

Jan. 30, 1945.

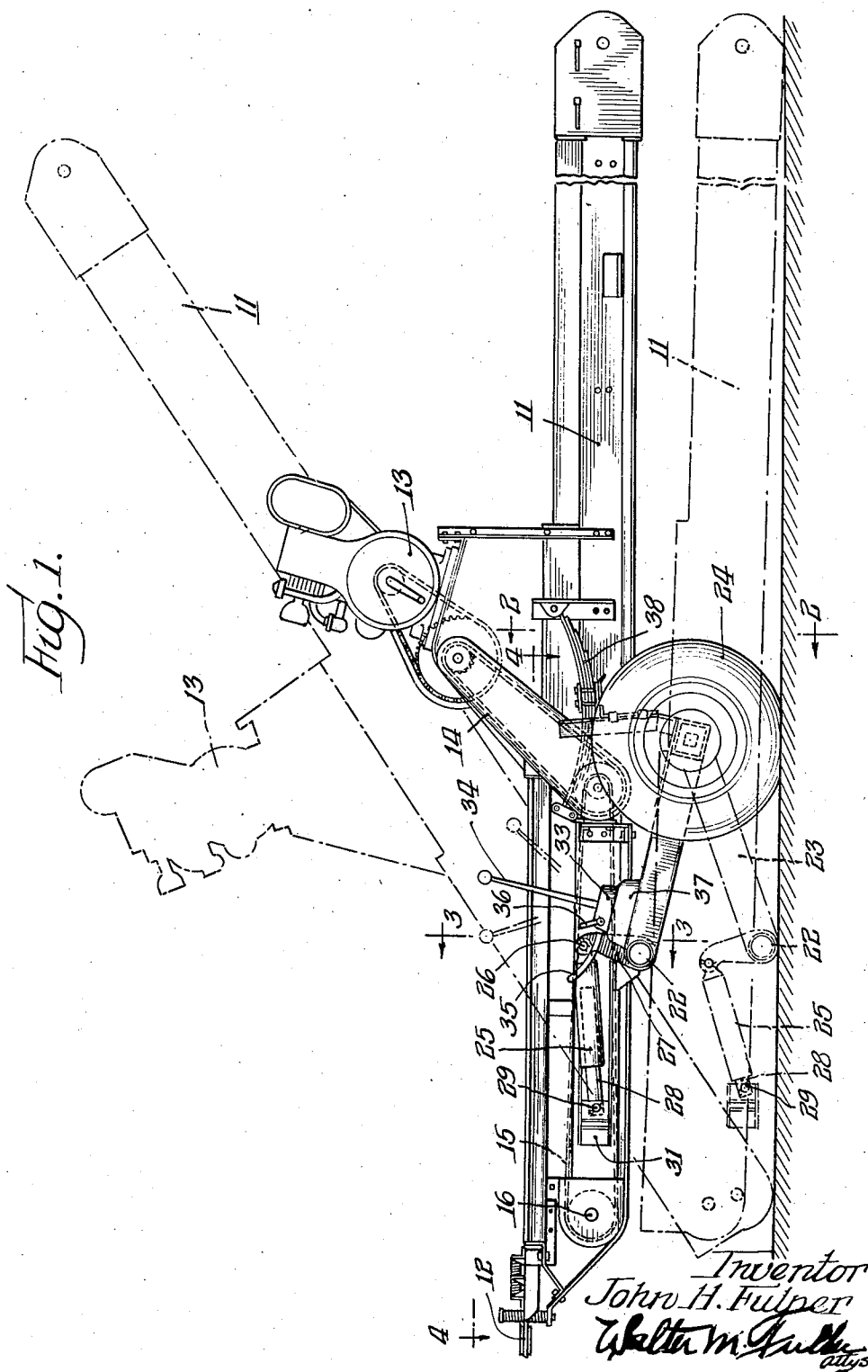
J. H. FULPER

2,368,353

CONVEYER

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Fig. 2.

