No. 844,524. PATENTED FEB. 19, 1907.

LE GRAND KNIFFEN.

MANURE FORK OR CARRIER.

APPLICATION FILED AUG. 18, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

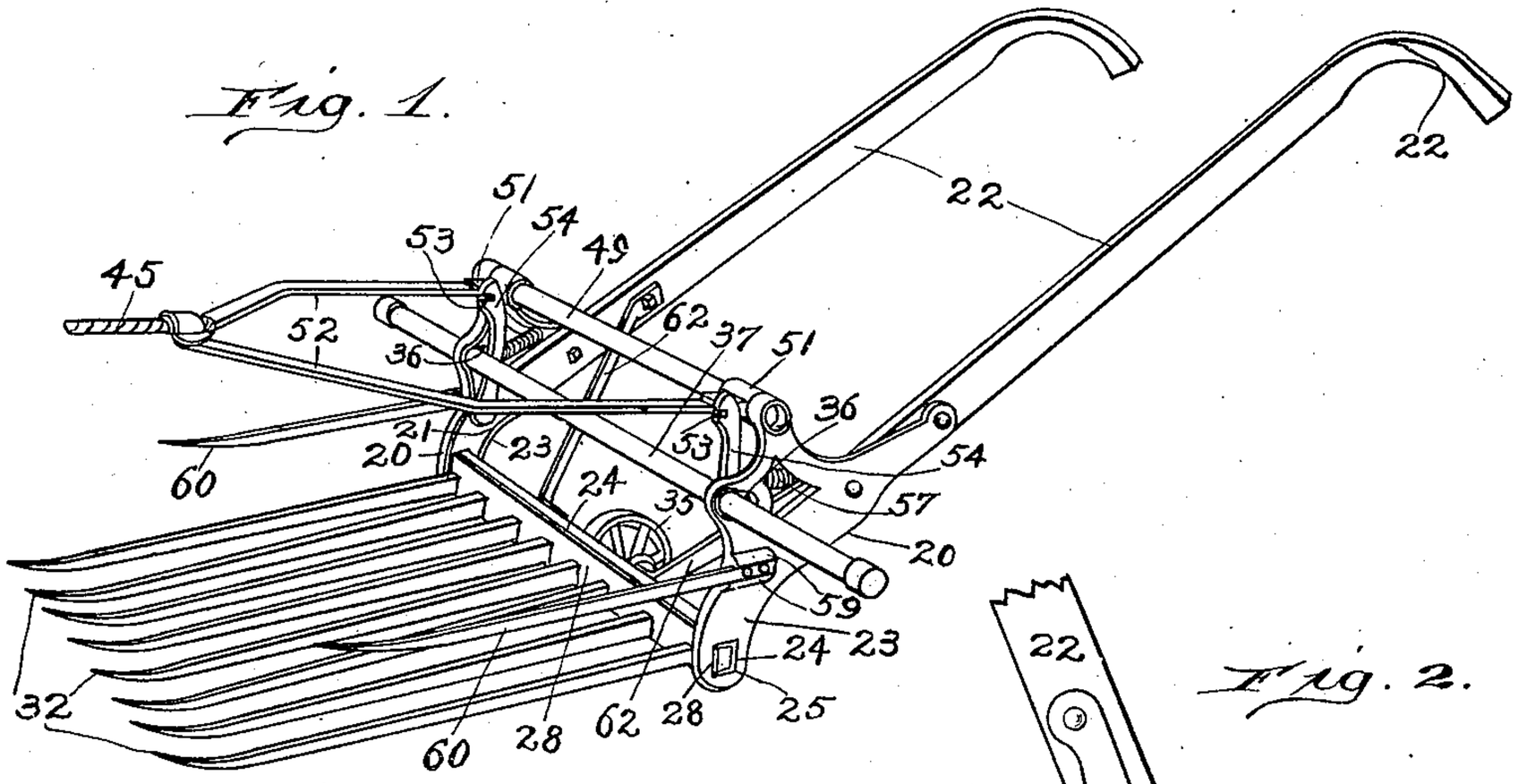

Fig. 2.

