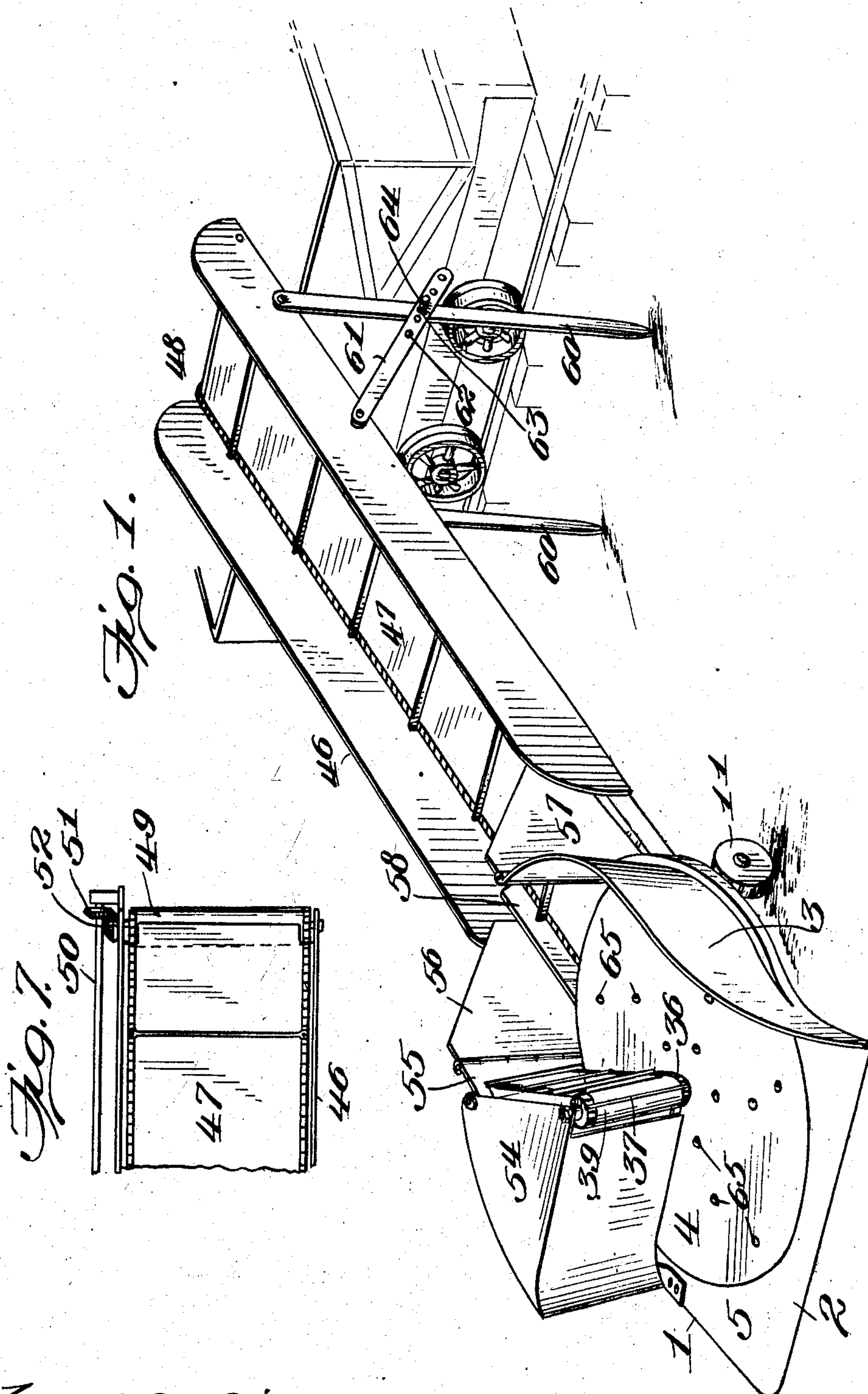


F. K. HOLMESTED.
LOADING MACHINE.
APPLICATION FILED DEC. 31, 1908.

944,438.

Patented Dec. 28, 1909.

3 SHEETS—SHEET 1.



Witnesses:
[Signature]
[Signature]

