No. 662,699. Patented Nov. 27, 1900.

W. SCOTT.

PRINTING MACHINE.

(Application filed Nov. 23, 1894.)

(No Model.) 5 Sheets—Sheet 1.

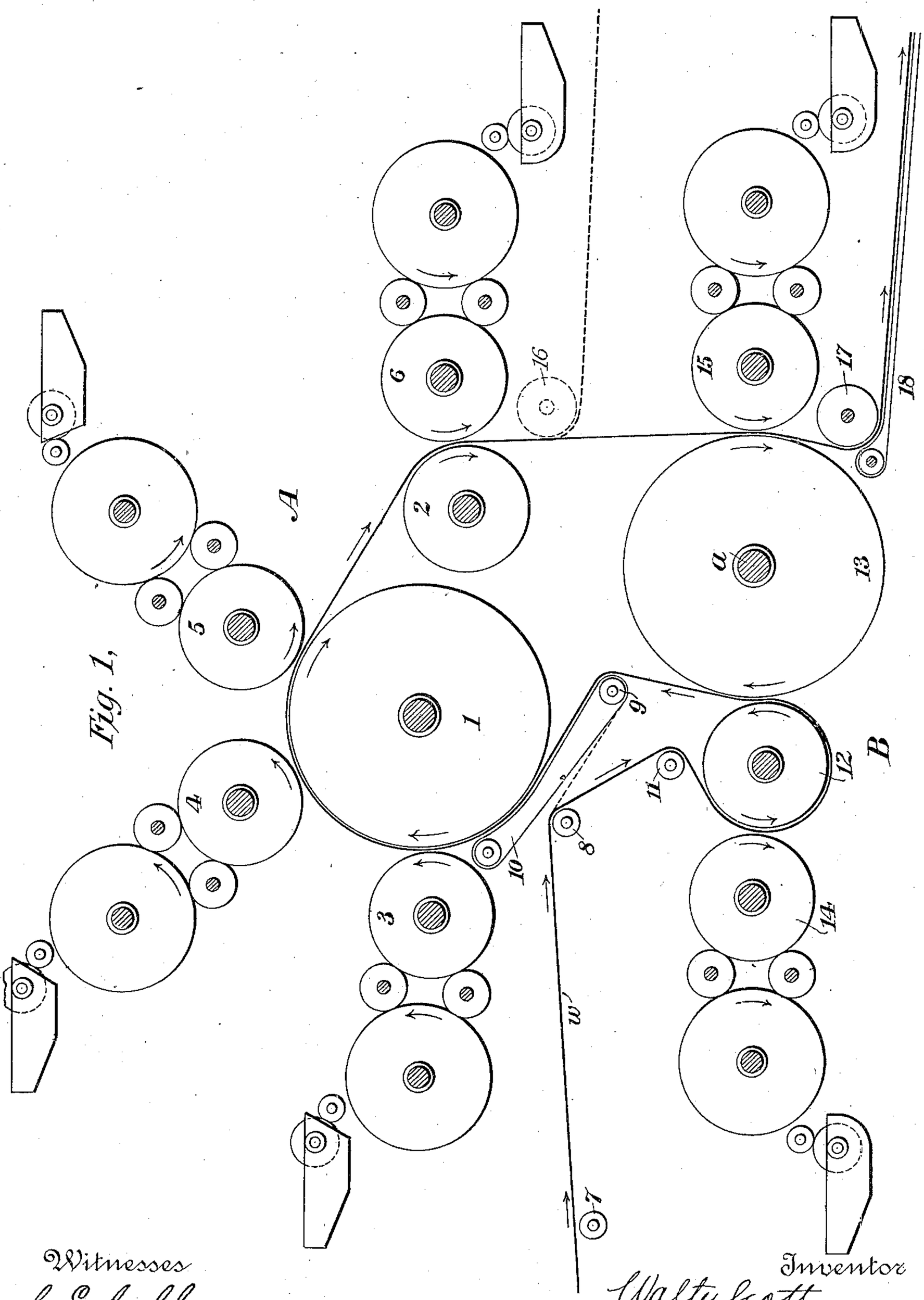

Fig. 1.

