

(No Model.)

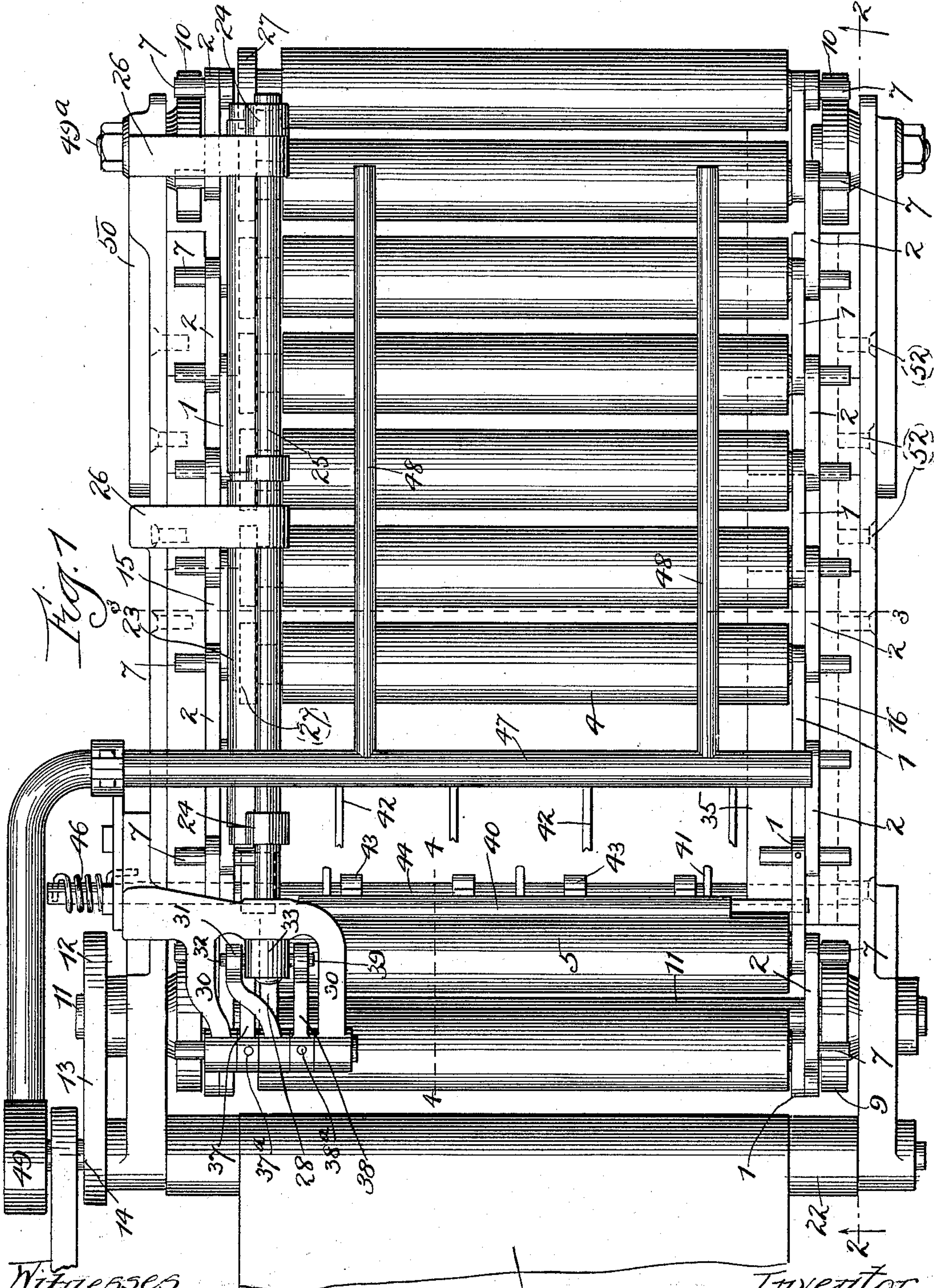
4 Sheets—Sheet 1.

R. MIEHLE.

SHEET CARRYING AND PILING OR FEEDING MECHANISM.

No. 586,073.

Patented July 6, 1897.



Witnesses.
Wm. J. Fleming
Jas. M. Pheasant

Inventor
Robert Miehle
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(No Model.)

