

No. 629,912.

Patented Aug. 1, 1899.

T. M. NORTH.  
PRINTING PRESS.

(Application filed Nov. 26, 1897.)

(No Model.)

3 Sheets—Sheet 1.

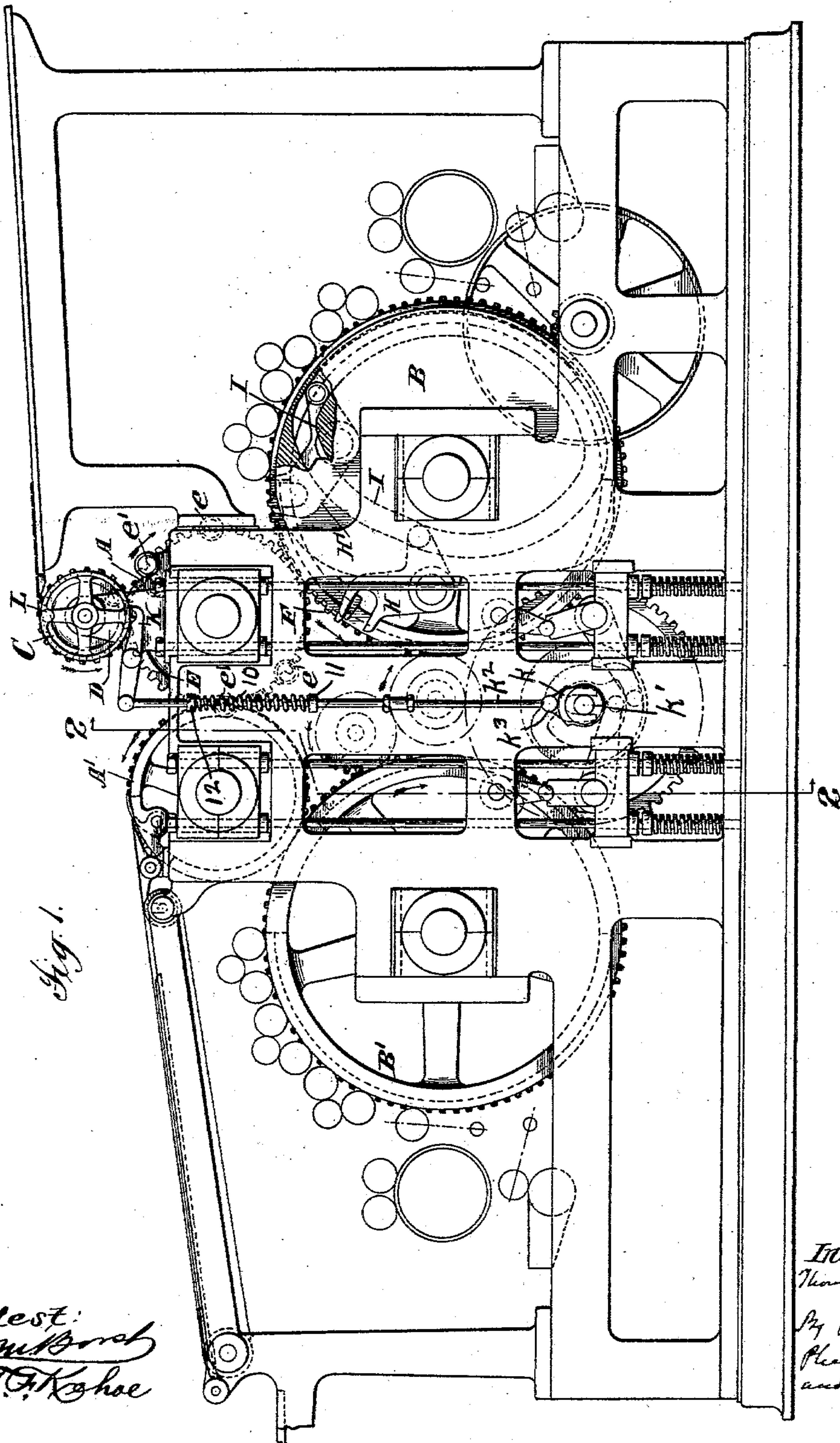


Fig. 1.