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(No Model.) 5 Sheets—Sheet 2.

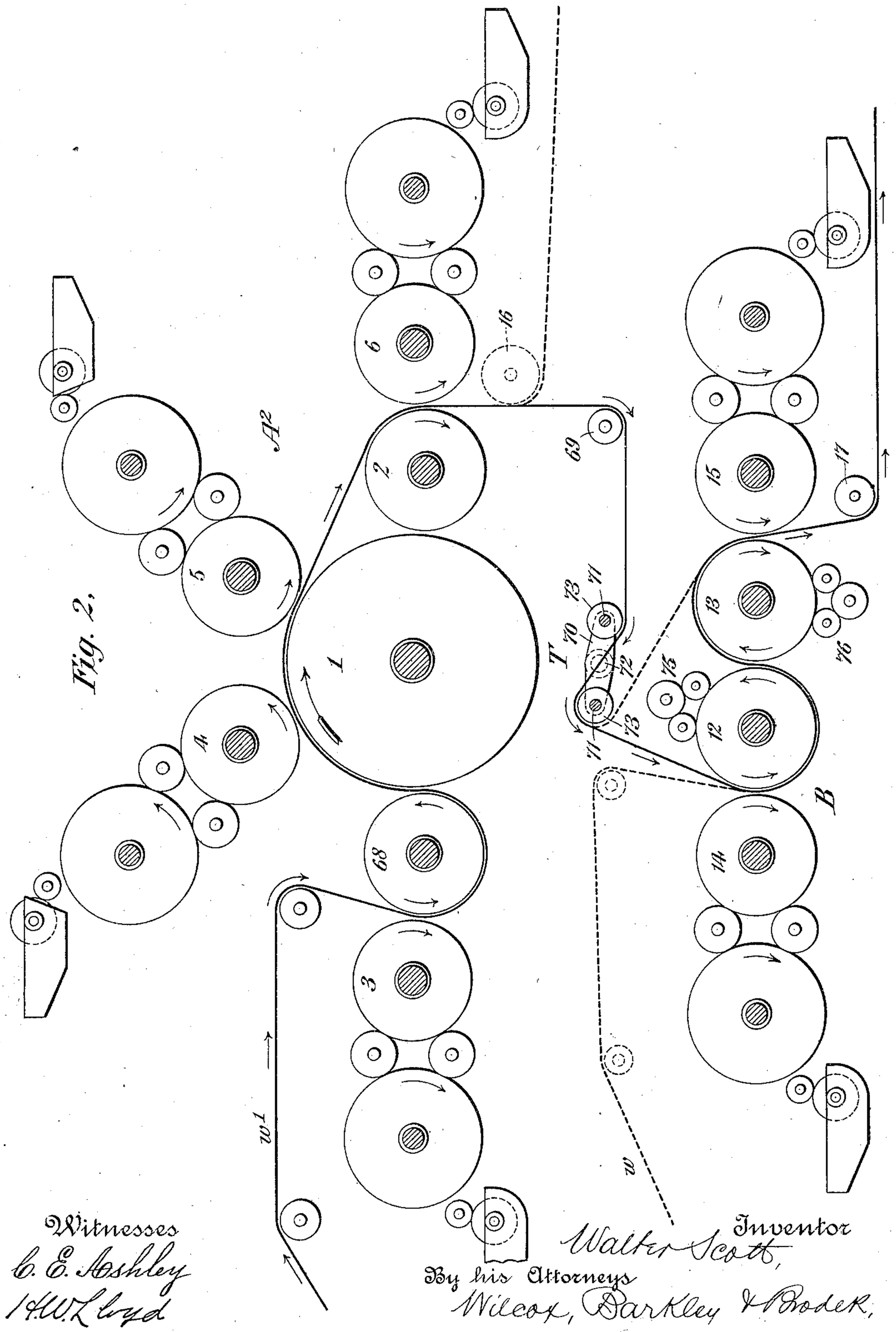

Fig. 2.

