

No. 776,809.

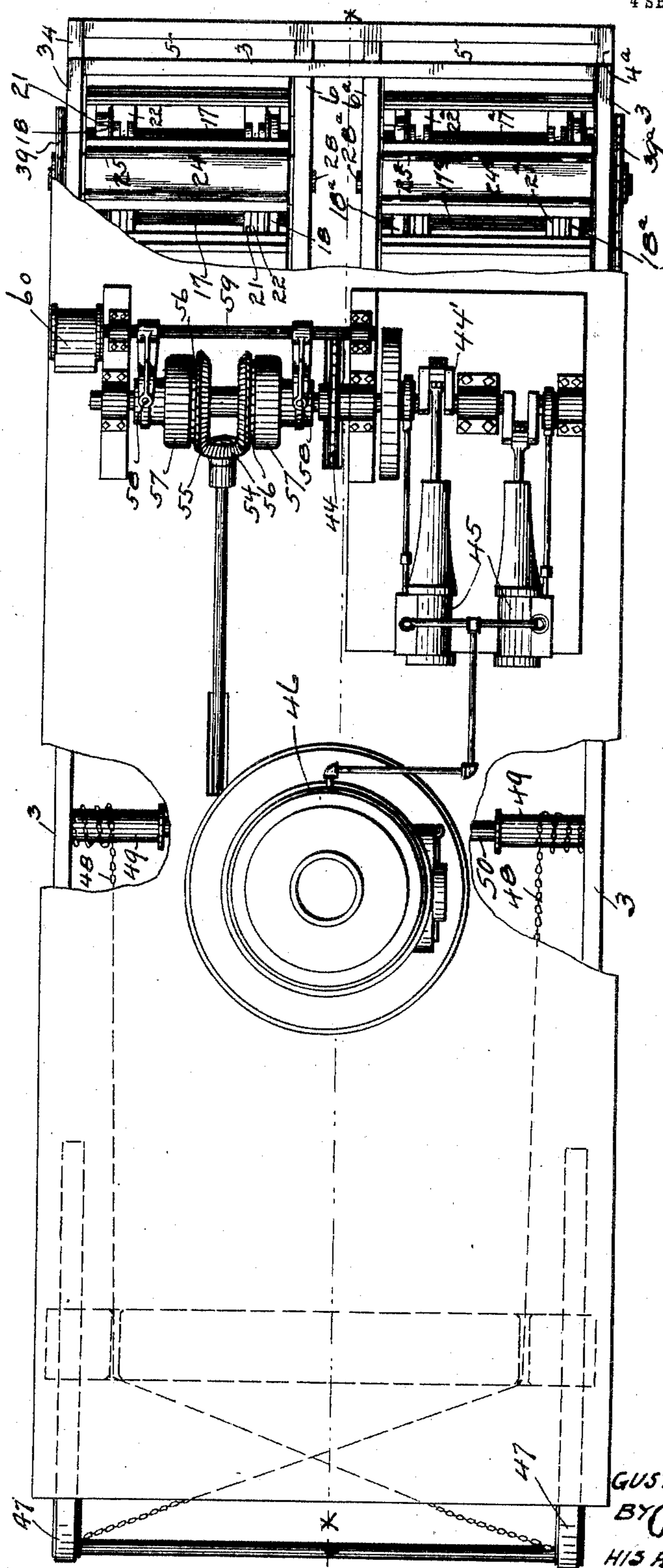
PATENTED DEC. 6, 1904.

G. SIPLER.
STEAM LOGGING ENGINE.

APPLICATION FILED JUNE 4, 1904.

NO MODEL.

