

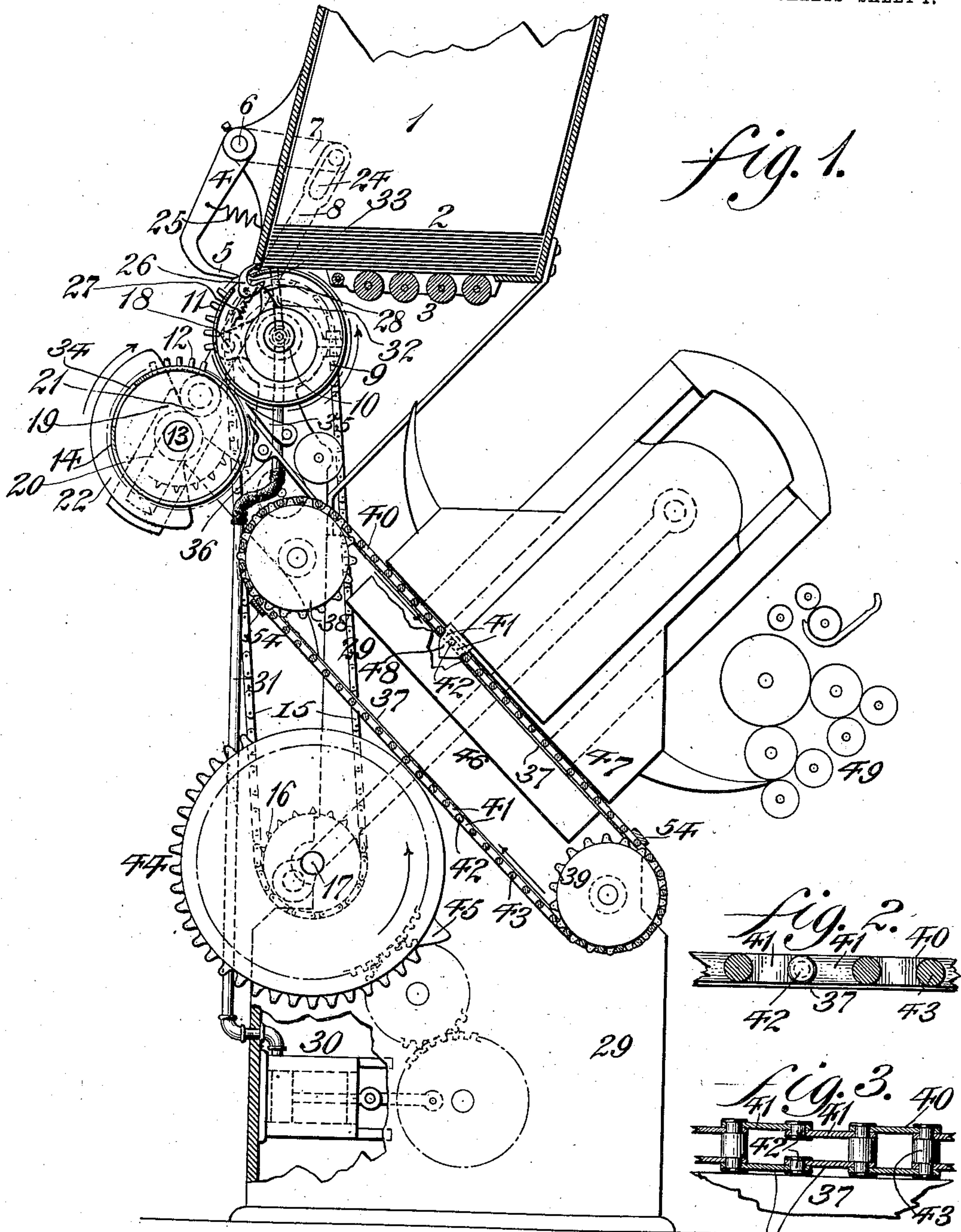
No. 828,281.

