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F. M. HOGG.
LOADING APPARATUS.
APPLICATION FILED DEC. 22, 1906.

3 SHEETS--SHEET 1.



WITNESSES:

Louis R. Heinrichs
C. C. Hines

INVENTOR
Francis M. Hogg

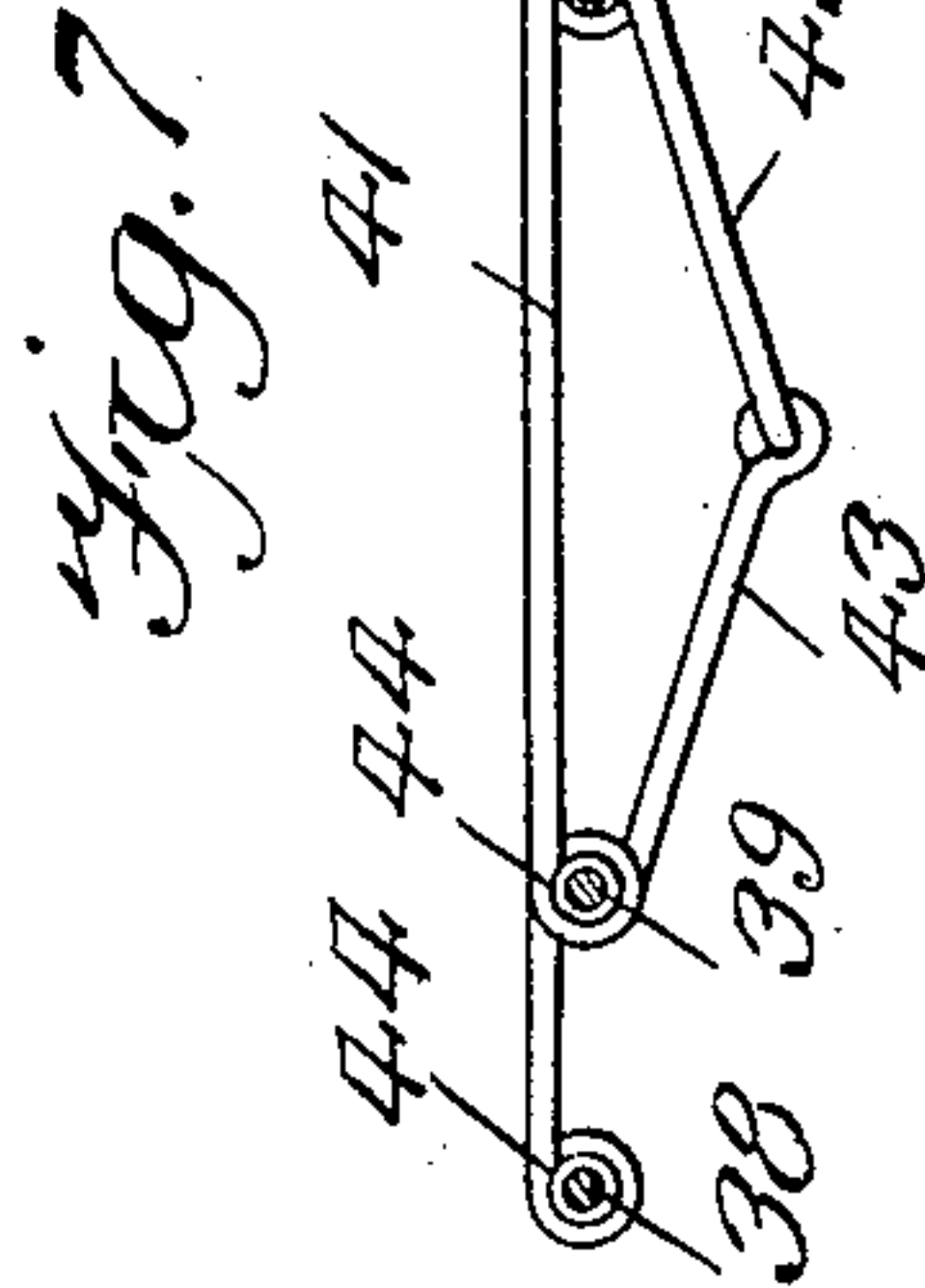
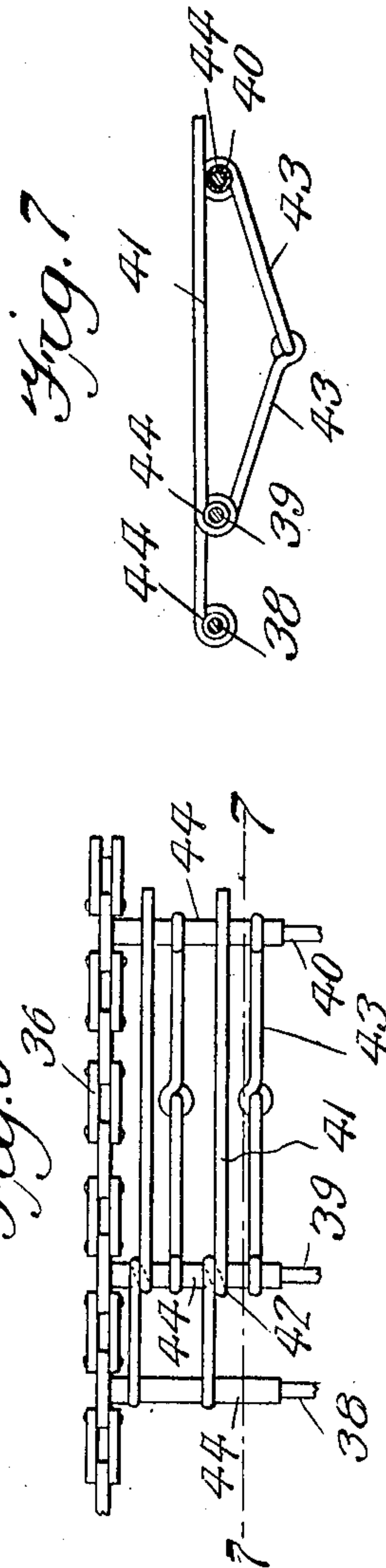
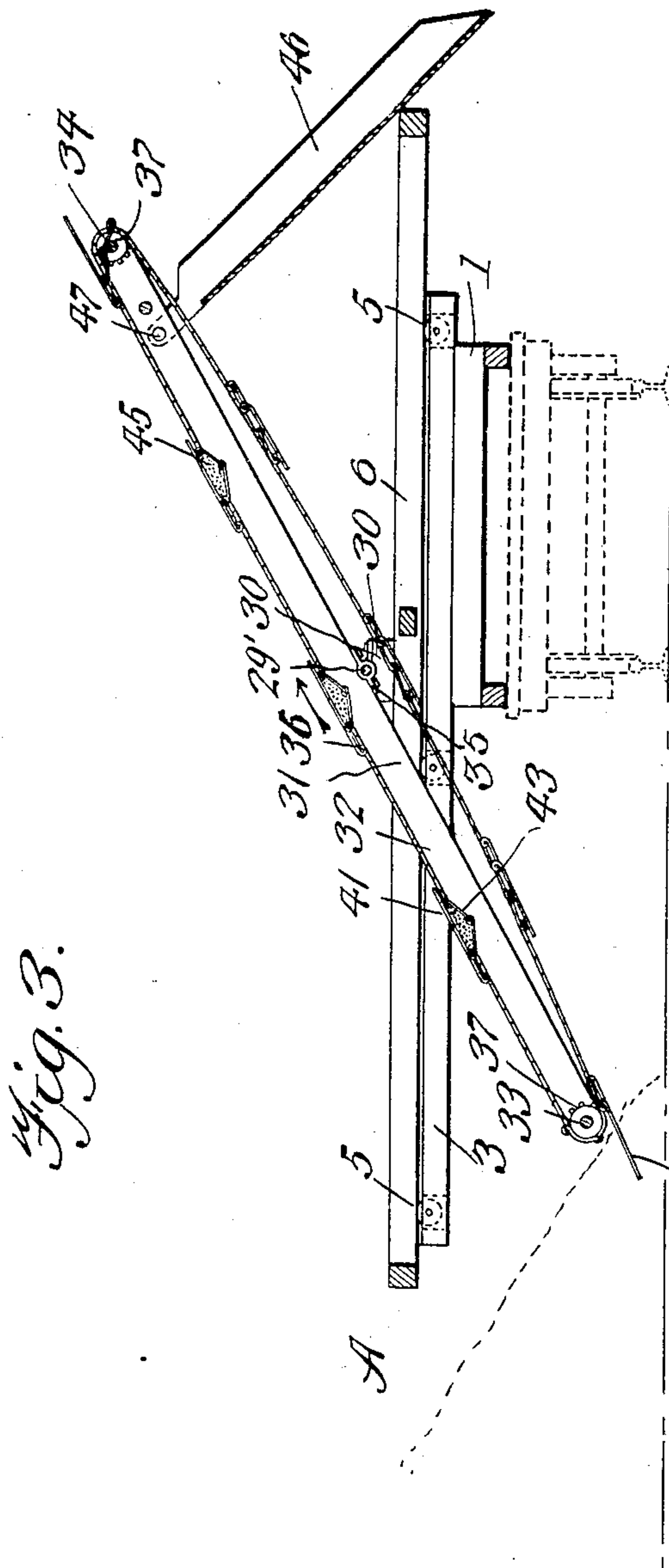
BY *Victor J. Evans*
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3 SHEETS—SHEET 3.