4 SHEETS—SHEET 1.



WITNESSES
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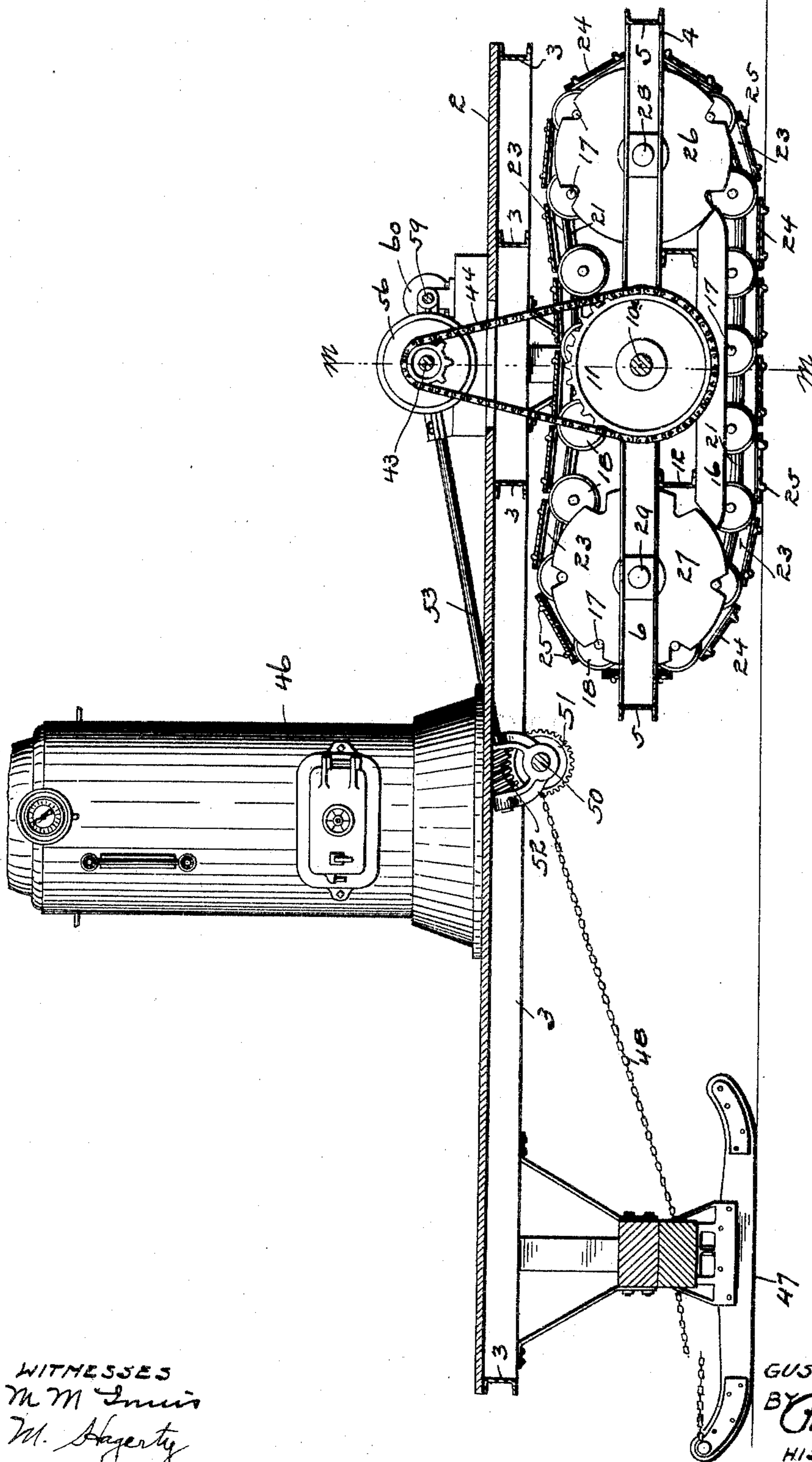


FIG. 2.

