No. 752,876. PATENTED FEB. 23, 1904.

H. A. W. WOOD.

PRINTING MACHINE.

APPLICATION FILED SEPT. 17, 1892. RENEWED JULY 16, 1903.

NO MODEL. 4 SHEETS—SHEET 1.

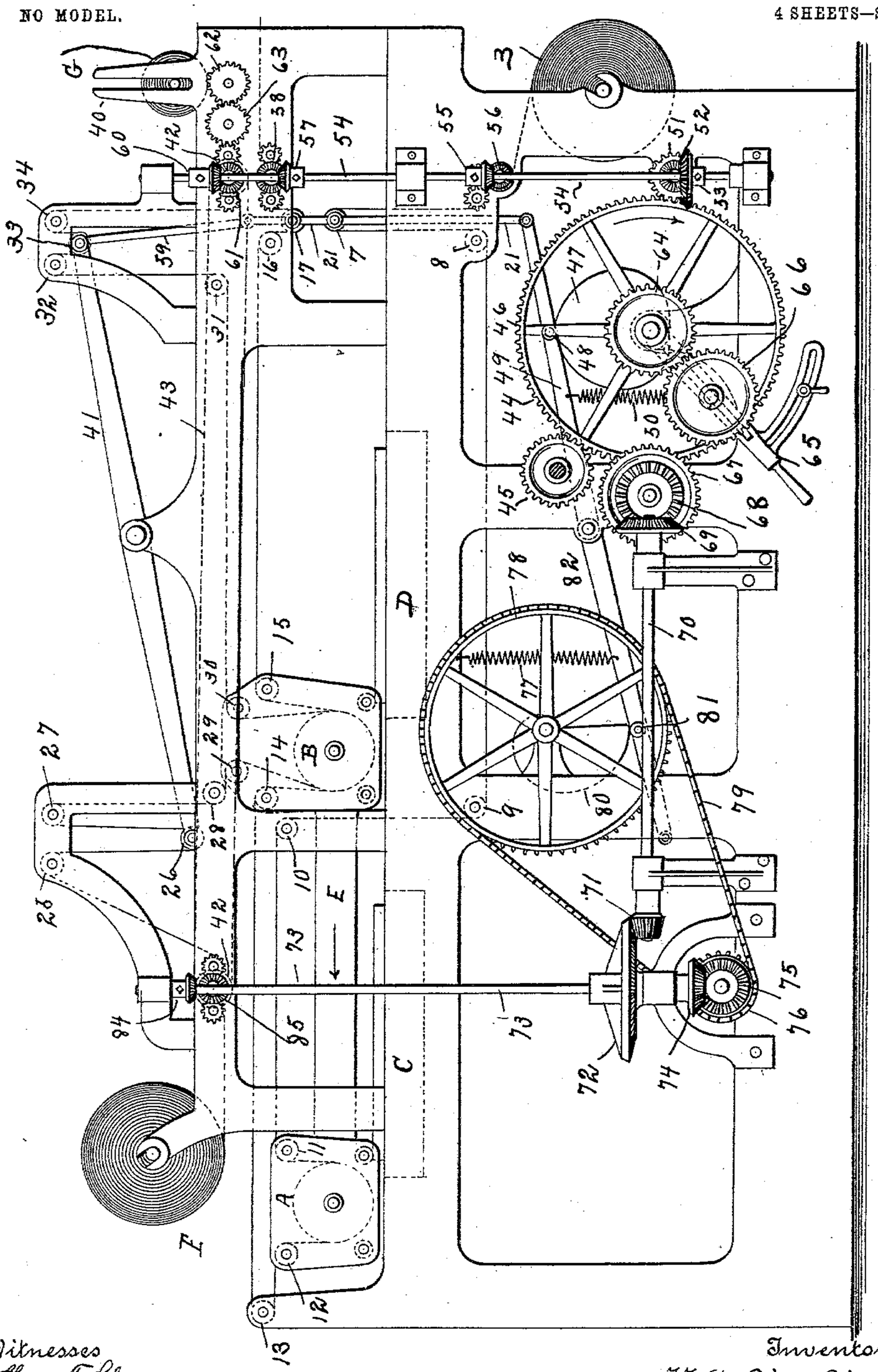

Fig. 1.

Witnesses
Chas. F. Schmeh.
E. M. Healy.

Inventor
H. A. Wise Wood,
By his Attorney
Louis W. Southgate

No. 752,876. PATENTED FEB. 23, 1904.

H. A. W. WOOD.

PRINTING MACHINE.

APPLICATION FILED SEPT. 17, 1892. RENEWED JULY 16, 1903.

NO MODEL. 4 SHEETS—SHEET 2.

