(No Model.)

8 Sheets—Sheet 1.

W. SPALCKHAVER.

WEB PRINTING MACHINE.

No. 545,138. Patented Aug. 27, 1895.

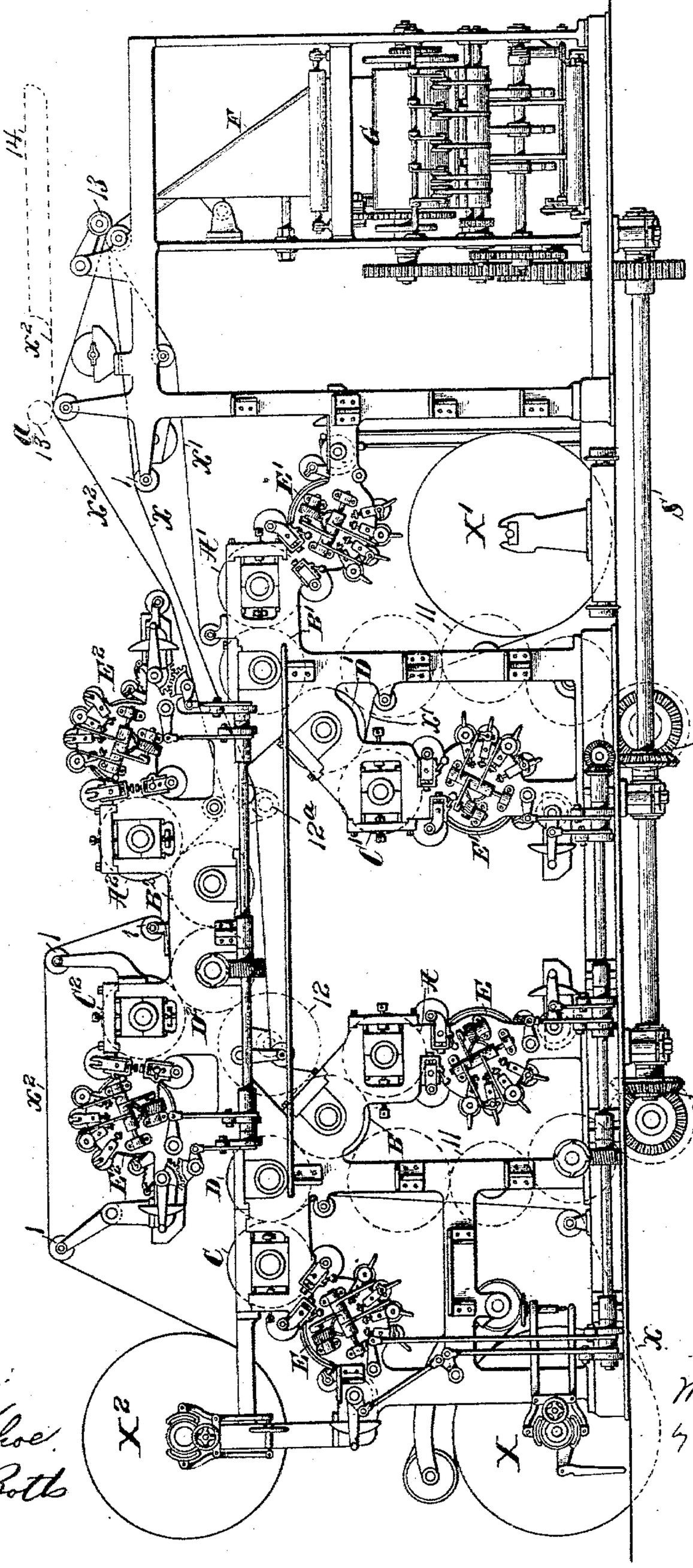

Fig. 1.

Attest:
C. F. Kehoe.
Geo. H. Botts

Inventor:
William Spalckhaver.
by Philipp Munn
& Phelps
Attys

(No Model.)

8 Sheets—Sheet 2.

W. SPALCKHAVER.

WEB PRINTING MACHINE.

No. 545,138. Patented Aug. 27, 1895.

