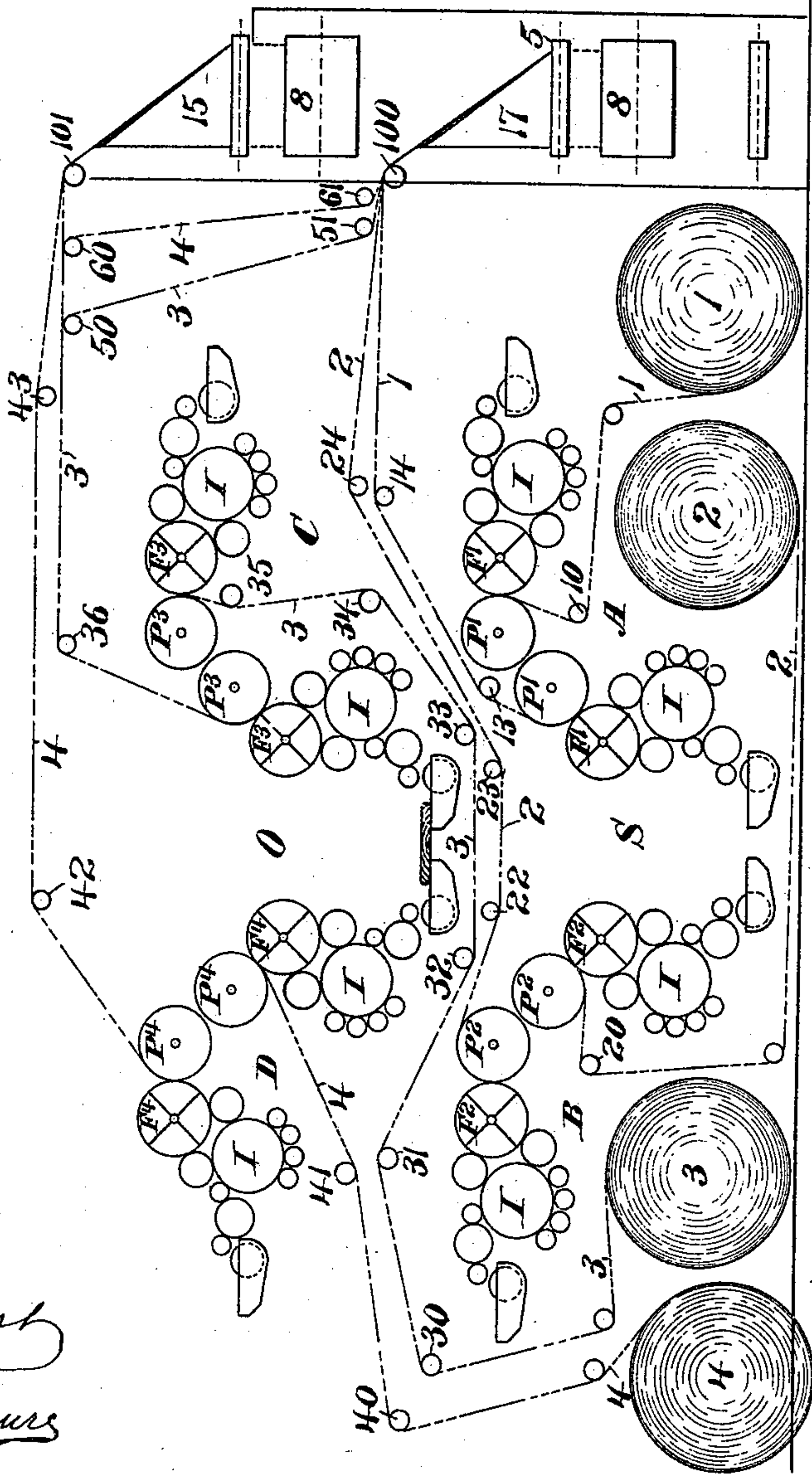


Fig. 5



Attest:
Gneborst
Nellie Maguire

Inventor
William Spalckhaver
by
Chas. H. Munroe
& Phelps
Attys

UNITED STATES PATENT OFFICE.

WILLIAM SPALCKHAVER, OF BROOKLYN, NEW YORK, ASSIGNOR TO ROBERT HOE, THEODORE H. MEAD, AND CHARLES W. CARPENTER, OF NEW YORK, N. Y.

WEB-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 567,051, dated September 1, 1896.

