

983,313.

W. REINECKE.  
FEEDING MEANS FOR BELT CONVEYERS.  
APPLICATION FILED JUNE 25, 1910.

Patented Feb. 7, 1911.

3 SHEETS—SHEET 1.

Fig. 2.

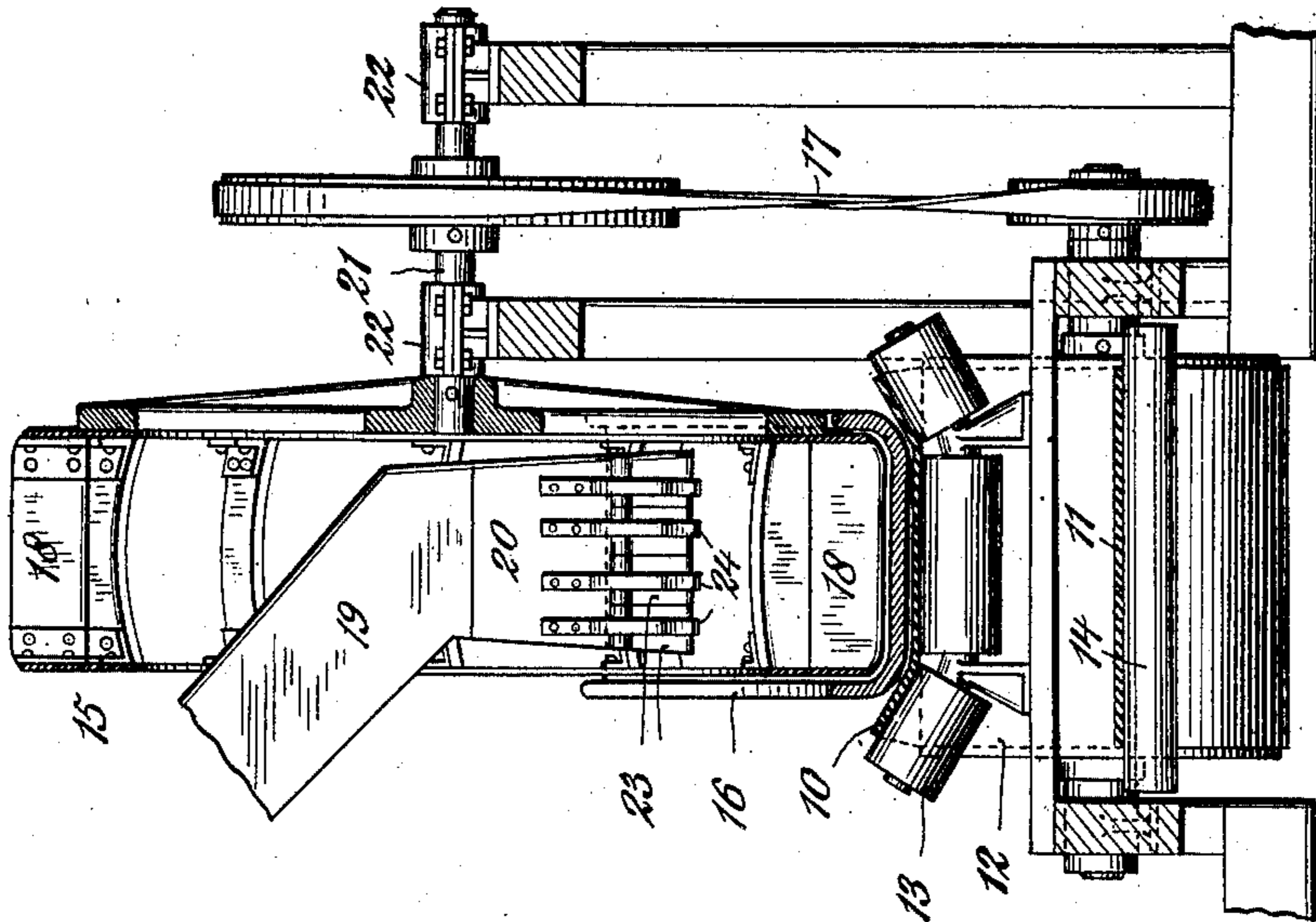
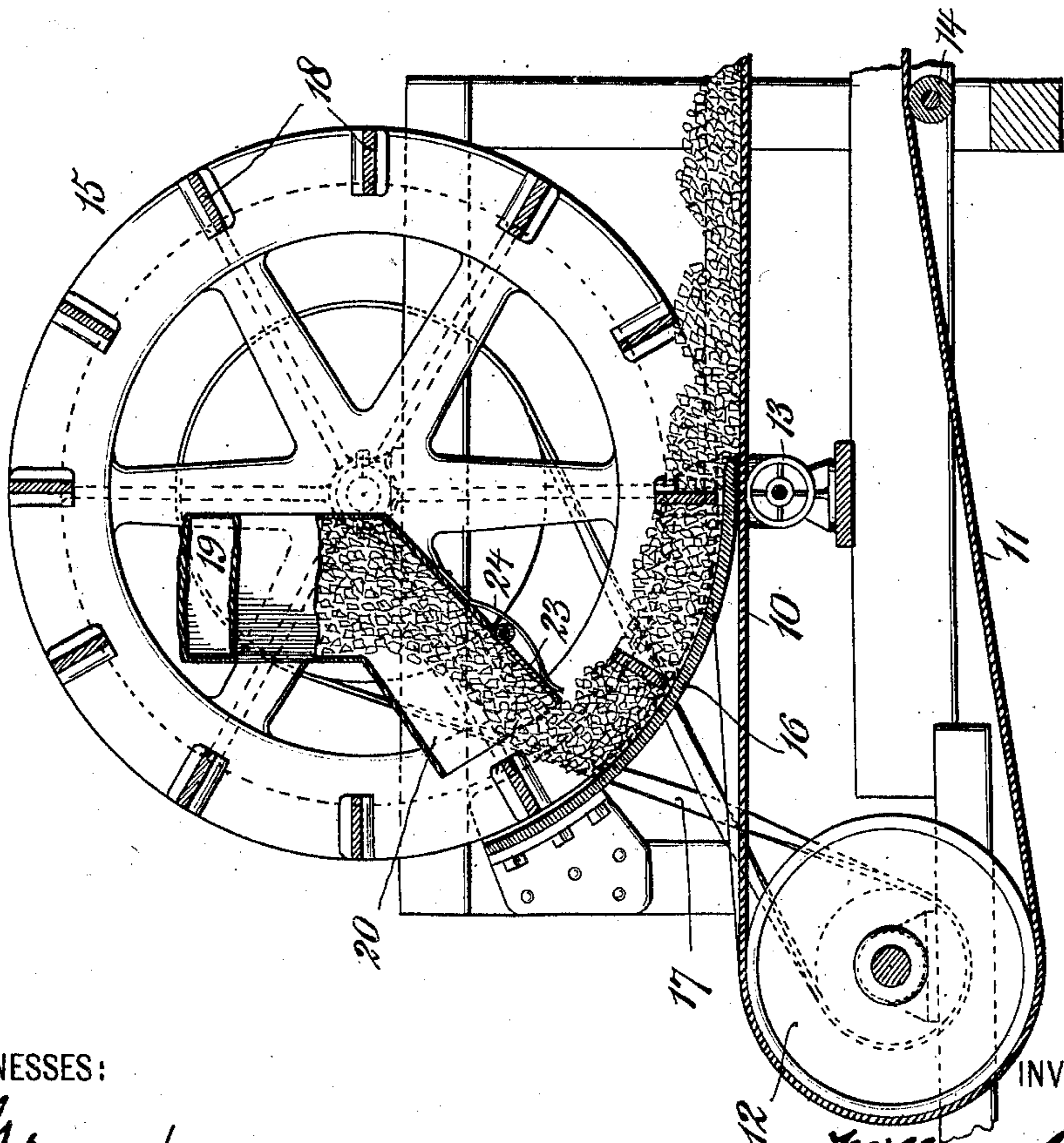


Fig. 1.