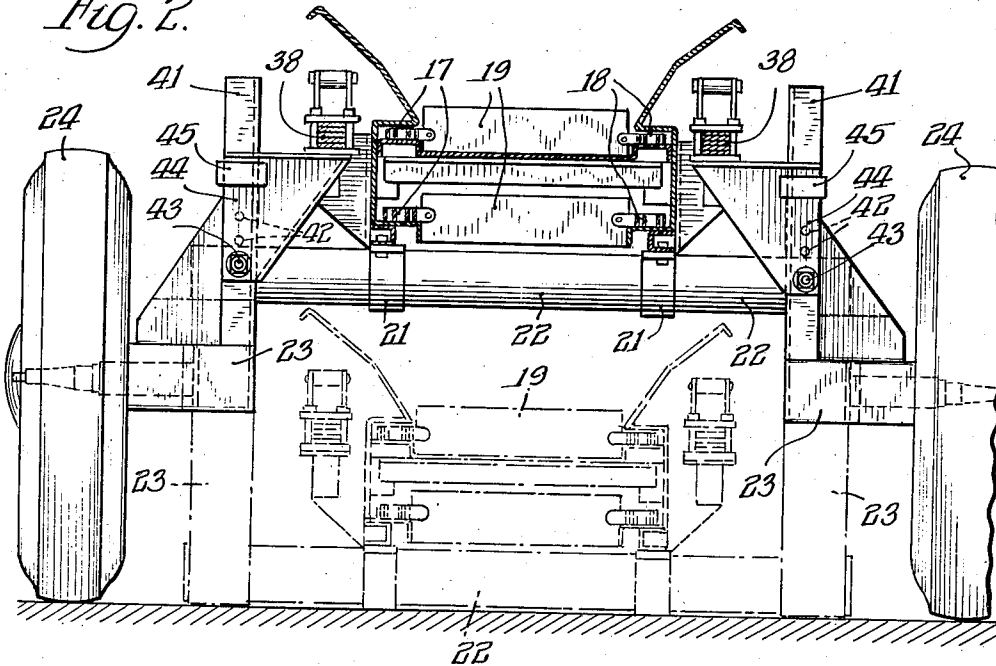
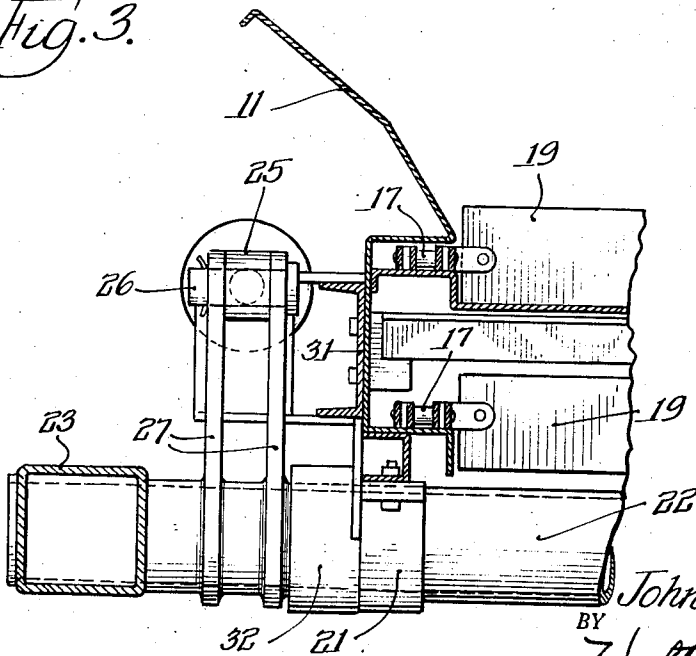


Fig. 3.



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Fig. 4.

