Feb. 16, 1926. 1,573,186

O. P. NYSTROM ET AL

PORTABLE CONVEYER

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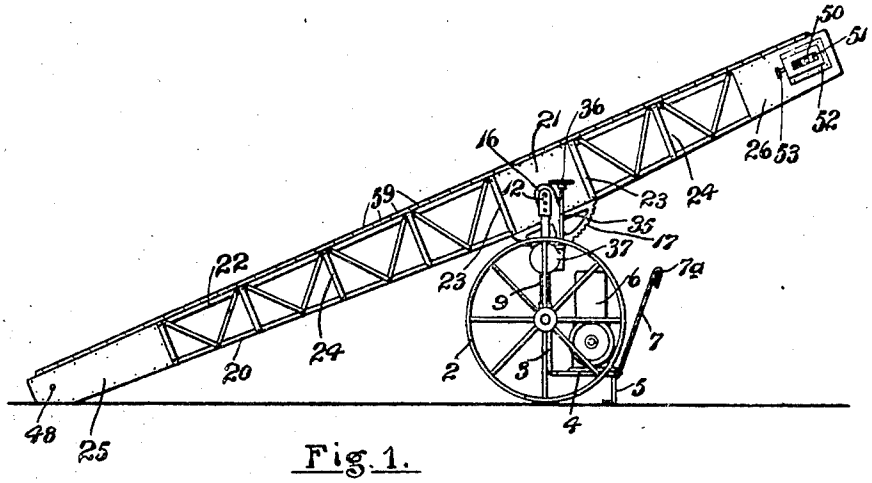


Fig. 1.

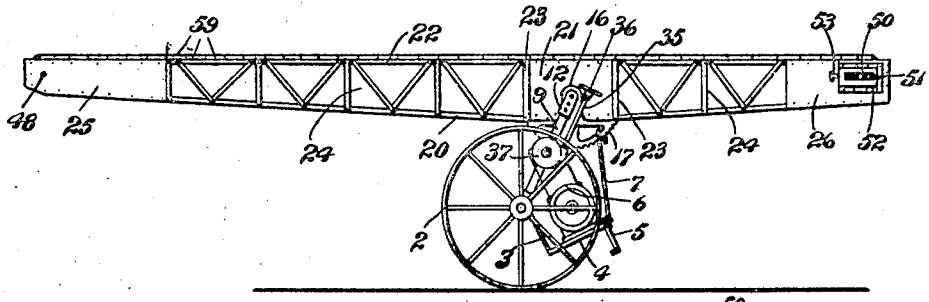


Fig. 2.

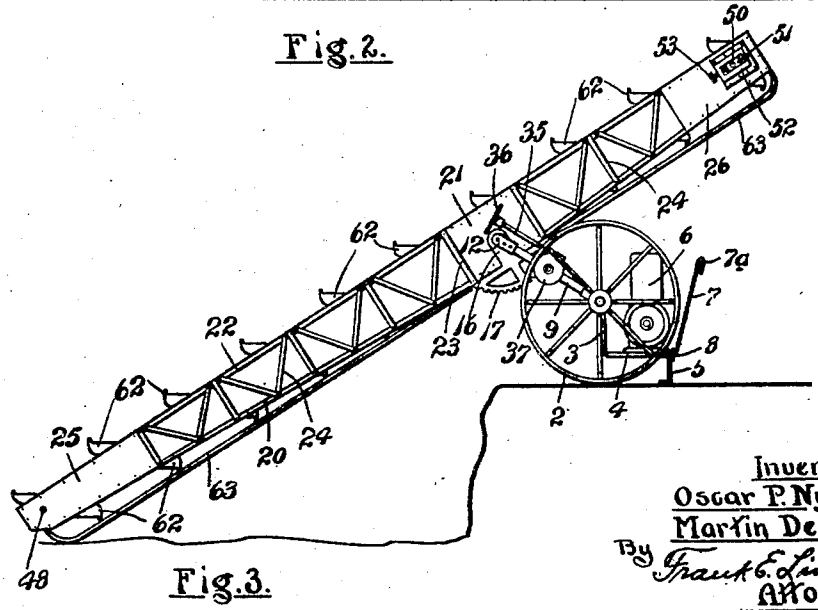


Fig. 3.

