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PATENTED OCT. 29, 1907.

A. R. GUSTAFSON.
BELT SHIFTING MECHANISM.

APPLICATION FILED NOV. 1, 1905. RENEWED MAY 21, 1907.

2 SHEETS—SHEET 1.

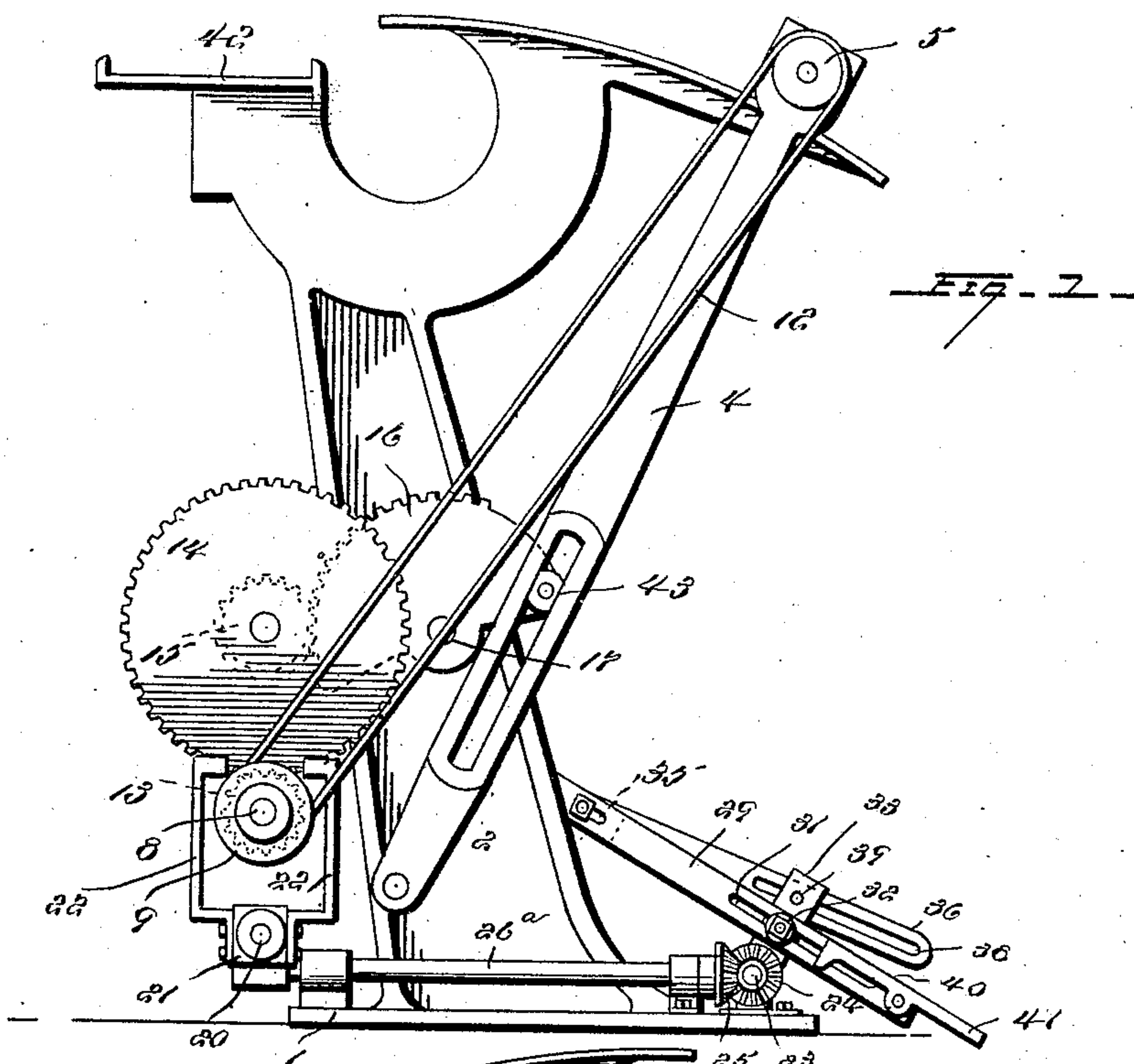


FIG. 1

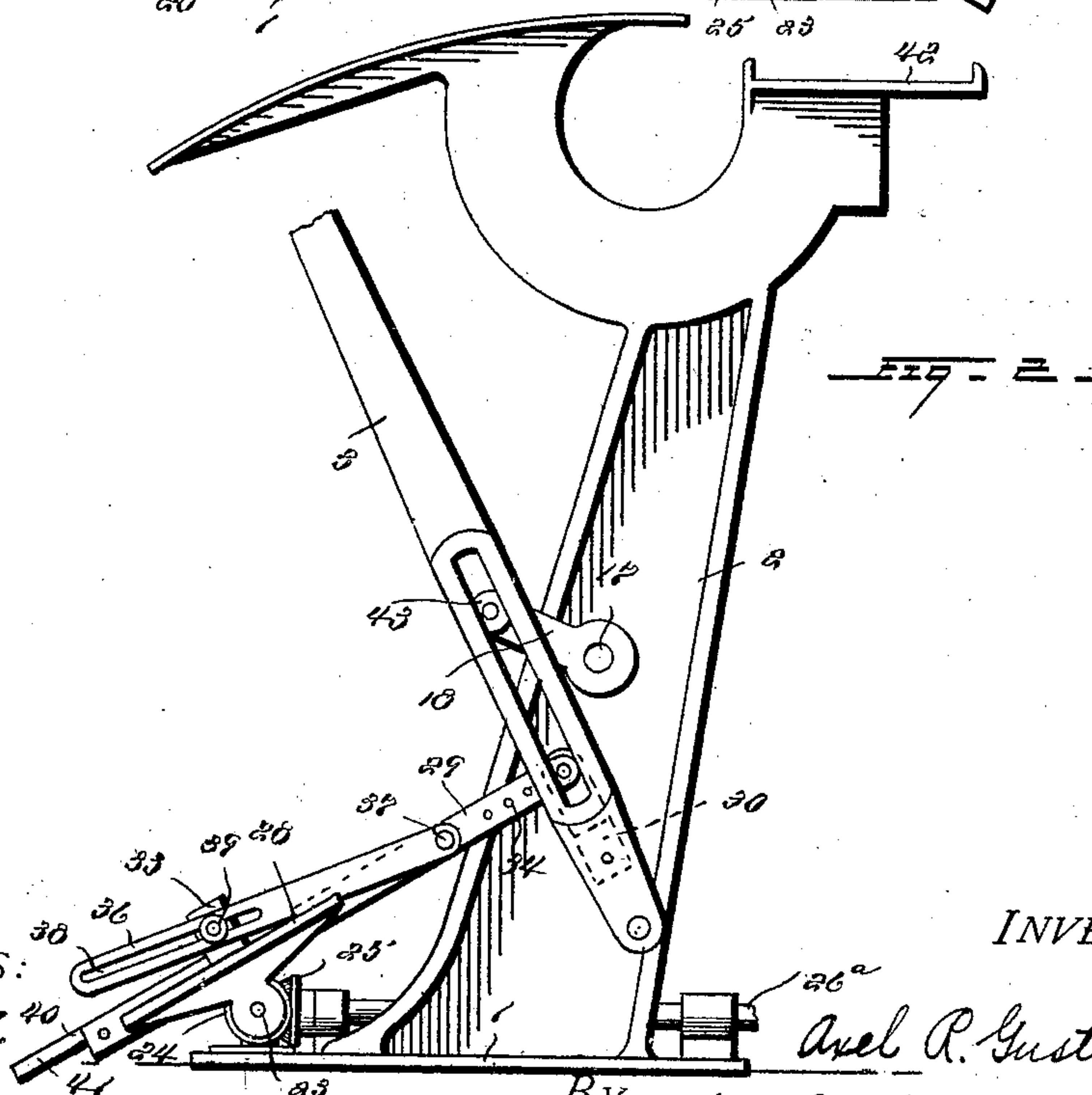


FIG. 2

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