PATENTED AUG. 7, 1906.

W. FULLARD.
FEED FOR PRINTING MACHINES.

APPLICATION FILED JULY 14, 1903.

2 SHEETS—SHEET 1.



Witnesses

L. Bouville.
P. E. Agler.

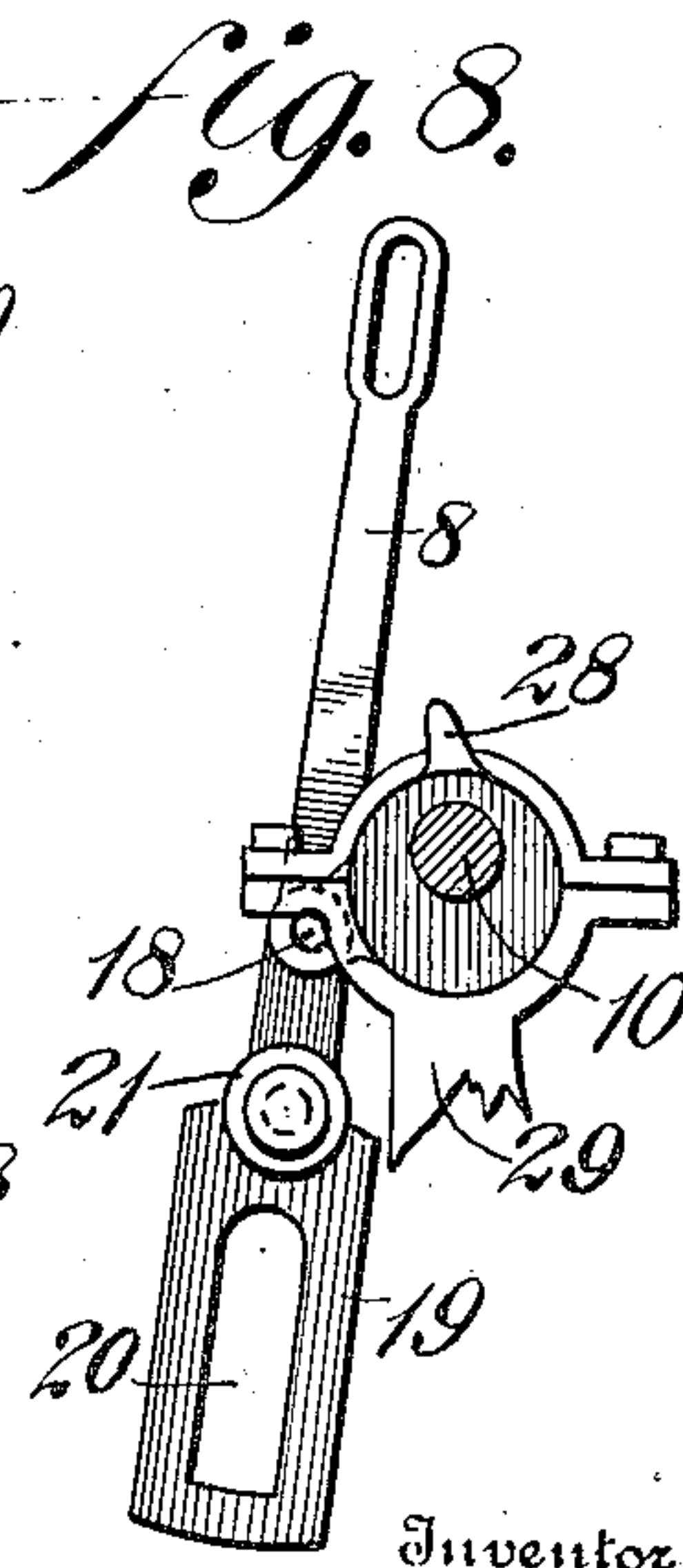
