

Sept. 27, 1949.

M. MAYRATH
GRAIN LOADER

2,483,290

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3 Sheets-Sheet 1

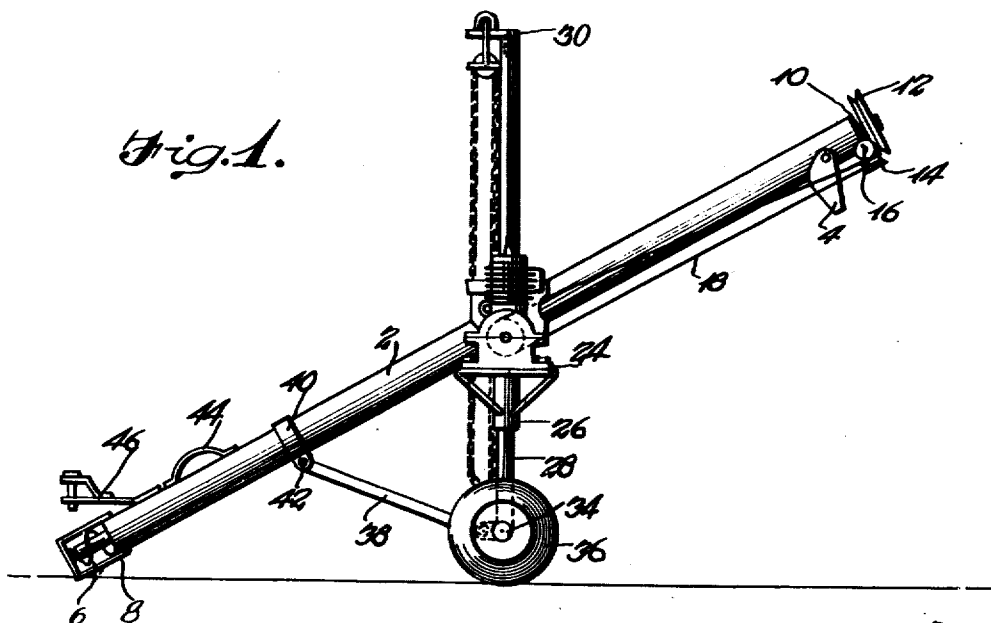


Fig. 2.

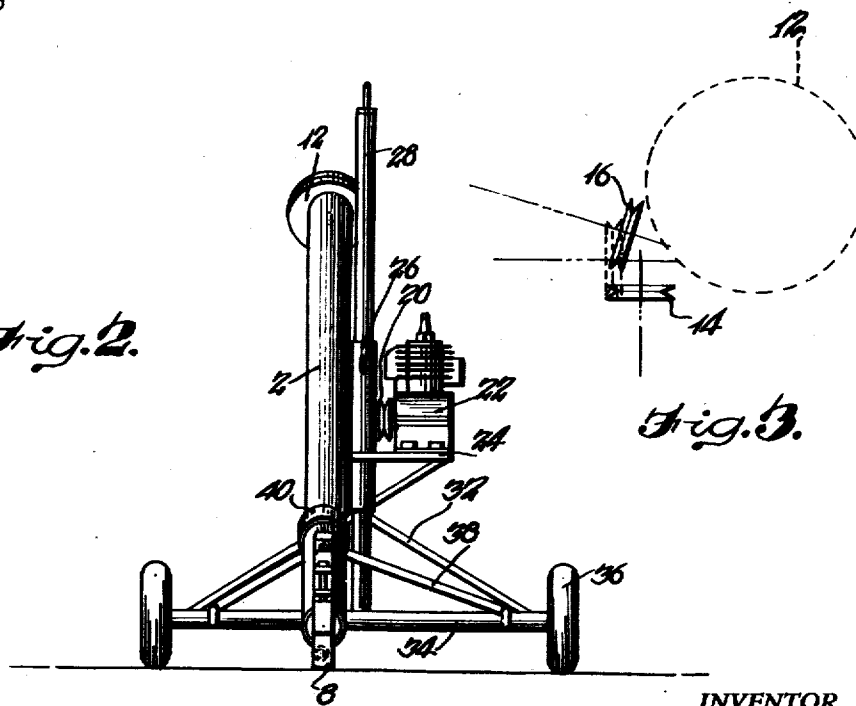


Fig. 3.

