

No. 793,115.

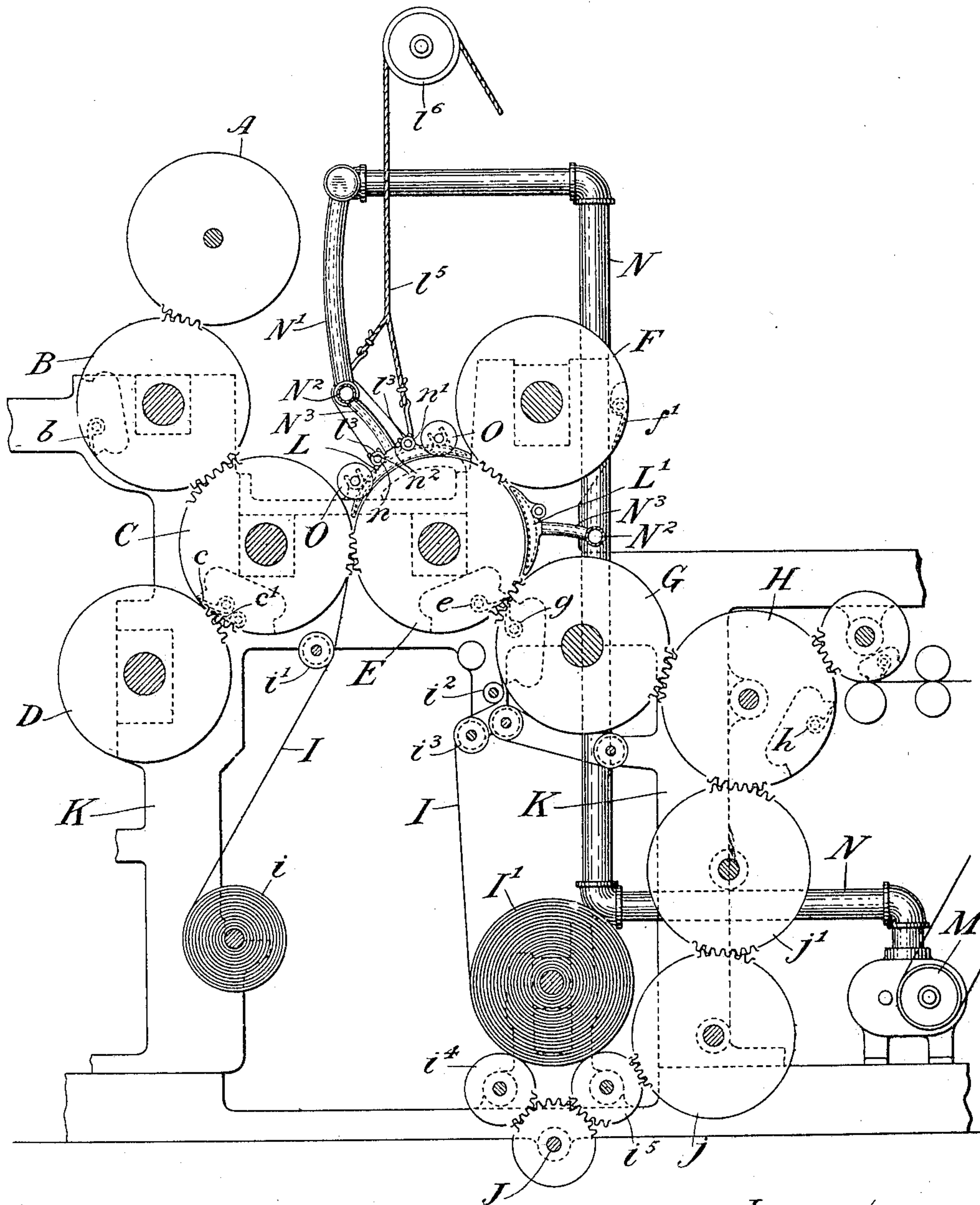
PATENTED JUNE 27, 1905.

A. W. WESEMAN.
SHEET CONTROLLING MEANS.

APPLICATION FILED JULY 5, 1902.

2 SHEETS—SHEET 1.

Fig. 1



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SHEET CONTROLLING MEANS.
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2 SHEETS—SHEET 2.

