

No. 740,533.

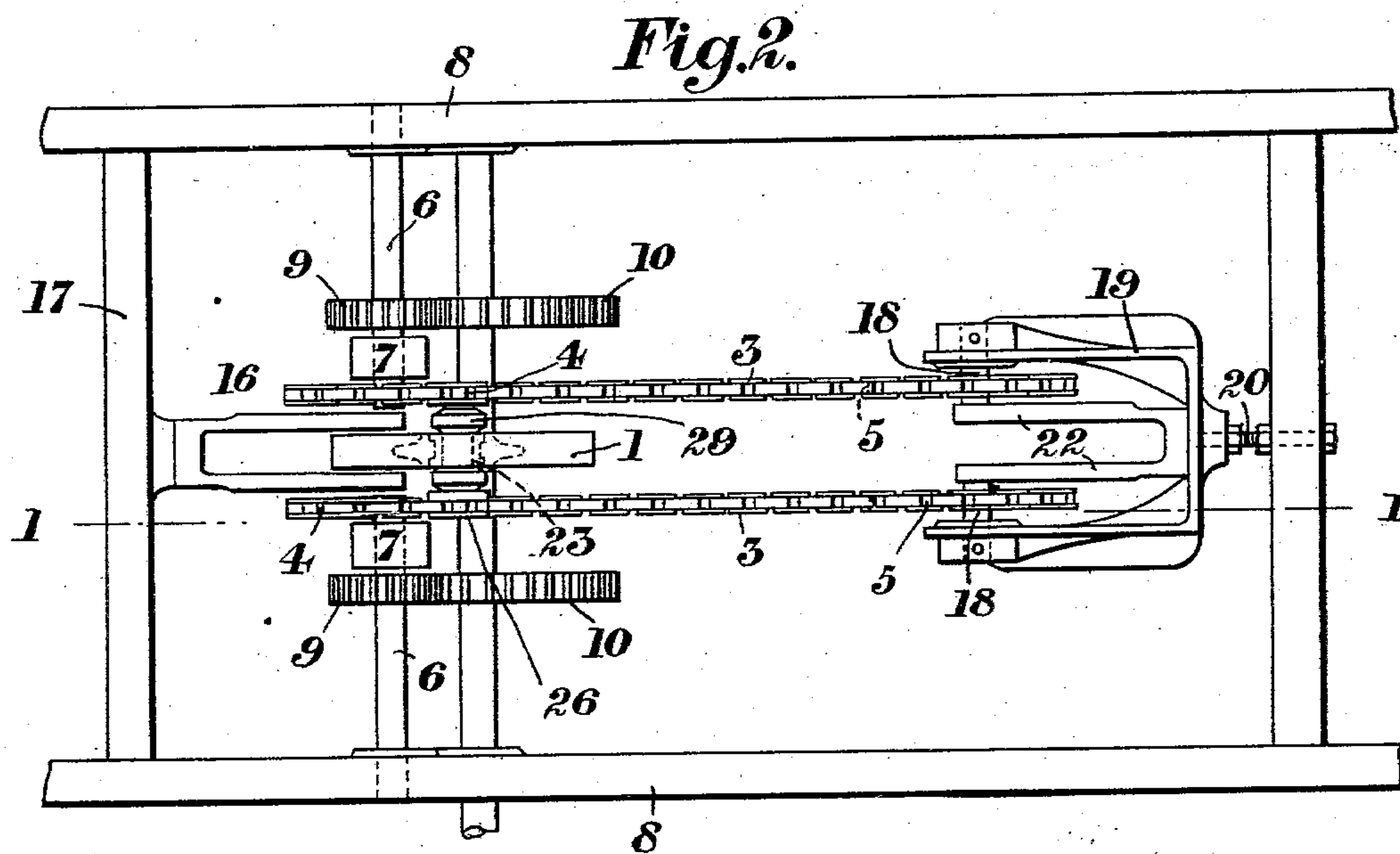
