

No. 641,216.

Patented Jan. 9, 1900.

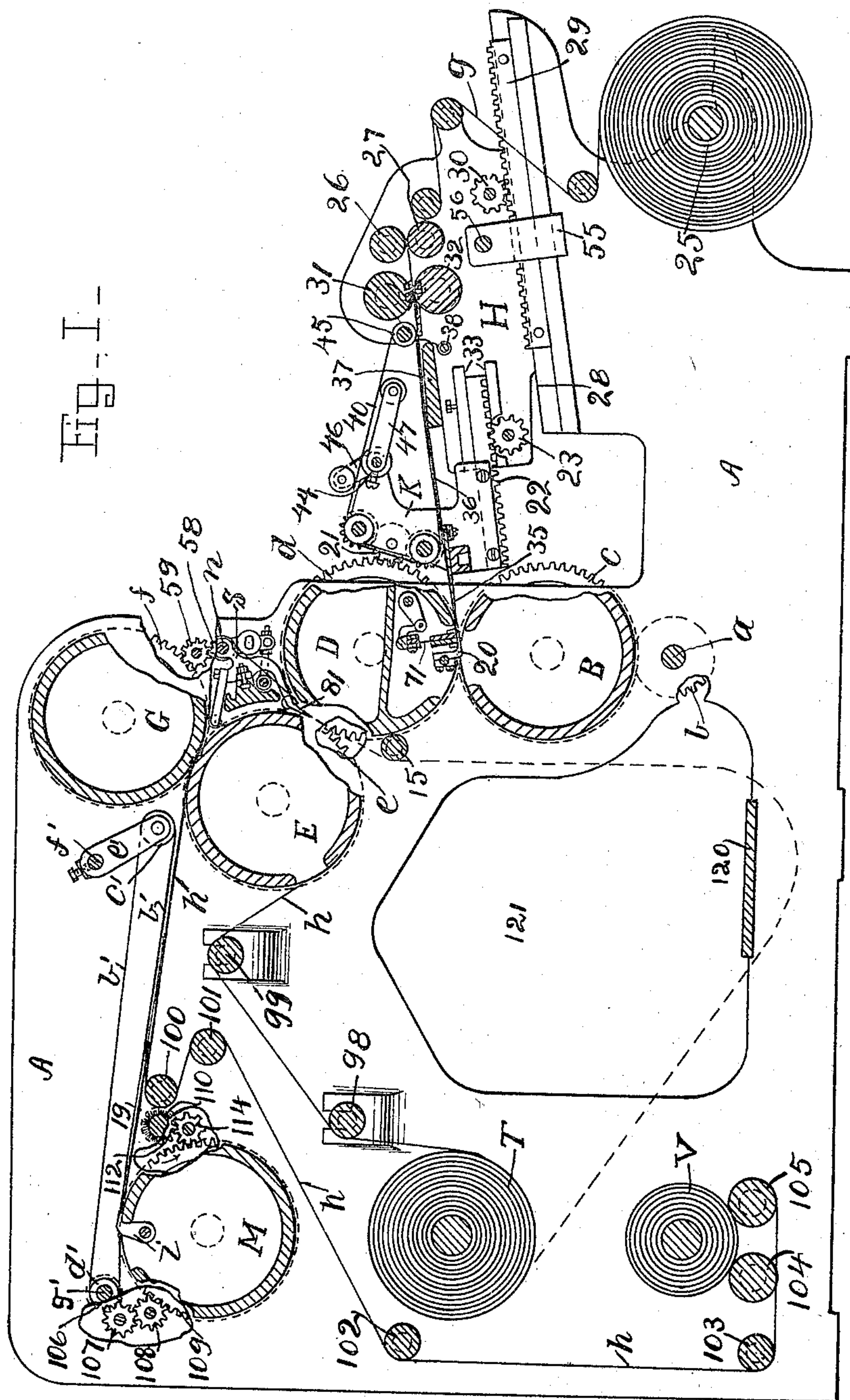
F. MEISEL.

WEB AND SHEET FEEDING AND PRINTING MACHINE.

(Application filed Mar. 31, 1899.)

(No Model.)

6 Sheets—Sheet 1.



WITNESSES

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L. L. Kelley

INVENTOR

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by R. B. Englemacher
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6 Sheets—Sheet 2.

Fig-2-

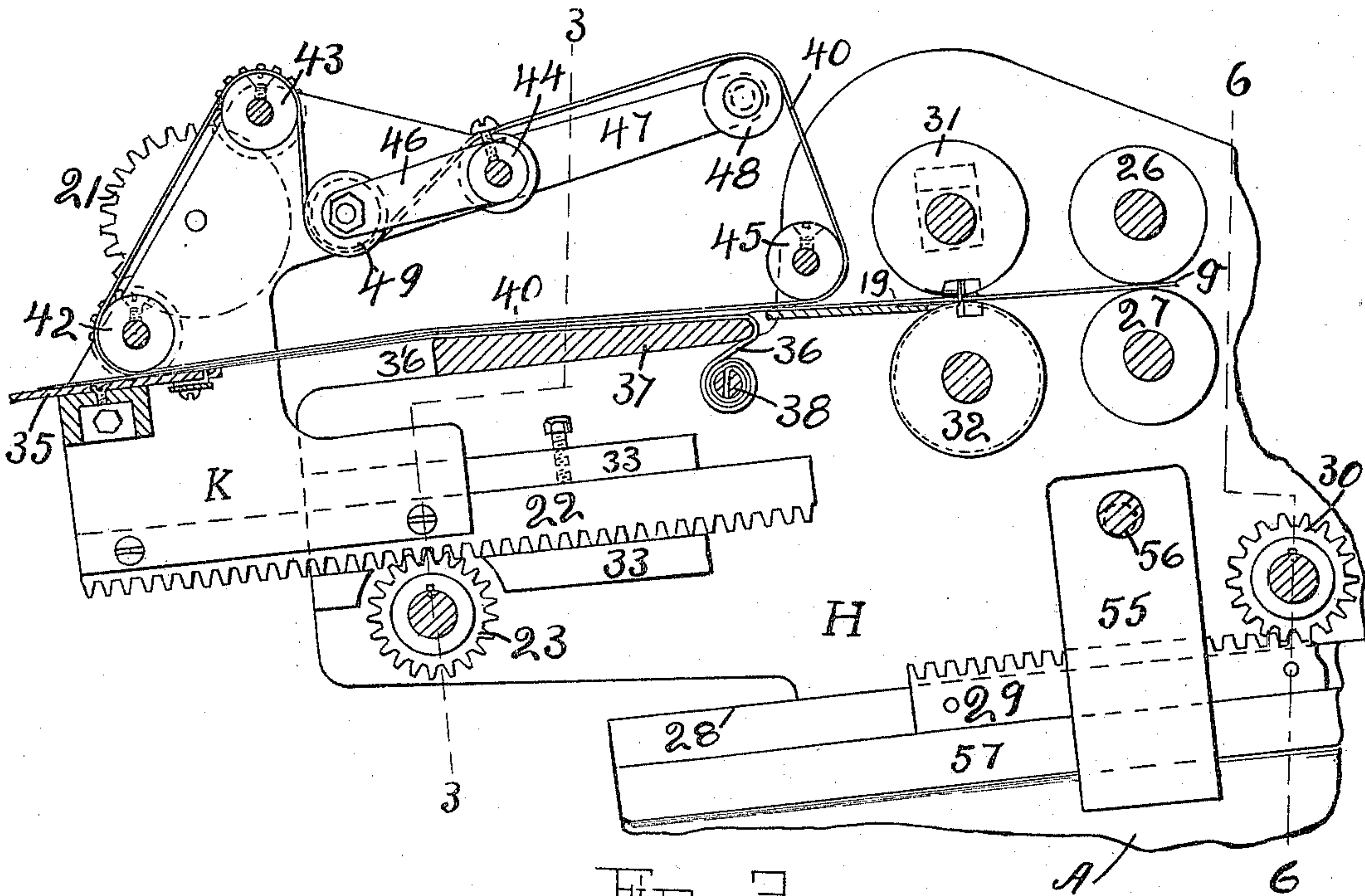


Fig. 3.