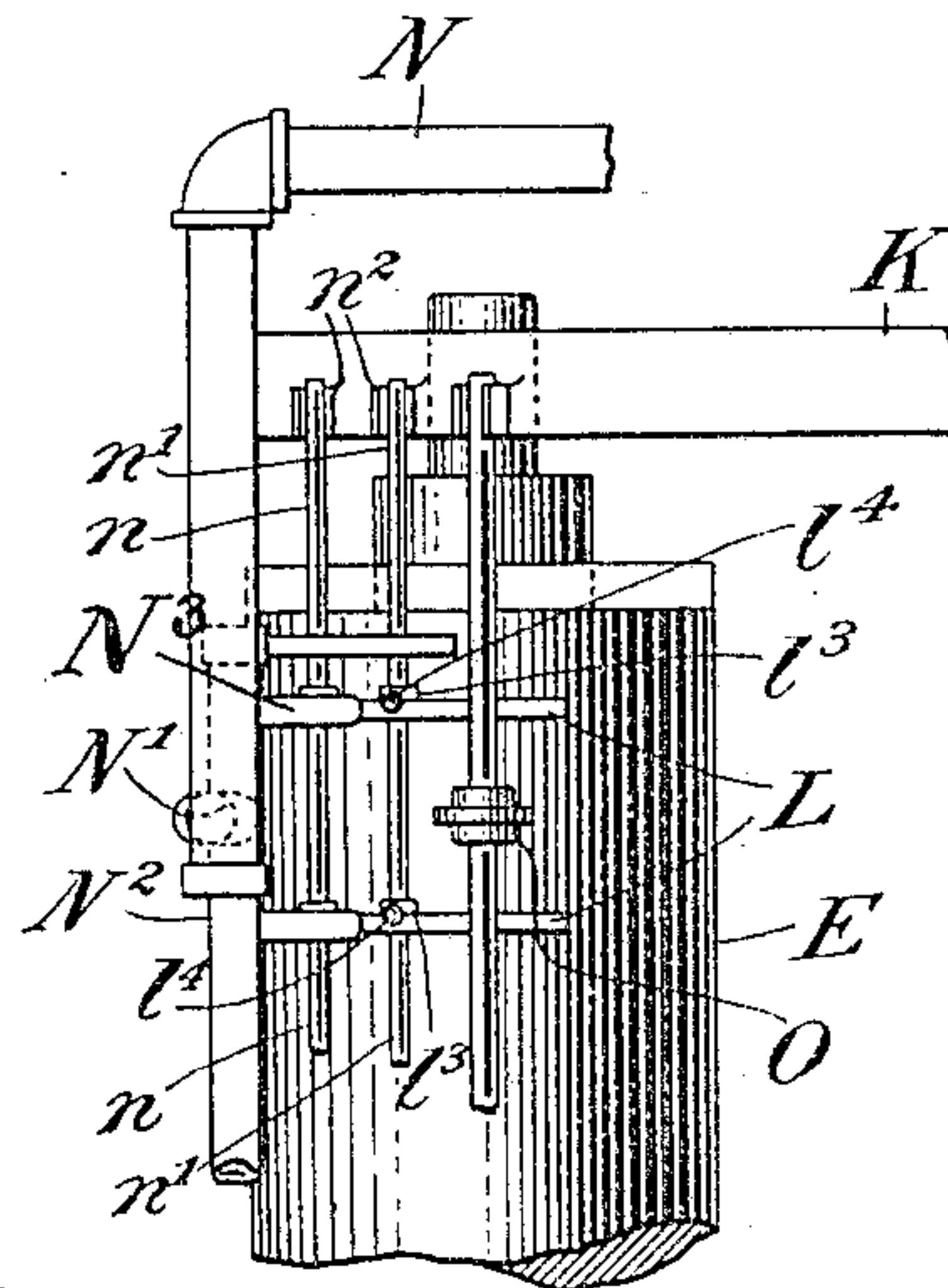
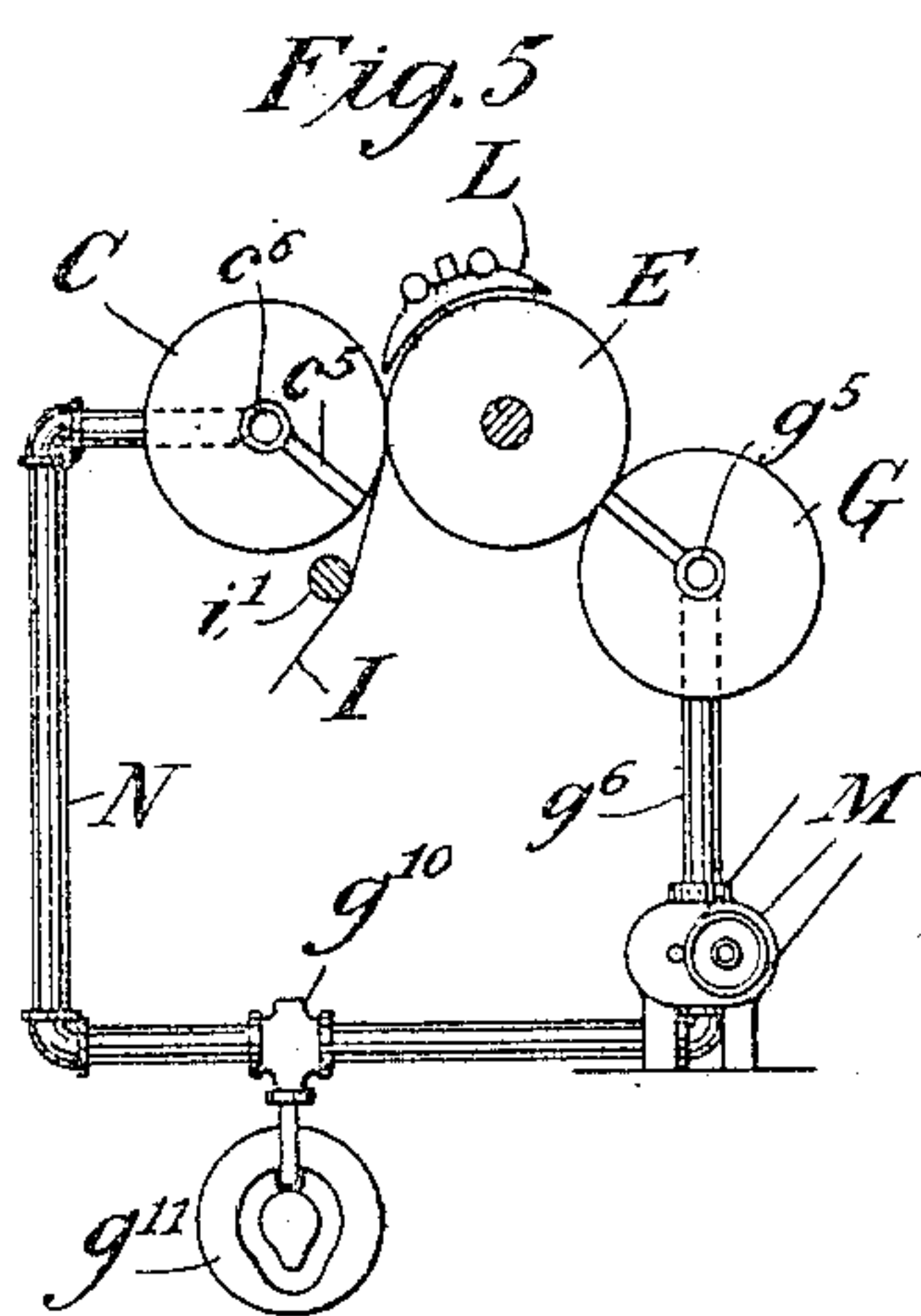