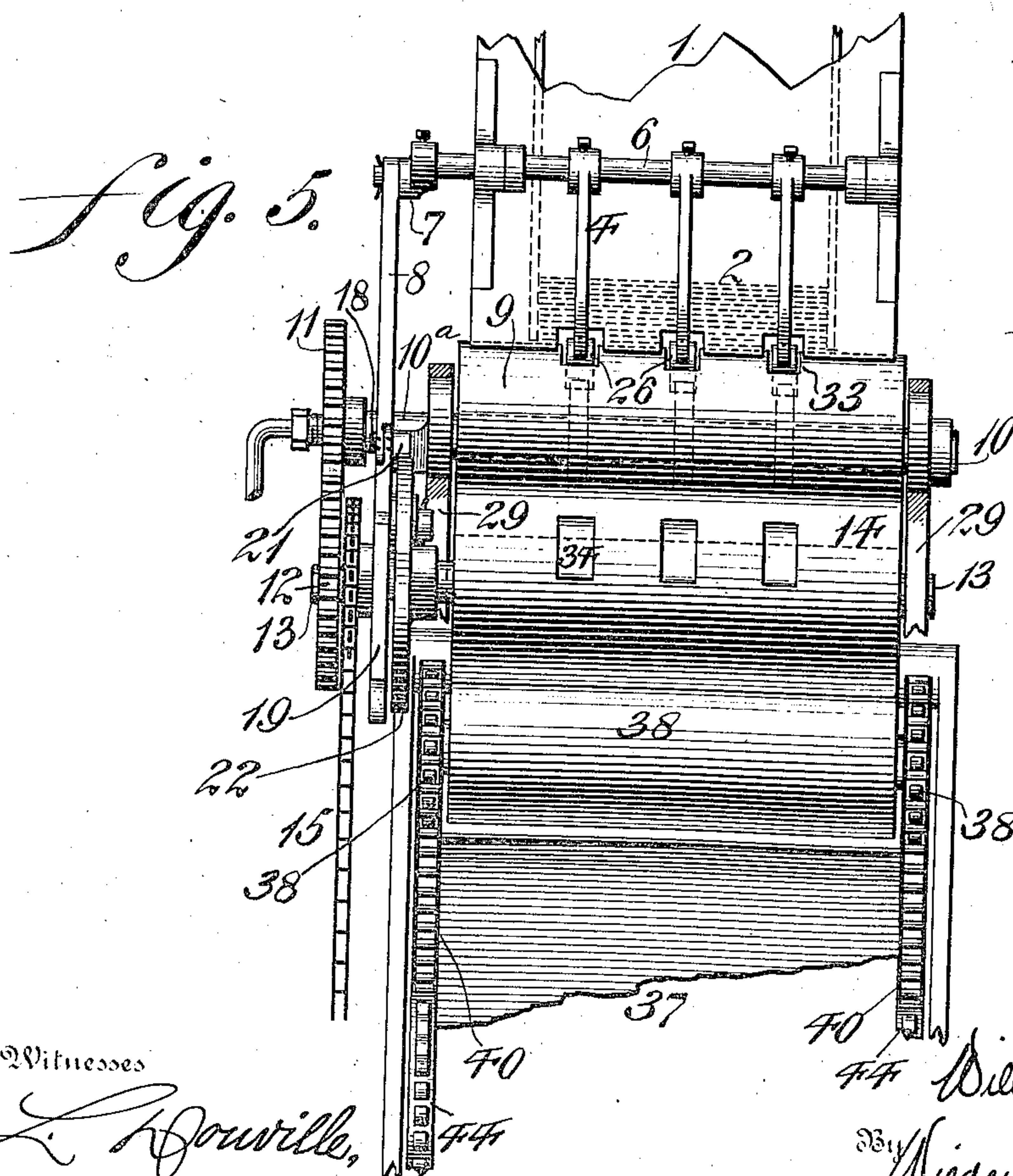
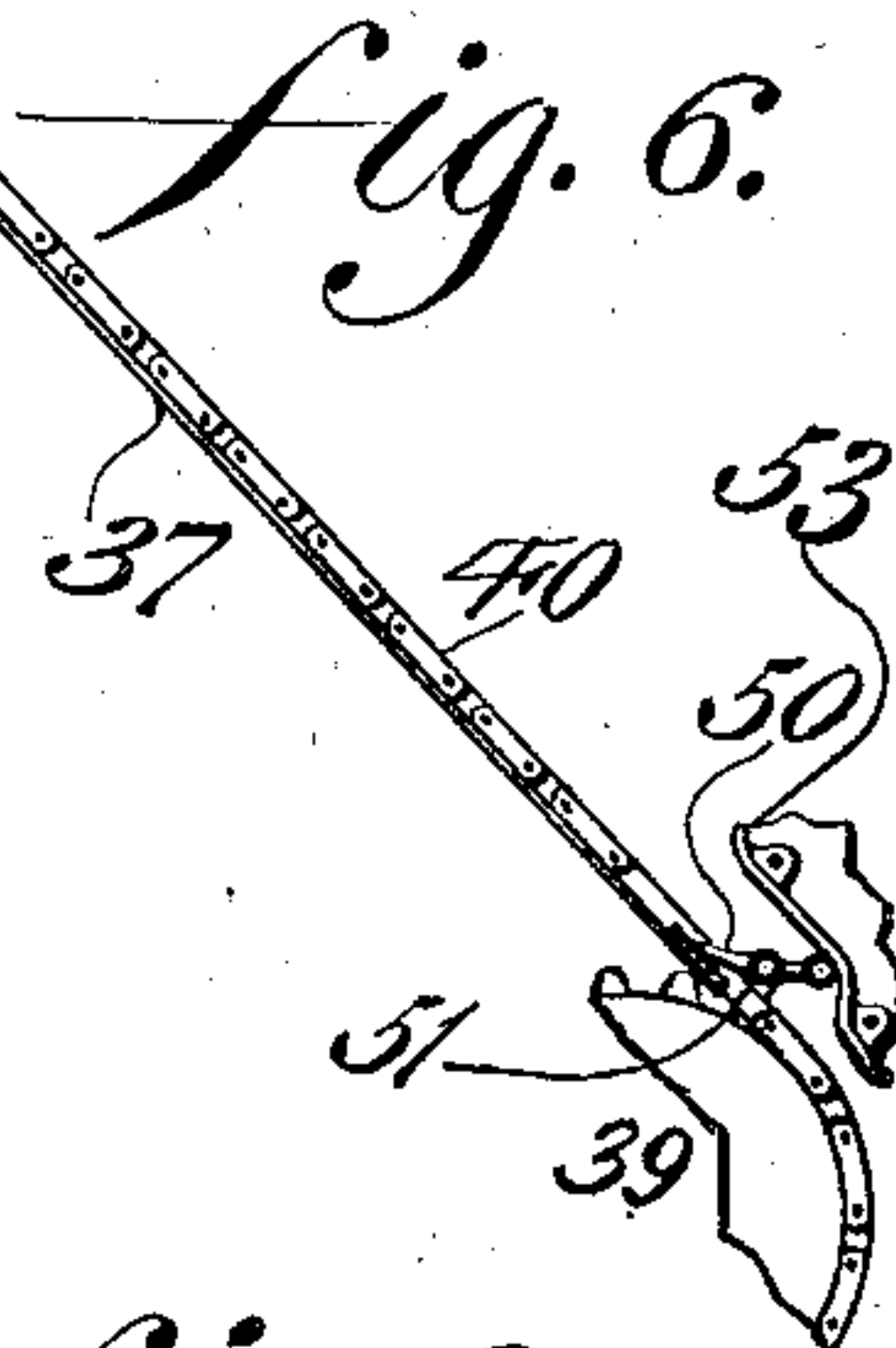
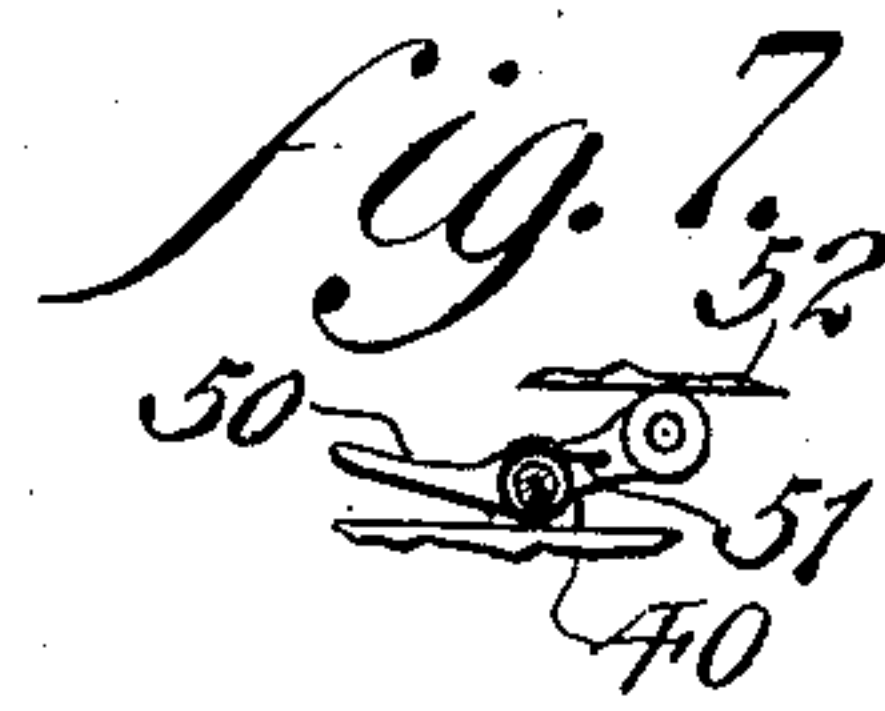
