

No. 664,574.

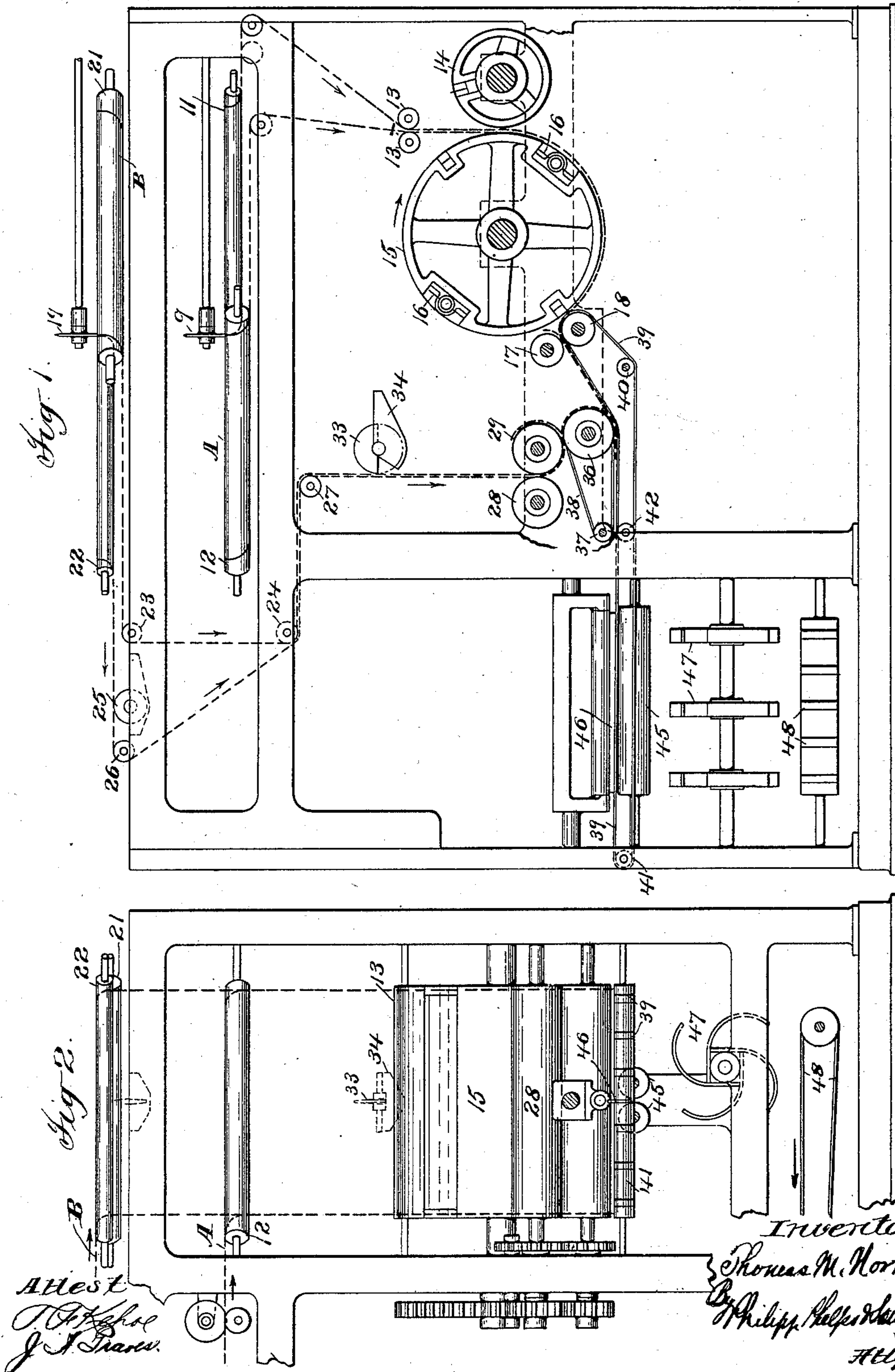
Patented Dec. 25, 1900.

T. M. NORTH.
PRINTING MACHINE.

(Application filed Apr. 5, 1900.)

(No Model.)

3 Sheets—Sheet 1.



No. 664,574.