Fig. 2

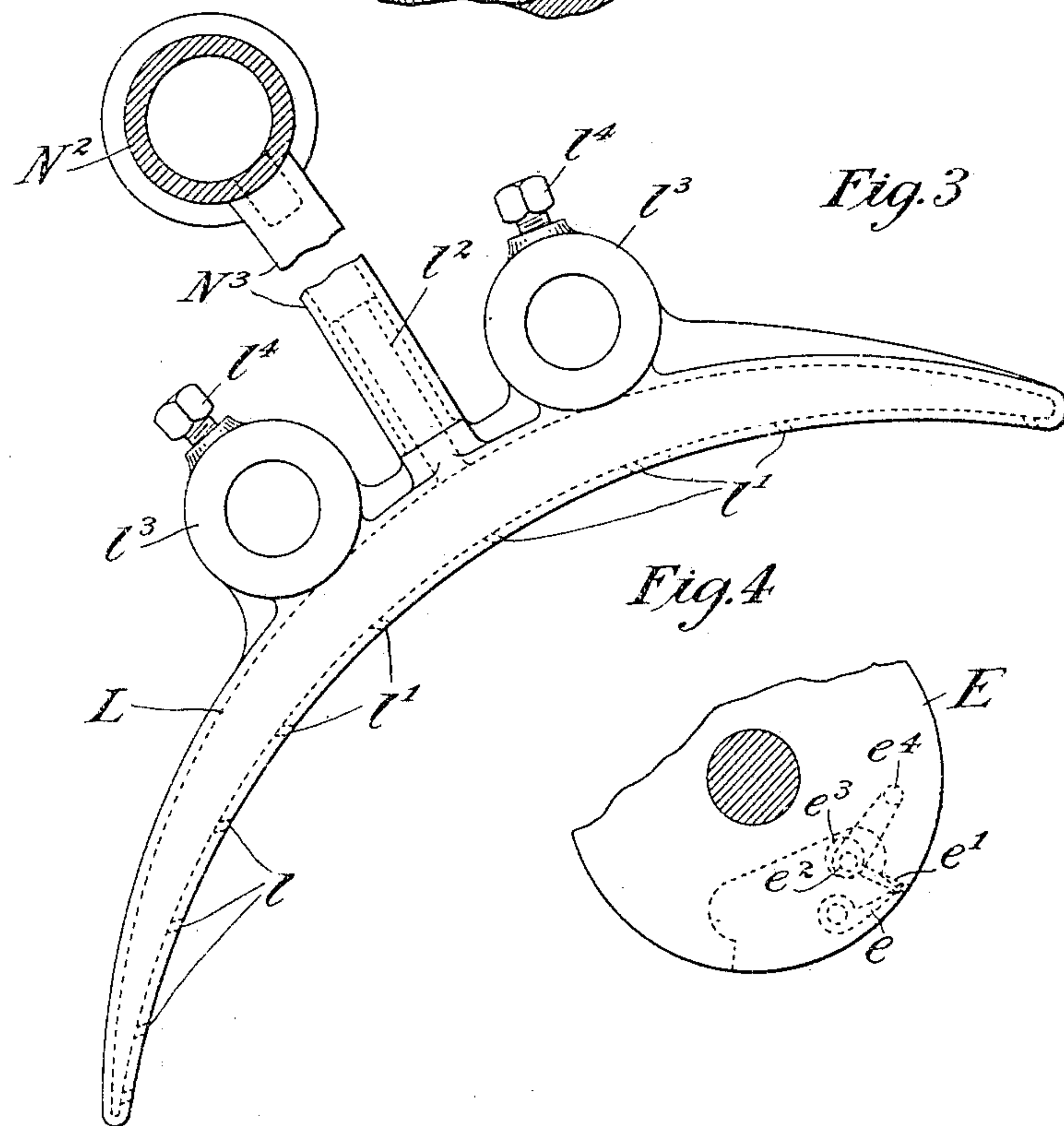