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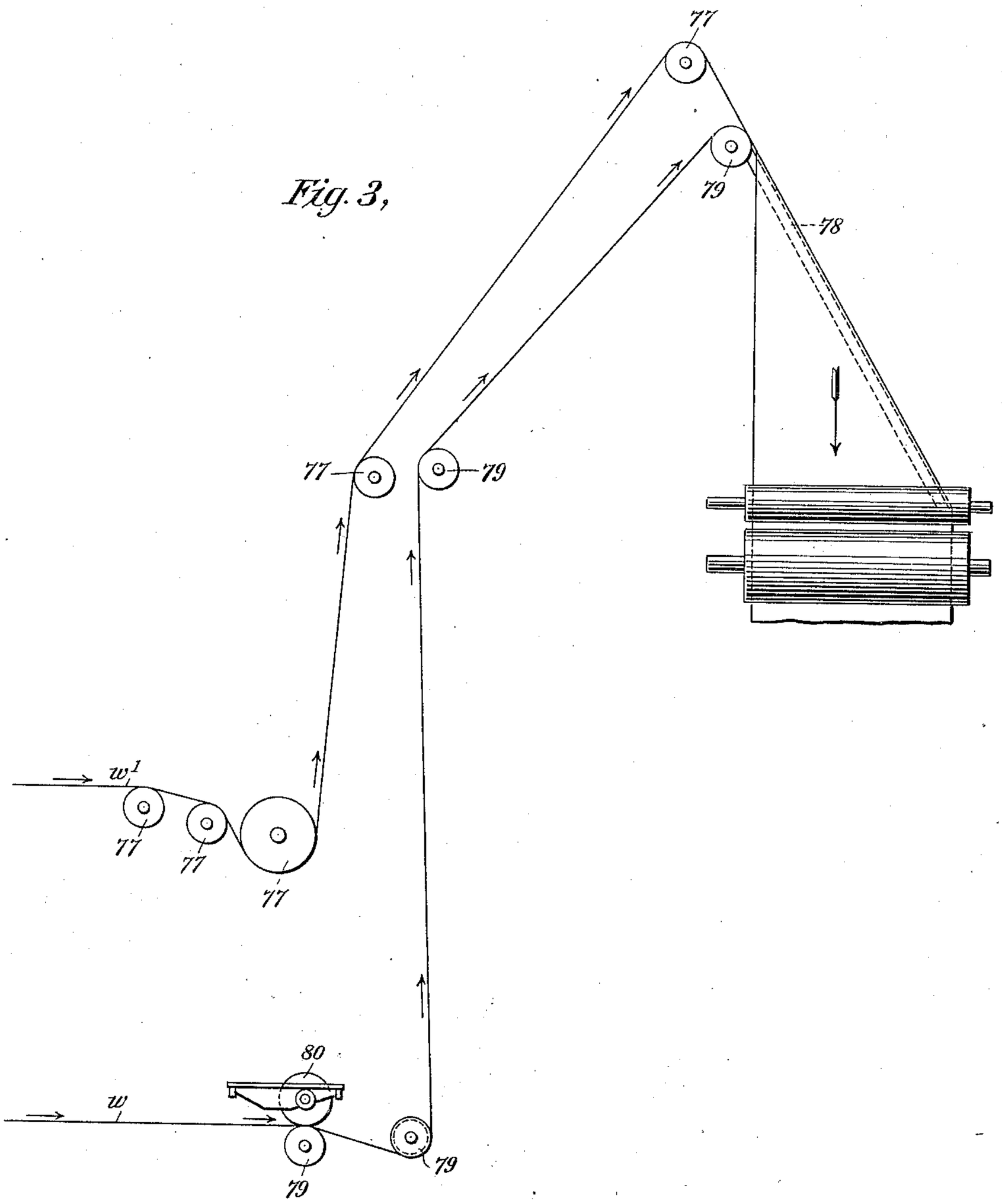
No Model.) 5 Sheets—Sheet 3.