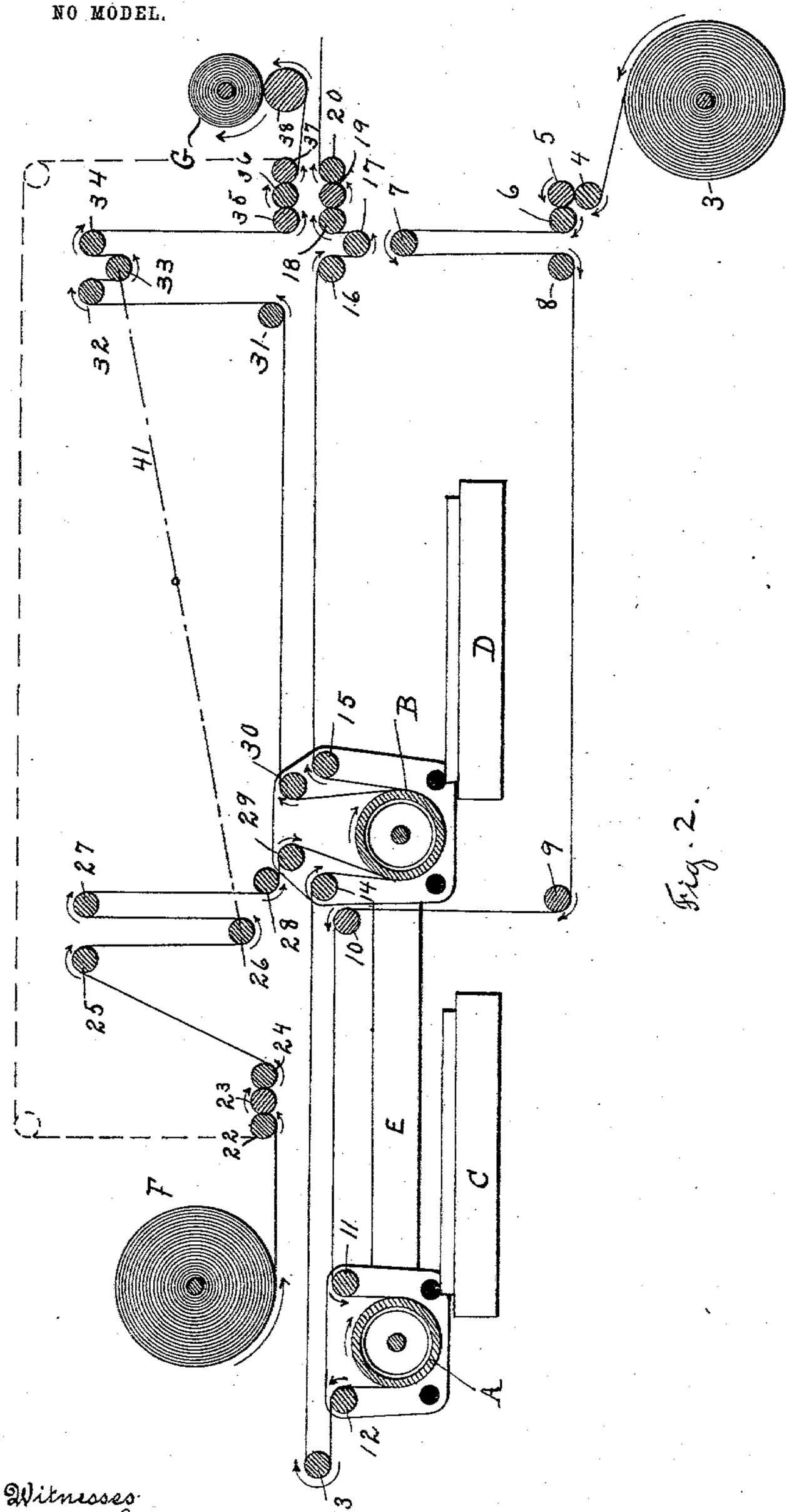

Fig. 2.

Witnesses:
Chas. F. Schmeh,
E. M. Healy.

Inventor
H. A. Wise Wood,
By his Attorney
Louis W. Southgate

No. 752,876. PATENTED FEB. 23, 1904.

H. A. W. WOOD.

PRINTING MACHINE.

APPLICATION FILED SEPT. 17, 1892. RENEWED JULY 16, 1903.

NO MODEL. 4 SHEETS—SHEET 3.