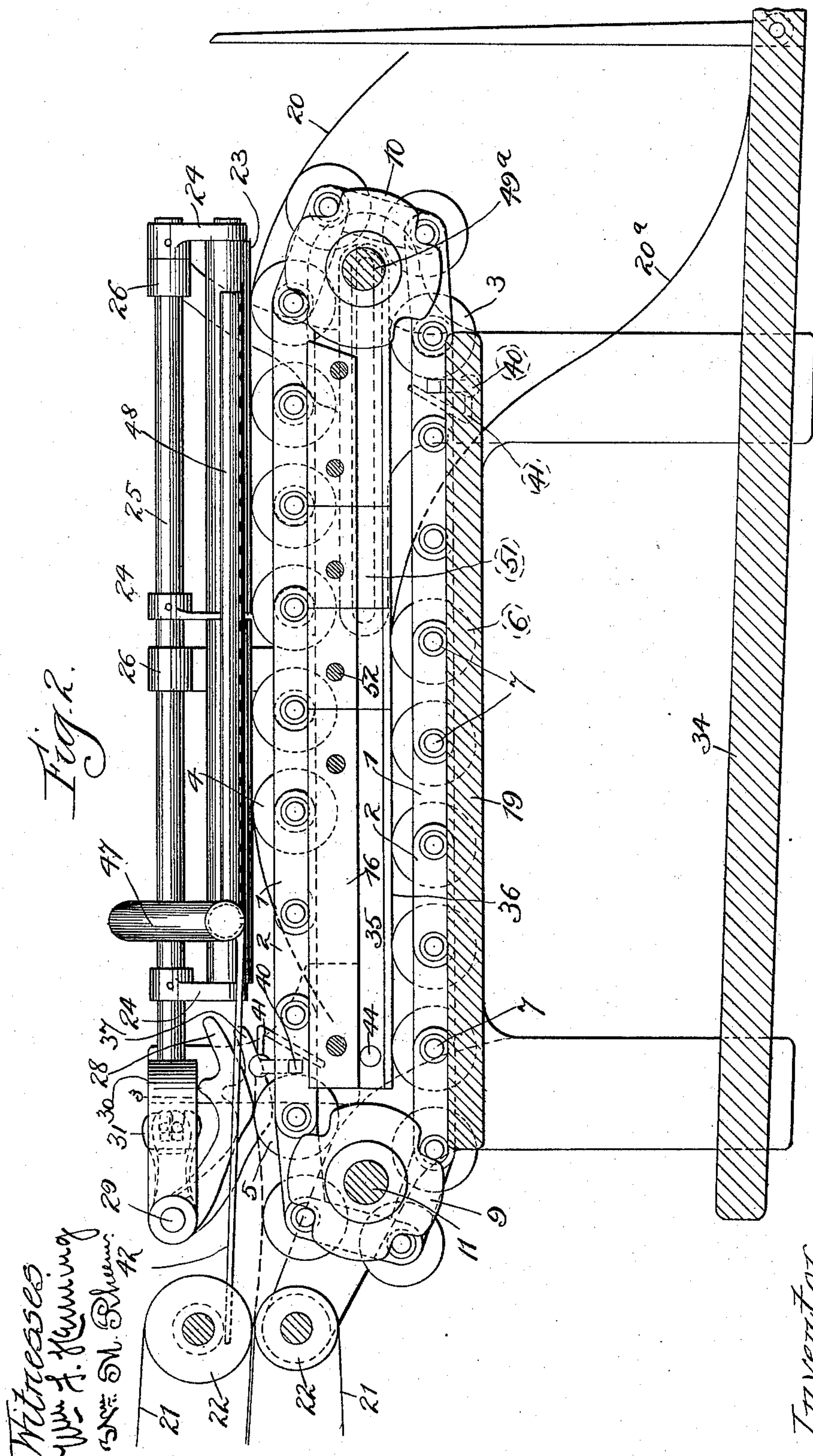
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R. MIEHLE.

SHEET CARRYING AND PILING OR FEEDING MECHANISM.

No. 586,073.

Patented July 6, 1897.



(No Model.)