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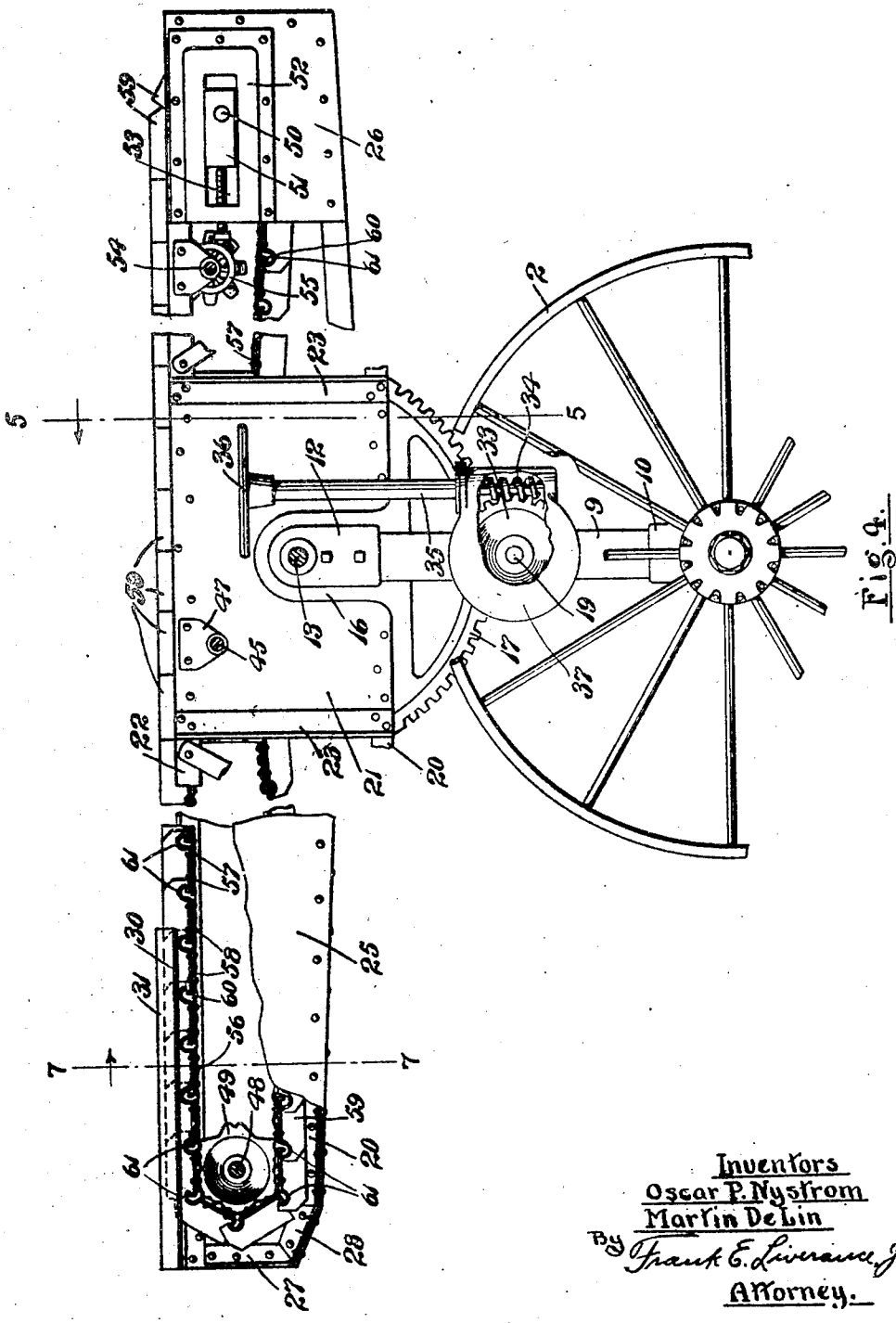


Fig. 4.