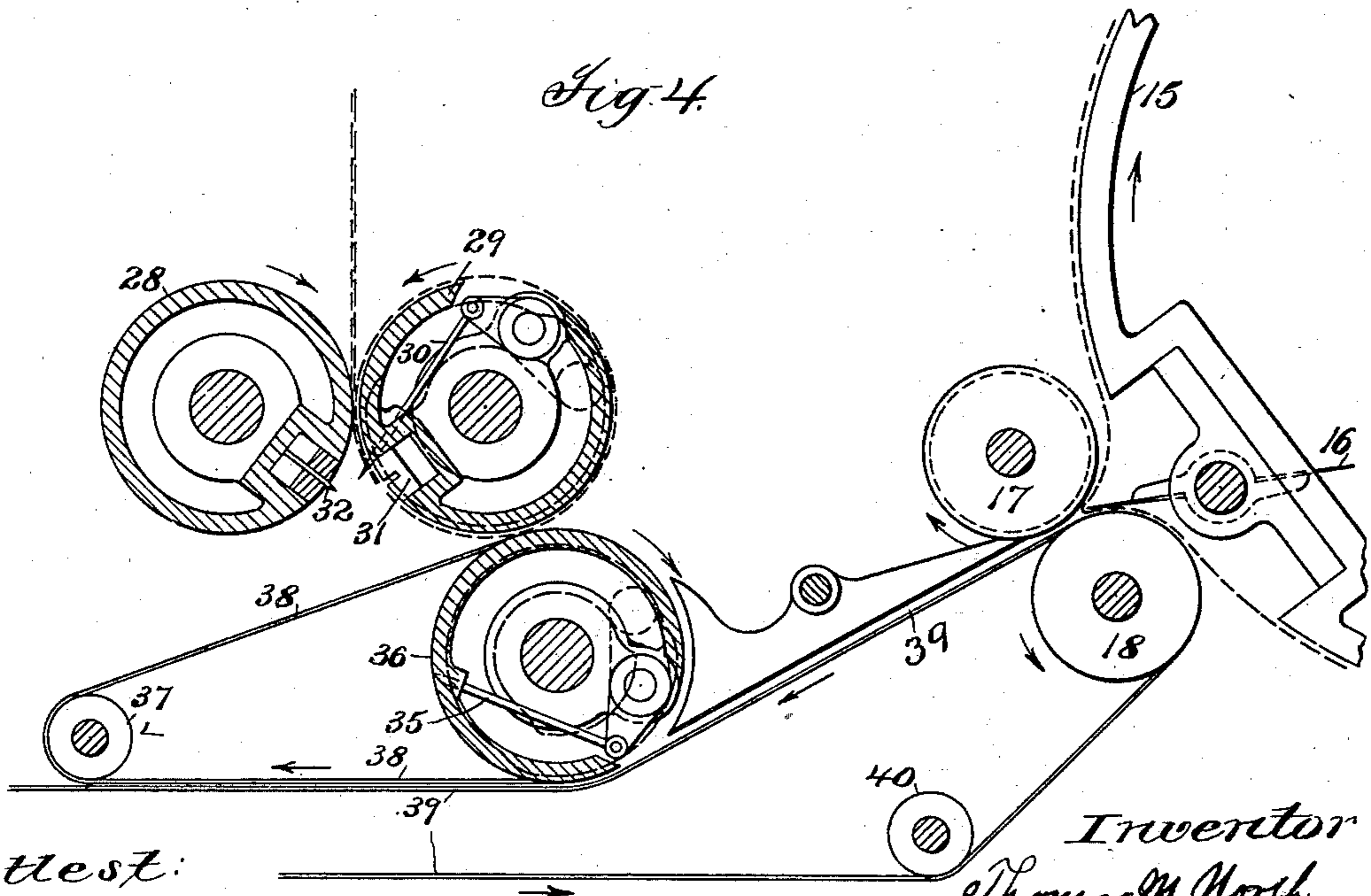
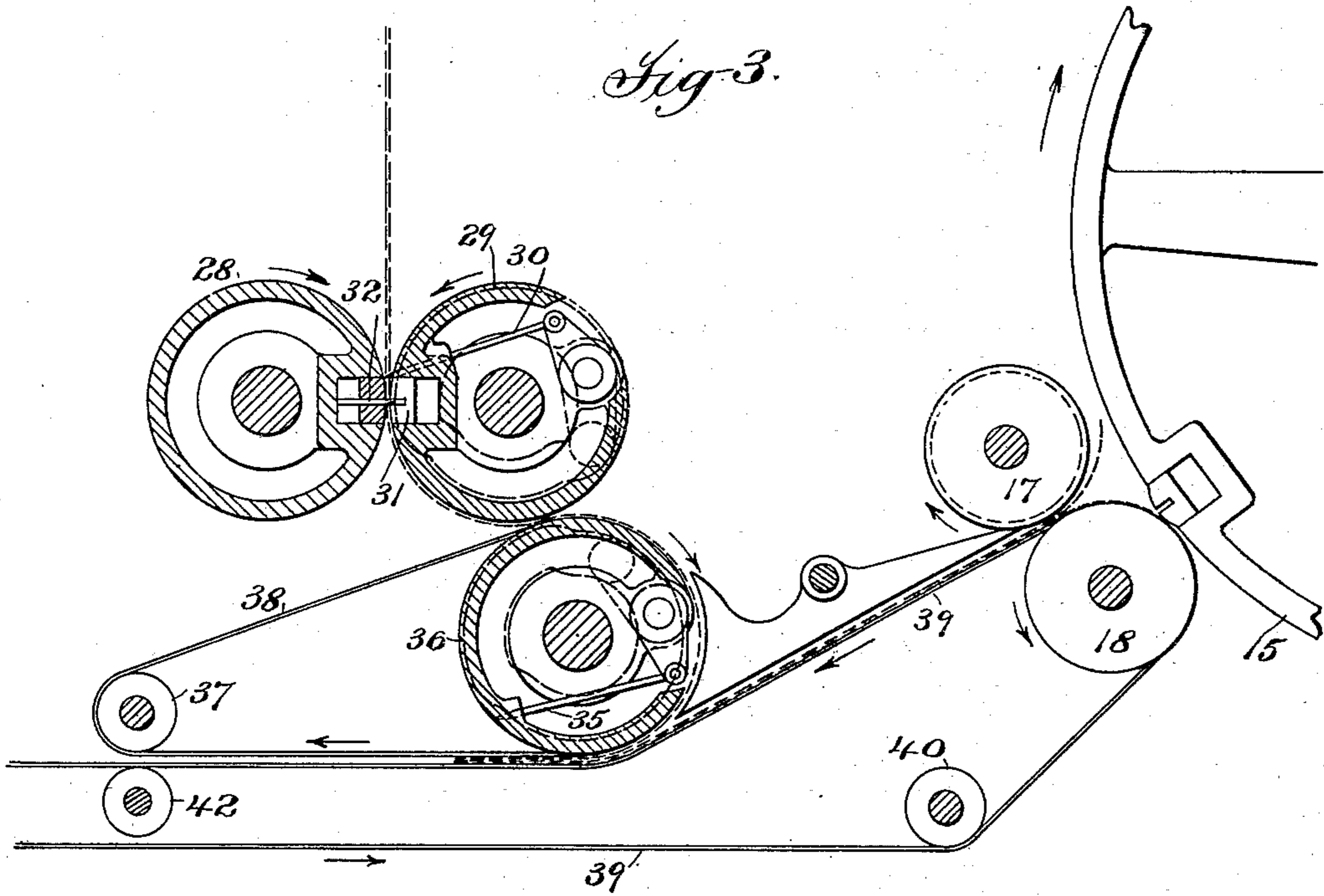
Patented Dec. 25, 1900.

T. M. NORTH.
PRINTING MACHINE.

(Application filed Apr. 5, 1900.)

(No Model.)

3 Sheets—Sheet 2.



Attest:
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No. 664,574.