Fig. 4.

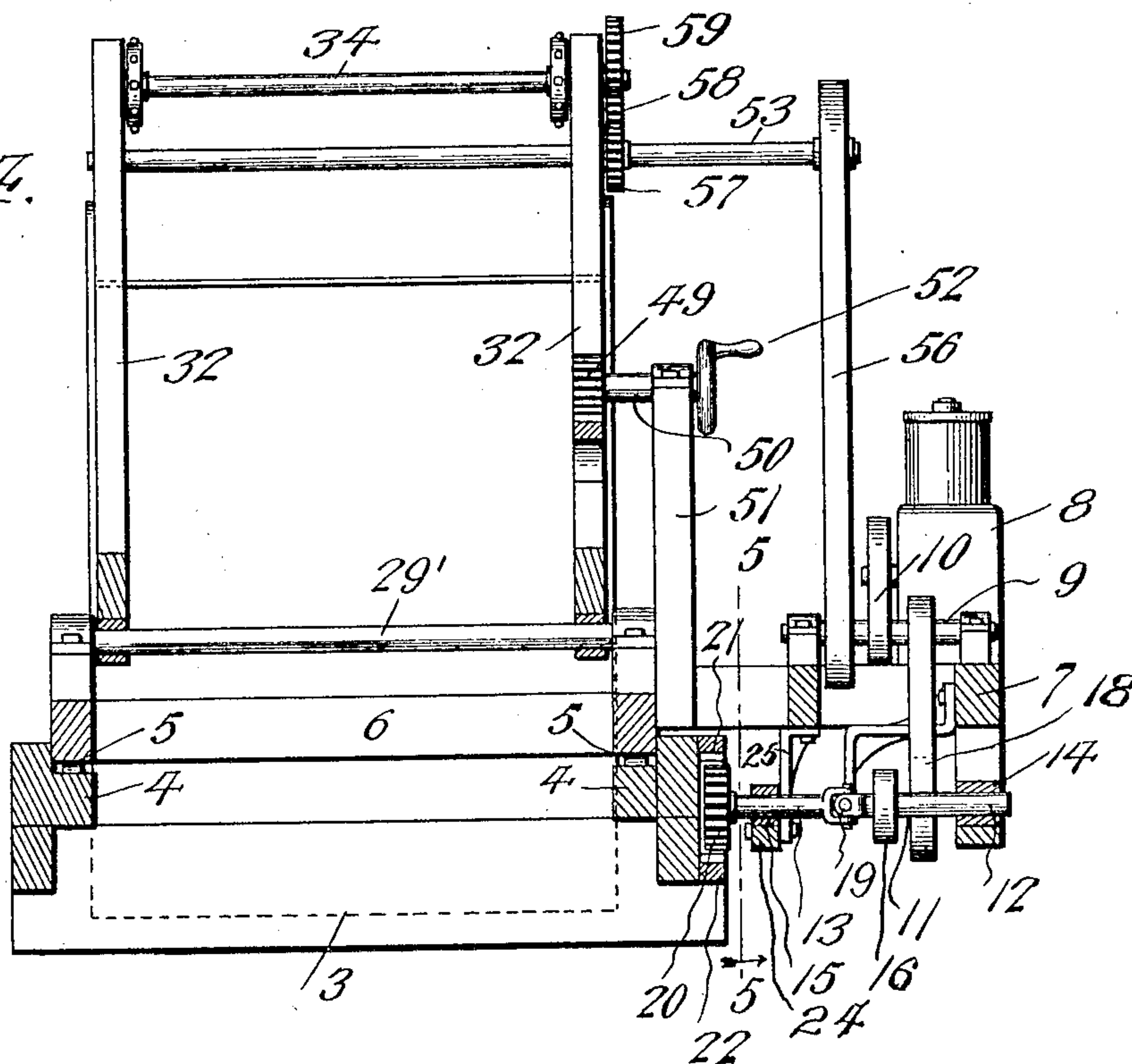