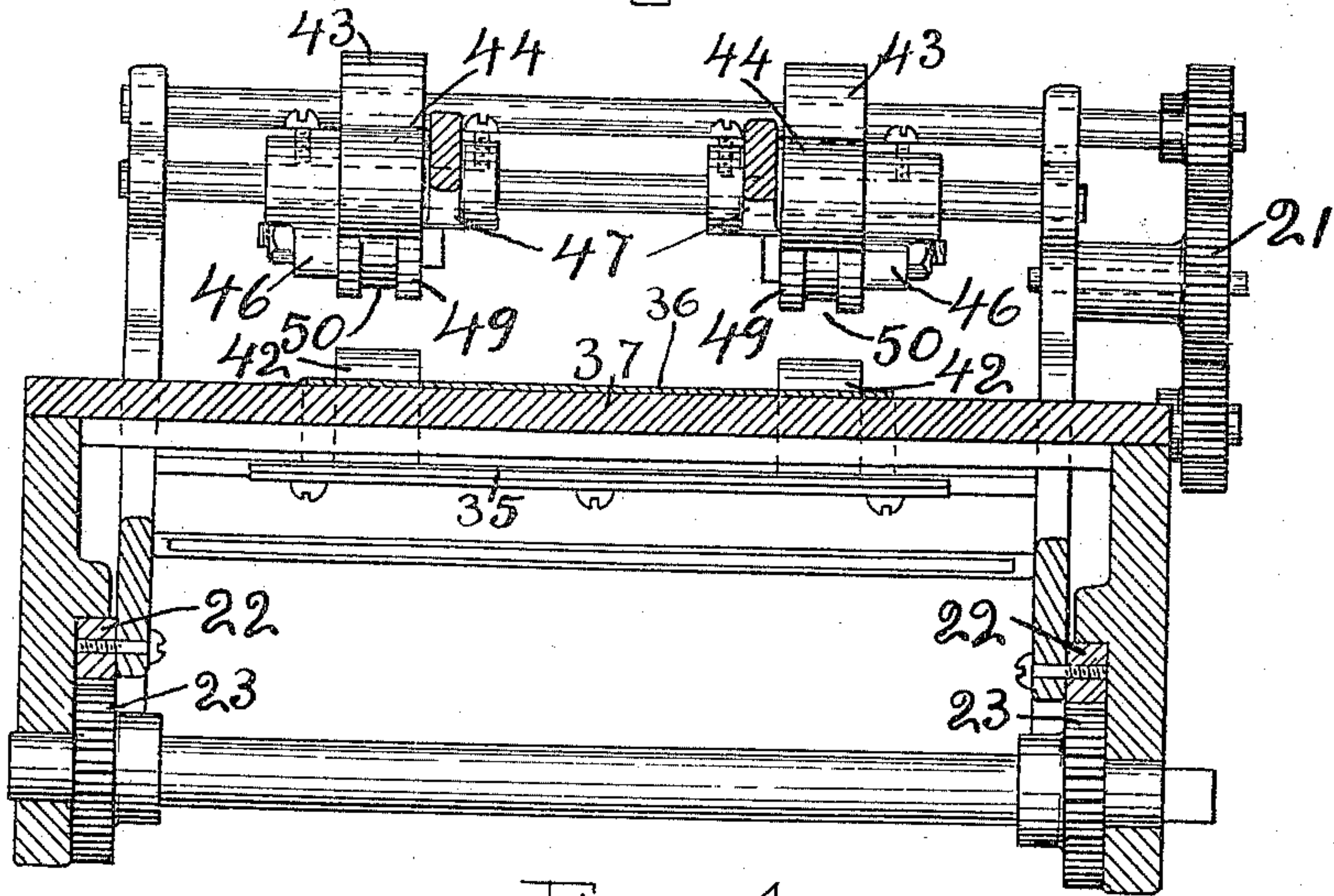


Fig - 4 -

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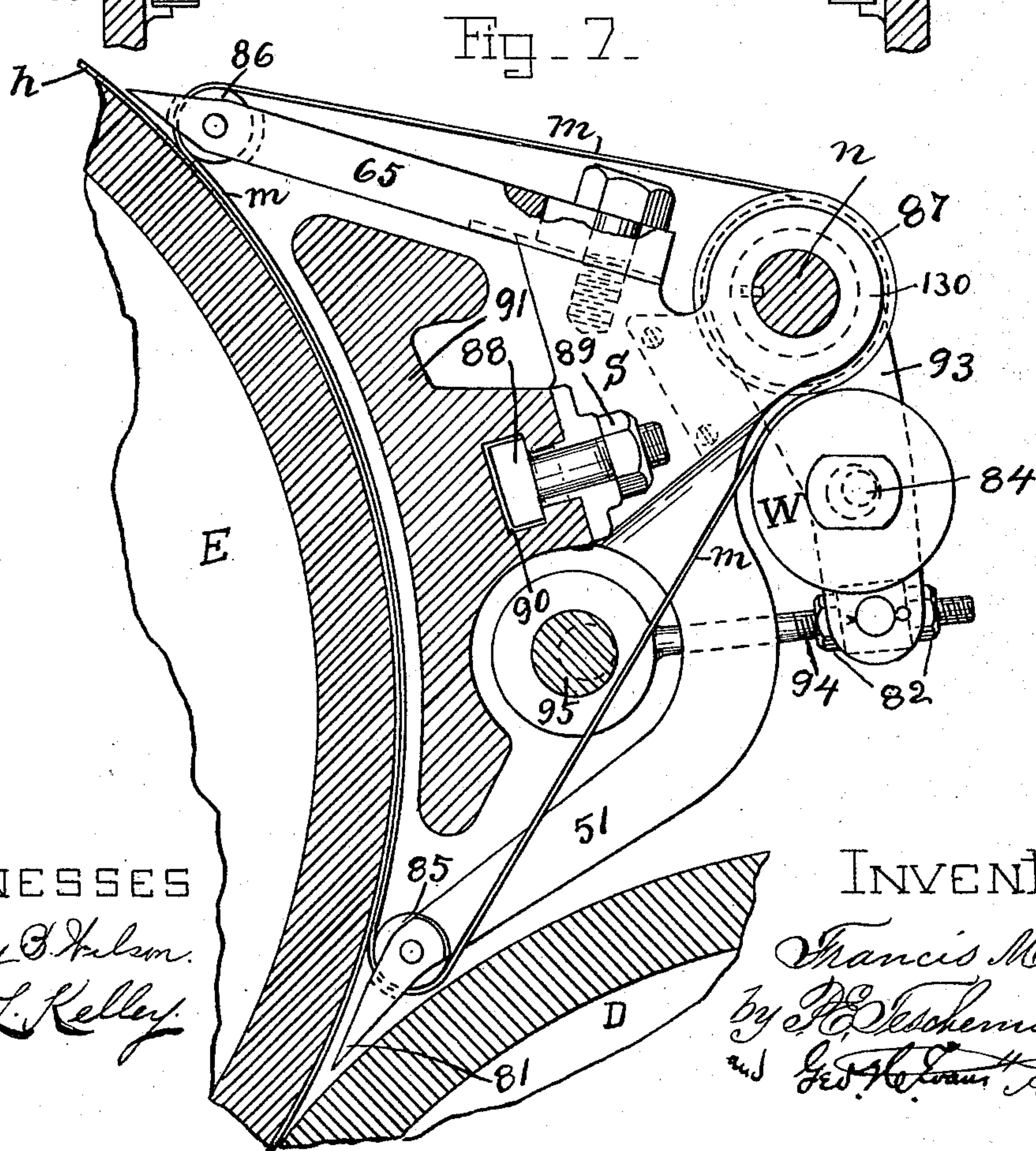
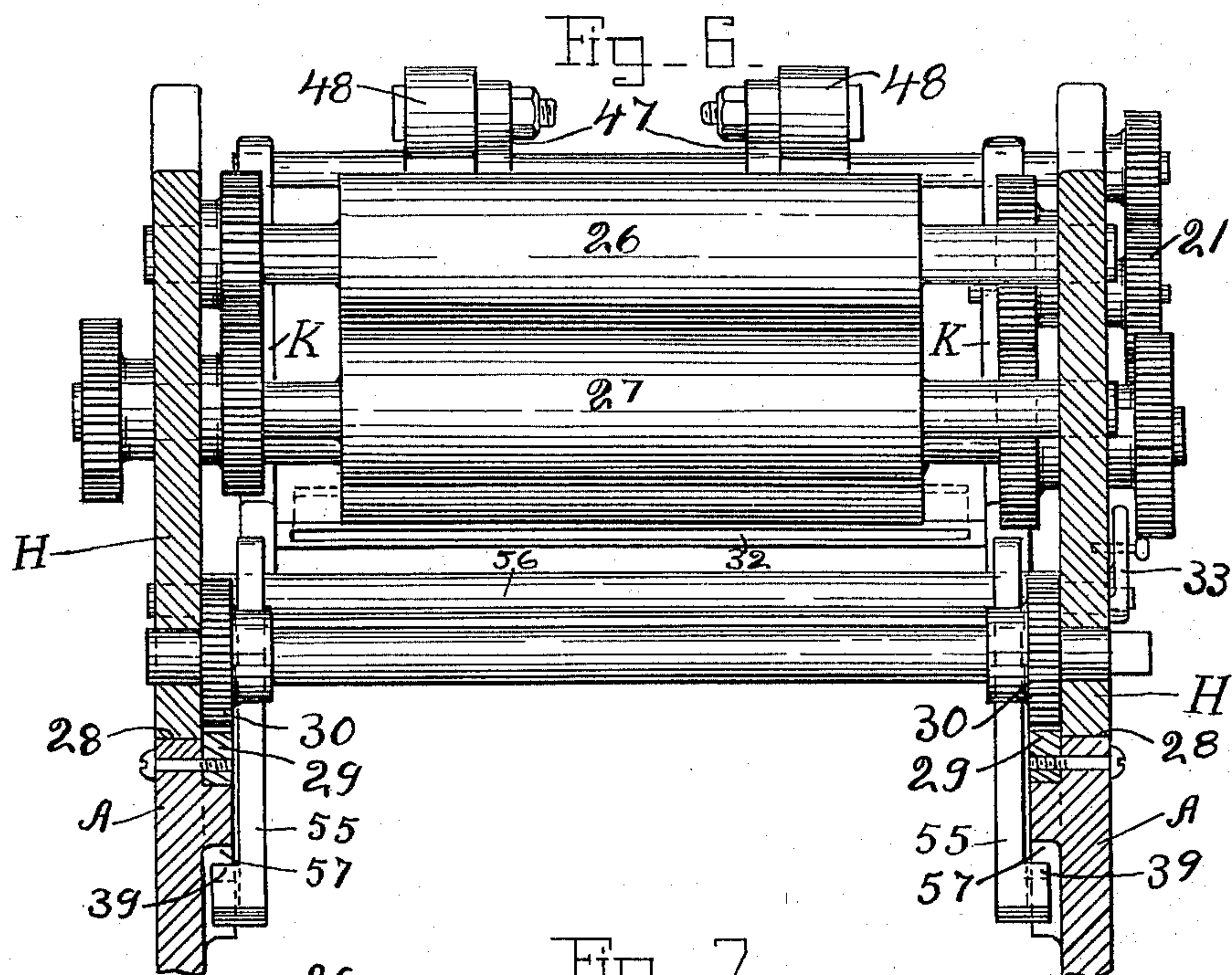
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WEB AND SHEET FEEDING AND PRINTING MACHINE.

(Application filed Mar. 31, 1899.)

(No Model.)

6 Sheets—Sheet 3.



WITNESSES

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No. 641,216.

Patented Jan. 9, 1900.