Fig. 3,



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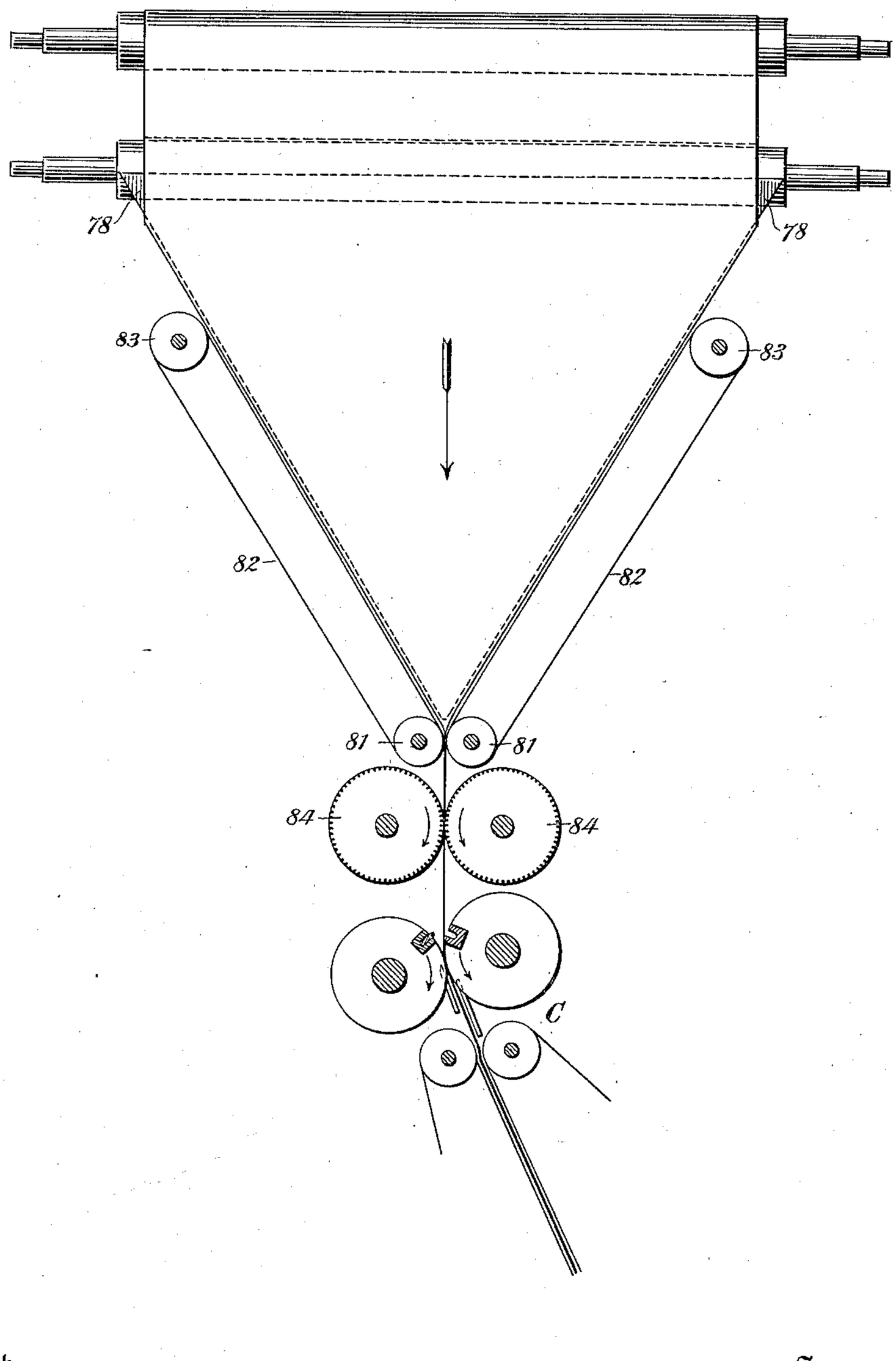
(No Model.) 5 Sheets—Sheet 4.