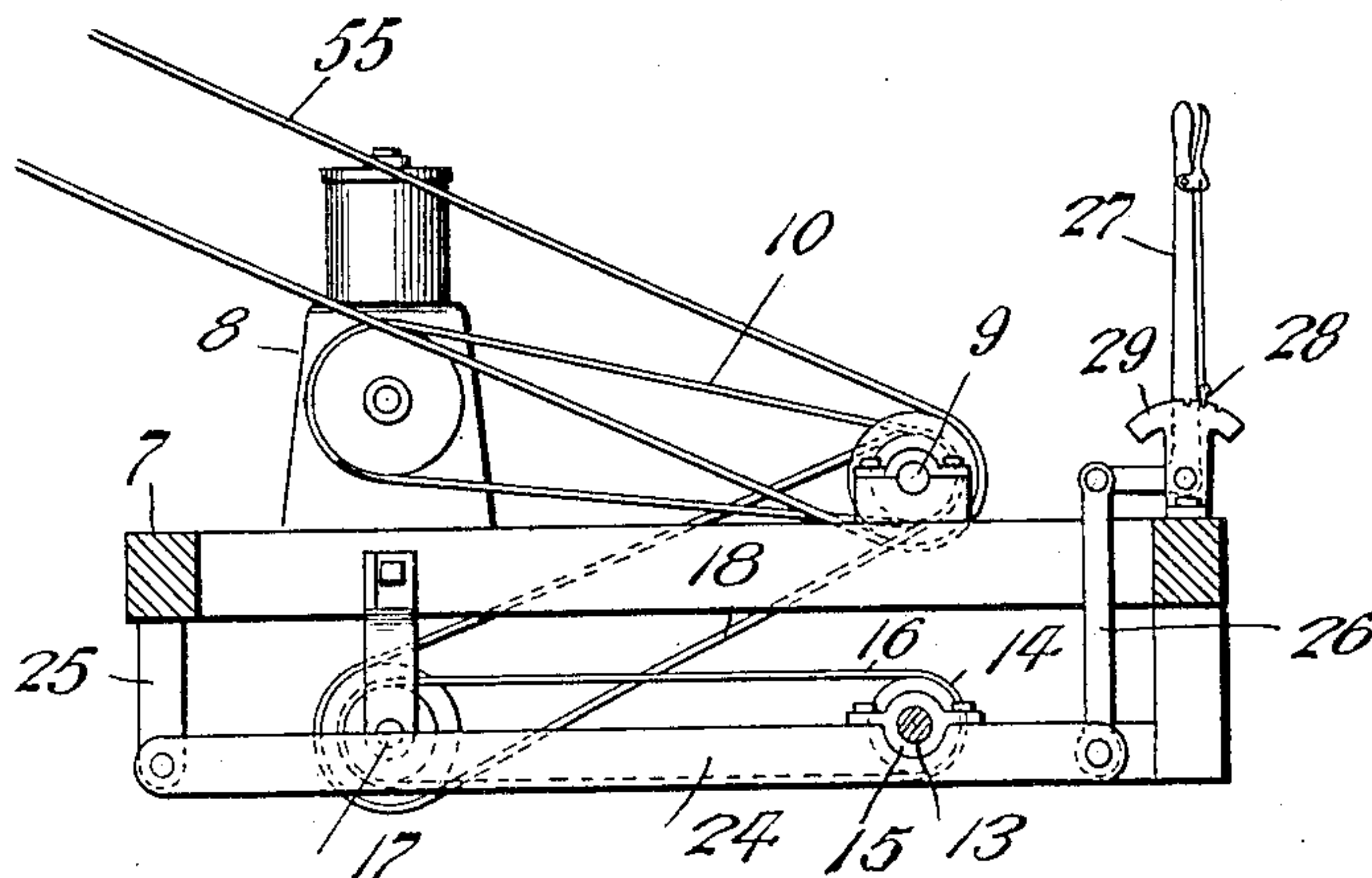


Fig. 5.