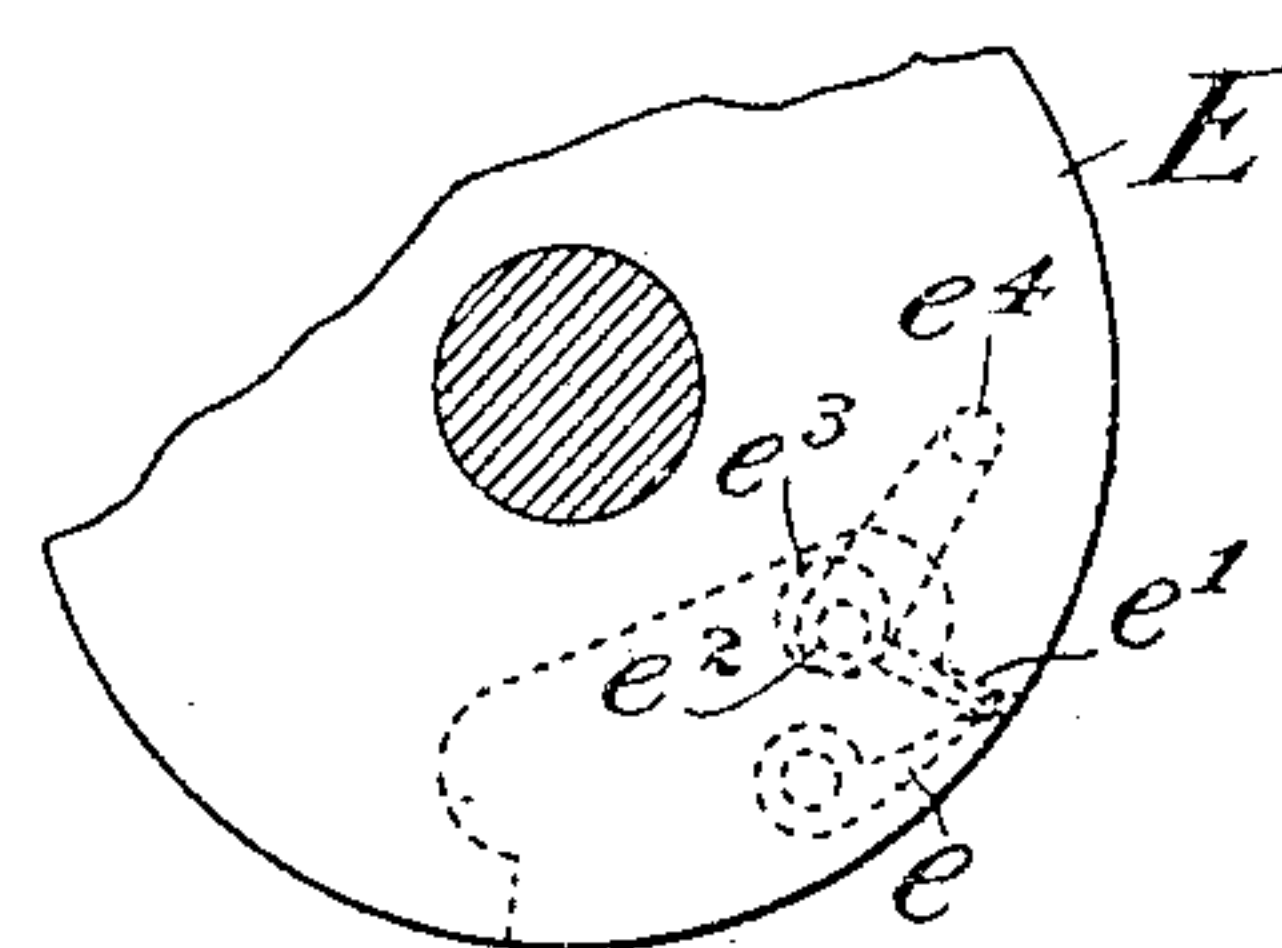


