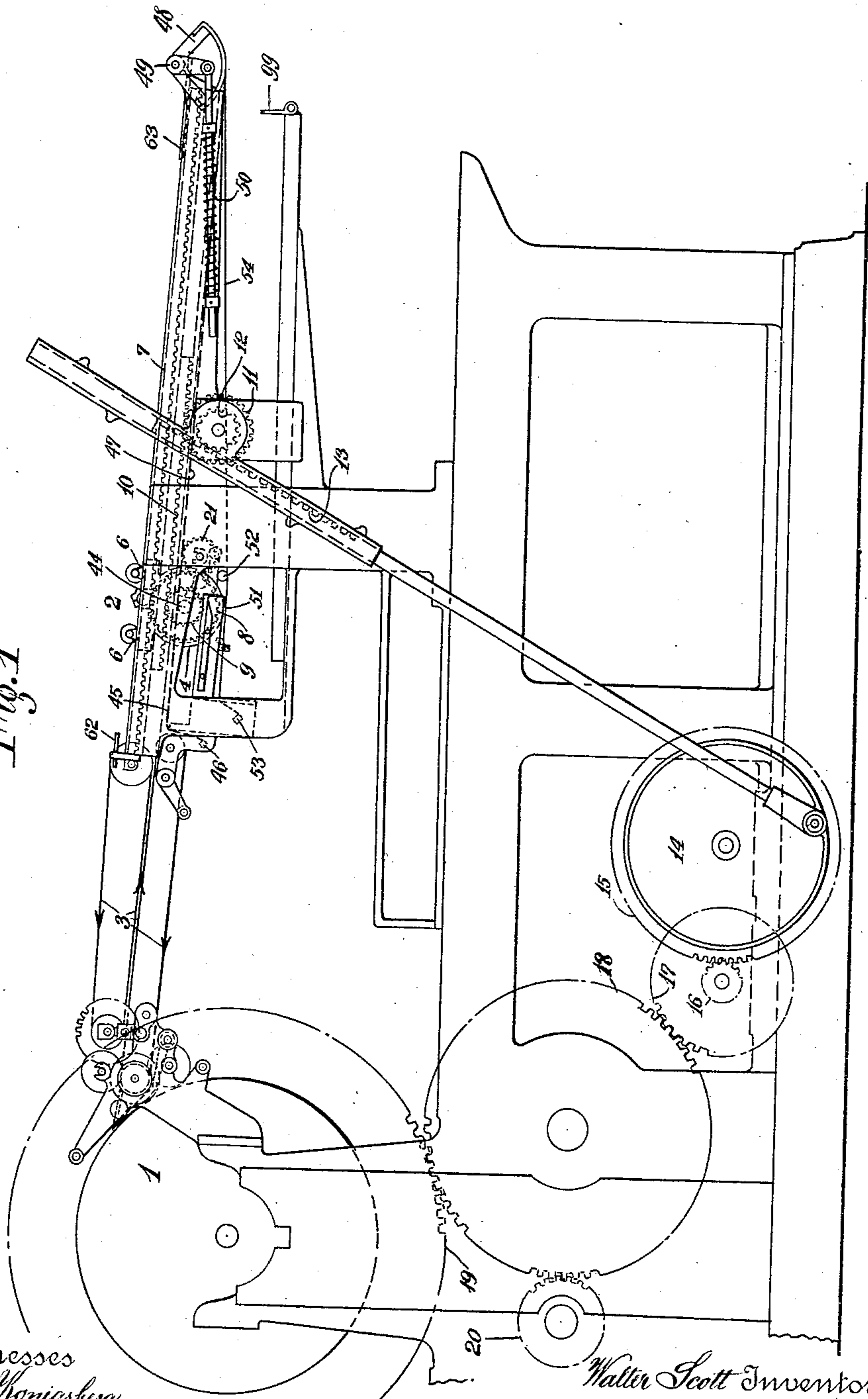


917,901.

W. SCOTT, DEC'D.  
I. & D. J. SCOTT, EXECUTORS.  
DELIVERY MECHANISM.  
APPLICATION FILED MAY 26, 1904.

Patented Apr. 13, 1909.  
6 SHEETS—SHEET 1.

Fig. 1



Witnesses  
Evan Honigsberg  
Annie Wiesenmann

Walter Scott Inventor  
By his Attorneys  
Deeken & Spaulding

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6 SHEETS—SHEET 2.

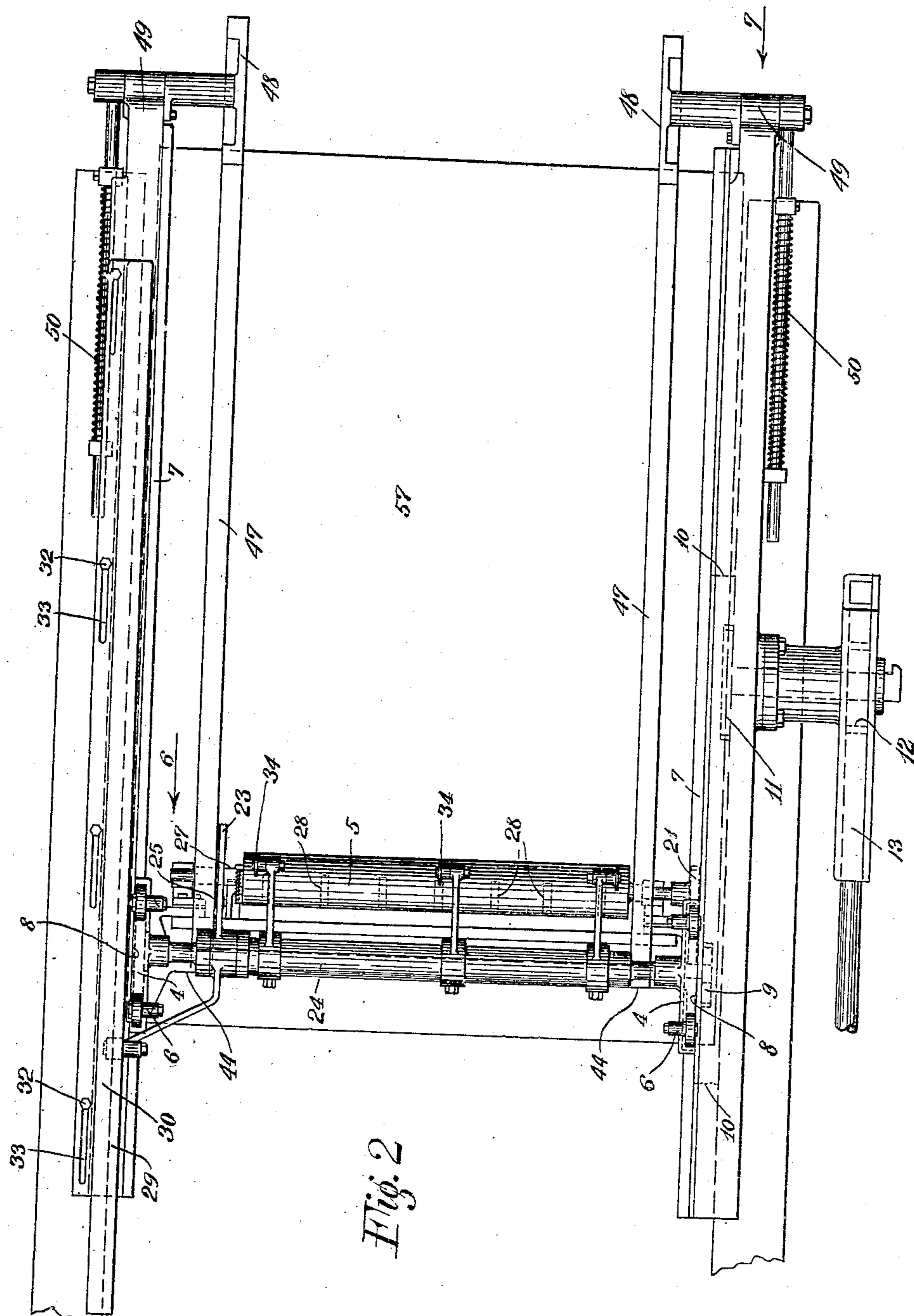


Fig. 2

Witnesses  
Jean Honigsberg  
Annie Kieselbach

Walter Scott Inventor  
By his Attorneys  
Pecken & Paulding

917,901.

