

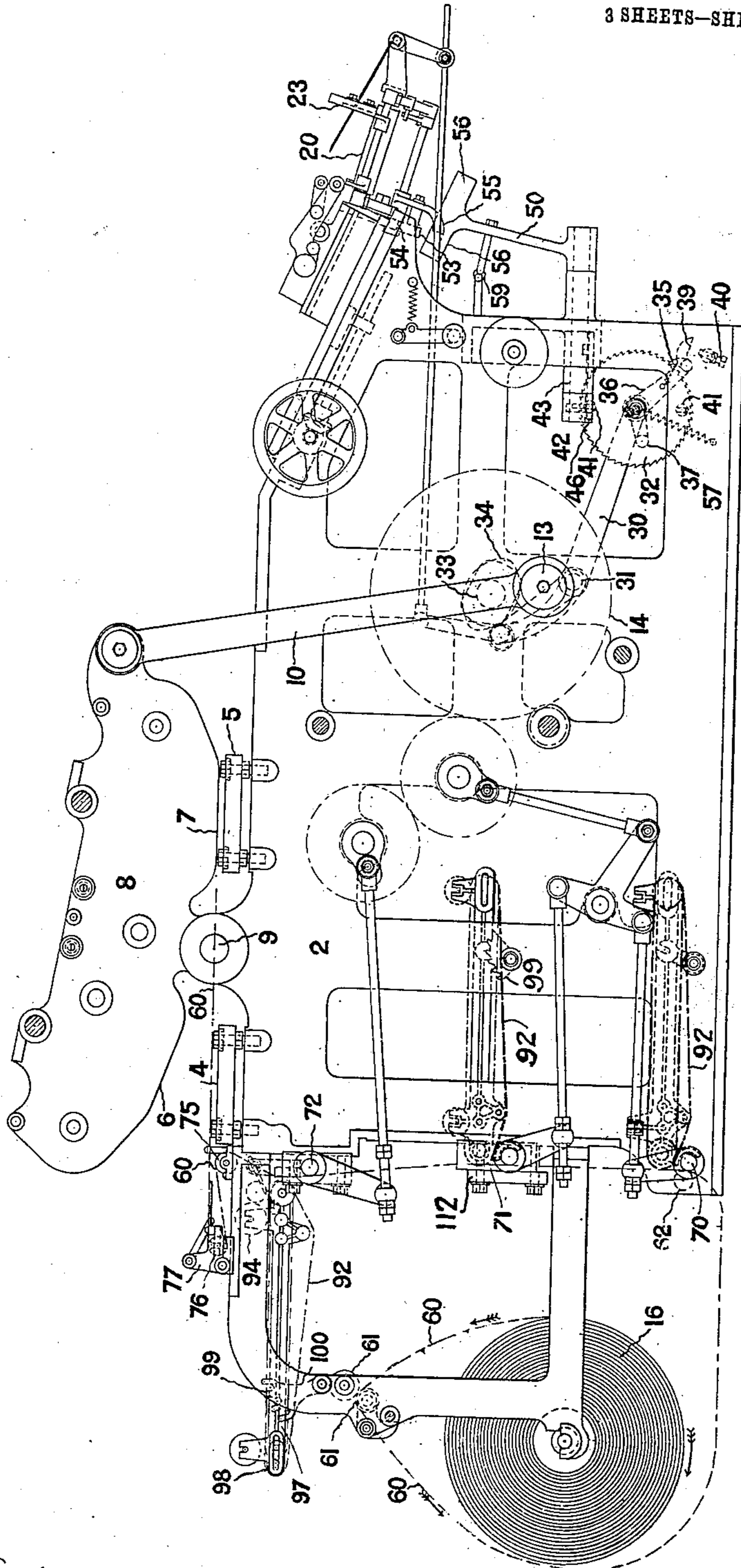
F. WAITE.
MACHINE FOR PRINTING SHOP COUNTER CHECK BOOKS AND THE LIKE.
APPLICATION FILED JUNE 28, 1904.

918,104.

Patented Apr. 13, 1909.

3 SHEETS—SHEET 1.

FIG. 1.