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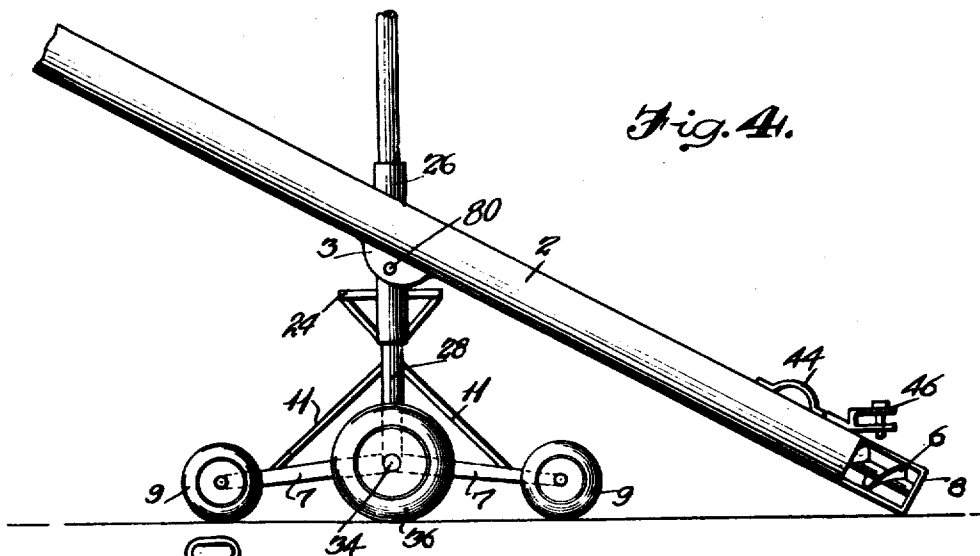
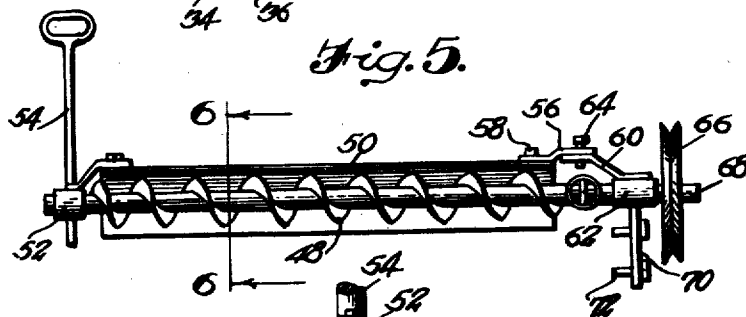
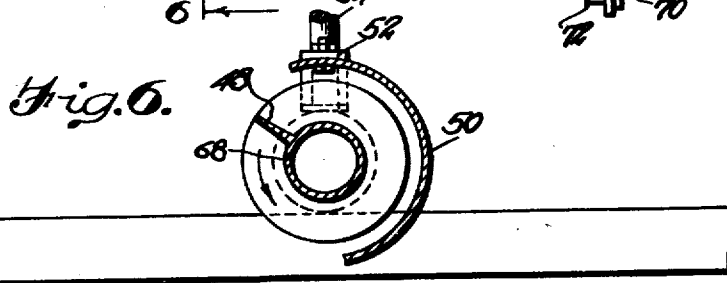
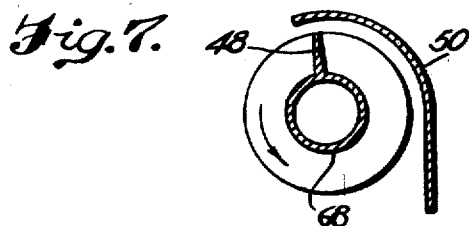
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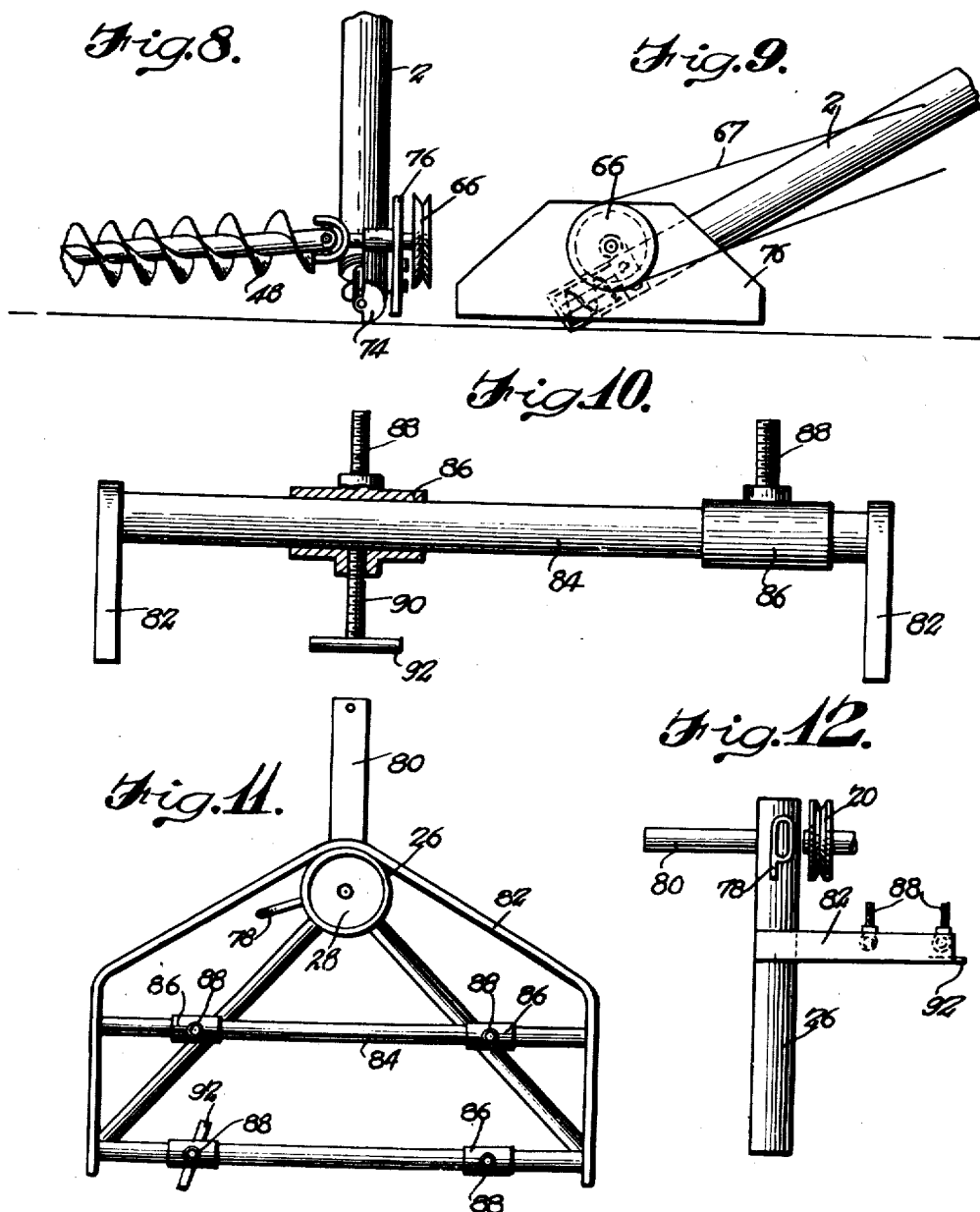
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GRAIN LOADER

