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PATENTED NOV. 6, 1906.

E. J. MASON & L. J. ROBB.

DEVICE FOR OPERATING TRIPPERS FOR BELT CONVEYERS.

APPLICATION FILED JAN. 22, 1906.

3 SHEETS—SHEET 1.

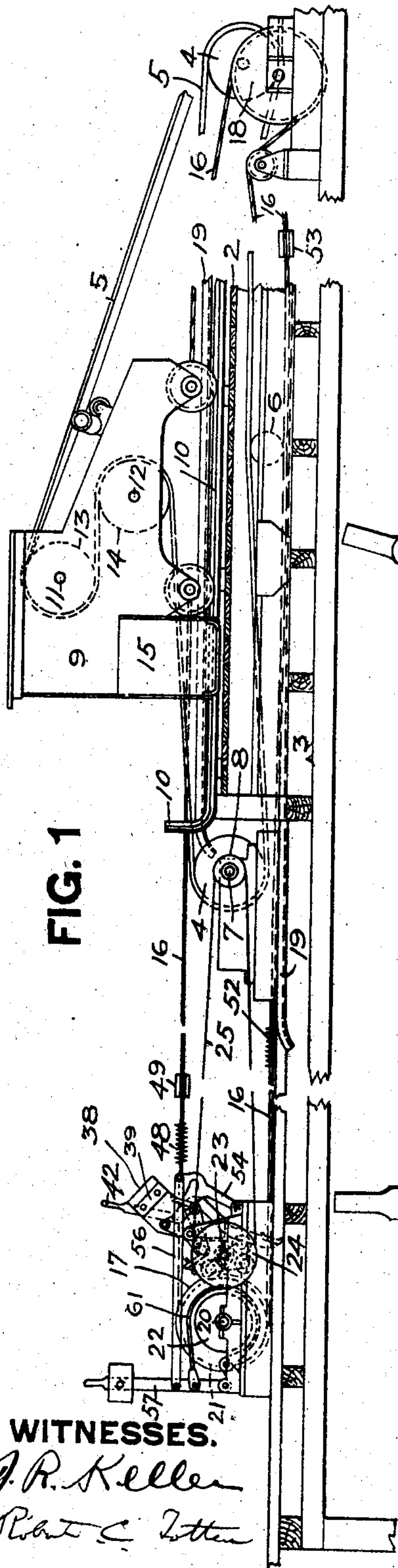