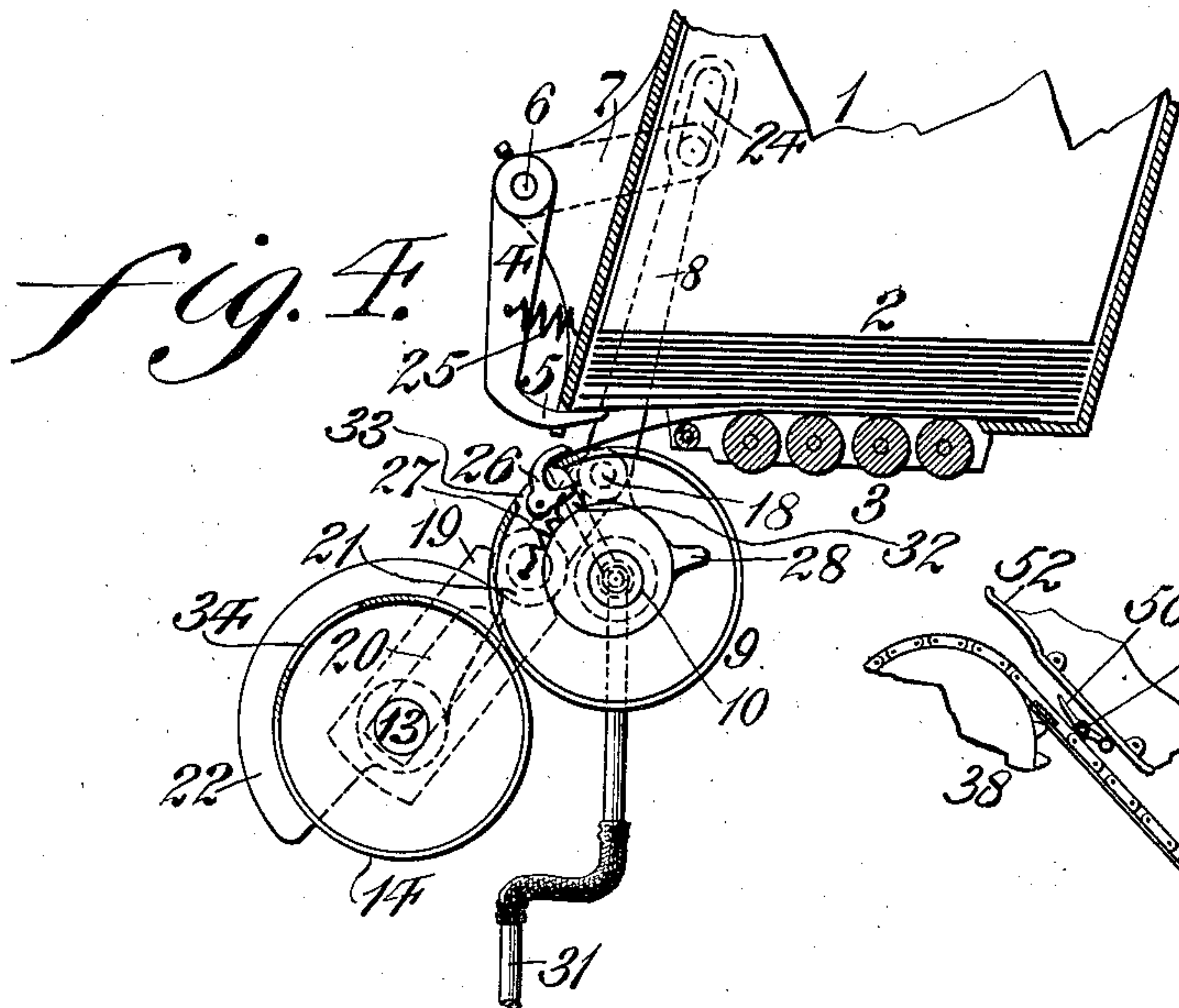
Inventor
William Fullard.
By Wiederstein & Fairbanks
Attorneys

