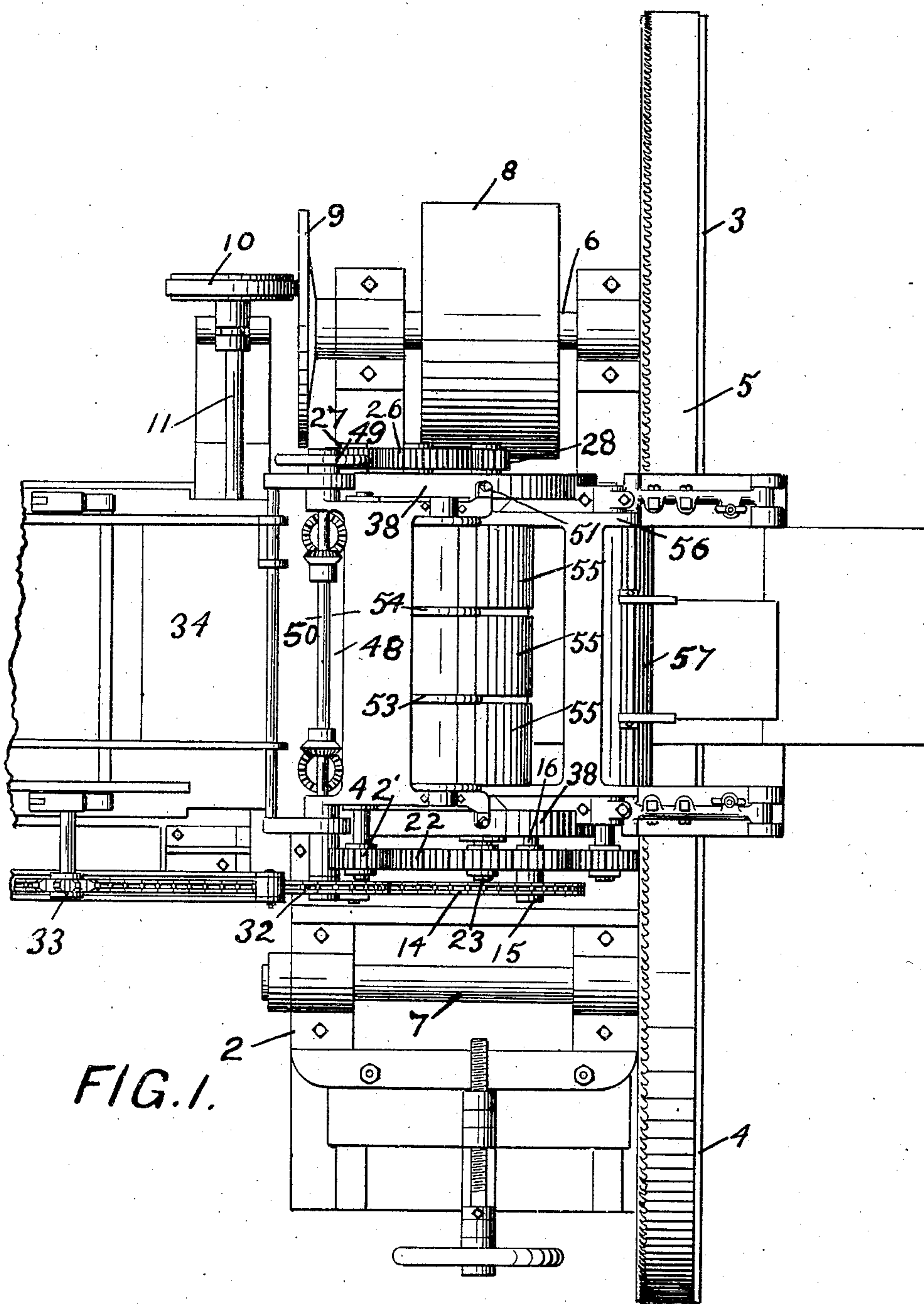


No. 842,572.

PATENTED JAN. 29, 1907.