Attest:  
*Wm. B. Borch*  
*T. F. Kohoe*

Inventor  
Thomas M.  
North  
By *Philip*  
*Phelps*  
and *Smyth*  
Attys

No. 629,912.

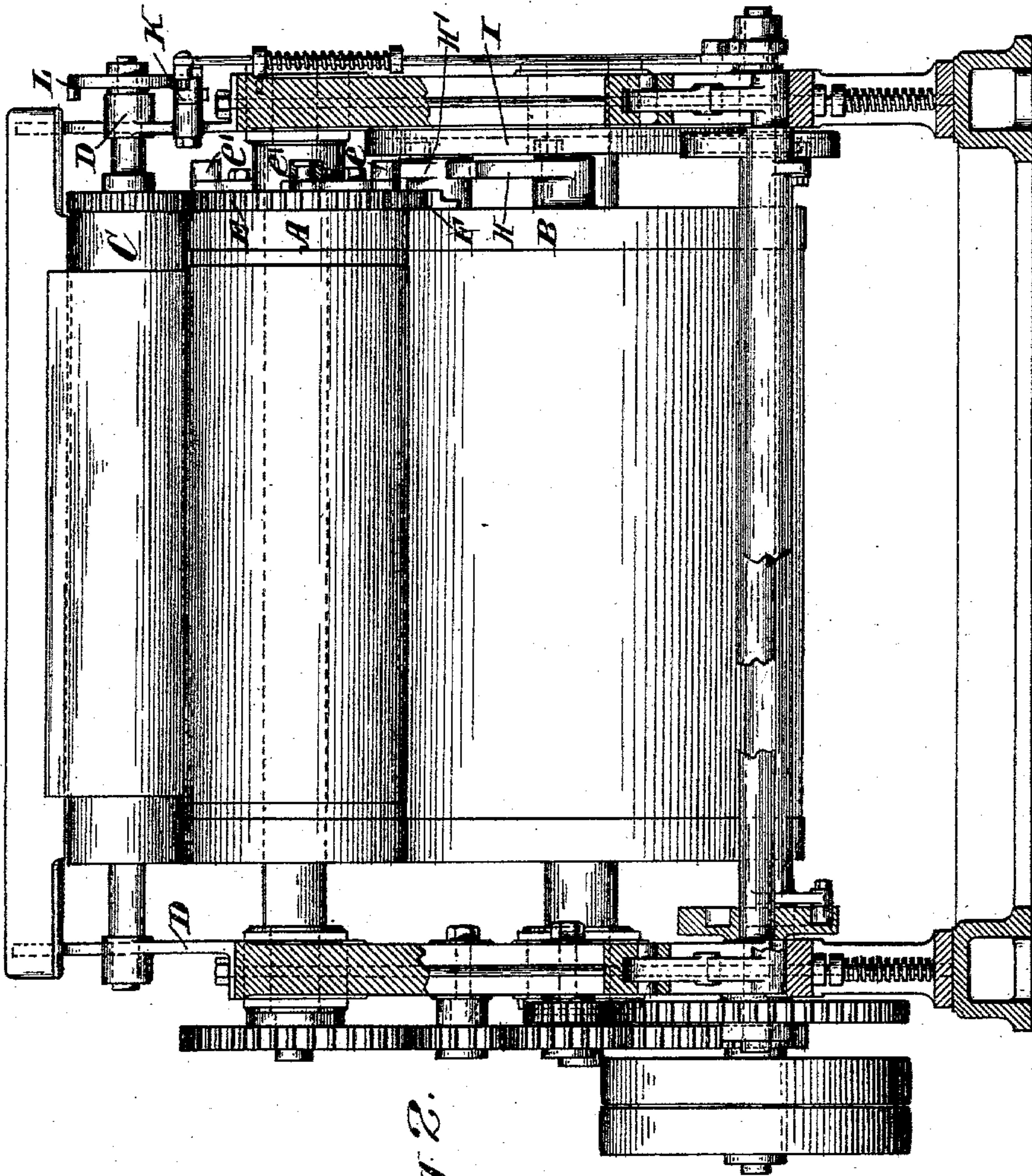
Patented Aug. 1, 1899.