FIG. 1

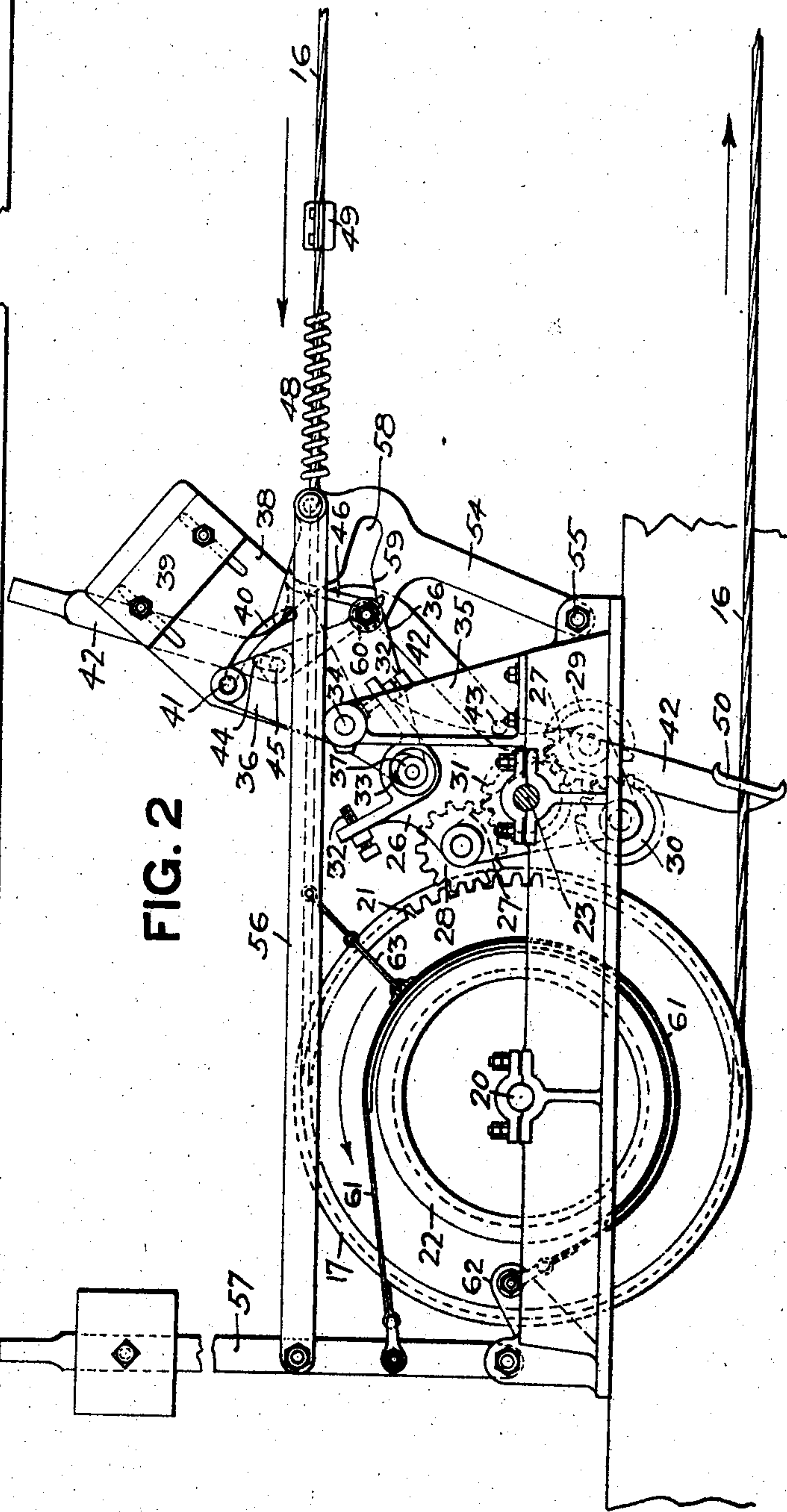


FIG. 2

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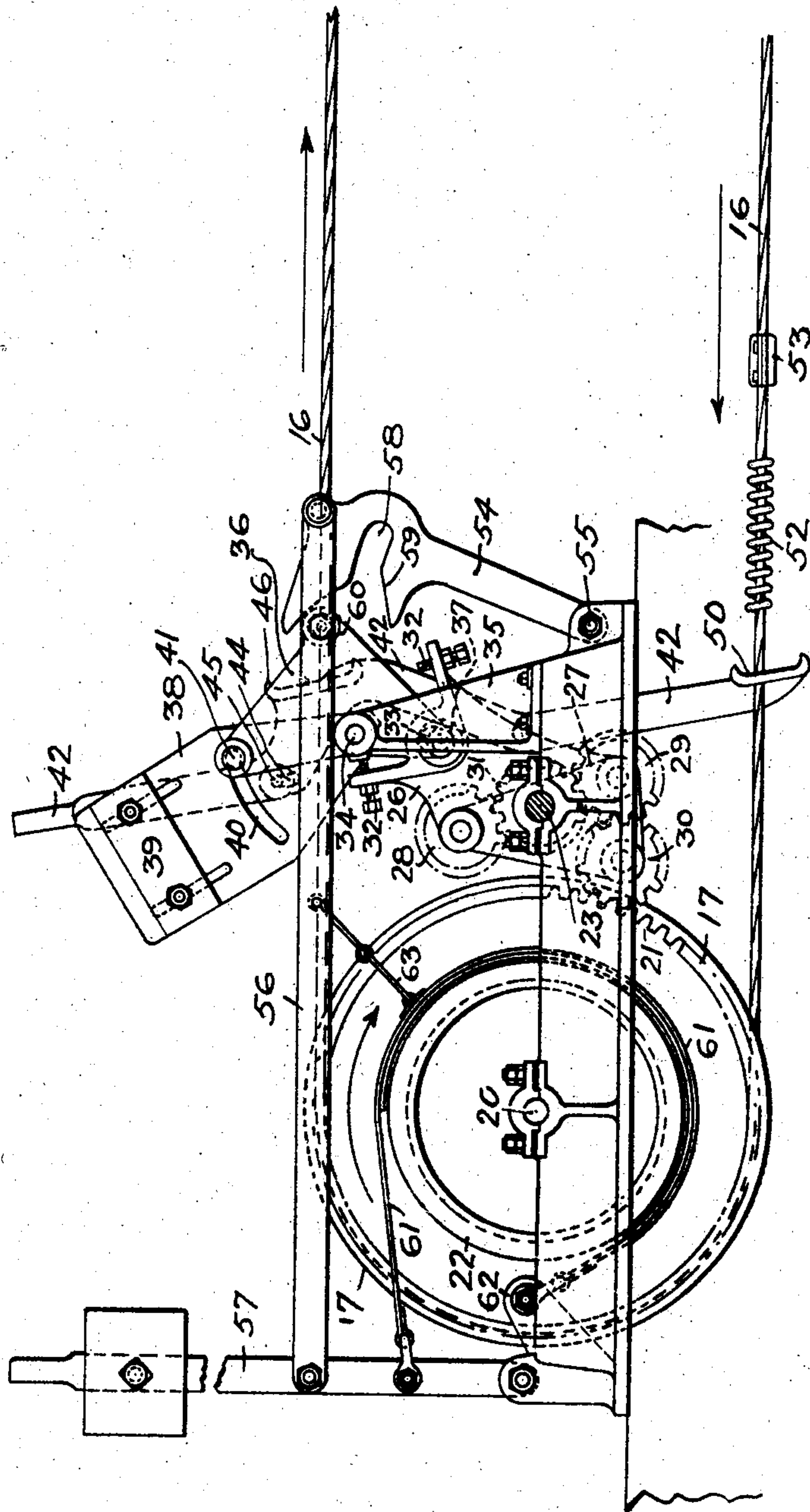
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3 SHEETS—SHEET 2.