Fig. 3

Fig. 4



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UNITED STATES PATENT OFFICE.

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SHEET-CONTROLLING MEANS.

SPECIFICATION forming part of Letters Patent No. 793,115, dated June 27, 1905.

Application filed July 5, 1902. Serial No. 114,460.

To all whom it may concern:

Be it known that I, ALONZO W. WESEMAN, 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 Sheet-Controlling Means, of which the following is a specification.

My invention relates generally to means for controlling sheets or a web of thin flexible material while moving, and has more particularly reference to means for controlling the sheets passing through a printing-machine.

I shall describe a machine embodying my invention and afterward point out the novel features in the claims.

When it is desired to do a fine quality of work in machines which print both sides of the sheets, it is necessary to use some means, as a "roll-tympan," to prevent the "offset"—*i. e.*, blurring of that side of the sheet which is first printed when the second side is printed. When the roll-tympan is used, it is not possible to employ the ordinary grippers to hold the sheet on the cylinder or other conveying means in connection with which the said tympan is utilized.

Heretofore tapes or other means, as an air suction, acting through perforations in the tympan have been employed to keep the sheet in close contact with the conveying means and to transfer the sheet from one conveying means to another. The air suction, however, requires a very powerful suction device and is on that account very expensive and inconvenient. To produce a means which will do this work economically and well is the object of my invention.

Other objects will appear as the specification proceeds.

To this end I construct my machine with means for exerting an air-pressure upon the sheet, so as to hold it against the conveying means, the said air-pressure being preferably exerted in the direction of the motion of the conveying means. Likewise in transferring the sheet from one conveying means to another I use an air-pressure which acts as a throw-off. In this and other features of con-

struction, more particularly hereinafter described, my invention consists.

In the drawings I have embodied my invention in a rotary printing-press; but it may of course be used in connection with presses and machines of a different construction, and the embodiment of the invention may of course be varied within the scope of the claims.

In the said drawings, Figure 1 is a side view in section of a rotary press embodying my invention. Fig. 2 is a plan view of a part of the second impression-cylinder, showing the means for exerting the air-pressure and auxiliaries thereto. Fig. 3 is an enlarged view of one of the guides through which the air-pressure is exerted on the sheets. Fig. 4 is a detailed view of an eccentric bearing for the shaft which carries the gripper-supports. Fig. 5 shows a device whereby the sheets are transferred by air-pressure.