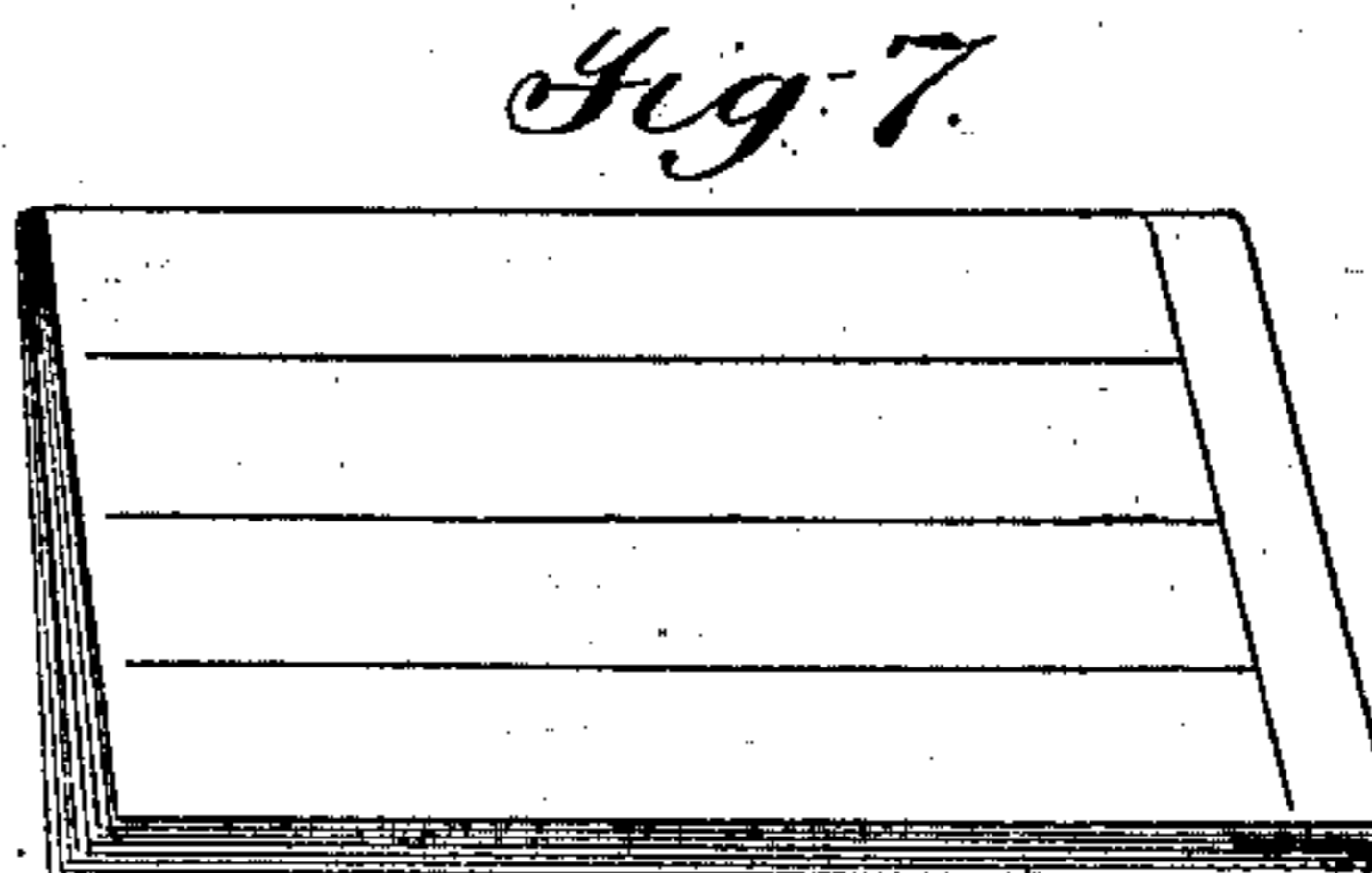
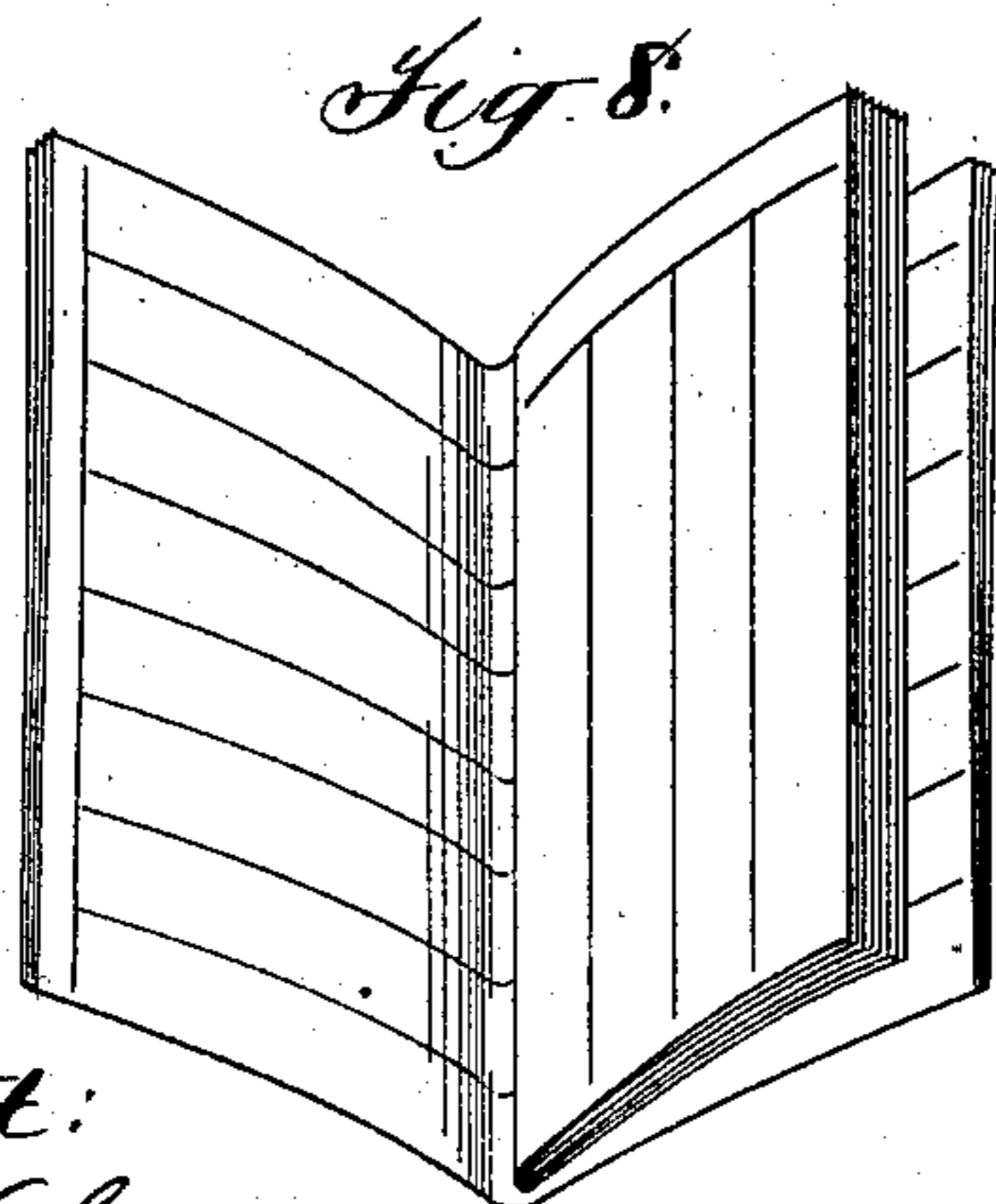