T. M. NORTH.  
PRINTING PRESS.

(Application filed Nov. 26, 1897.)

(No Model.)

3 Sheets—Sheet 2.



*Fig. 2.*

Attest:  
*John B. Bush*  
*T. F. Kehoe*

Inventor:  
*Thomas M. North*  
By *Philip Phelps*  
*Lawyer*  
*Atty*



No. 629,912.

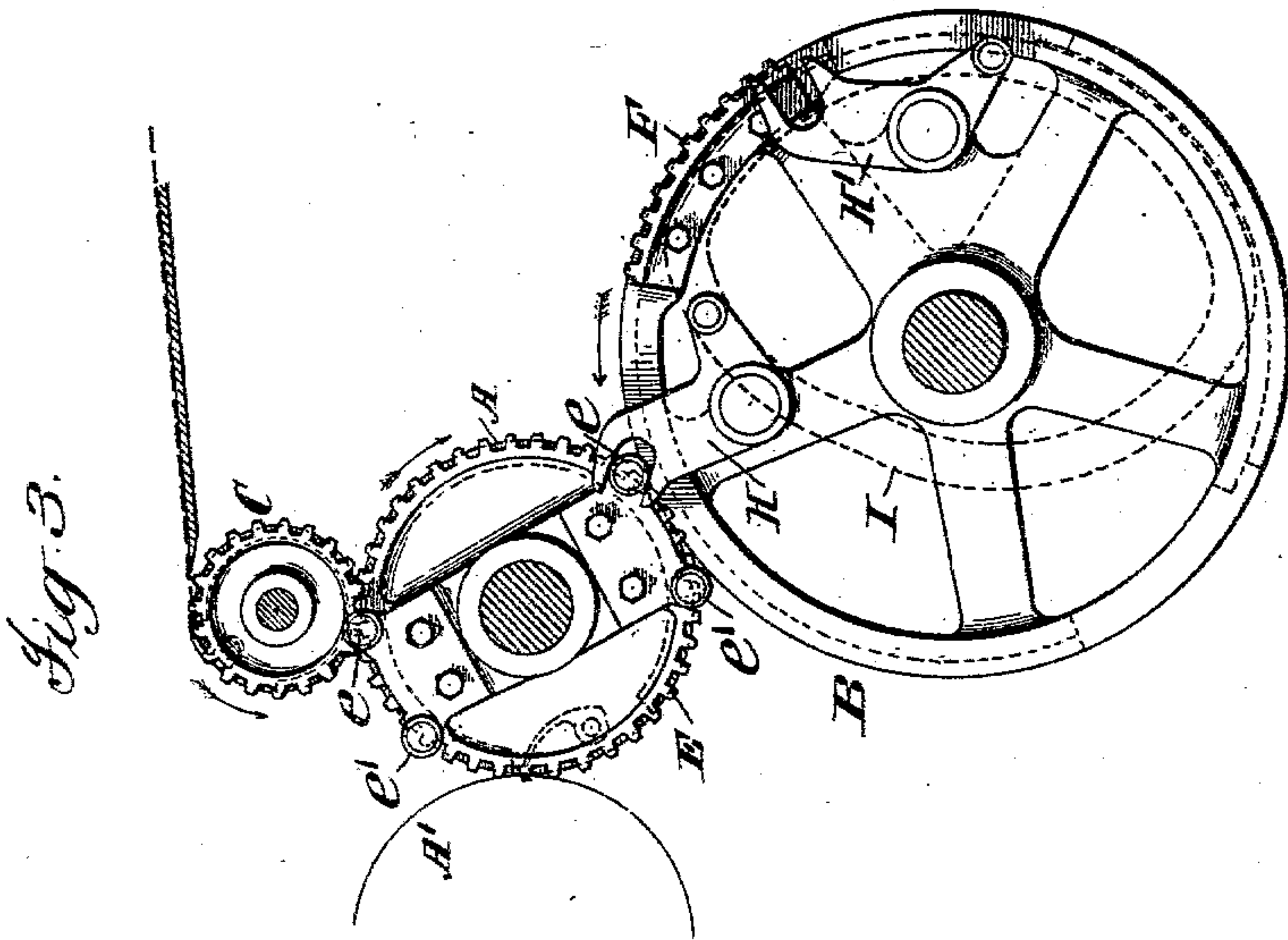
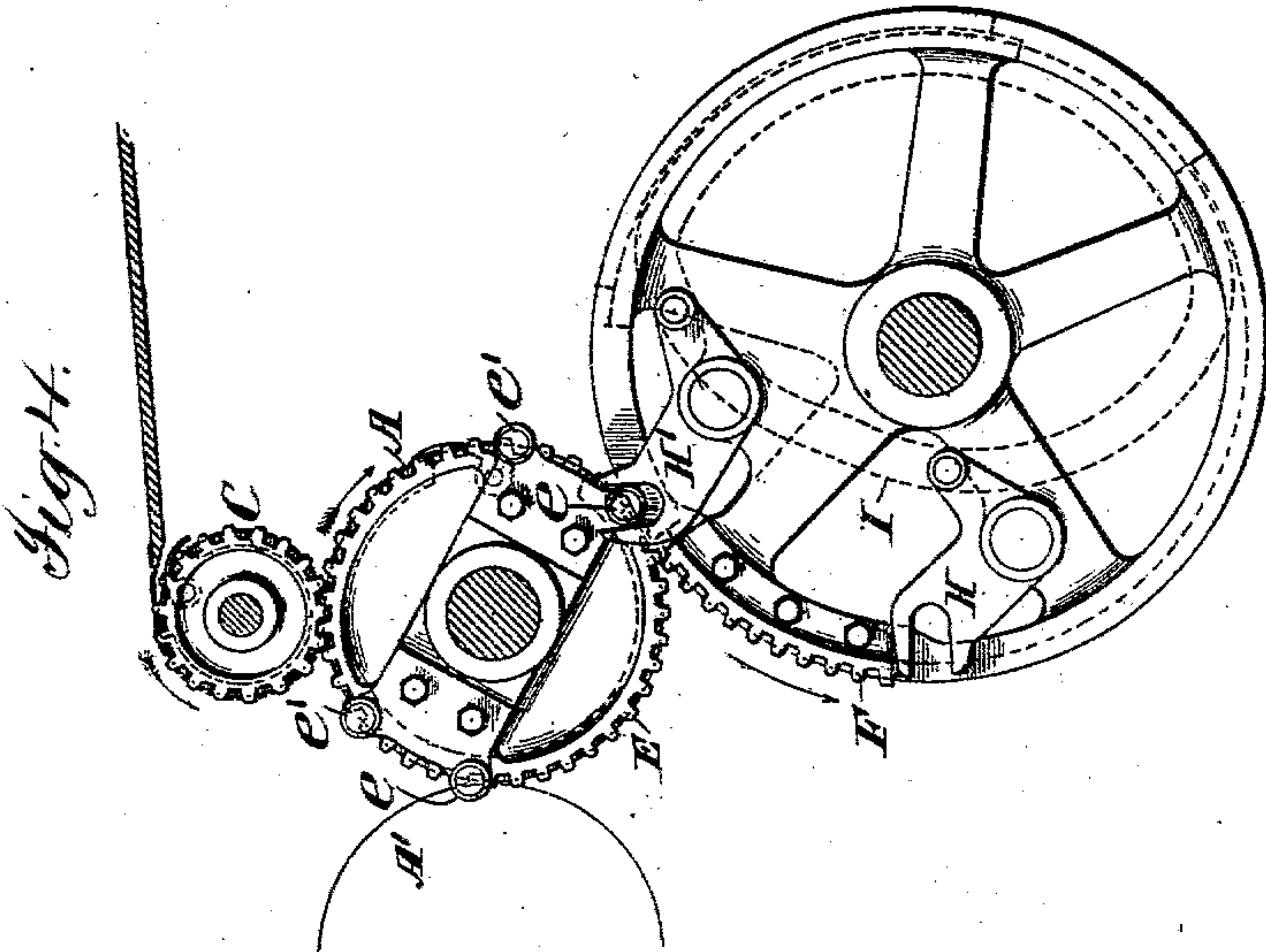
Patented Aug. 1, 1899.