Similar letters of reference indicate corresponding parts in the different views.

A and B indicate the first cylinders to which the sheets are fed by hand or by any other suitable means. If a web is used, they may be constructed as cutting-cylinders.

C and E indicate, respectively, the first and second impression-cylinders, having the usual plate-cylinders D and F adjacent thereto.

G is a transfer-cylinder, by means of which the sheets are conveyed to the collecting-cylinder H.

The transfer-cylinder B, the first and second impression-cylinders C and E, the transfer-cylinder G, and collecting-cylinder H are each provided with grippers, respectively, *b*, *c*, *e*, *g*, and *h*, which are operated by cams in the usual manner, so as to seize and release the sheets at the proper places where the transfer from one cylinder to another takes place. The impression-cylinder C and the plate-cylinder F are each provided with throw-off fingers *c'* and *f'*.

The sheet is transferred from the cylinder A to the cylinder C and held there by means of the grippers *c*. When the grippers *c* reach the axial line between the cylinders C and E, they release the sheet, so as to allow it to be seized by the grippers *e* on the cylinder E.

It is then carried around and transferred in the same manner to the grippers *g* on the cylinder G and thence to the grippers *h* on the cylinder H.

5 I is a roll-tympan fed from a roll *i*, over the idler *i'*, around the second impression-cylinder E, partly against the transfer-cylinder G, around the idlers *i''* and *i'''*, and wound up on the roll I'. The roll I' is driven by two smaller
10 rollers *i''* and *i'''*, which are geared to the main shaft J. One of these rollers *i'''* also transfers the motion of the main shaft through gears *j* and *j'* to the cylinders enumerated above, which are all geared together in the
15 usual way. The elements are of course also mounted in a suitable framework, as K, in a well-known manner. When this roll-tympan, which may be of paper or other suitable material, is used, it is evident that the grippers
20 *e* on the second impression-cylinder cannot be operated to seize the sheet from the cylinder C and to deliver it to the cylinder G. In this case, therefore, the cam which operates the grippers in a well-known manner is re-
25 moved, and the grippers are allowed to remain at rest. It is likewise preferable that the supports *e'* on the cylinder on which the grippers *e* rest when holding the sheets should be moved a distance inside the cylinder, so as
30 to prevent the grippers *e* from protruding outside the circumference of the said cylinder. This is accomplished by mounting the transverse shaft *e''*, which carries the supports
35 *e'*, in a manner well known in an eccentric bearing *e'''* at each end. By turning the handles *e'''* on the bearings *e'''* it will be seen that the shaft *e''* is moved a distance back, so that the supports *e'* are moved a distance inside of
40 the circumference of the cylinder sufficient to prevent the grippers *e* from protruding outside the circumference.

In order to control the sheet without the grippers as it passes around the cylinder E, I employ a series of guides or ducts L adjacent
45 to the said cylinder E and between the cylinders E and F and another series of similar guides or ducts L' between the cylinders F and G. Each guide L is made in the form of an arc of a circle corresponding to the cylinder E and is rather narrow, as shown in the
50 drawings. Inside it is hollow and is provided with a plurality of perforations or openings *l'* on its lower side bored on a slant or obliquely, as shown. A current of air is conducted from the blower M through a suitable
55 means of communication, as the pipes N and rubber tube N', to the transverse pipe N², which forms a common air-duct for all the guides, and through a plurality of rubber tubes
60 N³, which connect with a short rigid pipe *l''* on each of the guides L, opening into the latter. These guides L, as well as the pipe N², are mounted on the transverse rods *n* and *n'*, the said guides being to that end provided
65 with the bushings *l'''* and set-screws *l''''*, so that

they may be shifted laterally and transversely, such individual adjustment being permitted by the flexible tubes N³. Other means for adjusting these guides might of course be used. The ends of the rods *n* and *n'* are supported
70 on the framework in open brackets *n''* and the whole device attached to a rope or chain *l''''*, suspended from a pulley *l'''''*, or other means, so that the whole series of guides L and the transverse pipe N² can be lifted up bodily, whereby
75 access can be had to the impression-cylinder in order to make ready the form by the necessary overlays for printing. This removable adjustment is of course also made possible by the flexible connection N'. 80

O represents pressure-rollers of any suitable construction which are made separately removable.