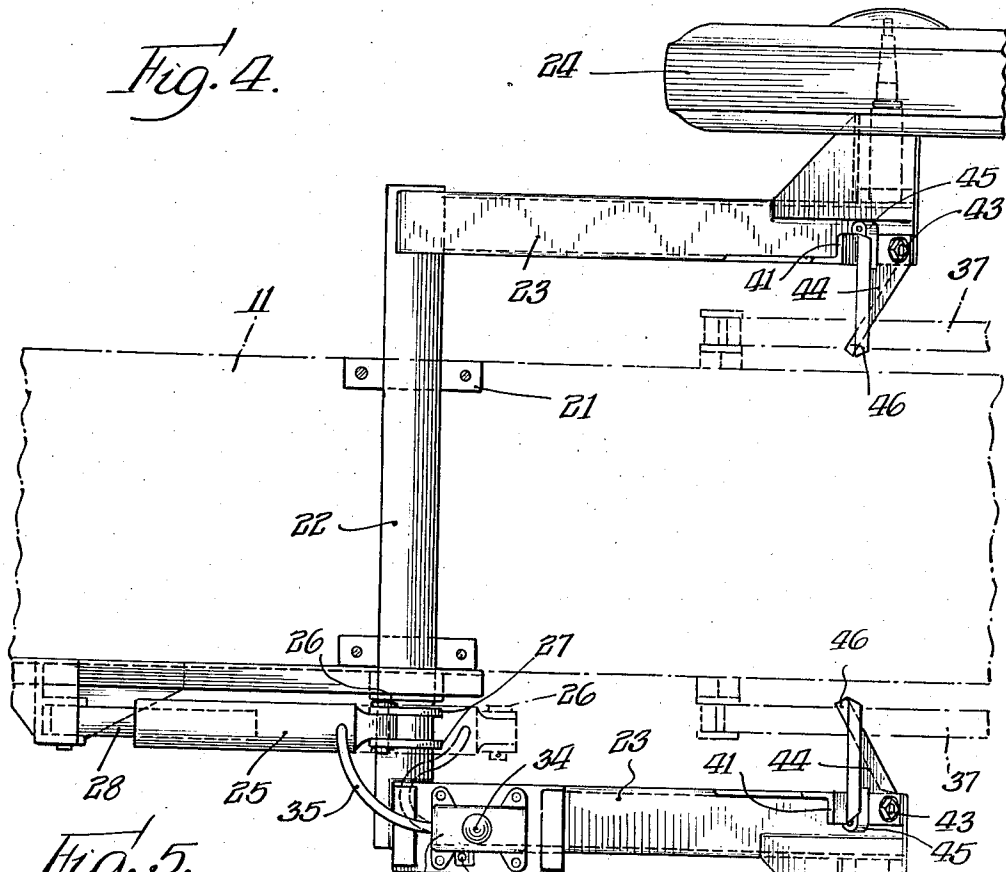
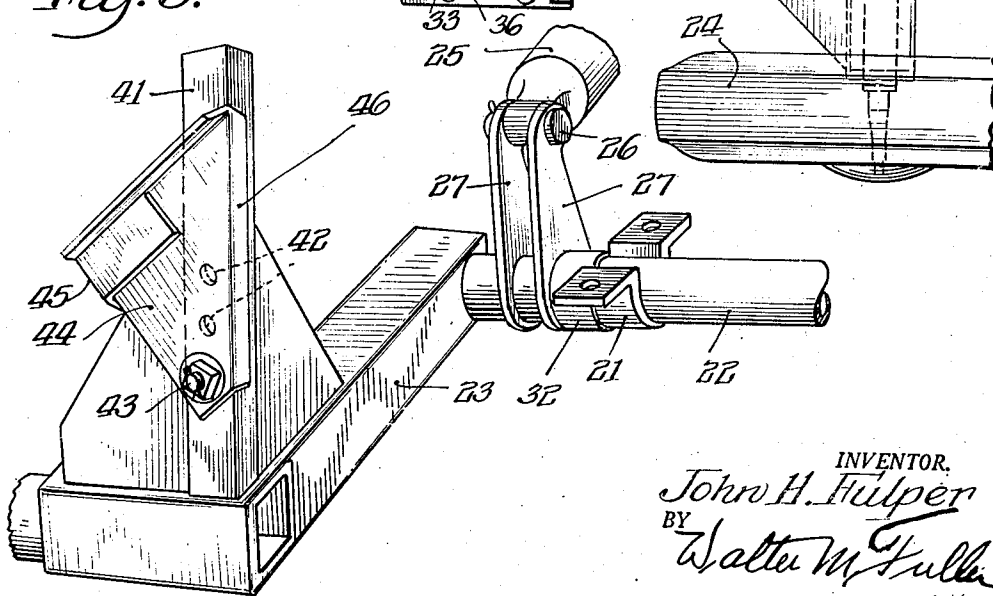


Fig. 5.