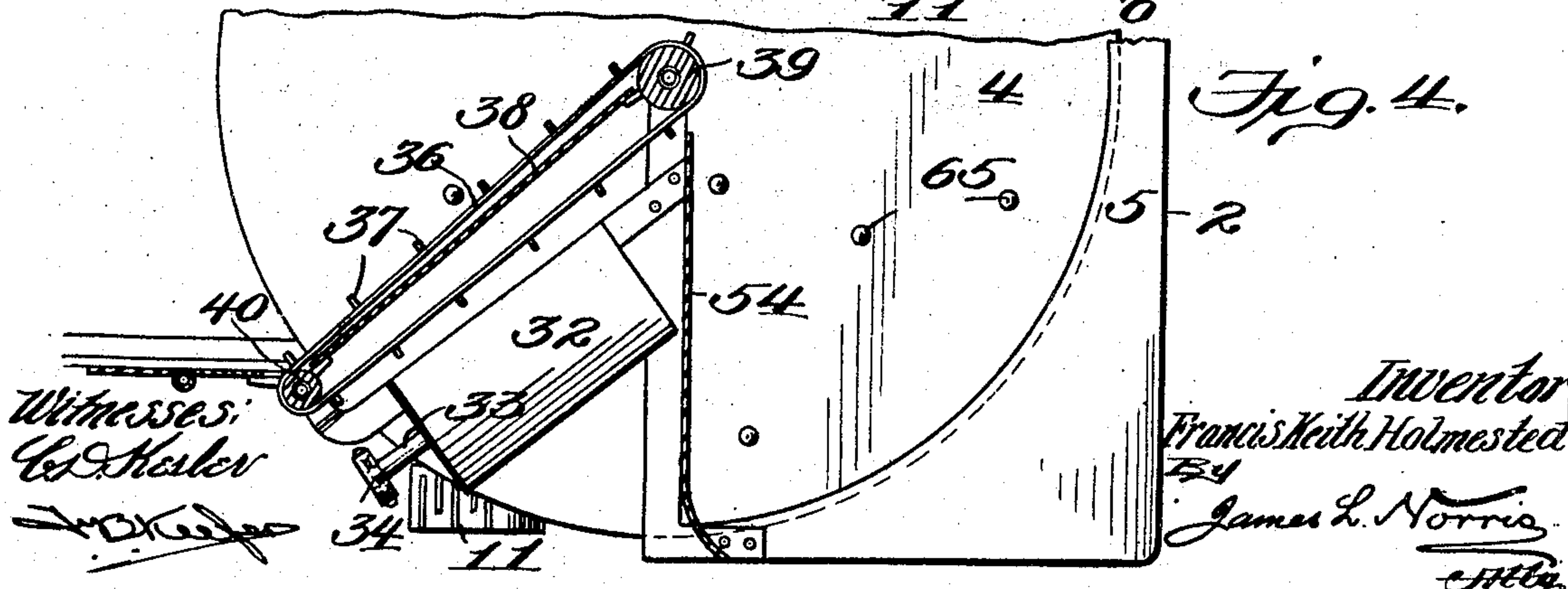
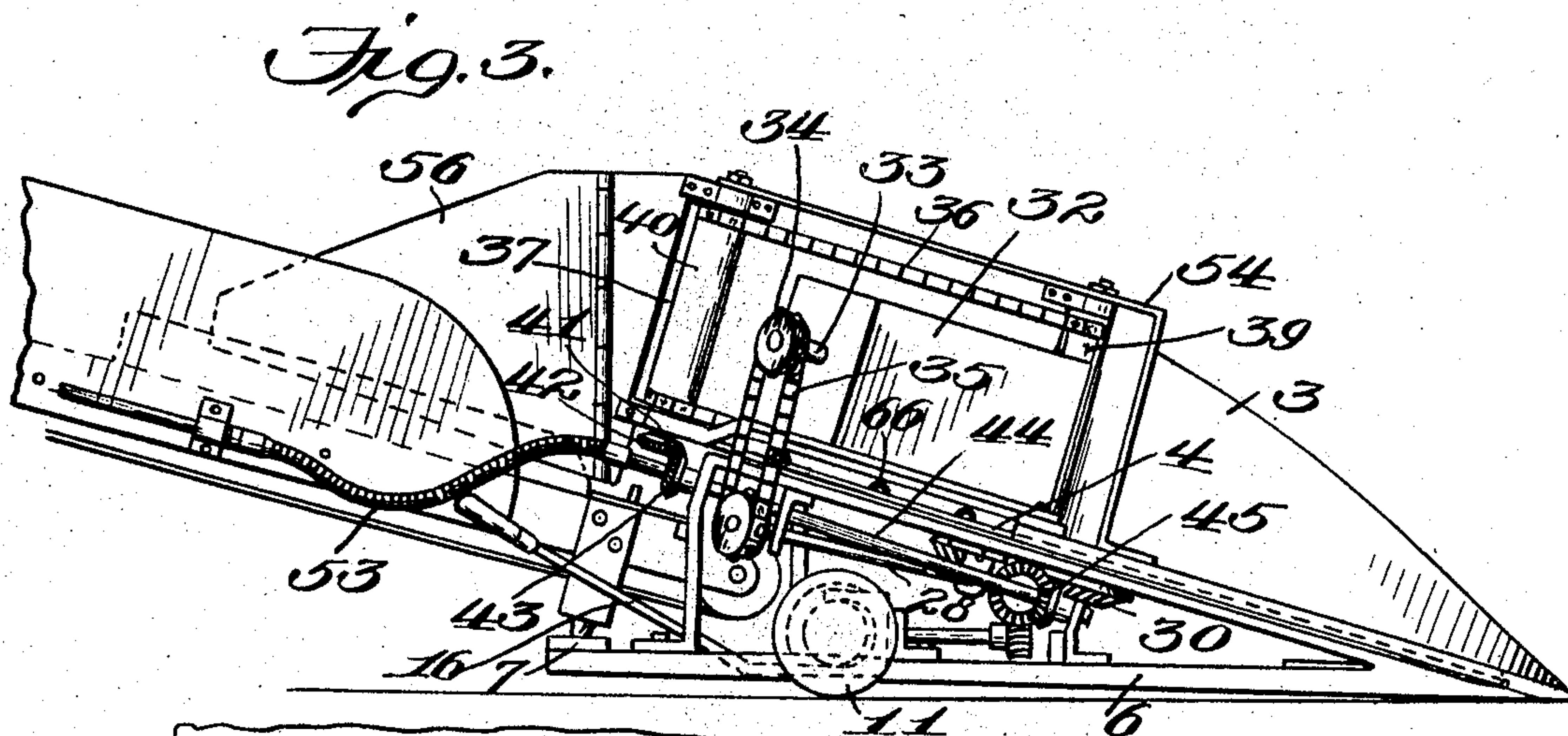
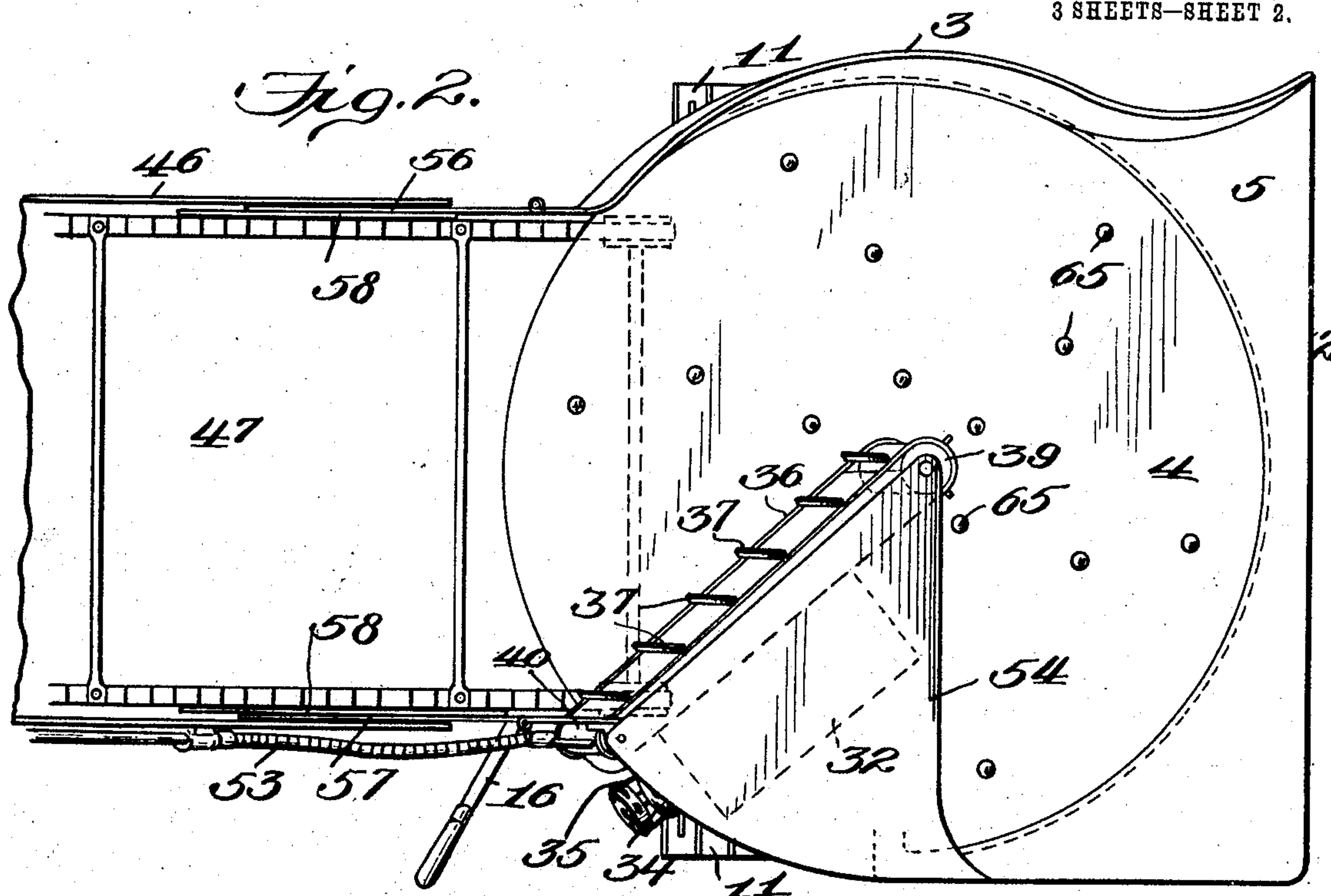
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James L. Norris
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3 SHEETS—SHEET 3.