The guides L' are similarly mounted and receive a current of air from one of the pipes
85 N, as shown. It is not necessary, however, that these guides should be removable away from the cylinder E; but they have a lateral and transverse adjustment individually similar to the guides L. The openings *l'* are
90 made in an oblique direction, so that the air passing through the same will be guided round the cylinder in the direction of the travel of the surface of the cylinder. A stop-cock or valve could be used on each guide L
95 to cut off air when narrower sheets are being used.

The operation is as follows: The sheets are fed to the grippers *b* on the cylinder B in the usual manner and transferred to the grippers *c*
100 on the cylinder C. When the grippers *c* on the cylinder C reach the axial line between the cylinders C and E or a slight distance above the axial line, the grippers *c* will open in the usual way to release the sheet, and the
105 throw-off fingers *c'* (which are underneath the sheet) will push the sheet against the cylinder E and underneath the edge of the guides L. When the sheet is thus transferred to the cylinder E, the air-pressure from the holes *e'*
110 will press the sheet against the cylinder E with sufficient force to cause it to adhere thereto and pass around underneath the guides L and between the cylinders E and F. When the edge of the sheet has reached the axial
115 line between the cylinders E and F or slightly farther, the throw-off fingers *f'* press the sheet against the cylinder E and underneath the guides L', so as to insure the sheet leaving the plate-cylinder F. The sheet is then
120 held by the air-pressure against the cylinder E until it reaches the cylinder G and is transferred against that cylinder by the roll-tympan as it passes a short distance around that
125 cylinder, the roll-tympan leaving the cylinder G abruptly around the roller *l''*, the sheet passing straight forward around the cylinder G. The grippers *g* on the cylinder G in this case will only require to seize the sheet after the roll-tympan has left the surface of the
130

cylinder G and convey the sheet around to the collecting-cylinder. In some cases these grippers *g* will not be necessary, as tapes or guides can be made to transfer the sheets to the collecting-cylinder. The cylinder G could be used as a collecting-cylinder.

In Fig. 5 is shown the means for employing air-pressure to push or transfer the sheets from one cylinder to another. In this case the cylinder C, in addition to the guides L or without the guides L, is constructed with a plurality of ducts, as *c*³, connected with the cylinder-shaft *c*⁶, made hollow for this purpose, which shaft communicates with one of the pipes N leading from the blower. The air can be turned off and on at the proper moment by means of the valve *g*¹⁰, operated by the cam *g*¹¹. The plate-cylinder F could of course also be supplied with the same means for blowing off the sheets. In like manner a suction could be used on the cylinder G to seize the sheet as it is received from the cylinder E to transfer it to the cylinder H, the hollow shaft *g*⁵ of the cylinder G communicating with the suction end of the blower M by means of the pipe *g*⁶. Of course fluid other than air could be used with the same effect.

Having thus described my invention, what I claim is—

1. In a printing-press, the combination with means for conveying sheets, of means for exerting an air-pressure, means of communication leading therefrom, a series of guides having openings for the discharge of air under pressure upon the sheets, and a plurality of flexible connections between the guides and the means of communication.

2. In a printing-press, the combination with means for conveying sheets, of means for exerting an air-pressure, means of communication leading therefrom, a series of guides adjacent to the conveying means having openings for the discharge of air under pressure upon the sheets, a plurality of flexible connections between the guides and the means of communication, and means for moving the said guides bodily away from the conveying means.

3. In a printing-press, the combination with means for conveying sheets, of means for exerting an air-pressure, means of communication leading therefrom, a series of guides having oblique openings for the discharge of air under pressure upon the sheets, and a plurality of flexible connections between the guides and the means of communication.

4. In a printing-press, the combination with means for conveying sheets, of means for exerting an air-pressure, means of communication leading therefrom, a series of guides adjacent to the conveying means having oblique openings for the discharge of air under pressure upon the sheets, a plurality of flexible connections between the guides and the means

of communication, and means for moving the said guides bodily away from the conveying means.

5. In a printing-press, the combination with means for conveying sheets, of means for exerting an air-pressure, means of communication leading therefrom, a series of individually-adjustable guides having openings for the discharge of air under pressure upon the sheets, and a plurality of flexible connections between the guides and the means of communication.