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UNITED STATES PATENT OFFICE.

FRANCIS M. HOGG, OF BESSEMER, ALABAMA.

LOADING APPARATUS.

No. 869,569.

Specification of Letters Patent.

Patented Oct. 29, 1907.

Application filed December 22, 1906. Serial No. 349,115.

To all whom it may concern:

Be it known that I, FRANCIS M. HOGG, a citizen of the United States, residing at Bessemer, in the county of Jefferson and State of Alabama, have invented new and useful Improvements in Loading Apparatus, of which the following is a specification.

This invention relates to an apparatus for loading coke and other substances into cars, the object of the invention being to provide a simple and comparatively inexpensive construction of apparatus of this character which is adapted to be readily controlled and will efficiently perform its intended function.

In the accompanying drawings,—Figure 1 is a side elevation of a loader embodying my invention. Fig. 2 is a top plan view of the same. Fig. 3 is a vertical longitudinal section of the apparatus as adjusted for the loading operation. Fig. 4 is an enlarged transverse section on line 4—4 of Fig. 1. Fig. 5 is a longitudinal section on line 5—5 of Fig. 4. Fig. 6 is a fragmentary plan view of the conveyer. Fig. 7 is a section on line 7—7 of Fig. 6.

Referring now more particularly to the drawings, the numeral 1 represents a wheeled supporting frame or flat car arranged to travel upon track rails 2, which are, in practice, arranged alongside a battery of coke furnaces and in parallel relation thereto, and also between the same and a trackway on which the cars to be loaded travel. I have not deemed it necessary to show the furnaces or transporting cars, as the present illustration is sufficient to illustrate the construction and principle of operation of the invention.

Supported by the car 1 is a platform 3 which extends transversely thereof and projects some distance beyond the car on the side thereof facing the banks of coke drawn from the coke ovens. This platform is provided at its sides with longitudinal track rails 4 provided with friction rollers 5 supporting a carriage 6 arranged to reciprocate thereon longitudinally of said platform and transversely of the car or supporting frame. The carriage may be of any suitable construction, but is here shown in the form of an open oblong rectangular frame provided upon one side with a frame extension 7 on which is mounted an engine 8 which may be adapted to propel the car 1 through suitable motor gearing, not shown. A drive shaft 9 is journaled in bearings on said frame extension and is driven by a belt 10 from the engine shaft. Also journaled on the frame extension below the shaft 9 is a shaft 11 consisting of alined sections 12 and 13 journaled respectively in bearings 14 and 15. The section 12 of said shaft 11 is driven by a belt 16 from a counter shaft 17 actuated from the drive shaft 9 by a belt 18, the several belts referred to passing over suitable pulleys on said shafts, and is connected at its inner end with the outer end of the section 13 by a gimbal or other suitable joint 19 which will permit said section 13 to swing in a vertical plane. The shaft section 13 is

movably mounted in its bearing in any preferred manner and carries at its inner end a pinion 20 arranged between upper and lower rack bars 21 and 22 fixed upon the adjacent side of the platform 3, said rack bars being preferably terminally connected by end pieces 23. The pinion receives continuous motion from the engine through the gearing before described and rotates to the left or in the direction of the arrow shown in Fig. 1, so that when thrown upward into mesh with the rack 21, it will project or move the carriage outward and when thrown downward into mesh with the rack 22, will retract or move the carriage rearwardly. Plain or un-toothed spaces 21^a and 22^a are left, respectively, at the rear end of the rack 21 and at the front end of the rack 22 to prevent the motion of the pinion from being communicated thereto at the respective limits of movement of the carriage, in order that injury to the gearing may be prevented in the event of the operator failing to promptly reverse the pinion. This construction also permits of the carriage being allowed to remain stationary for any desired length of time at the limits of its movements without the necessity of stopping the drive gearing or employing clutch mechanism to automatically arrest the action of the pinion.

The shaft section 13 may be movably mounted by arranging its bearing 14 upon a swinging bar or lever 24 pivotally connected at its rear end to a hanger 25 carried by the frame extension 7 and attached at its forward end by a link 26 to a pivoted adjusting lever 27 provided with a pawl 28 to engage a rack 29 fixed upon said frame extension, which rack may be provided with three teeth to permit the lever to be adjusted and locked to hold the pinion in mesh with either rack or out of meshing engagement therewith.