Fig. 5.

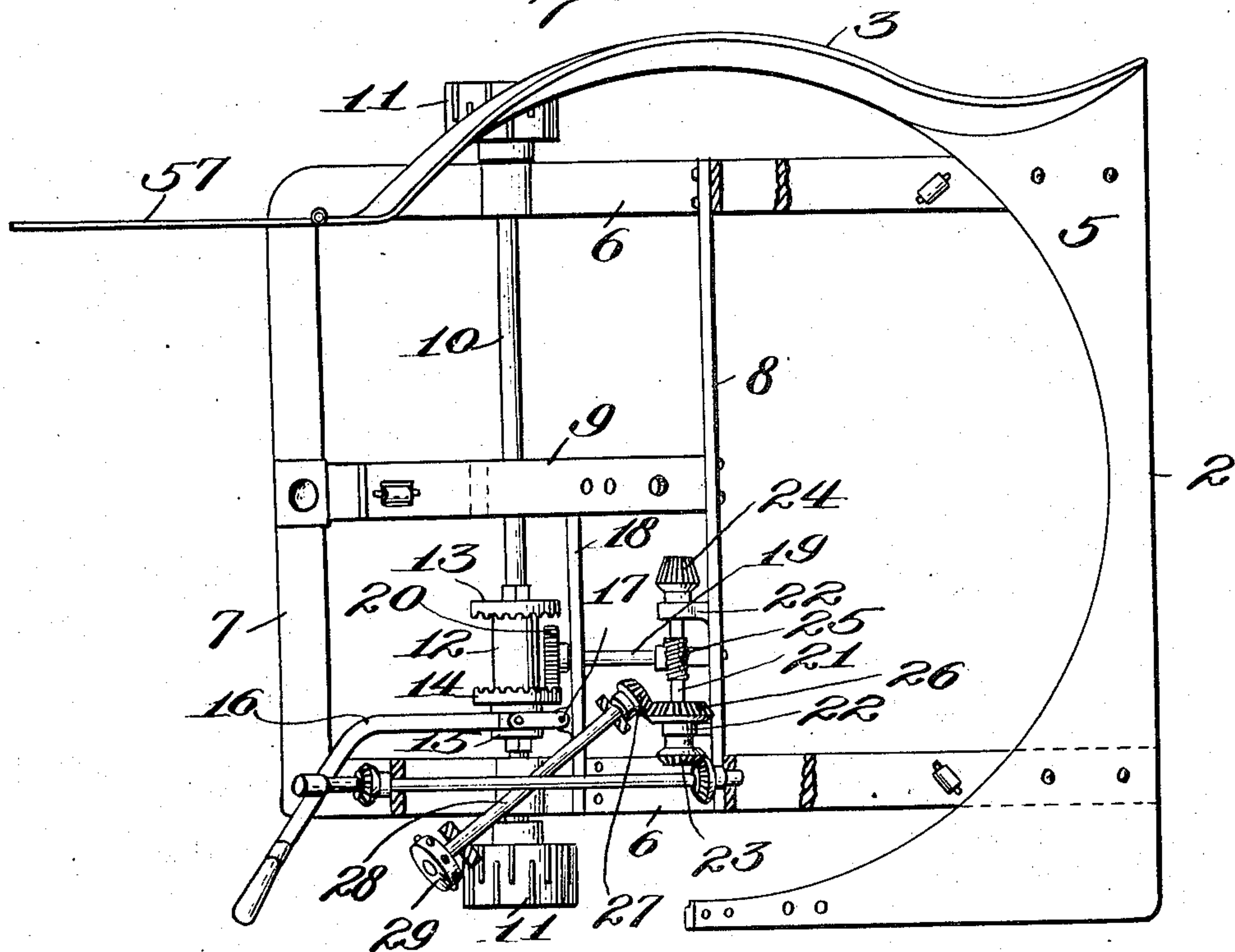
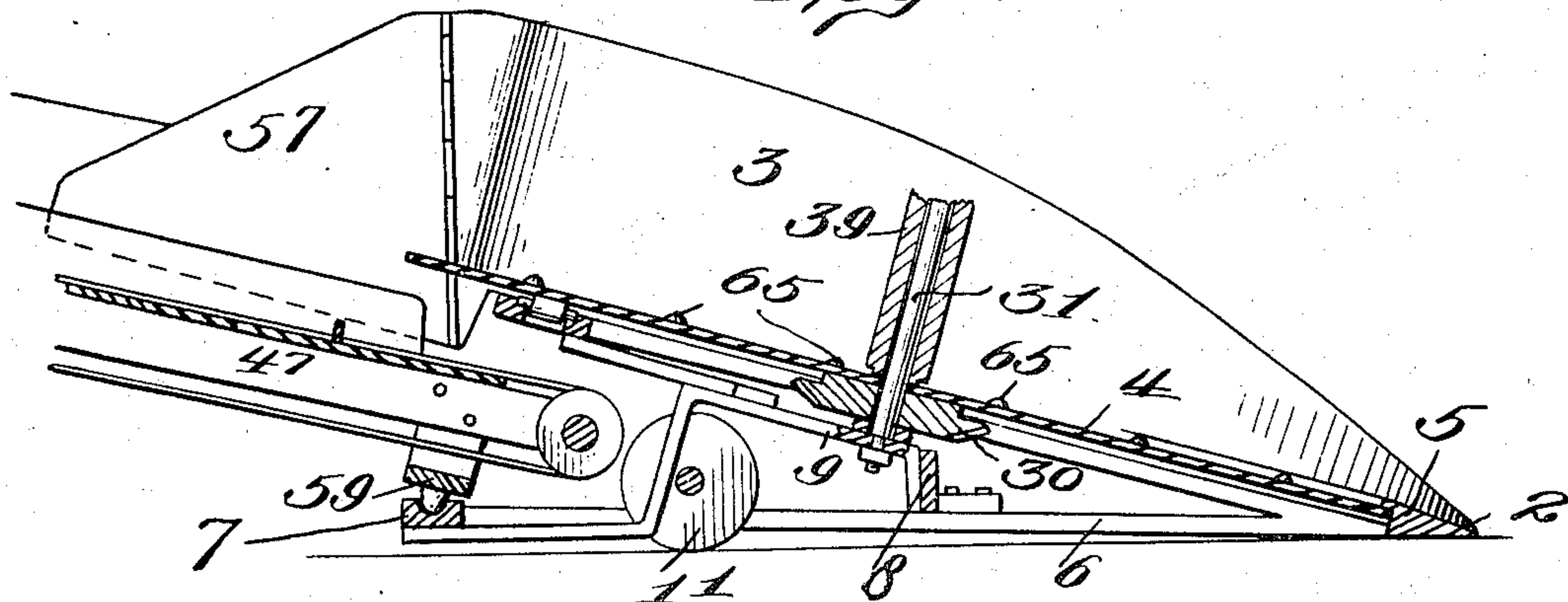