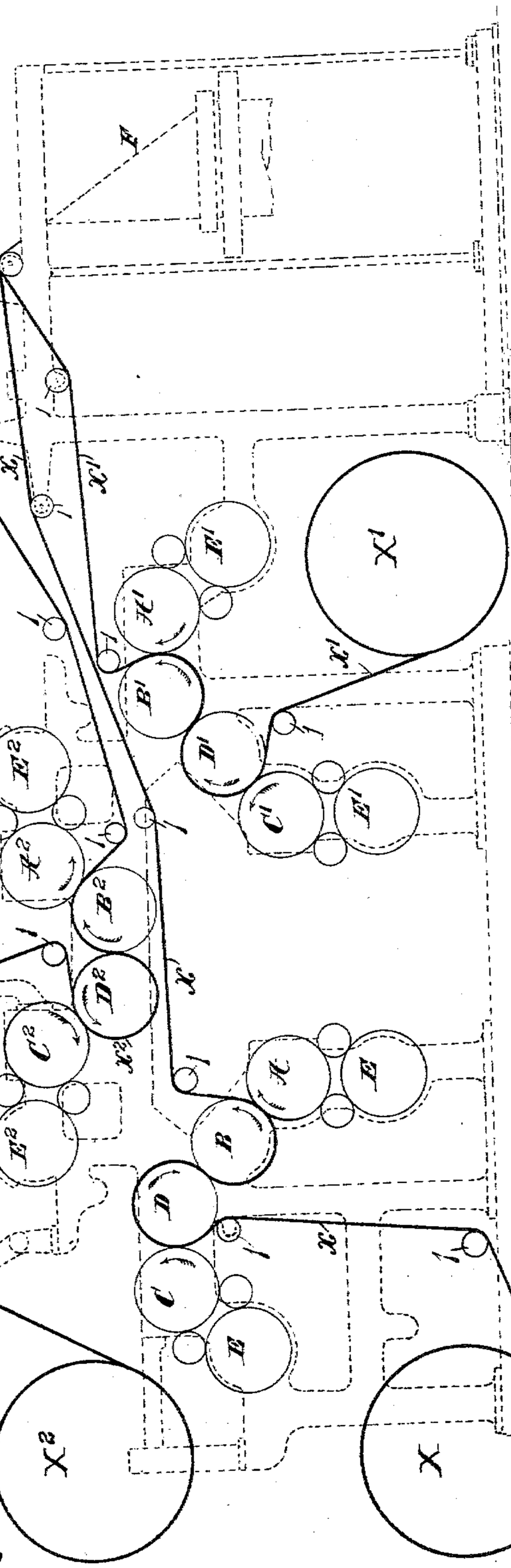

Fig. 2.

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(No Model.)

8 Sheets—Sheet 3.

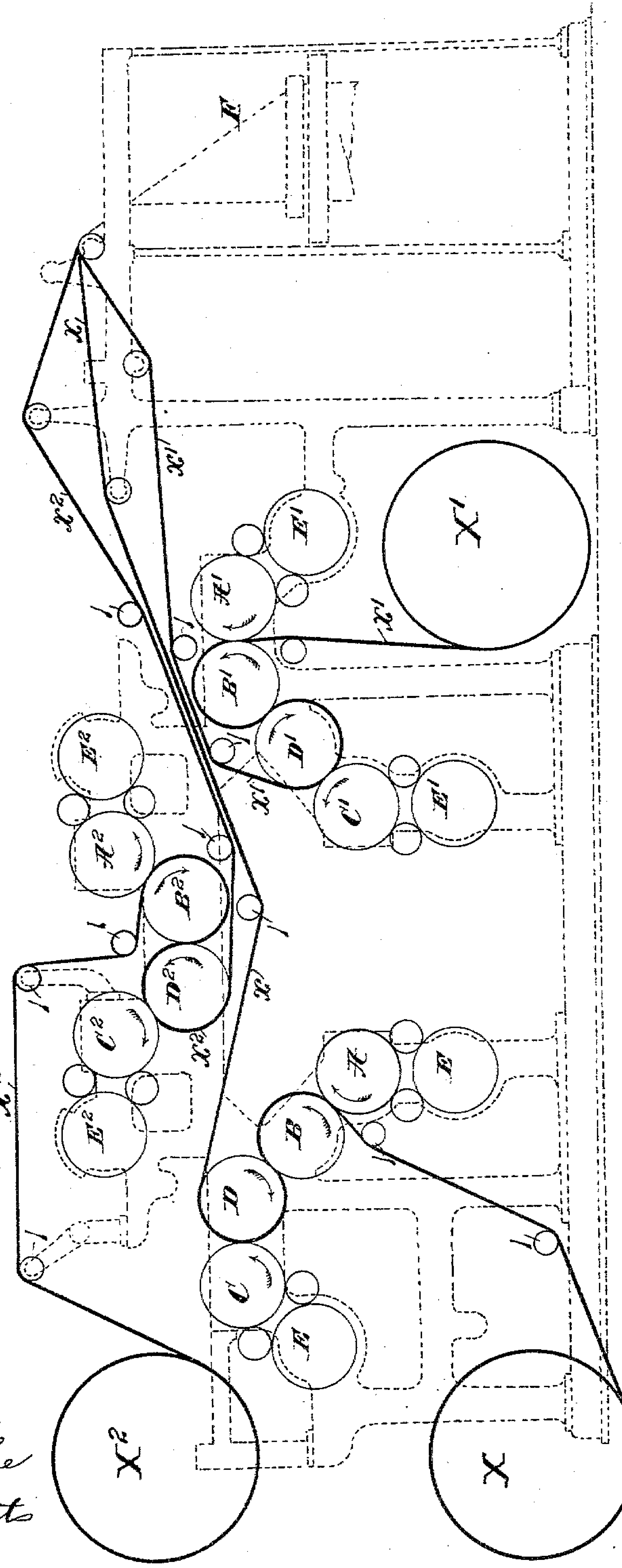
W. SPALCKHAVER.

WEB PRINTING MACHINE.

No. 545,138.

Patented Aug. 27, 1895.

Fig. 3.



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T. F. Kehoe
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(No Model.)

8 Sheets—Sheet 4.

W. SPALCKHAVER.

WEB PRINTING MACHINE.

No. 545,138. Patented Aug. 27, 1895.