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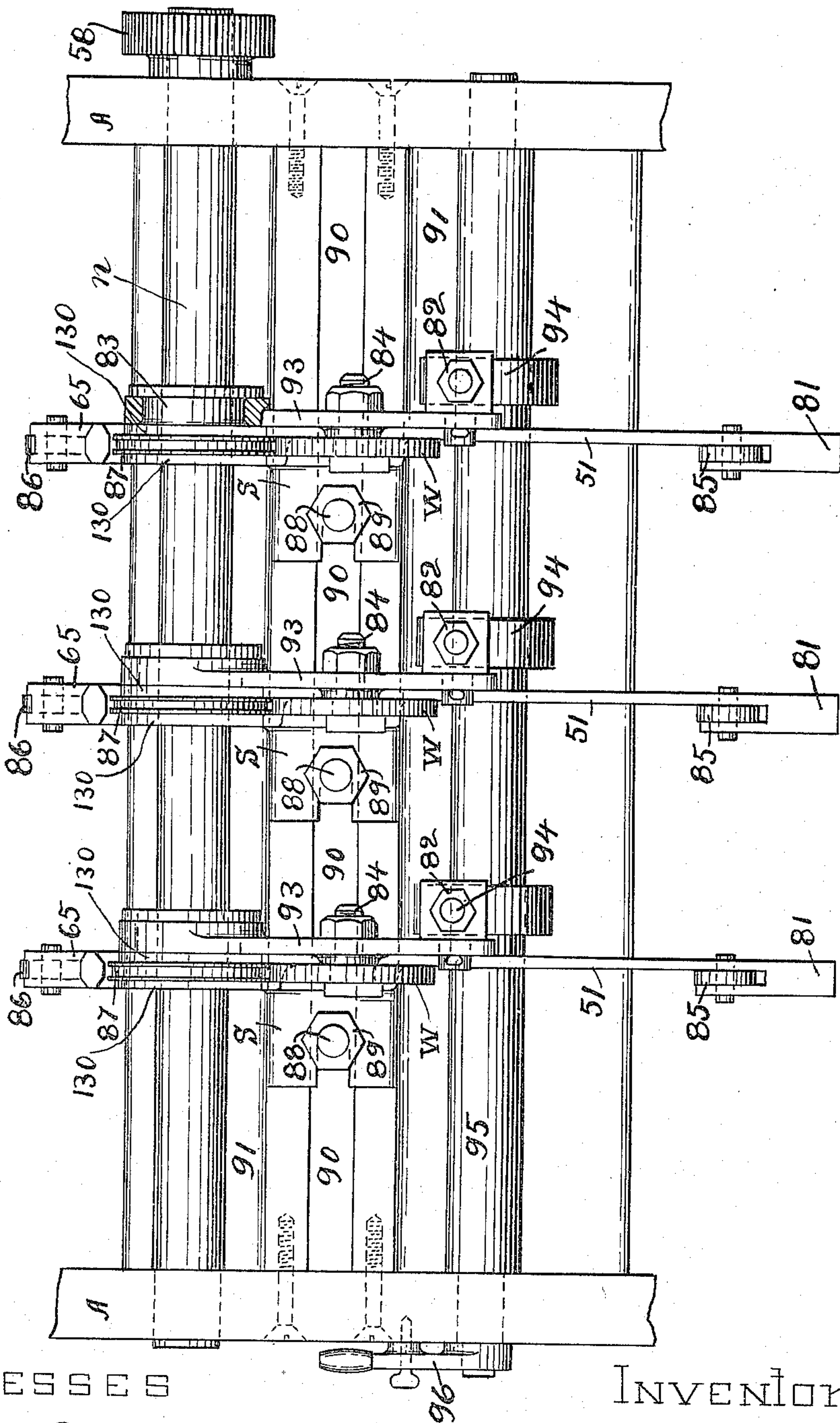
WEB AND SHEET FEEDING AND PRINTING MACHINE.

(Application filed Mar. 31, 1899.)

(No Model.)

6 Sheets—Sheet 4.

Fig. 8.



WITNESSES

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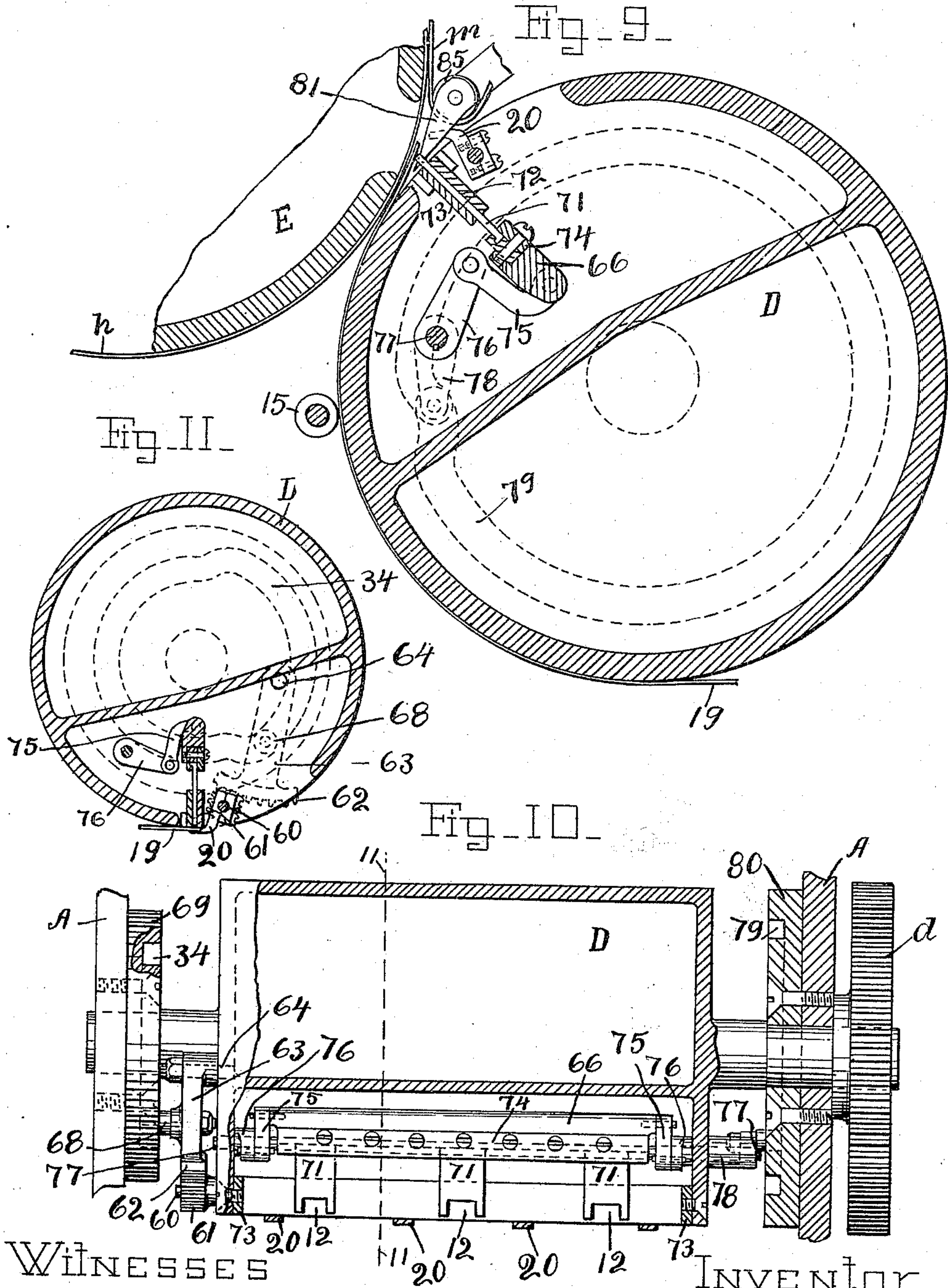
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WEB AND SHEET FEEDING AND PRINTING MACHINE.

(Application filed Mar. 31, 1899.)

(No Model.)

6 Sheets—Sheet 5.



WITNESSES

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No. 641,216.

Patented Jan. 9, 1900.