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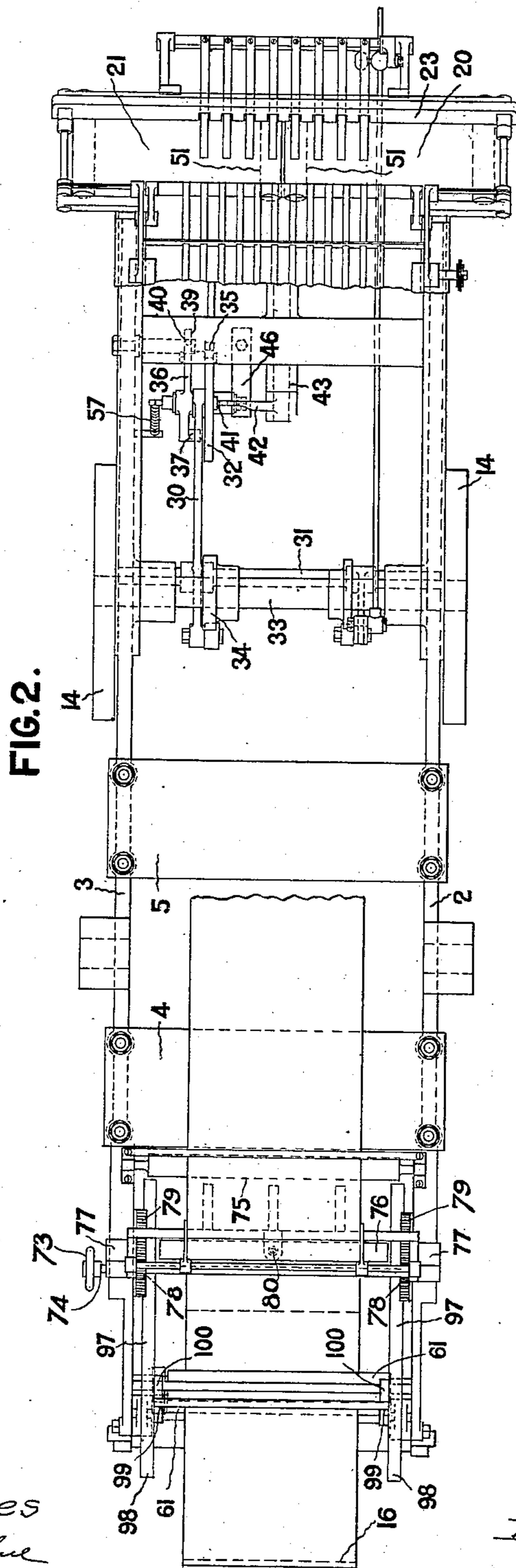
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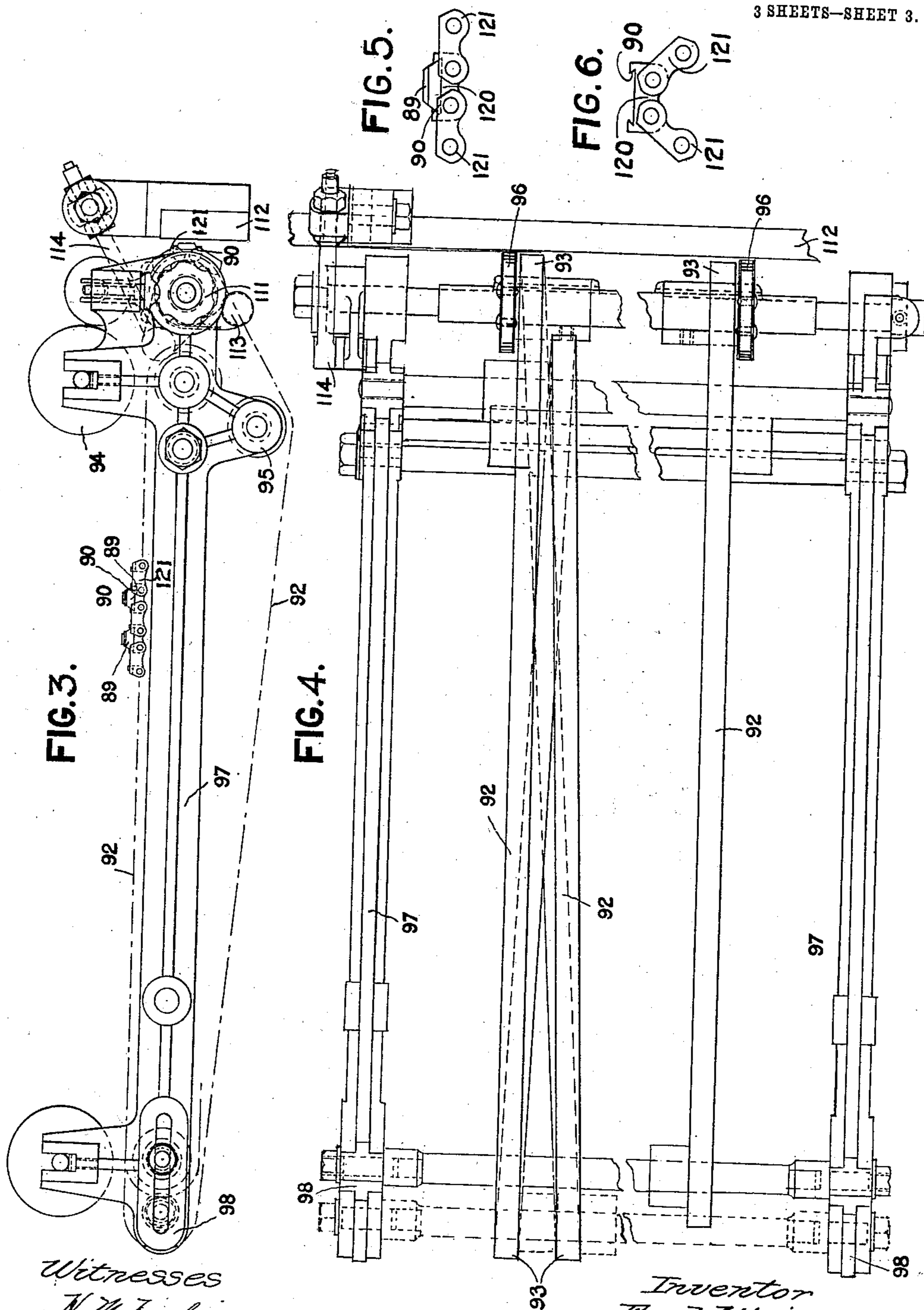
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