T. M. NORTH.  
PRINTING PRESS.

(Application filed Nov. 26, 1897.)

(No Model.)

3 Sheets—Sheet 3.



Attest:  
Jm. B. B. B.  
J. F. Kahoe.

Inventor  
Thomas M. North  
By Philip Phelps  
Lawyer  
Atty's



# UNITED STATES PATENT OFFICE,

THOMAS M. NORTH, OF NEW YORK, N. Y., ASSIGNOR TO ROBERT HOE, THEODORE H. MEAD, AND CHARLES W. CARPENTER, OF SAME PLACE.

## PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 629,912, dated August 1, 1899.

Application filed November 26, 1897. Serial No. 659,802. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS M. NORTH, a British subject, residing at New York, (Brooklyn,) county of Kings, and State of New York, have invented certain new and useful Improvements in Printing-Presses, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The present invention relates to that class of printing-presses having plate and impression cylinders. In these presses, wherein the impression-cylinder has been geared so that it will be revolved continuously, which has been the common form of construction, the disadvantage has been encountered that the sheets are presented to the impression-cylinder while the latter is in motion and inaccuracy of feed results which is detrimental to good printing. In an application, Serial No. 618,024, filed January 5, 1897, a construction is disclosed which overcomes this disadvantage, wherein the impression-cylinder rotates to print the sheet and thereafter comes to rest during each revolution of the plate-cylinder, during which period of rest the sheets are fed.

The present invention has for its object to accomplish substantially the same result by a different means, the means which are shown and described herein for this purpose consisting of a receiving-cylinder to which the sheet is fed and which carries the sheet to the impression-cylinder, this receiving-cylinder coming to rest to receive each sheet. The impression-cylinder rotates continuously, and the advantages of feed while the cylinder to which the sheets are fed is at rest are perfectly secured by means of the receiving-cylinder.

In the mechanism herein shown and described the receiving-cylinder is moved through connections with the plate-cylinder, and the mechanism for establishing this connection, as shown, is similar to the mechanism shown in the application above referred to for making the connection between the plate-cylinder and the impression-cylinder. It will of course be understood that the invention is not limited to this mechanism for giving rotation to the receiving-cylinder; but there may

be employed for this purpose mechanism independent of the plate-cylinder, or mechanism depending for its operation upon the rotation of the plate-cylinder, but of a different construction from that herein shown and described.

The invention also includes a stop for arresting the rotation of the receiving-cylinder at the proper point after it has revolved to carry the sheet to the impression-cylinder.

The present invention also includes, in combination with the several devices hereinbefore mentioned, a second impression-cylinder and a second plate-cylinder cooperating therewith for perfecting the sheet.

The present invention includes other details of construction which will be hereinafter fully described, and pointed out in the claims.