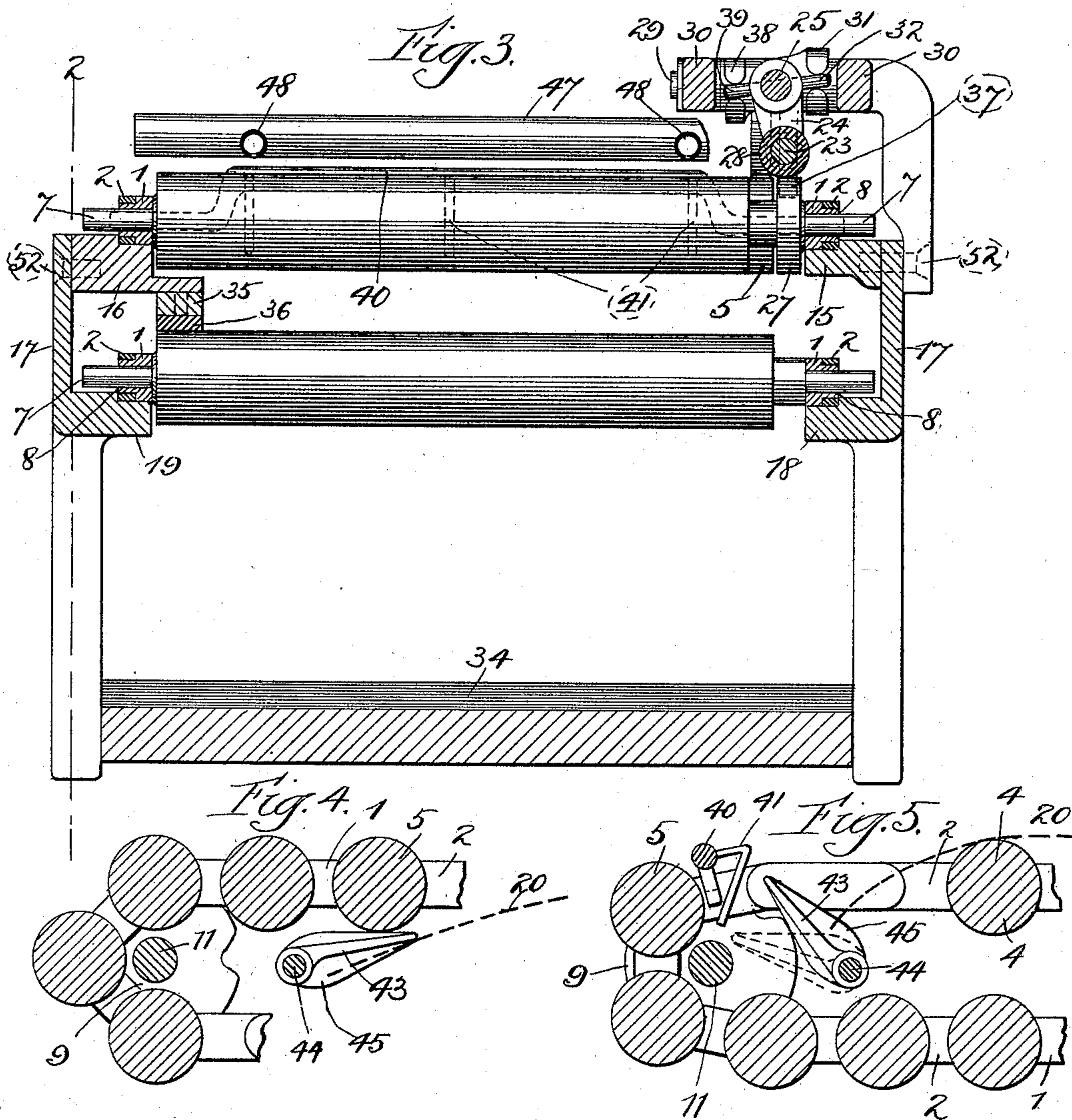
4 Sheets—Sheet 3.

R. MIEHLE.

SHEET CARRYING AND PILING OR FEEDING MECHANISM.

No. 586,073.

Patented July 6, 1897.



Witnesses
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(No Model.)

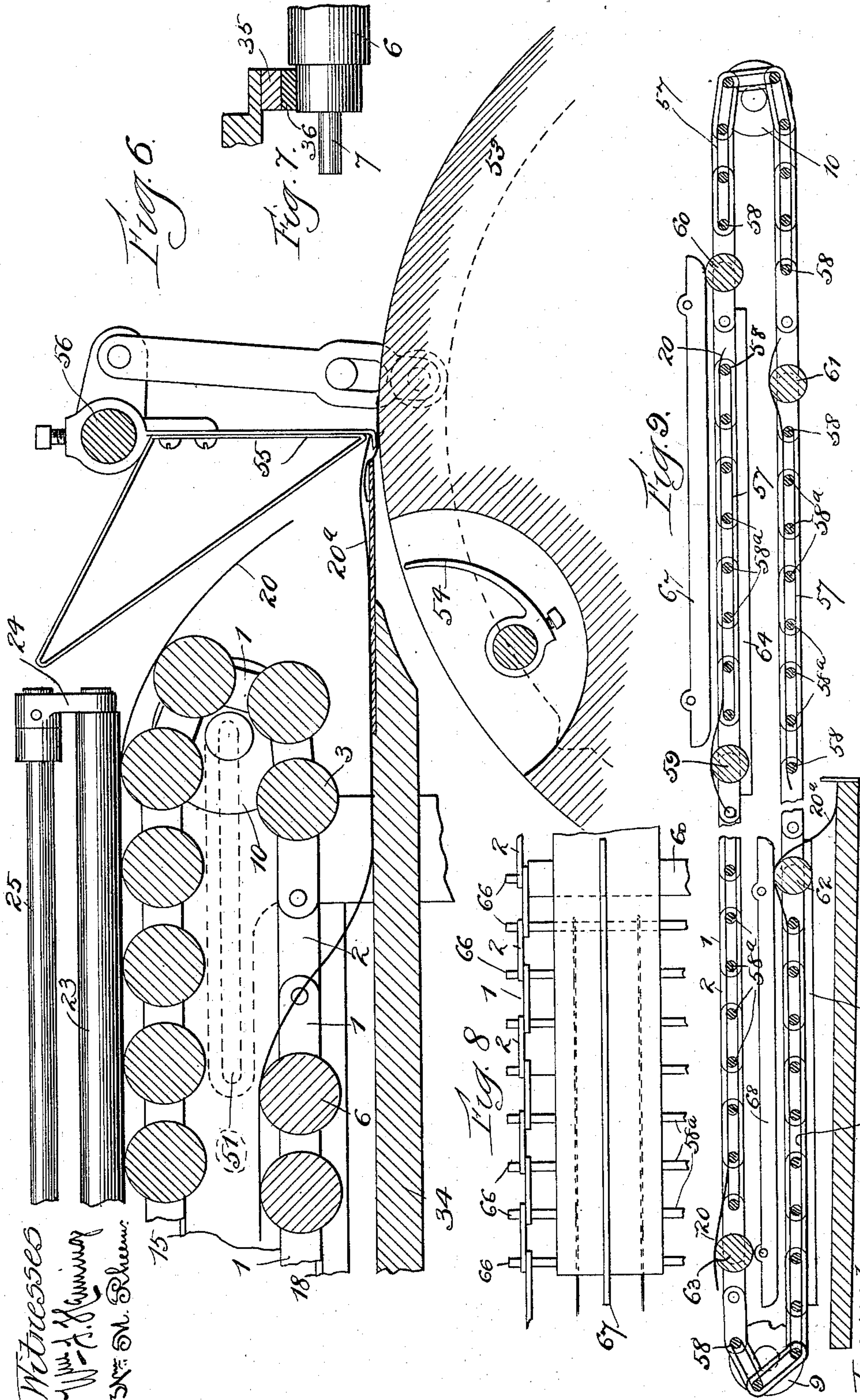
4 Sheets—Sheet 4.