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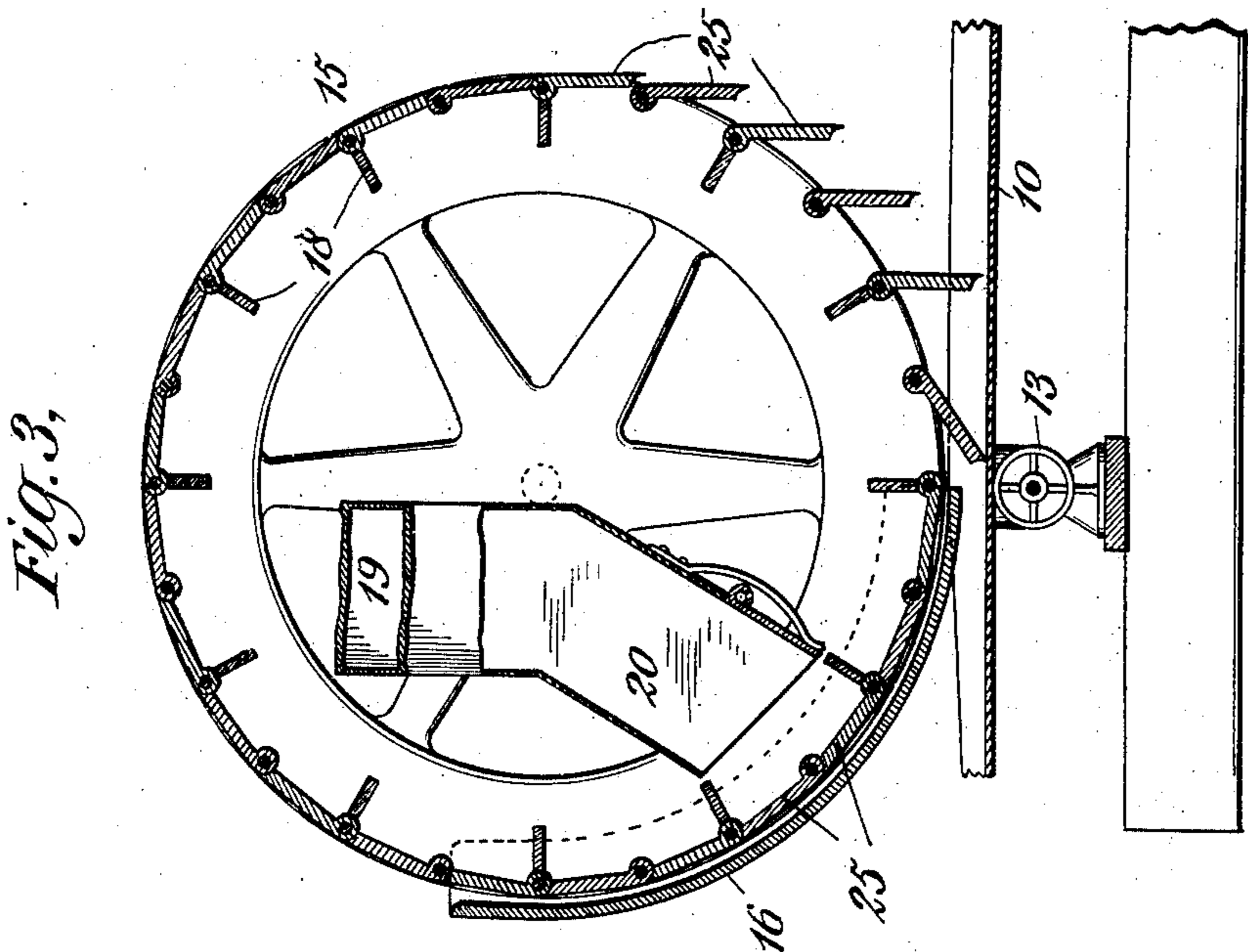