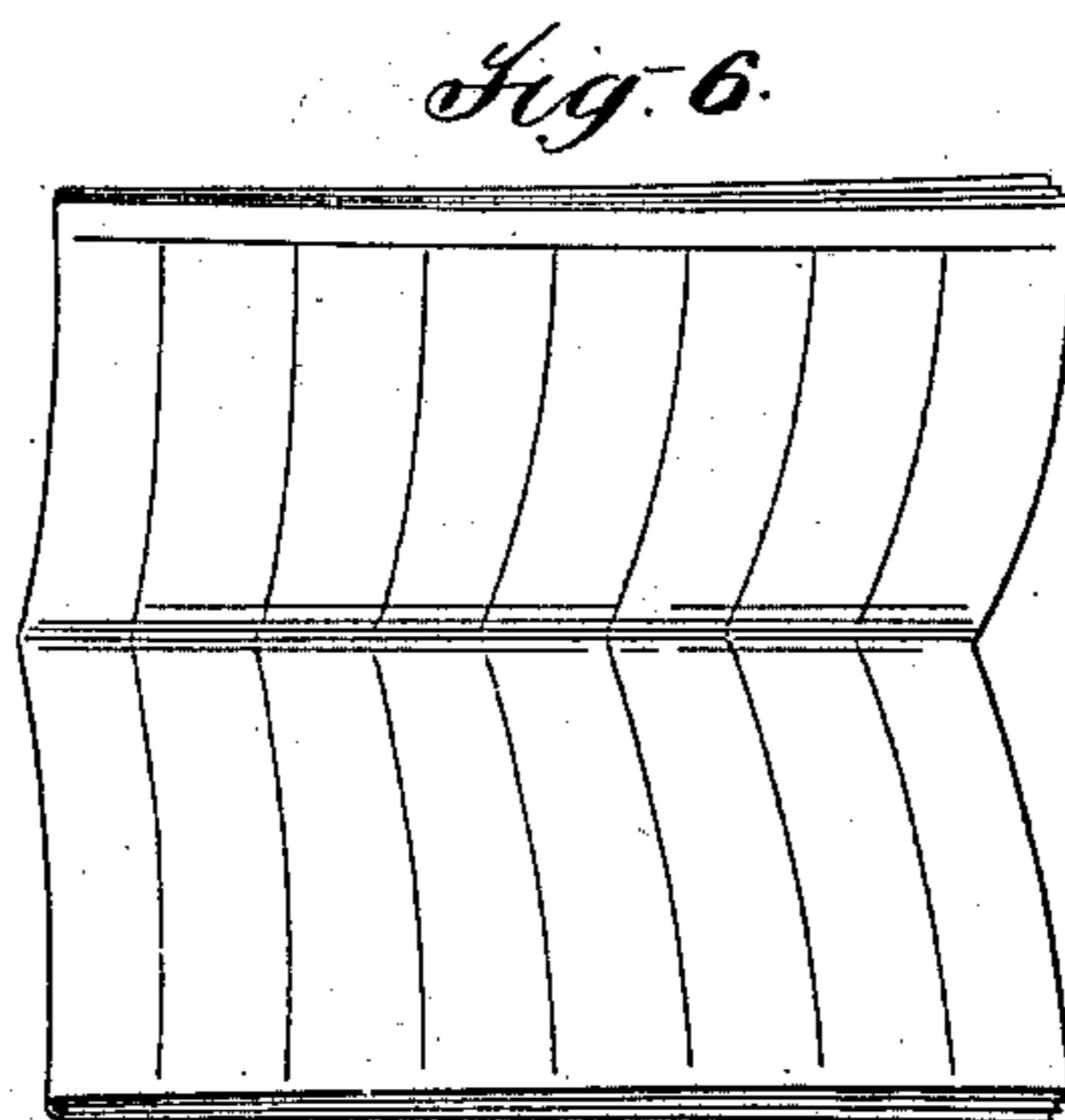
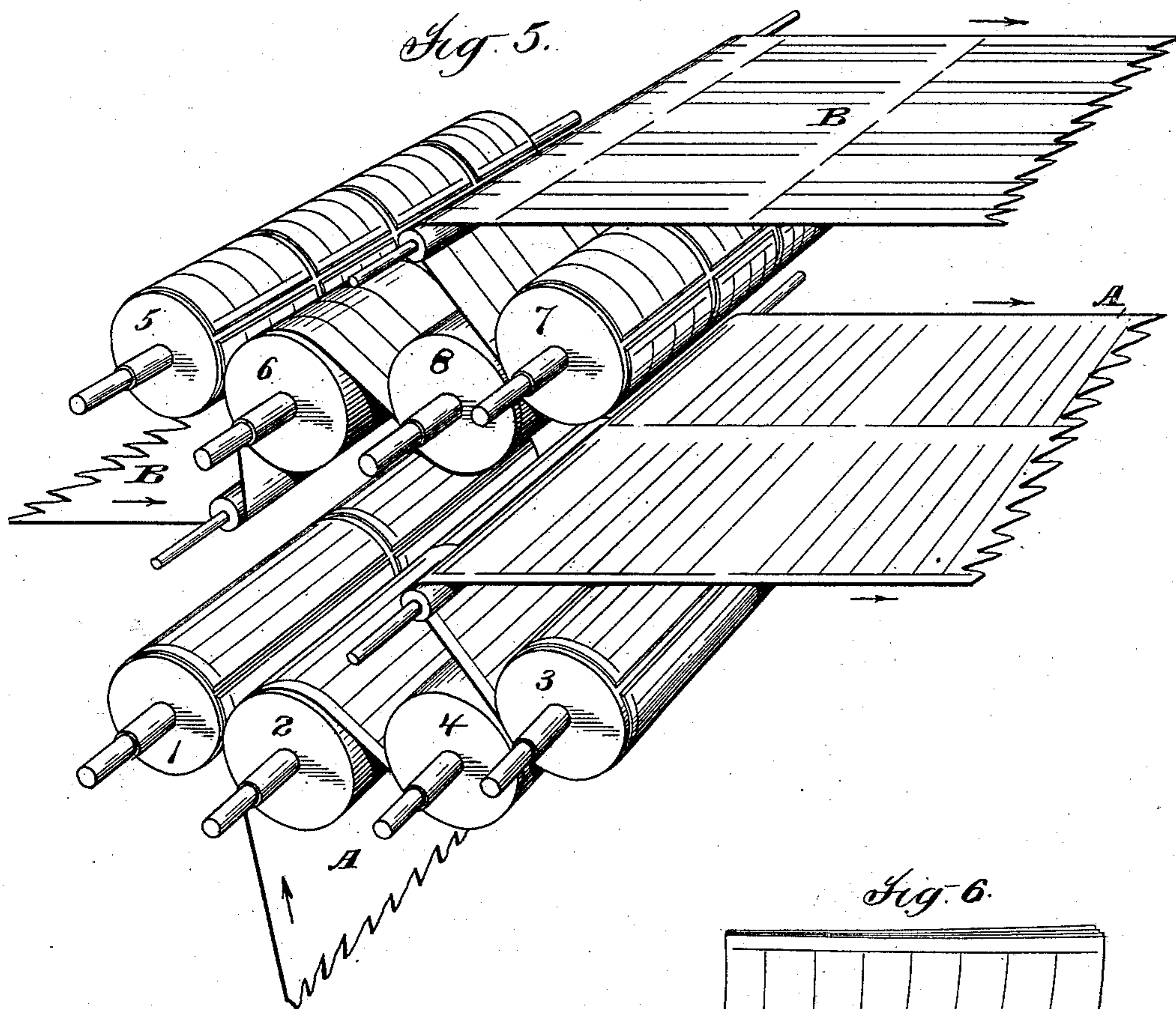
Patented Dec. 25, 1900.