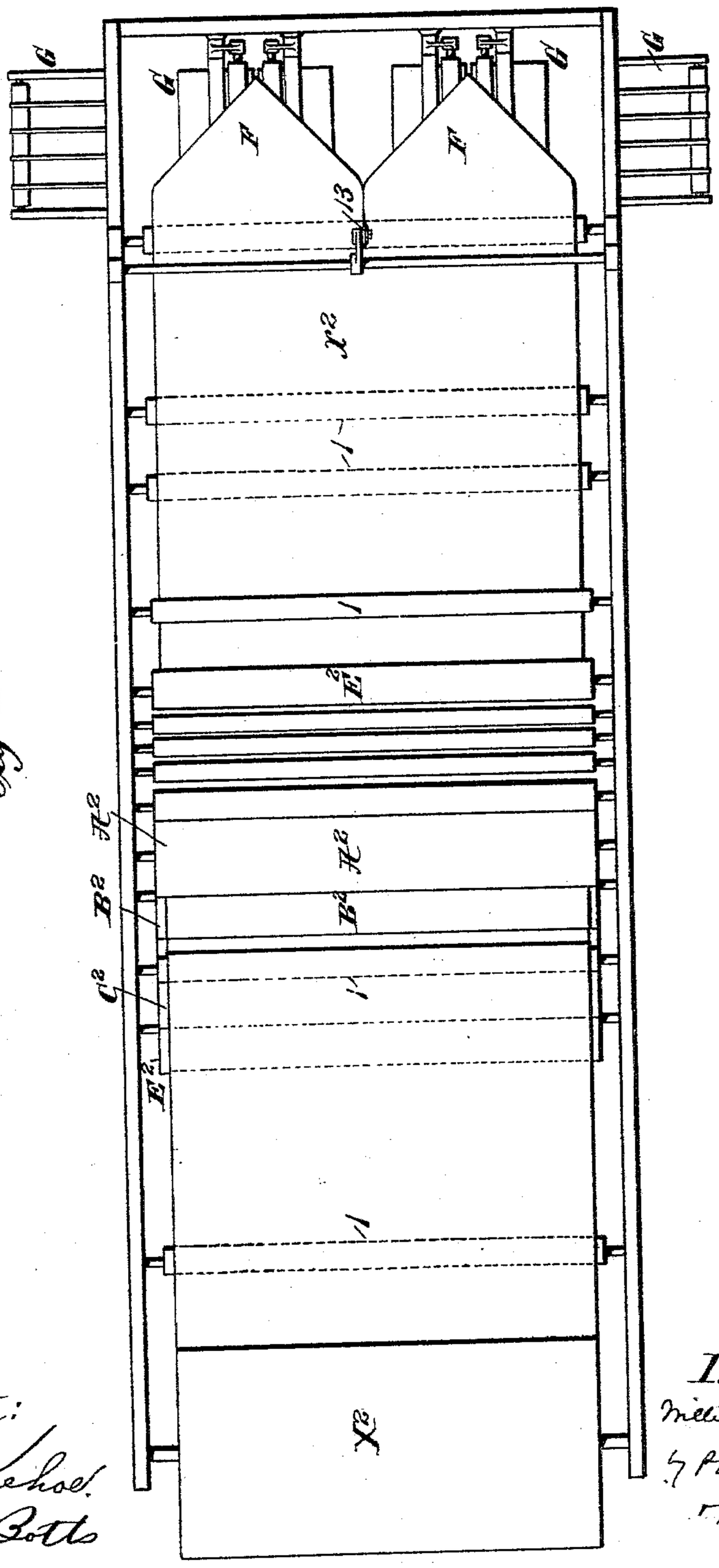

Fig. 4.

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(No Model.)

8 Sheets—Sheet 5.

W. SPALCKHAVER.

WEB PRINTING MACHINE.

No. 545,138. Patented Aug. 27, 1895.