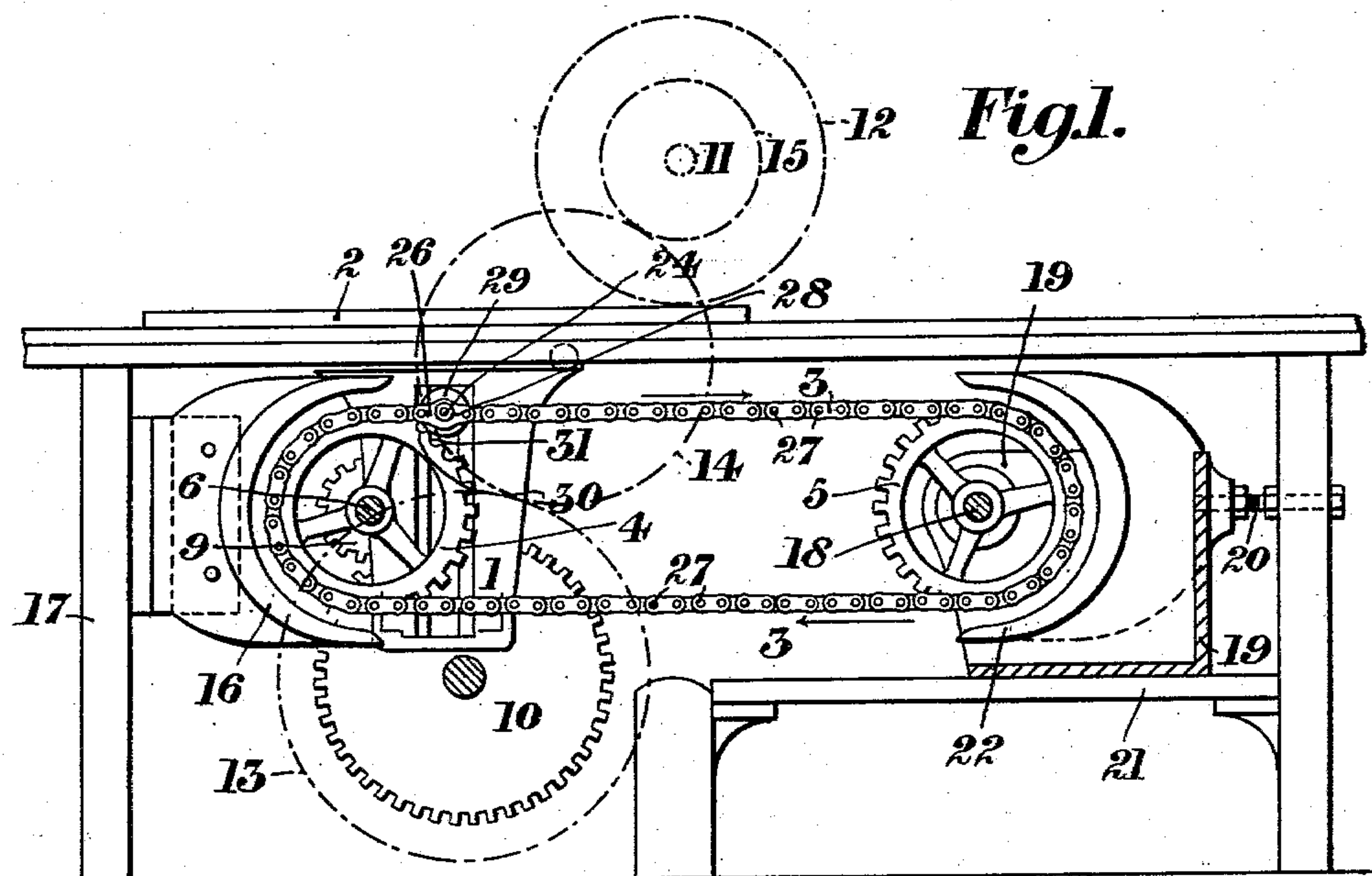
PATENTED OCT. 6, 1903.