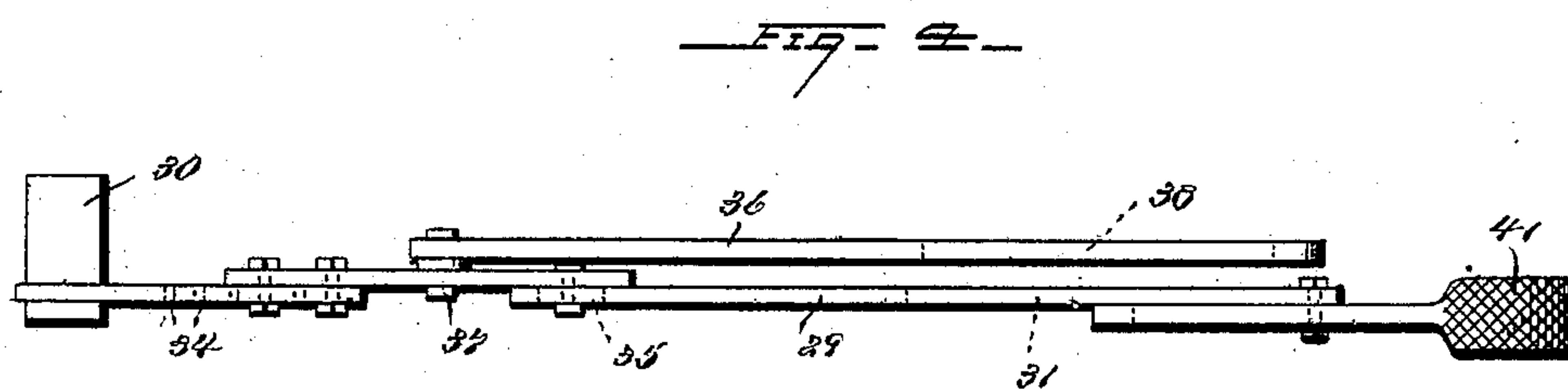
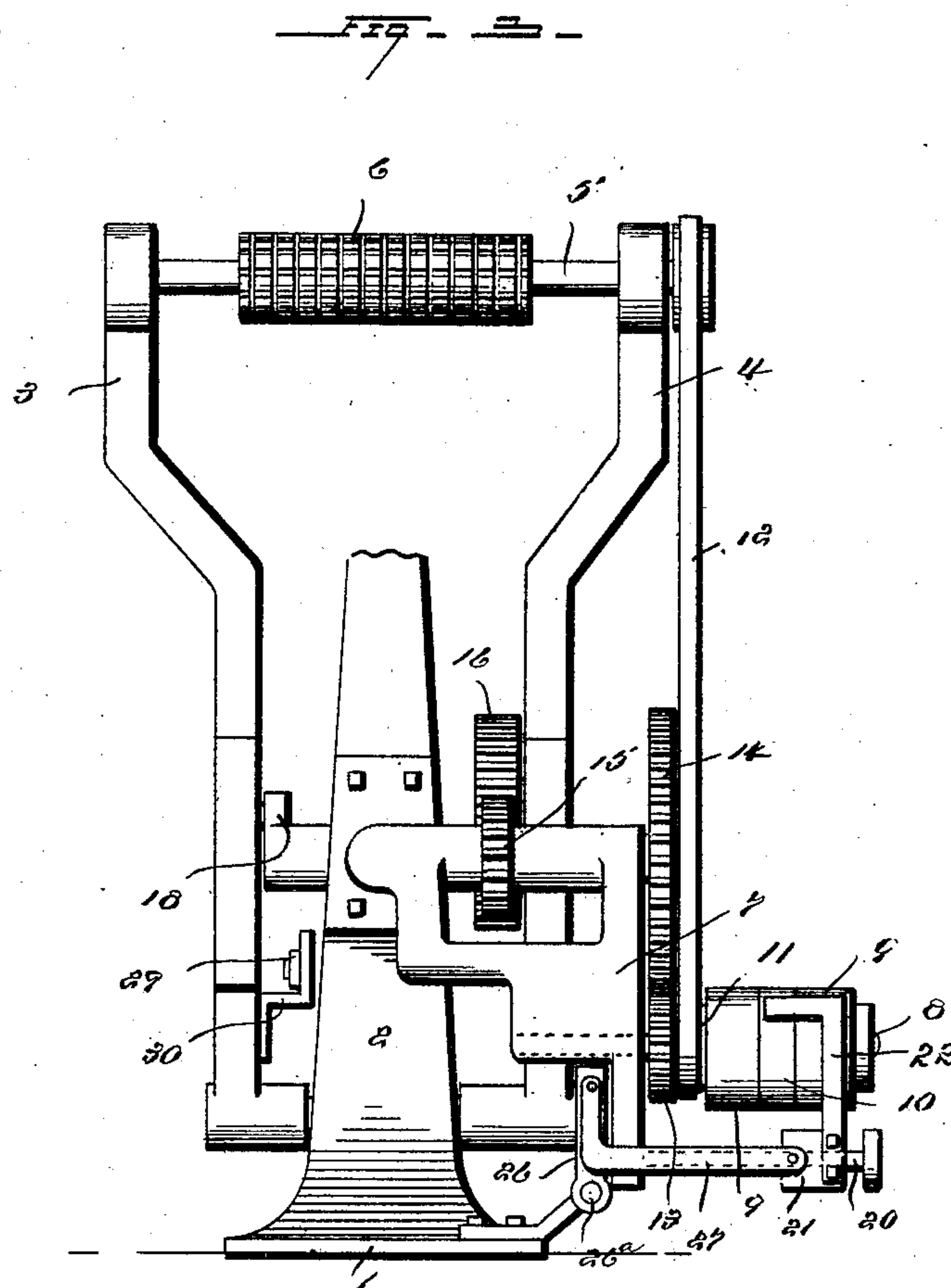
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UNITED STATES PATENT OFFICE.