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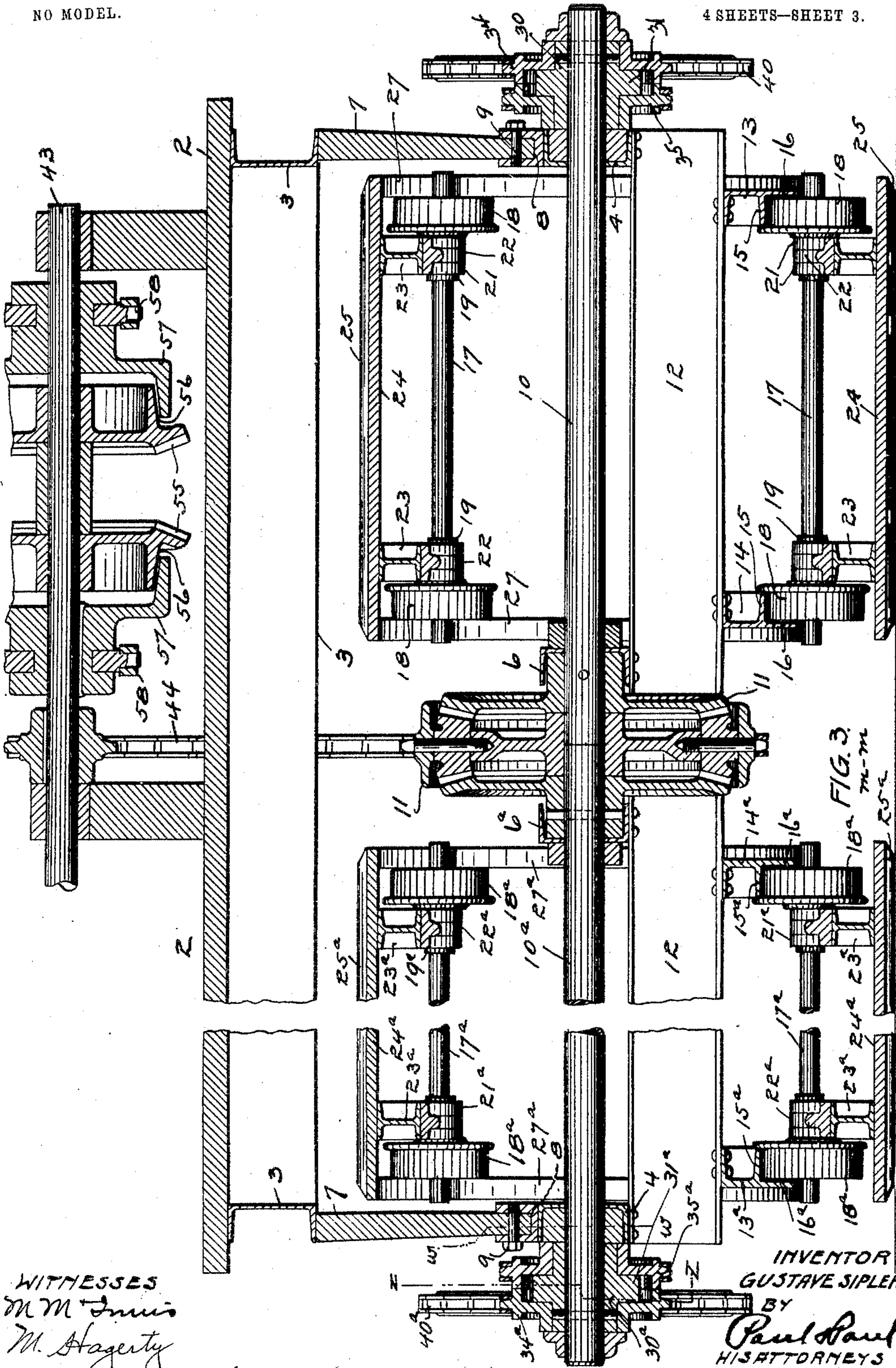
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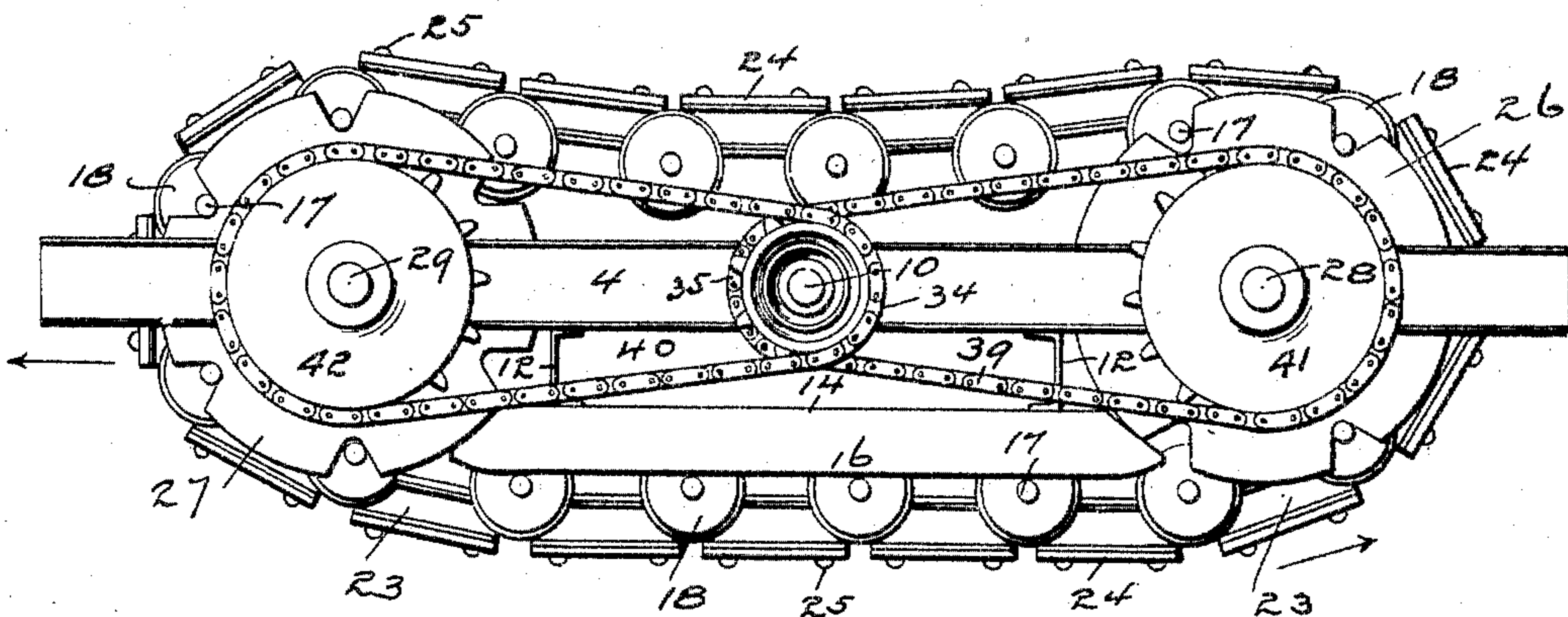


FIG. 4.