A. MEREEN.
RESAWING MACHINE.
APPLICATION FILED APR. 18, 1905.

3 SHEETS--SHEET 1.



WITNESSES

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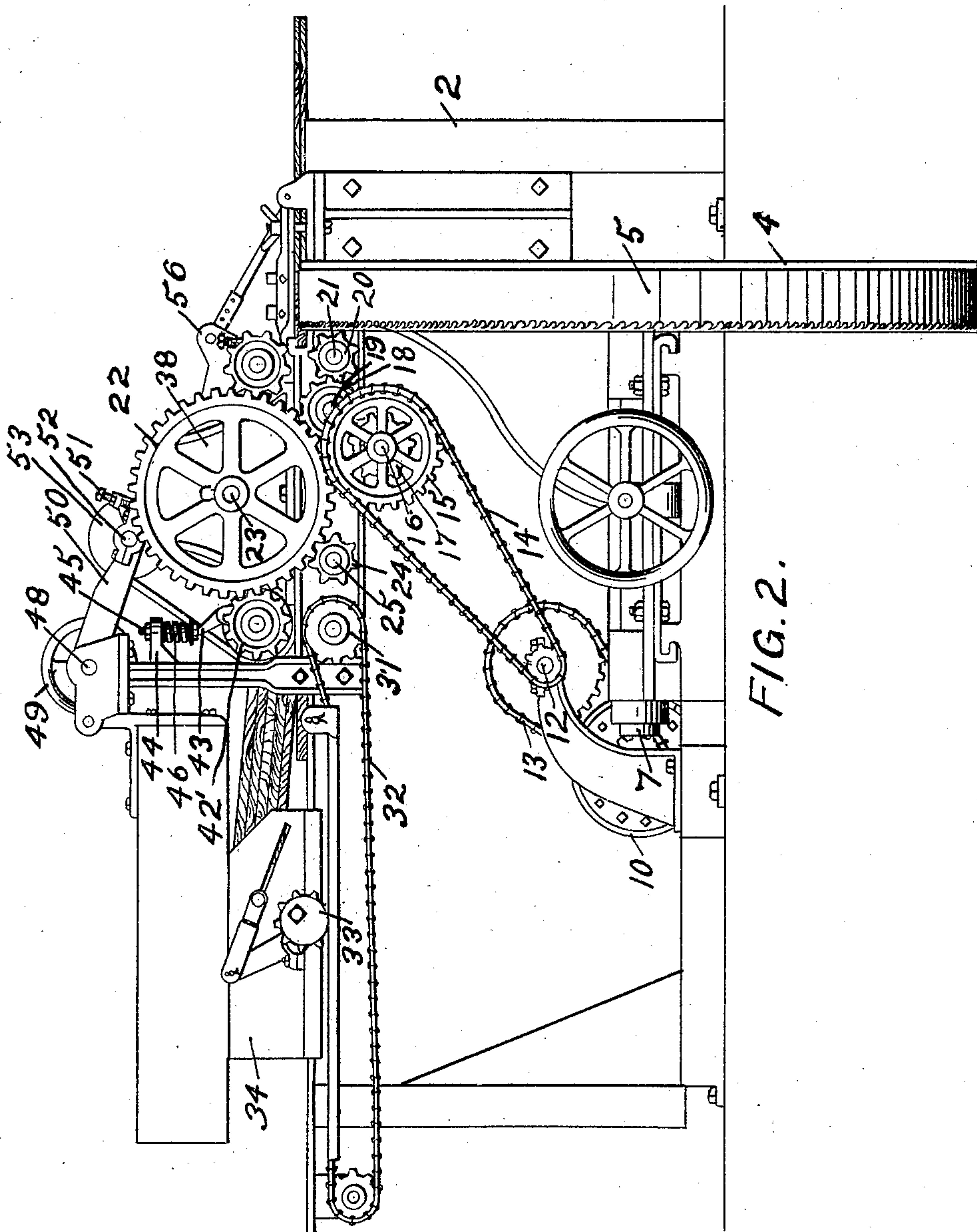
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