Fig. 6.



Witnesses:

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UNITED STATES PATENT OFFICE.

FRANCIS KEITH HOLMESTED, OF QUINNIMONT, WEST VIRGINIA.

LOADING-MACHINE.

944,438.

Specification of Letters Patent. Patented Dec. 28, 1909.

Application filed December 31, 1908. Serial No. 470,234.

To all whom it may concern:

Be it known that I, FRANCIS KEITH HOLMESTED, a subject of the King of England, residing at Quinnimont, in the county of Fayette and State of West Virginia, have invented new and useful Improvements in Loading-Machines, of which the following is a specification.

This invention relates to a loading machine or apparatus for use with loose material and particularly adapted to transfer coal from a pile, bin, or other place of storage to a car or cars and having an automatic operation to facilitate the elevation or disposition of coal or other loose material in a carrying or transporting means at a minimized expense by dispensing with and obviating the usual manual methods.

The improved machine or apparatus is portable and may be readily moved from one place to another without confinement to any particular form of track means and may be conveniently arranged in operative relation to a pile of loose material or coal and a car or other receptacle to be loaded without requiring the car or receptacle to be disposed in a precise position relatively to the material to be loaded thereinto.

The machine or apparatus also includes a motive means and coöperating mechanism whereby it may be readily moved over the ground surface to an operative position and either forwardly toward and partially in engagement with the loose material or coal to be loaded or backwardly from the latter as conditions and change of position may require, or the machine may be permitted through the operation of the mechanism to remain in a fixed position while loading the loose material or coal.

It is preferred that the machine or apparatus embody in its organization motive means and coöperative propulsive mechanism, but the portability of the machine is not confined to the use of any particular operating mechanism, the essential characteristics in this respect being the ready movability of the machine from one place or position to another without the use of a track means.

A further essential feature of the present machine is a conveying means adjustable upwardly and downwardly and in opposite lateral directions without in the least modifying the effectiveness of the actuating mechanism or affecting the operation of the

feeding means at the receptive extremity of the machine.

Other structural advantages will be hereinafter more fully specified, and a preferred form of the improvements is illustrated in the accompanying drawings for the purpose of demonstrating a practical application of the same, but it will be understood that the invention is not limited or confined to the precise construction which will be hereinafter explained and particularly to the actuating mechanism and motive means or to any particular form of motive means and coöperative mechanism geared thereto.

In the drawings: Figure 1 is a perspective view of a loading machine or apparatus embodying the features of the invention and shown applied in operative position. Fig. 2 is a top plan view of a portion of the machine or apparatus and particularly showing the receiving frame and feeding means and movable deflector and a portion of the conveyor or conveying means in operative association with the feeding means. Fig. 3 is a side elevation of the mechanism as shown by Fig. 2. Fig. 4 illustrates a horizontal section taken through a portion of the mechanism shown by Fig. 3. Fig. 5 is a top plan view of the receiving frame and a portion of the actuating mechanism and illustrating the feeding means and motive means removed. Fig. 6 is a longitudinal vertical section of the mechanism as shown by Fig. 2. Fig. 7 is a detail plan view of the upper extremity of the conveying means.

The present machine or apparatus embodies many features of improvement of the apparatus or loading device disclosed by my Patent No. 839,997, dated January 1, 1907. In this patent the machine is confined to operation on a fixed track means, and the feeding means, consisting of a revoluble platform, wheel or plate, delivers the loose material into a conveying means having a fixed position, and from this conveying means the loose material passes into an auxiliary car or receptacle forming a part of the machine organization and containing a further conveying means for transferring the loose material to the car or receptacle to be loaded. This patented machine has been found practicable for many purposes and very efficient as a labor-saving loading mechanism for loose material and particularly for loading coal into cars, but the machine embodying the present features of invention has a

greater scope and usefulness in the particulars which will be hereinafter explained.