Fig. 4,



Witnesses
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(No Model.)

5 Sheets—Sheet 5.

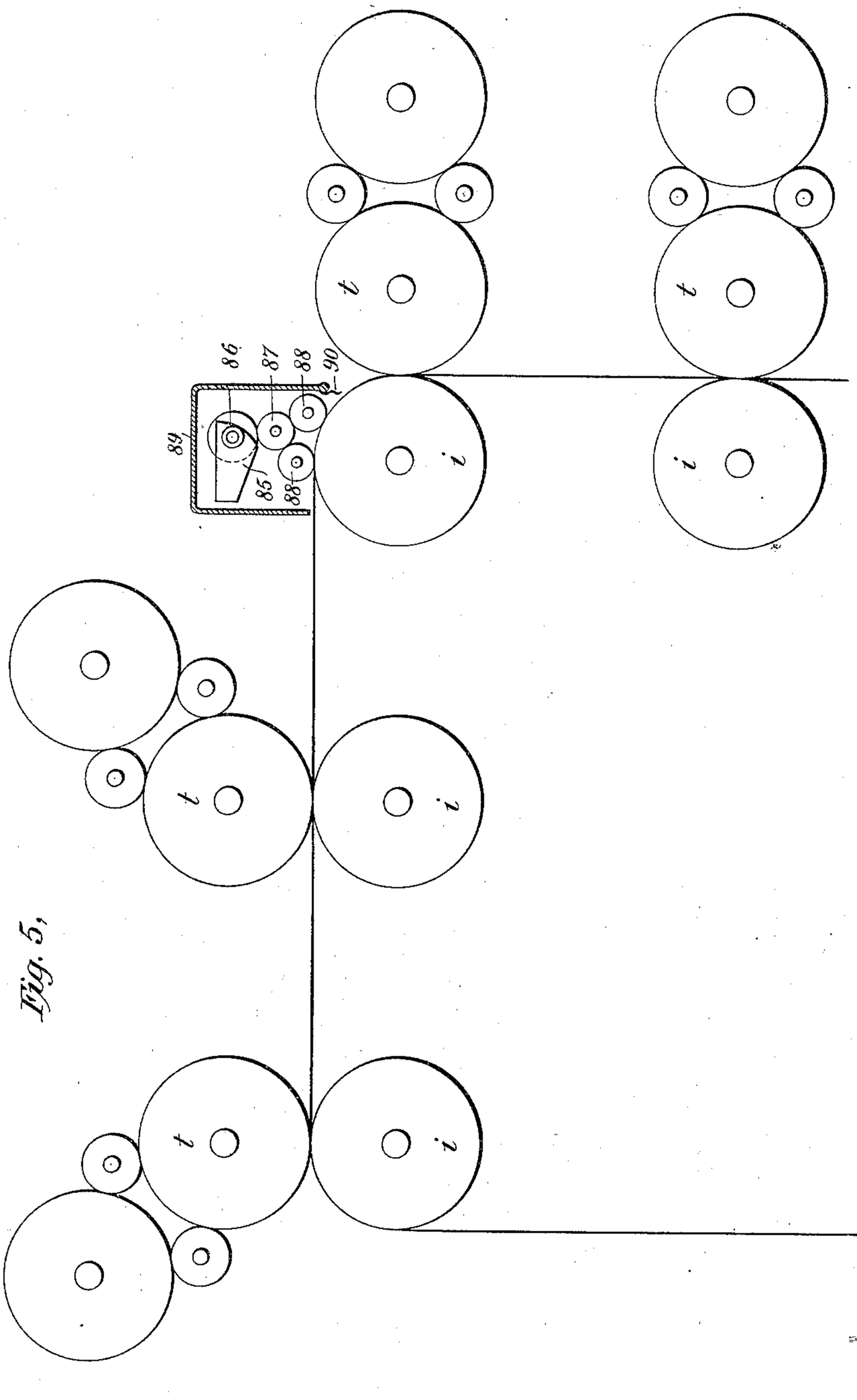

Fig. 5,

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UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 662,699, dated November 27, 1900.