W. SCOTT, DEC'D.  
I. & D. J. SCOTT, EXECUTORS.  
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6 SHEETS—SHEET 3.

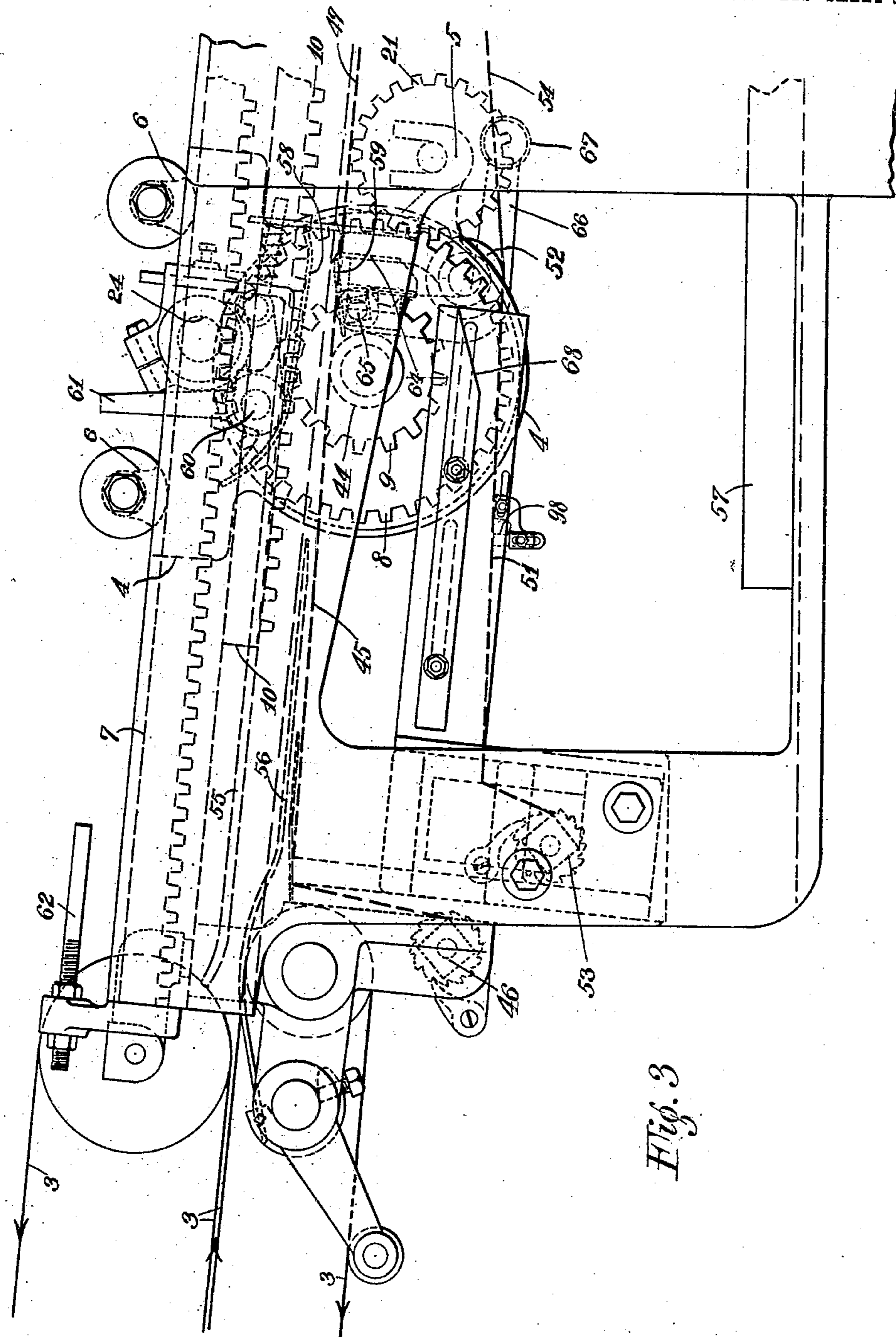


Fig. 3

Witnesses  
Joan Honigsberg  
Annie Keesmann.

Walter Scott Inventor  
By his Attorneys  
Belken & Spaulding

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I. & D. J. SCOTT, EXECUTORS.  
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6 SHEETS--SHEET 4.

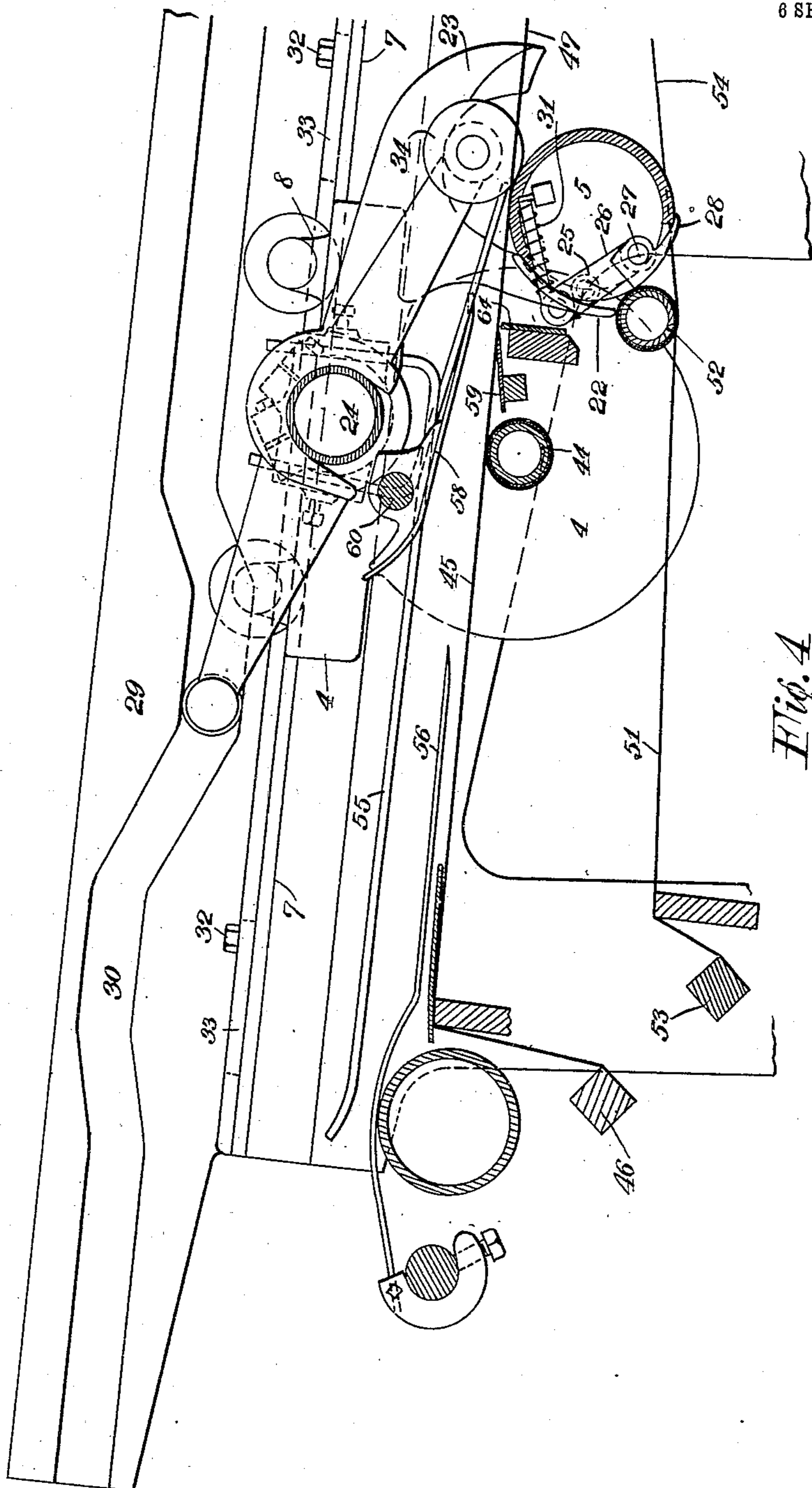


Fig. 4

Witnesses  
Joan Honigsberg  
Annie Wierhoff

Walter Scott Inventor

By his Attorneys  
Decker & Spaulding

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I. & D. J. SCOTT, EXECUTORS.  
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6 SHEETS—SHEET 5.