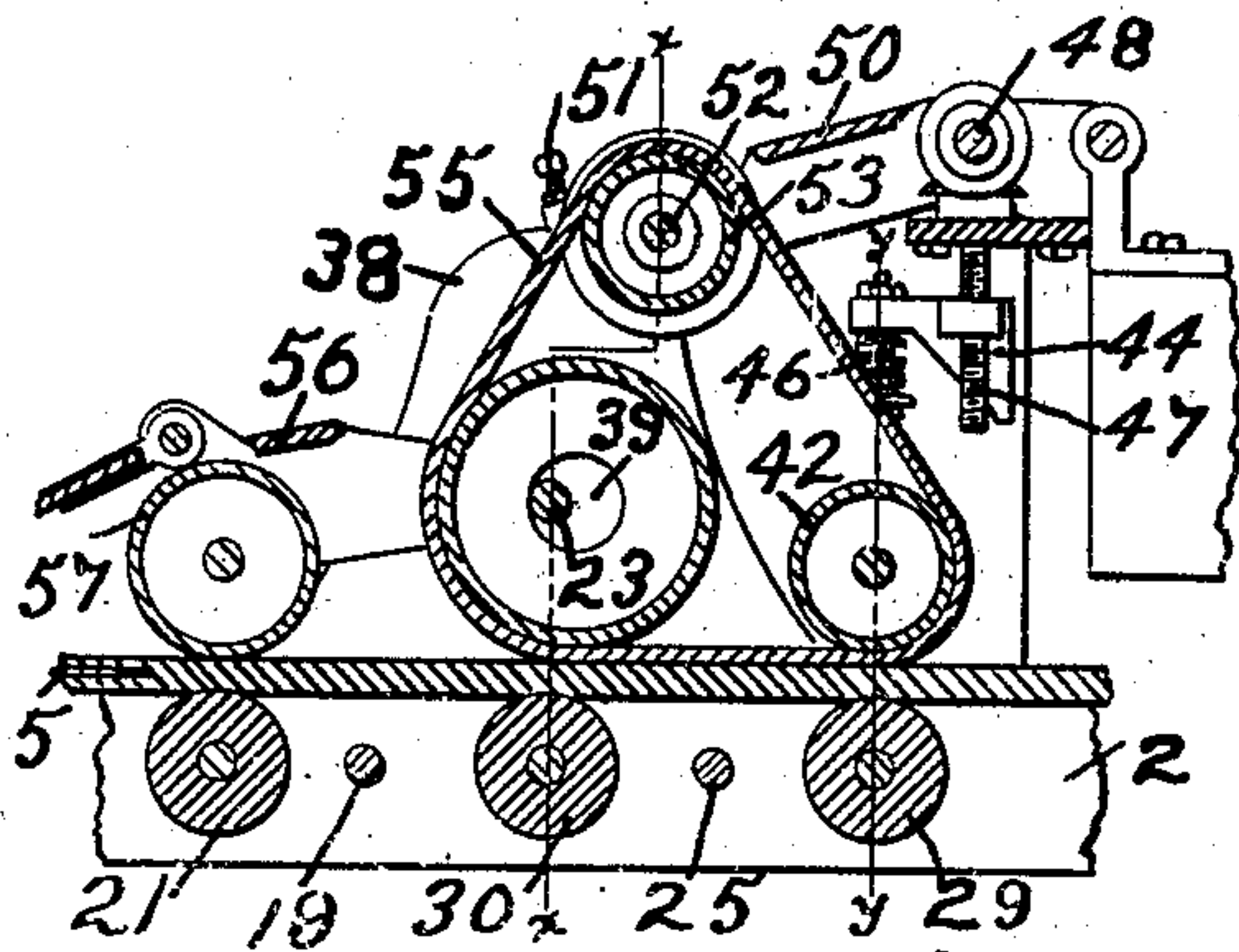


FIG. 4.