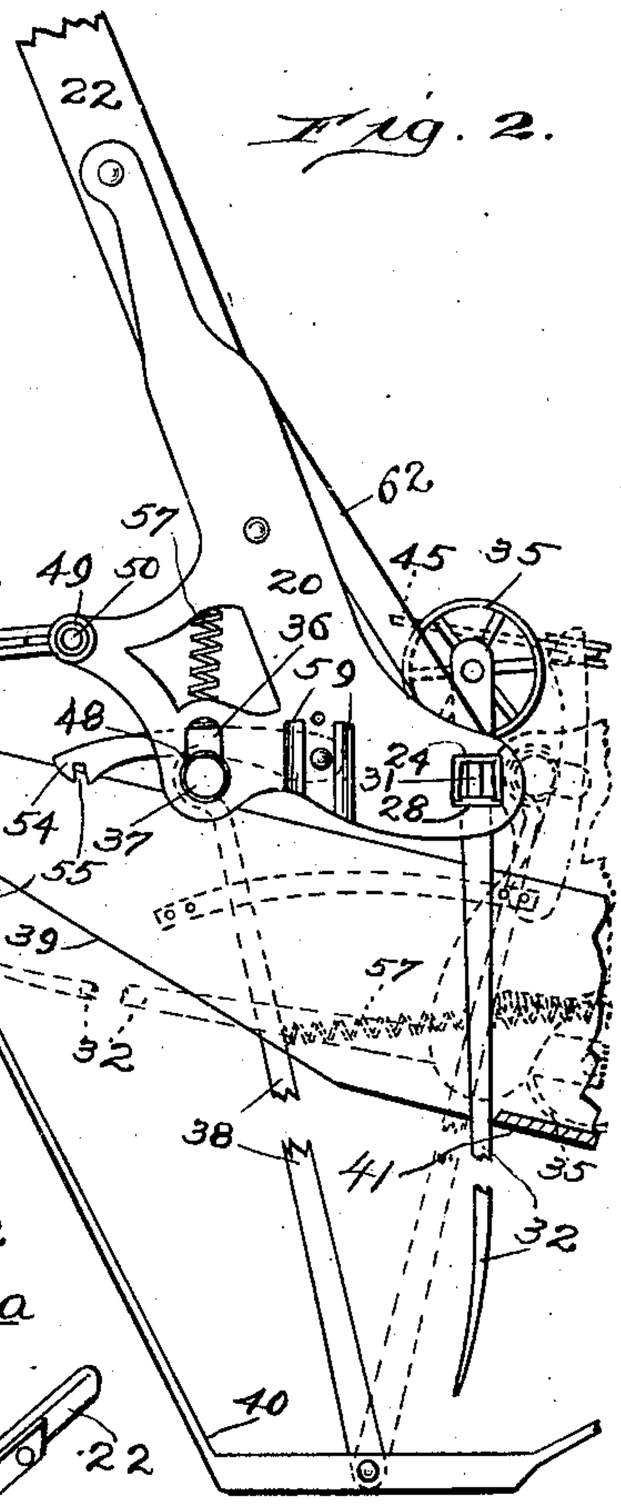

Fig. 3.

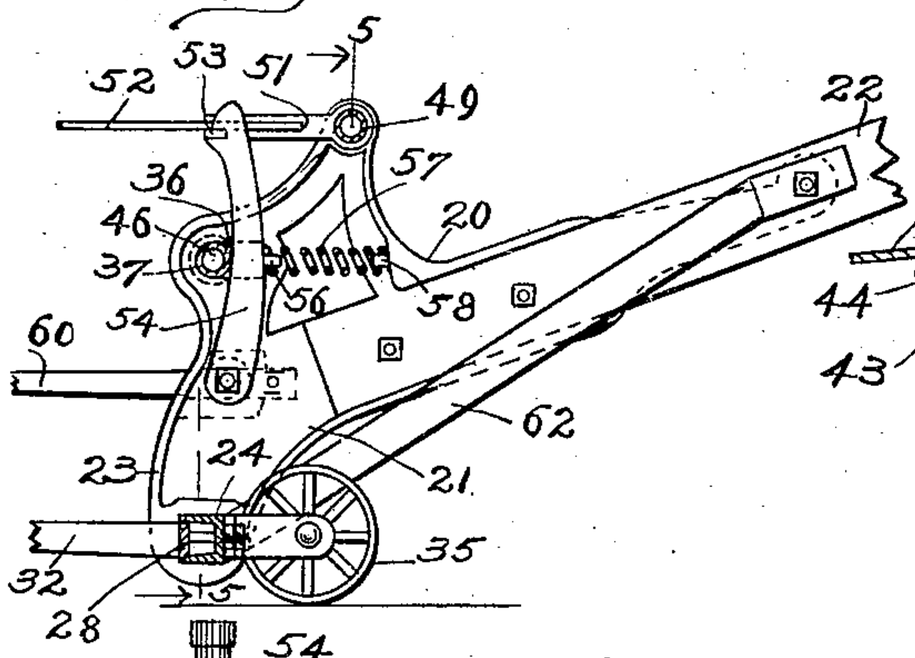

Fig. 4.