E. T. CLEATHERO.
BED MOTION FOR PRINTING MACHINES.

APPLICATION FILED SEPT. 8, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses.
Horace Grellier
Rodolphe J. Cleary.

Inventor
Edward Thomas Cleathero
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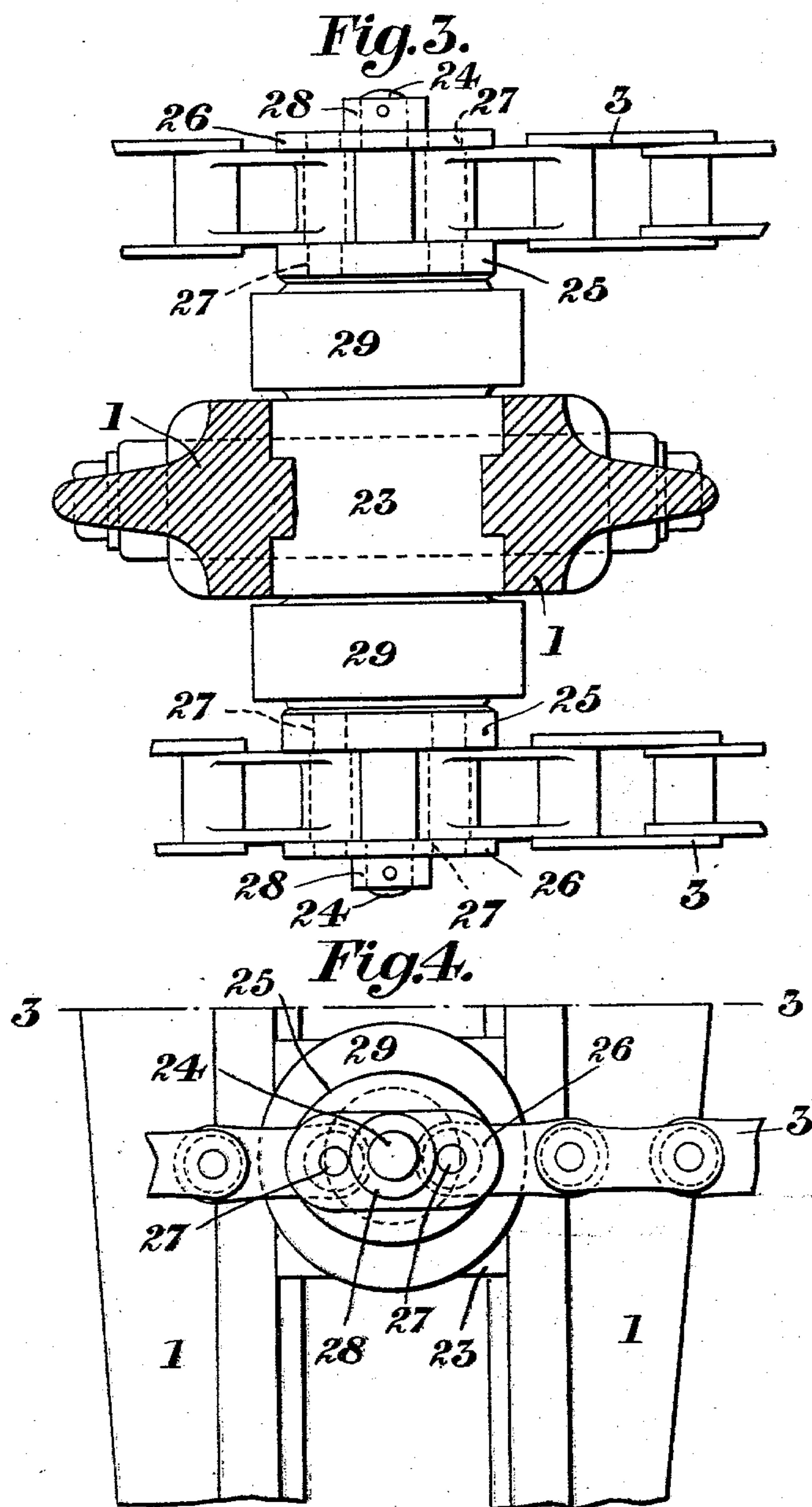
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