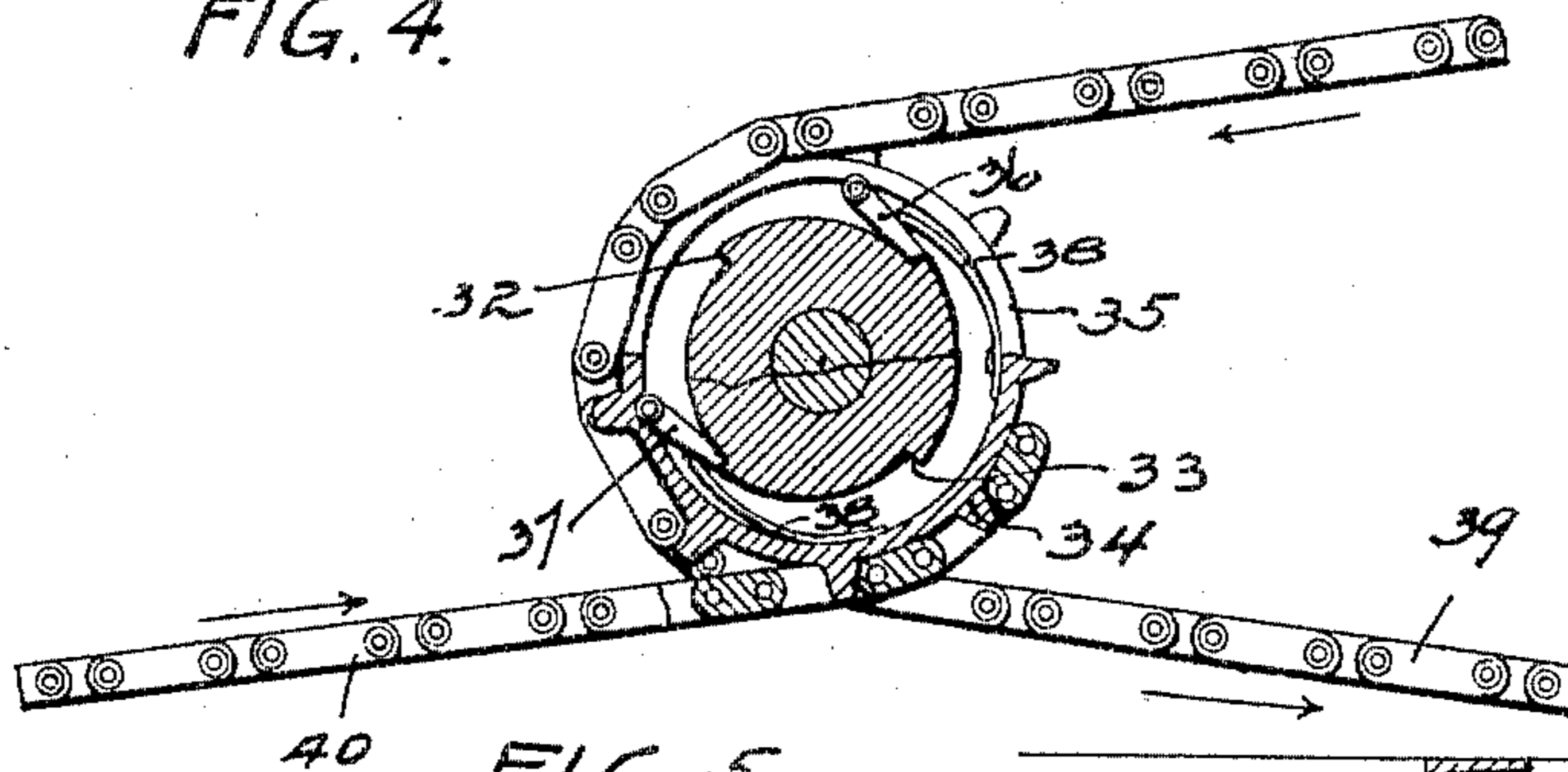


FIG. 5.