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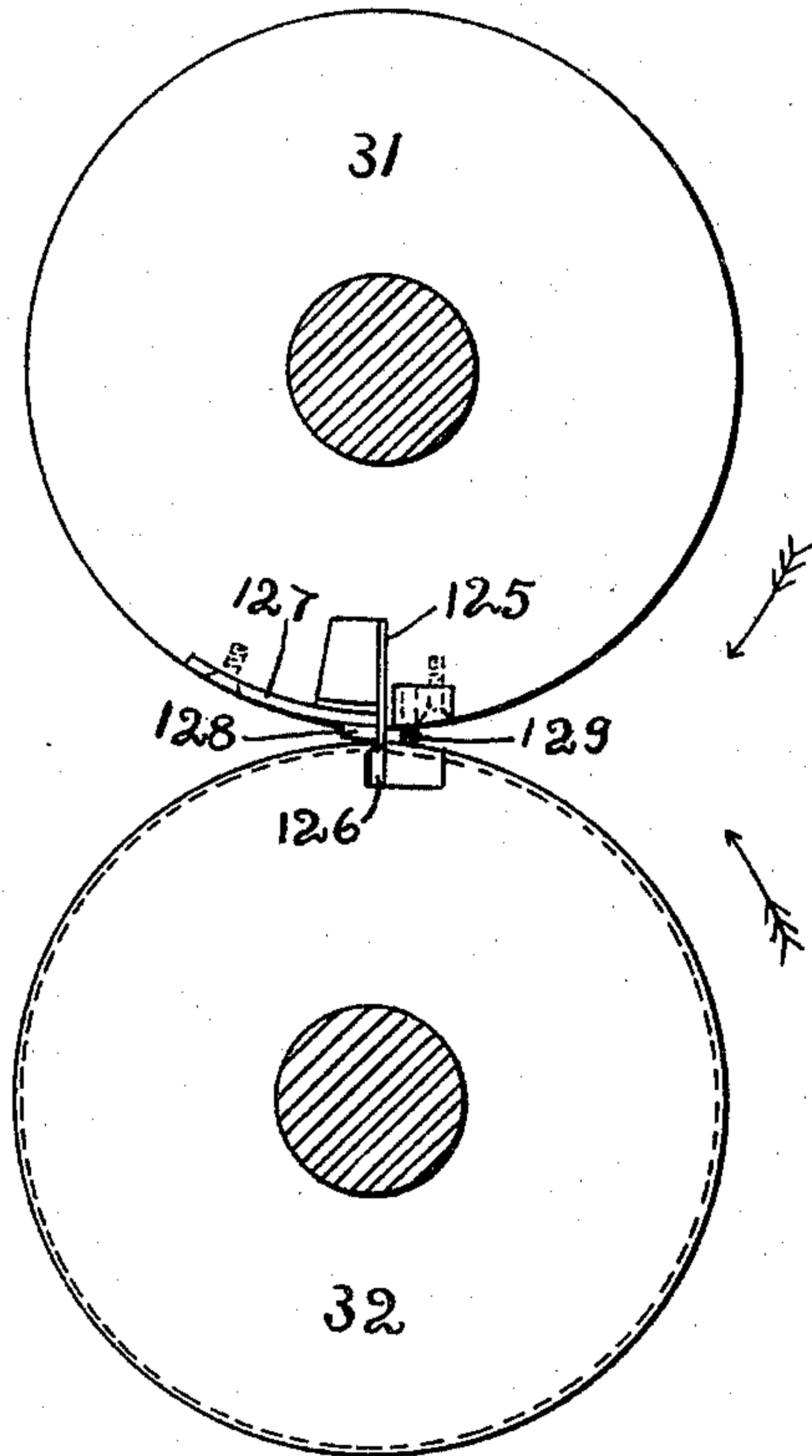
WEB AND SHEET FEEDING AND PRINTING MACHINE.

(Application filed Mar. 31, 1899.)

(No Model.)

6 Sheets—Sheet 6.

Fig. 12.



WITNESSES

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UNITED STATES PATENT OFFICE.

FRANCIS MEISEL, OF BOSTON, MASSACHUSETTS.

WEB AND SHEET FEEDING AND PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 641,216, dated January 9, 1900.

Application filed March 31, 1899. Serial No. 711,230. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS MEISEL, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Web and Sheet Feeding and Printing Machines, of which the following is a specification.

My invention relates to web and sheet feeding and printing machines; and it consists in certain novel features, combinations of parts, and details of construction, as will be hereinafter fully set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a longitudinal vertical section of a rotary web-perfecting printing-machine embodying my improvements. Fig. 2 is an enlarged detail of the adjustable carriages which support the paper feeding and cutting mechanism. Fig. 3 is a transverse vertical section on the line 3 3 of Fig. 2, the feeding-belts being removed. Fig. 4 is an elevation of a portion of the paper-feeding belt, and Fig. 5 is a transverse section of the same. Fig. 6 is a transverse vertical section on the line 6 6 of Fig. 2, the feeding-belts being removed. Fig. 7 is an enlarged side elevation, partly in section, of one of the tape-carrying devices of the second impression-cylinder. Fig. 8 is an end elevation of the tape-carrying devices, one of which is shown in Fig. 7. Fig. 9 is an enlarged sectional detail of the first impression-cylinder, showing my improved "shoo-fly" mechanism. Fig. 10 is an enlarged sectional elevation of the first impression-cylinder and parts immediately connected therewith. Fig. 11 is a vertical section on the line 11 11 of Fig. 10 looking toward the left. Fig. 12 is an enlarged side elevation of the cutter-cylinders.

In the said drawings, A represents the framework of the machine, in suitable bearings in which runs the driving-shaft *a*, carrying a gear *b*, which meshes with the gear *c* on the shaft of the first plate-cylinder B, said gear *c* meshing with the gear *d* on the shaft of the first impression-cylinder D, the gear *d* in turn meshing with the gear *e* on the shaft of the second impression-cylinder E, and said gear *e* meshing with the gear *f* on the shaft of the second plate-cylinder G, motion being thus communicated to said printing-cylinders

and by means of other suitable gears to other rolls and moving parts of the machine to be hereinafter described.

The web *g* of paper to be cut into sheets is drawn from a roll 25, which is mounted on a shaft supported in bearings in the framework A, said web passing under and over suitable guide-rolls and being unwound from the roll 25 by a pair of feed and drawing rolls 26 27, journaled in a carriage H, sliding on ways 28 on opposite sides of the framework and operated by a rack and pinion 29 30, as shown in Figs. 1 and 2, whereby the carriage may be adjusted to vary its distance from the printing-cylinders. In the carriage H are journaled the shafts of the cutter-cylinders 31 32, having a surface velocity greater than that of the feed-rolls, the upper cylinder being provided with a projecting cutter-blade 125 and the lower one with a groove 126, admitting the said blade, the cutter severing the sheet from the web at the instant before it is seized by the grippers 20, Figs. 1, 9, and 11, of the impression-cylinder D, and by adjusting the carriage H as described the cutters can be placed at a distance from the grippers 20 equal to the required length of the sheet to be severed from the web or the carriage moved backward far enough to enable the operator to have convenient access to the front pair of printing-cylinders.

To the upper cylinder 31 in front of the cutter-blade 125 is secured a flat spring 127, a part of the outer surface of which nearest to the cutter-blade is covered with a piece of elastic material 128, preferably felt or rubber, which serves to press the web of paper onto the surface of the lower cutter-cylinder 32 and hold it stretched, thereby preventing the paper from being forced down into the groove 126. This spring must be of such strength only as to allow it to slip on the paper without tearing it.