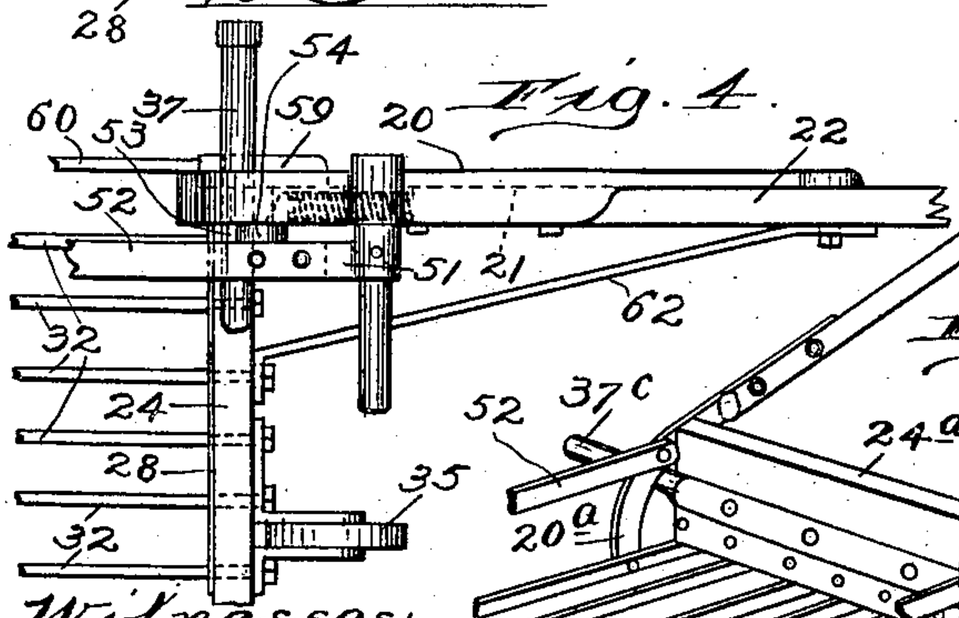

Fig. 4a

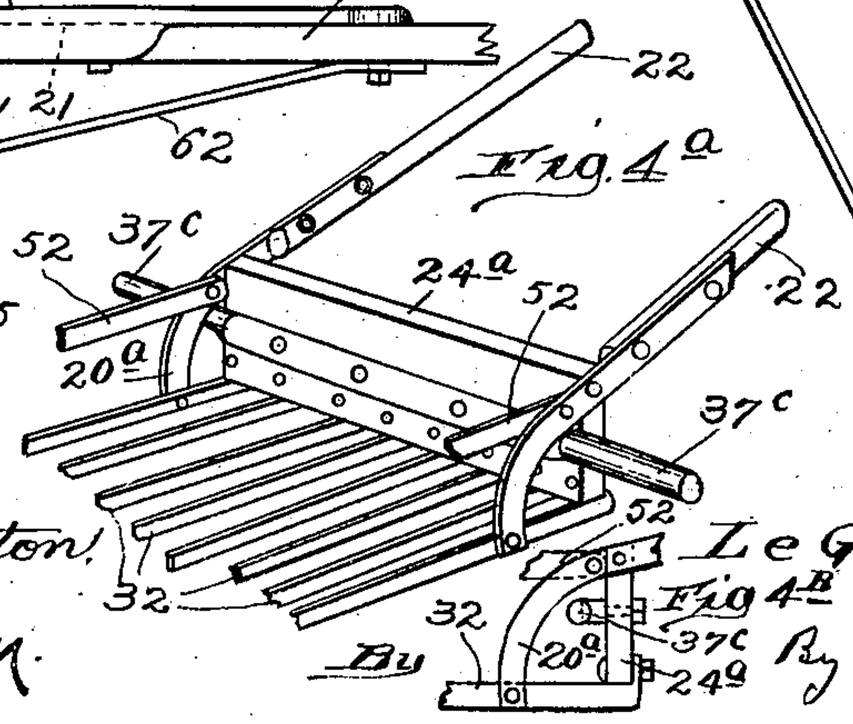

Fig. 4b

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2 SHEETS—SHEET 2.

Fig. 5.

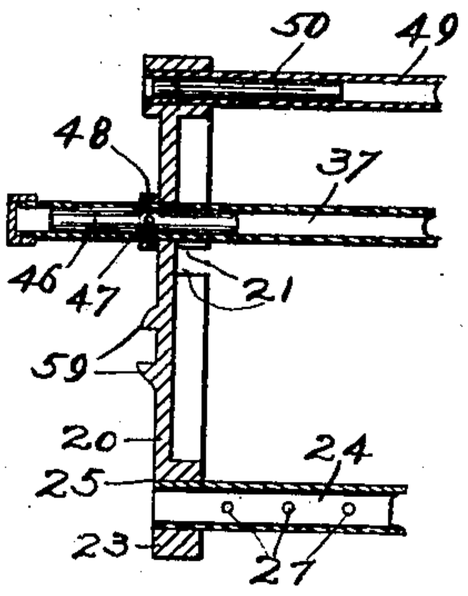


Fig. 6.