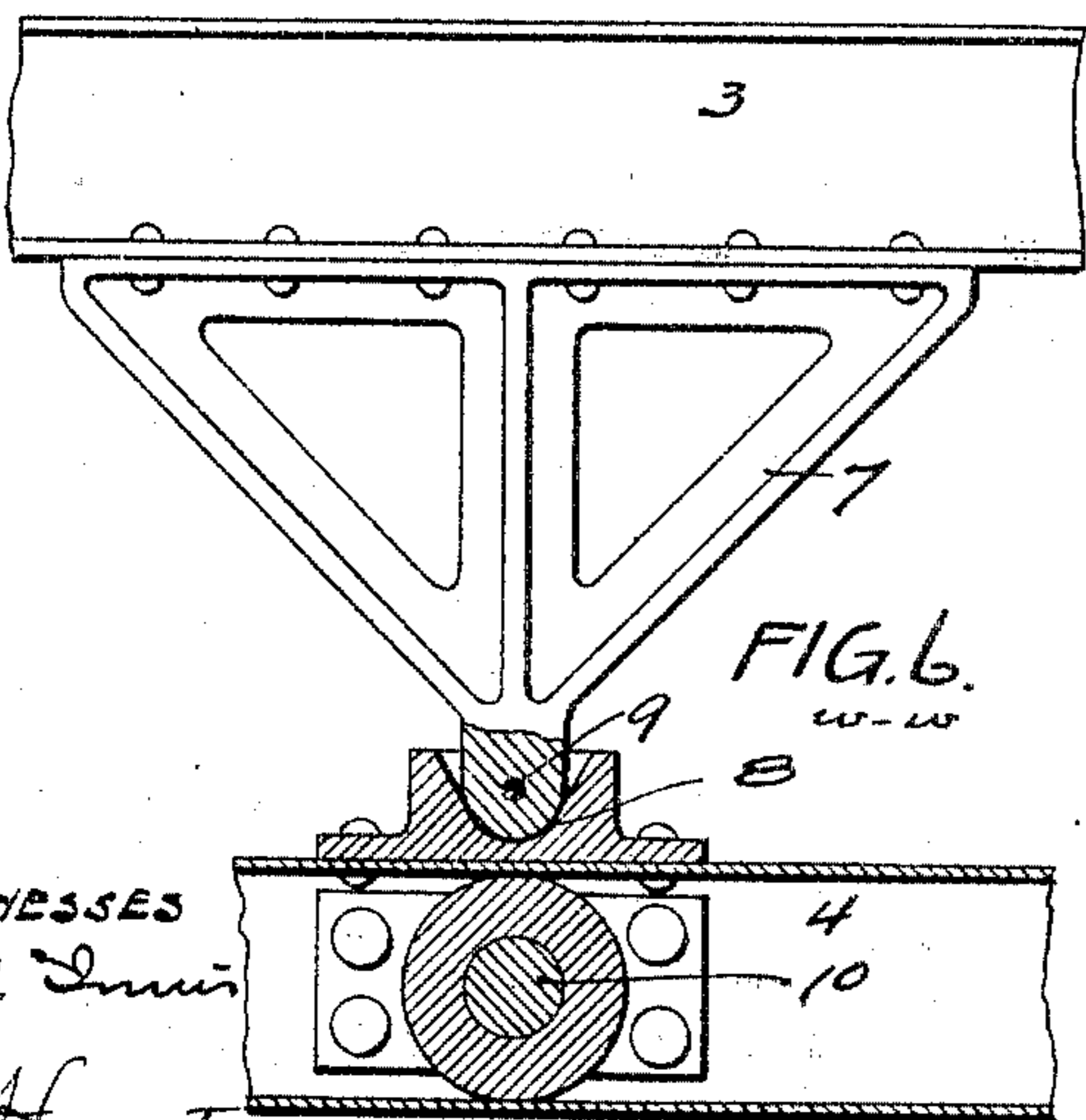


FIG. 6.

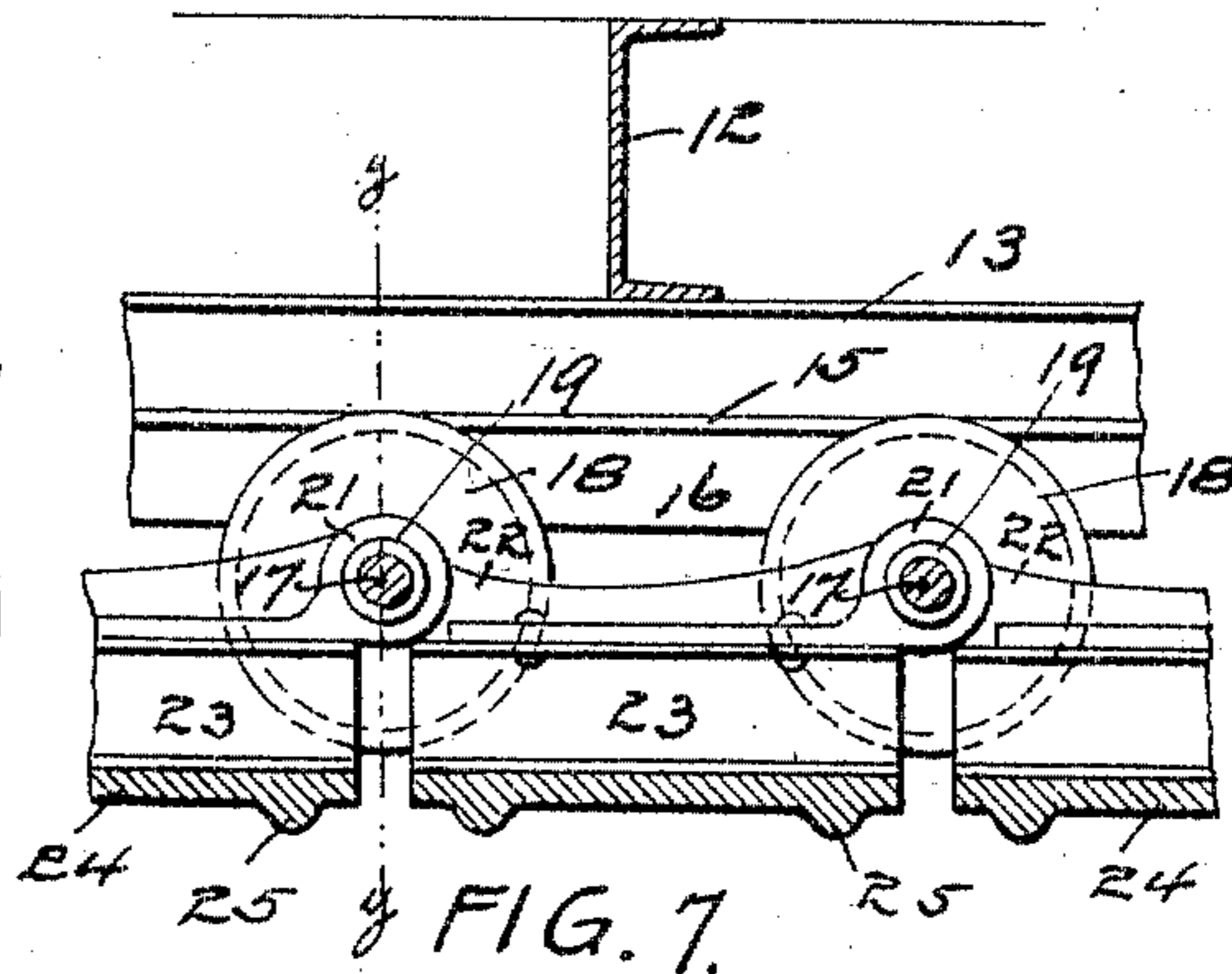


FIG. 7.