At a short distance in the rear of the cutter-blade 125 is a brush 129, projecting from the surface of the upper cutter-cylinder 31, which brush serves to hold the front edge of the web down upon the lower cutter-cylinder and prevent said edge from being carried upward by the cutter-blade as the cylinder 31 revolves.

K is an auxiliary carriage, which slides on

inclined ways 33 on the main carriage H. To the carriage K is secured a table 35, Figs. 1 and 2, to which is fastened one end of a piece or band of smooth-surfaced flexible material 36, which is also stretched over a transverse bar 37, secured to the carriage H, beneath which bar it is wound up on a roll 38, whereby as the carriage K is adjusted it is kept tightly stretched, as desired, to form a stationary support for the sheet as it is carried forward to the printing-cylinders. The front end of the table 35 serves to support and guide the sheet of paper to the cylinder D, so that it will be seized by its grippers 20, and at the same time keeps the front edge of the sheet away from the plate-cylinder B. The auxiliary carriage K is operated by means of a rack and pinion 22 23, whereby it may be adjusted on the main carriage H to keep the front edge of the table 35 always in the same position close to the impression-cylinder D as the position of the main carriage H is changed to vary the distance of the feed-rolls and cutters from said impression-cylinder D as is necessary for sheets of different lengths or sizes, it being obvious that the front edge of the table 35 must always be in the same position with respect to the printing-cylinders without regard to the distance therefrom of the cutters, the position of which will vary according to the length of the sheets being cut. For instance, when shorter sheets are to be cut the auxiliary carriage remains stationary, while the main carriage is moved nearer to the printing-cylinders by means of the rack and pinion 29 30, as before described. When the carriage K is adjusted on the carriage H, the roll 38 is revolved by means of a suitable handle (not shown) to wind up or unwind the flexible support 36, as may be required, to keep it properly stretched between its two points of attachment.

Directly over the sheet-support 36 are arranged a pair of endless paper-feeding belts 40, to each of which is preferably attached a strip of pliable material 41, Figs. 4 and 5, of less width than the belt and extending from one end to the other of the same, said strip having a rough surface—as, for instance, plush. These belts are supported by and run upon rolls 42, 43, 44, and 45, the shafts of the rolls 42 and 43 being provided with gears, which mesh with an intermediate gear 21, meshing with and driven by the gear *d* of the impression-cylinder D, the belt being thereby driven positively at the same surface speed as the printing-cylinders. The shafts of the rolls 42, 43, and 44 run in bearings in the carriage K, while the shaft of the rolls 45 runs in bearings in the main carriage H. The belts 40 run over the rolls 42, 43, 44, and 45, with the rough surfaces of the strips 41 in contact with the upper surface of the paper, which is thus by the frictional contact of said strips 41 carried over the surface of the flexible support 36 to the grippers of the cylinder D, and by this device I am enabled to dispense with

the usual tapes above and below the paper, which are objectionable on account of the difficulty of preventing the paper from being wrinkled thereby. A further objection to the tapes is that they are liable, if broken while the machine is in motion, to be carried between the plate and impression cylinders, thereby destroying such plates as they come into contact with. On the shaft upon which the rolls 44 revolve are pivoted arms 46 47, carrying on their outer ends belt-tightening rolls 48 49, the latter being each provided with a groove 50, Fig. 3, to receive the narrow strip 41, the plush surface of which is thus prevented from being flattened down or injured by contact with said rolls 49. By adjusting the arms 46 47 any slackness of the belts 40 produced by the forward adjustment of the carriage H or otherwise can be taken up to render them at all times sufficiently tight to act on the sheet as required. After the carriage H has been adjusted by means of its rack and pinion it is securely held by means of clamping-bars 55, one on each side, which are hung on an eccentric shaft 56, each bar having a lip or projection 39, Fig. 6, at its lower end which engages a rib 57 on the framework A, whereby as the shaft 56 is turned by means of a suitable handle 33, Fig. 6, the carriage will be securely clamped in place as desired. The length of the sheet 19, Fig. 2, severed from the web by the cutters can be varied by changing the surface velocity of the feed-rolls with relation to that of the rotary cutters, which can be effected in a well-known manner by the employment of a change-wheel, as described in Letters Patent No. 601,200, granted to me March 22, 1898. Instead of the flexible band 36 endless belts, tapes, or an apron having a surface velocity equal to that of the impression-cylinder may be employed. I prefer, however, to use the flexible band 36, as it prevents the sheet from wrinkling and renders the mechanism much simpler and cheaper to construct.

As soon as the sheet is seized by the grippers 20 of the first impression-cylinder D, said grippers having been opened and closed for this purpose by well-known mechanism hereinafter described, it is carried between the impression-cylinder D and the first plate-cylinder B, receiving an impression therefrom, and thence between the cylinder D and rolls 15, one of which is shown in Figs. 1 and 9, after which it is carried by mechanism, to be hereinafter described, to and between the second or perfecting pair of plate and impression cylinders G E, and thence by means of tapes over the offset web *h* to the accumulating-cylinder M, which is provided with grippers *i* and may be of any suitable or approved construction. The grippers 20 of the cylinder D are mounted on a rock-shaft 60, Fig. 10, journaled in said cylinder, to one end of which shaft, outside the said cylinder, is secured a pinion 61, which meshes with a sector-gear 62 at the end of a lever 63, pivoted

at 64 to the end of the cylinder D, said lever carrying a roll 68, (shown in Fig. 10 and dotted in Fig. 11,) which is acted upon by a cam-groove 34 in a stationary disk 69, secured to the framework A, (see Fig. 10,) whereby the desired movements are imparted to the grippers 20 as the cylinder is revolved. As soon as the front or leading end of the printed sheet 19, Fig. 9, has been released by the grippers it is pushed out from the surface of the cylinder D by a series of shoo-fly pusher-plates 71, which pass through a long narrow slot 72 in the gripper-bar 73, the inner ends of the shoo-fly plates being adjustably secured between the two members of a clamping-bar 74, bolted to a bar 66, to the opposite ends of which are pivoted two links 75, pivoted to arms 76 on a rock-shaft 77, having its bearings in the ends of the cylinder, said shaft also carrying outside the cylinder D an arm 78, which is provided at its end with a roll fitting within a cam-groove 79 in a disk 80, secured to the framework. The shoo-fly plates, of which there may be any suitable number, are thrust forward just after the grippers have released the sheet and serve to push the leading edge of the sheet outward, so that it will pass over a series of pointed guides 81 and between the offset web h of the second impression-cylinder and the paper-carrying tapes m , to be presently described. Each shoo-fly plate has a notch 12, which enables it to straddle and pass the adjacent guide 81 as the cylinder D revolves in such manner as to push out the sheet and at the same time prevent it from being obstructed by the guide in its passage thereover. The grippers 20 seize the sheet at the moment it is severed by the cutters and release it just before it reaches the guides 81, the rolls 15 preventing the sheet from dropping back after such release and before it is taken by the tapes m . The tapes m , Figs. 7 and 9, of the second impression-cylinder E are each supported by a series of rolls 85 86 87, Fig. 7, the rolls 85 and 86 being carried by frames or brackets S, adjustably secured by bolts 88 and nuts 89 in a longitudinal groove 90, formed in a cross-bar or support 91, extending between the sides of the framework A. The entire series of rolls 87 are mounted on and rotated by the shaft n , which is provided at one end with a gear 58, Figs. 1 and 8, which is engaged by an intermediate gear 59, meshing with and driven by the gear f on the shaft of the upper plate-cylinder G, the tapes having the same speed as the surface of said cylinder. Each roll 87 slides on but rotates with the shaft n and is embraced by a fork 130 on the bracket S, whereby as the several brackets are adjusted on the cross-bar 91 the rolls will be carried with them. The lower rolls 85 are located close to the guides 81, which are formed at the ends of arms 51, which form the lower ends of the brackets S, and the upper rolls 86 are mounted in arms 65, each forming a portion of one of the brackets S,