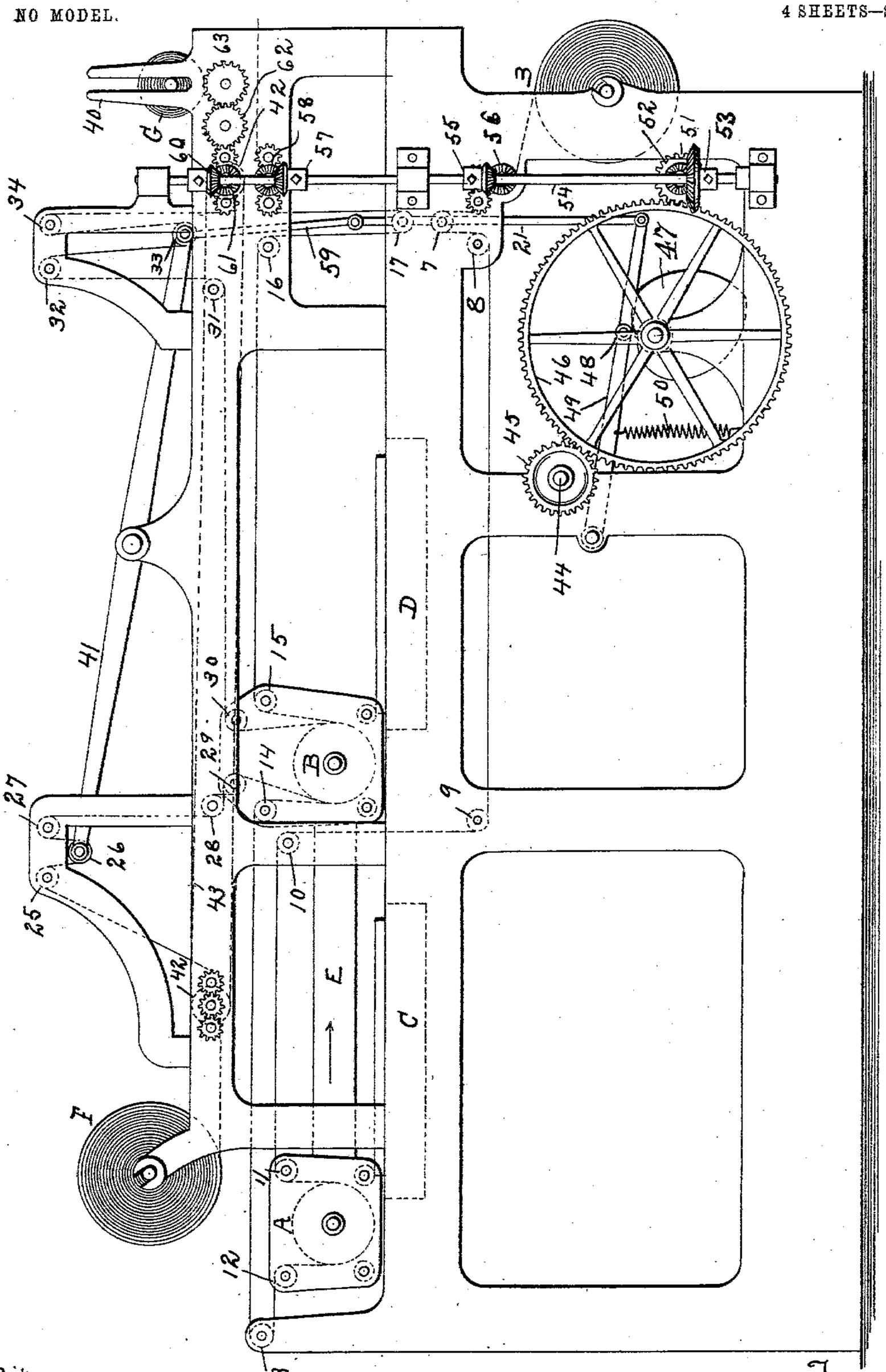

Fig. 3.

Witnesses
Chas. F. Schmidt.
E. M. Healy.

Inventor
H. A. Wise Wood,
By his Attorney
Louis W. Southgate

No. 752,876. PATENTED FEB. 23, 1904.

H. A. W. WOOD.

PRINTING MACHINE.

APPLICATION FILED SEPT. 17, 1892. RENEWED JULY 16, 1903.

NO MODEL. 4 SHEETS—SHEET 4.