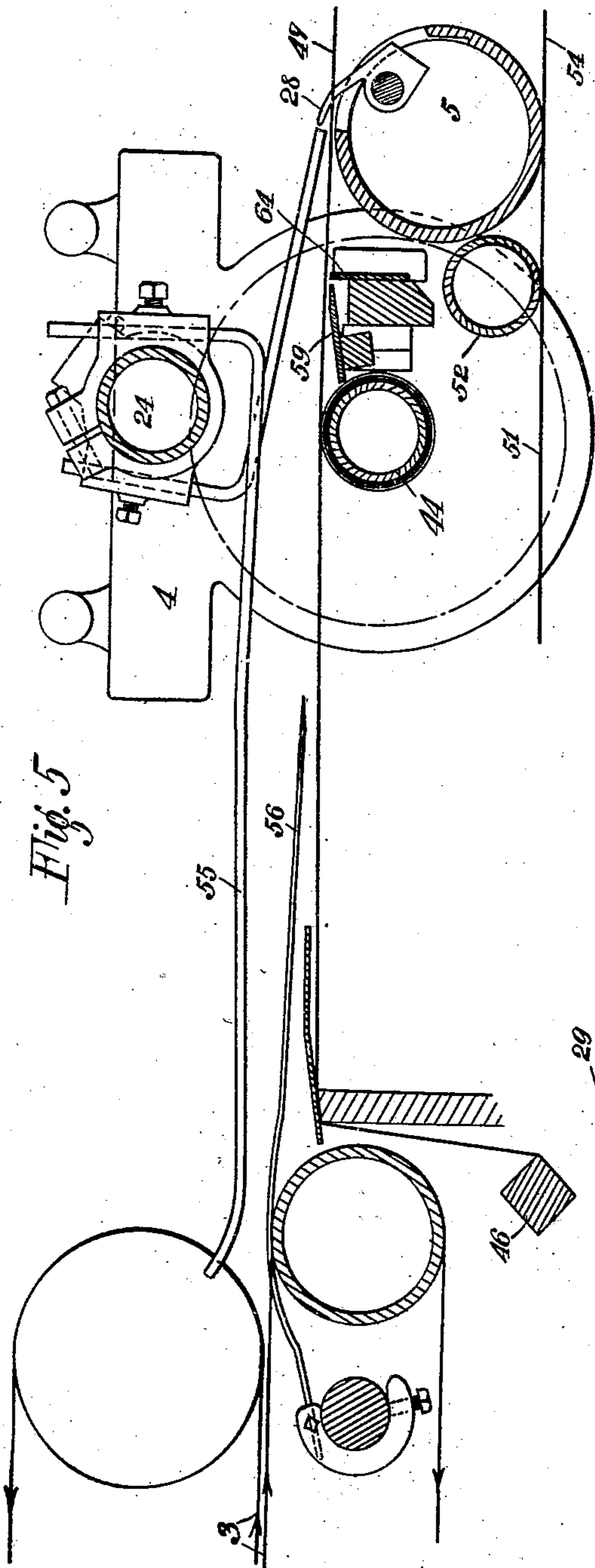


Fig. 5

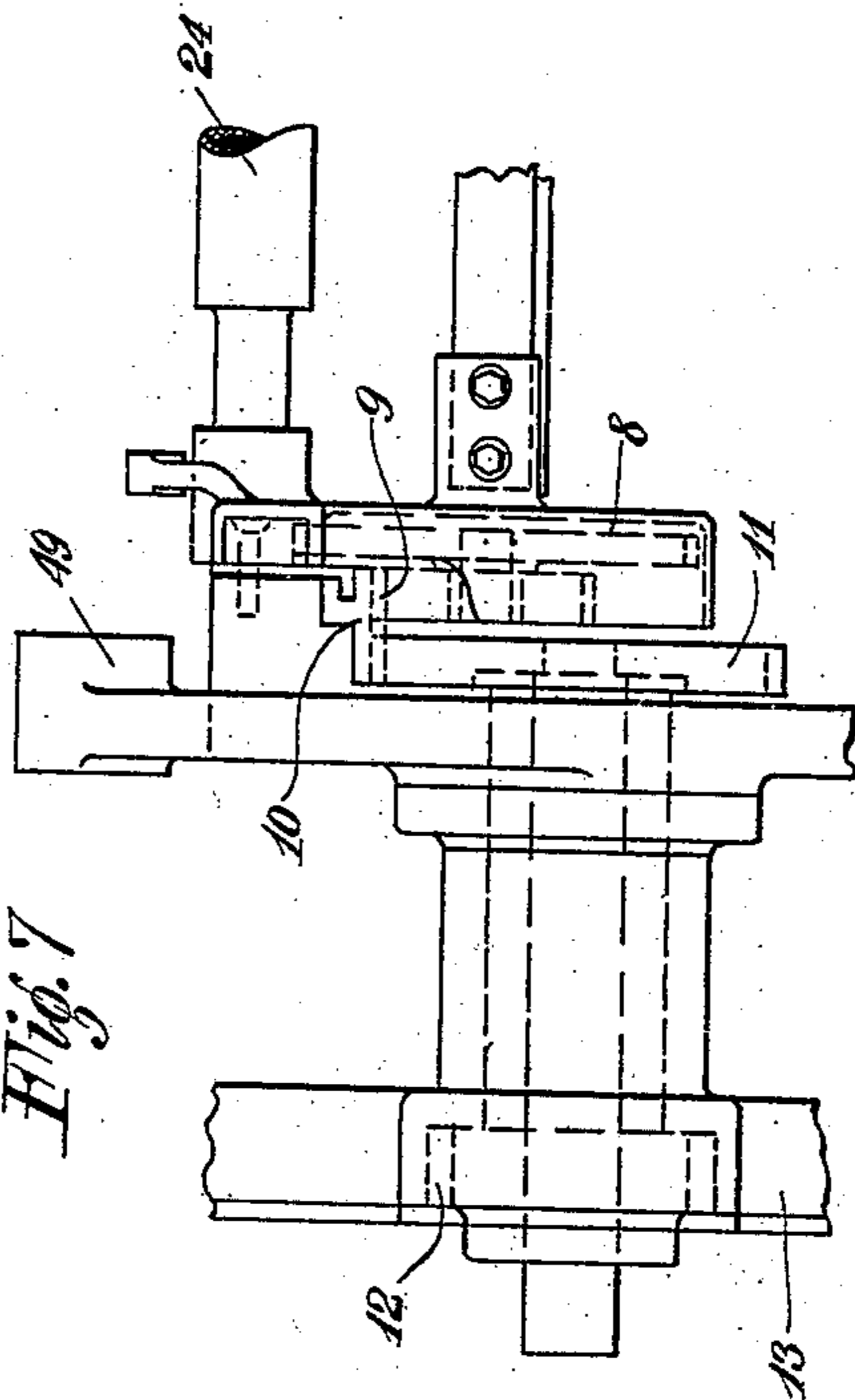


Fig. 7

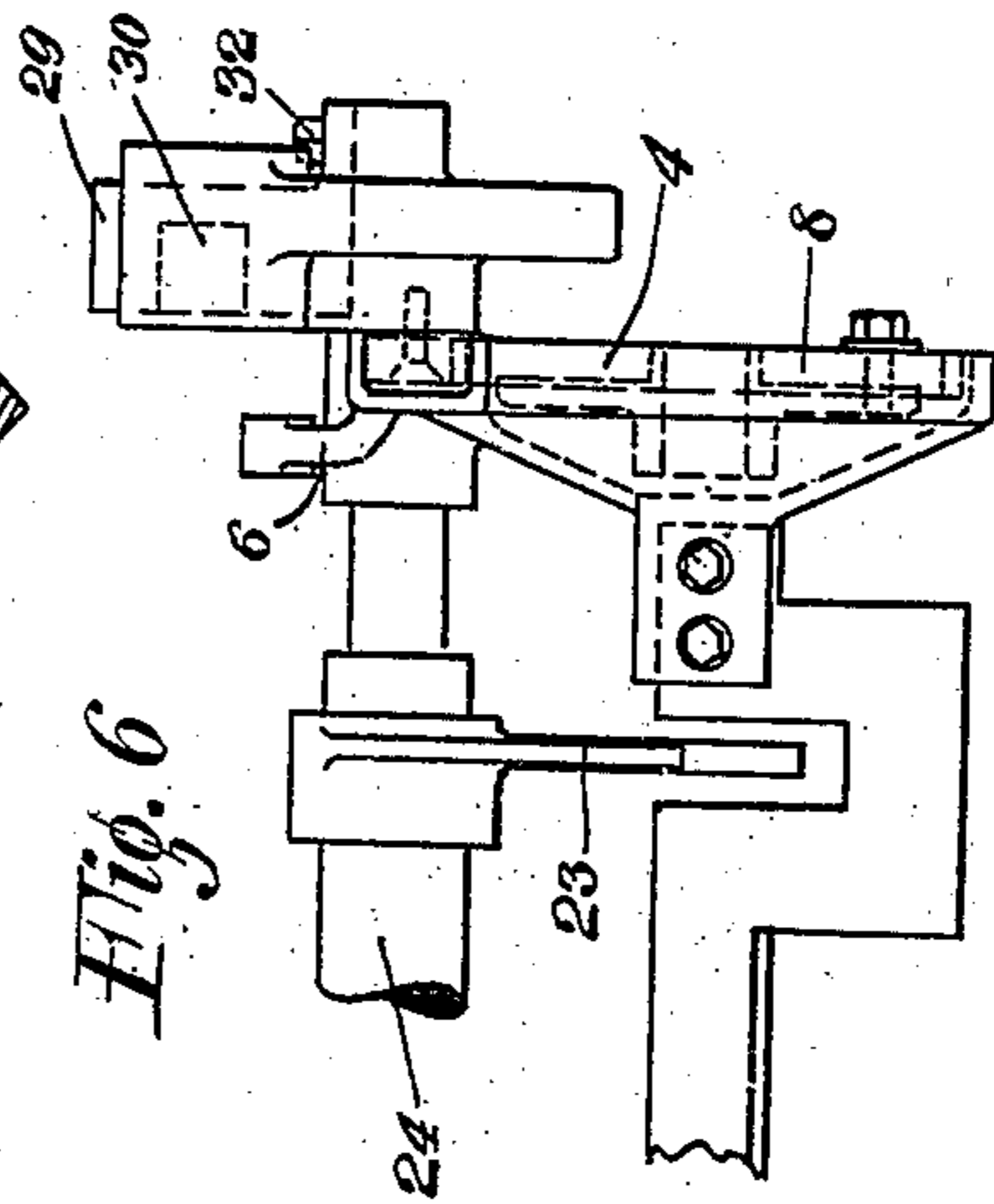


Fig. 6

Witnesses  
Fran Honigsberg  
Anne Wischnau

Walter Scott Inventor  
By his Attorneys  
Becken & Spaulding

917,901.

W. SCOTT, DEC'D.  
I. & D. J. SCOTT, EXECUTORS.  
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APPLICATION FILED MAY 26, 1904.

Patented Apr. 13, 1909.