R. MIEHLE.

SHEET CARRYING AND PILING OR FEEDING MECHANISM.

No. 586,073.

Patented July 6, 1897.



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UNITED STATES PATENT OFFICE.

ROBERT MIEHLE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE MIEHLE PRINTING PRESS AND MANUFACTURING COMPANY, OF SAME PLACE.

SHEET CARRYING AND PILING OR FEEDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 586,073, dated July 6, 1897.

Application filed November 29, 1895. Serial No. 570,420. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MIEHLE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sheet Carrying and Piling or Feeding Mechanism, of which the following is a full, clear, and exact specification.

My invention relates to mechanism for receiving one or more sheets as they come from roll-paper cutters, folding-machines, sheet-varnishing machines, ruling-machines, &c., and placing the same in position on a receiving-table; and my invention has for its principal and primary object to receive such sheets as they come from the machine continuously without intermission, or one immediately following the other, and deposit them in an orderly manner upon a receiving-table or other desired place.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said object and certain other objects hereinafter appearing are obtained, all as fully described with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a plan view of my improved apparatus. Fig. 2 is a vertical longitudinal section thereof, taken on the line 2 2, Fig. 1. Fig. 3 is a vertical transverse section taken on the line 3 3, Fig. 1, the ends of the bracket portions 30 being also sectioned on the line 3 3, Fig. 2, so as to disclose the portions 31 38. Fig. 4 is a detail sectional view taken on the line 4 4, Fig. 1, showing the lap-holder, hereinafter described, in its active position; and Fig. 5 is a similar view showing it in its inactive position. Fig. 6 is a vertical longitudinal section of the discharging end of the machine, showing it applied in feeding sheets to a cylinder printing-press. Fig. 7 is a detail view showing a modification. Fig. 8 is a plan view of a part of the carrier, hereinafter described, and a sheet thereon, illustrating a modification drawn on a small scale; and Fig. 9 is a vertical longitudinal section thereof, partly broken away.

Like signs of reference indicate like parts throughout the several views.

In carrying out my invention I employ a

suitable carrier having a roller upon which the sheet rests and means for rotating said roller in a direction the reverse of its bodily movement, the sheet being delivered onto the roller and the carrier and carried forward a certain distance by the bodily movement of the roller and the carrier, whereupon the rotation of the roller in the opposite direction is started, and the carrier thus permitted to slip out from under the sheet and permit the latter to fall in an orderly manner upon a suitable receiving-table below. In conjunction with these salient features of my invention I employ means for increasing the pressure or friction of the sheet upon the carrier.

In the preferred form of my invention the carrier is flexible and of an endless form, consisting of a pair of endless chains, composed of links 1 2, having two series of rollers journaled therein, the forward roller of one section being indicated at 3, the rear roller of the same section indicated at 4, the forward roller of the other section or series being indicated at 5, and the rear roller of such section being indicated at 6, thus constituting an endless carrier having two different sections traveling one over the other in opposite directions. The rollers 3 4 5 6, as well as the intermediate ones, are provided with projecting journals or shafts 7, which extend through the links 1 and 2, as indicated more clearly in Figs. 1 and 3, and which, if desired, may serve as the means for connecting the links 1 and 2 together, but in order that the longitudinal strain between the links may not be imparted to the journals of the rollers I prefer to provide the link 1 with a perforated journal or boss 8, upon which the other link 2 is pivoted and through which boss the journal 7 passes, thus connecting the links together and carrying the journals of the rollers without causing the strain on the chains to impart additional friction to the roller-journals. The carrier thus constructed is driven over a pair of notched wheels or sprocket-wheels 9 10, having suitable notches for the reception of the protruding ends of the journal 7, the sprocket 9 being mounted upon a shaft 11, which is provided with a pulley 12, connected by a belt 13 with a suitable driving-shaft 14.