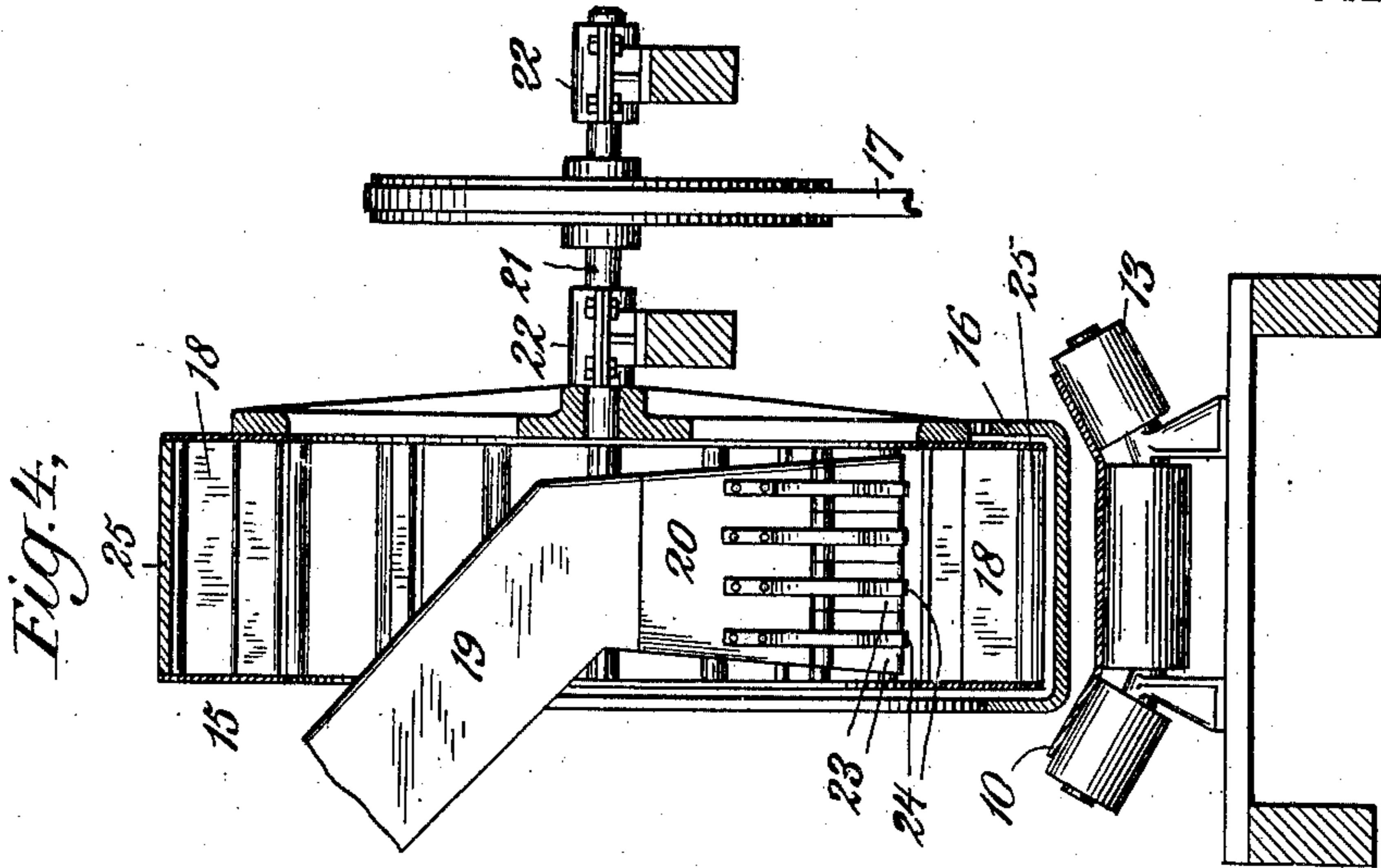
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 6.