In the drawings hereto annexed and forming a part of this specification, Figure 1 is a side view of a press embodying my invention. Fig. 2 is a sectional elevation on the line 2 2 of Fig. 1. Fig. 3 is a separate view of a plate-cylinder, the receiving-cylinder, and the mechanism for transmitting motion from the plate-cylinder to the receiving-cylinder. Fig. 4 is another view of the same mechanism in a different position.

In the drawings, A is the first, and A' the second, impression-cylinder; B the first, and B' the second, plate or form cylinder. The receiving-cylinder C is preferably mounted upon brackets D, rising from the boxes of the impression-cylinder A. Loosely mounted on the shaft of the impression-cylinder is a gear-wheel E, which meshes with a gear upon the end of receiving-cylinder C. This gear also meshes with a segment F on the plate-cylinder B. The gear E is provided with two sets of studs or rollers *e e* and *e' e'*, with which engage coupling-levers H H', pivoted to the end of the plate-cylinder and provided with guide-rollers which move in the path-cam I, fixed to the frame of the machine. The operation of this mechanism is substantially that of the mechanism described and claimed in my application, Serial No. 618,024, dated January 5, 1897, the coupling-lever H acting to gradually accelerate in starting the gear-wheel E and the coupling-lever H' acting to gradually retard in stopping said wheel. This



mechanism differs from that described in said application in the fact that the segment F is shorter and the wheel E is provided with two sets of studs or rollers *e e* and *e' e'* instead of one set, as is the case in said application, for the reason that the receiving-cylinder is given but one revolution during each revolution of the plate-cylinder, and consequently as the gear E in the form of machine selected for illustration has double the number of teeth that there are on the gear on the receiving-cylinder it is only necessary to cause the gear E to make half a revolution in order to cause the receiving-cylinder to make a complete revolution.

In order to stop the receiving-cylinder accurately in its receiving position and hold it there firmly during the time it is intended to remain stationary, a stop-lever K is provided, engaging with a stop-pin L on the receiving-cylinder. The lever K is operated by a cam *k* on the cam-shaft K' through a connecting-rod *k*<sup>2</sup>, which carries a fork provided with a stud and roller *k*<sup>3</sup>, which bears on the cam *k*. The roller is held against the cam by a spring 10, which bears against a collar 11 on the rod, and also against a guide 12 on the frame through which the rod passes.

After the sheet is printed on one side between the impression-cylinder A and plate-cylinder B it is taken by grippers on cylinder A' and perfected between the latter cylinder and plate-cylinder B'.

In order to prevent contact of the impression-cylinders with the inking-plates of the plate-cylinders, provision is made for lifting the impression-cylinders at the proper time by means of the usual cam-actuated toggle-levers.

Instead of raising and lowering the cylinders the cylinders may be mounted in fixed bearings. In this case the inking plates or surfaces on the cylinder will be mounted so as to be nearer the axis of the cylinder than the form-carrying surfaces, and means will be provided for moving the form-rollers to and away from the plates as the cylinders revolve. It is of course obvious how the inking-plates may be mounted, and the mechanism for controlling the form-rollers may be similar in construction to that shown in my application, Serial No. 698,847, filed December 10, 1898. Again, when the cylinders are mounted in fixed bearings the ink-distributing plates or surfaces may, if desired, be omitted, in which case the ink will be delivered directly from the ink-distributing devices to the form-rollers. This modification being obvious is not illustrated.

The invention is of course applicable to a press having a single impression-cylinder as well as to a perfecting-press.

What I claim is—

1. In a printing-machine, the combination with a printing-couple of two members one of which is a member of the printing-couple, means for intermittently driving the mem-

bers in unison, means for varying the speed of one member with relation to the other, and a feeding member driven from the member having the variable speed, substantially as described.

2. In a printing-machine, the combination with two members one of which is a member of the printing-couple, of means for intermittently driving the members in unison, means for varying the speed of one member with relation to the other, said means consisting of engaging surfaces carried by the members, and a feeding member driven from the member having the variable speed, substantially as described.