6. In a printing-press, the combination with means for conveying sheets, of means for exerting an air-pressure, means of communication leading therefrom, a series of individually-adjustable guides adjacent to the conveying means, having openings for the discharge of air under pressure upon the sheets, a plurality of flexible connections between the guides and the means of communication, and means for moving the said guides bodily away from the said conveying means.

7. In a printing-press, the combination with means for conveying sheets, of means for exerting an air-pressure, means of communication leading therefrom, a series of individually-adjustable guides having oblique openings for the discharge of air under pressure upon the sheet, and a plurality of flexible connections between the guides and the means of communication.

8. In a printing-press, the combination with means for conveying sheets, of means for exerting an air-pressure, means of communication leading therefrom, a series of individually-adjustable guides adjacent to the conveying means having oblique openings for the discharge of air under pressure upon the sheets, a plurality of flexible connections between the guides and the means of communication, and means for moving the said guides bodily away from the conveying means.

9. In a printing-press, the combination with a conveying means, of means for exerting an air-pressure, a means of communication leading therefrom, a lateral air-duct located adjacent to the conveying means, a plurality of discharge-ducts, flexible connections between the discharge-ducts and the lateral air-duct, and means for moving the lateral air-duct and the discharge-ducts bodily to and from the conveying means.

10. In a machine of the character described, the combination of means for exerting an air-pressure, a means of communication leading therefrom, an air-duct, a flexible connection between the means of communication and the air-duct, a plurality of discharge-ducts, and flexible connections between the discharge-ducts and the air-duct.

11. In a printing-press, the combination with a cylinder for conveying sheets, of means for exerting an air-pressure, a means of communication leading therefrom, a lateral air-

duct located transversely over the cylinder, a flexible connection between the means of communication and the air-duct, a plurality of discharge-ducts, flexible connections between the discharge-ducts and the air-duct, and means for moving the air and discharge ducts bodily to and from the cylinder.

12. In a printing-press, the combination with a conveying means, of means, as grippers, for holding the sheets, means for rendering said holding means inactive, and means for holding the sheets on the conveying means by air-pressure.

13. In a printing-press, a plurality of individually and transversely adjustable ducts for the discharge of air, and means for moving said ducts in unison.

14. In a printing-press, the combination with a cylinder having grippers, of an adjusting means for said grippers, a shaft carrying said adjusting means eccentrically disposed, and means for turning said shaft to adjust the adjusting means.

15. In a printing-press, the combination with two impression-cylinders located adjacent to each other and a plate-cylinder for each impression-cylinder located a distance away from the other impression-cylinder, of an air-pressure means for transferring the sheets from the first to the second impression-cylinder and for conveying them around the second impression-cylinder a distance between the first impression-cylinder and the second plate-cylinder.

16. In a printing-press having two form-cylinders and two impression-cylinders, a tympan-web passing partly around the second impression-cylinder, and air-pressure means for holding the sheet against the tympan-web while passing around between the first impression-cylinder and the second form-cylinder.

17. In a printing-press, the combination of two impression-cylinders adapted to carry sheets, two form-cylinders, a tympan-web passing partly around the second impression-cylinder, air-pressure means for transferring

the sheets from the first to the second impression-cylinder and for carrying them around with the second impression-cylinder until they reach the second form-cylinder.

18. In a printing-press having two form-cylinders two impression-cylinders and a receiving means, a tympan-web passing partly around the second impression-cylinder and air-pressure means for holding the sheets against the tympan-web while passing around between the first impression-cylinder and the second form-cylinder and between the second form-cylinder and the receiving means.

19. In a printing-press, the combination of two impression-cylinders having means thereon adapted to carry sheets, and a web-tympan passing around the second impression-cylinder, means for rendering said sheet-carrying means on the second impression-cylinder inoperative, and an air-pressure means for controlling the sheets as they pass around the second impression-cylinder on the web-tympan.

20. In a printing-press having two impression-cylinders located adjacent to each other, a plate-cylinder for each impression-cylinder located a distance away from the other impression-cylinder, and a sheet-receiving device, means for transferring the sheets from the first to the second impression-cylinder, air-pressure means for holding and controlling the sheet around the second impression-cylinder and the second plate-cylinder, means to prevent the sheet from following or adhering to the second plate-cylinder, and air-pressure means for controlling the sheet while passing around the second impression-cylinder between the second plate-cylinder and the sheet-receiving device.

Signed at Plainfield, in the county of Union and State of New Jersey, this 30th day of June, A. D. 1902.

ALONZO W. WESEMAN.

Witnesses:

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