Application filed December 3, 1895. Serial No. 570,880. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SPALCKHAVER, a citizen of the United States, residing at Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Four-Web Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of the present invention is to provide an improved multiweb-printing machine of such compact and convenient form as not only to provide ready access to the various printing mechanisms, but enable the webs to be so disposed with respect to said mechanisms as not to interfere with the movements of the attendants about and through the machine in manipulating the forms thereof, adjusting the inking apparatus thereof, threading the webs therethrough, and obtaining the shortest lead of each web from positions outside of the printing-machines through the respective printing-machines to the delivery mechanism.

The invention consists in various combinations and arrangements of the printing mechanisms, web-guides, and delivery apparatus whereby the aforesaid objects are attained, all of which are so specific in their character that the nature thereof will be fully comprehended from an understanding of the following specification, which includes a complete description of the apparatuses wherein said inventions are embodied, said specific inventions being concisely stated in the claims.

Exemplifications of the invention are illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a quadruplex machine, Fig. 2 being an end elevation of the delivery apparatus thereof. Figs. 3 and 4 are similar views of a like machine in which the rolls of paper are in slightly-different positions. Figs. 5 and 6 are similar views of a like machine in which the rolls of paper are in slightly-different positions.

In the drawings all gearing is dispensed with, and many parts common to the art are omitted in order to render the illustrations

perspicuous. The form-bearing cylinders are provided with diametrical lines to indicate their character. The impression-cylinders of each are left plain for a like purpose, and the inking-cylinders are marked I to designate them, and like indicating characters of reference are used in the several drawings to indicate correspondence of parts.

The essentials of a machine so extensive in its mechanisms as is necessarily involved where four webs of paper are simultaneously printed and delivered are not only that said mechanisms shall be arranged relatively so as to occupy the least possible space, owing to their use in establishments the confines of the printing-departments of which have been constructed for smaller machines, and hence are not only of fixed but of limited dimensions, especially in height, but that there shall be in and about the machine a provision made by such disposition of the parts of the mechanisms as will enable the operators to have ready access to the form-cylinders for applying the plates thereto, to the inking mechanisms for constantly controlling their action, so that perfect inking and resulting printing may be continuously effected, and access conveniently had to the paths of travel of the webs, that they may be readily threaded. There must also be such a run of the webs that they shall not interfere with this provision for access to such parts of the mechanism as require it, all of which is provided for by these improvements.

Each perfecting printing mechanism, of which there are four, A B C D, in addition to the inking apparatuses, consists of form-cylinders F and printing-cylinders P. Each of the printing mechanisms is arranged in the same vertical plane. The printing-cylinders of all of the mechanisms have their axes parallel, and the printing mechanisms A B, as well as the printing mechanisms C D, are separated apart from each other to such a distance as will afford between them openings or passage-ways O S for the movements of the attendants and operators, and the printing mechanisms C D are elevated above the printing mechanisms A B to the extent required to provide for access between the up-

per and lower pairs of printing mechanisms for the webs, and yet present an entire machine that shall accommodate itself to a limited space.

5 The web of paper 1 is guided by a roller 10 to and around the first impression-cylinder P', thus receiving an imprint upon one side from the form-cylinder F', and thence passes around the second impression-cylinder P',
10 which bears it into contact with the second form-cylinder F', by which it is imprinted on its second side, being thus perfected. This perfected web thence passes outward over guiding-rollers 13 14 to and over a common
15 guiding-roller 100, from which it passes to the delivery mechanism.

The web of paper 2 is guided over a roller 20 to and around the first impression-cylinder P², thus receiving an imprint upon one
20 side from the form-cylinder F², and thence passes around the second impression-cylinder P², which bears it into contact with the second form-cylinder F², by which it is imprinted on its second side, being thus perfected.
25 This perfected web thence passes outward over guiding-rollers 22, 23, and 24 to the common guiding-roller 100, from which it passes to the delivery mechanism.

The web of paper 3 is guided by means of
30 rollers 30 31 (omitted in Fig. 1) 32 33 34 35 to and around the first impression-cylinder P³, thus receiving an imprint upon one side from the form-cylinder F³, and thence passes around the second impression-cylinder P³,
35 which bears it into contact with the second form-cylinder F³, by which it is imprinted on its second side, being thus perfected. This perfected web thence passes outward over guiding-roller 36 to and over a common de-
40 livery-roller 101, from which it passes to the delivery mechanism.

The web of paper 4 is guided by means of rollers 40 41 to and around the first impression-cylinder P⁴, thus receiving an imprint
45 upon one side from the form-cylinder F⁴, and thence passes around the second impression-cylinder P⁴, which bears it into contact with the second form-cylinder F⁴, by which it is imprinted on its second side, being thus per-
50 fected. This perfected web thence passes outward over guiding-rollers 42 43 to and over a common delivery-roller 101, from which it passes to the delivery mechanism.