FRED WAITE, OF OTLEY, ENGLAND, ASSIGNOR TO JOHN J. PALMER, OF TORONTO, CANADA.

MACHINE FOR PRINTING SHOP-COUNTER CHECK-BOOKS AND THE LIKE.

No. 918,104.

Specification of Letters Patent.

Patented April 13, 1909.

Application filed June 28, 1904. Serial No. 214,526.

To all whom it may concern:

Be it known that I, FRED WAITE, a subject of the King of England, residing at The Lindens, Burras Lane, Otley, in the county of York, England, have invented certain new and useful Improvements in or Relating to Machines for Printing Shop-Counter Check-Books and the Like, of which the following is a specification.

This invention relates to machines and parts thereof for manufacturing from a web of paper such articles as shop-counter check books and the like. In these machines the paper is generally printed, numbered, perforated, folded and cut to size, and in the present machine the sheets are counted into piles and delivered from the machine ready for binding.

One object of the present invention is to provide improved means for numbering the sheets or for effecting the "paging", as this operation is generally termed in the art. In machines of this character, where several operations are performed, it is desirable to arrange the different mechanisms for performing the different functions in such a way that the machine as a whole will be as compact as possible. In some machines, the numbering or paging devices are set up with the type and, therefore, are comprised within the space allotted for the type; but in rapidly running machines this method of paging is unreliable. In the present case, the paging and printing are done separately and by different mechanisms, whereby it is important to arrange the paging mechanism in such a way as to avoid any lengthening of the machine. Moreover, in the case of shop counter check books and the like, the numbering is often required to be done on both sides of the web so that when the books are manufactured the numbering will occur in the proper places. For these purposes the paging mechanism is arranged to effect the paging while the web is in a vertical position, the printing being done while the paper is in a horizontal position. Moreover, by effecting the paging while the paper is in a vertical position, there is little blurring or smearing because the paper does not sag down upon the numbering type. Furthermore, in accordance with the invention, the improved means for effecting the paging comprises one or more frames carrying chains of type. These frames are arranged to reciprocate to impress the type upon the paper, and the

type is preferably removable from the chains. Means are also provided for bringing the paging and printing into register, all as will be explained hereinafter.

The invention will now be more fully described with reference to the accompanying drawings in which a practical and convenient embodiment of the invention is illustrated.