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PORTABLE CONVEYER

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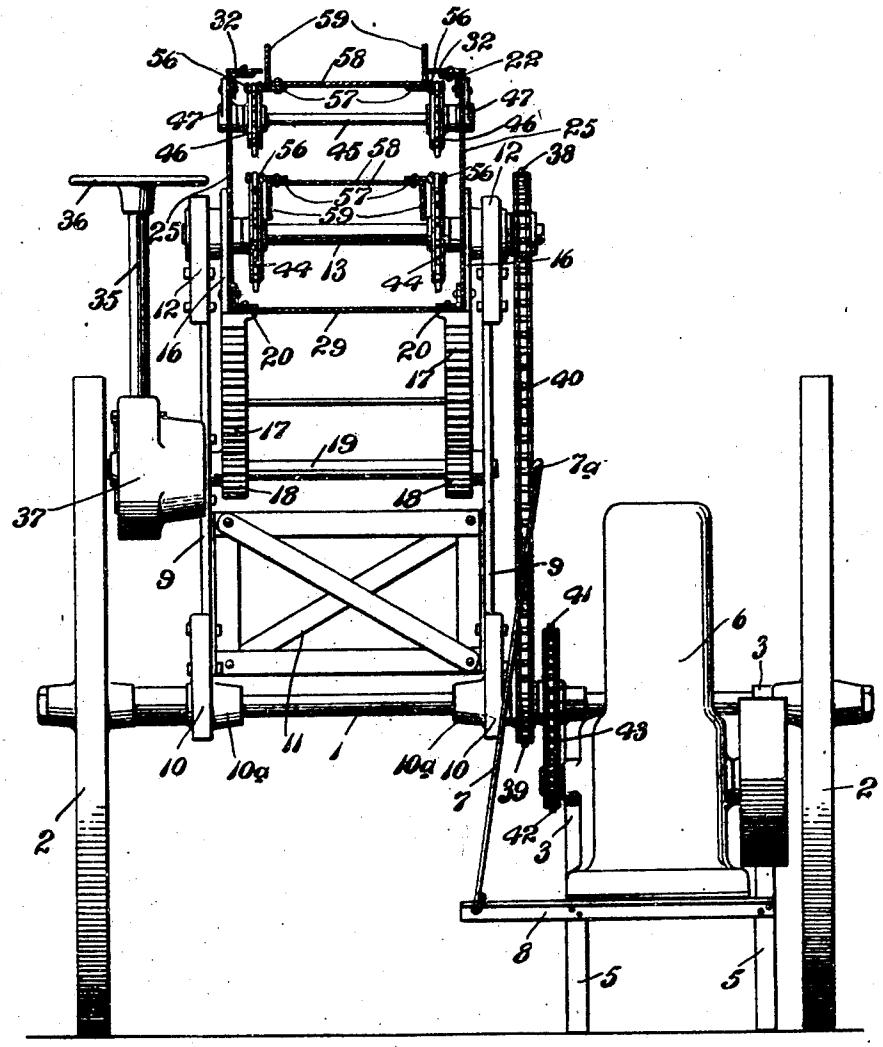


Fig. 5.

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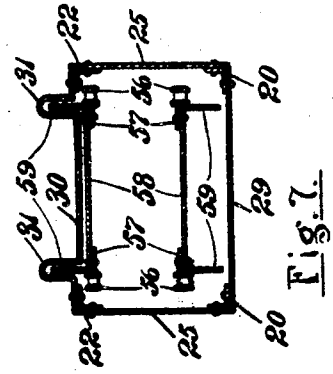


Fig. 7.