A shaft 29' extends centrally across the carriage 6 and is suitably fixed at its ends to blocks 30 attached to the side rails of the carriage. A conveyer frame 31 is arranged to tilt vertically within the carriage and comprises spaced parallel side bars 32 connected at their ends by shafts 33 and 34, said bars 32 being provided with bearings 35 engaging the shaft 29, whereby the conveyer frame is adapted to swing or tilt thereon. The conveyer frame supports an endless conveyer comprising a pair of link chains 36 mounted to travel on sprocket wheels 37 fixed to the shafts 33 and 34. The conveyer is provided at intervals with gathering devices to take up and hold the coke which is to be transported through the action of the conveyer to a car or receptacle. Each of these gathering devices is of peculiar construction, and comprises rods 38, 39 and 40 extending between and connected to links of the chains 36. The rods 38 and 39 are spaced the distance of an intervening link, while the rod 40 is arranged some distance in advance thereof in the direction of movement of the belt or conveyer. Rake fingers 41 are fixed at their rear ends to the rod 38 and looped

adjacent thereto about the rod 39, as indicated at 42, and project forwardly and rest at their free ends normally upon the rod 40. Extending between and pivotally connected with the rods 39 and 40 are links 43 arranged in pairs pivotally connected with each other and with the respective rods and disposed beneath the free ends of the fingers or in such relation thereto that the fingers will overlies the pockets formed by the links when the latter are in sagging position. Spacing sleeves or thimbles 44 inclose the rods between the ends of the fingers and links to retain the same in proper assembled position.

Under the pull of the belt the links and fingers are adapted to normally lie in a straightened out condition with the links in line with the chains and the fingers lying in close proximity to the links. When the links of each gathering device, however, reach the lower end of the conveyer, they bend to conform to the curve of the conveyer as it passes around the lower sprocket wheels 37 on the shaft 33, thus projecting or exposing the cooperating rake fingers which extend beyond the conveyer and to project into the bank of coke A and to take up coke therefrom. As the gatherer becomes a part of the upwardly moving or working stretch of the chain the coke is thrown by the fingers on to the links 43, which latter sag under the weight of the coke and form a pocket 45 for its reception, as shown in Fig. 3, while the fingers on clearing the sprocket wheels assume their normal position and project over the links to close the pockets thus formed and prevent the coke from passing out of the same under the action of the conveyer. As each gatherer passes around the sprocket wheels 37 on the upper shaft 34, the links again conform to the bend of the chain during the passage of the gatherer from the active to the return stretch of the conveyer, and thus open the pockets, as shown in Fig. 3, for the discharge of the coke therefrom. The discharging chute 46 resting at its lower end upon the rear cross bar of the carriage and pivotally connected at its upper end, as indicated at 47, to the conveyer frame so as to swing with said frame and vary its inclination to accord with the different positions thereof. The chute is adapted, in practice, to discharge the gathered coke by gravity into the transporting car located on the track alongside the apparatus, as will be readily understood.

The tilting of the conveyer to operate upon different portions of the bank of coke is accomplished through the medium of a segment rack 48 fixed upon one of the side bars thereof and with which meshes a pinion 49 carried by a shaft 50 journaled in a bearing upon a supporting post 51 mounted on the carriage and provided with an actuating hand wheel 52, whereby an operator, located on the apparatus in close juxtaposition to the engine, may conveniently tilt the conveyer to any desired position and at the same time control the action of the reciprocating carriage through the instrumentality of the lever 27. The upper end of the conveyer frame carries a shaft 53 disposed adjacent the shaft 34 and having one end projected beyond said frame and carrying a pulley 54 connected by a belt 55 with a pulley 56 mounted on the shaft 9. The shaft 53 also carries a pinion 57 meshing with an idler 58 which in turn meshes with a gear 59 on the adjacent

end of the shaft 34, whereby motion at a reduced rate of speed is communicated to the conveyer.