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UNITED STATES PATENT OFFICE

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CONVEYER

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3 Claims. (Cl. 198-233)

The current invention relates to certain recently evolved features of betterment and advantage, both structural and functional, in power-operated conveyers for coal or comparable material; and it concerns more particularly appliances of this type mounted on carriages or trucks allowing them to be transported with facility and dispatch on highways or city streets to the locations where used.

The present preferred embodiment of the invention in physical form may be conveniently transported or towed behind the motor-vehicle, such as a coal-loaded truck, to the work site and then disconnected therefrom and readily and expeditiously adjusted by its own mechanical means to convey the fuel to, and discharge or deliver it into, coal receiving windows of varying heights from the ground, whether they be at ground-level, as in basement-windows, or at suitable height for shoveling coal into from the bed of the coal-truck, the coal thus transferred and discharged being received at the opposite end of the conveyer from a mechanical dump-truck or other means.

The invention pertains more particularly to the novel structure of the carriage of the conveyer and means for pivotal adjustment of the conveyer with respect to such carriage and it also relates to means for supporting the machine in transport all of which is described hereinafter.

To enable those acquainted with this art to understand the invention and the benefits accruing from its employment, an existing and desirable form of structure has been illustrated in detail in the accompanying drawings; forming a part of this specification, and to which reference should be had in connection with the following specification, like reference numerals having, for the sake of simplicity, been used to designate the same parts in the several views.

In these drawings—

Fig. 1 shows the new and innovatory conveyer in side-elevation in full lines in towing relation, and in dotted lines in its lowest or ground-level position and also in its highest inclined position;

Fig. 2 is a vertical, transverse section on a larger scale on line 2-2 of Fig. 1 with some of the parts purposely omitted, the full line presentation indicating the conveyer in towing position, the dotted lines showing the conveyer in its lowest position;

Fig. 3 is a fragmentary, vertical cross-section on line 3-3 of Fig. 1;

Fig. 4 is a plan view as seen from the horizontal line 4-4 of Fig. 1; and

Fig. 5 is a partial perspective view of a portion of the carriage-frame.

In these drawings no attempt has been made to illustrate the coal-truck delivering coal on to the conveyer, nor to portray the new conveyer discharging its coal into a bin, nor to depict all of the structural details of the particular style of conveyer shown since many of these are old and well known in the art.

Heretofore, when coal or the like has been delivered to purchasers and users, it has been customary to dump such material on the ground and then transport it into the coal-bin or other storage facility by manually-operated means, as by shoveling it by hand direct from the coal-conveyance into the user's receptacle, or by means of a small, mechanically-actuated conveyer lifted manually into operative position, or by a large conveyer which has been towed to the work location for the purpose, but which is incapable of being lowered to the ground for discharging coal or the like to ground-level basement-windows.

All of these prior appliances and methods of procedure have had definite disadvantages, such as the heavy manual labor involved or the slowness of the operation.

Accordingly, one outstanding purpose of this invention resides in the provision of means to overcome these difficulties and it involves pivoting or hinging the carriage on the conveyer and by an hydraulic-ram, or other suitable actuating means, controlling the position of such carriage with respect to the conveyer to raise or lower the latter to any position within its range desired by the operator, and especially to lower it and bring it to rest on the ground between the transporting ground-wheels where it may function in a horizontal position to discharge the coal into basement-windows or other ground-level openings to bins or other storage facilities.

Referring to the drawings, it will be noted that the novel and improved trailer-conveyer has the usual elongated frame or boom 11 of ordinary construction; but, in this instance, it is equipped at its forward or load-receiving end with an efficient and convenient, spring-cushioned connector 12 adapted to be coupled to the rear end of the coal-loaded truck (not shown) during transportation of the conveyer to the location where it is to perform its service.

Mounted on such conveyer-boom is an internal-combustion engine 13, or other power means, in the present instance connected by successive driving-chains 14 and 15 and cooperating parts to the actuating shaft 16 at the load-receiving

end of the conveyer which operates the parallel, suitably-guided, endless conveyer-chains 17 and 18 (Figs. 2 and 3) cross-connected together at intervals, as is usual, by coal-feeding slats or bars 19, 19.