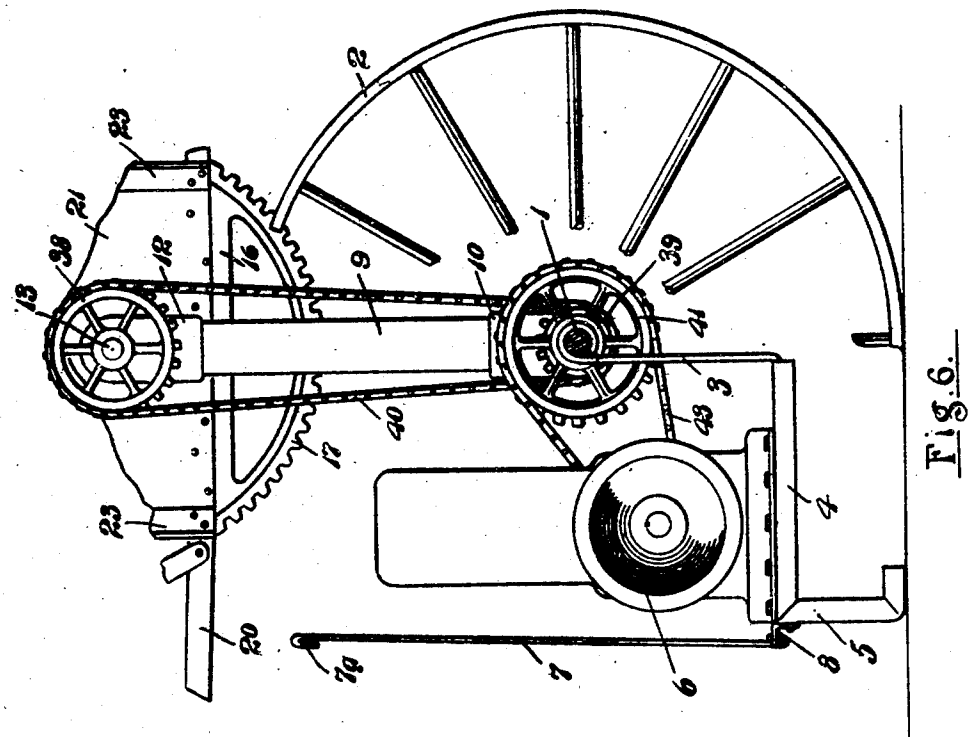


Fig. 6.

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Fig. 9.

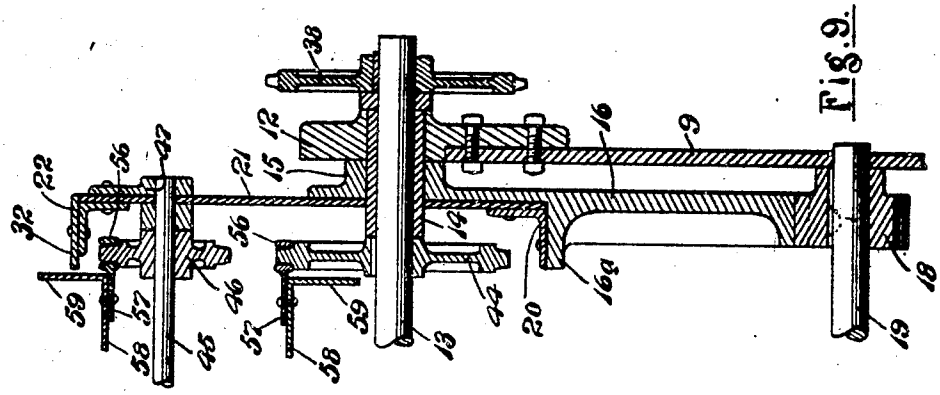
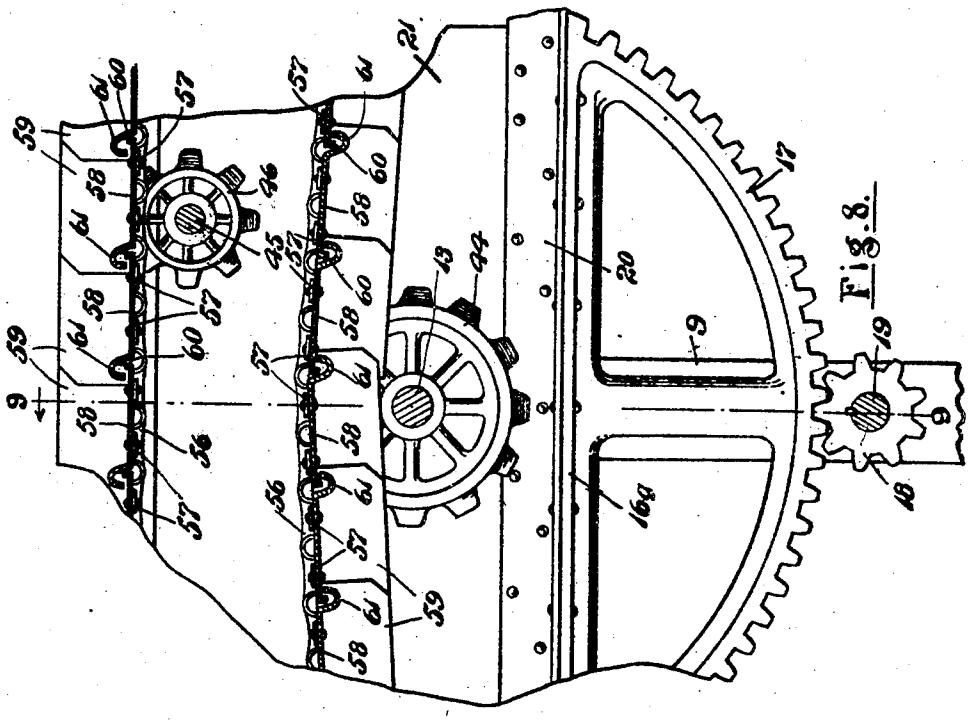