In operation, the car 1 is disposed opposite the bank A of coke, the carriage advanced through the action of the rack gearing and the conveyer tilted to bring its lower end in such position that the fingers of the gatherers will gather the coke from the bank in the manner previously described. The gathered coke will be conveyed by the conveyer or elevator to the chute 46 and discharged by the latter into the receiving car. Through the rack and pinion mechanism and the means for tilting the conveyer it will be obvious that the latter may be moved back and forth and adjusted to any desired angular position relative to the carriage to suit variations in the height or arrangement of the bank of coke and its distance from the rails 2.

Having thus described the invention, what is claimed as new, is:—

1. A loading apparatus comprising a supporting frame, a carriage arranged to reciprocate thereon, racks carried by the frame, a pinion mounted on the carriage and arranged between the racks, drive gearing for the pinion, means for throwing the pinion into and out of engagement with either rack, a tilting conveyer supported by the carriage, and means for controlling said conveyer.
2. A loading apparatus comprising a supporting frame, a carriage arranged to reciprocate thereon, spaced racks carried by one of said parts, a drive pinion carried by the other part and arranged between the racks, means for adjusting the pinion into and out of engagement with either rack, drive gearing for operating the pinion, a tilting conveyer supported by the carriage, and means for controlling said conveyer.
3. A loading apparatus comprising a supporting frame, a carriage arranged to reciprocate thereon, a tilting conveyer supported by the carriage, spaced racks upon the frame, a drive pinion on the carriage adapted to mesh with either of said racks, a shaft carrying said pinion and composed of jointed sections, drive gearing connected with one of the sections, adjusting means connected with the other section for throwing the pinion into and out of engagement with the racks, and means for controlling the conveyer.
4. A loading apparatus comprising a supporting frame, a carriage arranged to reciprocate thereon, racks carried by the frame, a sectional shaft on the carriage, one of the sections of the shaft being pivotally connected with the other, a pinion supported by said pivoted section for engagement with either of the racks, adjusting means connected with the pivoted shaft section, a motor on the carriage, a tilting conveyer frame supported by the carriage, an endless conveyer carried by said frame and provided with gathering means, and gearing driven by the motor for operating the said shaft and the conveyer.
5. A loading apparatus comprising a supporting frame, a carriage arranged to reciprocate upon the frame, racks upon the frame, a tilting conveyer supported by the carriage and provided with gathering means, a motor supported upon one side of the carriage, drive gearing between the motor and conveyer, a shaft driven from the motor and having a pivoted section, a pinion arranged between the racks and supported by the pivoted section of the shaft, and adjusting mechanism connected with said pivoted section of the shaft for throwing the pinion into and out of engagement with either rack.
6. A loading apparatus comprising a supporting frame, a carriage arranged to reciprocate thereon, racks carried by the frame, a pinion mounted on the carriage and arranged between the racks, a shaft carrying the pinion, means for adjusting the shaft to throw the pinion into and out of engagement with either rack, a tilting conveyer supported by the carriage, and means for controlling said conveyer.
7. A loading apparatus comprising a supporting frame, a stationary platform projecting laterally beyond one side of the frame, a carriage arranged to reciprocate upon said

- platform, reversible rack and pinion mechanism for operating the carriage, means for controlling said mechanism to advance or retract the carriage, a tilting conveyer supported by the carriage, means for tilting said conveyer, 5 drive gearing for the operating parts, and a chute pivotally mounted at its upper end upon the upper end of the conveyer and resting at its lower end on the frame and automatically controlled as to position by the tilting of the conveyer.
- 10 8. In a loader, a conveyer provided with gatherers, each comprising gathering fingers and a portion adapted to form a pocket for the reception of the coke gathered by the fingers, and adapted to be closed by the fingers to retain the coke therein.
- 15 9. In a loader, a conveyer provided with gatherers, each comprising gathering fingers and link members, said link members being adapted to sag under the weight of the material gathered by the fingers and to form a pocket for the

reception of the same, the fingers being arranged to close the pockets. 20

10. In a loader, a conveyer comprising connected chains provided with gatherers, each gatherer comprising supporting members carried by the chains, and gathering fingers and links operatively connected, said links being adapted to move away from the fingers at the extremities 25 of the conveyer and to receive the material gathered thereby and to form a pocket for its reception, the pocket adapted to be closed by the gathering fingers on the working stretch of the chain.

In testimony whereof, I affix my signature in presence of 30 two witnesses.

FRANCIS M. HOGG.

Witnesses:

W. H. DENNIS,
ANNIE WILSON.