Referring to the drawings, the numeral 1 designates a receiving frame which is downwardly inclined toward its receptive extremity 2 and has a flaring side or guard 3 extending fully thereover to the discharge or rear extremity, the latter extremity being preferably elevated. The feeding means consists of a revoluble platform, wheel or plate 4 of disk-like form and inclined toward the receptive extremity of the frame 1, the said frame 1 being provided with a top plate 5 which overlaps or projects over the lower portion of the feeding means, as clearly shown by Fig. 6. The frame 1 also includes in its organization a horizontal base frame comprising side bars 6 and a rear end cross bar 7, and transverse and longitudinal supports 8 and 9 as well as other reinforcing and supporting means which will be hereinafter incidentally referred to in explaining the position of the several operative mechanisms. An axle 10 extends transversely across the base frame and engages suitable bearing devices carried by the side bars 6 and is provided on its opposite extremities, preferably outside of the said side bars, with ground wheels 11 supplied with suitable tractive devices. On the axle 10 a clutch sleeve 12 is shiftably mounted and is provided with opposite clutch heads 13 and 14, and adjacent to the clutch head 14 the sleeve 12 has a shifting collar 15 with which a shifting lever 16 coöperates and is deflected or bent to extend outwardly at one side of the frame. The shifting lever 16 has its inner extremity fulcrumed as at 17 to a cross support 18 which provides a bearing for a counter shaft 19 carrying a pinion 20 at its rear end to mesh with either of the heads 13 and 14 for the purpose of moving the machine in opposite, forward and rearward directions, or by suitably adjusting the sleeve 12 the pinion 20 may occupy a position between the heads 13 and 14 at a time when the machine is in fixed position or has been properly adjusted for loading operation. The shaft 19 also has bearing in the transverse support 8 and extends beneath a motion transmitting shaft 21 supported in bearing brackets 22 projecting rearwardly from the support 8, the said shaft 21 being parallel with the support 8 and having on its outer and inner extremities suitable bevel gears 23 and 24 and driving the shaft 19 through the medium of a suitable worm gearing 25. The coöperating elements of the worm gearing 25 are respectively carried by the shafts 19 and 21 and always remain in mesh, and the shaft 21 is actuated through the medium of a driving pinion 26 in continual mesh with a pinion 27 on the inner end of a motor driven shaft 28 having on its outer extremity a sprocket wheel 29. The

bevel gear 24 continually meshes with a bevel pinion 30 on the under side of the center of the feeding means or the revoluble platform, wheel or plate 4.

The platform, wheel or plate 4 rotates on an upwardly projecting post 31 extending a suitable distance above the said platform and secured at its lower extremity in the longitudinal support 9, the gear 30, which is fixed to the platform, also rotating or revolving with said platform around the post.

Disposed over the platform, wheel or plate 4 at a point opposite the flaring side or guard 3 is a suitable motive means 32 having a power shaft 33 projecting from the outer extremity thereof and provided with a sprocket wheel 34 over which a chain belt 35 is trained and engages the sprocket wheel 29 on the outer end of the shaft 28. This motive means through the shaft 33 controls the actuation of the platform, wheel or plate 4, the propulsion either forwardly or backwardly and also the transportation of the complete machine, and also the operation of the conveying means which delivers the loose material from the feeding means to the car or receptacle to be loaded and which will be more fully hereinafter explained. The particular characteristics and type of this motive means are not essential, and it is intended to use any motive means adapted for the purpose and to support the same on the frame 1, preferably in the position shown. No other motive means is required to actuate the several parts of the machine, and by the organization of the motive means and co-operating mechanism explained and which will be more fully hereinafter referred to, the machine is rendered complete in its organization and independent as to its operation of any power generating means located in a plant or central station and therefore the improved machine may be operated at any point where its service is desired without the inconvenience of modifying or supplying connecting shafting or gearing.

Arranged over and extending partially across the feeding means, consisting of the platform, wheel or plate 4, is a movable deflector in the form of an endless belt 36 having lags, buckets, or analogous devices 37 and movable toward the rear of the machine or in such direction as to cause the loose material, such as coal, brought around against the said deflector by the feeding means or revoluble platform 4 to be delivered from the rear portion of the latter. The part of the movable deflector which is engaged by the loose material is braced or held in positive working position by a fixed partition 38, and interposed between the portions of the movable deflector, as shown by Fig. 4. A suitable spool or sleeve 39 is fitted over the upwardly projecting portion of the post 31 and constitutes a roller over which

the movable deflector passes, and in operative alinement with this roller 39 is an outer roller 40 fitted over and in operative relation to an upwardly projecting actuating shaft 41, see Figs. 3 and 4, the shaft 41 having a bevel pinion 42 on its lower end which meshes with a correspondingly disposed bevel pinion 43 on a longitudinal auxiliary shaft 44 provided with a pinion 45 at its forward extremity held in continual mesh with the pinion 23 on the outer end of the power transmitting shaft 21.