Fig. 8.



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UNITED STATES PATENT OFFICE.

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PORTABLE CONVEYER.

Application filed June 30, 1924. Serial No. 723,375.

To all whom it may concern:

Be it known that we, OSCAR P. NYSTROM and MARTIN DE LIN, citizens of the United States of America, residing at Holland, in the county of Ottawa and State of Michigan, have invented certain new and useful Improvements in Portable Conveyers; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a portable conveyer which is adapted to be of use in excavating cellars and the like, particularly under buildings such as houses. Many times in the installation of a furnace in a house, no basement or cellar has ever been dug thereunder such as is necessary to receive the furnace, and the digging thereof after the house is built is a very hard and costly proceeding. The present invention is designed to be used, one end thereof being capable of insertion under the building while the other end may be extended to a distance beyond the outline of the building, and the dirt shoveled on to the inner end of the conveyer is carried upwardly and outwardly to a point away from the house or other building under which the excavation is made. Our invention has for its primary object and purpose the production of a conveyer of this character which is run by a gasoline engine or similar motor, which can be adjusted to different angles to the vertical and which may be readily moved from one place to another. Subsidiary to this primary object are many other objects and purposes directed to the production of the machine in a simple and economical manner and one which is particularly effective for the purposes for which it is designed.

The invention by means of which these objects and purposes are attained as well as many others not at this time specifically stated, together with many novel constructions and arrangements of parts for effecting the same, is illustrated in the accompanying drawings, in which,

Fig. 1 is a side elevation of the conveyer showing the same positioned at an angle to the horizontal.

Fig. 2 is a like view, the conveyer being positioned substantially horizontal, the position it occupies when it is to be moved.

Fig. 3 is a side elevation showing the same as used in excavation, and with the construction slightly modified to change the conveyer into an endless conveyer and digger.

Fig. 4 is an enlarged side elevation of the machine with parts broken away and shown in section to better illustrate the construction.

Fig. 5 is a vertical section taken on the plane of line 5—5 of Fig. 4, looking as indicated by the arrows.

Fig. 6 is a fragmentary side elevation of the machine at the side opposite that shown in Fig. 4 showing the engine and driving connections between it and the conveyer proper.

Fig. 7 is a transverse vertical section on the plane of line 7—7, of Fig. 4.

Fig. 8 is a fragmentary enlarged vertical section taken longitudinally of the machine at its mid-portion and showing the conveyer construction in detail, and

Fig. 9 is a fragmentary transverse vertical section on the plane of line 9—9, of Fig. 8.

Like reference characters refer to like parts in the different figures of the drawings.