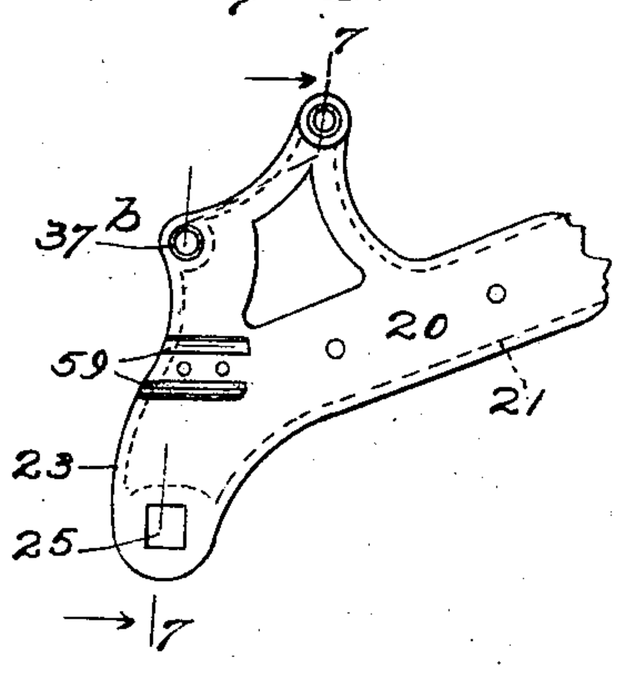


Fig. 7.

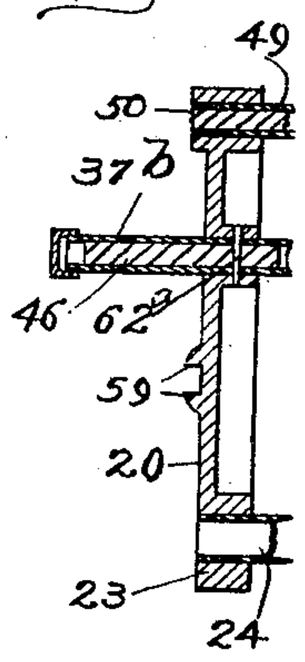


Fig. 8.

Fig. 9.

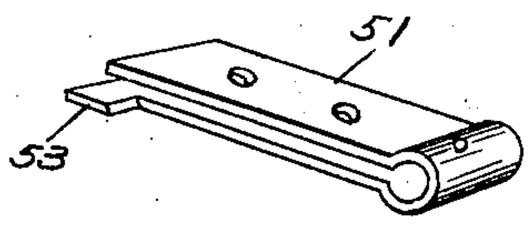


Fig. 10.

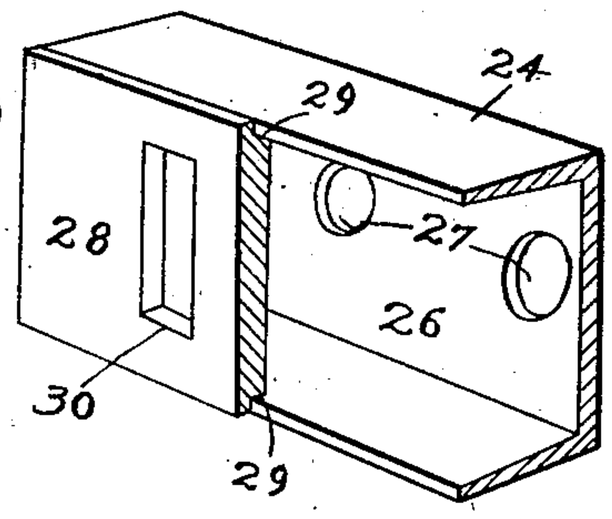


Fig. 11.

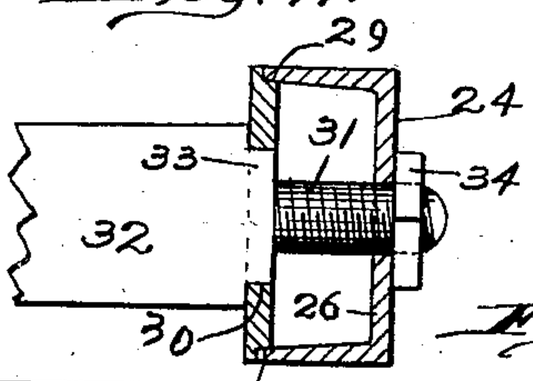


Fig. 12.

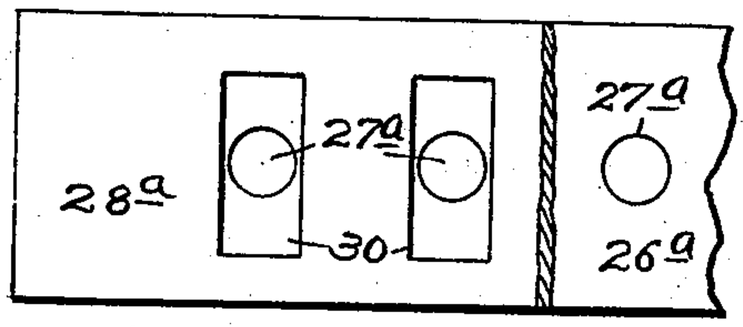


Fig. 13.