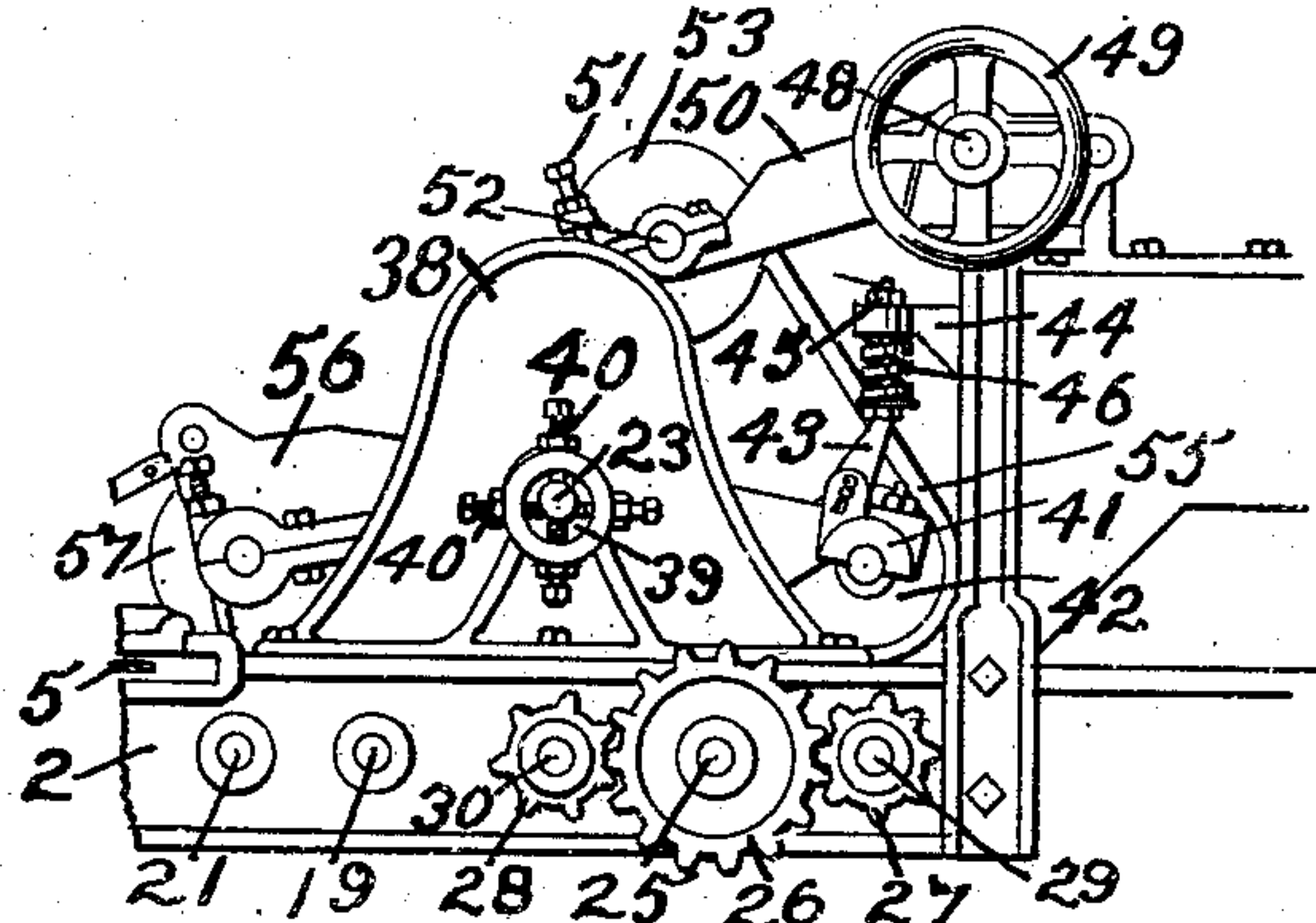


FIG. 3.

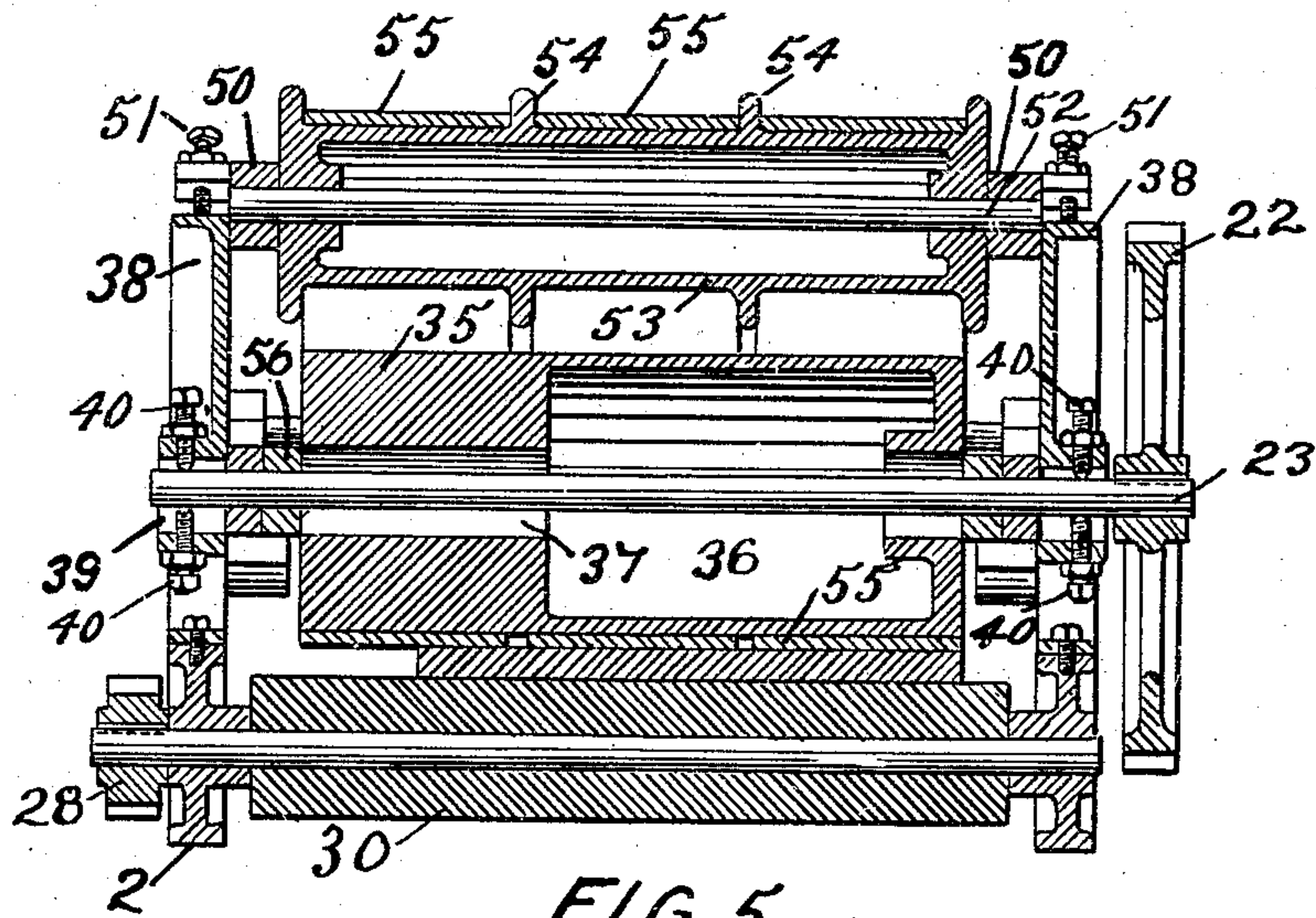


FIG. 5.