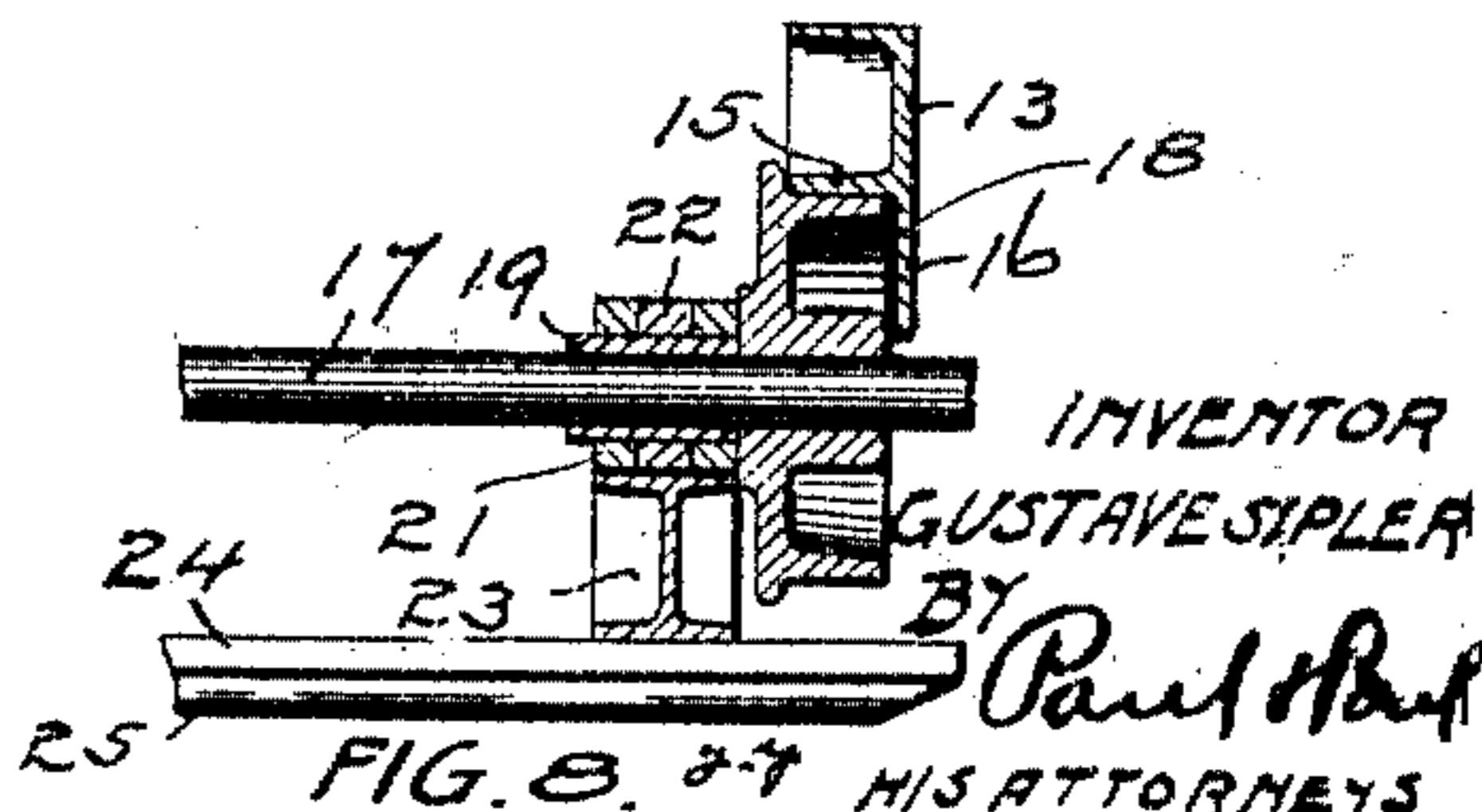


FIG. 8.

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UNITED STATES PATENT OFFICE.

GUSTAVE SIPLER, OF MINNEAPOLIS, MINNESOTA.

STEAM LOGGING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 776,809, dated December 6, 1904.

Application filed June 4, 1904. Serial No. 211,098. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVE SIPLER, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Steam Logging-Engines, of which the following is a specification.

My invention relates to that class of road or traction engines operated by steam-power in which the whole apparatus moves upon an endless traveling tramway or belt laid down at one end of the machine and taken up at the other as it progresses in either direction.

The object of my invention is to apply the principles embodied in an apparatus of the foregoing type to a logging-engine used for hauling sleighs loaded with logs from place to place.

A further object is to simplify the construction of the tramway or belt and provide improved means for reducing friction between it and the machine-frame.

A further object is to provide improved means for driving the endless belt or tramway.

A further object is to provide means for laying the belt or tramway which will prevent it from digging up the ice or snow of which the logging-road is composed.

