W. REINECKE.

FEEDING MEANS FOR BELT CONVEYERS.

APPLICATION FILED JAN. 19, 1910.

983,568. Patented Feb. 7, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

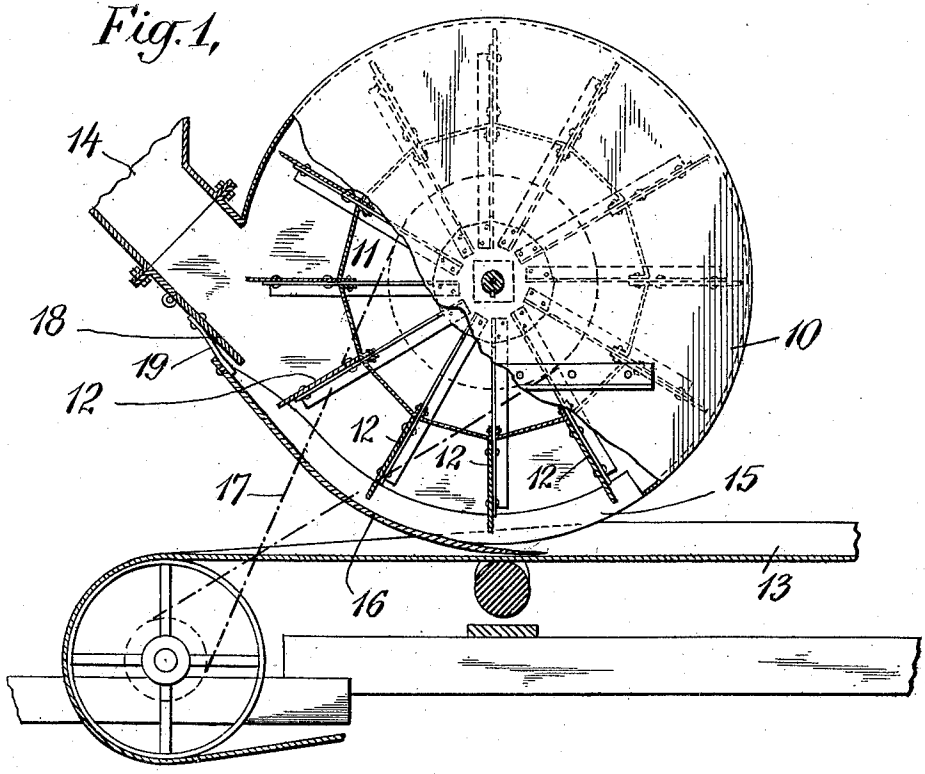
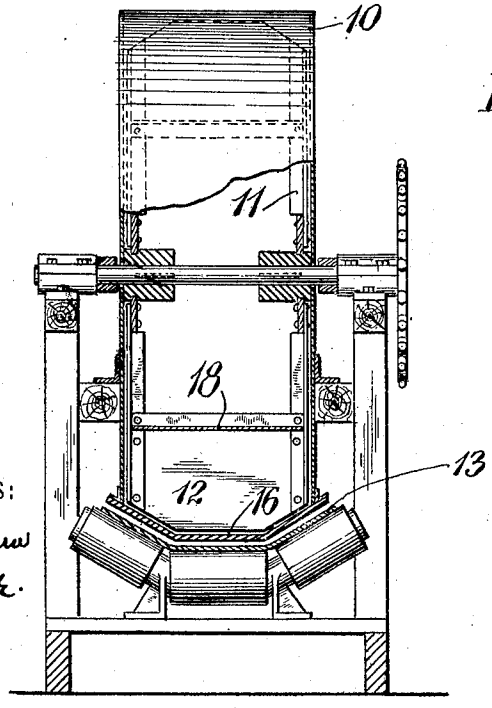