T. M. NORTH.
PRINTING MACHINE.

(Application filed Apr. 5, 1900.)

(No Model.)

3 Sheets—Sheet 3.



Attest:
T. F. K. K. K.
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Inventor.
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UNITED STATES PATENT OFFICE.

THOMAS M. NORTH, OF NEW YORK, N. Y., ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO ROBERT HOE AND CHARLES W. CARPENTER, OF SAME PLACE.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 664,574, dated December 25, 1900.

Application filed April 5, 1900. Serial No. 11,692. (No model.)

To all whom it may concern:

Be it known that I, THOMAS M. NORTH, a subject of the Queen of Great Britain and Ireland, residing at New York, 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.

This invention relates to certain improvements in printing machinery.

It is frequently desirable in printing-offices to issue a paper which shall consist of the ordinary newspaper and a magazine supplement, the magazine being inserted into or folded with the newspaper and the two coming out of the machine as a single product.

It is one of the objects of this invention to produce a machine which is capacitated to associate with a newspaper of the ordinary kind a magazine, the two being folded together and delivered from the machine as a single product.

A further object of the invention is to produce a machine which is capacitated to print a newspaper and a magazine supplement therefor, to forward the printed products, collecting them where necessary, and to associate them so that the machine will deliver a product consisting of a newspaper and a magazine, the two being folded together.

With these and other objects in view the invention consists in certain constructions and in certain parts, improvements, and combinations, as will be hereinafter fully described and then specifically pointed out in the claims hereunto appended.

In the accompanying drawings, forming a part of this specification, and in which like characters of reference indicate the same parts, Figure 1 is a front elevation of the associating and folding mechanism of a printing-machine constructed in accordance with the invention. Fig. 2 is a side elevation of the part of the construction shown in Fig. 1. Fig. 3 is an enlarged detail view, partly in section, of the associating mechanism. Fig. 4 is a view similar to Fig. 3, showing the parts in a different position. Fig. 5 is a diagram-

matic elevation in perspective, showing the arrangement of the printing-couples used in the machine and the webs printed thereby. Fig. 6 is a view of the newspaper portion of the product. Fig. 7 is a view of the magazine portion of the product, and Fig. 8 is a view of the newspaper and magazine portion, assembled.

The machine shown in the drawings, which illustrate a concrete embodiment of the invention forming the subject of this application, employs four double-wide printing-couples which may be arranged in any suitable manner in the machine, the product of two of the couples forming the newspaper part of the product and the product of the other two couples forming the magazine part.

Referring to Fig. 5, 1 indicates the form-carrying member, and 2 the impression member, of the couple which operates to print on one side of the web which is to form the newspaper portion of the product. The form-carrying member of the second couple is indicated at 3 and the corresponding impression member at 4. The web which is printed and perfected by these couples and which forms the newspaper portion of the product is marked A. The form-carrying member of the couple which delivers the first impression on the web B, which is to form the magazine portion of the product, is marked 5 and the corresponding impression member 6. The form-carrying member of the couple which perfects this web is marked 7 and the impression member 8.

It may be here remarked that the magazine portion of the product of this machine as the construction is here arranged is to consist of sixteen pages and the newspaper portion of the product is to consist of eight pages. It will be further noted that the printed columns (see Fig. 5) of the newspaper portion of the product run crosswise of the web, or at right angles to its line of travel, while the printed columns of the magazine portion of the product run longitudinally of the web, or in the direction of its line of travel. Furthermore, while the two webs A B are of the same size, the webs are so printed that two pages of the web A, which is to form a part

of the newspaper, correspond in size to four pages of the web B, which is to form a part of the magazine.