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2 SHEETS—SHEET 2.



Witnesses
L. H. Gouville,
P. F. Bagley.

Inventor
William Fullard.
Niedersheim & Fairbanks.
Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM FULLARD, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
UNITED PRINTING MACHINERY CO., OF BOSTON, MASSACHUSETTS, A
CORPORATION OF MAINE.

FEED FOR PRINTING-MACHINES.

No. 828,281.

Specification of Letters Patent.

Patented Aug. 7, 1906.

Application filed July 14, 1903. Serial No. 165,487.

To all whom it may concern:

Be it known that I, WILLIAM FULLARD, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented new and useful Improvements in Feeds for Printing-Machines, of which the following is a specification.

My invention relates to printing-presses; and it consists of an automatic sheet-feed by which sheets of paper may be successively fed to a press.

It also consists of means for making a "dwell" in the movement of such sheets while over the platen.

It further consists of novel features of construction, all as will be hereinafter fully set forth.

Figure 1 represents a side elevation, partly in section, of a press provided with my feed device. Figs. 2 and 3 represent, respectively, a plan and a vertical section of a portion of a chain. Fig. 4 represents in vertical section a portion of my device. Fig. 5 represents a rear elevation of the same. Fig. 6 represents a portion of the chain, showing a modification. Fig. 7 represents an enlarged detail of a portion shown in Fig. 6. Fig. 8 represents an enlarged detail of a roll-actuating device.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, 1 designates a hopper containing sheets of paper 2, resting on idler-rolls 3. A plurality of hooks 4, having fingers 5, are secured to a shaft 6, reciprocable by means of a crank 7 and rod 8, actuated to any suitable moving part of the press. Adjacent the rear lower edge of the hopper 1 is a hollow roll 9, mounted on a shaft 10, which is eccentrically mounted, on which is a gear-wheel 11, meshing with a like wheel 12 on a shaft 13, which carries a roll 14. A sprocket-chain 15 extends from a suitable sprocket-wheel 16 on the main shaft 17 of the press to a sprocket-wheel 11, mounted at the end of the roll 9. The shaft 10 of the roll 9 is eccentrically mounted on a bearing 10^a.