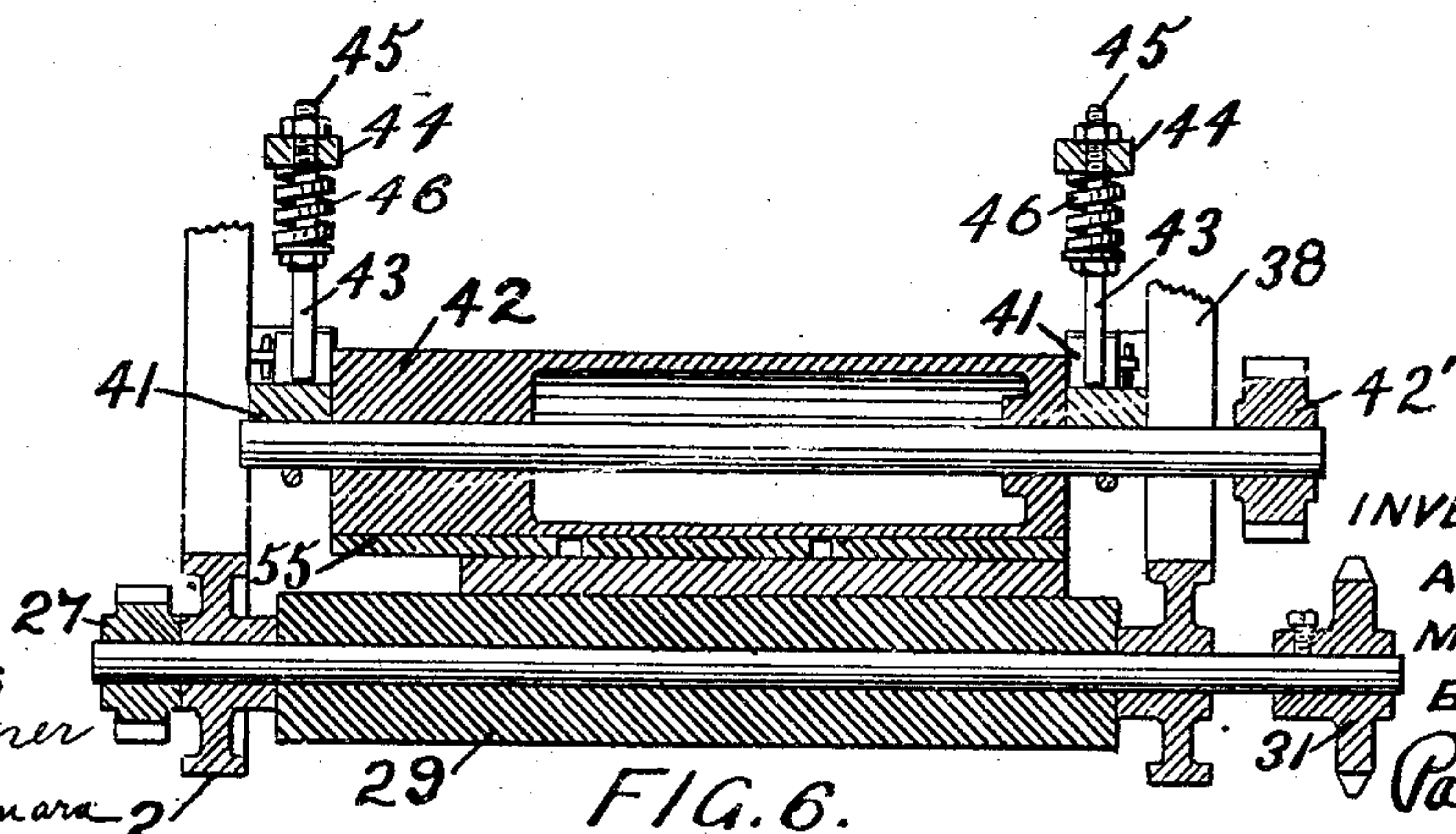


FIG. 6.

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ARNO MEREEEN, OF MINNEAPOLIS, MINNESOTA.

RESAWING-MACHINE.

No. 842,572.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed April 18, 1905. Serial No. 256,215.

To all whom it may concern:

Be it known that I, ARNO MEREEEN, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Resawing-Machines, of which the following is a specification.

My invention relates to sawmill machinery, and particularly to that class used in the manufacture of box lumber; and the object of my invention is to provide improved means for feeding the boards to the saw to the end that a maximum area of friction-surface in contact with the lumber can be obtained with a minimum of pressure thereon.