In the form of the machine shown the double-wide web A after being printed is converted into two webs, this being effected by a slitter, which may be of any usual or desired form. This slitter in the machine shown consists of an ordinary rotating wheel 9, co-operating with a roll, (not shown,) which may be driven in any suitable manner from any rotating part of the machine. After leaving the slitter the two parts of the web pass over turning-bars 11 and 12. These turning-bars transfer one part of the web laterally and superpose the two parts in the ordinary manner. After the parts of the web have been thus superposed they pass between guide-rollers 13 and then between ordinary cutting and folding cylinders 14 and 15, the folding-cylinder being provided with folding-blades 16. The present machine, as has been said, is designed to produce an eight-page newspaper. The folding-blades 16 are therefore arranged to tuck off at each half-revolution of the cylinder, the tucked-off product passing between guide-rollers 17 and 18.

The web B, which is to form the magazine portion of the product, after leaving the printing-cylinders is converted into two webs. To effect this, the web runs under a slitter 19, said slitter coöperating with a roll, (not shown,) after which the webs pass over turning-bars 21 22, by which one part of the web is transferred laterally. After leaving the turning-bar 21 the under portion of the web passes around suitably-located guides 23 and 24. The upper portion of the web after leaving the turning-bar 22 preferably runs over a pasting-disk 25, which applies a line of paste thereto, said line of paste of course running longitudinally of the web. This pasting device may, however, be omitted, if desired. After leaving the pasting-disk 25 this portion of the web runs over a guide 26 and then around the guide 24, where it meets the under portion of the web, and the two are pasted together by the line of paste applied by the disk 25. The two superposed portions of the web are then led over a guide 27 and between a pair of cutting-cylinders 28 29, one of which—viz., the cylinder 29—is in the present machine arranged to collect. To this end the cylinder 29 is provided with a set of cam-operated pins 30, which are of the construction ordinarily employed in the collecting-cylinders of printing-machines and which are arranged in the present machine to operate on every second revolution of the cylinder. The cylinder 29 is also provided with a cutting-block 31, which coöperates with a knife 32, carried by the cylinder 28.

Between the guide 27 and the cylinders 28 29 there is preferably located a paster, which is arranged to apply a line of paste between every other pair of pages on the under one of the superposed magazine-webs. While the

paster may be variously constructed to effect this function, in the machine shown it consists of a semicircular disk 33, running in the ordinary fountain 34. This pasting-disk 33 may be driven from any suitable part of the machine, and will, as is usual in such constructions, be driven somewhat slower than the web, so as to have a wiping action thereon. It is, however, driven at a sufficient speed so that it makes a half-revolution during the time when a portion of the web equal to the length of a printed page of the magazine is passing the paster. It being remembered that the cylinder 29 is a collecting-cylinder, the paster 33 is so constructed as not to apply any paste to the first page length of the superposed magazine-webs taken by the pins 30 on the cylinder 29. The paster, however, applies paste to the top one of the superposed webs for a distance equal to the second page length. As the second page length is taken by the pins 30 on the collecting-cylinder the paste thereon comes in contact with the first page length and the two page lengths are pasted together. The product delivered by the cylinder 29 is therefore an unfolded product having sixteen printed pages. In other words, the product which leaves the cylinder 29 consists of four sections of four pages each, these sections being pasted together. On the second revolution of the cylinder 29 its pins 30 are withdrawn and the associated and pasted product is taken by the pins 35 on a transfer-cylinder 36. The transfer-cylinder 36 and the pins carried thereby are of the usual construction, the pins being arranged to be operated to take and release the product at every second revolution of the cylinder.

Passing around the cylinder 36 and a guide-roller 37, suitably journaled in the frame, are a set of tapes 38. A set of tapes 39 pass around the roller 18, before described, and also around rolls 40 41, the roll 41 being located on the other side of a folding mechanism, to be hereinafter described. The tapes 39 for a portion of their length coöperate with the tapes 38, and a supporting-roller 42 is or may be arranged between the run of the tapes 39 and opposite to the roll 37.

Referring to the web A, it will be remembered that the columns of the printed page run at right angles to the line of travel of the web. As the sheets are folded off the cylinder 15, therefore, the product will be advanced with its folded edge foremost, the columns still lying at right angles to the direction of travel of the product. The product which passes between the rolls 17 and 18 is substantially that shown in Fig. 6. As this product leaves the rolls 17 and 18 it is advanced by the tapes 39, and as it comes into contact with the tapes 38 on the cylinder 36 it meets the magazine portion of the product and the two are associated. It will be noted that the cutting-cylinder 14, which coöperates with the cylinder 15, is twice the diameter of the cutting and collecting cylinders 28 and 29.

The sheet length cut by the cylinders 28 29 is therefore only one-half the sheet length cut by the cylinders 14 15. The product cut by the cylinders 14 15 is, however, folded in half by the folding-blades 16; but the product cut by the cylinders 28 29 is not folded prior to its association with its companion product. As the newspaper portion of the product which is folded meets the magazine portion of the product the two are therefore of the same size. The magazine portion of the associated product, however, has its columns running in the direction of travel of the product, while the newspaper portion of the product, as has been before explained, has its columns running at right angles to the line of travel of the product. As the two portions are associated, therefore, the columns of one portion lie at right angles to the columns of the other portion. The two portions of the associated product are carried forward by the tapes 39 to any suitable folding mechanism. In the machine shown a pair of folding-rollers 45 are arranged parallel to the run of the tapes 39, and cooperating with these rollers is a folding-blade 46. As the associated products come beneath the blade 46 they are tucked between the rolls 45 and given a fold on a line which in the machine shown is parallel to the columns of the magazine portion of the product and at right angles to the columns of the newspaper portion of the product. By this means the magazine portion is given its final fold and is inserted within the newspaper portion. The rolls 45 deliver the product to any suitable delivery mechanism. In the machine shown this delivery mechanism consists of the ordinary S-fly 47, which delivers to delivery-tapes 48.

The agencies by which the several operations which have been herein described are performed are all well known in printing machinery and the gearing by which the several parts are driven are all well known to persons skilled in the art. It has not been thought necessary, therefore, to illustrate or describe in detail the gearing which operates the several parts.

It is to be understood that the agencies by which the several operations are performed may be widely varied in character and that parts of the construction can be used independently of other parts. The invention is not therefore to be limited to the specific constructions by which the several operations hereinbefore described are performed.

What is claimed is—

1. The combination with means for forwarding a printed folded product having its columns parallel with the line of fold, of means for associating therewith a printed product having its columns at right angles to the columns of the product with which it is associated, and means for folding the associated products, substantially as described.