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13 Claims. (Cl. 198-233)

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My present invention relates to an improved fluent material loader and more specifically to a screw conveyor and supporting and operating structure therefor whereby the loader of my invention may be employed to load material, such as grains, from freight cars, piles, and the like, to storage containers, or trucks.

Generally the loader includes a screw conveyor housed within a tube and adjustably mounted upon a support upon which is carried the motive unit for the screw, together with other accessories hereinafter described.

It is an object of my invention to provide a loader of this general type in which the inclination, or height of the discharge end, of the screw conveyor can readily be adjusted without interfering with the normal position of the driving engine or motor. Secondly, it is an object of the invention to provide such an adjustment that enables the intake end, or lower end, of the screw conveyor to be located somewhat above or below the horizontal line passing beneath the wheels or other main supports of the apparatus, yet without requiring the upright carriage or the driving engine to be tilted off level.

An additional object of the invention is to provide an arrangement of screw conveyor pivot means so related to the mounting elements for the engine or motor that adjustments of inclination of the conveyor tube may be carried out without involving any readjustment of the relationship between the engine, or its drive pulley, to the driven portion of the screw, herein exemplified by a driven pulley. An ancillary object of the invention is to provide for minor adjustments between the engine or motor and the driven pulley, such as those required by wear or stretch of the pulley belt.

Still another object is to provide a loader of this type with which can be connected an auxiliary feeding conveyor adapted to move a continuous supply of grain or the like to a position in which it can be picked up by the main or elevating conveyor. I provide this feeding conveyor with a specially designed partial housing or shroud which operates to ensure that the effectiveness of this feeding conveyor is maintained at a very high level, as compared with prior devices of this type.