Coöperating with the rear portion of the feeding means is a delivery conveying means 46 which is adjustable upwardly and downwardly and in opposite lateral directions and the conveying belt or analogous movable element 47 thereof is actuated to have a rearward movement toward the outlet extremity 48 of said conveying means by a roller 49 at said extremity and which is actuated by a shaft 50 extending along the side of the conveying means and provided with a bevel pinion 51 meshing with a similar pinion 52 on one extremity of the spindle or shaft of the roller 49. The shaft 50 is practically a continuation of the shaft 44, a flexible connection 53 being interposed between the two shafts 44 and 50 and may be of any preferred type, this flexible connection as shown being in the form of a suitable length of flexible shafting. This flexible connection between the shafts 44 and 50 compensates for the adjustment of the delivery conveying means.

From the foregoing description and as hereinbefore noted it will be observed that all of the movable parts are controlled as to their actuation from the motive means 32 and the several elements specified are disposed at an angle relatively to the inclination of the feeding means and the several parts of the frame 4 and particularly the plate 5 coöperating with the said feeding means or supporting the latter. This mechanism presents a very effective actuating organization, but it is obvious that it may be modified and that the invention is not confined to the precise elements hereinbefore particularly described.

The roller 39 not only serves as an engaging means for the movable deflector or conveyer 36, but prevents dust and grit from clogging the bearing for said roller or the post 31. As an incidental protective feature a portion of the movable deflector or conveyer 36, the motive means and the mechanism below are covered by a dust hood or housing 54 of the shape shown particularly by Figs 1, 2 and 3 and applied in such manner as to avoid the least interference with the operation of the movable deflector or conveyer. This hood or housing 54 is open at its outer portion to give access to the motive means and coöperating mechanism. Directly in

rear of the movable deflector or conveyer and supported by the frame 1 is a rigid extension 55, and hinged thereto and also to the rear end of the flared side 3 are guards 56 and 57 which movably project into the conveying means 46 between the sides of the latter, and coöperating with the lower portions of these guards are elongated upstanding flanges or shields 58. The lower end of the conveying means projects under the rear extremity of the frame 1 far enough for the feeding means or revoluble platform 4 to permit the latter to effectively deposit the loose material on the belt or analogous device 47 and is fulcrumed as at 59 on the base of the frame 1 or on the center of the rear cross bar 7 of the said base, the fulcrum means being preferably in the form of a ball and socket joint as shown, by Fig. 6, to permit the delivery conveying means 46 to be raised or lowered and adjusted laterally in opposite directions at any angle desired with respect to the car or receptacle to be loaded and the most effective position of the feeding means embodying the revoluble platform, wheel or plate 4 relatively to the loose material into which the receptive or front extremity 2 of the frame 1 may be projected. In the adjustment of the conveying means 46 no openings will be formed between the rear portion of the feeding means and the said conveying means owing to the fact that the guards 56 and 57 will slide longitudinally into or outwardly from the portions with which they engage and also move away from and toward the bottom of the conveying means without producing a gap owing to the flanges or shields 58 and the overlap of the sides of the conveying means by the said guards 56 and 57. By this means the loose material discharged from the revoluble platform, wheel or plate 4 will with certainty be deposited upon the belt or analogous conveying means 47 irrespective of the adjustment of the conveying means or the position of the feeding means relatively to the delivery conveying means 46. The outlet extremity 48 of the conveying means 46 is positively supported in accordance with the elevation of said extremity by hinged legs 60 which may be turned or shifted at any angle found necessary under the conveying means and held in fixed position by braces 61 movably attached to the sides of the conveying means and formed with a plurality of openings 62 adapted to register with a single opening 63 in each of the legs, the openings 62 and 63 having pins 64 removably fitted therein. This prop means for the outlet extremity of the conveying means is a very simple mode of holding the said extremity of the conveying means at the elevation desired, but it will be understood that any other means may be substituted therefor and in some in-

stances a prop means may be unnecessary as the outlet extremity of the conveying means could be supported on the side of the car or other receptacle.

5 The operation of the machine will be readily understood from the foregoing description, but to briefly summarize the same, it may be stated that the receptive extremity of the frame 1 is caused to penetrate or
10 be located in feeding proximity to a pile of coal or other loose material, and the conveying means 46 will be shifted or adjusted either upwardly, downwardly, or laterally as may be required to place it in the most
15 effective position relatively to the car or receptacle to be loaded. The feeding means consisting of the revoluble platform, wheel or plate 4 is then set in motion and the loose material deposited thereon through the re-
20 ceptive extremity of the frame is carried around and upwardly adjacent to the flaring side 3 and brought into contact with the inmovable deflector or conveyer 36 which forces the loose material rearwardly into
25 the delivery conveying means between the guards 56 and 57, and by the said delivery conveying means the loose material is finally deposited in the car or receptacle. An effective incidental feature of construction
30 consists in roughening the upper surface of the revoluble platform, wheel or plate 4 or in providing the latter with projecting means to set up an adherence of the loose material or coal with the upper surface of
35 the said revoluble platform, and in the present instance this roughening means is shown in the form of rivet or bolt heads 65 arranged in curved lines and having a clearance with relation to the fixed partition 38 by the
40 formation of openings 66 in the lower edge of said partition. It is to be understood, however, that any means may be employed for roughening the upper surface of the platform 4 and the invention is not limited
45 in the use of the precise means as shown and described. At any time during the loading operation the machine may be readily projected forwardly in relation to the loose material or rearwardly from the latter, and,
50 furthermore, the outlet extremity of the conveying means 46 may be shifted to different points relatively to the car or receptacle being loaded, as may be desirable and found necessary.