The upper fold of the carrier is supported

preferably throughout its length between the sprockets 9 10 by means of ways or tracks 15 16, secured in any suitable manner to the side members 17 of the main frame and having rabbeted portions, as shown in Fig. 3, in which the links 1 2 rest and slide, such rabbeted portions being of sufficient depth to hold the chains in line and yet not so deep as to permit the journal 7 of the rollers to come in contact with the tracks or ways 16 or other part of the machine that would be likely to cause their rotation. The lower fold of the carrier is supported in a similar manner by means of tracks or ways 18 19, secured to or formed on the frame 17.

The rollers of each series are arranged sufficiently close together to constitute a support for the sheet 20 as it comes from the paper-cutter or other device. Ordinarily the sheet as it leaves the paper-cutting device is received by traveling tapes 21 or other feeding mechanism running over pulleys 22, which may be driven in unison with the carrier of my invention, so as to deliver the sheet over the roller 5, for instance, as it rises from under the wheel 9, and as such roller travels bodily and in unison with the movement of the pulleys 22 of the tapes 21 it will convey the sheet 20 away from the tapes 21 and into the position shown in Fig. 2, the sheet 20 in such figure, however, having been conveyed to the described position by the rollers 3 4 and the other rollers of the same series.

In order that the forward travel of the sheet 20 may cease when the sheet reaches this position and the series of rollers 3 4 may pass out from under the sheet, I cause such rollers at this period to rotate in a reverse direction, or direction the opposite of their bodily movement. This may be best accomplished by means of a bearer 23, arranged over the rollers and adapted to be brought into frictional contact therewith after the rollers have reached the proper position. As shown more clearly in Figs. 2 and 3, this bearer 23 consists of a rod having a coating of any suitable material for increasing its frictional contact with the rollers—such, for instance, as rubber—and this rod is mounted at its ends in downwardly-swinging crank-arms 24, which are secured to a crank-shaft 25, mounted in suitable brackets 26. When the sheet 20 has reached the proper position and it is desired that its further bodily movement cease, the bearer 23 is caused to swing into contact with the ends 27 of the series of rollers 3 4 by means of a trip 28, which is connected to the rocker-shaft 25 and is actuated to produce the described operation by means of the first roller 5 of the series of rollers 5 6 as the latter rises over the sprocket-wheel 9 in the manner shown in Fig. 2. The trip 28 is journaled upon a shaft 29, mounted in brackets 30, and is provided with a crank-arm 31, whose end is bifurcated, as shown in Figs. 2 and 3, and engages a pin or lug 32, projecting from a hub 33 on the rocker-shaft 25, so that as the

roller 5 rises and strikes the trip 28 the crank-arm 31 will be thrown upward and the rocker-shaft 25 consequently rotated to the left, viewing it as in Fig. 3, and the bearer 23 thereby brought into contact with the end pieces 27 of the series of rollers 3 4. By this means it will be seen that all of the rollers in the series 3 4 will be rotated rearwardly at a rate of speed exactly equal to their forward bodily travel, and consequently such forward bodily travel of the rollers will produce no friction upon the sheet 20, and the rollers will pass out from under the sheet and allow the latter to drop upon the other section or series of rollers below, which latter series, as will presently be described, will pass from under the sheet and allow it to drop upon any suitable receiving-table 34.

By the time the end roller 4 of the uppermost series of rollers reaches the limit of its forward movement and begins to descend around the sprocket 10 the sheet 20 will be resting upon the same series of rollers—that is, the series 3 4—with the forward end of the sheet projecting over the roller 4, the rear end of the sheet having in the meanwhile been supported by the rear end rollers in the series 5 6. When the forward roller 3 of the first series arrives at the position shown in Fig. 2, its periphery comes into contact with the under side of a fixed bearer 35, provided with a suitable rubber facing 36, which causes the roller 3 and the succeeding rollers of the series as they arrive at such position to rotate in a direction the reverse of their bodily travel, and such rotation is continued throughout the length of the bearer 35, which extends substantially to the sprocket 9. This rotation of the rollers as they reach the under side of the carrier permits them to roll out from under the sheet and allow it to fall upon the table 34, as indicated at 20^a in Fig. 2, because the peripheral travel of the rollers is exactly equal to their bodily travel, and hence such bodily travel produces no friction upon the sheet, which remains at rest while the carrier recedes. It is of course necessary that the rollers of the series 3 4 shall continue to rotate while passing from their upper to their lower position until the last roller of the series begins to descend around the sprocket 10; but in order that the means which cause the rotation of the series 3 4 may not also produce premature rotation of the succeeding series 5 6 the rollers of the series 3 4 are made longer than the rollers of the series 5 6, or, in other words, they have their end pieces 27, upon which the bearer 23 bears, arranged out of line with the ends of the roller in the series 5 6, so that the ends of the rollers in the series 5 6 will not strike against the bearer 23 while the latter is in the position necessary for rotating the rollers of the series 3 4, but will pass to the full extent of their forward movement and carry the sheet upon them in the manner before described for the series 3 4 and as shown in