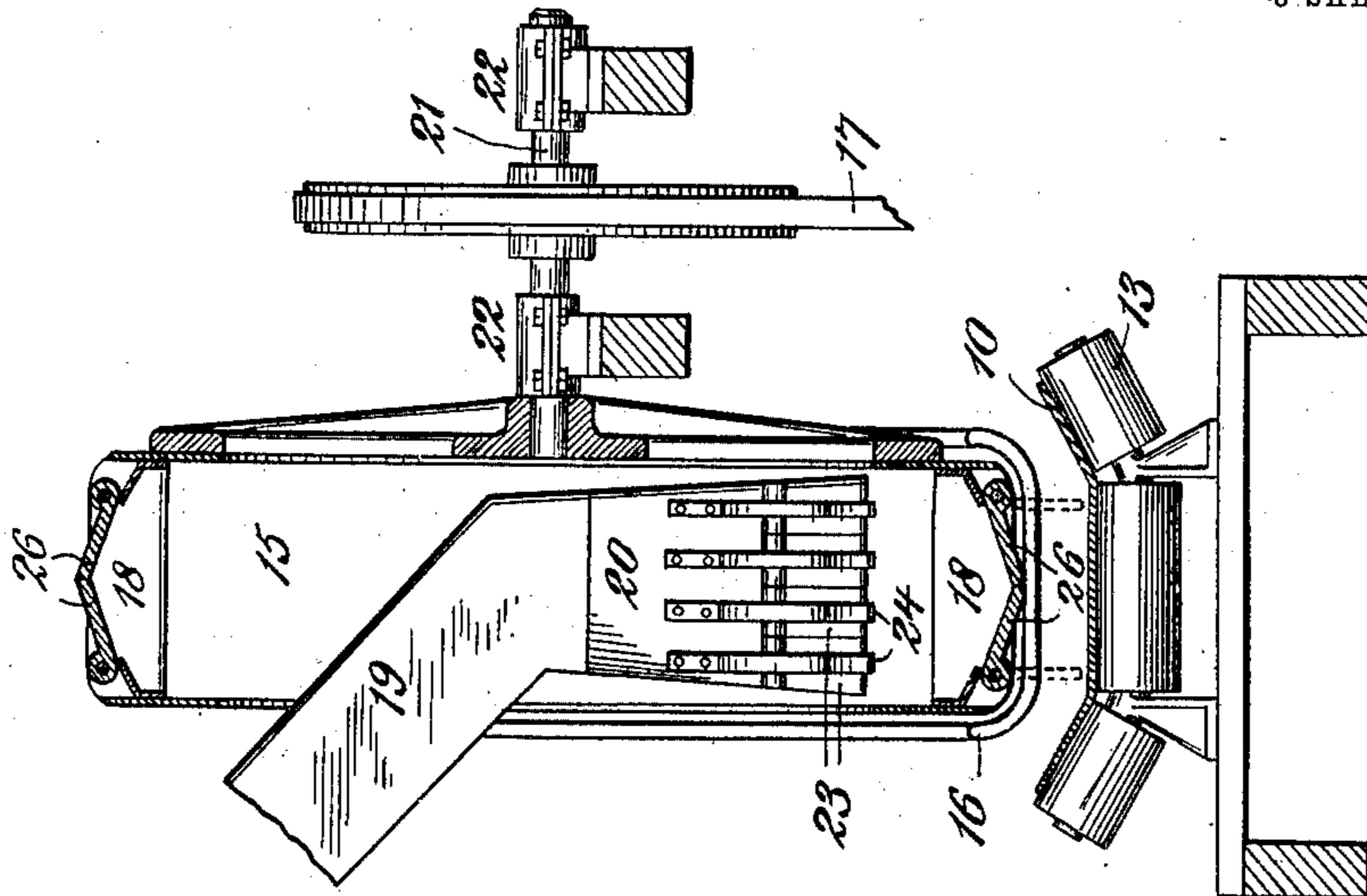