3. In a printing-machine, the combination with two members one of which is a member of the printing-couple, of means for intermittently driving the members in unison, means for varying the speed of one member with relation to the other, said means consisting of engaging surfaces, and one of said surfaces being inclined to its path of movement, and a feeding mechanism driven from the member having the variable speed, substantially as described.

4. In a printing-machine, the combination with two members one of which is a member of the printing-couple, of means for intermittently driving the members in unison, means for varying the speed of one member with relation to the other, said means consisting of engaging surfaces and one of said surfaces being inclined to its path of movement, means for varying the degree of inclination of said surface, and a feeding member driven from the member having the variable speed, substantially as described.

5. In a printing-machine, the combination with a printing-couple, of two members, means for intermittently driving the members in unison, means for varying the speed of one member with relation to the other, said means consisting of engaging surfaces, and means for giving one of the surfaces a movement independent of its driven movement, and a feeding member driven by the member having the variable speed, substantially as described.

6. In a printing-machine, the combination with a printing-couple having a constantly-rotating member, of a second rotating member, means whereby the speed of the second member is varied with respect to the constantly-rotating member and a feeding member driven by the member having the variable speed, substantially as described.

7. In a printing-machine, the combination with a constantly-rotating printing-couple, of a member intermittently driven in unison with one member of the couple, means whereby the speed of said member is varied with respect to the rotation of the couple, and a feeding member driven from said second member, substantially as described.

8. In a printing-machine, the combination with a constantly-rotating printing-couple, of a member intermittently driven in unison



with the couple, means for varying the speed of said member with relation to the couple, said means consisting of engaging surfaces carried by the member and one member of the couple, and a feeding member driven from the member having the variable speed, substantially as described.

9. In a printing-machine, the combination with a printing-couple, of a member intermittently driven in unison with the couple, means for varying the speed of said member with relation to the couple, said means consisting of engaging surfaces carried by the member and one member of the couple, one of said surfaces being inclined to its path of movement, and a feeding member driven from the member having the variable speed, substantially as described.

10. In a printing-machine, the combination with a constantly-rotating printing-couple, of a member intermittently driven in unison with the couple, means for varying the speed of said member with relation to the couple, said means consisting of engaging surfaces carried by the member and one member of the couple, one of said surfaces being inclined to its path of movement, and a feeding member driven from the member having the variable speed, substantially as described.

11. In a printing-machine, the combination with a printing-couple, of a member intermittently driven in unison with the couple, means for varying the speed of said member with relation to the couple, said means consisting of engaging surfaces, means for giving one of the surfaces a movement independent of the movement which it has when driven in unison with the couple, and a feeding member driven from the member having the variable speed, substantially as described.

12. In a printing-machine, the combination with a constantly-rotating printing-couple, of a member intermittently driven in unison with the couple, means for varying the speed of said member with relation to the couple, said means consisting of engaging surfaces carried by the member and one member of the couple, means for giving one of said surfaces a movement independent of its rotating movement, and a feeding member driven from the member having the variable speed, substantially as described.

13. In a printing-machine, the combination with a constantly-rotating printing-couple, of a gear carried on the shaft of one member of the couple, means whereby said gear is intermittently driven in unison with the couple, and a feeding-cylinder driven from said gear, substantially as described.

14. In a printing-machine, the combination with a printing-couple, of a gear mounted on the shaft of one member of the couple, means whereby the gear is intermittently driven in unison with the couple, means for varying the rotation of the gear with respect to the movement of said member, said means consisting of engaging surfaces carried by the

gear and one member of the couple, one of said surfaces being inclined to its path of movement, and a feeding-cylinder driven by the gear, substantially as described.

15. In a printing-machine, the combination with a printing-couple, of a gear mounted on the shaft of one member of the couple, means whereby the gear is intermittently driven in unison with the couple, means for varying the rotation of the gear with respect to the movement of said member, said means consisting of engaging surfaces carried by the gear and the member, means for giving one of the surfaces a movement independent of the movement which it has when it is driven in unison with the couple, and a feeding-cylinder driven by the gear, substantially as described.