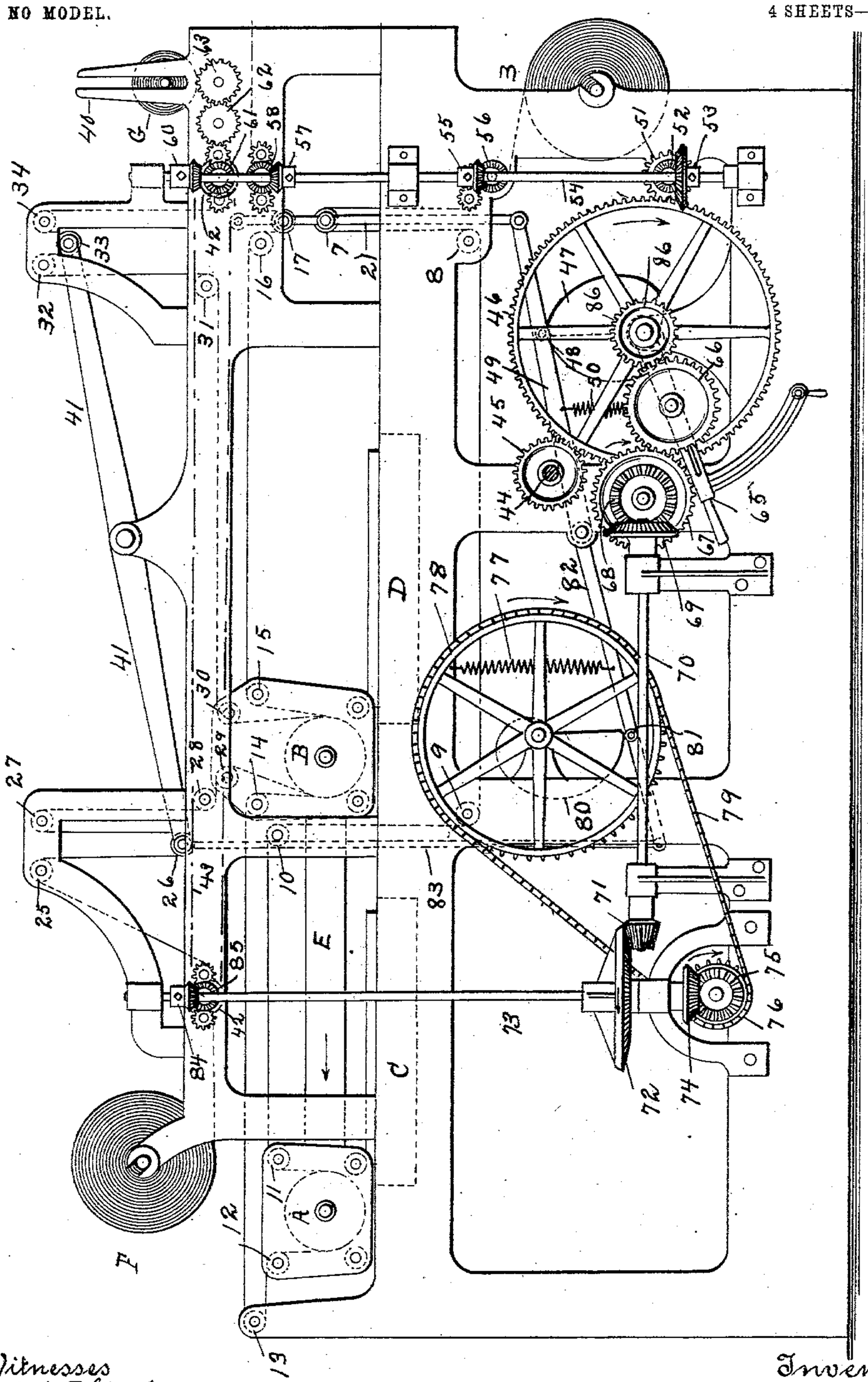

Fig. 4.

Witnesses
Chas. F. Schmeltz
E. M. Healy.

Inventor
H. A. Wise Wood,
By his Attorney
Louis W. Southgate

No. 752,876. Patented February 23, 1904.

UNITED STATES PATENT OFFICE.

HENRY A. WISE WOOD, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO DETROIT TRUST CO., TRUSTEE, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 752,876, dated February 23, 1904.

Application filed September 17, 1892. Renewed July 16, 1903. Serial No. 165,870. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. WISE WOOD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Improvement in Printing-Machines, of which the following is a specification.

The aim of this invention is to provide a new and improved offset-preventing mechanism for use in connection with printing-presses which employ flat forms.

The invention has been especially designed for use in connection with a web-perfecting printing-press employing flat form-beds and impression-cylinders and has been designed to protect the surface of the second impression-cylinder, so that the web that is being printed will not contact therewith.

The invention consists of the new organization of parts to automatically effect this result, as hereinafter described, and illustrated in the accompanying four sheets of drawings.

Figure 1 is a side elevation of a printing-machine with my improvements applied thereto, showing the gearing and a double arrangement for manipulating the auxiliary or offset web. Fig. 2 is a sectional elevation illustrating the way the webs are led through the machine. Fig. 3 is a side elevation showing the gearing that is in operation when the offset-web is manipulated in one manner or showing a machine organized with one form of offset-web-manipulating mechanism, and Fig. 4 is a similar view showing the gearing that is in operation when the offset-web is manipulated in another manner or in a different form of machine.

In the drawings my invention is shown as applied to a form of traveling-cylinder web-perfecting press substantially like what is shown and described in Letters Patent No. 376,053, dated January 3, 1888. In that patent are shown two reciprocating impression-cylinders which coact with stationary form-beds and devices for leading a web around said impression-cylinders, so that as the impression-cylinders move the web will be perfected. To a device of this character I add or connect an auxiliary web, which is led around the second impression-cylinder and acts both to guide the main web around such second impression-cylinder and to prevent offset on such impression-cylinder. This offset, as is well understood in the art, is caused by the first printed side of the web bearing or being forced against the second impression-cylinder as the second side is printed, whereby the ink from the first printed side is set off on the impression-cylinder and deposited on the next or succeeding part of the web, thereby blurring. I remedy this evil by placing an auxiliary web between the web to be printed and the second impression-cylinder and by automatically manipulating the auxiliary web at the proper times, so that a clean surface will be interposed between the second impression-cylinder and the web to be printed.

In some classes of work—as, for example, very nice bookwork—it is desirable to always shift the auxiliary or offset web at the same time as the web to be printed, whereby a fresh surface of the auxiliary web will always be presented, and to do this I may connect my auxiliary-web-manipulating apparatus directly to the manipulating apparatus for the main web. In other cases it is desirable to shift the auxiliary web only when a number of impressions have been taken—as, for example, twenty—and I also provide a mechanism by which the number of sheets printed by the second impression-cylinder without shifting the auxiliary web may be varied.

Also another and important feature of my invention is to hold the auxiliary web stationary on both sides of the impression-cylinder, whereby as the impression-cylinder moves the auxiliary web will move or turn around the impression-cylinder in conjunction with the main web and will thereby guide and lead the main web around the impression-cylinder, and also by this means the manipulating mechanism for the auxiliary web can be nicely got at and controlled. By this arrangement thin and delicate webs can be printed upon very accurately, because the offset-web will help to guide the web to be printed through the machine.