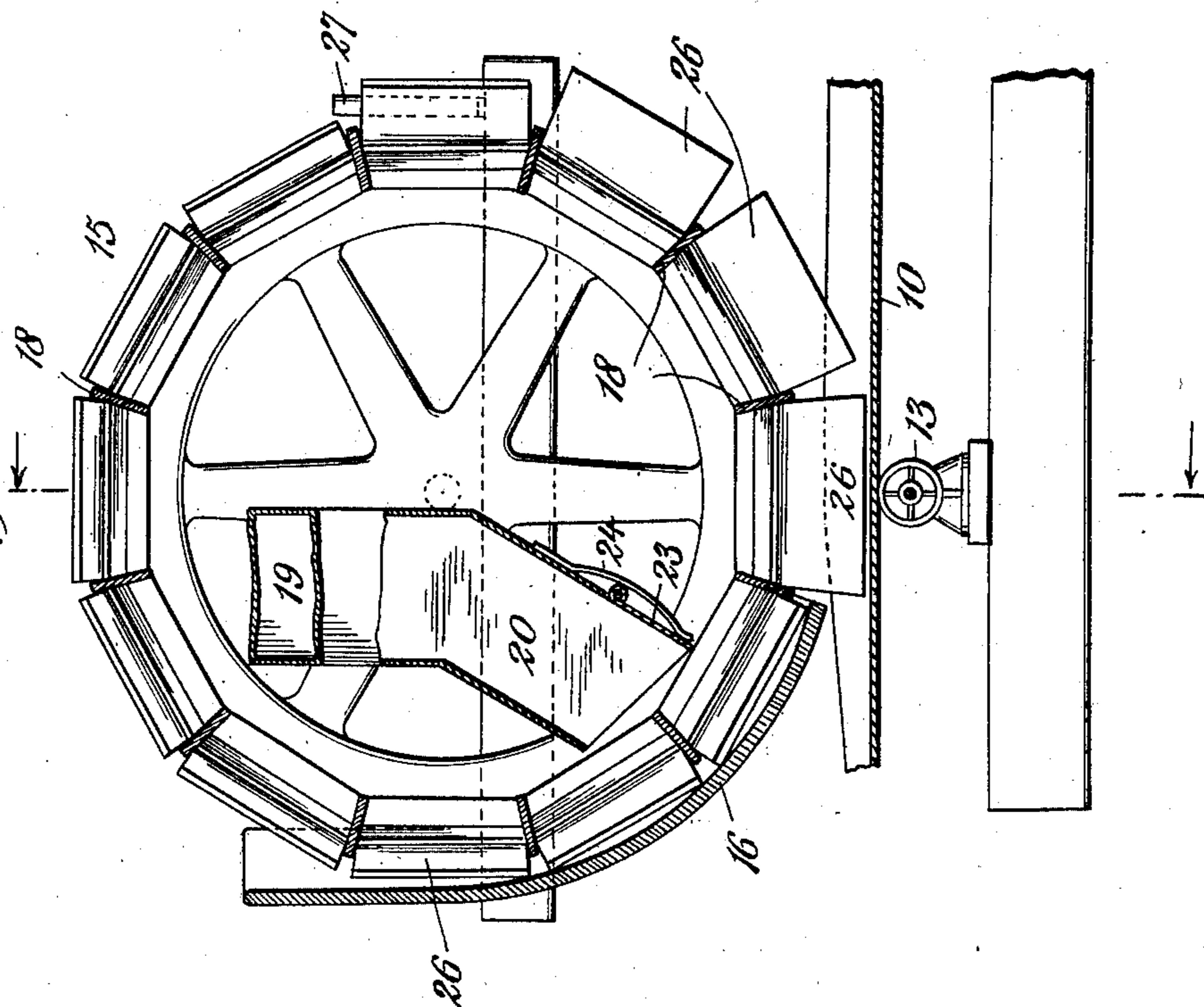