Other objects of the invention will appear from the following detailed description.

The invention consists generally in providing a belt of rubber or similar material arranged to have a broad frictional contact with the boards to assist in feeding them forward to the saw.

Further, the invention consists in providing a series of belts of yielding material that are adapted to accommodate themselves to the inequalities of the lumber.

Further, the invention consists in providing gravity-rolls that are adapted to hold the belts down upon the surface of the lumber.

Further, the invention consists in providing rolls driven at one end and having weighted opposite ends that counterbalance them when operating on narrow pieces of lumber at the side of the feed-bed.

Further, the invention consists in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of a resawing-machine embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a side elevation of the feed-belts and the operating mechanism therefor. Fig. 4 is a vertical section through said feed-belts and operating mechanism. Fig. 5 is a transverse sectional view on the line $x x$ of Fig. 4. Fig. 6 is a similar view on the line $y y$ of Fig. 4.

In the drawings, 2 represents the frame of the machine, having band-wheels 3 and 4, horizontal band-saw 5, and band-wheel shafts 6 and 7, one of which is provided with a driving-pulley 8. The mechanism for adjusting the band-wheels is shown in Figs. 1

and 2; but as it forms no part of my present invention a detailed description is unnecessary.

I prefer to provide a variable-speed friction drive mechanism in connection with this machine consisting of a disk 9, secured on the shaft 6, and a wheel 10, arranged to have a friction engagement with said disk and mounted on a shaft 11, the speed being varied by moving the wheel 10 back and forth on its shaft toward or from the center of the disk 9 by means of an ordinary lever mechanism, which I have thought unnecessary to illustrate in this application. A shaft 12 is driven through a chain belt 13 from the shaft 11 and is connected by a sprocket-chain 14 with a sprocket-wheel 15, loosely mounted on a stud 16 and having a gear 17, that engages a gear 18 on a shaft 19, said gear 18 meshing with a similar gear 20 on a feed-roll 21, that is preferably arranged close to the teeth of the saw. The gear 18 also meshes with a large gear 22 on a shaft 23, and said gear 22 meshes with a similar gear 24 on a shaft 25, that has a gear 26 on its opposite end meshing with gears 27 and 28 on lower feed-rolls 29 and 30. The feed-roll 29 has a gear 31, connected by a belt 32 with a reciprocating feed mechanism 33, that is adapted to operate in a hopper 34 and engage the outer ends of the lower boards therein and advance them to the feed-rolls. This reciprocating feed device forms no part of my present invention and need not be illustrated or described in detail herein. The shaft 23 has a roll 35 thereon. One end of this roll is cored out to form a chamber 36, and a hole 37 extends through the center of said roll and receives the shaft 23 and is of sufficiently greater diameter than that of said shaft to allow a limited vertical movement of said roll and permit it to rise and fall on said shaft and bear by gravity upon the lumber and accommodate itself to the varying thickness thereof. Standards 38 are provided on the frame of the machine at each end of the shaft 23 and have sockets 39 for said shaft, provided with set-screws 40 to permit the centering of said shaft therein. I prefer to core one end only of the roll 35, leaving the other end solid and of sufficient weight to counteract the tendency of the driving-gears to tilt the roll, particularly when it is operating on narrow pieces of boards that may be passing through one side of the machine. A

yoke 41 is loosely mounted on the shaft 23 and has bearings for a roll 42 and is provided with straps 43, connected with ears 44 by adjustable bolts 45, said bolts having coiled springs 46 between said straps and ears and adapted to be put under tension by the adjustment of said bolts to increase the yielding resistance of the roll 42 to the passage of the lumber. The ears 44 are carried by threaded rods 47, geared to a horizontal cross-shaft 48, that is provided with a hand-wheel 49, by means of which the said ears may be raised or lowered to lift or depress the roll 42. The roll 42 and the belts thereon are driven from a gear 42', that meshes with the gear 22. A frame 50 is pivoted on the shaft 48 and is vertically adjustable at one end by means of set-screws 51, that engage the brackets or standards 38, and said frame has bearings for a shaft 52, carrying a roll 53, provided at intervals on its periphery with annular ribs 54. A series of belts 55 are carried by these rolls 35, 42, and 53, their tension being regulated by the adjustment of the screws 51 and the yoke 41. I have shown three of these belts; but a greater or less number may be employed, if preferred. They are preferably made of rubber on account of its tendency to adhere to the surface of the lumber and feed the same forward rapidly to the saw. I prefer to arrange the belts, as shown in Fig. 4, so that they will assume a triangular form and present at the bottom a long broad bearing-surface to engage the upper surface of the lumber as it is fed between them and the lower rolls. I have found that where belts of rubber or similar material are employed and a broad bearing-surface is provided that a more uniform and rapid feed of a series of narrow boards, or those that are uneven in thickness, will result, and I have also found that the use of a broad bearing-surface for the belts on the lumber, with a comparatively light pressure, is productive of better results than where a narrow bearing-surface with high pressure is employed. The lower portions of the belts will be substantially horizontal and will travel in a plane substantially parallel with the plane of the lower feed-rolls and bear smoothly and evenly on the surface of the lumber and accommodate themselves to the varying thickness thereof. The ribs 54 will prevent the edges of the belts from riding over upon one another, and there will be sufficient friction between the belts and the driven roll 42 to keep them all in motion. The weight of the rolls 35 and 42 will hold the belts down flat upon the lumber, and their tension being regulated by the adjustment of the yoke 41 and the set-screws 51 their movement will be continuous to feed the lumber to the saw. When any thick or uneven piece of lumber passes under the roll 35, it will move upward to accommodate itself to the thickness of the board and hold