Original application filed August 30, 1893, Serial No. 484,358. Divided and this application filed November 23, 1894. Serial No. 529,729. (No model.)

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 certain new and useful Improvements in Printing-Machines, of which the following is a specification.

This application is a division of my application for Letters Patent for printing-machines filed on the 30th day of August, 1893, and serially numbered 484,358, now Letters Patent of the United States numbered 625,470, dated May 23, 1899.

The invention relates, primarily, to printing-presses wherein several colors are printed on one or both sides of the web, and has for its objects the simplification and improvement of this class of printing-machines, the prevention of spreading of additional colors impressed on a web or sheet already having one or more colors thereon, the prevention of the transfer of color from one part of the web or sheet to another non-corresponding part of the same, and other objects, as will hereinafter appear.

To these ends the invention consists of the combination with two or more web-printing presses, of which at least one is adapted to perfect its own independent web, and take-up devices between said presses, whereby one web may be run through all the presses and may receive impressions on one or both sides from or in each of them, and of other combinations of devices hereinafter pointed out.

The invention is shown in the accompanying drawings, forming part hereof, in which—

Figure 1 is a side view of the printing mechanism, no framework being shown. Fig. 2 is a side view of the printing mechanism of a modification of the invention shown in Fig. 1. Fig. 3 is a diagrammatic side view of the course of the webs to the folding mechanism. Fig. 4 is an end view of the last-named mechanism. Fig. 5 is a diagrammatic side view showing one form of a mechanism applying a suitable body to the printed web.

Referring to the accompanying drawings, a press adapted to print upon one side of a web is shown at A, the said press consisting of the impression-cylinders 1 and 2, the plate or type cylinders 3 4 5, coacting with the cylinder 1, plate-cylinder 6, coacting with impression-cylinder 2, and the usual inking apparatus for each plate-cylinder. The web *w* may be led to this machine from a roll, (not shown,) about rollers 7 8 9, and over tapes 10 to and between the cylinders 1 3, then between cylinders 1 and 4 and cylinders 1 and 5 and to and between cylinders 2 and 6, and thence to a folding mechanism, as hereinafter set forth; but I prefer to first lead the web to the printing-machine B, as over roller 11. The machine B, which is below machine A, consists of impression-cylinders 12 13, their coacting plate-cylinders 14 15, and the usual inking devices. From machine B the web *w* passes around roller 9 to machine A. This roller 9 may be mounted in pivoted arms and so act as a web take-up to obtain register of the impressions of the two machines; but I prefer the construction hereinafter described for a take-up. After leaving cylinder 2 the web may lead about roller 16 to a suitable cutting and folding mechanism or between cylinders 13 15 and about roller 17 over tapes 18 to the said mechanism. During its course through the two machines the web will have received impressions on one side from cylinder 14 and impressions in different colors on the other side from the cylinders 3, 4, 5, 6, and 15 or such of them as have forms on them. The various cylinders of each machine are geared together in the usual manner, the power required to drive them being applied to the shaft *a* of the cylinder 13. The gear of cylinder 13 is connected by an intermediate gear with the gears of the cylinders 1 2, as shown in my Letters Patent numbered 625,470 and dated May 23, 1899.