Fig. 5.



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# UNITED STATES PATENT OFFICE.

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FEEDING MEANS FOR BELT CONVEYERS.

983,313.

Specification of Letters Patent.

Patented Feb. 7, 1911.

Application filed June 25, 1910. Serial No. 568,810.

*To all whom it may concern:*

Be it known that I, WILLIAM REINECKE, a citizen of the United States of America, and a resident of New York, county and State of New York, have invented certain new and useful Improvements in Feeding Means for Belt Conveyers, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to improvements in feeding means for belt conveyers, and particularly to improvements in means for feeding material to the conveyor belt in the direction and at the speed of movement of the belt whereby the material is deposited upon the belt quietly, without friction against the surface of the belt, and with a minimum amount of shock. In a co-pending application Serial Number 538,864 filed January 19, 1910, I have shown means of this character comprising a rotating feeding wheel, the periphery of which is arranged to rotate at a surface speed of travel of the belt, the point of discharge from which is arranged in the immediate proximity of the belt, and the direction of rotation of which is in the direction of rotation of the belt.

My present application relates mainly to improvements in and relating to such feeder wheel, and improvements in and relating to the means by which material to be delivered to the belt conveyor is received within the said wheel.

In order that my invention may be fully understood I will now proceed to describe certain embodiments of the same, having reference to the accompanying drawings illustrating them, and will then point out the novel features in claims.

In the drawings: Figure 1 is a view in central vertical transverse section through an apparatus constructed in accordance with my invention. Fig. 2 is a view substantially in vertical horizontal section therethrough, the line of section being taken through the axial center of the said wheel. Figs. 3 and 4 are similar views showing a modified form of wheel. Figs. 5 and 6 are similar views showing a further modification of the form of wheel employed.

The belt conveyor shown comprises a conveyor belt having an upper runway 10 and a return portion 11, a driving pulley 12 over which the belt is arranged to pass and by which it is driven, idler troughing pulleys

13 for the upper runway of the belt, and cylindrical idler pulleys 14 for supporting the return portion of the belt. The feeding mechanism comprises a feeding wheel or drum 15 arranged to rotate with its periphery in close proximity to the upper surface of the active portion 10 of the belt, and a stationary guard or casing member 16 arranged between the said feed wheel and the conveyor belt. The wheel 15 is connected by suitable pulleys and a belt connection 17 with the drive wheel 12 for the conveyor belt, the said connecting belt being crossed whereby the direction of movement of the adjacent portions of the belt and wheel are in the same direction, and the diameter of the pulleys being such that the surface speed of the belt and the peripheral speed of the wheel are substantially uniform. The guard or casing member 16 conveniently terminates at a point about in a vertical line with the axis of rotation of the wheel 15, being shown in fact in Fig. 1 of the drawings as slightly in advance of such line. This guard or casing member thus arranged prevents material delivered to the feeding wheel from engaging the belt until it has passed the center of the wheel, it being delivered freely upon the belt immediately in advance of this point.

The wheel is provided with a plurality of paddle blades 18 by which the positive feeding of material is insured, and material is fed to the said wheel by means of a conduit 19 which terminates in a spout 20 received within the wheel, the discharge end of the spout being arranged in close proximity to the inner edges of the said paddle blades. In order that an open space may be provided for receiving the end of the conduit and spout, the said wheel is conveniently arranged upon a shaft 21 which extends from one side of the wheel only, suitable bearings 22 being provided for supporting the said shaft, the belt wheel connections being arranged between the two said bearings as is clearly shown in Fig. 2. By reason of the fact that the material is fed to the wheel upon the inside thereof the liability of the material to choke or jam is largely obviated, and I find such arrangement exceedingly advantageous for this reason. I also preferably provide the lower wall of the spout with yielding sections comprising spring fingers 23, normally held in position by springs 24 but which will yield under stress so that should any lumps

of the material be momentarily caught between one of the blades 18 and the lower wall of the spout as the wheel 15 advances, one or more of these fingers will yield to  
 5 permit the passage of the material and thereby to absolutely prevent damage to the wheel or the spout, or the locking up of the wheel.

Because of the possible tendency of the  
 10 material to hang back as the wheel advances, due to the frictional engagement between it and the face of the guard or casing member 16, I have in Figs. 3, 4, 5, and 6 shown certain modifications wherein the wheel is  
 15 provided with a peripheral closure comprising a plurality of swinging gates. In Figs. 3 and 4 such gates 25 are shown as pivoted to the side walls of the wheel upon axes parallel with the axis of rotation of the  
 20 wheel. These gates may be arranged to freely swing open, being closed by gravity as they rise above the center of the wheel in its rotation, and maintained closed by their engagement with the guard or casing member 16 as they descend upon the opposite  
 25 side of the wheel. As they leave the forward end of this guard or casing member in the rotation of the wheel, which is at the point at which the material is to be discharged upon the conveyer belt, they will  
 30 swing open by gravity aided by the weight of the material, whereby the material will be discharged freely at this point upon the belt. Such an arrangement will tend to insure an even distribution of the material  
 35 upon the conveyer belt as will be readily understood. In Figs. 5 and 6 I have shown another form of these swinging gates in which they are pivotally connected to the  
 40 wheel upon axes at right angles to the axis of rotation of the wheel, two such gates 26 being conveniently employed between each pair of blades 18, each gate being substantially half the width of the wheel and the  
 45 edges of each pair thereof being arranged to meet when in a closed position (see particularly Fig. 6). If desired stationary cams or projections 27 may be employed to insure the closing of the gates as they rise in  
 50 the rotation of the wheel above the center thereof, the said gates being maintained in a closed position by the guard or casing member 16 upon the opposite side of the wheel, the forward edge of the said guard  
 55 or casing member in this case being preferably terminated at an earlier point so that as each pair of gates reaches a point immediately below the center of the wheel they will be permitted to swing open to discharge  
 60 as is shown in Fig. 5.