In the drawings, Figure 1 is a view in side elevation of a machine with the improvements applied thereto. Fig. 2 is a plan view of the machine. Figs. 3 and 4 are detail views at right angles to each other of one of the paging devices, Fig. 3 being a side elevation and Fig. 4 a broken plan. Figs. 5 and 6 are detail views of a portion of the paging chain in side elevation.

Describing first the general nature of the machine shown in the drawings so that the paging mechanism and its relation to the machine can be the more readily understood, it will suffice to refer briefly to the different mechanisms of the machine and their functions. The side frames 2 and 3 carry between them the two platens 4 and 5 which meet the type beds 6 and 7 on the carrier 8. The latter is vibrated on its rocking shaft 9 by a connecting rod 10 on each side connecting the carrier 8 to eccentric pins 13 in the two main spur wheels 14 provided one on each side of the machine. This double type bed arrangement is shown and described more fully in my Letters Patent No. 786,072, issued to me March 28, 1905.

The web of paper is fed from a roll 16 preferably located at the rear of the machine and takes the course indicated by the broken lines 60 and the arrows adjacent thereto. First it passes up and between the feed rollers 61, then loosely down by and underneath the roll of paper, under the guide 62, and up between the paging devices hereinafter to be described, over the guide roller 75 and the adjustable bar 76 and then over the platens 4 and 5. After passing the platens 4 and 5 it may be perforated if desired, the perforators however, being omitted from the present machine, whence it may pass on to the cutters and folders which have also been omitted from the present machine. Having passed the folders the several sheets are delivered in piles upon an endless belt 51, the operation of which is timed by counting mechanism (which it is not necessary to describe in this specification) so that, when a predetermined number of sheets have been delivered in a

pile one on top of the other against a fence 23, sufficient movement will be imparted to the belt, through the medium of the counting mechanism to move the completed pile of
 5 sheets toward the side of the machine to make way for the delivery of another pile of sheets thereon. In the present machine two belts 51 are shown and the web of paper is arranged to be divided longitudinally down
 10 the center so that two sets of books can be manufactured at the same time.

Referring now to the paging mechanism for this machine, reference may first be had to Figs. 3 and 4 in which one of the paging
 15 devices is illustrated apart from the machine. Each paging or numbering device comprises a frame 97 provided with one or more numbering chains 92 and, if desired, with numbering or printing wheels 96.
 20 Each chain may be mounted in the frame upon sprocket wheels 93 secured upon cross shafts in the frame, and may consist of one or more loops according to the length of chain required. In the present case a chain hav-
 25 ing one loop is illustrated together with a chain having two loops. In mounting the chain having two loops, it is obvious that two of the strands must cross each other and for this purpose a guide roller 95 is provided
 30 to prevent interference. The frame 97, as will presently be explained, is mounted to reciprocate and upon each reciprocation to bring one of the numbers on the chain against a platen or some fixed part of the ma-
 35 chine 112 (Fig. 3) between which and the frame the web of paper feeds (Fig. 1). For advancing the chain upon each movement of the frame, a ratchet wheel 111 may be se-
 40 cured to one of the shafts having a chain carrying sprocket, and this ratchet may be operated by a pawl 113 upon an arm 114 se-
 45 cured to a fixed part of the machine. In this way, upon each reciprocation of the frame 97, the chain will be advanced the proper distance.

In Figs. 5 and 6 a preferable form of type carrying chain is illustrated. This chain comprises type carrying links 120 and connecting links 121 alternating with the type
 50 carrying links. The type carrying links are preferably formed with undercut grooves 90 to receive type blocks 89 which are shaped to fit these grooves. When the connecting links and type carrying links are substan-
 55 tially in line, the connecting links project over the ends of the type blocks in the type carrying links so as to prevent their slipping out of or their removal from the type carrying links, but when the connecting links are
 60 tilted at a sufficient angle to the type carrying links, (Fig. 6), the type blocks may be removed from the type carrying links. In this way the type may be replaced in or removed from the chain as conditions require. It is
 65 preferable to employ rubber face type in

these machines as the printing is much clearer than with engraved metal face type, and because no make ready is required. This rubber type may be inked by a roller
 pad 94 as it passes beneath the same. 70