There are provided for the run of the webs
55 of the printing-machines C D auxiliary guiding-rollers 50 51 60 61, by which said webs 3 4 are respectively guided to and over the common delivery or guiding roller 100, at which the webs are associated or brought into a com-
60 mon path of travel.

The delivery mechanism, which is external to the printing mechanisms, consists of longitudinal folders designated in a general sense
15 16 17 18, said folders being of any of the present well-known forms, as shown, consist-
65 ing of bars arranged to constitute a triangular internal former, in passing over which the

paper has its sides brought together at and is folded longitudinally in passing between external turners 5 6. Thus doubled or folded 70 longitudinally it is entered between cylinders 7 8, which are provided with cutting mechanisms to sever it into sheet-lengths, and the latter with carrying means and a folding-
75 blade, whereby the severed sheets are delivered once folded through the rollers 90 91 on tapes 161 or a table. The cylinders 7 8 represent in part such a delivery mechanism substantially as is shown in United States
80 Patent No. 453,407; but, of course, any other delivery apparatus than the one shown may be employed so long as it is capacitated to receive the paper in the web form from rollers, as 100 101, convert the same into short lengths or sheets, and deliver the latter in piles, folded 85 or flat, as may be desired.

The construction and arrangement of the mechanisms of these printing-machines enables the rolled webs to be so positioned outside of the mechanisms that their carrying-
90 shafts may be readily placed in their bearings without interfering with access to the mechanisms, and each web is so guided or threaded through the mechanisms that a clear space is provided for the convenient move-
95 ments of the attendants to and about the mechanisms of each press.

What is claimed is—

1. The combination with two web-printing machines arranged in line in one plane with
100 their cylinders parallel, two printing-machines arranged in line in a higher plane over said first-mentioned printing-machines and having their cylinders parallel with those of the lower printing-machines, and delivery
105 mechanism external to and alined with said printing-machines, of means for mounting all the web-rolls outside of the printing-machines and outside of the paths of the webs leading from the several rolls thereof, of
110 guides supporting the webs and causing the same to run directly onward to and through their respective printing-machines and to said delivery mechanism, whereby the webs are caused to travel in planes that leave clear
115 spaces between the machines for the movements of the attendants, substantially as described.

2. The combination with two web-printing machines arranged in line in one plane with
120 their cylinders parallel, of two web-printing machines arranged in line in a higher plane over the two first-mentioned printing-machines and having their cylinders parallel with those of the lower printing-machines, of
125 means arranged for guiding two of the webs horizontally through the mechanisms immediately beneath the two upper printing-machines and one web horizontally above the two upper printing-machines, whereby access to
130 the mechanisms and webs is unobstructed, substantially as described.

3. The combination with two web-printing machines arranged in line in one plane with

their cylinders parallel, two web-printing machines arranged in line in a higher plane over the first-mentioned printing-machines and having their cylinders parallel with each other and with those of the lower printing-machines, of web-guides for carrying the printed webs from the four printing-machines in sets of two webs, each set being guided outward for delivery in planes respectively above the printing-machines nearest the delivery mechanism whereby access to the form-cylinders and inking mechanisms of each is provided for, substantially as described.

4. The combination with two web-printing machines arranged in line in one plane with their cylinders parallel, two web-printing machines arranged in line in a higher plane over the first-mentioned printing-machines and having their cylinders parallel with each other and with those of the lower printing-machines, of web-guides for carrying the webs through the machines whereby two of the webs are carried immediately beneath the upper printing-machines and one web is carried above the two upper printing-machines, and web-guides whereby the four printed webs are carried to the delivery mechanisms in sets of two in planes respectively above the printing-machines nearest the delivery mechanism

whereby access to all parts of the mechanisms is provided for, substantially as described. 30

5. The combination with four web-printing machines arranged in vertical and horizontal pairs, the mechanism of companion machines being separated to afford convenient access to the parts of all the machines, and delivery mechanism external to and alined with said printing-machines, of guides whereby the webs running through the machines are supported and travel in planes that leave clear spaces between the machines for the movements of the attendants, and guides adjacent thereto whereby all of the webs may be led directly to one set of delivery mechanism or the webs from two of the printing-machines may be led directly to one set of the delivery mechanisms and the two webs from the other two printing-machines may be led directly to the other set of delivery mechanisms, substantially as described. 40 45 50

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM SPALCKHAVER.

Witnesses:

F. W. H. CRANE,
E. L. SPEIR.