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3

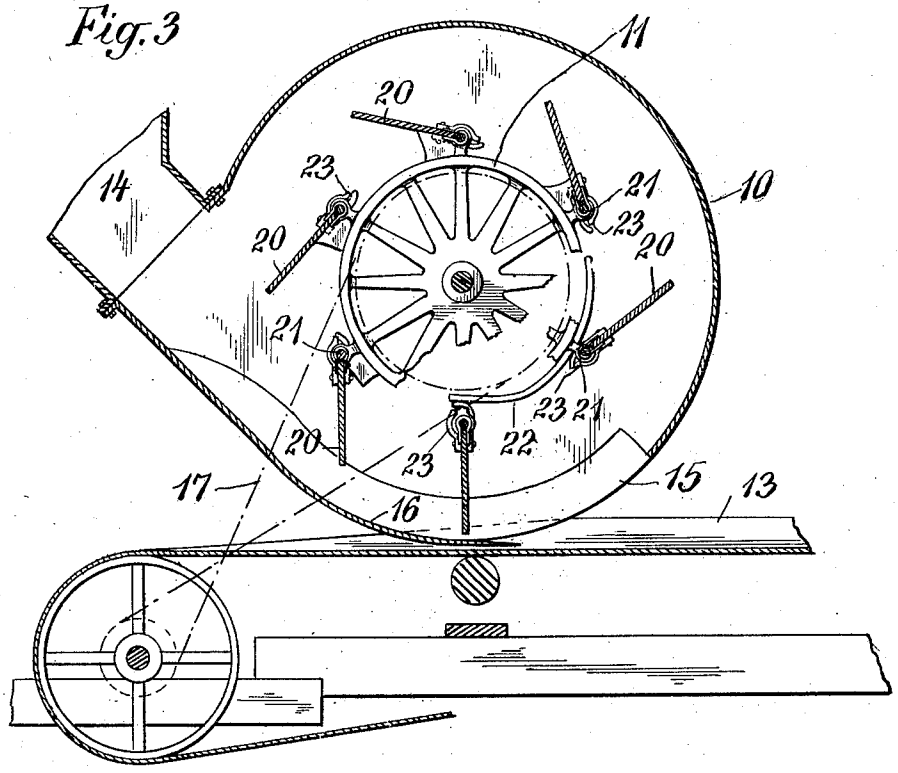


Fig. 4.

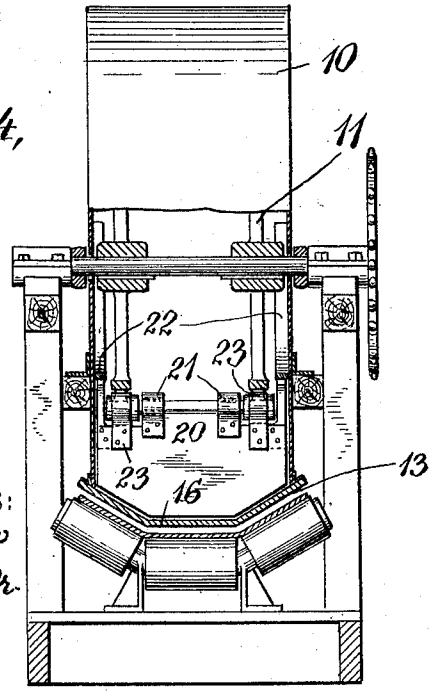
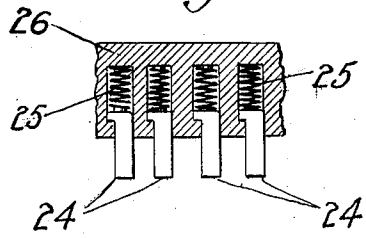


Fig. 5



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FEEDING MEANS FOR BELT CONVEYERS.

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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 consists in a feeding element adapted to rotate at the same speed and in the same direction with the belt, the discharge thereof being arranged in close contiguity with the receiving surface of the belt conveyer, whereby the material is deposited upon the belt conveyer quietly, without appreciable rubbing against the surface of the belt and with the least shock to the belt.

The result of feeding material to a belt conveyer from a stationary hopper or from some feeding device which does not move synchronously with the belt, is to produce considerable friction upon the surface of the belt, and the belt is further injured by the common practice of discharging the material upon the belt from a device at some distance thereabove.

It is the object of my present invention to reduce this shock and friction thereby increasing the life of the belt. The means which I employ for this purpose constitutes also an efficient measuring means whereby a predetermined quantity of material is delivered to the belt in a given time, and as the feeding device is maintained in driving connection with the belt the proper proportion of material delivered to the belt is maintained for all speeds of the belt.

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

In the drawings: Figure 1 is a view in partial central vertical section and partial side elevation of a feeding means constructed in accordance with my invention, showing the same as applied to a traveling belt conveyer. Fig. 2 is a view partly in end elevation and partly in central transverse section through the same. Fig. 3 is a view in central vertical section through a construction in which the feeding means comprises a paddle wheel the blades of which are movable. Fig. 4 is a view in part end elevation and part central transverse section therethrough. Fig. 5 is a detail view of a modified form of paddle blade which may be employed.