AXEL R. GUSTAFSON, OF CHICAGO, ILLINOIS.

BELT-SHIFTING MECHANISM.

No. 869,239.

Specification of Letters Patent.

Patented Oct. 29, 1907.

Application filed November 1, 1905. Serial No. 285,426. Renewed May 21, 1907. Serial No. 374,923.

To all whom it may concern:

Be it known that I, AXEL R. GUSTAFSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Belt-Shifting Mechanism, of which the following is a specification.

This invention relates to belt shifters particularly adapted for use with laundry machinery and especially to apparatus for starching shirt bosoms, and its prime objects are to provide means for automatically controlling the reversing mechanism and to produce a slower and more uniform motion of the reciprocating arms which carry the starching roller. It will be noted that the automatic reverting mechanism does not interfere in the least with the control of the reverse by means of the foot acting upon the treadle in the usual way.

The crank disks which impart motion to the reciprocating arms have heretofore received motion directly from the driving shaft; in this improved form the driving shaft is lowered and an intermediate gear interposed, which has the result of slowing the motion, which is considered desirable, and at the same time producing a more uniform movement of the starching roller, for the reason that the crank arms or disks do not make a complete revolution but reciprocate in unison with the movement of the reciprocating arms.

In the accompanying drawings, Figure 1 is a side elevation of a bosom starching machine with the said improvements applied thereto. Fig. 2 is a fragmentary side elevation viewed from the opposite side. Fig. 3 is a rear elevation, and Fig. 4 is a plan view of the attachment for automatically controlling the reversing mechanism.

Referring to the drawings, 1 is the base of the machine, 2 the frame and 3, 4, the reciprocating or swing arms pivoted at their lower ends to the frame and in the upper ends of which a shaft 5, carrying a starching roller 6, is journaled. A bracket 7 secured to the rear of the frame carries a shaft 8 on which are mounted two loose pulleys 9 and a fixed driving pulley 10 and a smaller pulley 11 which drives the roller 6 by means of a belt 12. The pulleys 9 and 10 receive the usual straight and crossed belts which are shifted to reverse the shaft. Motion is imparted from the driving shaft 8 to the arms 3, 4, by means of gears 13, 14, 15, 16. The said gear 16 is segmental and is mounted on one end of a shaft 17 which passes through and is journaled in the frame 2 and has on its opposite ends crank arms 18. The gear and crank arms have crank pins and blocks 43 which work in slots in the arms 4 and 3 respectively.