FIG. 3



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3 SHEETS—SHEET 3.

FIG. 4

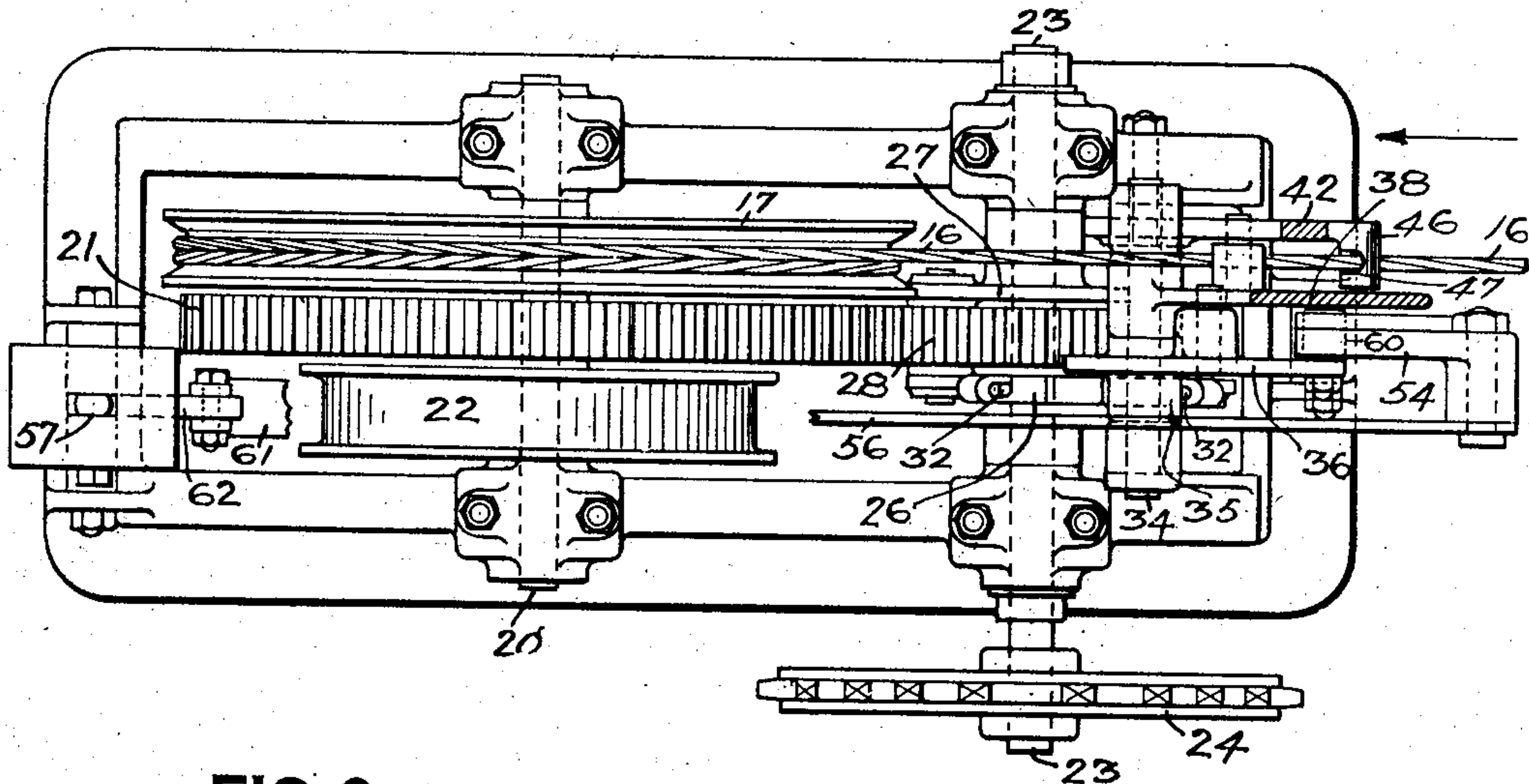


FIG. 6

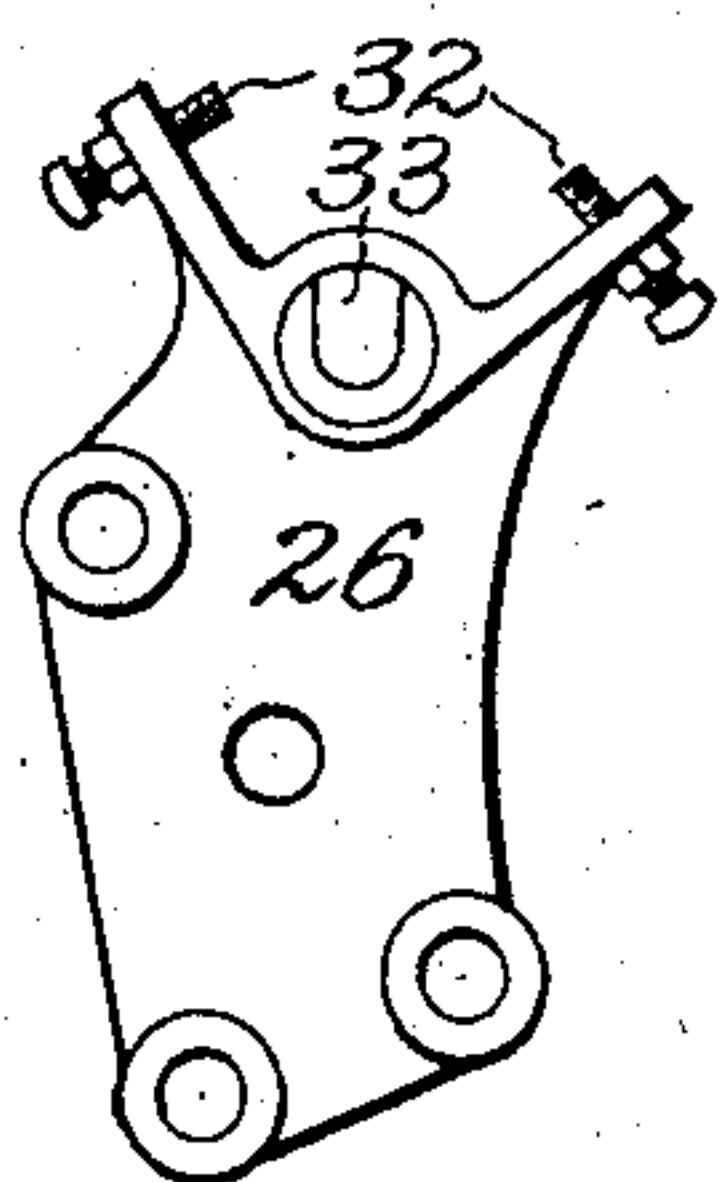


FIG. 7

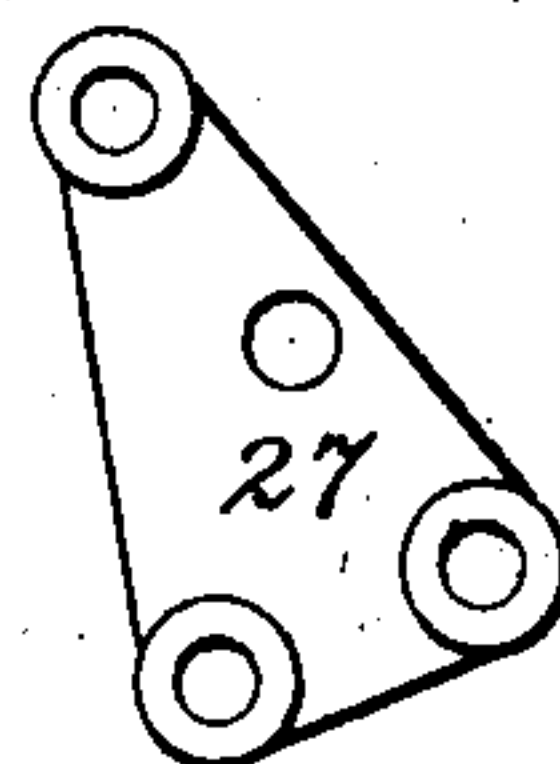