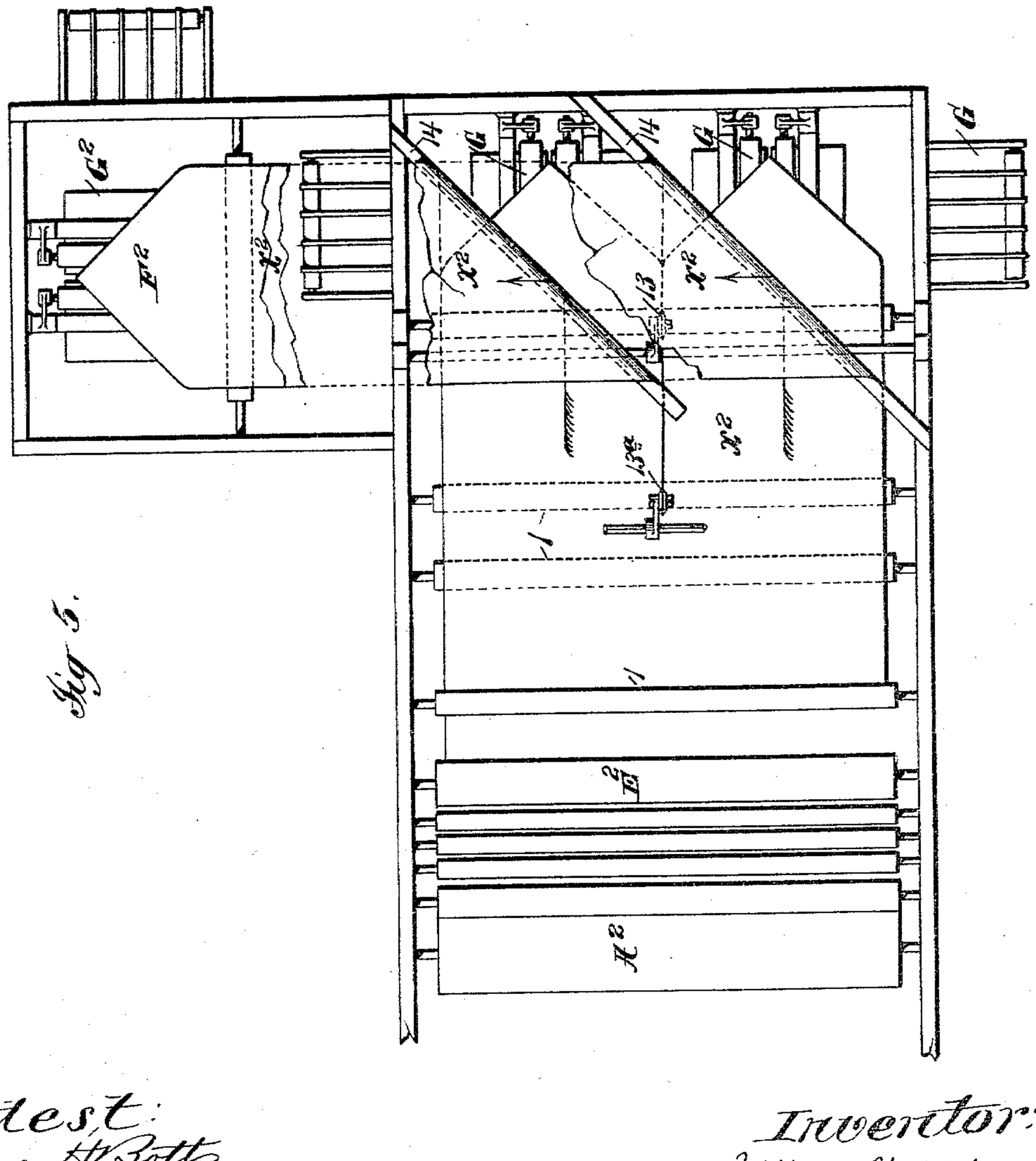

Fig 5.

Attest:
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T. F. Kehoe

Inventor:
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(No Model.)

8 Sheets—Sheet 6.

W. SPALCKHAVER.

WEB PRINTING MACHINE.

No. 545,138. Patented Aug. 27, 1895.

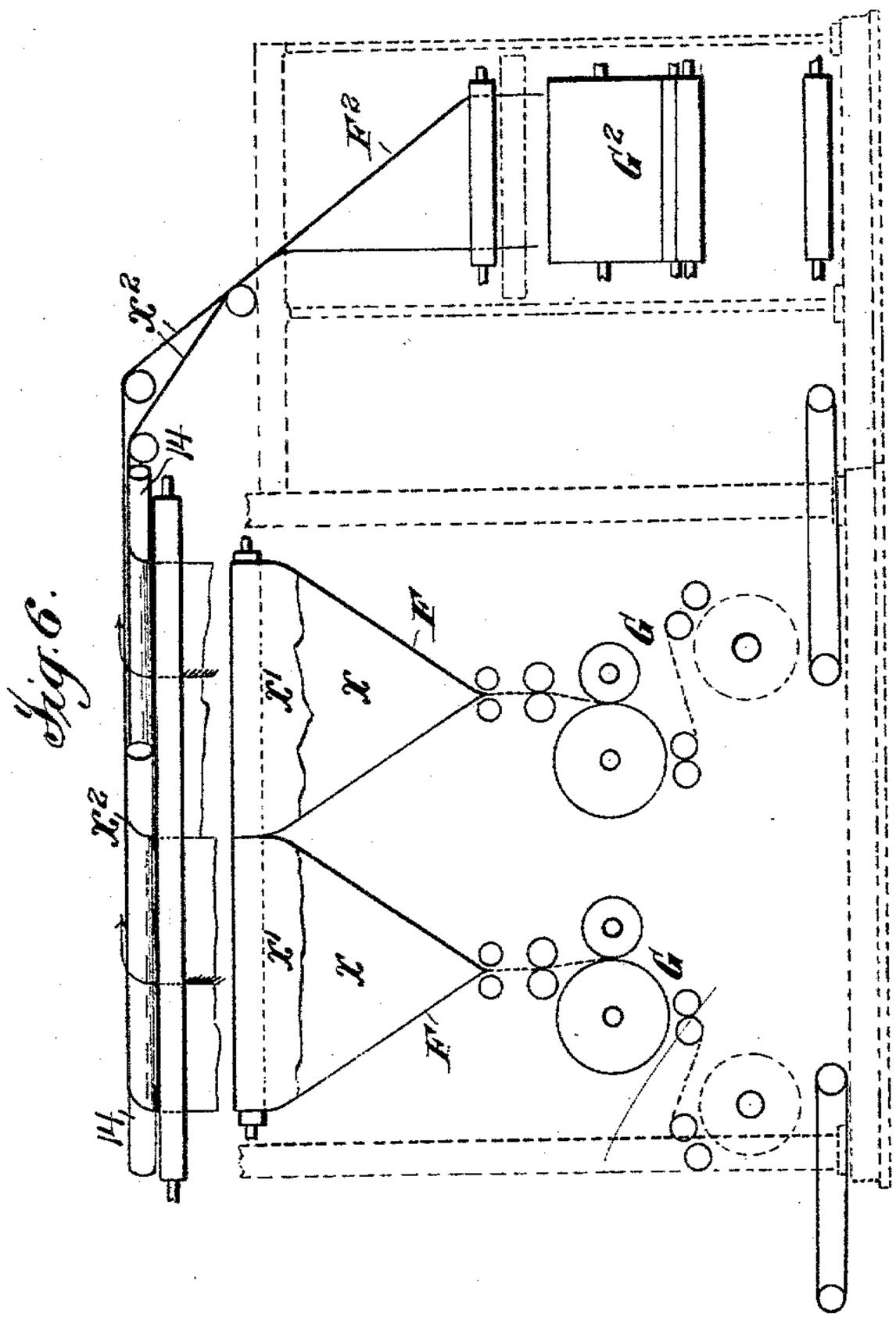

Fig. 6.

Attest:
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Inventor:
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(No Model.)

8 Sheets—Sheet 7.

W. SPALCKHAVER.

WEB PRINTING MACHINE.

No. 545,138. Patented Aug. 27, 1895.

