

APPLICATION FILED DEC. 2, 1907.

Patented Aug. 17, 1909.  
2 SHEETS—SHEET 1.

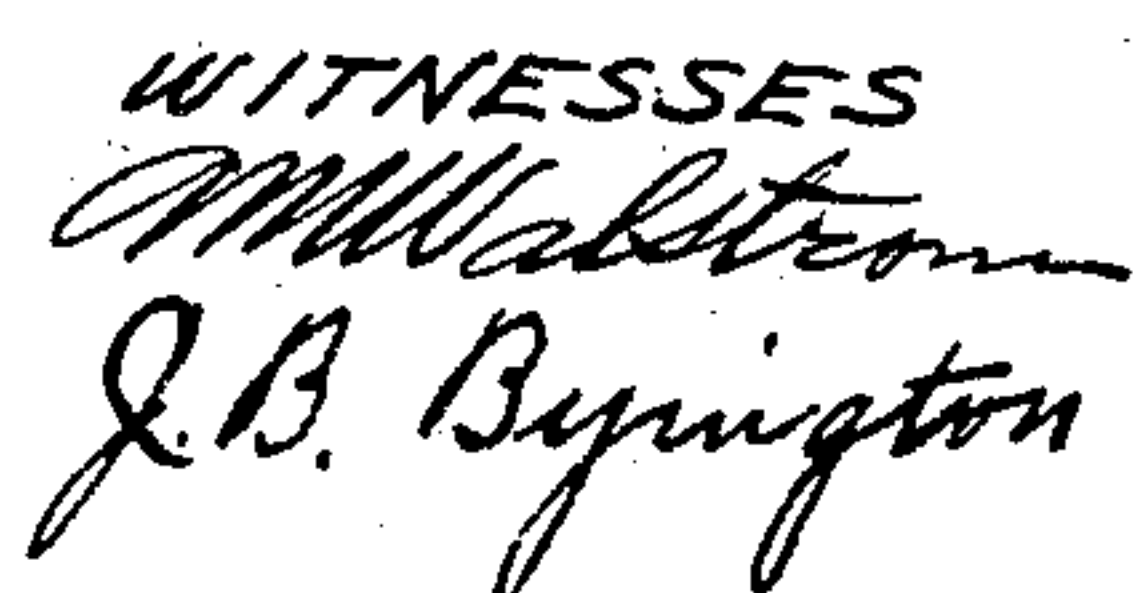


Fig 1.

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BY *Paul Paul*  
HIS ATTORNEYS

W. E. COURTNEY.

ELEVATOR.