6 SHEETS—SHEET 6.

Fig. 8

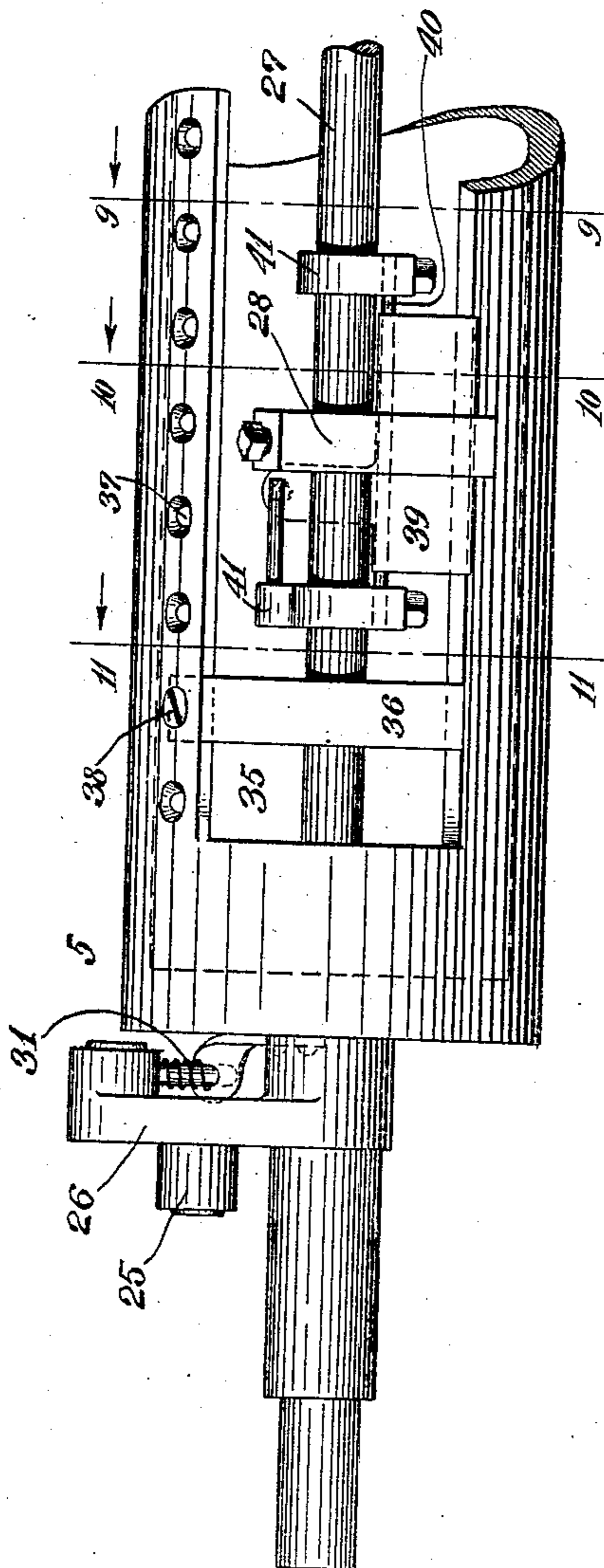


Fig. 11

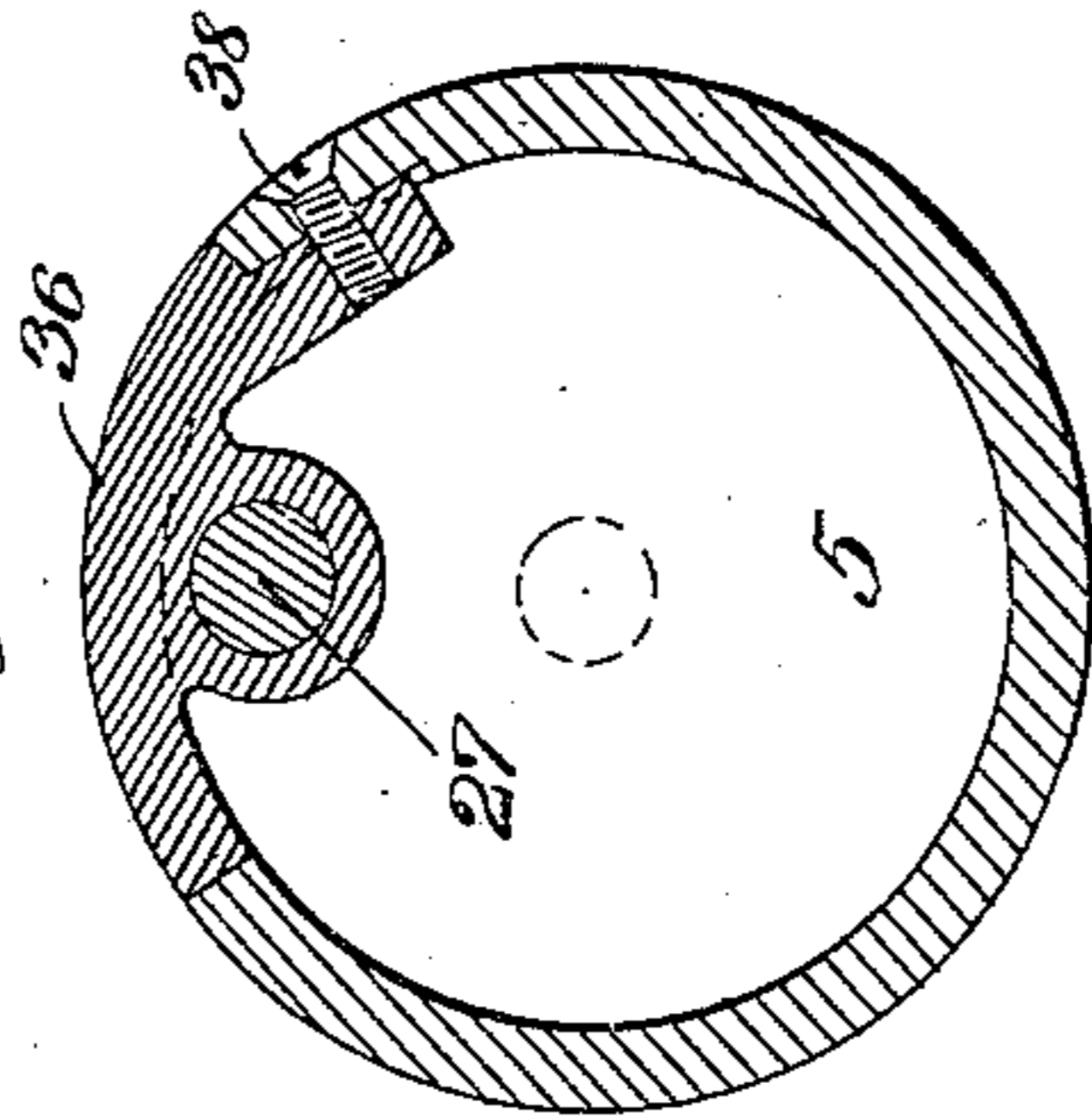


Fig. 10

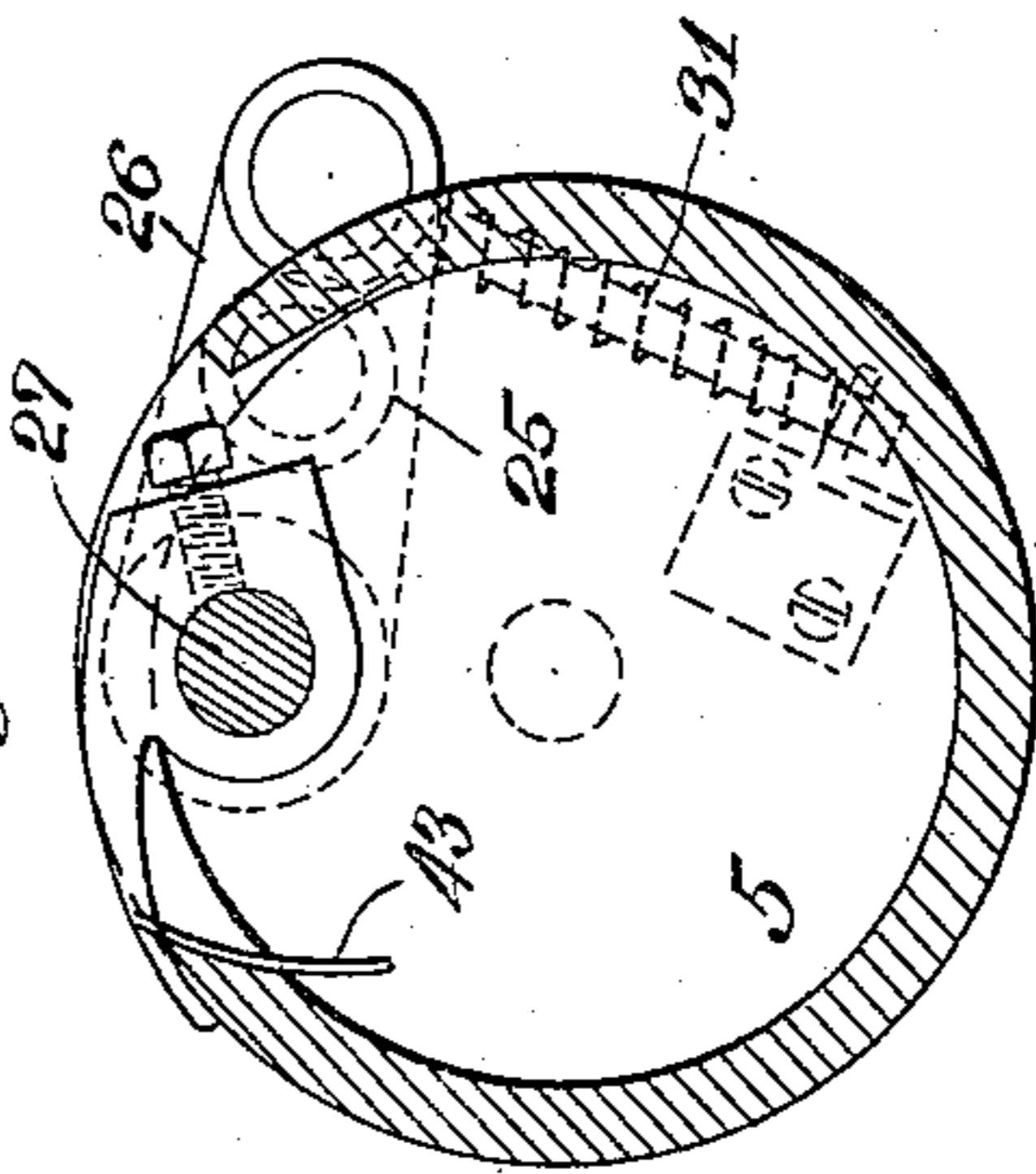
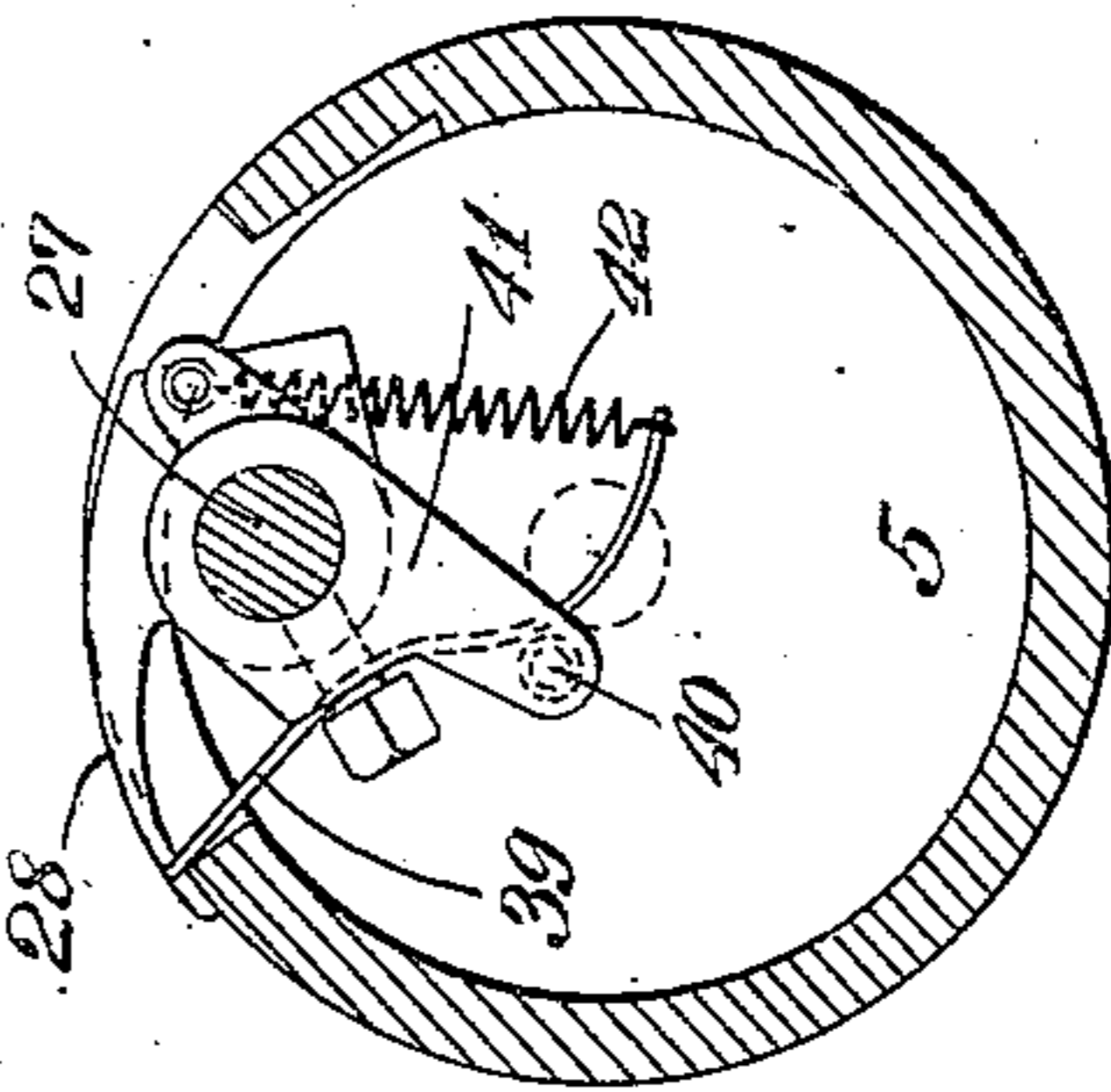


Fig. 9



Witnesses  
Evan Hornigberg  
Carmel Wischnahan

Walter Scott Inventor

By his Attorneys  
Becken & Spaulding

# UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY; ISABELLA SCOTT AND DAVID JOHN SCOTT  
EXECUTORS OF SAID WALTER SCOTT, DECEASED.

## DELIVERY MECHANISM.

No. 917,901.

Specification of Letters Patent.

Patented April 13, 1909.

Application filed May 26, 1904. Serial No. 209,879.

*To all whom it may concern:*

Be it known that I, WALTER SCOTT, a citizen of the United States of America, and a resident of Plainfield, Union county, New Jersey, have invented certain new and useful Improvements in Delivery Mechanism, of which the following is a specification.

My invention relates generally to delivery mechanism for sheets of paper or other flexible material, and has more particular reference to sheet delivery mechanism used in printing presses.