In the patent referred to the specific arrangement consists in placing the two form-beds in the same plane and leading the web in over the first bed. I have improved upon this arrangement by leading the main web up between said form-beds or to the first of said impression-cylinders from between said impression-cylinders, whereby, as will be hereinafter described, there are a less number of guides between the two cylinders, and thereby less blurring on the web between the two clyinders, as the printed side of the web will not have to come in contact with as many of such guide-rollers. Also by leading the main web up between the beds in this manner the top of the second impression-cylinder is accessible, and the web does not obstruct the same and prevent an auxiliary web being led around the second impression-cylinder, as in the device shown in said patent.

I have only shown enough of the mechanism of the before-referred-to patent to illustrate my improved offset-preventing mechanism and my improved way of leading the main web, the details of the driving mechanism for the impression-cylinders, the inking mechanism, and the gearing between the impression-cylinders and beds being omitted, as is also the way the carriage is mounted on the frames. I wish it understood, however, that my device for preventing offset on the web is not limited in application to a press in which the beds are in the same plane, as it is immaterial, so far as the broad scope of my invention is concerned, in what way the beds are arranged relatively to each other.

Referring to the drawings and in detail, A and B designate the reciprocating cylinders, and C and D the form-beds with which said impression-cylinders are adapted to coöperate.

The impression-cylinders A and B are arranged in a suitable carriage E, which is mounted on suitable guides (not shown) and may be reciprocated by any of the usual mechanisms.

The main web or web to be printed is led through the press as follows: The web-roll 3 is mounted in bearings in the frame, as shown, and from the roll the web is led around the rollers 4, 5, and 6, which are continuously driven to unwind the web and feed the same to the press. The web is then led over the looping-roller 7, which pays the web intermittently into the press when the impression-cylinders are off the form-beds in either direction. The web then passes around the rollers 8 and 9 to the center of the press, then up between the form-beds to the stationary roller 10 to the roller 11, carried by the carriage, then around the impression-cylinder A, and then around roller 12, mounted on the other side of the impression-cylinder A. From the carriage E the web then passes to the stationary roller 13, which is mounted in the main framing, as shown, and this roller 13 may be adjustable, if desired, so as to obtain proper register. From the roller 13 the web passes to the roller 14, mounted in the carriage near the second impression-cylinder, then around the second impression-cylinder B, as shown, then around the roller 15, also mounted in the carriage, to the stationary roller 16 near the end of the press. From this roller 16 the web is led under the looping-roller 17 and then into the bite of the delivery-rollers 18, 19, and 20, by which the web is continuously delivered from the press. The rollers that act to continuously feed the web into the press, the looping-rollers which constitute a shifting mechanism, and the rollers which serve to continuously deliver the web from the press constitute a web-manipulating mechanism which is arranged so that the web will be continuously fed into and delivered from the press and so that the web in the press will be shifted or drawn forward around the impression-cylinders when the latter are off the forms in either direction. It will be seen that as the web passes from one impression-cylinder to the other the freshly-printed surface will have to turn over only one roller—viz., roller 12—and that as the web passes around the rollers 13 and 14 the unprinted side will bear on such rollers. This is an important point over the patent shown and is obtained by leading the web up between the beds. The looping-roller 7 and the looping-roller 17 are mounted in common arms 21, and the web is oppositely looped around said rollers, as shown, whereby as the web is let out by the roller 7 it will be taken up by the roller 17.

Although I have shown a specific mechanism for manipulating the main web, it is to be understood that any equivalent mechanism may be used.

My offset-web-manipulating mechanism comprises means for leading the offset-web so that the same will be held at two points relatively to the second impression-cylinder, whereby the offset-web will turn around the second impression-cylinder with the main web, so that when the said cylinder is off the form in either direction the offset-web may be shifted with the main web or may be shifted when a certain number of sheets have been printed, as hereinafter described. The offset-web roll F may be placed in bearings in the main frame, as shown, and from this roll the web is led between rollers 22, 23, and 24, which are continuously driven to unwind and feed the web. From the roller 24 the offset-web passes to the guide-roller 25, then around the looping-roller 26, and then around the guide-rollers 27 and 28, mounted in the framing. From the roller 28 the offset-web is led around the roller 29, which is carried by the carriage E, then around the second impression-cylinder B, and then up around the roller 30, also carried by the carriage E. From the roller 30 the offset-web is led to the rollers 31 and 32,

around the looping-roller 33, around the guide-roller 34, then between rollers 35, 36, and 37, which are continuously driven, as hereinafter described, and from the roller 37 the web is led around the drum-cylinder 38, which acts to wind the web up into a second roll G, the arbor of this second roll being loosely mounted in slotted bearings 40, as shown. Instead of using two rolls F and G, as shown, it is obvious that a continuous blanket or web could be used and simply led from one set of continuously-running rollers to the other, as shown in dotted lines in Fig. 2. The looping-rollers 26 and 33 are mounted in suitable pivoted arms 41, as shown, and by actuating these looping-rollers a shifting mechanism is provided for the auxiliary or offset web.