2. The combination with means for for-

warding a printed folded product having its columns parallel with the line of fold, of means for associating therewith an unfolded printed product having its columns at right angles to the columns of the product with which it is associated, and means for folding the associated products, substantially as described.

3. The combination with means for forwarding a printed product, of means for giving it a fold parallel with its columns, means for associating therewith a printed product having its columns at right angles to the columns of the product with which it is associated, and means for folding the associated products, substantially as described.

4. The combination with means for forwarding a printed product, of means for giving it a fold parallel with its columns, means for associating therewith an unfolded printed product having its columns at right angles to the columns of the product with which it is associated, and means for folding the associated products, substantially as described.

5. In a printing-machine, the combination with a printing mechanism adapted to produce two printed products, one product having its columns at right angles to those of the other product, of means for giving one of said products a fold on a line which is parallel with its columns, means for associating therewith the other product, said associated product having its columns at right angles to the columns of the product with which it is associated, and means for folding the associated products, substantially as described.

6. In a printing-machine, the combination with a printing mechanism adapted to produce two printed products, one product having its columns at right angles to those of the other product, of means for giving one of said products a fold on a line which is parallel with its columns, means for associating therewith the other product in an unfolded condition, said associated product having its columns at right angles to the columns of the product with which it is associated, and means for folding the associated products, substantially as described.

7. The combination with means for forwarding a printed folded product consisting of a plurality of plies, said plies having their columns parallel with the line of fold, of means for associating therewith a printed product consisting of a plurality of plies, said product having its columns at right angles to the product with which it is associated, and means for folding the associated products, substantially as described.

8. The combination with means for forwarding a printed folded product consisting of a plurality of plies, said product having its columns parallel with the line of fold, of means for associating therewith an unfolded printed product consisting of a plurality of plies, said product having its columns at right angles to the product with which it is asso-

ciated, and means for folding the associated product, substantially as described.

9. The combination with means for forwarding a printed folded product consisting of a plurality of plies, of means for giving said product a fold parallel with its columns, means for associating therewith a printed product consisting of a plurality of plies, said product having its columns at right angles to the columns of the product with which it is associated, and means for folding the associated products, substantially as described.

10. The combination with means for forwarding a printed folded product consisting of a plurality of plies, of means for giving said product a fold parallel with its columns, means for associating therewith an unfolded printed product consisting of a plurality of plies, said unfolded product having its columns at right angles to the columns of the product with which it is associated, and means for folding the associated products, substantially as described.

11. The combination with means for forwarding a printed product, of means for forwarding a second printed product, the pages of the first product being equal in size to a multiple of the pages of the second product, means for folding the first product, means for associating the two products, so that the columns of one product are at right angles to the columns of the other product, and means for folding the associated products, substantially as described.

12. The combination with a printing mechanism adapted to produce two printed products, the pages of one product being equal in size to a multiple of the pages of the other product, means for folding the product having the larger pages, means for associating the two products, so that the columns of one shall be at right angles to the columns of the other, and means for folding the associated products, substantially as described.

13. The combination with means for forwarding a printed product having its pages printed in sets of two, of means for forwarding a printed product having its pages printed in sets of four, means for associating the two products so that the columns of one product are at right angles to the columns of the other product, and means for folding the associated products, substantially as described.

14. The combination with means for forwarding a printed product having its pages printed in sets of two, of means for forwarding a printed product having its pages printed in sets of four, each set of two pages being equal in size to each set of four pages, means for associating the two products so that the columns of one product are at right angles to the columns of the other product, and means for folding the associated products, substantially as described.

15. The combination with means for forwarding a printed product having its pages printed in sets of two, of means for forward-

ing a printed product having its pages printed in sets of four, means for converting each of the products into a multiple-ply product, means for associating the two products, so that the columns of one product are at right angles to the columns of the other product, and means for folding the associated products, substantially as described.

16. The combination with means for forwarding a printed product having its pages printed in sets of two, of means for forwarding a printed product having its pages printed in sets of four, each set of two pages being equal in size to each set of four pages, means for converting each of the products into a multiple-ply product of the same size, means for associating the two products so that the columns of one product are at right angles to the columns of the other product, and means for folding the associated products, substantially as described.

17. In a printing-machine, the combination with a printing mechanism adapted to produce two printed products, one product having its pages printed in sets of two and the other product having its pages printed in sets of four, means for converting each of the products into a multiple-ply product, means for associating the two products so that the columns of one product are at right angles to the columns of the other product, and means for folding the associated products, substantially as described.

18. In a printing-machine, the combination with a printing mechanism adapted to produce two printed products, one product having its pages printed in sets of two and the other product having its pages printed in sets of four, each set of two pages being equal in size to each set of four pages, means for converting each of the products into a multiple-ply product of the same size, means for associating the two products so that the columns of one product are at right angles to the columns of the other product, and means for folding the associated products, substantially as described.

19. The combination with means for forwarding a printed product having its pages printed in sets of two, of means for forwarding a printed product having its pages printed in sets of four, means for giving the two-page product a fold at right angles to its line of travel, means for associating therewith the four-page product with its columns at right angles to the columns of said two-page product, and means for folding the associated products, substantially as described.

20. The combination with means for forwarding a printed product having its pages printed in sets of two, of means for forwarding a printed product having its pages printed in sets of four, each set of two pages being equal in size to each set of four pages, means for giving the two-page product a fold at right angles to its line of travel, means for associating therewith the four-page product with

its columns at right angles to the columns of the two-page product, and means for folding the associated products, substantially as described.

5 21. The combination with means for forwarding a printed product having its pages printed in sets of two, of means for forwarding a printed product having its pages printed in sets of four, means for giving the two-
10 page product a fold at right angles to its line of travel, means for associating therewith in an unfolded condition the four-page product with its columns at right angles to the columns of the two-page product, and means for
15 folding the associated products, substantially as described.

22. The combination with means for forwarding a printed product having its pages printed in sets of two, of means for forwarding a printed product having its pages printed in sets of four, each set of two pages being equal in size to each set of four pages, means for giving the two-page product a fold at right angles to its line of travel, means for associ-
25 ating therewith in an unfolded condition the four-page product with its columns at right angles to the columns of the two-page product, and means for folding the associated products, substantially as described.