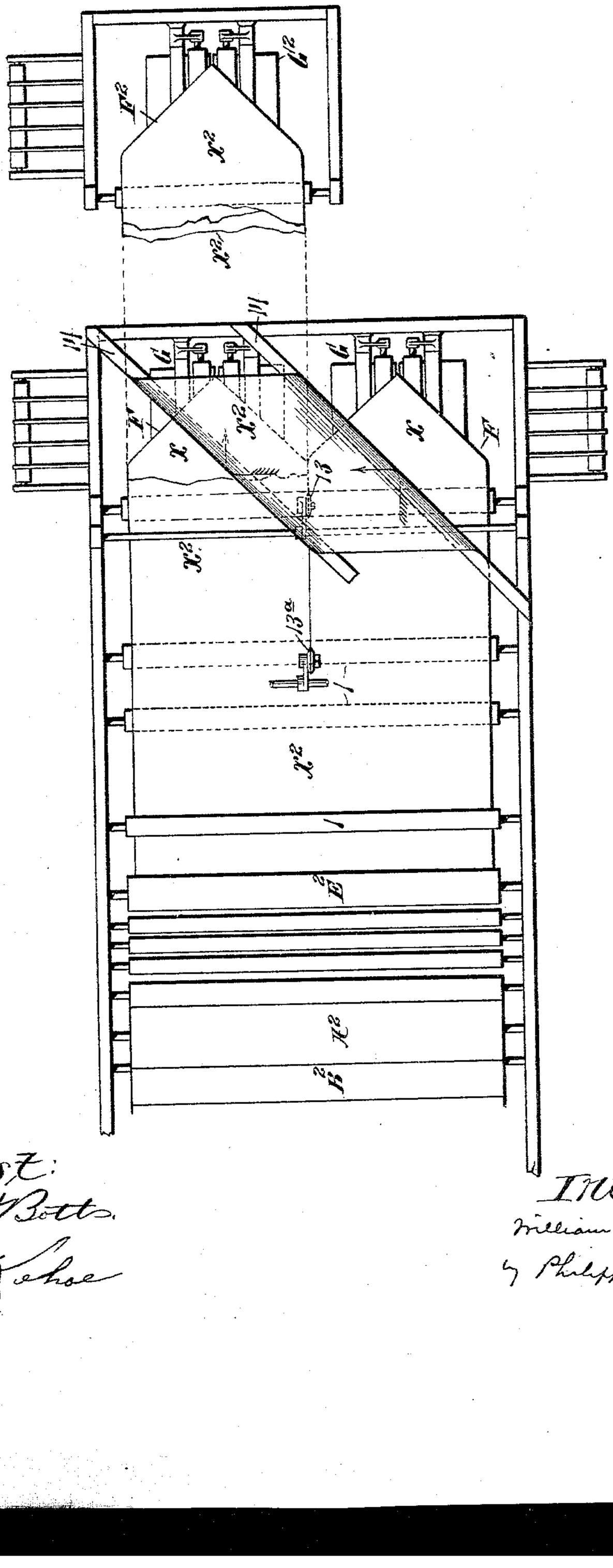

Fig. 7.

Attest:
Geo. H. Botts.
T. F. Kehoe

Inventor:
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by Philipp Brumm & Philipp
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(No Model.) 8 Sheets—Sheet 8.

W. SPALCKHAVER.

WEB PRINTING MACHINE.

No. 545,138. Patented Aug. 27, 1895.

Fig. 9.