FIG. 8

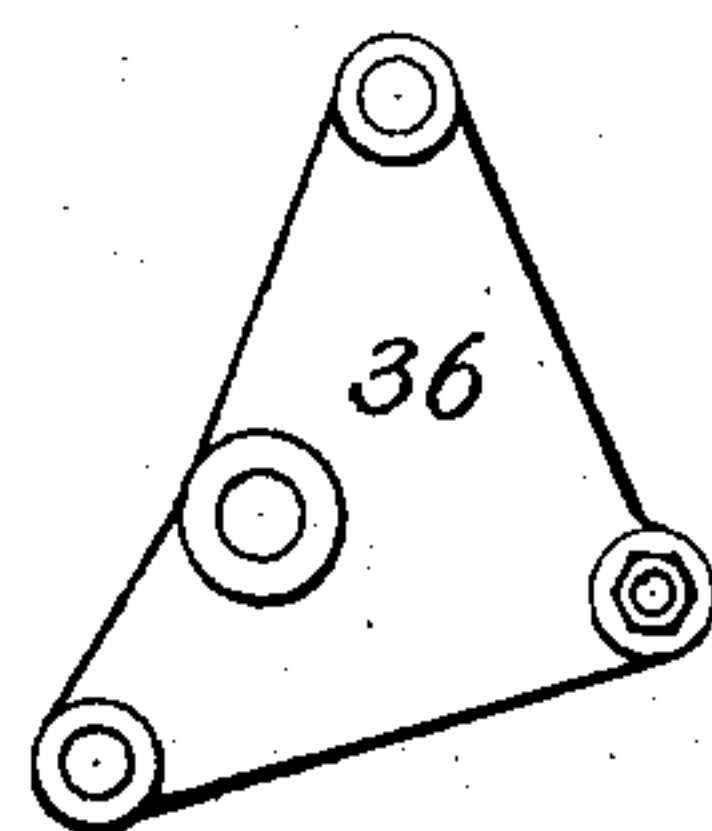
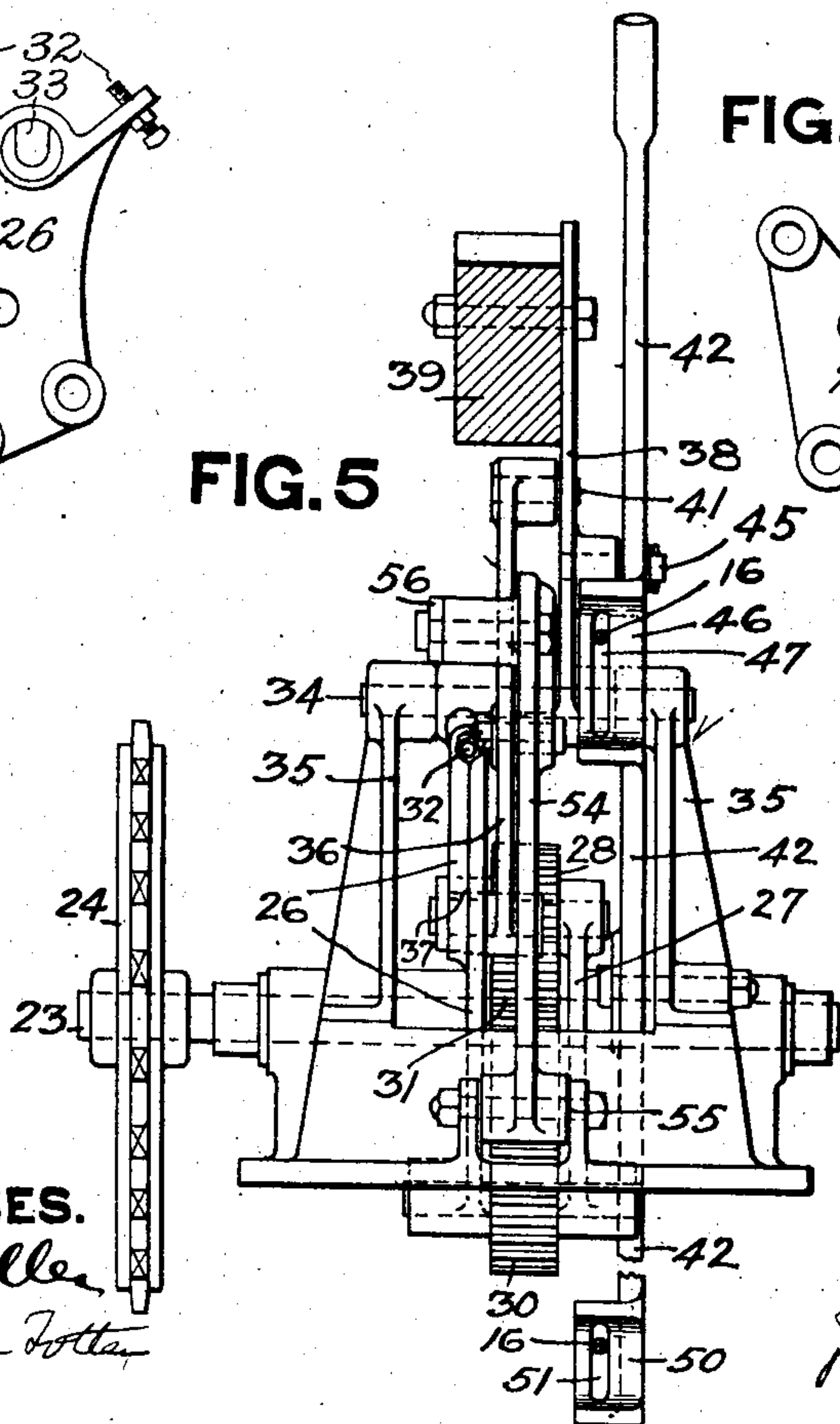