On a lug 18, projecting from the bearing 10^a, is pivoted an arm 19, having a slot 20, through which passes the shaft 13, said arm being adapted to rock the eccentric mounting of

the shaft 10 without displacing the teeth of the gear of the two rolls. A friction-roller 21, mounted on the arm 19, rides on a cam 22 on the shaft 13. The rod or arm 8 is also pivoted on the lug 18 and has a slot 24 engaging with the crank 7 on the shaft 6 and operative against the spring 25, secured to the hooks.

Mounted on the roll 9 are grippers 26, normally drawn toward the roll by springs 27 and thrown out by a cam 28, which is carried by an eccentric which is oscillated by the reciprocation of the arm 19, so that the cam 28 is also reciprocated in order to be brought at the proper time in suitable contact with said grippers in order to properly actuate the same. Shown as within the frame 29 of the press is an air-pump 30, connected by a tube 31 with the interior of the roll 9, from which interior extend radial apertures 32 to the periphery of the roll. Suitable recesses 33 34 in the rolls 9 and 14 prevent their interference with the hooks 4. Guides 35 36, adjacent the rolls 9 and 14, lead to the upper face of an endless apron or conveyer 37, mounted on idle spur-wheels 38 39. The teeth of said spur-wheels engage in a sprocket-chain 40, by which the apron 37 is carried. At two opposite points in the chain 40 the links are doubled in length by connecting the bars 41 by short rivets 42 instead of the regular cross-pins 43. Engaging with the lower side of the chain 40 is a mutilated gear-wheel 44, having a special tooth 45, shown as mounted on the main shaft 17.

46 represents the inclined platen of the press, which is situated between the upper and lower portions of the endless apron or conveyer 37, the upper portion of the conveyer passing directly over the upper surface of the platen and coacting with which is the reciprocating bed 47, operated by a suitable crank, and to which bed is attached a dog 48, adapted to engage with the doubled links of the chain 40. It will be noticed that the dog by entering the opening in the double links is interposable in the path of movement of the chain, and as it is necessary to hold the chain in suitable or normal position the said dog must engage with said chain without deflecting the same from its normal path.

The inking-rolls 49 require no description.

I have shown in Fig. 1 of the drawings stops 54 on the apron 37. In Figs. 6 and 7 I show as substitutes for these grippers 50, normally held in contact with the face of the apron 37 by springs 51 and temporarily carried therefrom by cams 52 and 53.

The operation is as follows: At each rotation of the main shaft 17 of the press the roll 9 is raised by means of the action of the arm 19 on the bearing 10^a, so that the ends of the suction-tubes 32 engage with the lowermost sheet of pile of paper 2 in the hopper 1, the hooks 4 being simultaneously withdrawn and the grippers 26 raised by the cams 28, all as shown in Fig. 1. Fig. 4 shows the return of the hooks 4, so that the fingers 5 act to support the body of sheets 2 and permit the further movement of the lower sheet, which latter is carried between the rolls 9 and 14 and downward to the apron 37, over which it is slid until checked by the stop 54, which has reached a position for that purpose, of Fig. 1 or engaged by the grippers 50 of Fig. 6. The rotation of the mutilated gear 44 is timed so that when the sheet is in proper position with respect to the stop 54 its last tooth leaves the chain 40 as or before the bed 47 of the press descends, the dog 48 engaging in the doubled link of the chain 40, thus securing the register of the sheet. After the impression is made the bed 47 rises, disengaging the dog 48. The rotation of the shaft carrying with it the gear 44 brings the tooth 45 of the gear 44 in position to engage the opposite doubled link of the chain 40 at the proper time, and the chain is given another half advancement, whereby the imprinted sheet is deposited in any suitable receptacle (not shown) at the front of the press.