In the machine illustrated in the drawing, three paging frames are provided, as will be seen from Fig. 1. These frames may be sup-
 75 ported at one end in a pivoted sector bracket or brackets 99 provided with a number of different seats whereby said end may be ad-
 80 justed at different radial distances from the pivot of the bracket, thus facilitating the horizontal adjustment of the frames. The purpose of this horizontal adjustment of the
 85 frame is to bring the end of the frame, where the impression is effected, at the particular distance desired from the cooperating platen 112. As the numbering type becomes worn it is obvious that this distance may be re-
 90 quired to be varied. The other end of the frame is operatively connected with and supported on, as illustrated in Fig. 1, one arm of a bell crank lever mounted upon a rock shaft
 70, 71 or 72 as the case may be, which shafts
 95 are arranged to be operated at the proper times from the driving gear of the machine through suitable connections as illustrated. As the bell crank levers are rocked upon the rock shafts, the frames will be reciprocated. 95

It will be obvious that as many numbering mechanisms may be employed as are desired, three being illustrated in the present case to adapt the machine particularly for printing
 100 shop-counter check books where three sets of numbers are required. In addition to the numbers, the printing wheels 96 may be supplied with characters such as letters and the like or with series numbers, whereby letters
 105 or other characters may be printed in addition to the numbering.

It will be observed that the numbering operation in the present machine takes place first and directly as the web of paper is fed
 110 from the roll, and that the numbering is effected while the web is in a vertical position. After the web passes the numbering devices, it travels on, as has been described above, over the roll 75 and then back over a
 115 bar 76 before passing in a horizontal plane to be printed. This bar 76 is preferably pivoted at 80 in a horizontal adjustable slide 77. By thus pivoting the bar, the inequalities in the web of paper such as an unequal
 120 tension upon the two edges of the web can be taken up or compensated for. The slide 77 may be adjusted backward and forward by means of a hand wheel 73 upon a shaft 74 provided with pinions 78 engaging racks 79
 125 upon the frame of the machine. By adjusting this slide horizontally, the bar 76 is drawn backward or forward with respect to the platens 4 and 5 and thus the paging is readily made to register with the printed matter
 130 upon the web.

Various changes may be made in the construction and application of the present improvements without imparting from the spirit of the invention.

5 I claim as my invention:

1. In a printing press, in combination with means for printing, means for guiding a web of paper in a substantially vertical plane, and horizontally reciprocating numbering frames 10 on both sides of said web to number the paper on each side thereof as it is thus fed.

2. In a printing press, in combination with means for printing, means for guiding a web of paper in a substantially vertical plane, a 15 horizontally reciprocating numbering frame on each side of the web, and a platen on each side of the web to cooperate with the corresponding frame upon the other side of the web to number the paper on both sides there- 20 of as it is being thus guided.

3. In a printing press, the combination with means for printing the paper while in a substantially horizontal plane, of means for numbering the paper on both sides thereof 25 while in a substantially vertical plane, said numbering means including a horizontally reciprocating frame on each side of the paper, a chain of numbering devices upon each of said frames, and means to reciprocate said 30 frames to impress the type upon the paper.

4. In a press for printing books from a web of paper, the combination of means for printing the web and means for paging the web, said paging means including means to guide 35 the web in a substantially vertical plane, separate paging devices located on each side of the web as it is fed in the vertical plane, and means to reciprocate the paging devices to effect the paging.

40 5. The combination of type blocks and a carrying chain having type carrying links alternating with over-lapping connecting

links, the type blocks being held in the type carrying links by the over-lapping connecting links.

6. The combination of a type block and a chain having type carrying links and connecting links between the type carrying links, each type block being adapted to be slid into its type carrying link when the connecting 50 links are at a considerable angle thereto and to be held in said link by the connecting links when they are substantially in line therewith.

7. The combination of type blocks and a chain having type carrying links and connecting links between the type carrying links, said connecting links being pivoted upon the 55 sides of the type carrying links and adapted to hold the type blocks in the type carrying links and to permit the removal of the type 60 blocks from the type carrying links when they are tilted sufficiently with respect to the type carrying links.

8. In a printing press, the combination of a frame mounted to reciprocate, sprocket 65 wheels upon said frame, a sprocket chain carrying type at intervals thereon and looped and crossed from one sprocket wheel to another, and a platen against which the numbers are brought by the reciprocating frame in 70 order to impress the paper.

9. In a printing press, the combination of a frame mounted to reciprocate, a platen cooperating therewith, and a pivoted sector 75 provided with a plurality of seats for supporting the frame at one end for the purpose specified.

In witness whereof I have hereunto set my hand in presence of two witnesses.

FRED WAITE.

Witnesses:

CECIL A. S. BAXTER,
DAVID NOWELL.