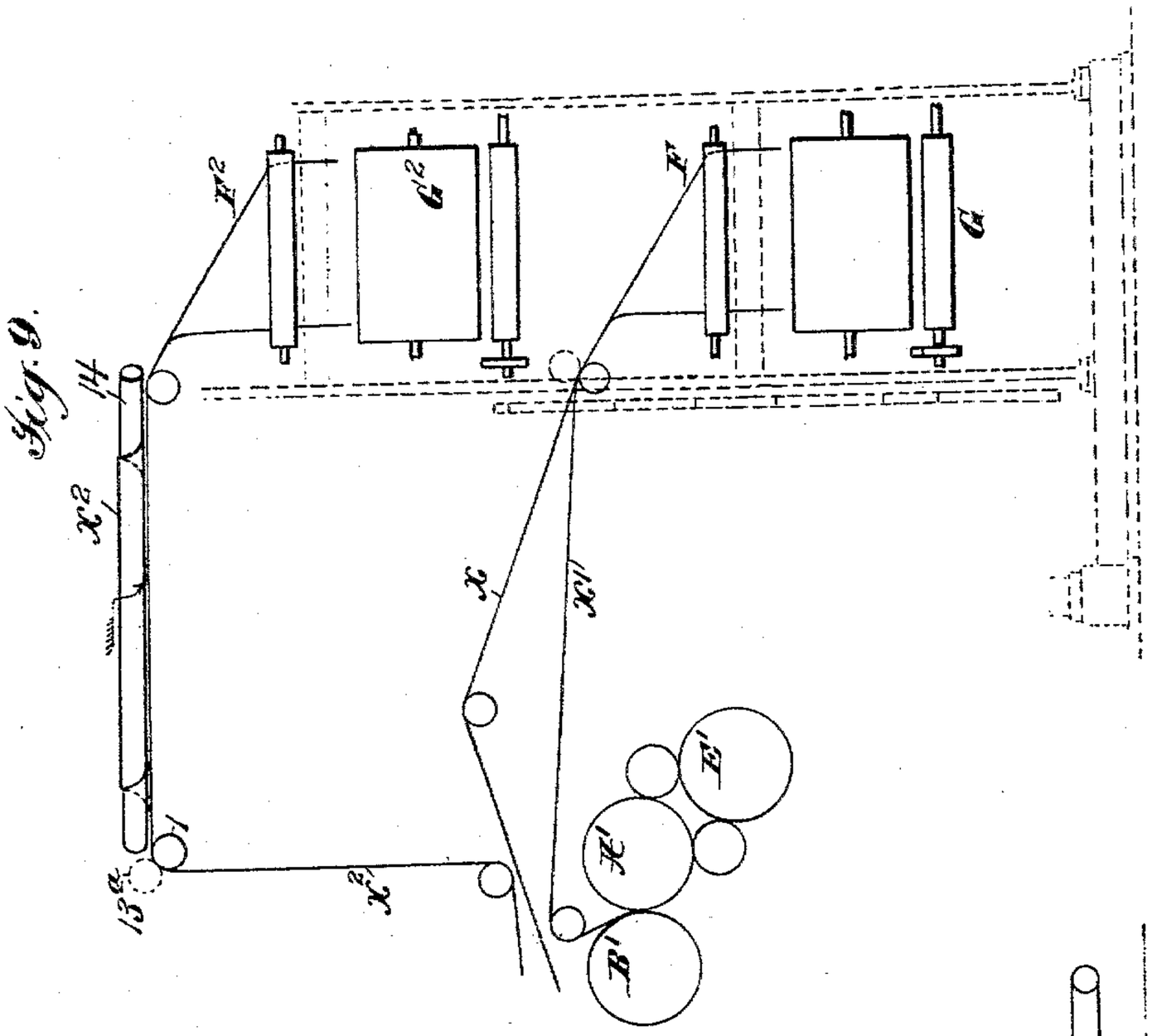
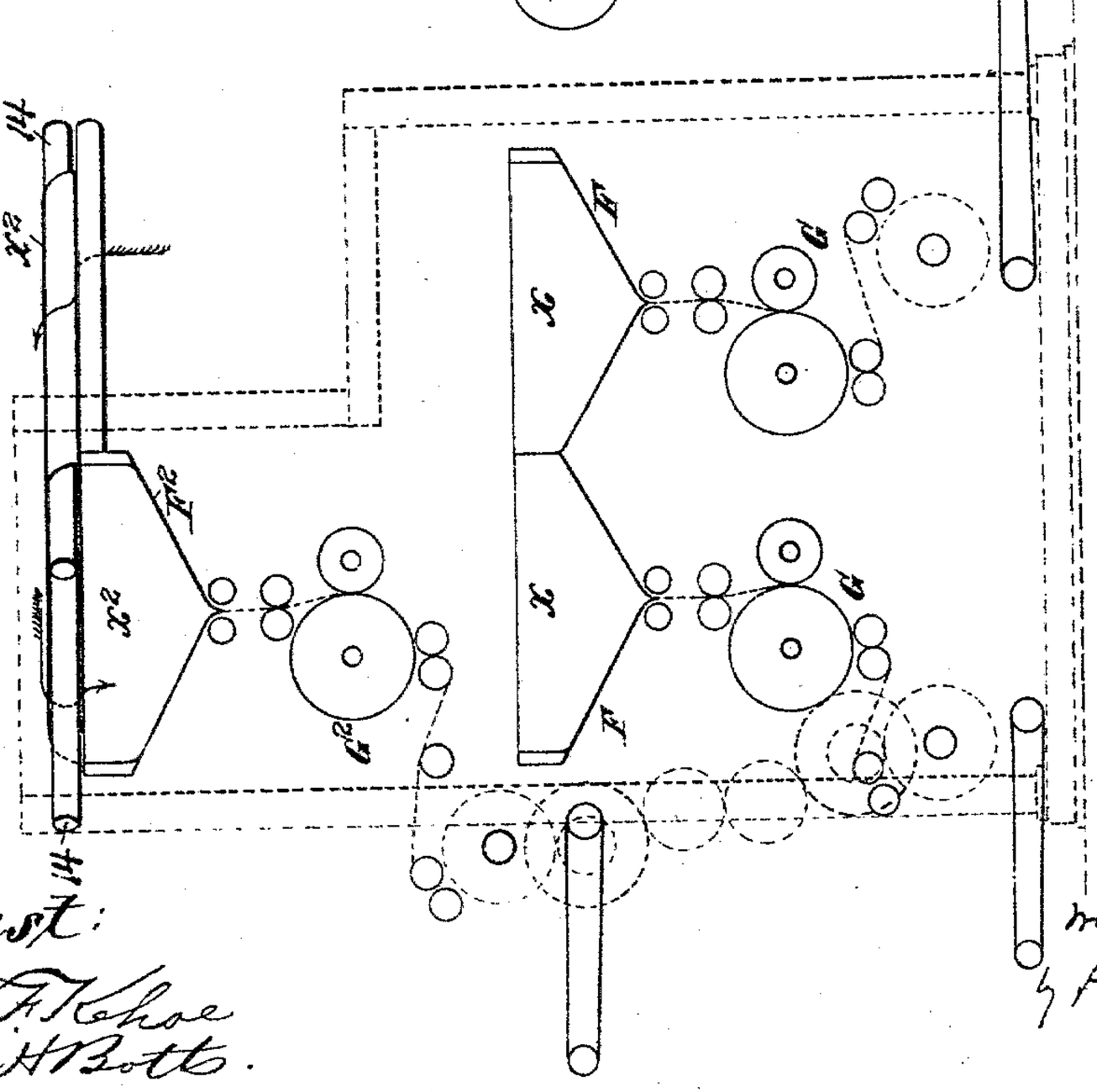


Fig. 8.



Attest:
T. A. Kehoe
Geo. H. Bott.