In the accompanying drawings I have illustrated one complete example of the physical embodiment of my invention according to the best mode I have thus far devised, but it will be understood that various changes and alterations may

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be made in the exemplified structure within the scope of the appended claims.

In the drawings:

Fig. 1 is a side elevational view of the loader of my invention.

Fig. 2 is a front elevational view.

Fig. 3 is a diagrammatic view of the pulleys for driving the screw.

Fig. 4 is a side elevational view of the loader showing a modified support.

Fig. 5 is a front elevational view of an auxiliary feed conveyor.

Fig. 6 is a transverse sectional view thereof.

Fig. 7 is a transverse sectional view of an auxiliary feed conveyor showing an alternate shape of cover.

Fig. 8 is a front elevational view showing the feed conveyor attached to the loader.

Fig. 9 is a side elevational view thereof.

Fig. 10 is an enlarged side elevation, partly in section of a modified form of engine support.

Fig. 11 is a top plan view thereof.

Fig. 12 is a front elevational view.

Referring now to the drawings I have illustrated the present preferred embodiment of my invention as comprising a tube 2 having an upper discharge spout 4 and housing a screw conveyor 6. The lower end of the tube is formed with a bearing bracket 8 for the shaft 10 of the screw 6, and on the upper end of this shaft I provide a pulley 12. This pulley is driven through pulleys 14 and 16 which are positioned tangentially of the pitch circle of the drive pulley 12 by belt 18 from the drive wheel 20 of motor 22. The motor is supported on bracket 24 having a slide tube 26 on the post 28 and the latter carries an upper bracket 30 for a hoist device which permits the vertical adjustment of the motor and support. The tube 2 is supported by a pivot on the slide tube 26. It will be observed that, since both the tube 2 and the engine are carried by the same vertically slidable tube 26, vertical adjustments do not alter the relationship between drive wheel 20 and the pulleys 12, 14 and 16 at the upper end of the tube, so that no change need ordinarily be made in the belting. Moreover, as the drive wheel 20 is substantially or approximately concentric with the axis of pivot arm 30, changes in inclination of tube 2 resulting either from a vertical movement of slide tube 26 or from adjustments of radius rods 38 (described below), do not involve lengthening or shortening the belt 18.

Braces 32 carry axle 34 and wheels 36 stabilized

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through radius rods 38 having a common collar 40 secured by pin 42, on the tube 2. Obviously movement of the collar along the tube will vary the angularity of position of the tube relative to the post 28. As the slide tube 26 is raised or lowered on the post 28 the radius rods 38 operate to maintain the post 28 in a vertical position.

In the modification of Fig. 4 the tube 2 is formed with an ear 3 secured by pivot arm 80 to tube 26, and the axle 34 carrying wheels 36 is provided with outriggers 7 for wheels 9. Crossed braces 11 from the outriggers are secured to post 28.

A handle 44 on the tube 2 is provided for manual positioning of the lower inlet end, and a conventional tractor hitch 46 permits the movement of the loader from place to place.

Often it is desirable to feed the material to the loader in which case I employ a screw conveyor 48 having a cover 50 therefor, a journal bracket 52 supporting the end of the screw shaft, and also a support 54 to maintain the screw spaced from the floor or ground. It should be noted that cover 50 extends to a lower level than the shaft of the screw, and preferably to a point approximately level with the bottom or lowermost reach of said screw. This ensures feeding of the entire mass of grain or other pulverulent material surrounding the screw, a large portion of which would otherwise be merely agitated without being moved laterally into the intake area of the main screw 8.

An arm 56 is secured by bolt 58 to the cover 50 and the arm 60 carrying journal bracket 52 is secured thereto by bolt 64. A pulley 66 driven by belt 67 from the motor 22 is carried on shaft 68 and the link 70 is secured by bolts 72 to the extension 74 of tube 2. If desirable, a shroud 76 may be used to prevent the material being moved from interfering with the driving means of the screw conveyor 48.

In Figs. 10, 11, and 12 I have shown a modified form of the slide tube 26. A mounting strap 82 has parallel portions between which are mounted supports 84. Slide collars 86 on the supports have studs 88 for attachment to and support of the motor while one collar is provided with a set screw 90 and handle 92 so that the motor and collars may be adjusted laterally on the supports and secured in adjusted position.

The loader of my invention with or without the described accessories will efficiently move and load fluent material such as grains, and the loader is self contained. Obviously any suitable source of power may be employed, and the supports for the motor unit may be varied in size and shape to accommodate such units.