In the operation of any one of the structures shown, material is fed through the chute 19 to the feed wheel by which it is in  
 65 turn fed to the conveyer belt. The material leaves the feed wheel while moving in the

same direction and at the same speed as the belt, and hence is received by the belt without shock and without friction. The interior feed of the wheel tends to decrease the liability of jamming, this being, of course,  
 70 largely due to the fact that the receiving area of the wheel increases in the direction in which the material is received, instead of decreasing as would be the case if material were fed to the wheel from the periphery  
 75 thereof. It will also be seen that the device is a very simple one, and consequently inexpensive to manufacture and unlikely to get out of order.

What I claim is:

1. The combination with a traveling conveyer belt, of a rotatable wheel the periphery of which is arranged in immediate proximity to the conveying surface of the belt,  
 80 means for connecting the belt and wheel together whereby their adjacent surfaces will travel in the same direction and at substantially the same rate of speed, means for delivering material to the wheel at a point within the same in a direction toward the  
 85 exterior of the wheel, and to rear of the vertical plane containing the axis thereof, and a casing element arranged in proximity to the periphery of the wheel, beneath the point at which the material is delivered to the wheel, the said casing element terminating at about the said vertical plane, whereby the material is delivered to the belt from the wheel in advance of the said vertical  
 90 plane. 95 100

2. The combination with a traveling conveyer belt, of a rotatable wheel provided with paddle blades, the outer edges of which extend substantially to the exterior periphery of the wheel, the periphery of the said  
 105 wheel being arranged in immediate proximity to the conveying surface of the belt, means connecting with the interior of the said wheel for delivering material thereto at a point within a circle bounding the interior of the said paddle blades as the wheel revolves, and to rear of the vertical plane containing the axis thereof, a casing element arranged in proximity to the periphery of the  
 110 wheel, beneath the point at which the material is delivered to the wheel, the said casing element terminating at about the said vertical plane, whereby the material is delivered to the belt from the wheel in advance of the said vertical plane, and means for connecting the belt and wheel together, whereby their adjacent surfaces will travel in the same direction and at substantially the same rate of speed. 115 120 125

3. The combination with a traveling belt conveyer, of a feed wheel therefor provided with peripheral gates, the periphery of the said feed wheel being arranged in close proximity to the upper surface of the said  
 130 belt, means for feeding material to the said

wheel, means whereby the gates are maintained in a closed position until they reach a point in close proximity to the said belt, and for permitting them to open at such point whereby the material carried by the wheel will be discharged upon the belt, and means for connecting the belt and wheel together whereby their adjacent surfaces will travel in substantially the same direction and at the same rate of speed.

4. The combination with a traveling belt conveyer, of a feed wheel therefor provided with peripheral gates and having paddle blades, the periphery of the said feed wheel being arranged in close proximity to the upper surface of the said belt, means for feeding material to the said wheel, at a

point therein within a circle which bounds the inner edges of the blades as the wheel revolves, means whereby the gates are maintained in a closed position until they reach a point in close proximity to the said belt, and for permitting them to open at such point whereby the material carried by the wheel will be discharged upon the belt, and means for connecting the belt and wheel together whereby their adjacent surfaces will travel in the same direction and at substantially the same rate of speed.

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