55 What is claimed is:

1. In a loading machine, a frame for receiving loose material, a feeding means mounted in the frame, and a conveying means cooperating with the frame and provided with means for rendering the same
60 movable upwardly and downwardly and laterally in opposite directions independently of movement of said feeding means.

2. In a loading machine, a frame for re-
65 ceiving loose material, a revoluble feeding

means mounted in the frame, and conveying means cooperating with the frame and provided with means for rendering the same movable upwardly and downwardly and laterally in opposite directions independently of movement of said feeding means. 70

3. In a loading machine, a frame for receiving loose material, a feeding means mounted in the frame at an inclination, and conveying means cooperating with the frame
75 and provided with means for rendering the same movable upwardly and downwardly and laterally in opposite directions independently of movement of said feeding means.

4. In a loading machine, a frame for receiving loose material, a revoluble feeding means mounted in the frame at an inclination, and conveying means cooperating with the frame and provided with means for rendering the same movable upwardly and
85 downwardly and laterally in opposite directions independently of movement of said feeding means.

5. In a loading machine, a frame for receiving loose material, feeding means mounted in the frame, and a delivery conveying means for receiving material from the feeding means and provided with means for rendering the same movable in opposite lateral
90 directions independently of movement of said feeding means.

6. In a loading machine, a frame for receiving loose material, a feeding means mounted in the frame, a conveying means adjustably cooperating with the said feeding means, and mechanism for actuating the said feeding means and conveying means and for moving the entire machine and carried by the latter.

7. In a loading machine, a frame for receiving loose material, a feeding means mounted in the frame, a deflector movable across the feeding means, a delivery conveying means adjustably cooperating with the said feeding means, and mechanism for actuating the feeding means, deflector and conveying means and for moving the entire machine and carried by the latter. 11

8. In a loading machine, a frame for receiving loose material, a feeding means mounted in the frame, a conveying means cooperating with the feeding means, and mechanism including motive means for actuating the said feeding and conveying means and for moving the entire machine
12 and carried by the latter.

9. In a loading machine, a frame for receiving loose material having a revoluble feeding means therein, a conveying means for receiving the loose material from the said feeding means and movable to different angular positions relatively to the frame and feeding means, guard means movably connected to the frame and shiftably engaging the conveying means, and mechanism 13

ism for operating the feeding and conveying means.

10. In a loading machine, a frame for receiving loose material having a feeding means movably mounted therein, a conveying means for receiving the loose material from the feeding means and movable to different angular positions relatively to the frame and feeding means, and guard means movably interposed between the frame and feeding means and the conveying means.

11. In a loading machine, a frame for receiving loose material having a feeding means movably mounted therein and provided with a roughened surface, and a conveying means cooperating with the frame and to which the feeding means delivers the loose material.

12. In a loading machine, a frame to receive loose material having a feeding means movably mounted therein and provided with projections on its upper surface, a movable deflector extending over a portion of the feeding means, the projections moving under the deflector and clearing the latter, and a conveying means cooperating with the frame and to which the feeding means delivers the loose material with the assistance of the deflector.

13. In a loading machine, a frame to receive loose material having a feeding means movably mounted therein and provided with projections on its upper surface, a movable deflector extending over a portion of the feeding means, a fixed partition cooperating with a part of the deflector and having openings in its lower edge to permit the projections to clear the same, and a conveying means to which the feeding means delivers the loose material with the assistance of the deflector.

14. In a loading machine, a feeding means for engagement with loose material and having a fixed position when operated, and a delivery conveying means for receiving the loose material from said feeding means and provided with means for rendering the same movable upwardly and downwardly and in opposite lateral directions without modifying the position of the feeding means.

15. In a loading machine, a movable feeding means, a portable frame carrying said

means, an adjustable delivery conveying means supported by and movable with the said frame, and actuating mechanism for the feeding and conveying means also carried by said frame and including a motive means and a wheeled axle operative thereby to move the entire machine from one place to another and for advancing and backing the machine relatively to the loose material.

16. In a loading machine, movable feeding means, delivery conveying means cooperating with the said feeding means, a portable frame carrying the said feeding and conveying means, and actuating mechanism including a motive means for controlling the operation of the feeding and conveying means and the movement of the portable frame from one place to another or toward and from the material to be loaded and having devices for permitting the frame to remain in fixed position during the actuation of the feeding and conveying means.

17. In a loading machine, a frame having a feeding means movably mounted therein, a conveying means cooperating with the feeding means and movably held by the frame and provided with actuating devices, the conveying means being provided with means for rendering it movable upwardly, downwardly and laterally in opposite directions, and mechanism for operating the feeding and conveying means and including a movable connection to compensate for the movement of the conveying means.

18. In a loading machine, a frame having a feeding means movably mounted therein, a movable deflector arranged over the feeding means, a conveying means cooperating with the feeding means, mechanism for driving the feeding means, deflector and conveying means and including a motive means, and a dust hood or protector applied over the mechanism and a portion of the deflector.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRANCIS KEITH HOLMESTED.

Witnesses:

CHAS. S. HYER,
C. A. ROWE.