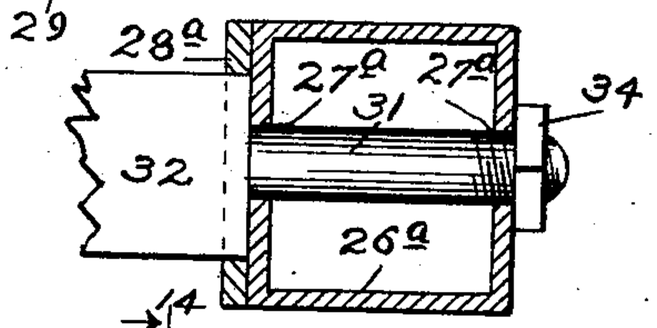


Fig. 14.

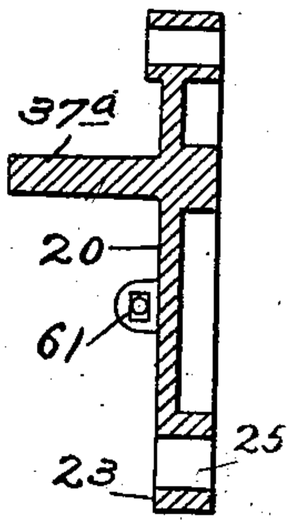
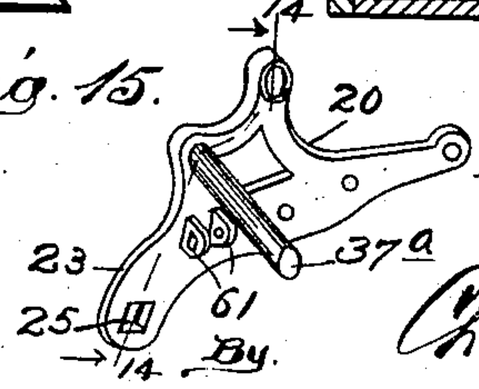


Fig. 15.



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UNITED STATES PATENT OFFICE.

LE GRAND KNIFFEN, OF CHICAGO, ILLINOIS.

MANURE FORK OR CARRIER.

No. 844,524. Specification of Letters Patent. Patented Feb. 19, 1907.

Application filed August 18, 1906. Serial No. 331,102.

To all whom it may concern:

Be it known that I, LE GRAND KNIFFEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Manure Fork or Carrier, of which the following is a specification.

This invention relates to that type of implements used for collecting or scooping up and conveying material from one point to another, and while it is more especially intended to be employed for handling barnyard manure and in connection or coöperation with an improved loading apparatus, such as is disclosed in an application, Serial No. 325,065, for Letters Patent filed by me on the 7th day of July, 1906, yet it is applicable for use without such an apparatus or with a loading apparatus of different construction and for handling and removing other material, such as earth, ore, fertilizers, and the like; and it consists in certain peculiarities of the construction, novel arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

In my above-mentioned application for patent on loading apparatus I have shown and described in connection with and as forming a part of the apparatus a fork or carrier of substantially the same construction as that forming the subject-matter of the present application, but have not therein claimed said fork or carrier *per se*, or, rather, except in conjunction with the apparatus or as forming a part thereof.

The principal object of the invention is to provide a fork or carrier which shall be simple and inexpensive in construction, strong, durable, and effective in operation, and so made that it may be drawn by horse or other power over the ground and up an inclined chute when desired and manually guided in its forward movement, but automatically guided down the chute.

Another important object is to so construct the fork or carrier that it will automatically dump its load when it reaches a certain point on the chute and in such a manner as to prevent it becoming wedged between the sides of the chute by means of straw and fibrous manure.

Still another and important object is to provide means for preventing the tendency of the handles of the fork or carrier to rise in its forward movement, thereby relieving the operator of great strain.