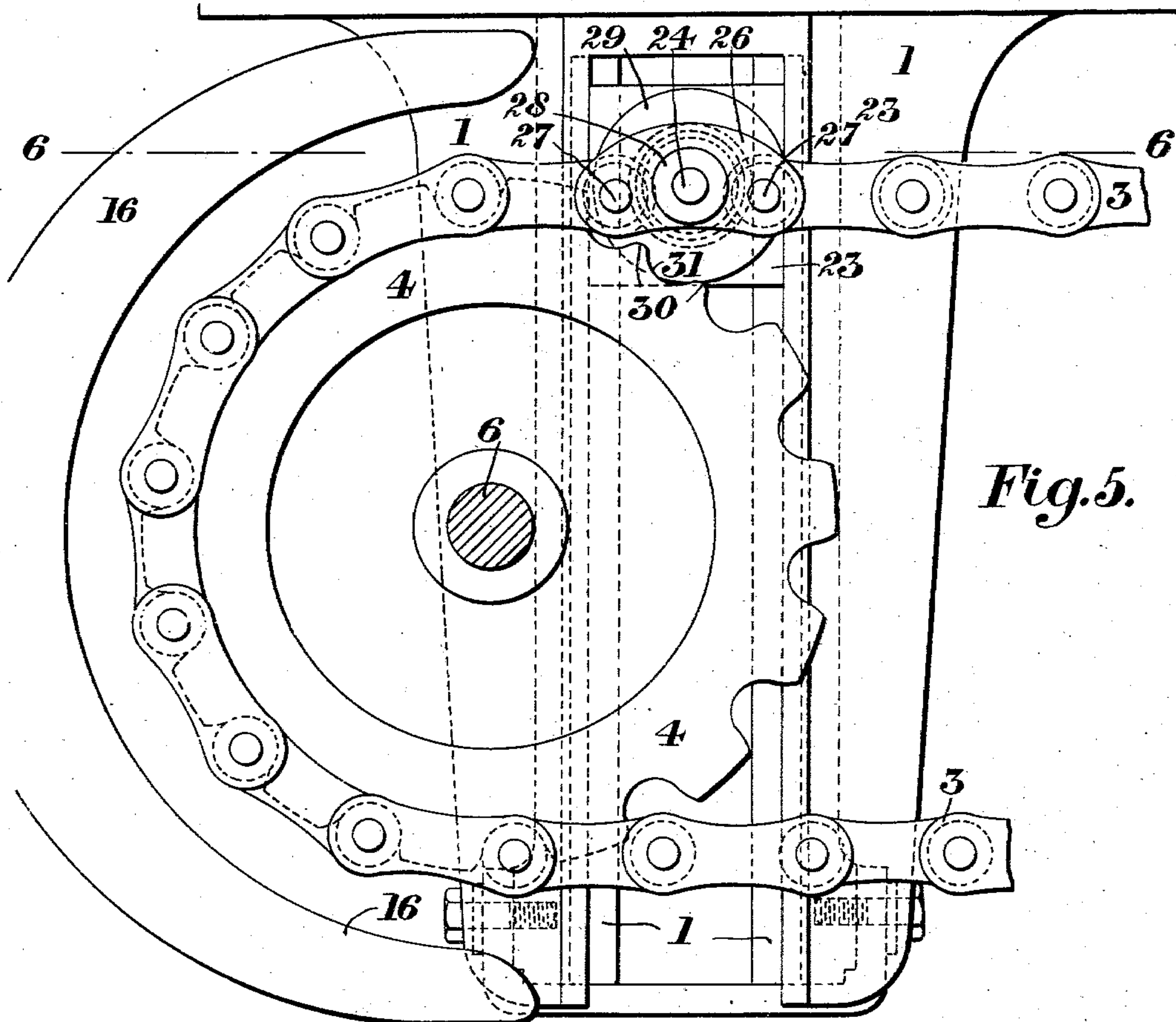


Fig. 5.