In the class of printing machines known as "two revolution", "stop cylinder" and similar machines, the printed sheets are generally delivered with the printed side up, sometimes, however, it is desirable to deliver the sheets with the printed side down. Furthermore, it is frequently desired to change from one style of delivery apparatus to another in the same machine, when doing different classes of work.

The object of my invention is to produce an improved structure of the character described, capable of delivering the sheets with the printed side down, and also to provide interchangeable means whereby the sheet can be delivered either with the printed side up or down at will in the same machine.

In carrying out the above objects, my invention is characterized by a rotating sheet turning gripping mechanism mounted on the reciprocating carriage.

In delivering a sheet by means of a reciprocating carriage, it is customary to use a collapsible apron or other sheet support which is unwound on the forward stroke of the said carriage and rewound on the return stroke, thereby allowing the sheet to drop. Usually a rotatable roller, constructed similar to the well known Hartshorn shade roller, is mounted on the reciprocating carriage, on which the apron is wound, the spring giving the proper tension to the apron. This may be used so far as certain features of my invention are concerned. However, I prefer to use tension tapes also wound on the roller carrying the web, but wound in the opposite direction, so that when the apron is rewound, the tapes unwind and vice versa. Suitable spring tension means are applied to the other end of the tapes thereby regulating the unwinding and rewinding of both the apron and tapes. To compensate for the discrepancy

of the diameter of the apron and tension tapes on the roll carrying the same, I fasten the ends of the tapes to a rocking frame or pivoted member controlled by the spring tension means aforesaid.

When the sheet is delivered with the printed side down, I find it advantageous to provide an auxiliary collapsible apron or other sheet support for supporting the turned sheet. The sheet may be fed either on top or below the said auxiliary apron, but in the present instance it is fed below the said apron. This auxiliary apron may be constructed with a spring roller, or in the same manner as the main apron, and is shown in the present instance as being constructed like the latter with tension tapes.

Other features of construction and combination of parts will appear as the specification proceeds.

In the drawings, I have embodied my invention in a suitable form, but changes may of course be made without departing from the spirit of my invention.

In the said drawings: Figure 1 is a general view showing my invention applied to a printing press. Fig. 2 is a plan view of Fig. 1. Fig. 3 is an enlarged detail view showing the reciprocating carriage, the gripper traveling with the same, and the gearing operating the several parts. Fig. 4 is a sectional view of the reciprocating carriage. Fig. 5 is a view similar to Fig. 4 with some of the parts omitted. Fig. 6 is a detail view looking in the direction of the arrow 6 in Fig. 2. Fig. 7 is a detail view looking in the direction of the arrow 7 in Fig. 2, with the rocking frame, to which the tension tapes are attached, removed. Fig. 8 is an enlarged view of the rotating gripper. Fig. 9 is a section on the line 9—9 of Fig. 8. Fig. 10 is a section on the line 10—10 of Fig. 8 showing a modified gage and also the means for opening the gripper. Fig. 11 is a section on the line 11—11 of Fig. 8.

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

1 indicates the impression cylinder of a printing machine, and 2 the delivery mechanism for the same. Interposed between the said impression cylinder and the delivery mechanism are the tapes 3, forming a sheet path, or other means for conveying the sheet.

The delivery mechanism comprises essen-

tially a reciprocating carriage 4 and a rotating sheet turning gripping mechanism 5 moving with the reciprocating carriage.

Motion is imparted to the reciprocating carriage in any usual way, but the said carriage is preferably constructed as follows: The carriage 4 runs on hangers 6 traveling on suitable rails 7. Fixed on the framework are two stationary racks with which engage the gears 8, of the carriage 4, moving with the pinion 9 to which latter motion is imparted by the sliding racks 10 meshing with the gears 11, receiving their motion from the pinion 12 operated by the rack 13. The rack 13 is attached to the disk 14, receiving its motion through gears 15, 16, 17, 18, 19, and 20, the parts being so arranged that the reciprocating carriage makes one complete back and forth movement to every two revolutions of the impression cylinder. In other styles of machines, it will have one complete movement to each sheet printed, or if a collecting cylinder is used, one to every pack of sheets delivered.

The rotating sheet turning gripping mechanism 5 is provided with gears 21 meshing with the gears 8 on the reciprocating carriage by means of which the said gripping mechanism is rotated continuously as the carriage travels back and forth. As the gripping mechanism is rotated continuously, it makes more than one revolution during the delivery of the sheet. Suitable mechanism is provided for opening the gripping mechanism during one of its revolutions—viz. usually the first revolution—taking the form of two cams 22 and 23 traveling with the reciprocating carriage, they being pivoted loosely on the shaft 24 of the said carriage. These cams engage alternately with the roller 25 on the lever 26 attached to the gripper shaft 27, carrying the grippers proper 28, to open the said grippers at the predetermined periods above stated. This is effected by operating the said cams from the actuating cam 29 stationary on the framework, by means of the roller traveling in the cam groove 30. This cam groove is so shaped at the feeding point of the sheet, as shown in Fig. 4, that the cams 22 and 23 are actuated only during one revolution of the gripping mechanism—usually its first revolution. During the remainder of the revolutions of the gripping mechanism, the cam groove is straight and the cams 22 and 23 not effective, and the grippers remain closed. The spring 31 keeps the grippers normally closed. The actuating cam 29 is adjustable on the framework by means of the bolts 32 and grooves 33 so as to open the grippers at variably predetermined periods, and to cause the grippers to nip the sheet at the most convenient point. The grippers are opened to release the sheet after making substantially one-half a revolution after seizing the same

so as to properly turn the leading edge of the said sheet.

Mounted on the shaft 24 are friction rolls 34 adapted to rest upon the rotating sheet turning gripping mechanism. To this end the said rotating sheet turning gripping mechanism—which is in the form of a cylinder—is provided with a cut-out portion 35 at the point where the grippers proper are located, in which can be placed the loose pieces 36 preferably mounted on the gripper shaft 27 and adjustable lengthwise on the same so as to accommodate various sizes of sheets. A number of holes as 37 are provided in which the loose pieces are fastened by means of screws 38. The friction rolls 34 are likewise adjustable on the shaft 24 so that the said friction rolls will bear on the said loose pieces.

The gripping mechanism is preferably provided with a gage as 39 against which the sheet strikes and bearing against the pin 40 carried by the two ears 41 on the gripper shaft and normally closed by means of the spring 42 attached to the lower end of the gage and to one of the ears 41. As the grippers open, the gripper shaft turns and the pin 40 raises the gage.

In Fig. 10 I have shown a modification in which the gage 43 is carried on the grippers proper and raises and lowers with them.

Mounted on the reciprocating carriage is a rotatable roller 44. On this roller is wound a sufficient amount of apron 45 to reach from one end of the carriage to the other. This apron is fixed at one end to the member 46 and is adapted to be unwound as the carriage travels forward, to support the sheet. This rotatable roller 44 is generally constructed like the well known Hartshorn shade roller so as to rewind the apron tightly on the return stroke. I could use this construction, but prefer to wind on the said roller the tension tapes 47 on either side of the apron, the said tension tapes being fixed at the other end of the machine and wound on the roller, in a manner opposite to that of the apron. The free end of the said tension tapes is attached to the rocking frame 48 pivoted on the standard 49 and controlled by the spring 50. The effect of this is that when the apron unwinds, the tapes rewind under tension from the spring 50 and vice versa. The rocking frame has the effect of allowing a slight play so as to compensate for the difference in diameter of the apron and tapes on the roller 44, and the consequent difference in speed of winding and unwinding.

When the sheet is delivered with the printed side down, I find it advantageous to employ an auxiliary collapsible apron 51 below the reciprocating carriage and rotating sheet turning gripper. This apron is wound on the auxiliary roller 52 traveling with the reciprocating carriage, and is fixed with its

free end on the member 53. The function of this auxiliary apron will appear later. This auxiliary apron could be constructed with the Hartshorn shade roller, but is preferably provided with tension tapes 54 in the same manner as the main apron.

The operation of the machine when the sheet is to be delivered with the printed side down will now be described. The sheet is conveyed from the impression cylinder by means of the sheet path 3 and is guided into the bite of the rotating sheet turning gripping mechanism by means of the guides 55 and 56. The gripping mechanism then closes and as it rotates will turn the leading edge of the sheet, when it will open again and the body of the sheet will be fed out between the said gripping mechanism which is in the form of a cylinder and the friction rolls 34 and drop with its printed side down on the board. All this takes place during the forward stroke of the carriage. If the auxiliary sheet support is used the sheet will be fed thereto with its printed side down during the forward stroke of the carriage. In the present instance it is delivered below the said auxiliary apron and has a tendency to hug the underside of the said apron and will not drop immediately on the receiving board. As the carriage returns and the auxiliary apron is rewound, the sheet falls printed side down on the said board 57. Suitable joggers may be employed on the said board to even up the sheets in the usual way. Preferably I mount a stop 98 adjustably on the framework and adjacent to, and just touching, the underside of the collapsible auxiliary apron to prevent the sheet from going too far. A stop or jogger 99 limits the movement of the sheet in the other direction. It is preferable that the carriage should have commenced its forward stroke when the sheet moves into the bite of the gripping mechanism so as not to cause it to strike too hard against the gage 39.