said arms being made detachable, so that they can be removed when it becomes necessary to take out the tape-supporting mechanism, which could not otherwise be accomplished for want of space between the cylinders D G. Each of the tapes m is tightened, if loose, by means of a roll W bearing against it, as shown in Fig. 7, said tightening-roll being mounted on an eccentric stud 84, projecting from an arm 93, pivoted on a hub 83, Fig. 8, projecting from the bracket S, said arm 93 being adjustably secured at its lower end by means of nuts 82 to the threaded end of a rod 94, the opposite end of which is connected to a shaft 95, eccentrically mounted in the sides of the framework A and provided with a handle 96, Fig. 8, by the turning of which the entire series of tapes m may be simultaneously tightened or loosened, as required, while each tape m may be individually tightened or loosened by means of the nuts 82 or the eccentric stud 84. By moving the brackets S longitudinally upon the cross-bar 91, as described, the tapes and their supporting-pulleys may be adjusted at suitable distances apart for sheets of any desired width.

The offset web h is unwound from the dispensing-roll T, Fig. 1, and thence passes over removable guide-rolls 98 99 to and around the second impression-cylinder E, thence over rolls 100 101 102 103 105 to the roll V, upon which it is rewound in the usual manner. The dispensing-roll T is arranged, as shown, at a sufficient distance from the second impression-cylinder E to enable the offset web h after the guide-rolls 98 99 have been removed to be lowered down, as shown by dotted lines in Fig. 1, away from the bottom of said cylinder E, whereby the operator is afforded convenient access to said cylinder to "make ready" the same or for other purposes—an important advantage in printing-machines of this description.

After passing between the printing-cylinders E G the printed sheet is carried forward by the offset web h and tapes b' , which run over pulleys $c' d'$, the pulleys c' being mounted on arms e' , secured to a shaft f' , and the pulleys d' being mounted on a shaft g' , which carries a gear 106, driven by intermediate gears 107 108, the latter meshing with the gear 109 on the shaft of the accumulating-cylinder M.

To prevent the sheet from following the offset web h as the latter passes over the guide-roll 100, I employ a rotary brush 110, Fig. 1, the shaft of which is provided with a gear 112, driven by the gear 109 of the accumulating-cylinder M through the medium of an intermediate gear 114, said brush revolving in the direction of the arrow, whereby it is caused to assist the tapes b' in carrying the printed sheet to the accumulating-cylinder.

A removable board 120, Fig. 1, extends across the lower portion of the machine at the bottom of the opening 121, where it is supported by resting on the sides of the framework. This board 120 forms a platform for

the operator to stand upon while working on the second impression-cylinder and serves to protect that portion of the offset web which lies beneath it.

5 What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with a cylinder, of a normally-stationary sheet support or table adjustable in length for sheets of varying
10 lengths and traveling sheet-feeding belts over said table or support with their lower runs parallel therewith to move the sheets over the table or support to the cylinder.

2. The combination with a cylinder, of a
15 sheet support or table, adjustable in length for sheets of varying lengths and movable bodily toward and from the cylinder, means for adjusting the length and position of the table or support, and traveling sheet-feeding
20 belts over said table or support with their lower runs parallel with the upper surface thereof to feed the sheets therealong to the cylinder; said belts being movable away from the cylinder with the said table or support.

25 3. The combination with a cylinder, of a carriage or frame movable toward and from the cylinder, web feeding and cutting mechanisms mounted on said carriage or frame, a sheet supporting and feeding mechanism on
30 said carriage or frame and extending between the cutting mechanism and the cylinder and movable with said frame or carriage away from the cylinder to allow access thereto.

4. The combination with a cylinder, of a
35 main carriage movable toward and from the cylinder, web feeding and cutting mechanisms mounted on said carriage, a sheet supporting and feeding mechanism on said carriage and extending between the cutting mechanism and the said cylinder, and movable with
40 said carriage away from the cylinder to allow access thereto, and means for effecting an independent adjustment of said sheet supporting and feeding mechanism on the main carriage.
45

5. The combination with a cylinder, of a main carriage movable toward and from the cylinder to allow access thereto, web feeding and cutting mechanisms mounted on said carriage, and an adjustable sheet-support mounted
50 on the carriage and extending between the cutting mechanism and the cylinder, means for adjusting the length of the said sheet-support, and endless, traveling, sheet-feeding
55 belts over said support with their lower runs parallel with the upper surface thereof to feed the sheets thereover to the cylinder, and take-ups for the said sheet-feeding belts to adjust them to the adjustment of the said sheet-support.
60

6. The combination with the main carriage, web cutting and feeding mechanisms mounted thereon, and a take-up roll beyond the web-cutting mechanism, of an auxiliary carriage
65 adjustable on the main carriage, a flexible web or sheet support connected at one end to the auxiliary carriage and at its opposite end con-

nected to said take-up roll, traveling sheet-feeding belts mounted on the auxiliary carriage over the said flexible web with their
70 lower runs extending along the upper surface thereof, the lower inner shaft or roller of the sheet-feeding belts being mounted on the main carriage, and means for taking up the slack of said sheet-feeding belts.
75

7. The combination with the main carriage, the web feeding and cutting mechanisms mounted thereon, a take-up roll, and a table on said main carriage, of an auxiliary carriage adjustable on the main carriage and having
80 a table at its forward end, a flexible sheet-support connected to said table and extending thence over the first-named table to the said take-up roll, rolls or shafts journaled on the auxiliary carriage above the flexible sheet-
85 support, endless, driven, sheet-carrying belts mounted on said rolls or shafts and also extending around a roll or shaft on the main carriage with their lower runs over the flexible
90 sheet-support, and a take-up for said sheet-feeding belts.

8. The combination with a support for a sheet or web, of an endless traveling belt provided on its outer face with a soft or yielding
95 surface of rough or pile material to engage the paper and feed it along said support.

9. The combination with a sheet or web support, of an endless traveling feeding-belt provided on its outer face with a narrower surface of rough or pile material to engage the
100 paper and feed it along said support, and a take-up roll engaging the said outer side of the belt and having a groove to receive and protect its rough or pile surface.