FIG. 5



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UNITED STATES PATENT OFFICE.

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DEVICE FOR OPERATING TRIPPERS FOR BELT CONVEYERS.

No. 834,921.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed January 22, 1906. Serial No. 297,208.

To all whom it may concern:

Be it known that we, ELLIOTT J. MASON and LEWIS J. ROBB, residents of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Devices for Operating Trippers for Belt Conveyers; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to a device for operating a tripper for a belt conveyer, its object being to provide a simple, durable, and efficient form of apparatus for traversing and automatically reversing the tripper.

To these ends our invention comprises the novel features hereinafter set forth and claimed.

To enable others skilled in the art to make and use our invention, we will describe the same as follows:

Figure 1 is a side elevation, partly broken away, of a tripper and drive embodying our invention. Fig. 2 is an enlarged side view of the reversing mechanism. Fig. 3 is a like view showing parts in different position. Fig. 4 is a plan view of the reversing mechanism; and Fig. 5 is an end view looking in direction of arrow, Fig. 4. Figs. 6 and 7 are views of the journal-plates removed. Fig. 8 is a view of the actuating-plate removed.

Like numerals represent like parts in the different figures.

The numeral 2 designates a suitable platform supported on a suitable structure 3, composed of beams, girders, &c. At opposite ends of the structure 3 are the drums 4, adapted to receive the broad belt 5, which carries the coal, grain, or other material to be conveyed. Idle rollers 6 support the belt 5 at suitable intervals. One of the drums 4 is mounted on a power-driven shaft 7, which is provided with the sprocket-wheel 8.

The tripper-frame 9 may be of any suitable construction and is mounted on wheels to travel on the track 10. Supported in bearings on the frame 9 are the shafts 11 and 12, upon which are mounted the pulleys 13 and 14, respectively. The belt 5 passes around these pulleys 13 and 14 in the manner indicated. A hopper or hood 15 is so arranged with reference to the pulley 13 that the ma-

terial carried up on the belt 5 is discharged from the top of said pulley into the hood or hopper, whence it passes to the proper point of discharge.