When it is desired to deliver the sheet with the printed side up, the rotating sheet turning gripping mechanism is removed or otherwise rendered inactive. But in place thereof I provide the reciprocating carriage with the usual means for delivering the sheet with the printed side up. In the present instance these means take the form of opposed grippers 58 and 59. The upper gripper 58 is pivoted at 60 and is provided with an arm 61 adapted to contact with the stops 62 and 63, one at either end of the delivery mechanism. These stops serve to open and close the gripper 58 in the usual way so as to clamp the sheet between itself and the opposed gripper 59. Adjacent to the gripper 59 is a gage 64. The gripper 59 is pivoted at 65 and carries an arm 66 having a roller 67 adapted to come in contact with the stationary cam 68 which has the effect of mov-

ing the said gripper 59 down so as to allow the sheet to strike against the gage. When the carriage moves forward, the gripper moves upward and nips the sheet. The sheet is then carried forward by the said grippers and supported on the main apron. As the carriage moves back and the apron is withdrawn, the sheet falls on the delivery board.

When the sheet is delivered with the printed side down, the cam 68 is removed as are also the stops 62 and 63, or the grippers 58 and 59 otherwise rendered inoperative.

The function of the auxiliary apron is peculiar. When the sheet is fed out between the rotating gripper and adjacent friction roll, it has a tendency to cling or adhere to the underside of the apron as it unwinds, and in that way it delivers the sheet much straighter and evenner on the receiving board.

What I claim is:

1. In a printing or other machine, the combination of a reciprocating carriage, a rotatable cylinder traveling with the said reciprocating carriage, means for continuously rotating the said cylinder during the forward stroke of the carriage, grippers carried by the cylinder, means for actuating the said grippers to seize and release the sheet, so as to reverse the leading edge thereof, during one revolution of the cylinder, and means for feeding the body of the sheet out during the forward stroke of the carriage so as to cause it to drop with its printed side downward.

2. In a printing or other machine, the combination of a reciprocating carriage, a rotatable cylinder traveling with the said reciprocating carriage, means for continuously rotating the said cylinder during the forward stroke of the carriage, grippers carried by the cylinder means for actuating the said grippers to seize and release the sheet so as to reverse the leading edge thereof, during a variably predetermined revolution of the cylinder, and means for feeding the body of the sheet out during the forward stroke of the carriage so as to cause it to drop with its printed side downward.

3. In a printing or other machine, the combination of a reciprocating carriage, a rotatable cylinder traveling with the said reciprocating carriage, means for continuously rotating the said cylinder during the forward stroke of the carriage, grippers carried by the cylinder, means for actuating the said grippers to seize and release the sheet, so as to reverse the leading edge thereof, during the first revolution of the cylinder, and means for feeding the body out during the forward stroke of the carriage so as to cause it to drop with its printed side downward.

4. In a printing or other machine, the combination of a reciprocating carriage, a rotatable cylinder traveling with the said reciprocating carriage, means for continu-

ously rotating the said cylinder during the forward stroke of the carriage, grippers carried by the cylinder, means for actuating the said grippers to seize and release the sheet  
 5 so as to reverse the leading edges thereof, during one revolution of the cylinder, and friction rolls bearing against the cylinder to feed out the body of the sheet during the forward stroke of the carriage so as to cause  
 10 it to drop with its printed side downward.

5. In a printing or other machine, the combination of a reciprocating carriage, a rotatable cylinder traveling with the said reciprocating carriage, means for continu-  
 15 ously rotating the said cylinder during the forward stroke of the carriage, grippers carried by the cylinder, means for actuating the said grippers to seize and release the sheet so as to reverse the leading edge thereof,  
 20 during a variably predetermined revolution of the cylinder, and friction rolls bearing against the cylinder to feed out the body of the sheet during the forward stroke of the carriage so as to cause it to drop with its  
 25 printed side downward.

6. In a printing or other machine, the combination of a reciprocating carriage, a rotatable cylinder traveling with the said reciprocating carriage, means for continu-  
 30 ously rotating the said cylinder during the forward stroke of the carriage, grippers carried by the cylinder, means for actuating the said grippers to seize and release the sheet so as to reverse the leading edge thereof, during  
 35 the first revolution of the cylinder, and friction rolls bearing against the cylinder to feed out the body of the sheet during the forward stroke of the carriage so as to cause it to drop with its printed side downward.

40 7. In a printing or other machine, a reciprocating carriage adapted to deliver the sheet with the printed side up, on the return stroke of the carriage, and means, adapted to be rendered inoperative, for delivering the sheet  
 45 with the printed side down on the forward stroke of the carriage, comprising a rotatable cylinder traveling with the said reciprocating carriage, means for continuously rotating the said cylinder during the forward stroke of the  
 50 carriage, grippers carried by the cylinder, means for actuating the said grippers to seize and release the sheet, so as to reverse the leading edge thereof, during one revolution of the cylinder, and means for feeding the  
 55 body of the sheet out so as to cause it to drop with its printed side downward.

8. In a printing or other machine, a reciprocating carriage adapted to deliver the sheet with the printed side up, on the return stroke  
 60 of the carriage, and means adapted to be rendered inoperative, for delivering the sheet with the printed side down on the forward stroke of the carriage, comprising a rotatable cylinder traveling with the said reciprocating  
 65 carriage, means for continuously rotating the

said cylinder during the forward stroke of the carriage, grippers carried by the cylinder, means for actuating the said grippers to seize and release the sheet, so as to reverse the leading edge thereof, during a variable prede-  
 70 termined revolution of the cylinder, and means for feeding the body of the sheet out so as to cause it to drop with its printed side downward.

9. In a printing or other machine, a recip-  
 75 rocating carriage, adapted to deliver the sheet with the printed side up, on the return stroke of the carriage, and means, adapted to be rendered inoperative, for delivering the sheet with the printed side down on the for-  
 80 ward stroke of the carriage, comprising a rotatable cylinder traveling with the said reciprocating carriage, means for continuously rotating the said cylinder during the forward stroke of the carriage, grippers carried by the  
 85 cylinder, means for actuating the said grippers to seize and release the sheet so as to reverse the leading edge thereof, during the first revolution of the cylinder, and means for feeding the body of the sheet out so as to  
 90 cause it to drop with its printed side downward.

10. In a printing or other machine, a reciprocating carriage, adapted to deliver the sheet with the printed side up, on the return  
 95 stroke of the carriage, and means adapted to be rendered inoperative, for delivering the sheet with the printed side down on the forward stroke of the carriage, comprising a rotatable cylinder traveling with the said recip-  
 100 rocating carriage, means for continuously rotating the said cylinder during the forward stroke of the carriage, grippers carried by the cylinder, means for actuating the said grippers to seize and release the sheet so as to re-  
 105 verse the leading edge thereof, during one revolution of the cylinder, and friction rolls bearing against the cylinder to feed out the body of the sheet, so as to cause it to drop with its printed side downward.  
 110

11. In a printing or other machine, a reciprocating carriage, adapted to deliver the sheet with the printed side up on the return  
 115 stroke of the carriage, and means, adapted to be rendered inoperative, for delivering the sheet with the printed side down on the forward stroke of the carriage, comprising a rotatable cylinder traveling with the said reciprocating carriage, means for continuously ro-  
 120 tating the said cylinder during the forward stroke of the carriage, grippers carried by the cylinder, means for actuating the said grippers to seize and release the sheet, so as to reverse the leading edge thereof, during a vari-  
 125 ably predetermined revolution of the cylinder, and friction rolls bearing against the cylinder to feed out the body of the sheet so as to cause it to drop with its printed side downward.

12. In a printing or other machine, a re- 130

reciprocating carriage adapted to deliver the sheet with the printed side up, on the return stroke of the carriage, and means adapted to be rendered inoperative, for delivering the  
 5 sheet with the printed side down on the forward stroke of the carriage, comprising a rotatable cylinder traveling with the said reciprocating carriage, means for continuously rotating the said cylinder during the forward  
 10 stroke of the carriage, grippers carried by the cylinder, means for actuating the said grippers to seize and release the sheet, so as to reverse the leading edge thereof, during the first revolution of the cylinder, and friction rolls bearing against the cylinder to feed  
 15 out the body of the sheet so as to cause it to drop with its printed side downward.