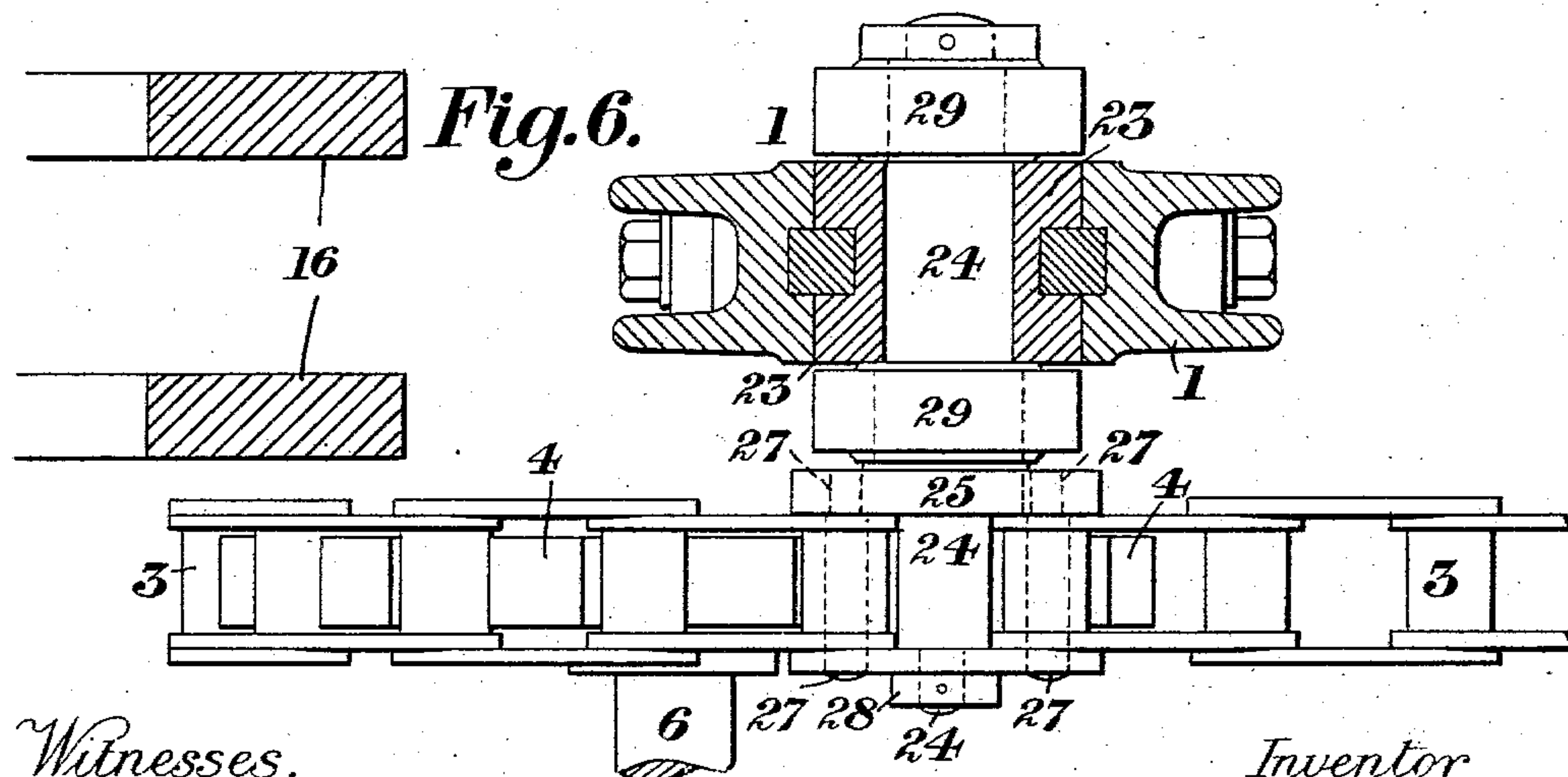


Fig. 6.

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UNITED STATES PATENT OFFICE.

EDWARD THOMAS CLEATHERO, OF ALTRINCHAM, ENGLAND.

BED-MOTION FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 740,533, dated October 6, 1903.

Application filed September 8, 1902. Serial No. 122,564. (No model.)