This complete, lengthy conveyer, by means of a pair of bearings 21, 21 mounted on the underside thereof, is rockingly supported on a hollow, cylindrical shaft or tube 22 constituting the intermediate cross-member of a substantially U-shape carriage-frame having hollow, parallel side-members 23, 23 welded to, or otherwise rigidly secured to, the end portions of part 22, and spaced apart a greater distance than the width of the conveyer, so that in the lower positions of the latter it may be accommodated between them.

At their free ends, the pair of side frame-members 23, 23 outwardly laterally beyond them are mounted, in any appropriate manner, on a pair of transversely-aligned, ground carrying-wheels 24, 24, preferably rubber-tired, which of course support the entire weight of the conveyer when it is above the ground.

Manifestly, by rocking frame 22, 23, 23, up or down around the axis of the ground-wheels 24, 24, the height of the conveyer may be varied as desired from ground-level, as portrayed in dotted lines in the lower portion of Fig. 1, in which case the shaft 22 of the supporting carriage-frame rests on the ground, up to its full inclined height as presented in the upper portion of the same figure of the drawings.

The means by which this is accomplished comprises an hydraulic-ram, the cylinder 25 of which at its closed end is hinged at 26 to a pair of parallel arms 27, 27 welded to, and outstanding from, the frame shaft or cross-member 22. (Figs. 1, 3, 4 and 5.)

The protruding end of the plunger or piston 28 of the cylinder 25 is hinged or rockingly mounted at 29 on a bracket 31 rigidly mounted on one side of the conveyer and having a hub 32 (Fig. 3) encasing the part 22 to assure an unchanging relation of the conveyer, the bracket, and the carriage-frame member 22.

A pump 33 (Fig. 1), equipped with a detachable operating-handle 34, is adapted, when actuated by the handle, to supply hydraulic-liquid under suitable pressure to the interior of the adjacent end portion of cylinder 25 through a flexible conduit or pipe 35 (Figs. 1 and 4) to force the piston outwardly thereby elongating the distance between the two hinge connections 29 and 26, and as a consequence rocking the wheeled frame or carriage around the axis of the cross-member 22 and also around the axis of the ground-wheels to elevate the conveyer.

Pump 33 is supplied with a hand-operated relief-valve 36, which, when open, allows the hydraulic liquid to flow from the cylinder 25 through the connection 35 into the sump 37 from which it may be later available for pumping.

Such opening of valve 36 releases the fluid pressure in the cylinder and allows the piston or plunger 28 to slide inwardly thereof thus effecting a lowering of the carriage-frame as will be readily understood, the speed of such descent being controlled by the degree of valve opening.

The specified operation of the pump and valve allows the conveyer to be lowered to the ground between the side frame members 23, 23 for delivery of the coal into low windows or other openings, and in that case the cross-piece of the U-

frame may rest on the ground as presented in dotted lines in Fig. 1.

Actuation of the pump will raise the conveyer to towing position, as illustrated in full lines in Fig. 1, or to a still higher inclined operative position for delivery at its upper end into a truck or other receptacle.

This trailer-conveyer embodies novel and effective means for support of the conveyer while the latter is in transit as when being towed, or pulled along, while supported on its own wheels.

Whether the pivotal action of the wheeled carriage with respect to the conveyer is controlled by hydraulic means, or by hand winch and cables, or by other suitable mechanism, it is a matter of safety to provide means to rest the conveyer boom on the side members 23, 23 of the carriage-frame when the machine is in transport, and, in this particular case, the conveyer has been provided at each side with semi-elliptic springs 38, 38 (Figs. 1 and 2) so located and applied to the sides of the conveyer that, when the conveyer is lowered to rest on the carriage side-frame members with the hydraulic-valve 36 open, the cross-member 22 is allowed to rock freely in the bearings 21, 21, and effective spring action is available to cushion road shocks due to high speed of towing.

It is therefore desirable to provide suitable supports for the conveyer in transit, which members should also be quickly removable from the path of the boom when it is desired to lower it to the ground.