As described, the manipulating mechanism for the offset-web consists of means for continuously feeding and delivering the same and a shifting mechanism.

The rollers 23 and 36 have suitable pulleys 42, mounted on the shafts of the same, and these pulleys are connected to turn together by a chain or belt 43, whereby if one set of rollers is driven the other will be turned at the same speed and in the same direction.

The gearing for driving the manipulating mechanism of the main web may be organized as follows: A driving-shaft 44 is journaled in the main frame, and from this driving-shaft the cylinders A and B may be reciprocated by any of the usual mechanisms, not necessary here to show. On this driving-shaft is mounted a pinion 45, which meshes with and drives a large gear 46, and on the shaft of this gear 46 are mounted cams 47 of any desired shape or construction, and bearing on or coöperating with cams 47 are rollers 48, mounted in arms 49, which arms 49 are suitably connected to arms 21, which carry the looping-rollers. The arms 49 are normally held in their lowest position by springs 50, as shown. By this means the looping-rollers for the main web may be properly raised and lowered to intermittently shift the web through the press in the well-known manner. A pinion 51 is driven from the gear 46, and connected to this pinion is a bevel-gear 52, which meshes with and drives bevel-gear 53, mounted on the vertical shaft 54. Also mounted on the shaft 54 is a bevel-gear 55, which meshes with and drives bevel-gear 56, which is connected to the roller 4, and the rollers 4, 5, and 6 are geared together, as shown, whereby they will be continuously turned to unwind and feed the web from the roll 3. Also on the shaft 54 is mounted another bevel-gear 57, which meshes with and drives a bevel-gear 58, which is mounted on the delivery-roller 19, and the delivery-rollers 18, 19, and 20 are geared together, as shown, whereby the delivery-rollers may be continuously driven. This web-manipulating mechanism will act to continuously feed the web into the press, intermittently shift the same around the impression-cylinders when the impression-cylinders are off the forms in either direction, and to continuously deliver the web from the press in the well-known manner. Supposing now it is desired to manipulate the offset-web in unison with the main web, the double machine, as shown in Fig. 1, would be connected as shown in that figure, or a machine with a single mechanism would be used, as shown in Fig. 3. In this case the gearing is arranged as follows: Links 59 are arranged between the arms 21 and the arms 41, whereby as the looping-rollers 7 and 17 are raised and lowered the looping-rollers 33 and 26 will be vibrated in unison with the main web-looping rollers. Also arranged on the shaft 54 is another bevel-gear 60, which may be adjusted up and down to engage gear 61, which is fastened on the end of the roller 36, and the rollers 35, 36, and 37 are geared together, as shown, whereby they will be turned from the shaft 54 when the bevel-gear 60 is slipped down to engage the bevel-gear 61. From the gear or roller 37 the drum-roll 38 is driven by means of pinion 62 and intermediate 63.

The operation with my machine thus organized is as follows: By the gearing before described the feeding and delivery rollers for the offset-web are turned at the same peripheral speed as the feeding and delivery rollers for the main web, and the looping-rollers 26 and 33 are operated in unison with the looping-rollers 7 and 17 for the main web, whereby as the main web is shifted, the offset-web will also be shifted, and thereby a clean surface of the offset-web will always be interposed between the second impression-cylinder and the main web. Supposing now it is desired only to shift the offset-web when a certain number of impressions—say twenty—have been made and supposing also it is desired to vary the number of impressions that can be made without shifting the offset-web, then the following arrangement of gearing in the double machine is used: The bevel-gear 60 is slipped up to disengage the bevel-gear 61, and the connections 59 are removed, whereby the feeding, delivering, and looping rollers of the offset-web-manipulating mechanisms are left free to be operated, as hereinafter described. On the shaft of the gear '46 is mounted a gear 64, and this gear 64 may be taken off and replaced by larger or smaller gears, as hereinafter described, to vary the number of impressions that will be taken before the offset-web will be shifted. Also hung on the shaft of the gear 46 is a sweep 65, and fastened in a slot in this sweep in the usual manner is an intermediate gear 66, and by manipulating the sweep this gear 66 can be brought up to mesh with and drive a gear 67. In the operation before described—that is, in a double machine—when the offset-web is shifted through the press at the same speed