It will be observed that the operation of the feed and of the press is continuous and that the motion of the paper is positive and progressive—i. e., in an advancing direction only.

It will be noted that by reason of the inclination of the rear walls of the hopper with respect to its bottom the weight of the superposed sheets does not rest equally on the lower sheet, the forward portion of the sheet carrying less of such weight. When the hopper contains a large number of sheets, the advantage of this rearward inclination of the hopper with respect to its bottom is very apparent in the facility with which the lower sheet may be detached from the others.

It will be evident that various changes may be made by those skilled in the art which will come within the scope of my invention, and I do not, therefore, desire to be limited to the exact construction herein shown and described.

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

1. A printing-press comprising a platen, a

bed, an intermittently-actuated carrier-apron operative to carry the sheets over said platen and means interposable in the normal path of said apron for positively holding it during impression without deflecting it from such normal path.

2. A printing-press comprising a platen, a bed, an intermittently-actuated carrier-apron operative to carry the sheets over said platen and means movable in unison with said bed for positively holding said apron during impression.

3. A printing-press comprising a platen, a bed, a carrier-apron operative to carry the sheets over said platen, a chain operatively secured to said apron and means engageable with said chain and moved in unison with said bed for positively holding said apron during impression.

4. A printing-press comprising a platen, a bed, means for supporting a plurality of sheets, an intermittently-actuated apron, means for successively depositing such sheets on said apron and means interposable in the normal path of said apron for positively holding it during impression without deflecting it from such normal path.

5. A printing-press comprising a platen, a bed, means for supporting a plurality of sheets, a carrier-apron, means for successively depositing such sheets on said apron, means for intermittently moving said apron so as to bring such sheets over said platen and means connected with said bed for positively holding said apron during impression.

6. A printing-press comprising a platen, a bed, means for supporting a plurality of sheets, a carrier-apron, means for successively depositing such sheets on said apron, a mutilated gear-wheel, a chain on said wheel operating to intermittently advance said apron and means engageable with said chain for positively holding said apron during impression.

7. In an automatic sheet-feed, a hollow feed-roll, suction-tubes in said roll, grippers on said roll, an eccentrically-mounted shaft on which said roll is rotated, and means for moving said shaft in a direction substantially opposite to its rotation, whereby the movement of said tubes and said grippers is retarded during their engagement with the sheet.

8. In an automatic sheet-feed, a hollow feed-roll, suction-tubes in said roll, grippers on said roll, an eccentrically-mounted shaft on which said roll is rotated, a second feed-roll geared to said first-named feed-roll and means connected with said second roll for rocking said eccentric mounting without displacing the teeth on said gear.

9. In a printing-press, a platen, a bed, a sheet-carrier apron, a sprocket-chain for actuating said apron, a link in said chain differentiated from a plurality of the remaining

links and a gear-wheel engaging with said chain and having a differentiated tooth adapted to engage with said differentiated link.

10. In a printing-press, a platen, a bed, a
5 sheet-carrier apron, a sprocket-chain for actuating said apron, a link in said chain of larger size than a plurality of the remaining links and a gear-wheel engaging with said chain and having a tooth of larger size than
10 the remaining teeth for engaging with said larger link.

11. In a printing-press, a platen, a bed, a sheet-carrier apron, a sprocket-chain for ac-

tuating said apron and having links at opposite sides thereof of larger size than the remaining links, means engaging with said
15 larger links for holding said apron during impression, a mutilated gear-wheel engaging with said chain and a tooth on said gear-wheel of larger size than the remaining teeth
20 for engaging with said larger links.

WILLIAM FULLARD.

Witnesses:

WILLIAM E. DOWN,
ANNA BALAGUER.