the yielding belt thereon with sufficient pressure to prevent it from slipping. The use of rubber belts for this purpose is preferable, as they possess the quality of adhesiveness to lumber in a high degree; but other material may be substituted for these rubber belts if it is found desirable to do so. I prefer also to arrange the belts in the manner shown, having a long bearing-surface on the top of the lumber, with convenient means for regulating their tension; but other methods of supporting the belts and adjusting their tension may be provided, if preferred.

The roll 42 is preferably cored out at one end (as indicated in Fig. 6) for the same purpose as described with reference to the roll 35—viz., the rolls all being driven at one end it is evident there will be a tendency to tilt and produce an uneven pressure on the lumber, and to obviate this I have constructed the rolls in this way. A second yoke 56 is also pivoted on the shaft 23 and carries a roll 57, that bears upon the lumber after it passes from under the feed-belts and coöperates with the roll 29 to hold the material in alinement when it engages the saw. I have shown in this machine a series of driven feed-rolls operating beneath the feed-belts; but these rolls may be idle, if preferred, or they may be dispensed with altogether and an ordinary feed-belt or plate substituted therefor.

In using the machine the feed-belts are put under proper tension by the adjustment of the yoke 41 and set-screws 51 and the boards fed by the feed mechanism heretofore referred to in between the feed-belts and the rolls beneath. The weight of the rolls 42 and 35 will hold the rubber belts down on the lumber with sufficient pressure to prevent slippage, and the frictional contact of the belts with the lumber will feed it rapidly and evenly to the saw.

I claim as my invention—

1. The combination, with a horizontal saw, of a feed-bed over which the boards are fed side by side to the saw, and a feed-belt arranged above said bed and having a portion of its surface arranged to bear flatwise upon the surface of the boards, means for holding said belt on said boards with a yielding pressure, means for regulating the tension on said belt and a driving means for said belt to cause it to move the boards, substantially as described.

2. The combination, with a horizontal saw, of a feed-bed whereon the lumber is advanced side by side endwise to the saw, a driven feed-belt supported above said bed, the lower side of said belt being substantially parallel with the plane of said bed and having a long bearing-surface on the boards and composed of a material capable of adhering to the boards, means for regulating the tension on said belt, and means for holding said

belt down upon said boards with a yielding pressure to cause it to move the boards, substantially as described.

3. The combination, with a horizontal band-saw, of a feed-bed whereon the lumber is advanced side by side endwise to the saw, a series of driven feed-belts arranged above said bed, the lower portion of said belts being parallel substantially with the plane of said bed and having long bearing-surfaces on the boards, means for yieldingly holding said belts down upon said boards to obtain a maximum area of frictional contact with a minimum of pressure to move said boards, and means for regulating the tension on said belt.

4. The combination, with a horizontal saw and a feed-bed over which the boards are advanced endwise side by side to the saw, of a series of belts supported side by side above said bed and having broad frictional bearing-surfaces on the boards and composed of a material that has a tendency to adhere thereto, means for regulating the tension on said belts, and means for driving said belts to move the boards, substantially as described.

5. The combination, with a horizontal saw and a feed-bed over which the boards are advanced side by side to the saw, of a belt supported above said bed and arranged to bear on the surface of the lumber, rolls around which said belt passes there being two rolls at the bottom arranged to press said belt down upon the lumber with a yielding pressure and another roll above said first-named rolls, and the part of said belt between and beneath said first-named rolls being substantially parallel with and lying smoothly on the tops of the boards, means for regulating the tension on said belt and means for positively driving said rolls and belt.

6. The combination, with a horizontal saw and a feed-bed over which the boards are advanced to the saw, of rolls arranged above said bed in a plane substantially parallel with the plane of said bed and free to move vertically under pressure of the lumber, a belt passing under said rolls and arranged to travel parallel with the lumber and held on the surface of the lumber by said rolls with a yielding pressure, means for regulating the tension of the belt, and means for driving said belt.