Fig. 2. When the succeeding series 5 6 has reached the position of the series 3 4 in Fig. 2, the forward roller 3 of the series 3 4 will be in the present position of the roller 5, as shown in Fig. 2, and as soon as such roller 3 arrives at this position its end piece 27 engages with a second trip 37, provided with a crank-arm 38, having a bifurcated end engaging with a projecting pin 39, secured to the hub 33 of the rocker-shaft 25, and thus throws the bearer 23 to the left and into the line of movement of the ends of the rollers in the series 5 6, the trip 37 and crank-arm 38 being secured to the shaft 29 by pins 37^a 38^a, respectively. This causes the rollers in the series 5 6 to rotate rearwardly, as before described, until the last roller 6 passes beyond the end of the bearer 23 and begins to descend around the sprocket 10, but the bearer 23 does not rotate the rollers of the succeeding series while in its described position, because while in the position for rotating the rollers of the series 5 6 it is directly over the gap or opening between the end piece 27 and the body portion of each roller in the series 3 4. This gap or space between the end pieces 27 and the body portions of the rollers 3 4 is also directly in line with the trip 28, so that the rollers of the series 3 4 will pass by the trip 28 without raising it or otherwise altering its position; but when the rollers of the series 5 6 reach the trip 28 the latter will be raised and the bearer 23 shifted to the position shown in Fig. 3 for rotating the rollers of the series 3 4 and the trip 37 will be depressed, as shown in Fig. 2, and will remain in this position until the end pieces 27 of the series 3 4 reach and raise it, because it is out of the line of movement of the ends of the rollers of the series 5 6.

In order that the liability of the sheet descending between the tape-rollers 22 and the rollers of the carrier as the sheet emerges from between the tapes 21 may be avoided, I locate a guard in advance of the forward roller of each series. This guard may consist of a cross-bar 40, extending between the chains constituted by the links 1 2, and being bowed upwardly, as shown in Fig. 3, and provided with a number of annular fingers 41, so arranged and formed as to project over the space between the rollers of the carrier and the tape-roller 22, and thus guide the end of the sheet safely onto the carrier.

In order that the end of the sheet as it emerges from the tapes 21 may be prevented from following the tapes upwardly around the upper tape-roller 22, I arrange over the space between the lower roller 22 and the rollers of the carrier a number of guide-fingers 42, which project from any suitable support on the machine into grooves or spaces in the upper tape-roller 22, and in order that the final end of the sheet may not curl upward and catch upon the succeeding series of rollers I arrange at the rear end of the machine a number of automatic lap-holding fingers 43, which, when the

sheet has completed its forward bodily travel, automatically descend upon the rear edge or end of the sheet and hold it down under the succeeding rollers in the manner shown in Fig. 4. These lap-holding fingers may be mounted upon a shaft 44, suitably journaled in the main frame or other fixed parts of the machine, and are actuated to descend against the final end of the sheet in this manner by means of the succeeding series of rollers. If desired, this may be accomplished by causing the rollers to strike directly against the fingers 43 themselves, but it is preferable to provide the shaft 44 with a cam 45, so formed and arranged that the foremost roller of the series as it rises from around the sprocket 9 will strike the cam 45 and rotate the shaft and fingers 43 to the position shown in Fig. 4, where it will be held by the succeeding rollers until the entire series of rollers has passed over it, whereupon a spring 46, coiled around the shaft 44, returns the fingers 43 to the position shown in Fig. 5 in readiness to permit the end of the sheet to pass beyond them and to descend thereagainst as soon as the forward roller of the succeeding series strikes the cam 45. The spring 46 is so secured and arranged as to hold the fingers 43 normally in the position shown in Fig. 5, but to permit such fingers to be oscillated in both directions from this position, so that in the event it should be desired to turn the machine backward for any purpose the rollers might pass over the fingers 43 and depress them, as shown in dotted lines in Fig. 5, without interference. To this end also the under side of the cam 45 is so formed and arranged as to receive the pressure of the rollers as they pass rearwardly and cause the fingers 43 to move out of the way. For the same purpose the trips 28 and 37 have their forward ends beveled or turned upwardly, as shown in Fig. 2, so that the rollers may pass rearwardly without interference.

It is sometimes desirable to increase the pressure of the sheet upon the rollers 3 4 or 5 6 without bringing a material, object, or device in contact with the surface thereof. To accomplish this without this objection, I locate over the carrier a number of air-pipes 47 48, the pipe 47 being connected with any suitable fan or blower 49 and extending athwart the machine and also serving as a support for the fingers 42, while the pipes 48 branch out from the pipe 47 and extend longitudinally of the machine on each side, the pipes 47 48 being perforated on their under sides for delivering a continuous blast of air upon the sheet and thus holding it down in position upon the rollers.

The sprocket-wheels 10 are mounted upon a shaft 49^a, which is suitably secured in supports 50, having slots 51 extending longitudinally of the machine, whereby the shaft 49^a may be adjusted with relation to the shaft 11 when it is desired to shorten or lengthen the machine, and in order that the bearer 35 and the guideways 15 16 may be accordingly de-

creased in length they are composed of a number of sections divided longitudinally and secured by screws 52 to the side members 17 of the main frame, as shown in Figs. 2 and 3, so that when desired one or more of the sections may be taken out, together with one or more of the rollers 3 4 5 6, and the links 1 2 and the shaft 49^a pushed rearwardly in the slots 51 to a corresponding position.