30 23. In a printing-machine, the combination with a printing mechanism adapted to produce two printed products, one of said products having its columns at right angles to the columns of the other product, of means for
35 giving one of said products a fold on a line which is parallel with its columns, means for associating therewith the other product, said associated product having its columns at right angles to the columns of the product with
40 which it is associated, and means for folding the associated products, substantially as described.

24. In a printing-machine, the combination with a printing mechanism adapted to produce two printed products, one of said products having its columns at right angles to the columns of the other product, of means for giving one of said products a fold on a line which is parallel with its columns, means for
50 associating therewith the other product in an unfolded condition, said associated product having its columns at right angles to the columns of the product with which it is associated, and means for folding the associated
55 products, substantially as described.

25. In a printing-machine, the combination with a printing mechanism adapted to produce a printed product having its pages printed in sets of two, and a printed product having its pages printed in sets of four, of means for associating the products so that the columns of one product are at right angles to the columns of the other product, and means for folding the associated products, substantially
60 as described.

26. In a printing-machine, the combination with a printing mechanism adapted to pro-

duce a printed product having its pages printed in sets of two, and a printed product having its pages printed in sets of four, of means
70 for giving the two-page product a fold on a line which is parallel with its columns, means for associating the four-page product therewith with its columns at right angles to the columns of the two-page product, and means
75 for folding the associated products, substantially as described.

27. In a printing-machine, the combination with a printing mechanism adapted to produce a printed product having its pages printed in sets of two, and a printed product having its pages printed in sets of four, of means for giving the two-page product a fold on a line which is parallel with its columns, means for associating the four-page product there-
80 with in an unfolded condition with its columns at right angles to the columns of the two-page product, and means for folding the associated products, substantially as described.

28. In a printing-machine, the combination
90 with a printing mechanism adapted to produce a printed product having its pages printed in sets of two, of a printing mechanism adapted to produce a printed product having its pages printed in sets of four, means for
95 giving the two-page product a fold on a line which is parallel with its columns, means for associating therewith the four-page product with its columns at right angles to the columns of the two-page product, and means for
100 folding the associated products, substantially as described.

29. In a printing-machine, the combination with a printing mechanism adapted to produce a printed product having its pages printed in sets of two, of a printing mechanism adapted to produce a printed product having its pages printed in sets of four, each set of two pages being equal in size to each set of four pages, means for giving the two-page
110 product a fold on a line which is parallel with its columns, means for associating therewith the four-page product with its columns at right angles to the columns of the two-page product, and means for folding the associated
115 products, substantially as described.

30. In a printing-machine, the combination with a printing mechanism adapted to produce a printed product having its pages printed in sets of two, of a printing mechanism adapted to produce a printed product having its pages printed in sets of four, means for giving the two-page product a fold on a line which is parallel with its columns, means for associating therewith in an unfolded condi-
125 tion the four-page product with its columns at right angles to the columns of the two-page product, and means for folding the associated products, substantially as described.

31. In a printing-machine, the combination
130 with a printing mechanism adapted to produce a printed product having its pages printed in sets of two, of a printing mechanism adapted to produce a printed product having

its pages printed in sets of four, each set of two pages being equal in size to each set of four pages, means for giving the two-page product a fold on a line which is parallel with its columns, means for associating therewith in an unfolded condition the four-page product with its columns at right angles to the columns of the two-page product, and means for folding the associated products, substantially as described.

32. The combination with means for superposing a plurality of webs, each web having pages printed thereon in sets of two, of means for cutting sheets therefrom, means for folding said sheets, means for superposing a plurality of other webs, means for cutting sheets therefrom, means for associating said sheets in an unfolded condition with the folded product, so that the columns of the sheets are at right angles to the columns of the folded product, and means for folding the associated products, substantially as described.

33. The combination with means for superposing a plurality of webs, each web having pages printed thereon in sets of two, of means for cutting sheets therefrom, means for folding said sheets, means for forwarding a plurality of other webs, means for applying a line of paste between said last-mentioned webs and longitudinally thereof, means for cutting sheets from these webs, means for associating said sheets with the folded product so that the columns of the sheets are at right angles to the columns of the folded product, and means for folding the associated products, substantially as described.

34. The combination with means for superposing a plurality of webs, each web having pages printed thereon in sets of two, of means for cutting sheets therefrom, means for folding said sheets, means for forwarding a plurality of other webs having pages printed thereon, means for applying a line of paste between said last-mentioned webs and longitudinally thereof, means for applying a line of paste to one of said webs longitudinally thereof and between every alternate set of pages, means for cutting sheets from said webs, means for collecting said sheets, means for associating the collected sheets with the folded product, and means for folding the associated products, substantially as described.

35. In a printing-machine, the combination with a printing-couple adapted to print pages in sets of two on a double-wide web, of a printing-couple adapted to print pages in sets

of four on a double-wide web, means for slitting and superposing the two-page web, means for cutting sheets therefrom, means for folding the sheets, means for slitting and superposing the four-page web, means for cutting sheets therefrom, means for associating said sheets with the folded product from the two-page web with the columns of the sheets at right angles to the columns of the folded product, and means for folding the associated products, substantially as described.

36. In a printing-machine, the combination with a printing-couple adapted to print pages in sets of two on a double-wide web, of a printing-couple adapted to print pages in sets of four on a double-wide web, means for slitting and superposing the two-page web, means for cutting sheets therefrom, means for folding the sheets, means for slitting the four-page web, means for applying a line of paste longitudinally between the two parts of the web thus formed, means for cutting sheets therefrom, means for associating said sheets with the folded product from the two-page web, the columns of the sheets being at right angles to the columns of the folded product, and means for folding the associated products, substantially as described.

37. In a printing-machine, the combination with a printing-couple adapted to print pages in sets of two on a double-wide web, of a printing-couple adapted to print pages in sets of four on a double-wide web, means for slitting and superposing the two-page web, means for cutting sheets therefrom, means for folding the sheets, means for slitting the four-page web, means for applying a longitudinal line of paste between the parts of the web thus formed, means for applying a longitudinal line of paste to one of said parts of the web and between every alternate set of pages, means for cutting sheets from said web, means for collecting said sheets, means for associating the collected sheets with the folded product from the two-page web, so that the columns of the collected sheets are at right angles to the columns of the folded product, and means for folding the associated products, substantially as described.

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

THOMAS M. NORTH.

Witnesses:

F. W. H. CRANE,
L. ROEHM.