7. The combination, with a horizontal saw and a feed-bed over which the boards are advanced side by side to the saw, of a driven rubber belt supported above said feed-bed and having a broad bearing-surface arranged to contact with the upper surface of the boards and feed them toward the saw, means for regulating the tension on the belt, and means for yieldingly holding said belt down upon the boards, substantially as described.

8. The combination, with a horizontal band-saw and a feed-bed over which the

boards are advanced side by side to the saw, of a series of rubber belts arranged above said bed and having long bearing-surfaces upon the upper surfaces of the boards, means regulating the tension on the belts and gravity-rolls arranged to hold said belts down upon the boards with a yielding pressure, substantially as described.

9. The combination, with a horizontal band-saw and a feed-bed over which the boards are advanced side by side to the saw, of a loose or floating roll arranged over said bed, an idle roll, a pivoted frame wherein said idle roll is supported, a driven roll having a vertical movement in its bearings and yieldingly held toward said bed, and a belt carried by said rolls and held down upon the top of the boards by the weight of said loose roll and said driven roll, substantially as described.

10. The combination, with a horizontal band-saw, of a feed-bed whereon the lumber is advanced side by side endwise to the saw, a driven feed-belt supported above said bed, the lower portion of said belt traveling for a considerable distance in a plane substantially parallel with the plane of said bed and resting upon the upper surface of the lumber on said bed to move said lumber, means for holding said belt on said lumber with a yielding pressure, and means for adjusting the tension of said belt.

11. The combination, with a horizontal band-saw, of feed-rolls whereon the box-boards are advanced side by side endwise to the saw, a series of driven feed-belts supported above said rolls and composed of a material that has a tendency to adhere to the boards, the lower portion of said belts traveling for a considerable distance in a plane substantially parallel with the plane of said rolls, gravity-rolls arranged to hold said belts down upon the boards with a yielding pressure to move the same toward the saw, and means for regulating the tension on the belts, substantially as described.

12. The combination, with a saw and a feed-bed, of a feed-belt between which and said bed the lumber is advanced, rolls loosely mounted and having a limited vertical movement and resting by gravity upon the lumber, one of said rolls having a driving connection at one end, and said rolls being cored out in the ends contiguous to said driving connection to allow the weight of the opposite ends to counterbalance the tendency of the drive to tilt the rolls, substantially as described.

13. The combination with the lumber bed and saw, of the vertically-movable presser-roll, and shaft passing through the same, said roll being free to play about said shaft, a swinging yoke carrying a positively-driven feed-roll, said roll and the first-mentioned roll lying adjacent to the bed, one in advance of the other, a swinging yoke carrying a roll

above said former-mentioned rolls, and a belt passing around said rolls and having its lower portion lying substantially parallel with the plane of the bed and adapted to exert pressure on the lumber for feeding it to the saw, substantially as described.

14. The combination with the lumber bed and saw, of the vertically-movable presser-roll and shaft passing through the same, said roll being free to play about said shaft, a swinging yoke carrying a positively-driven feed-roll, said roll and the first-mentioned roll lying adjacent to the bed, one in advance of the other, a swinging yoke carrying a roll above said former-mentioned rolls, a belt passing around said rolls and having its lower portion lying substantially parallel with the plane of the bed to exert a pressure on the lumber for feeding it to the saw, and means for vertically adjusting said positively-driven roll, substantially as described.

15. The combination with the lumber bed and saw, of the vertically-movable presser-roll and shaft passing through the same, said roll being free to play about said shaft, a swinging yoke carrying a positively-driven feed-roll, said roll and the first-mentioned roll lying adjacent to the bed, one in advance of the other, a swinging yoke carrying a roll above said former-mentioned rolls, a belt passing around said rolls and having its lower portion lying substantially parallel with the plane of the bed to exert a pressure on the lumber for feeding it to the saw, and

means for adjusting the positively-driven roll and the roll located above said roll, substantially as described.

16. The combination with the lumber bed and saw, of the presser-rolls located one in advance of the other, above the bed, means for positively driving one of said rolls, a roll located above said rolls, belts passing around said rolls and having their lower portion lying substantially parallel with the plane of the bed to exert a pressure on the lumber for feeding it to the saw, and ribs formed on the periphery of the top roll and fitting between the adjacent edges of the belts to prevent one belt rising upon another, substantially as described.

17. The combination with the lumber bed and saw, of the pressure-rolls located one in advance of the other, above the bed, means for positively driving one of said rolls, a roll located above said rolls, a belt passing around said rolls and having its lower portion lying substantially parallel with the plane of the bed to exert a pressure on the lumber for feeding it to the saw, means for regulating the tension of said belt, and means for regulating pressure on the positively-driven roll, substantially as described.

In witness whereof I have hereunto set my hand this 13th day of April, 1905.

ARNO MERREEN.

Witnesses:

RICHARD PAUL,
C. MACNAMARA.