as the main web this intermediate 66 is dropped out of mesh with the gear 67; but in the operation now under discussion when it is desired to shift the offset-web independently of the main web the intermediate 66 is raised to mesh with the gear 67. Fastened on the shaft of the gear 67 is a bevel-gear 68, which meshes with and drives bevel-gear 69, fastened on the end of the shaft 70, which is mounted in suitable bearings attached to the frame, as shown, and on the other end of the shaft 70 is arranged a pinion 71, which meshes with and drives a large bevel-gear 72, fastened to the vertical shaft 73, which is mounted in suitable bearings on the main frame. On the lower end of this shaft 73 is fastened a bevel-pinion 74, which meshes with and drives a bevel-gear 75, and on the shaft with this bevel-gear 75 is arranged a sprocket-pinion 76. A shaft is mounted in suitable bearings on the main frame, and on this shaft is arranged a gear 78, and this gear 78 is driven from the pinion 76 by means of sprocket-chain 79. On the shaft of the gear 78 are arranged cams 80, against which bear rollers 81, fastened on arms 82, loosely mounted on the same shaft as arms 49, and between the arms 41 and the arms 82 are arranged suitable detachable connections or links 83. These links 83 are disconnected when the offset web is run at the same speed with the main web, but are connected to draw the offset-web forward when the slow speed is used, as is being at present discussed. The arms 82 are normally kept in their raised position by means of springs 77, as shown. Near the top of the shaft 73 is arranged a bevel-pinion 84, which meshes with and engages a bevel-pinion 85 on the shaft of the roller 23, and the rollers 22, 23, and 24 are geared together, as shown. This bevel-pinion 84 may be moved up and down, so as to be connected and disconnected from the gear 85, and the pinion 84 is disconnected when the offset-web is fed at the same speed as the main web, but is connected when the offset-web is run at a slower speed, as is being now described. It will be seen that if the rollers 22, 23, and 24 are driven by this means the rollers 35, 36, and 37 will also be driven in the same direction and at the same speed by means of chain or belt 43. It will also be seen that all the mechanism for manipulating the offset-web at the slow speed is driven from gear 64.

In the arrangement shown in Fig. 1 the gearing is supposed to be proportioned so that twenty impressions will be taken before the offset-web will be shifted. Supposing now that it is desired to increase the number of impressions that may be taken before the offset-web is shifted, gear 64 will be removed and a gear of smaller size, as 86, (see Fig. 4,) will be used in the place of the same and the sweep will be properly adjusted to connect gear 86, intermediate 66, and gear 67. Now in this case the offset-web would only be shifted after a larger number of impressions had been taken. Thus by varying the size of the gear on the shaft of the gear 46 the number of impressions that are taken without shifting the offset-web can be carried. It is desirable to use gearing in this connection, so as to positively operate the device, so that the feed of the offset mechanism will act only at a time when the main web is shifted and the impression-cylinders off the forms in either direction, the cams being designed with this in view. Now when the press is connected as described the rollers 22, 23, and 24 and 35, 36, and 37 will be very slowly turned to unwind the offset-web from the roll F and to slowly wind the same up into roll G. The gearing, as before described, will shift the offset-web when the desired number of sheets—as, for example, twenty—have been printed, whereby the same portion of the offset-web is used a number of times. The cams 80 are so proportioned that the shift of the offset-web will take place very quickly and practically with the shift of the main web. Therefore a considerable range of adjustment can be effected with one set of cams 80, as the slight movement imparted to the offset-web during its shift by its feeding and delivery rollers may be neglected, as it is immaterial if the offset-web is shifted a little more or less than the main web, provided the offset-web is always shifted at least the length of a sheet. In some cases I contemplate using sets of cams 80 or changing the same as the shift of the offset-web is adjusted. By holding the offset-web stationary at a point beyond the travel of the impression-cylinder in either direction the offset-web will run nicely around the impression-cylinder and, as before described, will help the main web around the impression-cylinder, and by means of the disconnecting parts before described—that is, the removable links, the slipping bevel-pinions, and the sweep—the offset-web can be made to run either with the main web or very much slower, and by changing the pinion 64, as before described, the offset-web can be shifted when any desired number of sheets have been printed.

Of course, as shown in the drawings, a machine could be built, as in Fig. 3, in which the offset-web is shifted always with the main web, or a machine could be built in which the auxiliary web is always shifted at a much slower speed, or a double machine, as shown, can be constructed embodying both devices. Either of these mechanisms is within the scope of my invention.

The feeding, shifting, and delivery mechanisms for both webs and the arrangement of beds can be varied as desired.

The cams which actuate the shifting mechanism in both the main and offset web manipulating devices will be properly proportioned so that the shift of the offset-web will take

place at the same time as a shift of the main web.

The cams for the shifting mechanism of the main-web-manipulating mechanism will be proportioned so that the shift will easily and nicely take place when the impression-cylinders are off impression.

The way in which I lead and feed the offset-web to the machine can be applied as well to a platen-press as to a press in which a reciprocating impression-cylinder is used in connection with a stationary form-bed, and when I hereinafter use the term "reciprocating impression-cylinder coacting with the bed" I mean to be understood as considering that a platen would be the equivalent of this construction, and I intend to cover both these constructions by the term "impression-surface."

The details, arrangements, proportions, and design of the cams, gears, and various parts herein shown and described may be greatly varied by a skilled mechanic without departing from the scope of my invention as expressed in the claims.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the second form-bed and the perfecting traveling impression-cylinder of a web-printing press, an offset-web interposed between said impression-cylinder and the web to be printed, a manipulating mechanism for the web to be printed, and an automatic shifting mechanism for the offset-web, said automatic shifting mechanism being timed to shift the offset-web when the impression-cylinder is off impression.

2. The combination in a web-printing press of two form-beds, a traveling impression-cylinder coacting with each of said form-beds, an offset-web interposed between the second impression-cylinder and the web to be printed, a manipulating mechanism for the web to be printed, and an automatic shifting mechanism for said offset-web, said shifting mechanism being timed to shift the offset-web when said impression-cylinder is off impression in either direction.