To all whom it may concern:

Be it known that I, EDWARD THOMAS CLEATHERO, of the Hollies, Barrington road, Altrincham, in the county of Chester, England, have invented certain new and useful Improvements in Bed-Motions for Printing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in the reciprocating bed-motions of printing and analogous machines. It has been invented with special reference to what are known as the "Century" and the "Miehle" printing-machines; but it is of course applicable to all machines, whether printing or not, which have reciprocating bed-motions.

The objects of the invention are to dispense with the usually-employed reciprocating frame, the two longitudinal racks, the spur-gear that engages with these racks alternately, and the means by which this alternate engagement is effected. Among its advantages are a considerable diminution in the weight of the mass to be reciprocated and a shortening of the length of the fixed frame of the machine.

Referring to the accompanying drawings, which are to be taken as part of this specification and read therewith, Figure 1 is a longitudinal vertical section on the line 1 1 of Fig. 2 of sufficient of a printing-machine to illustrate the application of my invention thereto, the said arrangement being one in which two sprocket-chains are employed for operating the reciprocating bed; Fig. 2, a plan of the apparatus shown in Fig. 1 with the top frame or table removed; Fig. 3, a sectional plan on line 3 3 of Fig. 4; and Fig. 4, a side elevation showing, on an enlarged scale, detached portions of the apparatus represented in Figs. 1 and 2; Fig. 5, a side elevation of a modification in which one sprocket-chain is employed for operating the reciprocating bed, and Fig. 6 a horizontal section substantially on the line 6 6 of Fig. 5.

Throughout the several figures of the drawings the same reference-numerals are used to indicate the same or corresponding parts.

In carrying out the present improvements

as shown in Figs. 1, 2, 3, and 4 a vertically-slotted guide-bracket 1 is made fast centrally to the reciprocating bed 2, Fig. 1, from which it depends and with which it travels as if in one piece therewith. Two endless chains 3 3 pass around sprocket-wheels 4 4 and 5 5, situated near the ends of the machine. The wheels 4 4 are each secured on one end of a short shaft 6, journaled in a bearing 7 and in the adjacent side frame 8, and each shaft 6 has secured thereon a spur-pinion 9, gearing with a wheel 10, which is rotated in any convenient manner.

In the accompanying drawings, wherein the improvements as an example are shown applied to a printing-machine, the wheels 10 are conveniently represented in Fig. 1 as geared to the shaft 11 of the impression-cylinder 12 by spur-wheels 13 14 15, all of which apparatus, forming no part of the present invention, is represented in dotted lines.

The two shafts 6 6 are coaxial and the common axis thereof is concentric with a semicircular guide 16, fixed to the adjacent end frame 17 of the machine, this guide in plan being of forked form, as shown in Fig. 2, and the inner or adjacent ends of the two shafts 6 6 terminating outside of the said fork.

The two wheels 5 5 are each mounted to rotate freely on a short shaft or stud 18, rigidly secured in a frame 19, adjustable by a set-screw 20 longitudinally of the machine on a stationary plate 21, Fig. 1. Within the frame 19 is rigidly secured a semicircular guide 22, similar to and in line with the above-described guide 16 and concentric with the common axis of the two coaxial shafts 18 18. To tighten or slacken the chains 3 3, the set-screw 20 is correspondingly adjusted and the frame 19 will be moved outward or inward, the studs 18 18 and guide 22 moving as if integral therewith, the relative positions of the said guide and the wheels 5 5 remaining undisturbed during this adjustment.

Vertically slidable within the before-described guide-bracket 1 is a block 23, Figs. 3 and 4, pivotally mounted on a rod 24, secured at its ends to the two chains 3 3, the rod 24 for this purpose being conveniently provided with flanges 25 25, which conjointly with plates 26 26 serve as chain-links and are inserted as such in the chains 3 3, the link-pins

27 27 and nuts or collars 28 28 on the ends of the rod 24 serving to secure the latter to the chains. Between the sliding block 23 and the flanges 25 25 are antifriction-rollers 29 29, adapted to engage with and travel over the semicircular guides 16 and 22.