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 plan view of a steam logging engine or sleigh embodying my invention. Fig. 2 is a longitudinal vertical section of the same substantially on the line *x x* of Fig. 1. Fig. 3 is a transverse vertical section on the line *m m* of Fig. 2. Fig. 4 is a detail of the driving mechanism. Fig. 5 is a section on the line *z z* of Fig. 3. Fig. 6 is a detail sectional view on the line *m m* of Fig. 3. Fig. 7 is a detail showing the manner of connecting the links of the tramway or belt to the tread-plates. Fig. 8 is a section on the line *y y* of Fig. 7.

In the drawings 2 represents a floor or platform provided with the usual transverse bracing-bars 3, which are preferably of chan-

nel-iron, to form a substantial rigid support for the engine-boiler. Beneath the rear end of this platform is a rectangular frame consisting of side and end bars 4 and 5 and intermediate bars 6, connecting the end bars at a point near the middle of the machine. These bars are preferably all of channel-iron of suitable dimensions. Brackets 7 are provided on the under side of said platform 2 and have their lower ends fitting within sockets 8 on the side bars 4 and held therein by pins 9. The lower ends of these brackets are rounded to fit the correspondingly-shaped ends of the sockets and oscillate freely therein to allow the frame and tramway belts carried thereby to tilt up and down and accommodate themselves to the inequalities of the road.

Beneath the brackets 7 and their pivots on the oscillating frame are two shafts, which I designate as 10 and 10^a, arranged in line with each other in suitable bearings in the oscillating frame and having their inner ends connected by a compensating-gear device 11, through which power is transmitted from a suitable source, as will hereinafter be described, to operate the machine. Beneath the bars 4 and 6 I provide bars 12 upon each side of the shafts 10 and 10^a, extending entirely across the machine and secured to the flanges of the bars 4 and 6 at their points of intersection. Beneath the bars 12 and secured thereto are rails 13 and 14, extending at right angles to said bars and composed, preferably, of angle-iron, having flanges 15 and 16.

As shown clearly in Fig. 3, I have provided a pair of rails 13 and 14 upon each side of the compensating gear and also a belt or tramway, with the driving mechanism therefor, upon each side of said gear. These belts and their operative connections are duplicates of each other, and in this description, therefore, I will merely describe the belt and its connecting mechanism on one side of the machine, designating the corresponding belt and parts on the other side of the machine by the same reference-numerals with the exponent "a."

Referring now to the belt or tramway at the right hand of Fig. 3, 17 represents a series of shafts provided with flanged wheels 18, secured thereon and loosely mounted in sleeves

19. Links 21 have forked ends pivoted on said sleeves, and corresponding links 22 have their ends pivoted on said sleeves between the forks of the links 21, thus forming an endless chain or belt between the sleeves and the shafts 17. Blocks 23, preferably of I-beam material, are bolted to the links at each end of the shaft 17 and also to tread-plates 24, having ribs 25 on their surfaces to prevent the belt from slipping. The wheels 18 travel on the flanges 15 and form a roller-bearing between the rails 13 and the tread-plates, the flanges of the wheels 18 engaging the rails and holding the rails in place. The shafts 17 extend out beyond the ends of the wheels 18 and engage sprockets-wheels 26 and 27, mounted on shafts 28 and 29, that have suitable bearings in the bars 4 and 6 upon each side of the machine.

Any suitable mechanism may be employed for driving the shafts 28 and 29 from the shaft 10; but I prefer to employ the following-described mechanism: On the outer end of the shaft 10 is secured a gear 30, having a centrally-arranged annular ring 31, provided on its periphery with alternately-arranged teeth 32 and 33. Sprockets 34 and 35 are loosely mounted on the ends of said gear and have dogs 36 and 37, that engage, respectively, the teeth of said gear and are held in engagement therewith by springs 38. Sprocket-chains 39 and 40 connect the sprockets 34 and 35 with suitable sprocket-wheels 41 and 42, secured on the shafts 28 and 29. The purpose of this form of drive is to apply the power to the tramway-belt in such a way that it will always be drawn taut as it is laid on the ground. For instance, referring to Figs. 4 and 5, if the machine is moving ahead or toward the left hand in Fig. 4 the power will be transmitted through the belt 39 to the sprocket 41 and draw the lower half-section of the tramway-belt taut beneath the rails. The other belt, 35, will run loosely on its sprocket, moving in the same direction as the belt 39. As soon, however, as the machine is reversed to run backward or toward the right hand of Fig. 4 the power will be transmitted through the belt 35, which will be run in the opposite direction from that indicated by the arrow in Fig. 5, and the belt will again be drawn taut beneath the bearing-rails. With this construction there will be no danger of kinking or buckling of the tramway-belt either when the machine is going backward or forward, as the part that bears on the ground will be drawn taut and present an even bearing-surface.

Mounted in suitable bearings upon the platform 2 is a drive-shaft 43, connected by a drive-chain 44 with the compensating gear 11. The drive-shaft is connected with a crank-shaft 44, driven from an engine of the ordinary horizontal type 45, supplied with steam from a boiler 46.

I do not desire to confine myself to any par-

ticular arrangement or style of engine, as this part of the machine is capable of considerable modification, according to the use for which it is designed to put the apparatus and the power required.