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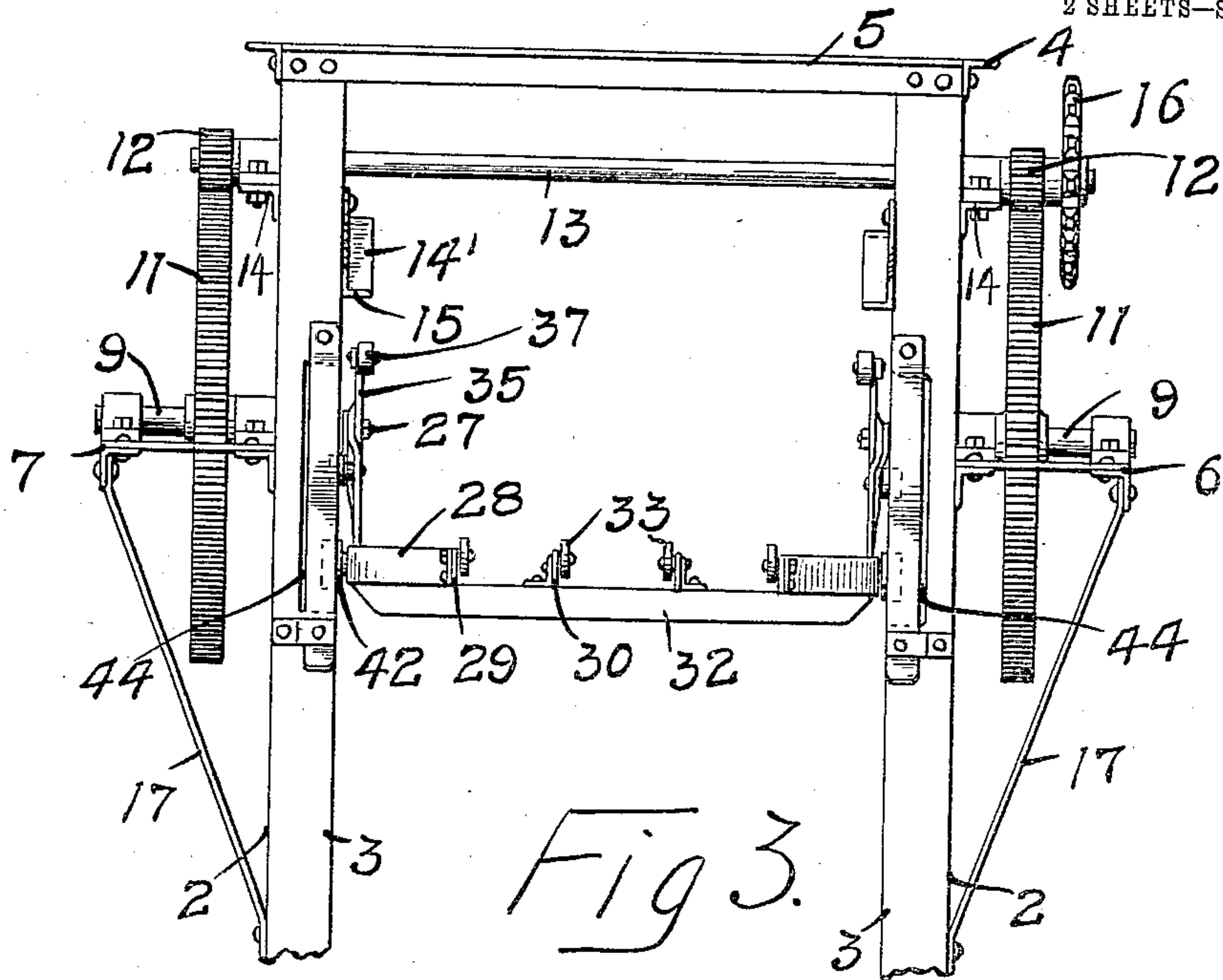


Fig 3.