Secured to the front and rear axles of the tripper-frame 9 is the cable 16, which passes around the sheaves 17 and 18. A trough 19 is provided to receive the cable 16 and guide the same. Mounted on the shaft 20, on which the sheave 17 is secured, are the gear-wheel 21 and the brake-wheel 22. Parallel to the shaft 20 is the shaft 23, which carries the sprocket-wheel 24. A chain 25 connects the sprocket-wheel 8 on the shaft 7 with the sprocket-wheel 24, by which power is communicated to the shaft 23. Mounted loosely on the shaft 23 are the journal-plates 26 and 27, which together form a rocking frame with bearings for the pinions 28, 29, and 30. The pinions 28 and 29 mesh with a pinion 31 on the shaft 23 and the pinion 29 with the pinion 30. One or other of the pinions 28 and 30 is normally in engagement with the gear-wheel 21 on the shaft 20. The plate 26 has the stop-screws 32, which regulate the movement of the rocking frame carrying the pinions 28, 29, and 30. These stops come into contact with lugs on the standard 35. The plate 26 is further provided with the elongated opening or slot 33. Pivoted at 34 in the standard 35 is the actuating-plate 36. This plate 36 has the friction-roller 37, which engages the opening 33 in plate 26. Pivoted on the same shaft 34 as the plate 36 is the weighted arm 38, with the adjustable weight 39 attached thereto. This arm 38 has the slot 40, with which a pin 41 on the plate 36 engages.

A lever 42 is pivoted at 43, said lever having an elongated opening 44, which engages the pin 45 in the arm 38. The lever 42 has the stop-plate 46, with an opening 47 therein, through which the cable 16 passes. This opening, however, is not sufficiently large to admit the spring 48 on the cable 16 or the adjustable enlargement 49, so that when said spring is forced by said enlargement into contact with the stop-plate 46 the lever 42 is moved, as fully hereinafter described. At the lower end of the lever 42 is a like stop-plate 50, with an opening 51, through which

the cable passes, which is provided with a second spring 52 and enlargement 53. An arm 54 is pivoted at 55, the upper end of said arm being connected by the rod 56 to the lever 57. The arm 54 has the recess 58 formed therein, with the inclined or cam face 59 adapted to engage a roller 60 on the plate 36. A brake-band 61 is connected to the lever 57 and to the fixed support 62. A link 63 connects the rod 56 to the brake-band 61 and holds said band normally out of engagement with the brake-wheel 22.

When our improved device is in use, when the tripper is traveling in the direction of the arrow, Fig. 2, and the tripper-frame has reached the end of the track or the point where it is desired to reverse, the enlargement 49 on the cable 16 comes into contact with the spring 48 and advances said spring into contact with the face-plate 46 on the lever 42. The spring acts as a cushion and relieves the lever of a sudden jar or shock. The lever is moved over into the position indicated in Fig. 3. As said lever moves it carries with it the weighted arm 38, and when said arm has passed the center it falls of its own weight, and as the slot 40 has moved in engagement with the pin 41 it is apparent that when the end of the slot is reached the further movement of said arm will carry with it the actuating-plate 36. This plate by its movement through the connection of the roller 37 with the opening 33 in the plate 26 rocks the rocking frame and throws the pinion 28 out of engagement with the gear-wheel 21. At the same time the pinion 30 is thrown into engagement with the gear-wheel 21. The engagement of the pinion 30 with the gear-wheel 21 reverses the rotation of the sheave 17 and causes the cable and tripper to travel in the opposite direction. The tripper-frame then moves back in the opposite direction until the enlargement 53 comes in contact with the lower end of lever 42 when in the position shown in Fig. 3, whereupon through the connection described the parts are thrown into position shown in Fig. 2 and the direction of travel of the tripper-frame again reversed.

When it is desired to hold the tripper stationary, this is done by operating the lever 57, whereupon the arm 54 is drawn forward and the roller 60 on plate 36 travels up the inclined face 59, the plate 36 being lifted, so as to rock the journal-plate 26 and throw both pinions 28 and 30 out of engagement with the gear-wheel 21. At the same time the brake-band is thrown into engagement with the brake-wheel and any tendency of the rotation of the shaft 20 due to the travel of the belt 5 is prevented.

What we claim is—

1. In a device for operating a tripper for a belt conveyer, the combination of a tripper-

frame, a belt, an endless cable, a shaft for driving said cable, a gear-wheel, a rocking frame, oppositely-driven pinions carried by said rocking-frame, and means carried by said cable for throwing said pinions alternately into engagement with said gear-wheel.

2. In a device for operating a tripper for a belt conveyer, the combination of a tripper-frame, a belt, an endless cable, a shaft for driving said cable, a gear-wheel, a rocking frame, oppositely-driven pinions carried by said rocking frame, stops on said frame, and means carried by said cable for throwing said pinions alternately into engagement with said gear-wheel.