10. The combination of a supporting-frame, 105 a carriage thereon, an auxiliary carriage adjustable on the main carriage and provided with a web or sheet supporting device variable in length, a web or sheet feeding belt mounted on the two carriages with its lower
110 run traveling over said web or sheet support, means for operating said belt, and pivoted belt-tightening arms carrying rolls engaging opposite sides of said belt.

11. The combination with a supporting- 115 frame, of a carriage having mounted thereon a sheet or web feeding device, an auxiliary carriage adjustable on the main carriage, and a web or sheet supporting device, substantially as described.
120

12. The combination with a supporting- 125 frame, of a carriage having mounted thereon a sheet or web feeding device and a cutting device, an auxiliary carriage adjustable on the main carriage, and a web or sheet supporting device, substantially as described.

13. The combination with a supporting- 130 frame, of a carriage having mounted thereon a sheet or web feeding device, an auxiliary carriage adjustable on the main carriage, a web or sheet supporting device, and a web or sheet feeding belt arranged above the web or sheet supporting device, substantially as described.

14. The combination with a supporting-frame, of a carriage having mounted thereon a sheet or web feeding device and a cutting device, an auxiliary carriage adjustable on the main carriage, a web or sheet supporting device, and a web or sheet feeding belt arranged above the web or sheet supporting device, substantially as described.

15. The combination of a supporting-frame, a carriage, an auxiliary carriage adjustable on the main carriage, a web or sheet supporting device variable in length, a web or sheet feeding belt arranged above the web or sheet supporting device, means for driving said feeding-belt, and means for taking up the slack of said feeding-belt, substantially as described.

16. The combination of a supporting-frame, a carriage provided with a table and a take-up roll, an auxiliary carriage adjustable on the main carriage, and a flexible web or sheet supporting device variable in length, and having one end attached to the auxiliary carriage, and the other end to the take-up roll, said web passing over said table, substantially as described.

17. The combination with the first impression-cylinder and a series of guides placed between the first and second impression-cylinders, of the gripper-shaft and grippers, a co-operating gripper-bar provided with a slot, shoo-fly plates passing through said slot, and means for actuating the same, said shoo-fly plates being provided at their outer ends with notches for the reception of the ends of the guides, substantially as described.

18. In a perfecting printing-machine, the combination with the first impression-cylinder provided with means for seizing and holding the sheet, of a second impression-cylinder and a sheet-carrying device encircling a portion only of the second impression-cylinder lying between the first impression-cylinder and the second plate-cylinder without passing between the second plate and impression cylinders, for holding the sheet against the second impression-cylinder and carrying it to the second plate-cylinder, substantially as described.

19. In a perfecting printing-machine, the combination with the first impression-cylinder provided with means for seizing and holding the sheet, of a second impression-cylinder, and means consisting of endless tapes encircling a portion only of the second impression-cylinder lying between the first impression-cylinder and the second plate-cylinder without passing between the second plate and impression cylinders, for holding the sheet against the second impression-cylinder and carrying it to the plate-cylinder, substantially as described.

20. In a perfecting printing-machine, the combination with the first impression-cylinder provided with means for seizing and holding the sheet, of a second impression-cylinder, and means consisting of endless tapes encircling a portion only of the second impres-

sion-cylinder lying between the first impression-cylinder and the second plate-cylinder without passing between the second plate and impression cylinders, for holding the sheet against the second impression-cylinder and carrying it to the second plate-cylinder, and guides for guiding the sheet, substantially as described.

21. The combination with a cylinder, of a support parallel therewith, a frame or bracket adjustable along said support and provided with pulleys, and an endless tape running over said pulleys and partially encircling the cylinder between two of said pulleys to guide the sheets around the cylinder.

22. The combination with a cylinder, of a support parallel therewith, a frame or bracket adjustable along said support and provided with pulleys, an endless tape running over said pulleys and partially encircling the cylinder between two of said pulleys to guide the sheets around the cylinder, and a tightening device for the tape to increase or lessen its pressure on the cylinder.

23. The combination with a cylinder, of a support, a frame or bracket adjustable on the support in the direction of the length of the cylinder and provided with pulleys: said bracket having an adjustable arm carrying one of the innermost pulleys, and movable toward and from the cylinder, and an endless tape running over said pulleys and partially encircling said cylinder between the two innermost pulleys to guide the sheets around the cylinder.

24. The combination with a cylinder, of a support parallel therewith, a series of frames or brackets adjustable toward and from each other along said support, guide-pulleys on said brackets, a driving-shaft passing through said brackets, pulleys sliding on and rotating with said shaft, endless tapes extending around said guide and drive pulleys and partially encircling the cylinder between the former, and means on the brackets for moving the drive-pulleys along their shaft.

25. The combination with a cylinder, of a support, a series of frames or brackets adjustable on said support, a driving-shaft passing through said brackets, pulleys mounted on said shaft and sliding on but rotating with the same, tapes running over said pulleys, and a belt-tightening device for every tape provided with a common operating means, whereby the entire series of tapes may be simultaneously tightened or loosened, substantially as described.

26. The combination with a cylinder, of a support, a series of frames or brackets adjustable along said support and provided with guide-pulleys, a driven shaft passing through said brackets and provided with pulleys sliding on and rotating therewith, tapes running on said guide and drive pulleys and partially encircling the cylinder, arms pivoting on the said shaft and having tightener-pulleys engaging said tapes, and an eccentric shaft hav-

ing rods connecting it adjustably to the free ends of said pivoted arms.

27. In a web-perfecting printing-machine, the combination with the first impression-cylinder to the under side of which the sheets are fed, and means for seizing and holding the sheet, of a second impression-cylinder, an offset web enveloping the second impression-cylinder and carrying the printed sheets to the delivery device, and a series of driven tapes partially encircling the second impression-cylinder to hold the sheets to said web, substantially as described.

28. In a web-perfecting printing-machine, the combination with the second impression-cylinder, of an offset web having its dispensing-roll located below the level of that portion of the offset web on which the printed sheet is carried away from said second impression-cylinder, substantially as described.

29. In a web-perfecting printing-machine, the combination with the second impression-cylinder, of an offset web having its dispensing-roll located below the level of that portion of the offset web on which the printed sheet is carried away from the said impression-cylinder, and placed at such distance from the printing-cylinders as to afford access to said cylinders, substantially as described.

30. In a web-perfecting printing-machine, the combination with the second impression-cylinder, of an offset web having its dispensing-roll located below the level of that portion of the offset web on which the printed sheet is carried away from said second impression-cylinder, and a removable guide-roll for supporting and guiding the offset web in its passage from the dispensing-roll to the second impression-cylinder, substantially as described.

31. In a rotary web-perfecting printing-machine, the combination with the second impression-cylinder, an accumulating-cylinder, an offset web, and a guide-roll for the offset web located near the accumulating-cylinder, of a rotary brush, substantially as described.

32. The combination with a pair of cutting-cylinders, one of which is provided with a longitudinal groove and the other with a cutter-blade coöperating therewith, of a presser-spring arranged in front of the cutter-blade, and a brush placed behind the same, substantially as described.

Witness my hand this 27th day of March, A. D. 1899.

FRANCIS MEISEL.

In presence of—

P. E. TESCHEMACHER,
M. B. WILSON.