As the rod 24 completely traverses the two chains 3 3, and therefore obstructs spaces of the said chains which would otherwise be available for teeth of the sprocket-wheels 4 4 and 5 5, one tooth 30 of each of the said wheels is formed with a recess or mutilation 31, adapted to accommodate the appropriate obstruction, and the number of links in each chain is a multiple of the number of teeth of the wheels 4 and 5, and these latter are at such distance apart from center to center as to insure that the blocked links shall always come into proper working relationship with the recessed or mutilated teeth 30.

Assuming that the before-described apparatus is in the position in which it is indicated in Fig. 1 and that the chains 3 3 are adapted to travel in the directions indicated by the arrows in that figure, the operation may be described as follows: When the machine is started, the chains 3 3 through the rod 24, block 23, and guide-bracket 1 (the block 23 then engaging the upper part of the said bracket) move the printing-bed 2 toward the right of Figs. 1 and 2 at uniform speed until the rod is vertically over the axis of the shafts 18 18, at which juncture the antifriction-rollers 29 29 act against the guide 22 and move down through it, carrying the sliding block 23 down to the bottom of the guide-bracket 1, thereby in succession gradually slowing down the rightward travel, reversing the travel, and gradually accelerating the leftward travel of the printing-bed. When the rollers 29 29 emerge from the lower part of the semicircular guide 22 and the block 23 is in engagement with the lower part of the guide-bracket 1, the said block moves the printing-bed toward the left of Figs. 1 and 2 at uniform speed until the rod 24 is vertically beneath the axis of the shafts 6 6, at which juncture the antifriction rollers 29 29 engage with the lower part of the semicircular guide 16 and move upward through the latter, carrying the sliding block 23 up to the top of the guide-bracket 1, thereby in succession gradually slowing down the leftward travel, reversing the travel, and gradually accelerating the rightward travel of the printing-bed.

When there is only one chain 3 employed for operating the printing-bed, and therefore only one sprocket-wheel at each end of the machine, as in the arrangement represented in part in Figs. 5 and 6, the chain 3 and sprocket-wheels 4 and 5 (only the former of which is shown in Figs. 5 and 6) are situated to one side of the center line of the machine,

the guides 16 and 22 (of which only the guide 16 is shown) and the guide-bracket 1 occupying the central position and the rod 24 projecting out to one side of the single chain 3 into the sliding block 23 and having an antifriction-roller 29 on either side of the guide-bracket in line with the semicircular guides 16 and 22.

The operation of the last-described modification is the same as that shown in Figs. 1, 2, 3, and 4.

Instead of the slotted guide-bracket 1, semicircular guides 16 and 22, and chain or chains 3 being arranged vertically, as indicated in the drawings, they may be all arranged horizontally.

If desired, suitable supports may be provided beneath the upper and lower parts of the chains 3 3 to prevent the latter from sagging.

It will be obvious that instead of chains being used as the means for operating the part, such as the bed 2, to be reciprocated flexible bands may be employed for the purpose, the word "chain" or "chains" hereinafter used in the claims being intended to include all such alternative devices.

I claim—

1. In apparatus for imparting reciprocating motion to printing-beds and other devices, the combination with the said device, of a slotted guide-bracket secured thereto, a rod engaging the slot of said bracket, a uniformly-traveling chain carrying the rod, two wheels over which the chain travels, one in each bight of the chain, a semicircular guide concentric with each of the wheels and adapted to engage the rod, an adjustable frame carrying one of the wheels and semicircular guides, and adjusting devices for the frame, substantially as set forth.

2. In apparatus for imparting reciprocating motion to printing-beds and other devices, the combination with the said device of a slotted guide-bracket secured thereto, a block slidable in the slot of the bracket, a rod on which the block is pivotally mounted, two uniformly-traveling chains each carrying one end of the rod, two pairs of wheels over which the chains travel, one wheel in each bight of the chains, antifriction-rollers on the rod, a semicircular guide concentric with each of the wheels and adapted to engage the rollers, an adjustable frame carrying one pair of the wheels and one of the semicircular guides, and adjusting devices for the frame, substantially as set forth.

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

EDWARD THOMAS CLEATHERO.

Witnesses:

ARTHUR GRIME,
G. E. BANNISTER.