Other objects and advantages of the invention will be disclosed in the subjoined description and explanation.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is a perspective view of a fork or carrier embodying my invention. Fig. 2 is a view, partly in elevation and partly in section, of the upper portion of the inclined chute of a loading apparatus with the fork or carrier shown thereon in its tilted or dumped position, parts of the view being shortened for the convenience of illustration. Fig. 3 is an inner face view of one of the sides of the fork, showing portions of the tines, a part of the bail, and one of the locking-levers therefor. Fig. 4 is a plan view of a portion of the fork or carrier. Fig. 4^{a} is a perspective view of the fork or carrier, showing a modification in the construction thereof. Fig. 4^{B} is an end view of a portion thereof. Fig. 5 is a sectional view taken on line 5 5 of Fig. 3 looking in the direction indicated by the arrows. Fig. 6 is an outer face view of one side of the fork or carrier, showing a modification in the construction thereof. Fig. 7 is a sectional view taken on line 7 7 of Fig. 6 looking in the direction opposite to that indicated by the arrows. Fig. 8 is a detached perspective view of one of the locking-levers for the bail. Fig. 9 is a similar view of one of the securing-clips for the bail. Fig. 10 is a fragmental perspective view of the cross-bar which carries the tines. Fig. 11 is a cross-sectional view thereof, showing a portion of one of the tines in place thereon. Fig. 12 is a front face view of a portion of a modified form of the tine-carrying cross-bar. Fig. 13 is a cross-sectional view thereof. Fig. 14 is a sectional view taken on line 14 14 of Fig. 15 of one of the sides of the fork or carrier, showing another form of its construction; and Fig. 15 is a perspective view thereof.

Corresponding numerals of reference indicate like parts throughout the different views of the drawings.

The carrier or fork may be of any suitable form—such as a fork, scoop, or scraper—for gathering and holding the manure or material; but for the purpose of handling barn-

yard manure, which contains straw, hay, and other fibrous material, I prefer to construct it with tines, as shown in the drawings accompanying this application; but I desire it understood that I may substitute a scoop, shovel, or scraper therefor without departing from the spirit of the invention. The fork or carrier consists of two upright side members or pieces 20, which are counterparts of one another and preferably of about the shape shown in the drawings. Each of these members is provided on its inner surface with a rearwardly-extending socket or channel 21, in each of which is located a handle 22, which project rearwardly and upwardly and are for the use of the operator in guiding the fork or carrier when the same is being filled.

On a front and downwardly-projecting extension 23 of each of the members 20 is horizontally secured a cross-head 24, which is preferably rectangular in cross-section and hollow and also preferably has its ends fitted in sockets 25, formed in the extensions 23. The preferred construction of the cross-head 24 is illustrated in detail in Figs. 10 and 11 of the drawings and consists of a piece of channel-iron 26, having in its rear portion a number of circular openings 27 and between the front edges of its top and bottom a plate 28, which may have shoulders 29 to receive said edges. This plate has a series of rectangular openings 30 arranged in a horizontal row and so as to register with the openings 27, which are for the reception of the rounded and screw-threaded portions 31 of the tines 32, while the openings 30 are for the reception of the rectangular portions 33 of the tines and which keep them from turning in their sockets, nuts 34 being used on the rear ends of the portions 31 to hold the tines in place.

Instead of using a cross-head of the above-described construction I may employ one of the form or make shown in Figs. 12 and 13, which consist of a hollow bar 26^a, about square in cross-section, having in its front and rear portions holes 27^a for the reception of the portions 31 of the tines. Located on the front portion of the bar 26^a is a plate 28^a, which is provided with rectangular openings 30 to receive the similarly-shaped portions 33 of the tines. The cross-head, whether made as above described or otherwise, may have journaled on its rear portion at about its middle a wheel or roller 35, employed for assisting the movement of the carrier in its descent on the chute. This wheel has no particular advantage in moving the load upward on the chute, as the draft is such as to often lift it out of contact therewith; but when the carrier has discharged its load and is returned, so as to travel down the chute, the wheel which is placed at the middle of the cross-head will strike the platform or chute and will act in the downward movement of the carrier as a leader therefor, permitting the tines to drag on the chute, thus guiding the carrier in a direct movement downwardly, whereas, if two wheels were employed on the carrier, if one of them came in contact with an obstruction it is obvious that the carrier would be deflected to one side and its further downward progress prevented by the side piece of the chute.

Each of the members 20 is provided in its upper portion and somewhat rearwardly from the cross-head 24 with a horizontal slot 36, in which is loosely located a horizontally-extending hollow rod or cross-bar 37, the ends of which project a considerable distance from the outer surface of the members 20 and form pivots for the fork or carrier to coact with stops or levers 38 on the upper part of an inclined chute 39 in order to cause the fork or carrier to be tilted, so as to discharge its load. In Fig. 2 of the drawings I have shown a portion of the upper end of a chute 39, which is equipped with a supporting-bracket 40 to rest on the side of a wagon box or body or other receptacle to be loaded. The floor 41 of the chute terminates some distance from the upper ends of the sides 42 of the chute, thus providing an opening through which the carrier may operate and dump its load. The upper ends of the sides 42 are united by a cross-piece 43, on which is journaled a pulley 44, over which a cable 45, attached at one of its ends to the bail of the fork or carrier and used for drawing the same, passes. On each side of the chute and usually pivotally secured to the bracket at its lower end is a lever or stop 38, which projects above the upper edge of the sides 42, so as to be in the path of the projecting ends of the rod or cross-bar 37 or pivots. As there is considerable strain on these pivots or projecting ends, I prefer to use a hollow bar or rod 37 and reinforce its ends by placing therein solid rods or bars 46, (see Fig. 5,) which may be secured in place by means of pins 47, passed through collars 48, one on the outer side of each of the members 20, and through the rods 46 and rod or bar 37, thus preventing longitudinal movement of the last-named rod. At the rear end, somewhat above the rod or bar 37, the members 20 are transversely connected by means of a cross-bar or rod 49, preferably hollow and reinforced by solid rods 50 in each of its ends.