In the construction of the machine, an axle 1 is used at the ends of which wheels 2 are mounted. Suspended from the axle near one of the wheels are a pair of spaced apart straps 3, the lower ends of which connect to the front ends of two horizontal bars 4 at the opposite ends of which downwardly extending legs 5 are connected adapted to rest at their lower ends on the ground or other support on which the wheels 2 bear. An engine, preferably, a small gasoline motor 6 is carried on and above the bars 4. A rod 7 is connected loosely at its lower end to an angle bar 8 in turn permanently secured to and between the upper ends of the legs 5, said rod at its free end being formed with a hook 7^a for a purpose which will be later described.

Two spaced apart vertical bars 9 are connected at their lower ends to members 10 provided with hubs 10^a through which the axle 1 freely passes. This freely mounts the bars for rotative movement on the axle. A connecting and spacing framework indicated at 11 in Fig. 5 is disposed between the lower portions of the bars 9. At the upper end of each bar a member 12 is permanently secured and equipped with bearings through

which a shaft 13 passes. Referring to Fig. 9, it will be seen that the shaft passes through a bearing sleeve 14 which is extended inwardly from the member 12 to pass through an enlarged boss 15 adjacent the upper end of a member 16 which at its lower portion is formed into a gear segment having a series of gear teeth 17 cut in its curved under side. The teeth 17 mesh with pinions 18 keyed on a cross shaft which at its ends has rotatable mounting in openings in the bars 9. The shaft is shown at 19 in Figs. 5, 8 and 9.

Each of the members 16 is formed with an inwardly extending ledge 16ª at the upper side of the gear segment which serves as a support for an angle iron bar 20 which is permanently secured thereto. Vertical side plates 21 extend upwardly along the inner sides of the members 16 above the ledges and between the said members 16 and and the vertical legs of the bars 20, being permanently secured thereto and at the upper edges of said plates other angle bars 22 are permanently secured, lying directly above the bars 20. At the outer side and at each vertical edge of each plate 21, vertical angles 23 are fastened, and a lattice work of vertical and diagonal bars, indicated at 24 is interposed between the upper and lower bars 20 and 22 at each side of the structure for a distance beyond each edge of plates 23. At one end of the beam or girder thus made, side plates 25 are permanently fastened and at the other similar side plates 26 are secured as shown. At the ends of the beam, vertical angles 27 are used to connect the upper and lower bars 20 and 22, and at one end, as shown in Fig. 4, an inclined short bar 28 is used. A lower cross plate 29 (see Fig. 7) connects the lower bars 20 at the ends of the beam, and at one end, the left as shown in Fig. 4, an upper cross plate 30 connects the upper bars, said plate 30 having upwardly pressed parallel longitudinal ribs 31 made therein, the purpose of which will be hereafter described. At intermediate points where the plate 30 is not over the upper bars 22, a plate 32 is used over the upper horizontal leg of each bar 22, as shown in Fig. 9.

On one end of the shaft 19 a worm wheel 33 is secured (see Fig. 4) with which a worm 34 engages, the same being at the lower end of a vertical shaft or rod 35 which is equipped with a hand wheel 36 at its upper end. The worm and worm wheel are enclosed in a suitable casing 37. Manual operation of the hand wheel serves to turn shaft 19 with pinions 18 thereon, whereby the construction supported between the bars 9 may be turned to different angles with respect thereto. The turning movement of said construction is about the axis of the horizontal shaft 13.

Shaft 13 at one end is provided with a sprocket wheel 38 located directly above a smaller like wheel 39 rotatably mounted on the axle 1. An endless sprocket chain 40 passes around wheels 38 and 39. A larger sprocket wheel 41 is loosely mounted on the axle 1 on the same hub with wheel 39 in alinement with a sprocket attached to the crank shaft of the engine 6, a second endless chain 43 passing around wheels 41 and 42. When the engine is running, the shaft 13 is driven continuously, as is evident.