In Fig. 2 is shown a modification of the arrangement shown in Fig. 1. An impression-cylinder 68 is placed between the plate-cylinder and cylinder 1 to form machine A^2, while the lower machine B is unchanged. The web *w'* leads, as shown, through machine A^2 and may lead thence to a cutting and folding machine, or it may lead to machine B, around roller 69, the take-up T, and to and between either cylinders 12 14 or 13 15. The web *w* may be used when machine A^2 delivers around roller 16, as hereinafter described. The take-up T consists of end pieces 70, tie-shafts 71,

and journals 72, and rollers 73 on the shafts 71. The web passes on opposite sides of the rollers. Any suitable means (not shown) for regulating the position of the take-up may be used. The references 75 76 indicate oiling-rollers for oiling the cylinders 12 13 to prevent set-off.

In Figs. 3 and 4 is shown the arrangement for forwarding the webs. The web *w'* runs over rollers 77 to the longitudinal former or folder 78, of usual construction. The web *w* runs over rollers 79 to the former and is there associated with web *w'*. Web *w* may receive a line of paste from the paster 80. Closely adjacent to each other at the point of the former are the rollers 81, about which tapes 82 pass. The pulleys 83 for the tapes 82 may be mounted in swing-arms. (Not shown.) Adjacent the rollers 81 are the forwarding rolls or cylinders 84, which have knurled, fluted, or otherwise-roughened surfaces. The diameters of the cylinders 84 and of the rolls 16 17 are such that the same matter shall always come upon the same parts of the cylinders or rolls, thus avoiding blurring or mixing of colors. Thus the rolls 16 17 are half the diameter of the plate-cylinders shown, which in such case carry duplicate plates at opposite sides thereof, though no two of said cylinders carry like plates. The cylinders 84 shown are equal to the plate-cylinders shown, though this is not indicated in the drawings, as Figs. 1 and 4 are on different scales. It is obvious that the same result can be attained with other sizes of the cylinders 84 and rolls 16 17. The web is led from the cylinders 84 in any suitable way to the usual perforating or cutting apparatus, as C.

Where several colors are printed on a web to aid in making the later colors adhere to the first without spreading or mixing, I employ any suitable device or mechanism to apply magnesia or other powder to the web after it has had one or more colors printed thereon and before it receives the remainder of the colors, as this is beneficial. In some cases the device may apply bronzing-powder. One form of a powdering device is shown in Fig. 5, where is shown a series of printing-couples, the reference *i* marking the im pression-cylinders and *t* the plate-cylinders. The powder applying or dusting apparatus is composed of the fountain 85, feed-rolls 86 87, and dusting-rolls 88. A removable or hinged box or cover 89 confines the dust. The reference 90 indicates a flexible material, as cloth, secured to the box 89 to complete the inclosure. The rolls 88 press on the web as it passes an impression-cylinder.

The milled or fluted rollers 84 may coact like gears, the ribs of one fitting between the ribs of the other, and so pull the web. Rollers 84 are driven by gears (not shown) and act on the web without actually pinching it, and thus marring the print.

Many changes in details and parts of the mechanisms may be made without departing from the spirit of the invention, which is not limited to the precise forms thereof shown.

The guide-rolls 16 17 may be fluted, knurled, or roughened in the same manner as rolls 84.

What I claim is—

1. In a printing-press, the combination of a press having an impression-cylinder and a plurality of form-cylinders for coaction therewith in printing on one side of a web as it passes through once, a perfecting-press adapted to print on an independent web, said presses being arranged one over the other, and adjustable means intermediate said presses for guiding a single web from one to the other of said presses, substantially as described.

2. In a printing-press, the combination of a press having a form and an impression cylinder for printing on one side of a web, and an impression-cylinder and a plurality of form-cylinders for coaction with the last-named cylinder for printing a number of colors on the other side of the web, with a second perfecting-press, said presses being arranged one above the other, and adjustable web-guides between said presses, whereby two webs may be independently perfected or one web may be run through both machines, substantially as described.

Signed at New York, in the county of New York and State of New York, this 22d day of November, A. D. 1894.

WALTER SCOTT.

Witnesses:
G. W. HOPKINS,
R. W. BARKLEY.