10 In Fig. 6 I have shown my invention in connection with a cylinder printing-press, the invention being here employed as a means of feeding the sheets one at a time (after being cut in sheets by the paper-cutting mechanism) to the feed-guides and grippers of the press and without waiting for the first sheet to be withdrawn by the grippers before the second one is deposited against the guides.

53 represents the cylinder of the press provided with the usual grippers 54. 55 represents the guides, and 56 the shaft, by which the guides are operated as usual. When my invention is used for this purpose, it is desirable that the sheet 20^a, after it is deposited upon the receiving-table 34, be given a farther advancing movement toward the gages 55, so as to insure its close contact therewith and in consequence the perfect adjustment of the sheet before it is caught by the grippers. To accomplish this, I make the ends of the rollers 3 4 5 6 where they bear against the bearer 35 slightly smaller than the body portions of such rollers, as shown in Fig. 7, whereby the peripheral speed of the rollers when they reach the under side of the carrier—that is, when they start rearwardly under the bearer 35—will be slightly greater than their rearward travel, so that a slight forward tendency will be imparted to the sheet 20^a as it rests upon the receding rollers.

In Figs. 8 and 9 I have shown my invention particularly adapted for drying varnished or coated sheets as they come from a varnishing or other coating machine. In this form of my invention each section of the carrier is provided with but one roller, which takes the place of the rear roller of the series before described with reference to Figs. 1 to 7, inclusive; and in lieu of the other rollers used in the form of the invention before described I employ a number of longitudinal wires or strings 57, which are stretched between cross-bars 58 and serve to support the sheet upon the chains. If desired, intermediate cross-bars 58^a may be employed and the wires or strings wrapped around them and thus held in place. In the form before described there were but two sections to the carrier, having a slight space between the end roller of one section and the forward roller of the other, as shown more clearly in Fig. 2, for the passage of the sheet onto the receiving board or table 34, but in this modified form there are five or more sections, each provided, as before described, with a roller at its rear end. These rollers are numbered, respectively, 59 60 61 62 63 and are journaled in the links

1 2 of the chains in the same manner as the rollers in the form before described, and the links are supported and guided at top and bottom by ways or guides 64 65. The chains are driven by the sprocket-wheels 9 10, before described, and supported on such wheels by means of pins or lugs 66, formed on or secured to the links 1 and 2 and engaging in the notches of the wheels 9 10 in the manner before described with reference to the projecting journals 7.

In following the section having the roller 59 through the machine it will be seen that in this form of my invention the sheet 20 as it is fed from a varnishing-machine, ruling-machine, or other device is delivered upon the cross-bar 58 as the latter rises over the sprocket-wheel 9, and inasmuch as such cross-bar is traveling bodily with the carrier and the sheet is being fed forward by the tapes 21 (shown in Fig. 2) the sheet will follow the cross-bar 58 until the entire sheet is delivered onto the carrier and the final end thereof is resting over roller 59 in the same manner that the sheet rests upon the roller 63 in the succeeding section. The section of the carrier with the sheet 20 thus supported thereon continues to travel forward and passes under a bearer or bar 67, supported over the carrier and being adapted to press the sheet against the roller 59 and also cause such roller to rotate in a direction the reverse of its bodily travel. It is therefore seen that as soon as this rotation of the roller 59 commences the parts will be in the position shown in Fig. 9, and the forward bodily travel of the sheet 20 will cease and the roller 59 will roll out from under the sheet while holding it firmly against the bearer 67 and permit the sheet to fall upon the section below having the roller 60. The roller 60 at this time being inactive the sheet will be carried rearwardly again by such section until the roller 60 reaches a second bearer 68, arranged over the lower fold or lap of the carrier and acting like the bearer 67 to press the sheet against the roller 60, which will then be in the position of the roller 62 and cause such roller to rotate in the reverse direction. As soon as this rotation begins the bodily movement of the sheet will cease, the roller will roll out with its section from under the sheet, and the latter will be permitted to fall upon the receiving-table 34. This form of my invention may be employed where the length of the device is immaterial and the surface of the sheet of paper is of such a nature that it will not be materially affected by the contact of the bearer-bars 67 68. It is evident, however, that the bearer can be formed with a very narrow bearing-surface, so that the same can be positioned at the margins of the sheet, which are trimmed off when the sheets have been dried and are prepared for use—such, for instance, as labels, pictures, and the like—and hence in that case would not affect the surface.

Any number of carriers may be employed,

one below the other, so as to carry the sheet a sufficient length of time to allow it to be thoroughly dried.

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

1. A machine for the purpose described having in combination an endless carrier composed of a number of sections having spaces between them and each being provided with a roller upon which the sheet rests, and means for rotating said roller in a direction the reverse of its bodily movement, substantially as set forth.

2. A machine for the purpose described having in combination a carrier provided with a roller upon which the sheet rests, means for delivering the sheet onto said carrier and a bearer impinging the surface of the roller for rotating said roller reversely of its bodily movement when the sheet leaves the sheet-delivering mechanism, substantially as set forth.