The shaft 13 adjacent each side plate 21 carries a chain wheel 44. Above and to one side of the shaft 13, another shaft 45 is positioned having chain wheels 46 thereon in the same vertical planes with the wheels 44. The ends of shaft 45 pass through the side plates 21 and are carried in suitable bearings 47 attached to the outer sides of the plates 21. At one end of the beam or girder carried between the bars 9, a shaft 48 is mounted horizontally between and supported at its ends by the plates 25, it also having chain carrying wheels 49 thereon. At the opposite end of the beam or girder, still another shaft 50 is mounted horizontally between the plates 26, being carried at their ends in blocks 51 which are slidably mounted in suitable guides 52, being adjusted by means of the adjusting screws 53. This shaft also has chain carrying wheels thereon. And finally a short distance in front and above the shaft 50, still another shaft 54 is suitably mounted on bearings depending from the upper bars 22, it having wheels 55 thereon.

Two endless chains 56 pass around the various chain carrying wheels 44, 46, 49, 55 and those not shown on the shaft 50. The chains pass above the wheels 44, 46 and 55, the lower run of the chain passing over the wheels 44 and the upper run of the chain over the wheels 46 and 55. The wheels 44 on shaft 13 are the driving wheels for moving the chains in unison, and the tension of said chains is adjusted by the adjusting screws 53.

The links of the chains at spaced intervals have inwardly projecting lugs 57 to which cross plates 58 of metal are riveted, said plates having upwardly extending ends 59, as shown whereby on the straight upper run of the chain a moving trough is made into which dirt or other material may be placed and carried to the delivery end of the machine and there dumped as the chains pass around the shaft 50. The ends of the sides 59 may pass by each other to a limited extent when necessary, as in passing over the wheels 44, as shown in Fig. 8. The ends of the bottoms 58 are formed at one end with an upturned lip 60 and at the other with an upwardly curved overhanging section 61, said section on one of the units lying over the lip 60 of the next adjacent

unit. There is thus made a substantially continuous bottom which will not let dirt or like material pass therethrough, the sections 61 extending transversely serving as cleats or ribs to hold the material from running downward by gravity when the conveyer is in operation, it being inclined to the horizontal at such time and the conveyer serving as an elevator for the material thrown thereon. The upwardly pressed ribs 31 on the plate 30 afford space for the passage of the sides 59 of the material conveying units, as is evident.

A machine made as described may be readily moved to any desired place of use and the end where plates 25 and 30 are attached lowered. This can be done by turning the members 10 to which bars 9 are attached about the axle 1, and further by operating the hand wheel 36 to turn shaft 19. Either one or both of the means for changing the position of the beam or girder on which the conveyer proper is mounted may be used so as to lower the end thereof as much as may be desired. The engine 6 serves to drive the conveyer continuously and dirt shoveled on to the conveyer above the plate 30 is carried in the continuous trough made by the sheet metal members having bases 58 and sides 59. The dirt will be conveyed upwardly and outwardly and delivered at the upper outer end of the conveyer, the ribs made by the transverse sections 61 carrying the dirt and holding it from running backward down the conveyer by gravity.

With a construction of this character, an excavation may be made under a house or other building substantially as well as in the open. This makes the construction particularly valuable in furnace installation work where a house does not have a cellar or basement to receive the furnace. If the character of the soil permits, the conveyer chains may be equipped with digging buckets 62, as shown in Fig. 3, which will loosen and take up the dirt and carry it outward. When thus used, members 63 are attached to the under sides of the beam or girder so as to properly space the scoops from the ground. The usual practice, however, will be to loosen and dig the dirt with the usual implements by hand and throw the same on to the conveyer constructed as shown in the other figures of the drawings.

This construction is relatively simple and is very practical and effective for the purposes for which it is designed. The appended claims define the invention and are to be considered as comprehensive of all forms of structure coming within their scope.

We claim:

1. In combination with an axle, wheels at the ends of the axle, two spaced apart bars mounted on and extending upwardly from the axle, an elongated beam pivotally mounted between its ends at the upper ends of said bars, an endless conveyer on said beam, a gear segment fixed to said beam, a pinion mounted on one of said bars and meshing with said gear segment, and means for manually rotating said pinion and for holding it nonrotative whereby pivotal adjustment of the beam on the arms is accomplished.