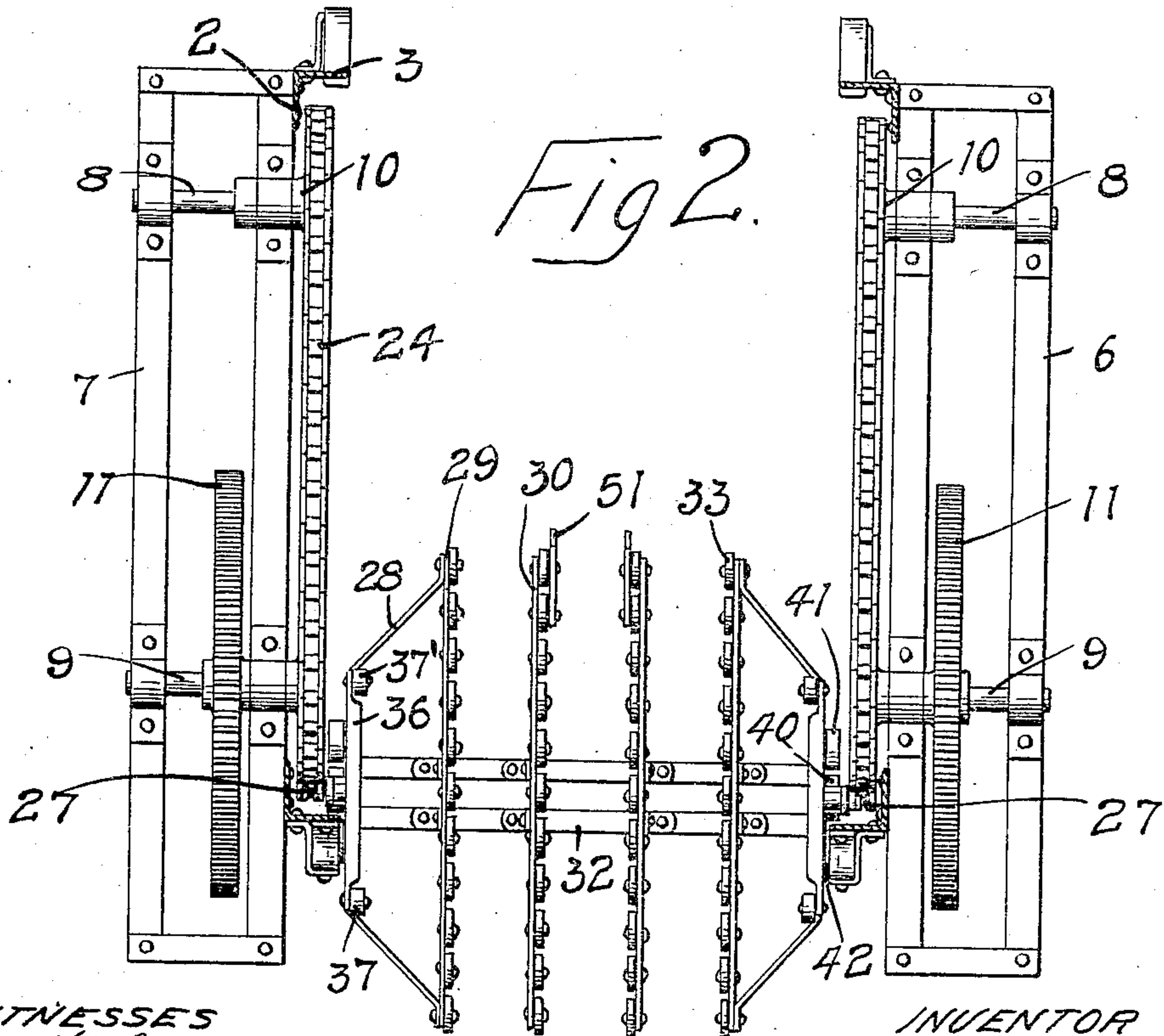


Fig 2.

WITNESSES  
*M. Walster*  
*J. B. Byington*

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# UNITED STATES PATENT OFFICE.

WILLIAM E. COURTNEY, OF ST. PAUL, MINNESOTA, ASSIGNOR TO MATHEWS GRAVITY CARRIER COMPANY, OF ST. PAUL, MINNESOTA, A CORPORATION OF MINNESOTA.

## ELEVATOR.

No. 931,570.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed December 2, 1907. Serial No. 404,801.

*To all whom it may concern:*

Be it known that I, WILLIAM E. COURTNEY, of St. Paul, Ramsey county, Minnesota, have invented certain new and useful Improvements in Elevators, of which the following is a specification.

The object of my invention is to provide means for transferring packages from a lower to a higher level or vice versa and delivering them to a gravity carrier, and the particular object of the invention is to improve the details of construction of the elevator shown and described in the pending application of Robert D. Hutchinson, filed August 2, 1906, No. 328,860 and assigned to the Mathews Gravity Carrier Company.

The invention consists generally 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 vertical sectional view of an elevator with my invention applied thereto. Fig. 2 is a plan view of the same. Fig. 3 is a view of the upper portion of the elevator taken at right angles substantially to the view in Fig. 1.

In the drawing, 2 represents the upright frame of the elevator composed preferably of angle bar iron having vertical flanges 3 arranged on the outer side of the frame to form guides, as will hereinafter appear.