The apparatus comprises a casing 10 and a drum 11 rotatably mounted therein; the said drum is provided with a plurality of paddle blades 12 which may be either stationary or movable. In the form of apparatus shown in Figs. 1 and 2 they are stationary while in the form of apparatus shown in Figs. 3 and 4 they are pivotally connected and are movable. A portion of a traveling belt conveyer 13 is shown in connection with the feeding device, the lowermost portion of the feeding drum and casing being in close contiguity therewith. An inlet chute 14 connects with the interior of the casing 10, the same being arranged to connect the casing 10 with any suitable source of supply of the material to be fed to the belt conveyer, and the casing is provided with a discharge opening 15 near its lowermost portion and just above the surface of the belt 13. The portion 16 of the casing to the rear of the opening 15 and between the opening and the chute 14, is preferably of a shape in cross section to correspond with the usual trough-shape of the belt conveyer (see Fig. 2), and it is so disposed as to just clear the surface of the belt when the belt is running. The feeding drum is connected by any suitable means in driving relation with the belt conveyer in such a way that the surface speeds of the two parts are alike and their contiguous surfaces travel in the same direction. A convenient form of such means is a cross belt 17 engaging driving pulleys for the belt conveyer and rotating drum respectively, of diameters properly proportioned to the surface speeds required.

Material to be fed to the belt conveyer tumbles down the chute 14 to the interior of the casing 10 and is caught by the blades 12 of the rotating drum. Thereafter it is fed forward at the proper rate of speed and is delivered to the belt 13 through the discharge opening 15 at just the speed at which the belt travels. Moreover, it will be seen that it is discharged directly upon the belt with substantially no fall, so that both surface friction and shock are practically eliminated. I conveniently provide a portion of the inlet chute 14 with a yielding portion

18, the same being shown in the form of a hinged flap pressed forward by means of a spring 19. Should there be any tendency of the material to choke at the point it is received by the wheel, this portion is intended to yield to relieve the pressure, and so avoid a locking up or a breakage of the parts.

The form of feeding means which I have just described and which is shown in Figs. 1 and 2 of the drawings, is particularly adapted for feeding granular material, or material otherwise composed of but small parts or particles, but where material containing parts of larger size,—such as coal, ore, and the like, is to be fed to the conveyer, it is sometimes preferable to employ a feeding member having swinging paddle blades in order to avoid the possibility of such larger portions becoming jammed between the outer end of the blades and the wall of the casing. Such a feeding device is shown in Figs. 3 and 4, the paddle blades 20 therein being pivotally supported at 21 to the central drum 11. In this form, a stationary cam 22 is preferably employed for lifting the blades after they have passed the point of delivery and to hold them thus lifted until the center of gravity thereof crosses the center of their supports in the rotation of the drum; while stops 23 operate to limit the relative movement of the paddle blades in their movement with the drum prior to their engagement with the said stationary cam. The blades will thus be permitted to hang down as they pass the point at which the material is admitted from the chute 14 and to swing freely until they reach about the point of the commencement of the discharge opening 15. In such arrangement, the possibility that a large piece of material might become jammed between the end of a blade and the side wall of the casing is reduced practically to a minimum, for the blade may either swing in the front or to the rear thereof. Furthermore, the angles at which the blades approach the side of the casing are such as to substantially prevent any jamming from occurring, independently of the fact that the blades will swing freely to prevent it.

In Fig. 5, I have shown a further modification in which the blades themselves may yield, the said blades including portions 24 which may be forced inward with respect to a relatively unyielding portion 26 thereof, against the yielding pressure of springs 25. Such form of yielding blades may be employed either in the stationary form of blade employed in the example of my invention illustrated in Figs. 1 and 2 or in the pivoted swinging blades employed in the example illustrated in Figs. 3 and 4.

What I claim is:

1. The combination with a traveling conveyer belt, of a rotatable wheel comprising a drum and yielding impelling blades carried thereby the said blades being arranged at intervals around the said drum whereby material received within the wheel will be contained between the said blades and will be impelled thereby in the direction of rotation of the wheel as the said wheel revolves, the periphery of the wheel being arranged in immediate proximity to the conveying surface of 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.

2. The combination with a traveling conveyer belt, of a rotatable wheel comprising a drum and pivoted blades carried thereby, the periphery of the wheel being arranged in immediate proximity to the conveying surface of 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.

3. The combination with a traveling conveyer belt, of a rotatable wheel comprising a drum and pivoted blades carried thereby, the said blades being arranged to swing freely during one part of the revolution of the wheel, the periphery of the wheel being arranged in immediate proximity to the conveying surface of the belt, means operating upon the blades to move them to predetermined positions with respect to the wheel during another portion of the revolution of the wheel, 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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