Inventor:
William Spalckhaver
by Philipp Munson
Phelps
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UNITED STATES PATENT OFFICE.

WILLIAM SPALCKHAVER, OF BROOKLYN, 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. 545,138, dated August 27, 1895.

Application filed December 1, 1894. Serial No. 530,565. (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 Printing-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 multiple-web-printing machine, and especially to provide a three-web machine of compact and convenient form, securing convenient access to the different printing mechanisms for the various purposes required in web-printing, and with the webs leaving the printing mechanisms in convenient position for subsequent handling by delivery mechanisms of different forms in accordance with the form of the product or products and point or points of delivery desired.

As the invention will be best understood from a full description of a construction embodying the same, all further preliminary description will be omitted, and such a description be now given, in connection with the accompanying drawings, forming a part of this specification, and showing a multiple-web-printing press embodying all the features of the invention in the preferred form and certain modifications in the delivery mechanism, and the features forming the invention will then be specifically pointed out in the claims.

In the drawings, Figure 1 is a diagrammatic side elevation of the complete press with a double-width two-product main delivery, and showing in dotted lines the lead of the web or webs to an auxiliary delivery. Fig. 2 is a diagrammatic section inside the frame, showing the lead of all the webs to the main delivery. Fig. 3 is a view similar to Fig. 2, showing a modified lead of the webs. Fig. 4 is a plan view showing the same lead as in Figs. 2 and 3. Figs. 5 and 6 are respectively a plan and end elevation showing in diagram the lead of the top web to the side auxiliary delivery, as in dotted lines in Fig. 1. Fig. 7 is a plan view showing in diagram the lead of the top web to an auxiliary delivery at the end of the press. Figs. 8 and 9 are respectively an end and side elevation, also in diagram, showing the lead of the top web to an auxiliary delivery above one side of the main delivery.

Referring to said drawings, the printing-machine consists, essentially, of three web-printing mechanisms, two of which are placed in the lower part of the machine and arranged in line, and the other is supported above these two lower mechanisms. In the form shown each of the printing mechanisms has two pairs of type and impression cylinders, the lower front mechanism having the pairs of type and impression cylinders A B and C D, the lower rear mechanism the pairs of type and impression cylinders A′ B′ and C′ D′, and the top mechanism the pairs of type and impression cylinders A^2 B^2 and C^2 D^2, the type-cylinders of these respective printing mechanisms being provided, respectively, with the inking mechanisms E E′ E^2, which are shown as of substantially the form described and claimed in Letters Patent No. 453,408, although it will be understood that inking mechanism of any other suitable form may be used.

In order to bring the two lower printing mechanisms close together and at the same time secure convenient access thereto for application and removal of plates, &c., neither of the web-rolls is placed between them, but the lower rolls X X′, from which the webs x and x' are led, are preferably placed, respectively, outside their printing mechanisms and, as shown, above the floor-line of the press, the third web-roll X^2, from which the web x^2 is led to the top printing mechanism, being preferably mounted, as shown, above and in front of its printing mechanism and in line with the web-roll X. It will be understood, however, that the position of these rolls may be varied; but the arrangement shown secures a short lead and forms a very compact and convenient construction.

To make the construction as compact as possible and secure more convenient access to the cylinders, the successive type-cylinders of the two lower mechanisms are arranged one above the other, so as to reduce the floor-space required, and the successive type-cylinders of the top printing mechanism are arranged in substantially the same horizontal plane, so as to reduce the height of the press,

this ehabling the three mechanisms to be mounted very compactly, as shown, with the lower cylinders of the two lower mechanisms quite close together with convenient access between them and the top mechanism extending above the lower mechanisms and the space between them, the upper cylinders of the lower mechanisms preferably being separated farther than their base-cylinders, so as to afford space for dropping the impression-cylinders of the top mechanism, this securing, also, convenient access from above to the upper type-cylinders of the two lower mechanisms at the opposite ends of the press.

The two lower printing mechanisms are shown as driven from the main driving-shaft S at the base of the machine through bevel-gears 10 and series of intermediates 11, and the top printing mechanism is shown as driven from the first impression-cylinder B of the lower front mechanism through an intermediate 12. In order that the top printing mechanism may be run with either of the lower mechanisms, however, so that two printing mechanisms may be run in case of stoppage of either of the lower mechanisms, this intermediate 12 is removable, and a stud 12^a is provided upon which the intermediate 12 may be placed to drive the top printing mechanism from the second impression-roll D′ of the lower rear printing mechanism, and by removing the intermediate 12 the two lower mechanisms may be driven without driving the top mechanism.

The lead of the three webs through the printing mechanism requires no description, as it is obvious from the drawings, it being understood that rolls 1 are simple guide-rolls, over which the webs are led. The webs may be led, as shown in Fig. 2, so as to have the first impression on the upper side as the webs pass to the delivery mechanism, or, as in Fig. 3, with the first impression on the under side, only the simple change in lead shown being required.

It will be seen that this arrangement of printing mechanism provides a very low, compact, and convenient construction of three-web-perfecting press, in which all the type-cylinders are readily accessible for inspection and handling of plates, the threading of each of the webs is convenient, and all the parts of the machine in convenient position, while the lead of the webs to the printing mechanisms and from the latter to bring them together is very short and direct.