To accomplish this result, at each side of the structure a suitably-braced, upstanding angle-bar 41 is welded or otherwise fixedly secured to the top of the corresponding side carriage-member 23 in approximately the same vertical plane as that of the axis of the adjacent carrying-wheel 24, the transverse flange of such part 41 having a series of vertically-spaced apertures 42.

By means of a pivot or hinge pin 43 (Figs. 2 and 5) occupying one of such apertures and a hole in a triangular bracket 44, the latter is rockingly mounted on such side-bar 23, the bracket having a hook 45 and a marginal flange 46, the hook by engagement with member 41 holding the bracket in proper position to support the corresponding spring 38 when the conveyer is being towed as shown in full lines in Fig. 2, the flange 46 by engagement with bar 41 maintaining the bracket in inoperative position when the conveyer is being lowered to ground-level and while occupying such position.

Thus the springs function to yieldingly support the conveyer while it is being towed and to efficiently absorb the shocks incident to such travel.

Those skilled in this art will readily appreciate that the invention, as defined by the appended claims, is not necessarily limited and restricted to the precise and exact details of structure and function herein set forth and that reasonable modifications may be resorted to without departure from the heart and essence of the invention and without the loss or sacrifice of any of its material benefits and advantages.

I claim:

1. In a transportable-conveyer mounted on transversely-aligned ground carrying-wheels, the novel combination of (a) a rigid conveyer-supporting frame of substantially U-shape on which said wheels are rotatably mounted near the free ends of the sides of the U-frame, the sides of said frame being spaced apart a distance greater than the width of the conveyer to accommodate the latter between them, (b) means rockingly mount-

ing the conveyer on the cross-piece of the U-frame at an intermediate point of the length of the conveyer, (c) hydraulic-ram means to rock said wheel-supported frame relative to the conveyer and around the axis of said wheels to lower said frame cross-piece and the conveyer to substantially ground-level and to elevate them to different heights above said ground-level, (d) sustaining spring-means on said conveyer, and (e) supporting-means for said spring-means movably mounted on said U-frame either into operative position beneath said spring-means whereby the latter are supported thereby in the transporting position of the conveyer or into inoperative position from beneath said spring-means when the conveyer is to be lowered below such transported position, said ram having a relief-valve eliminating when open the fluid-pressure in the ram.

2. In a transportable-conveyer mounted on transversely-aligned ground-carrying wheels, and having a rigid conveyer-supporting frame of substantially U-shape on which said wheels are rotatably mounted near the free ends of the sides of the U-frame, the sides of said frame being spaced apart a distance greater than the width of the conveyer to accommodate the latter between them, means rockingly mounting the conveyer on the cross-piece of the U-frame at an intermediate point of the length of the conveyer, and means to rock said wheel-supported frame relative to the conveyer and around the axis of said wheels to lower said frame cross-piece and the conveyer to substantially ground-level and to raise them to transport height, the novel combination being sustaining spring-means on said conveyer, and

supporting-means for said spring-means movably mounted on said U-frame either into operative position beneath the spring-means whereby the latter are supported thereby in the transporting position of the conveyer, or into inoperative position from beneath said spring-means when the conveyer is to be lowered below such transporting position.

3. In a transportable-conveyer mounted on transversely-aligned ground-carrying wheels, and having a rigid conveyer-supporting frame of substantially U-shape on which said wheels are rotatably mounted near the free ends of the sides of the U-frame, the sides of said frame being spaced apart a distance greater than the width of the conveyer to accommodate the latter between them, means rockingly mounting the conveyer on the cross-piece of the U-frame at an intermediate point of the length of the conveyer, and means to rock said wheel-supported frame relative to the conveyer and around the axis of said wheels to lower said frame cross-piece and the conveyer to substantially ground-level and to raise them to transport height, the novel combination of sustaining springs on the conveyer at opposite sides thereof, and supports for said springs mounted on said U-frame in substantially the same vertical plane as the axis of the carrying-wheels and movable either into operative position beneath said springs whereby the latter are supported thereby in the transporting position of the conveyer, or into inoperative position from beneath the springs when the conveyer is to be lowered below said transporting position.

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