Having thus fully described my invention what I claim as new and desire to secure by Letters Patent is:

1. A loader for fluent material comprising a screw conveyor and its housing, a wheeled frame having a vertical post, a sleeve on the housing movable on the post, a motor unit on the sleeve operably connected with a screw, a pivot on the sleeve supporting the conveyor and its housing, and radius rods between the frame and the housing and adjustable along the housing to vary the angle of the housing with relation to the post.

2. A loader for fluent material comprising a screw conveyor and its housing tube, a wheeled frame having a vertical post, a sleeve pivotally secured to the housing tube and slidably mounted on the post, and a motor unit on the sleeve operably connected with the screw.

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3. A loader for fluent material comprising a screw conveyor and its housing, a wheeled frame having a vertical post, a sleeve pivotally secured to the housing and vertically movable on the post, a motor supporting frame on the sleeve, a motor unit slidably mounted on the motor supporting frame and operably connected with the screw, and radius rods between the wheeled frame and the housing and adjustable along the housing to vary the angle of the housing with relation to the post.

4. A loader for fluent material comprising a screw conveyor and its housing tube, a wheeled frame having a vertical post, a sleeve pivotally secured to the housing tube and slidably mounted on the post, a motor supporting frame on the sleeve and a motor unit slidably mounted on the motor supporting frame and operably connected with the screw.

5. A loader for fluent material comprising a screw conveyor and its housing tube, a wheeled frame having a vertical post, a sleeve pivotally secured to the housing tube and slidably mounted on the post, and a motor unit on the sleeve operably connected with the screw, said connection including a belt and pulley drive and idler wheels positioned tangentially of the pitch circles of the drive and driven pulleys.

6. A loader for fluent material comprising a screw conveyor and its housing tube, a wheeled frame having a vertical post, a sleeve pivotally secured to the housing tube and slidably mounted on the post, a motor supporting frame on the sleeve, a motor unit on the motor supporting frame slidably mounted thereon and operably connected with the screw, said connection including a belt and pulley drive and idler wheels positioned tangentially of the pitch circles of the drive and driven pulleys.

7. A loader for fluent material comprising a conveyor screw having a housing, a wheeled frame supporting a vertical guide member, a support slidably engaging said guide member for vertical movement with respect thereto and having a pivotal connection with said housing substantially midway of the length thereof, and a motor unit mounted on said support.

8. A loader for fluent material comprising a conveyor screw having a housing, a wheeled frame supporting a vertical guide member, a support in vertically slidable contact with said guide member and having a pivotal connection with said housing, a motor unit mounted on said support, at least one radius rod pivotally secured at one end to said wheeled frame, and means pivotally securing the other end of said rod to said housing intermediate one end of the latter and the point of connection between said housing and sleeve.

9. The invention in accordance with claim 1 in which said wheeled frame comprises a pair of main support wheels on a common axle, wheeled outriggers connected to said frame, and support elements connecting said post with said outriggers.

10. A grain loader comprising a wheeled framework having a vertical post, a sleeve slidably encompassing said post for vertical movement therealong, a stub axle extending laterally from said sleeve, a feed screw housing pivoted on said axle, a feed screw in said housing, and a motor mount secured to said sleeve and extending laterally therefrom in a direction opposite to that of said axle, said motor mount comprising a pair of spaced arms, a pair of parallel guide rods ex-

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tending between said arms, and motor mounting elements slidably engaging said guide rods.

11. A loader for fluent material comprising a conveyor screw having a housing, a wheeled frame supporting a vertical guide member, a support slidably engaging said guide member for vertical movement with respect thereto, said housing being pivotally secured adjacent its midpoint to said support, and means on said support for receiving a motor unit for driving connection with said conveyor screw.

12. A loader for fluent material comprising a conveyor screw having a housing, a supporting frame, a vertical guide member carried by said frame, a motor support slidably engaging said guide member for vertical movement with respect thereto, a pivotal connection between said motor support and said housing intermediate the length of the latter, and means on said motor support for receiving a motor unit for driving connection with said conveyor screw.

13. A loader for fluent material comprising a conveyor screw having a housing, a supporting frame, a substantially vertical guide member carried by said frame, a support slidably engaging said guide member for vertical movement with respect thereto, a pivotal connection between said support and said housing intermediate

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the length of the latter, a driven pulley mounted adjacent one end of said housing and connected to drive said conveyor screw, and a driving pulley mounted substantially coaxially with said pivotal connection, whereby the distance between said driving pulley and said driven pulley is substantially independent of the pivotal relation of said housing and said support and of the position of said support on said guide member.

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