2. In combination with an axle, wheels at the ends of the axle, an elongated hollow beam mounted on and above the axle and adapted to be turned about a horizontal axis to depress one end and elevate the other, an endless conveyer mounted within and lengthwise of the beam, a support pivotally suspended from the axle and terminating in legs adapted to bear on the ground, an engine carried on said support, and means to drive the conveyer continuously from the engine.

3. In combination with an axle, wheels at the ends of the axle, two spaced apart bars mounted on and extending upwardly from the axle, an elongated beam pivotally mounted between its ends at the upper ends of the bars, an endless conveyer carried by said beam, a gear segment fixed to said beam, a shaft mounted for rotation on one of said bars, a pinion gear fixed to said shaft and meshing with said gear segment, a worm gear fixed to said shaft, and a worm meshing with said worm gear and adapted for manual rotation.

4. In combination with a horizontal axle, wheels mounted at the ends of the axle, two spaced apart bars pivotally mounted on and extending upwardly from the axle, a shaft rotatably mounted at the upper ends of said bars, an elongated hollow beam mounted on said shaft to turn thereabout, means for manually turning the beam to any desired inclination, an endless conveyer including an endless chain mounted within and lengthwise of the beam, a sprocket on said shaft to engage and drive said chain, and means carried on the axle for driving said shaft.

5. In combination with a horizontal axle, wheels mounted at the ends of the axle, two spaced apart bars pivotally mounted on and extending upwardly from the axle, a shaft rotatably mounted on and between the upper ends of the bars, an elongated hollow beam mounted tiltably on said shaft, a second shaft carried on and between the bars below the first shaft, pinions on the second shaft, gear segments attached to the lower side of the beam in mesh with said pinions, means for manually turning the second shaft to tilt the beam, an endless conveyer mounted within and lengthwise of the beam, and means for driving the conveyer.

6. In combination with a horizontal axle, wheels mounted in spaced apart relation on the axle, two spaced apart bars pivotally

mounted on and extending upwardly from the axle, a shaft rotatably mounted on and between the upper ends of the bars, an elongated beam tiltably mounted between its ends on said shaft, manually operated means for tilting the beam to different positions on the shaft, an endless conveyer mounted lengthwise of the beam and driven by said shaft, a support suspended from the axle, an engine carried on the support, and means for driving the shaft from the engine.

7. In combination with a horizontal axle, wheels mounted in spaced apart relation on the axle, two spaced apart bars pivotally mounted on and extending upwardly from the axle, a shaft rotatably mounted on and between the upper ends of the bars, an elongated beam tiltably mounted between its ends on said shaft, gear segments attached to and depending from the lower side of the beam, a second shaft rotatably carried by said bars below the first shaft, pinions on the second shaft meshing with said segments, means for manually turning the second shaft to tilt the beam, a conveyer mounted on the beam lengthwise thereof and driven by the first shaft, a support pivotally mounted on the axle and depending therefrom, an engine carried on said support, and means for driving the first shaft from the engine.

8. A construction containing the elements in combination defined in claim 7, combined with a rod connected at its lower end to said support and formed with means at its upper end to engage with one of the said gear segments to hold the said support in an upper position and off of the ground when the conveyer is moved.

9. In combination with a horizontal axle, wheels mounted at the ends of the axle, two spaced apart bars pivotally mounted on the axle and extending upwardly therefrom, a shaft rotatably mounted between and at the upper ends of the bars, an elongated beam tiltably mounted between its ends on the shaft, manually operated means for tilting the beam about the shaft, an endless conveyer mounted on and lengthwise of the beam and driven by said shaft, a support pivotally mounted on the axle and depending therefrom for a distance, then extended horizontally and provided with legs to rest on the ground, an engine carried on the horizontal portion of the support, means to drive the shaft from the engine, and means attached to the support and adapted to be detachably connected with an overhead portion of the structure for elevating the support and engine to clear said legs from the ground.

In testimony whereof we affix our signatures.

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MARTIN DE LIN.