Angle bars 4 and 5 connect the tops of the corner bars with one another and brace and strengthen the elevator frame. Upon each side of the upright corner bars of the elevator frame I provide rectangular frames 6 and 7 having bearings for shafts 8 and 9 arranged in pairs, one upon each side of the elevator. Sprocket wheels 10 are secured on the shafts 8 and corresponding wheels are mounted on the inner ends of the shafts 9. Large gear wheels 11 are secured on the shafts 9 and mesh with pinions 12 on a driving shaft 13 that is supported in bearings on cross bars 14. Cross bars 14' having downwardly turned portions 15 at one end extend transversely of the upper portion of the elevator frame and act as guides to direct the carriers from one side of the elevator to the other as will hereinafter appear. The shaft 13 has a driving sprocket wheel 16 on one end through

which the elevator mechanism is operated from a suitable source of power. The frames 6 and 7 supporting the gearing of the elevator are provided with braces 17.

At the bottom of the elevator cross bars 18 are provided, above which bars 19 are arranged connected with the cross bars 18 by plates 20 and having adjustable connections with the said bars by means of vertical slots 21 and bolts 22. Shafts 23 are journaled on the cross bars 19 and are provided with sprocket wheels 10' which cooperate with the corresponding wheels 10 at the top of the elevator to support the carrying chains 24. Brace bars 25 and 26 connect the upper and lower portions of the elevator frame. Between the carrying chains and having pivots 27 thereon are the elevator carriers, a series of them being provided, depending in number upon the height of the elevator. These carriers, preferably, consist of side bars 28 and intermediate bars 29 and 30, the bars 29 on both sides of the carrier having their ends secured to the ends of the bars 28. Cross bars 32 are provided upon which the bars 28, 29 and 30 are arranged parallel with one another and at right angles to their support. The cross bars 32 preferably extend transversely of the middle portion of the carrying bars. The spaces between the bars 30 and 29 are unobstructed. To facilitate the picking up of the packages from the carriers and upon the bars 29 and 30 a series of anti-friction carrying wheels 33 are journaled, their peripheries projecting above the tops of the bars and serving as anti-friction surfaces on which the packages travel from one side of the carrier to the other. Upon the bars 28 hangers 34 and 35 are secured, each hanger being bent inwardly above the plane of the carrier and crossing the opposite hanger on the same side, and both hangers at their point of intersection at each end of the carrier are mounted on the pivots 27. The upper ends of the hangers 34 and 35 are connected by bars 36 provided at their ends with anti-friction rollers 37 and 37' and the hangers 34 and 35 intermediate to their pivotal connection with the carrier chain and the carrier, are provided with anti-friction rollers 38 and 38'. When the carrier is passing from one side of the elevator to the other



the anti-friction rollers 37 and 37' will engage the angle bars 14 and hold the carrier in a horizontal position.

The carriers on each side are provided with central anti-friction wheels 40 and upon each side of the wheels 40 are similar wheels 41 and 42. Straps 43 extend upwardly from the pivots of the wheels 40 to the pivotal supports 27 of the carriers on the carrier chains. When the carrier is ascending on one side of the elevator the vertical flanges 3 on that side will pass between the anti-friction wheels 42 and 40 and contact with the wheels 38 and the carrier will be guided and be prevented from swinging on its pivots. At the top and bottom of the elevator on each side recesses 44 are cut in the flanges 3 to permit the passage of the anti-friction bearing wheels and allow the carrier to move from one side of the elevator to the other. On the down side of the elevator the vertical flanges contact with the wheels 41 and with similar wheels 45 mounted on the straps 43. On the up side of the elevator at the top and bottom guides 46 and 47 are provided, and on the down side at the top of the elevator guides 48 are arranged in position to engage the anti-friction wheels 38' and hold the carrier in its proper position while making the turn and during the first part of its downward movement.

The downwardly turned ends 15 of the cross bars 14 will guide the carriers until their anti-friction wheels 37 and 37' properly contact with the bars 14 which will prevent the carrier from tilting during its transverse movement from one side of the elevator to the other.