3. In a device for operating a tripper for a belt conveyer, the combination of a tripper-frame, a belt, an endless cable, a shaft for driving said cable, a gear-wheel, a rocking frame, a shaft on which said rocking frame is mounted, a gear-wheel on said shaft, oppositely-driven pinions on said rocking frame driven by said last-named gear-wheel, and means carried by said cable for throwing said pinions alternately into engagement with said gear-wheel.

4. In a device for operating a tripper for a belt conveyer, the combination of a tripper-frame, a belt, an endless cable, a shaft for driving said cable, a gear-wheel, a rocking frame, oppositely-driven pinions carried by said rocking frame, a lever in the path of said cable, connections between said lever and said rocking frame, and means carried by said cable for operating said lever to throw said pinions alternately into engagement with said gear-wheel.

5. In a device for operating a tripper for a belt conveyer, the combination of a tripper-frame, a belt, an endless cable, a shaft for driving said cable, a gear-wheel, a rocking frame, oppositely-driven pinions carried by said rocking frame, a lever in the path of said cable, an actuating-plate connected to said lever, connections between said plate and said rocking frame, and means carried by said cable for operating said lever to throw said pinions alternately into engagement with said gear-wheel.

6. In a device for operating a tripper for a belt conveyer, the combination of a tripper-frame, a belt, an endless cable, a shaft for driving said cable, a gear-wheel, a rocking frame, oppositely-driven pinions carried by said rocking frame, a lever in the path of said cable, an actuating-plate connected to said rocking frame, a weighted arm having a sliding connection with said plate, connections between said arm and said lever, and means carried by said cable for operating said lever to throw said pinions alternately into engagement with said gear-wheel.

7. In a device for operating a tripper for a belt conveyer, the combination of a tripper-

frame, a belt, an endless cable; mechanism for reversing the travel of said cable, and a yielding member on said cable adapted to engage said reversing mechanism to operate same.

8. In a device for operating a tripper for a belt conveyer, the combination of a tripper-frame, a belt, an endless cable, mechanism for reversing the travel of said cable, a spiral spring on said cable, adapted to contact with said reversing mechanism, and an enlargement on said cable back of said spring.

9. In a device for operating a tripper for a belt conveyer, the combination of a tripper-frame, a belt, an endless cable, a shaft for driving said cable, a gear-wheel, oppositely-driven pinions adapted to engage said gear-wheel alternately, and means for throwing both of said pinions out of engagement with said gear-wheel.

10. In a device for operating a tripper for a belt conveyer, the combination of a tripper-frame, a belt, an endless cable, a shaft for driving said cable, a gear-wheel, oppositely-driven pinions adapted to engage said gear-wheel alternately, braking mechanism and means for operating said braking mechanism and throwing both of said pinions out of engagement with said gear-wheel simultaneously.

11. In a device for operating a tripper for a belt conveyer, the combination of a tripper-frame, a belt, an endless cable, a shaft for driving said cable, a gear-wheel, oppositely-driven pinions adapted to engage said gear-wheel alternately, a brake-wheel on said shaft, a brake-band, and means for operating said brake-band and throwing both of said pinions out of engagement with said gear-wheel simultaneously.

12. In a device for operating a tripper for

a belt conveyer, the combination of a tripper-frame, a belt, an endless cable, a shaft for driving said cable, a gear-wheel, oppositely-driven pinions adapted to engage said gear-wheel alternately, a brake-wheel on said shaft, a brake-band, mechanism for throwing said pinions out of engagement with said gear-wheel, and a lever connected to said mechanism and to said brake-band.

13. In a device for operating a tripper for a belt conveyer, the combination of a tripper-frame, a belt, an endless cable, a shaft for driving said cable, a gear-wheel, a rocking frame, oppositely-driven pinions in said frame, adapted to engage said gear-wheel, an actuating-plate connected to said rocking frame, an arm adapted to engage said actuating-plate to throw both of said pinions out of engagement with said gear-wheel, a lever and connections between said arm and said lever.

14. In a device for operating a tripper for a belt conveyer, the combination of a tripper-frame, a belt, an endless cable, a shaft for driving said cable, a gear-wheel, a rocking frame, oppositely-driven pinions in said frame, adapted to engage said gear-wheel, an actuating-plate connected to said rocking frame, an arm having a cam-face adapted to engage said actuating-plate to operate said plate to throw both of said pinions out of engagement with said gear-wheel, a lever, and connections between said arm and said lever.

In testimony whereof we, the said ELLIOTT J. MASON and LEWIS J. ROBB, have hereunto set our hands.

ELLIOTT J. MASON.
LEWIS J. ROBB.

Witnesses:

F. W. WINTER,
ROBERT C. TOTTEN.