Secured on the cross-bar or rod 49 and usually by means of clips 51 are the rear ends of a bail 52, the front end of which has the cable 45 connected thereto. As shown in Figs. 1 and 9, each of the clips 51 is provided with a lateral projection 53, located slightly to the rear of the rod or cross-bar 37 or the pivots of the carrier. However, these projections may be made integral with the arms of the bail, as is evident.

Fulcrumed at its lower end on each of the members 20 is a lever 54, each of which has in

its upper front portion a recess 55 to engage the projections 53 on the arms of the bail. The upper end of each of the levers 54 is rounded or beveled, and the lower wall of each of the recesses therein is longer than the upper wall for the purpose of more effectual engagement with said projections. Each of said levers is provided on its rear surface, at about its middle, with a lug 56, around which is fitted one end of a coil-spring 57, the other end of which is fitted around a lug 58 on the inner surface of each of the side members. These springs serve to press the levers 54 forwardly, so that the recesses 55 will engage the projections 53, and thus firmly hold the bail 52 in its horizontal or lowered position until the ends of the rod or cross-bar 37 or pivots of the carrier strike the levers 38 or stops on the chute, by means of which the rod or bar 37 will be pressed backwardly in the slots 36, thus disengaging the levers 38 from the projections 53 and permitting the carrier to be dumped. Each of the members 20 is provided on its outer surface with one or more pairs of spaced-apart and horizontal lugs 59 to receive the rear ends of auxiliary tines 60, used for preventing the material falling off the sides of the carrier. Instead of using the horizontally-disposed lugs or ribs 59 for the above-named purpose, as shown in Figs. 1, 2, 5 to 7, inclusive, I may employ apertured lugs 61, as shown in Fig. 15 of the drawings, in which figure, as well as in Fig. 14, it will be observed that each of the members 20 is provided with a pivot 37^a, which is integral therewith and which form I may sometimes employ.

In Figs. 6 and 7 of the drawings I have shown another modification in the construction of the side members 20, which consists in using a hollow cross-bar or rod 37^b without the reinforcing-rods and in fastening it by means of pins 62^a to said members.

As shown in Fig. 1 of the drawings, the cross-head is connected to the handles by means of diagonally and upwardly-disposed braces 62, which serve to strengthen the device and to some extent prevent the load escaping through the rear part thereof.

As one of the important features of my present invention is to provide a fork or carrier of such construction as to enable it to be easily dumped at the proper time, and as I do not desire to be limited to the specific construction of the device except where so claimed, and as the facility of the dumping operation depends largely on the novel and peculiar arrangement of the parts of the device with respect to one another, and particularly on the arrangement and location of the bail and pivots, I have shown several modifications of the implement, and in Fig. 4^a have shown a perspective view illustrating the broad idea of the construction to facilitate the tilting or dumping thereof which consists in employing an upright board or plate 24^a, to the lower edge of which is secured a series of forwardly-projecting tines, the outer or side ones of which are braced to the ends of the board 24^a and handles 22 by means of bars 20^a, to which the ends of the bail 52 are secured at points above and slightly to the rear of a cross-bar 37^c, which is longitudinally secured on the board 24^a and has its ends projected beyond the same.

From the foregoing and by reference to the drawings it will be understood and clearly seen that when the carrier is drawn upwardly on the chute and reaches the upper portion thereof the projecting arms or pivots will strike projections, stops, or levers with which the chute is provided, and thus through the draft through the bail which is connected to the fork or carrier above the pivots or dumping-arms thereon, which arms or pivots are located on the sides and near the rear of the device, will cause the fork or carrier to be rotated on the pivots and dumped of its load.

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

1. A fork or carrier consisting of two upright spaced-apart side members, a cross-head and a cross-bar transversely uniting the same, means on the cross-head to hold the material, and a laterally-extending pivot on each of the members above the cross-head.

2. A fork or carrier consisting of two upright spaced-apart side members each having on its inner surface a rearwardly and upwardly extending channel, a handle secured in each of said channels, a cross-head and a cross-bar transversely uniting the members, means on the cross-head to hold the material, and a laterally-extending pivot on each of members above the cross-head.