13. In a printing or other machine, the combination of a reciprocating carriage, two  
 20 sets of grippers carried by the same, one set to seize and turn the leading edge of the sheet so as to deliver it with the printed side down, and the other to seize the leading edge of the sheet and deliver it with the printed side up.

25 14. In a printing or other machine, the combination of a cylinder having a cut out portion, a gripper shaft located in said cylinder, grippers located on the said shaft and extending through the said cut out portion, a  
 30 loose piece sliding on the gripper shaft adapted to form a bridge over the cut out portion and to be adjustably secured at various points of the cylinder.

35 15. In a printing or other machine, the combination of a cylinder having a cut out portion, a gripper shaft located in said cylinder, grippers located on the said shaft and extending through the said cut out portion, a  
 40 loose piece sliding on the gripper shaft adapted to form a bridge over the cut out portion and to be adjustably secured at various points of the cylinder, and a friction roll adjacent to the said cylinder adapted to be adjusted into alinement with the loose piece  
 45 aforesaid.

16. In a printing or other machine, the combination of a cylinder having a cut out portion, a loose piece sliding in the said cylinder adapted to form a bridge over the cut  
 50 out portion and to be adjustably secured at various points of the cylinder, and a friction roll adjacent to the said cylinder adapted to be adjusted into alinement with the loose piece aforesaid.

55 17. In a printing or other machine, the combination of a reciprocating carriage, a rotatable cylinder having grippers for turning the sheet moving with the said carriage, and two cams moving with the carriage for opening the grippers at two points during one  
 60 revolution of the said cylinder.

18. In a printing or other machine, the combination of a reciprocating carriage, a rotatable cylinder having grippers moving with  
 65 the said carriage, two cams moving with the

carriage for opening the grippers at two points during one revolution of the said cylinder, a cam having a groove stationary on the framework, and means connected with the two cams on the reciprocating carriage  
 70 for engaging with the cam groove aforesaid.

19. In a printing or other machine, the combination of a reciprocating carriage, a rotatable cylinder having grippers moving with the said carriage, two cams moving with the  
 75 carriage for opening the grippers at two points during one revolution of the said cylinder, an adjustable cam having a groove stationary on the framework, and means connected with the two cams on the reciprocating carriage for engaging with the cam  
 80 groove aforesaid.

20. In a printing or other machine, the combination of a reciprocating carriage having a sheet support, an auxiliary sheet support movable with the said carriage, means  
 85 for turning the sheet and feeding it to the said auxiliary sheet support on the forward stroke of the carriage, the auxiliary sheet support delivering the sheet on the return  
 90 stroke of the carriage.

21. In a printing or other machine, the combination of a reciprocating carriage having a sheet support, an auxiliary sheet support movable with the said carriage, means  
 95 mounted on the said carriage for turning the sheet and feeding it to the auxiliary sheet support on the forward stroke of the carriage, the auxiliary sheet support delivering the sheet on the return stroke of the carriage.  
 100

22. In a printing or other machine, the combination of a reciprocating carriage having a sheet support, an auxiliary sheet support movable with the reciprocating carriage, a rotating sheet turning gripper mechanism moving with the said carriage for turning the sheet and feeding it to the auxiliary sheet support during the forward stroke of the carriage, the auxiliary sheet support delivering the sheet on the return  
 110 stroke of the carriage.

23. In a printing or other machine, the combination of a reciprocating carriage having a sheet support, an auxiliary sheet support movable with the said carriage, means  
 115 for turning the sheet and feeding it to the underside of the auxiliary sheet support on the forward stroke of the carriage, the auxiliary sheet support delivering the sheet on the return stroke of the carriage.  
 120

24. In a printing or other machine, the combination of a reciprocating carriage having a sheet support, an auxiliary sheet support movable with the said carriage, means  
 125 mounted on the said carriage for turning the sheet and feeding it to the underside of the auxiliary sheet support on the forward stroke of the carriage, the auxiliary sheet support delivering the sheet on the return stroke of the carriage.  
 130

25. In a printing or other machine, the combination of a reciprocating carriage having a sheet support, an auxiliary sheet support movable with the reciprocating carriage, a rotating sheet turning gripper mechanism moving with the said carriage for turning the sheet and feeding it to the underside of the auxiliary sheet support during the forward stroke of the carriage, the auxiliary sheet support delivering the sheet on the return stroke of the carriage.

26. In a printing or other machine, the combination of a reciprocating carriage having a sheet support, an auxiliary sheet support movable with the said carriage, means for turning the sheet and feeding it to the auxiliary sheet support on the forward stroke of the carriage, the auxiliary sheet support delivering the sheet on the return stroke of the carriage, and a stop located adjacent to the auxiliary sheet support against which the leading edge of the sheet strikes to limit the travel of the said sheet.

27. In a printing or other machine, the combination of a reciprocating carriage having a sheet support, an auxiliary sheet support movable with the reciprocating carriage, means mounted on the said carriage for turning the sheet and feeding it to the auxiliary sheet support during the forward stroke of the carriage, the auxiliary sheet support delivering the sheet on the return stroke of the carriage, and a stop located adjacent to the auxiliary sheet support against which the leading edge of the sheet strikes to limit the travel of the said sheet.

28. In a printing or other machine, the combination of a reciprocating carriage having a sheet support, an auxiliary sheet support movable with the reciprocating carriage, a rotating sheet turning gripper mechanism moving with the said carriage for turning the sheet and feeding it to the auxiliary sheet support during the forward stroke of the carriage, the auxiliary sheet support delivering the sheet on the return stroke of the carriage, and a stop adjacent to the auxiliary sheet support against which the leading edge of the sheet strikes to limit the travel of said sheet.

29. In a printing or other machine, the combination of a reciprocating carriage having a sheet support, an auxiliary sheet support movable with the said carriage, means for turning the sheet and feeding it to the underside of the auxiliary sheet support, during the forward stroke of the carriage, the auxiliary sheet support delivering the sheet on the return stroke of the carriage, and a stop located adjacent to the auxiliary sheet support against which the leading edge of the sheet strikes to limit the travel of the said sheet.

30. In a printing or other machine, the

combination of a reciprocating carriage having a sheet support, an auxiliary sheet support movable with the said carriage, means mounted on the said carriage for turning the sheet and feeding it to the underside of the auxiliary sheet support during the forward stroke of the carriage, the auxiliary sheet support delivering the sheet on the return stroke of the carriage and a stop located adjacent to the auxiliary sheet support against which the leading edge of the sheet strikes to limit the travel of the said sheet.

31. In a printing or other machine, the combination of a reciprocating carriage having a sheet support, an auxiliary sheet support movable with the reciprocating carriage, a rotating sheet turning gripper mechanism moving with the said carriage for turning the sheet and feeding it to the underside of the auxiliary sheet support during the forward stroke of the carriage, the auxiliary sheet support delivering the sheet on the return stroke of the carriage, and a stop located adjacent to the auxiliary sheet support against which the leading edge of the sheet strikes to limit the travel of the said sheet.

32. In a printing or other machine, a reciprocating carriage, a main apron and an auxiliary apron carried by the said carriage, means for turning the sheet and feeding it from the main apron to the auxiliary apron during the forward stroke of the carriage, the auxiliary apron delivering the sheet on the return stroke of the carriage.

33. In a printing or other machine, the combination of a reciprocating carriage, a collapsible apron adapted to be drawn out on the forward stroke of the carriage and to support the sheet as it is drawn out, an auxiliary collapsible apron adapted to be drawn out on the forward stroke of the said carriage, of means for turning the sheet and feeding it to the underside of the said auxiliary apron, and a stop located below the auxiliary apron against which the leading edge of the sheet strikes to limit the travel of the said sheet.

34. In a printing or other machine, the combination of a reciprocating carriage, a collapsible apron adapted to be drawn out on the forward stroke of the carriage and to support the sheet as it is drawn out, an auxiliary collapsible apron adapted to be drawn out on the forward stroke of the said carriage, of means mounted on the said carriage for turning the sheet and feeding it to the underside of the said auxiliary apron, and a stop located below the auxiliary apron against which the leading edge of the sheet strikes to limit the travel of the said sheet.

35. In a printing or other machine, the combination of a reciprocating carriage, a collapsible apron adapted to be drawn out on

the forward stroke of the carriage and to support the sheet as it is drawn out, an auxiliary collapsible apron adapted to be drawn out on the forward stroke of the said carriage, of  
5 a rotating sheet turning gripper moving with the said carriage for feeding the sheet to the underside of the said auxiliary apron, and a stop located below the auxiliary apron

against which the leading edge of the sheet strikes to limit the travel of the said sheet. 16  
Signed at New York this 25th day of May 1904.

WALTER SCOTT.

Witnesses:

RAYMOND C. SPAULDING,  
AXEL V. BEEKEN.