The forward end of the platform 2 is supported upon oscillating sleigh-runners 47, that are connected on each side of the center by chains 48 with trams 49 on a shaft 50. A worm-wheel 51, secured on said shaft, meshes with a worm 52 on one end of a rod 53. The opposite end of said rod is provided with a bevel-gear 54, arranged between miter-gears 55 on the drive-shaft 43 and provided with conical bearing-surfaces 56 on one side, adapted to enter correspondingly-shaped cups 57, splined on said shaft and forming, with the said conical surfaces, friction-clutches through which power may be transmitted from the drive-shaft to the rod 53. These clutches are so arranged that when one is locked and operative the other is in its inoperative position, and by alternately transmitting power through them to the rod 53 the operator can readily steer the apparatus. I prefer to operate these friction-clutch devices by power, and therefore provide forked members 58 in connection with each of the cups 57, said members being secured to a piston-rod 59 of a cylinder 60. Steam is alternately admitted to the ends of the cylinder to move the piston therein and operate the clutch devices. The operator standing on the machine can control the movement of the same through the engine 45 and at the same time steer the apparatus in the desired direction.

I claim as my invention—

1. In a traction-engine, the combination, with a frame, shafts arranged in pairs near the forward and rear ends of said frame, sprockets secured on said shafts, tramways, shafts mounted at intervals thereon and arranged to engage said sprockets, antifriction bearing-wheels mounted on said last-named shafts, rails mounted on said frame and engaging the bearing-wheels on the lower sections of said tramways, a driving-shaft composed of two sections having their outer ends operatively connected with said first-named shafts, and a compensating gear connecting the inner ends of said driving-shaft sections, substantially as described.

2. In a traction-engine, the combination, with a hinged frame, of two tramways, carrying-wheels therefor, bearing-wheels mounted on said tramways and supporting said frame, a driving-shaft arranged transversely on said frame between said carrying-wheels and composed of two sections having operative connections with said carrying-wheels, and a compensating gear connecting the sections of said driving-shaft between said tramways.

3. In a traction-engine, the combination, with a frame, of shafts mounted therein, sprocket-wheels carried by said shafts, a tram-

belt comprising shafts arranged to engage said sprockets, sleeves loosely mounted on said shafts and links and tread-plates connecting said sleeves, wheels secured on said belt-shafts, and rails depending from said frame and arranged to bear upon said wheels, for the purpose specified.

4. In a traction-engine, the combination, with a frame, of shafts mounted therein, sprocket-wheels secured on said shafts, a tram-belt comprising a series of shafts having ends engaging said sprocket-wheels, links connecting said belt-shafts, bearing-wheels secured on said belt-shafts, and bearing-surfaces provided on said frame upon each side of said belt and arranged to rest upon the bearing-wheels passing beneath them, substantially as described.

5. In a traction-engine, the combination, with a frame, of a tramway, carrying-wheels therefor, bearing-wheels mounted on said tramway and arranged to engage bearing-surfaces on said frame only when said tramway is passing beneath said surfaces, substantially as described.

6. In a traction-engine, the combination, with a driving-shaft, of driven shafts arranged in front and in the rear of said driving-shaft, a tram-belt, carrying-wheels therefor on said driven shafts, a gear secured on said driving-shaft and having alternately-arranged teeth, sprockets loosely mounted on said gear and having oppositely-arranged dogs to engage said teeth, sprockets secured on said driven shafts, and chain belts connecting the sprockets of said gear and those of said driven shafts respectively, for the purpose specified.

7. In a traction-engine, the combination, with a platform, of a frame pivotally suspended beneath the same, a driving-shaft, driven shafts arranged in pairs in front and in the rear of said driving-shaft upon each side of said frame, sprocket-wheels mounted on said

driven shafts, a tram-belt comprising tread-plates, links connecting the same, and shafts having bearings for said links and arranged to engage said sprocket-wheels, bearing-wheels mounted on said shafts, and rails suspended in pairs upon each side of the machine between the upper and lower sections of said belt and arranged to bear upon said belt-wheels, substantially as described.

8. In a traction-engine, the combination, with a suitable frame, of carrying-wheels mounted therein, a tramway, shafts mounted at intervals thereon and engaging said carrying-wheels, sleeves loosely mounted on said tramway-shafts, links and tread-plates connecting said sleeves, and bearing-wheels mounted on said tramway-shafts and arranged to pass beneath and support said frame, substantially as described.

9. In a traction-engine, the combination, with a driving-shaft, of driven shafts arranged in front and in the rear of said driving-shaft, a tramway, carrying-wheels therefor mounted on said driven shafts, and means connecting said driving and driven shafts for drawing taut the lower section of said tramway when it is moved either forward or backward, substantially as described.

10. In a traction-engine, the combination, with a platform, of a frame hinged beneath said platform, carrying-wheels mounted in said frame, a tramway supported by said wheels, and bearing-wheels mounted on said tramway near the edges thereof and having bearing-surfaces on the under side of said frame, substantially as described.

In witness whereof I have hereunto set my hand this 28th day of May, 1904.

GUSTAVE SIPLER.

In presence of—

RICHARD PAUL,
M. HAGERTY.