3. A machine for the purpose described having in combination an endless carrier having a number of sections each provided with a roller upon which the sheet rests, and means for intermittently and alternately rotating said rollers in a direction the reverse of their bodily movement, substantially as set forth.

4. A machine for the purpose described having in combination a number of traveling sections, moving one over the other, for receiving the sheets, and each having a roller upon which the sheet rests, and means for rotating said roller in each section when the section reaches a substantially horizontal position, substantially as set forth.

5. A machine for the purpose described having in combination an endless carrier provided with a number of sections for supporting the sheet, having spaces between them, and means for arresting the movement of the sheet and causing it to fall through said spaces while the carrier continues to travel, substantially as set forth.

6. A machine for the purpose described having in combination a carrier having separated sections for supporting and carrying the sheet and each of said sections having a roller upon which the sheet rests, a shiftable bearer adapted to be alternately shifted into contact with a part of said rollers, and means operating in unison with said sections for alternately shifting said bearer into contact with a part of said rollers, substantially as set forth.

7. A machine for the purpose described having in combination a carrier having separated sections each having a roller upon which the sheet rests, a shiftable bearer adapted to be thrown into contact with a portion of said rollers, a trip for throwing said bearer in one direction and being arranged to be struck by one of said rollers, the other of said rollers

being provided with a cut-away portion so as to pass said trip, and a second trip arranged out of the line of movement of said first roller but in the line of movement of said second roller, and adapted to throw said bearer in the opposite direction, substantially as set forth.

8. A machine for the purpose described having in combination a carrier having separated sections each provided with a roller upon which the sheet rests, one of said rollers being projected beyond the end of the other and having a cut-away portion, a bearer adapted to alternately engage with said rollers, a rock-shaft for operating said bearer, a pin or lug projecting from each side of said rock-shaft, a trip arranged in the line of movement of said cut-away portion of said roller and having a crank-arm engaging with one of the lugs upon said rock-shaft, a second trip arranged out of the line of movement of said cut-away portion of the roller and adapted to be struck by said roller and having a crank-arm engaging with said other lug or pin on the rock-shaft, said crank-arm on the right being connected with said trip on the left and the crank-arm on the left being connected with the trip on the right, substantially as and for the purpose set forth.

9. A machine for the purpose described having in combination an endless carrier having a number of separated sections each provided with a roller, means for delivering the sheet onto said carrier, and a guard arranged in advance of each of said rollers, substantially as set forth.

10. A machine for the purpose described having in combination an endless carrier having sections each provided with a roller and having spaces between them, means for rotating said rollers in a direction the reverse of their bodily travel, and means arranged over said rollers for increasing the pressure of the sheet thereagainst, substantially as set forth.

11. A machine for the purpose described having in combination an endless carrier having separated sections and each provided with a roller upon which the sheet rests, means for rotating said rollers in a direction the reverse of their bodily movement, and an air-blast arranged over said rollers and adapted to force the sheet from between the sections, substantially as set forth.

12. A machine for the purpose described having in combination a carrier provided with a number of separated sections upon each of which the sheet rests, a lap-holder arranged to be actuated in unison with said sections and adapted to depress the rear end of the sheet on one section below the foremost end of the succeeding section, substantially as set forth.

13. A machine for the purpose described having in combination a carrier provided with a number of separated sections each for sup-

porting and carrying the sheet, a lap-holder arranged in the line of movement of said sections and adapted to be depressed upon the final end of the sheet on one section by the
5 succeeding section, substantially as set forth.

14. A machine for the purpose described having in combination a carrier provided with a number of separated sections, a pivoted lap-holder arranged in the line of movement of
10 and adapted to be struck by said sections and moved in one direction, and means for returning said lap-holder to its normal position, substantially as set forth.

15. A machine for the purpose described having in combination a carrier having separated sections for supporting and carrying the sheet, a rock-shaft pivoted under said carrier and having lap-holding fingers projecting up between said sections, and a cam
20 on said rock-shaft adapted to be struck and actuated by said sections, substantially as set forth.

16. A machine for the purpose described having in combination a carrier having separated sections for supporting and carrying the sheet, a shaft having lap-holding fingers projecting up between said sections, means for holding said fingers normally between said sections, and a double cam on said shaft
30 adapted to be struck by said sections when

moving in either direction for depressing said lap-holding fingers, substantially as set forth.

17. A machine for the purpose described having in combination a moving carrier having a roller upon which the sheet rests and a
35 bearer impinging said roller at a point where the latter is adapted to support the sheet, for rotating said roller in a direction the reverse of its bodily movement, substantially as set forth.
40

18. A machine for the purpose described having in combination an endless carrier provided with removable links, an adjustable wheel over which said carrier travels and sectional tracks or ways for supporting said
45 links, substantially as set forth.

19. A machine for the purpose described having in combination a flexible carrier consisting of a series of rollers, a guide or way for said rollers returned under itself whereby
50 the carrier will be deflected partly under itself during its travel or operation, means for moving said carrier on said way and means for rotating said rollers in a direction the reverse of their bodily movement, substantially
55 as set forth.

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Witnesses:

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