16. In a printing-machine having two printing-couples, the combination with a member intermittently driven in unison with one member of one of the couples, of means for varying the movement of said member with relation to the member of the couple, said means consisting of engaging surfaces carried by the member and a member of the printing-couple, a feeding member driven from the member having the variable movement, and means for transferring a sheet from one couple to the other.

17. In a printing-machine having two printing-couples, one of which has a constantly-rotating member, of a member intermittently driven in unison with said constantly-rotating member, means for varying the speed of rotation of said member with relation to the member of the couple, a feeding member driven from the member having the variable movement, and means for transferring a sheet from one couple to the other, substantially as described.

18. In a printing-machine having two printing-couples, the combination with a member intermittently driven in unison with one member of one of the couples, of means for varying the movement of said member with relation to the member of the couple, said means consisting of engaging surfaces having paths of movement corresponding to said member, means for giving one of the engaging surfaces a movement independent of the movement which it has when driven in unison with the member of the couple, and means for transferring a sheet from one couple to the other, substantially as described.

19. In a printing-machine, the combination with a printing-couple, of a member, means moving with the member and one member of the couple whereby said member has its speed gradually increased until it is intermittently driven in unison with the member of the couple and then gradually decreased until it comes to a stop, said means consisting of two pairs of engaging surfaces and means for giving one surface of each pair a movement independent of the movement which it has when driven in unison with the member of the



couple, a feeding-cylinder driven from said member, and a stopping mechanism for holding the feeding-cylinder in its position of rest, substantially as described.

5 20. In a printing-machine, the combination with a constantly-rotating printing-couple, of a member, means carried by the member and one member of the couple for gradually increasing the speed of said member until it  
10 is driven in unison with the member of the couple and then gradually decreasing its speed until it comes to a position of rest, a feeding-cylinder driven from said member, and a stopping mechanism acting to hold the  
15 feeding-cylinder in its position of rest, substantially as described.

21. In a printing-machine, the combination with a constantly-rotating printing-couple, of a gear carried on the shaft of one member of  
20 the couple, devices carried by the gear and one member of the couple whereby the speed of the gear is increased until it is driven in unison with the said member, and then gradually decreased until it is brought to a posi-  
25 tion of rest, a feeding-cylinder driven from said gear, and a stopping mechanism acting to hold the feeding-cylinder in its position of rest, substantially as described.

22. In a printing-machine, the combination  
30 with two constantly-rotating printing-couples, of a gear carried on the shaft of one member of one of the couples, means carried by the gear and a member of that couple for gradually increasing the speed of the gear until  
35 it is driven in unison with said couple and then gradually decreased until it is brought

to a position of rest, a feeding-cylinder driven from said gear, a stopping mechanism for holding said feeding-cylinder in its position of rest, and means for transferring a sheet from one  
40 couple to the other, substantially as described.

23. In a printing-press, the combination of the plate-cylinder provided with a segmental gearing, the coupling-levers, the receiving-cylinder, and the intermediate gear-wheel  
45 provided with pins cooperating with the coupling-lever to connect the plate-cylinder with the intermediate gear-wheel, substantially as described.

24. The combination of a cylinder provided  
50 with a segmental gearing, a gear-wheel adapted to engage with said segmental gearing, coupling-levers mounted on the cylinder, studs or rollers mounted on the gear-wheel with which the coupling-levers engage, and  
55 a second cylinder in gear with said gear-wheel, substantially as described.

25. The combination of a cylinder provided with a segmental gearing, a gear-wheel adapted to engage with said segmental gearing,  
60 coupling-levers mounted on the cylinder, two sets of studs or rollers mounted on the gear-wheel with which the coupling-levers engage, and a second cylinder in gear with said gear-wheel, substantially as described.  
65

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

THOMAS M. NORTH.

Witnesses:

M. H. PHELPS,

A. L. KENT.