3. The combination in a web-printing press of two form-beds, a traveling impression-cylinder coacting with each of said form-beds, an offset-web interposed between the second of said impression-cylinders and the web to be printed, a manipulating mechanism for the web to be printed, and an independent manipulating mechanism for the offset-web comprising feeding and delivery devices, and a shifting device arranged to shift the offset-web every time said impression-cylinder is off impression.

5. The combination in a web-printing press of two form-beds, a traveling impression-cylinder coacting with each of said form-beds, an offset-web interposed between the second of said impression-cylinders and the web to be printed, and a manipulating mechanism for said offset-web arranged so that the offset-web will be automatically shifted at intervals of a number of impressions.

6. The combination in a web-printing press of two form-beds, a traveling impression-cylinder coacting with each of said form-beds, an offset-web interposed between the second of said impression-cylinders and the web to be printed, a manipulating mechanism for said offset-web, and connections whereby said manipulating mechanism can be connected to shift the offset-web with the main web or at intervals of a number of impressions.

7. The combination in a web-printing press of two form-beds, a traveling impression-cylinder coacting with each form-bed, a web-manipulating mechanism for the web to be printed, an offset-web interposed between the second of said impression-cylinders and the web to be printed, a manipulating mechanism for this offset-web, and connections between the two manipulating mechanisms whereby they will operate synchronously.

8. The combination in a web-printing press of two form-beds, a traveling impression-cylinder coacting with each form-bed, a offset-web interposed between the second impression-cylinder and the web to be printed, a manipulating mechanism for said offset-web, two sets of gearing for operating said manipulating mechanism, one gearing adapted to move the offset-web in unison with the web to be printed, the second gearing adapted to shift the offset-web only when a number of impressions have been taken, this gearing also being adjustable so that the number of impressions that can be taken without shifting the offset-web can be varied, and connections whereby either of said gearings may be used.

9. The combination with the form-bed and second impression-surface of a printng-press, an offset-web interposed between said impression-surface and the material to be printed, a manipulating mechanism for said offset-web comprising a feeding mechanism located at one side of said impression-surface, a delivery mechanism located at the other side of said impression-surface, and a shifting mechanism.

10. The combination with the form-bed and second impression-surface of a web-press of the class described, an offset-web interposed between the said second impression-surface and the web to be printed, a feeding mechanism for said offset-web located at one side of

said impression-surface, a delivery mechanism for said offset-web located at the other side of said impression-surface, and a shifting mechanism for the offset-web comprising a looping-roller arranged at each side of said impression-surface.

11. The combination in a web-printing press of a form-bed, an impression-surface coacting therewith, an offset-web interposed between said impression-surface and the web to be printed, mechanism adapted to slowly move the web on each side of said impression-surface, a looping device arranged substantially on each side of said impression-surface adapted to take up the web fed in by one mechanism and to pay the web out to the other mechanism, and means for operating said looping mechanisms whereby the offset-web can be quickly shifted.

12. The combination with the second impression-cylinder of a web-printing press of the class described, an offset-web interposed between said second impression-cylinder and the web to be printed, continuously-driven feeding-rollers 19, 20 and 21, looping-rollers 23 and 28, continuously-driven delivery-rollers 29, 30 and 31, and means for synchronously moving the looping-rollers 23 and 28.

13. The combination in a web-perfecting printing-press of two stationary form-beds, a traveling carriage carrying an impression-cylinder coacting with each form-bed, web-guiding devices and manipulating mechanism for the web to be printed, guides comprising stationary guides and guides carried in the carriage and arranged on each side of the second impression-cylinder, an offset-web passing around said guides or rollers to the impression-cylinder, and a manipulating mechanism for the offset-web, whereby the second impression-cylinder will move in a loop or wave of both the offset-web and the web to be printed.

14. The combination in a perfecting printing-press of the second impression-cylinder, guides for leading an offset-web to and from said second impression-cylinder whereby the ends thereof will be exterior to said cylinder, and an automatically-operating manipulating mechanism for the offset-web adapted to automatically respace the offset-web relatively to the surface of the second impression-cylinder at intervals of a number of impressions.

15. The combination in a perfecting printing-press of the second impression-cylinder, guides for leading an offset-web to and from said second impression-cylinder whereby the ends thereof will be exterior to said cylinder, and an automatically-operating manipulating mechanism for the offset-web adapted to automatically respace the offset-web relatively to the surface of the second impression-cylinder at intervals of a number of impressions and during the period when the impression-cylinder is out of impression.

16. In a printing-press, the combination of a reciprocating cylinder, an offset-web therefor, supports for the ends of the offset-web located exterior to the cylinder and beyond the range of movement thereof, with means independent of the means employed for shifting the web to be printed, for intermittently shifting the offset-web after impressions.

17. In a web-printing press, the combination of a type-bed, a reciprocating cylinder, and means for intermittently feeding the web to be printed between the cylinder and the bed, with an offset-web interposed between the web to be printed and the cylinder and held stationary at its ends beyond the range of travel of the cylinder, and means independent of the means for shifting the web to be printed, for intermittently shifting the offset-web in the direction of the travel of the web to be printed, after the taking of impressions.

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

H. A. WISE WOOD.

Witnesses:
LOUIS W. SOUTHGATE,
E. M. HEALY.