The bracket 7 carries a rod 20 on which is slidably mounted a block 21, which carries a belt-shifting device 22. Motion is imparted to said block and shifting device by means of a rock shaft 23, gears 24, 25, arm 26

on rock shaft 26^a, and links 27. Said rock shaft 23 is provided with a treadle 28 which is operated in the usual way by the foot. A link 29 is pivotally attached to the arm 3 by means of a bracket 30, the other end having a slot 31 in which a pin 32, in a rock arm 33, travels. Said link has coarse adjustment in holes 34 and a fine adjustment by means of a slot and bolt 35. The upper end of bracket 30 is slotted to allow of vertical adjustment. An auxiliary link 36 is pivoted to link 29 by a bolt 37 and has a slot 38 for a pin 39 on said arm 33. The lower end of the link 29 has a dog 40 pivoted thereto, the head of which normally projects across the slot 31. The said links will have a reciprocating movement corresponding with the motion of the arm 3 to which they are connected, and when moving forward the rear end of the slot 38 will engage the pin 39 and rock the arm 33 forward, which, through the connections already described, will act upon the belt-shifting mechanism to reverse the driving shaft. At the end of the backward movement the dog 40 will engage the pin 32 and the said arm 33 will be rocked in the opposite direction, and the reversal will take place before the roller 6 has reached the extreme limit of its excursion. Should it be desired to give the full movement to the said roller it is only necessary to raise the head of the dog 40 by pressing upon the projecting end 41 by the foot thus causing the said dog to pass over pin 32, the movement continuing until the gear 15 runs off the last tooth of the segment gear 16 and the front end of slot 31 engages said pin. The machine will then stop with the roller 6 at the extreme backward limit of its movement, when it will rest in the starch pan 42 until the shifting device is acted upon by means of the treadle 28 operated by the foot. The gears 15 and 16 are then thrown in mesh by starting the arms 3 and 4 forward by the treadle. As already mentioned the usual treadle action is in no way interfered with by this automatic attachment.

Having thus described my invention what is claimed as new and desired to be secured by Letters Patent is:—

1. The combination with a drive shaft, swinging arms, and gearing between the shaft and arms including a segment gear, of a belt shifting mechanism for the shaft, connected to and automatically actuated by the arms, to reverse the shaft before the segment gear is disengaged, and means to stop such automatic action, to allow the segment gear to run to disengagement.

2. The combination with a shaft, and a swinging arm driven thereby, of a belt shifting mechanism associated with said shaft, to reverse the same, and automatic connections between said arm and mechanism, arranged to operate the mechanism, and reverse the shaft at predetermined points, and manually operated means to disengage said connections.

3. The combination with a shaft and a belt shifting mechanism therefor, of an arm connected to and operated by the shaft and swinging in a plane at a right angle to the axis of the shaft, and a link carried by the arm and

having a sliding connection with said mechanism, arranged to operate the same at the end of each stroke of the arm.

5 4. In a belt shifter, the combination with a treadle and a rock shaft on which the treadle is mounted, of another shaft geared to said rock shaft and having a crank arm, and movable shifter arms connected to said arm.

10 5. The combination with a shaft and a belt shifting mechanism therefor including a rocker, of swinging arm connected to and operated by said shaft, and a link connecting the arm and rocker and having a slot and pin connection with the latter, arranged to operate the same at the end of each stroke.

15 6. The combination with a reciprocating arm, and a rock shaft operatively connected to a belt shifter and having a projecting arm, of a link connected to the said arms, the connection of the link to one of the arms being by means of a slot and pin, producing intermittent operation of the arm and its shaft.

20 7. The combination with a reciprocating part, and a rock shaft operatively connected to a belt shifter and having a projecting arm, of a link pivoted to the said part and having a slot and pin connection to the arm, and a

dog pivoted to the link and having its head extending across the slot and arranged to strike the pin, and movable to avoid the same. 25

8. The combination with a swinging arm, and a shaft geared thereto, of belt shifting mechanism for the shaft, including a rock shaft operatively connected to the shifter arm, a treadle on said rock shaft, for foot operation, automatic connections between said rock shaft and the swinging arm, and means to disengage the automatic connections. 30

9. The combination with a swinging arm, and a belt shifting mechanism having a rocker arm, of a link connecting said arms and having a stop which throws the rocker in one direction, and an auxiliary link connected to said link and to the rocker arm and having a stop which throws the rocker in the other direction. 35

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 40

AXEL R. GUSTAFSON.

Witnesses:

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H. G. BATCHELOR.