On the receiving side of the elevator I have shown a section of gravity carrier 49 having stops 50 at its end to prevent the package from accidentally sliding off, said carrier being composed of rails with spaces between them to permit the passage of the carrier bars 30. One end of the carrier is provided with stops 51 which engage the package and hold it in place until the point of delivery is reached.

I claim as my invention:—

1. In an elevator, the combination, with the upright angle bar frame having vertical flanges forming guides, of a package carrier arranged to move vertically in said frame, anti-friction wheels mounted on said carrier and arranged to contact with the outer faces of said vertical guides and said flanges having recesses in the top and bottom of the elevator to permit the passage of said anti-friction wheels and allow the carrier to move from one side of the elevator to the other.

2. In an elevator, the combination with an upright frame, of a package carrier arranged to move vertically in said frame, a series of anti-friction guiding wheels provided on

each side of said carrier, and vertical guiding flanges arranged to pass between wheels on the same side of the carrier and prevent oscillation thereof.

3. In an elevator, the combination, with an upright frame, of carrier chains mounted therein, a carrier provided between said chains, hangers secured to said carrier on each side thereof, the hangers on the same side of the carrier being arranged to cross one another, bars connecting the upper ends of said hangers on the same side of the carrier, said hangers having pivots connecting them at their points of intersection with one another to said carrier chains, anti-friction guiding wheels mounted on said hangers and said bars, and guides for said wheels provided on said frame.

4. In an elevator, a carrier comprising side rails, hangers secured at their lower ends thereto and inclined toward one another above said carrier, the hangers on the same side of the carrier crossing one another, carrier chains pivotally connected to said hangers at their points of intersection with one another, and guiding means mounted on said hangers.

5. In an elevator, a carrier comprising side bars, hangers secured to said bars, anti-friction wheels 38 and 42 mounted respectively on said hangers and said bars, and a guiding means arranged to pass between and engage said anti-friction wheels.

6. In an elevator, the combination, with a carrier and means for elevating the same, of hangers secured to said carrier, bars connecting the upper ends of said hangers on the same side of the carrier, anti-friction wheels mounted on said bars, and cross bars arranged in the upper portion of the elevator and adapted to engage said anti-friction wheels and guide said carrier in a horizontal direction during its passage from one side of the elevator to the other.

7. In an elevator, the combination, with a frame and carrier chains mounted therein, of a carrier arranged between said chains, hangers secured to said carrier and having pivotal connections with said chains at points intermediate to their ends, bars connecting the upper ends of said hangers on the same side of the carrier, anti-friction wheels mounted on said bars, and guides mounted in said frame and arranged to direct the carrier from one side of the elevator to the other.

8. In an elevator, the combination, with a frame and carrier chains mounted therein, of a carrier arranged between said chains, hangers secured to said carrier and pivotally connected with said chains, straps connecting the pivots of said hangers with said carriers, anti-friction guiding wheels mounted on each side of said carrier, and anti-friction



wheels mounted on said hangers and straps, and guides provided on the up and down side of said elevator frame in position to engage the said wheels.

5 9. In an elevator, the combination with an upright frame, of carrier chains mounted therein, a carrier, hangers secured thereto on each side, the hangers on the same side of the carrier crossing one another, bars connecting  
10 the upper ends of said hangers on the same side of the carrier said hangers having pivots connecting them at their points of intersection with one another to said carrier chain.

15 10. In an elevator, the combination with a frame, of carrier chains, a carrier, hangers secured thereto on each side the hangers on the same side of the carrier crossing one another, bars connecting said hangers on the same

side of the carrier said hangers having pivotal connections with said chains, and anti-friction guiding wheels carried by said hangers and bars. 20

11. In an elevator, the combination with a carrier, and means for elevating the same, of hangers secured to said carrier, bars carried  
25 by said hangers, anti-friction wheels mounted on said bars, guiding means arranged to engage said anti-friction wheels and direct said carrier horizontally from one side of the elevator to the other. 30

In witness whereof, I have hereunto set my hand this 29th day of November 1907.

WILLIAM E. COURTNEY.

Witnesses:

RICHARD PAUL,  
J. B. BYINGTON.