With this printing mechanism it is evident that delivery mechanism of various forms may be conveniently used. Thus the three double-width webs $x\ x'\ x^2$ may be led from the respective printing mechanisms to a delivery mechanism consisting of two longitudinal folders F, placed side by side, as shown in Figs. 1 to 4, a slitter 13 being used, by which the webs are slit centrally, so that three single-width webs thus pass to each longitudinal folder F and to each delivery G, equal products thus being delivered at opposite sides of the machine. It is desirable, however, that means should be provided for securing three products, and that one or more of the webs may be delivered with the two halves of the webs at opposite sides of the press associated one upon the other, and I provide a simple and convenient construction for this purpose well adapted for the different products desired, in which the main delivery mechanism, by which the three webs or one or more of them may be delivered on a straight run and without association of the two halves one upon the other, is combined with an auxiliary delivery, by which one or more of the webs may be delivered with the two halves associated one upon the other. By this construction a great variety of products may be secured and three eight-page papers produced from webs of the proper width, of which papers two consist of four pages from each of two webs, and the third being from a single web. The construction and location of the auxiliary delivery will depend somewhat upon the result desired and upon the floor-space; but in all these constructions a transferrer lying outside the path to the main delivery and preferably above the latter will be used, by which one or more of the webs, after being slit longitudinally, may have its or their sections transferred so as to lie one upon the other.

In Figs. 5 and 6 a transferrer above the main delivery, consisting in the form shown of turning bars 14, is combined with a delivery at one side of the main delivery, a longitudinal folder F^2 and delivery mechanism G^2 being used, by which the product will be delivered endwise of the press and opposite the main delivery, a slitter 13^a being used in connection with the transferrer, and each of the sections being turned at right angles by one of the turning bars and the right-hand section brought under the left-hand section, the lead of the web or webs from the printing mechanism being shown in dotted lines in Fig. 1.

In Fig. 7 is shown a construction which will be found desirable when the floor-space widthwise of the press is limited, in which the auxiliary folder F^2 and delivery G^2 are placed rearward of and in line with one side of the press, one section of the slit web or webs passing directly to the auxiliary mechanism and the other section being carried about both turning bars of the transferrer and brought on top of the other section, the transferrer 14 being in the same position as in Figs. 1, 5, and 6.

In Figs. 8 and 9 a construction is shown which is well adapted for use when additional floor-space for the auxiliary mechanism cannot conveniently be secured. In this construction the auxiliary delivery mechanism is placed above one side of the main delivery mechanism and one section of the web or webs led directly thereto, while the other sec-

tion is carried above both turning bars of the transferrer and brought on top of the first section, the product being delivered at the side of the press above one of the products from the main delivery mechanism. In this construction the transferrer 14 is raised to a greater height above the main delivery and moved forward from the position shown in the other figures.

It will be understood by those skilled in the art that the deliveries G G^2 may be of any suitable form, and that various other devices for securing a variety of products—such as additional slitters and pasting or stapling mechanisms—may be added to the construction shown.

What I claim is—

1. The combination with two web printing mechanisms arranged in line with their cylinders parallel, of a third web printing mechanism above and extending over the space between said two first mentioned printing mechanisms and having its cylinders parallel with the cylinders of said mechanisms, substantially as described.

2. The combination with two web printing mechanisms arranged in line with their cylinders parallel, each mechanism having its successive type cylinders arranged one above the other whereby the horizontal space occupied by said printing mechanisms is reduced, of a third web printing mechanism above and extending over the space between said two first mentioned printing mechanisms with its cylinders parallel with the cylinders of said mechanisms, and having its successive type cylinders arranged in substantially the same horizontal plane, whereby the vertical space occupied by said third printing mechanism is reduced, substantially as described.

3. The combination with two web printing mechanisms arranged in line with their cylinders parallel, each mechanism having its successive type cylinders arranged one above the other and with the upper type cylinders of the two mechanisms separated farther than the lower type cylinders of said printing mechanisms, whereby the horizontal space occupied by the printing mechanisms is reduced and the upper type cylinders brought into position for convenient access from the opposite ends of the machine, of a third web printing mechanism above and extending over the space between said two first mentioned printing mechanisms with its cylinders parallel to the cylinders of said printing mechanisms and having its successive type cylinders arranged in substantially the same horizontal plane whereby the vertical space occupied by said third printing mechanism is reduced, substantially as described.

4. The combination with two web printing mechanisms arranged in line with their cylinders parallel, of a third web printing mechanism above and extending over the space between said two first mentioned printing mechanisms with its cylinders parallel with the cylinders of said mechanisms, a main delivery mechanism at one end of the press capacitated to deliver the webs without superposition of sections, and an auxiliary delivery mechanism at the same end of the press having a slitter and transferrer by which the sections of the slit web or webs may be superposed, substantially as described.

5. The combination with two printing mechanisms arranged in line with their cylinders parallel, each mechanism having its successive type cylinders arranged one above the other and with the upper type cylinders of the two mechanisms separated farther than the lower type cylinders of said printing mechanisms, whereby the horizontal space occupied by the printing mechanisms is reduced and the upper type cylinders brought into position for convenient access from the opposite ends of the machine, of printing mechanism above said two first mentioned printing mechanisms with cylinders parallel to the cylinders of said two first mentioned printing mechanisms, substantially as described.

6. The combination with two web printing mechanisms arranged in line with their cylinders parallel, each mechanism having its successive type cylinders arranged one above the other and with the upper type cylinders of the two mechanisms separated farther than the lower type cylinders of said printing mechanisms, whereby the horizontal space occupied by the printing mechanisms is reduced and the upper type cylinders brought into position for convenient access from the opposite ends of the machine, of web printing mechanism above said two first mentioned printing mechanisms with cylinders parallel to the cylinders of said two first mentioned printing mechanisms, and web associating and delivery mechanism at one end of the press capacitated to deliver the product of all said printing mechanisms, substantially as described.

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

WILLIAM SPALCKHAVER.

Witnesses:

E. L. SPEIR,

F. W. H. CRANE.