3. A fork or carrier consisting of two upright spaced-apart side members each having on its inner surface a rearwardly and upwardly extending channel, and on its outer surface means to secure a tine thereto, a handle secured in each of its channels, a tine located on the side of each of said members and extending forwardly therefrom, a cross-head and a cross-bar transversely uniting the members, means on the cross-head to hold the material and a laterally-extending pivot on each of the members above the cross-head.

4. A fork or carrier consisting of two upright spaced-apart side members, a tubular cross-head and a tubular cross-bar transversely uniting the same, means on the cross-head to hold the material, and a laterally-extending pivot on each of the members above the cross-head.

5. A fork or carrier consisting of two upright spaced-apart side members, a cross-head transversely uniting the same at their lower portions, cross-bars transversely uniting said members at their upper portions, one

of said cross-bars projecting at its ends a considerable distance beyond the outer surface of said members to form pivots, and means on the cross-head to hold the material.

6. A fork or carrier consisting of two upright spaced-apart side members, a cross-head and a cross-bar transversely uniting the same, a cross-bar transversely uniting said side members, means on the cross-head to hold the material, a bail connected at its rear ends to said cross-bar, and a laterally-extending pivot on each of the side members above the cross-head.

7. A fork or carrier consisting of two upright spaced-apart side members, a cross-head and tubular cross-bars transversely uniting the same, means on the cross-head to hold the material, one of said cross-bars projecting at its ends a considerable distance beyond the outer surface of each of said members to form pivots, and reinforcing means applied to the outer portion of said tubular bar forming said pivots.

8. A fork or carrier consisting of two upright spaced-apart side members, a cross-head and a cross-bar transversely uniting said members, means on the cross-head to hold the material, the said cross-bar located above the cross-head and projecting at its ends a considerable distance beyond the outer surface of each of said members to form pivots, and a bail loosely connected at its rear ends to the side members at points above and to the rear of the pivot forming the bar.

9. A fork or carrier consisting of two upright spaced-apart side members, a cross-head and a tubular cross-bar transversely uniting the same, means on the cross-head to hold the material, said cross-bar projecting a considerable distance beyond the outer surfaces of each of said members to form pivots, and a solid rod located in each end of the cross-bar to reinforce the same.

10. A fork or carrier consisting of two upright spaced-apart side members, a cross-head and a cross-bar transversely uniting the same, means on the cross-head to hold the material, said cross-bar projecting at its ends a considerable distance beyond the outer surfaces of each of said members to form pivots, a bail loosely connected at its rear ends to the side members at points above and to the rear of the pivot-forming bar, a handle secured to each of the side members, brace-bars connecting the handle and the cross-head.

11. A fork or carrier consisting of two upright spaced-apart side members, a cross-head and a cross-bar transversely uniting the same, a wheel journaled on the rear portion of the cross-head at about its middle, means on the cross-head to hold the material, a laterally-extending pivot on each side of the members above the cross-head, and a bail loosely connected at its rear ends to the side members at points above and to the rear of said pivots.

12. A fork or carrier consisting of two upright spaced-apart side members, a cross-head and a cross-bar transversely uniting the same, forwardly-projecting tines on the cross-head to hold the material, a laterally-extending pivot on each side of said members above the cross-head, and a bail loosely connected at its rear ends to the side members at points above and to the rear of said pivots.

13. A fork or carrier consisting of two upright side members each having a channel to receive a handle, a cross-head uniting the side members at their lower portions, means on the cross-head to hold the material, a transverse bar uniting the side members at their upper portions, a bail secured on said cross-bar and having on each of its sides a lateral projection, a pivot on each of the members, a spring-actuated and recessed lever fulcrumed on each of the members and adapted to engage the projections on the bail, and a handle located in each of the channels of the side members.

14. A fork or carrier consisting of two upright side members, a rearwardly-extending handle secured to each of said members, a cross-head uniting the side members at their lower portions, means on the cross-head to hold the material, a cross-bar uniting the side members at their upper portions, a bail secured at its rear ends to said cross-bar and having on each of its sides a lateral projection, a pivot on each of the sides of the fork or carrier, a spring-actuated and recessed lever fulcrumed on each of the said members and adapted to engage the projections on the bail.

15. A fork or carrier having dumping arms or pivots projecting laterly from the sides thereof near the rear of the device on which the same is rotated when being dumped.

16. A fork or carrier having dumping arms or pivots projecting laterly from the sides thereof near the rear of the device, on which the same is rotated when being dumped, a bail connected to the fork or carrier and said arms or pivots being located below the point of connection of the bail, in order that the draft through the same will assist in dumping the fork or carrier.

17. A fork or carrier having dumping arms or pivots projecting laterly from the sides thereof near the rear of the device, on which the same is rotated when being dumped, a wheel journaled on the rear lower portion of the fork or carrier to guide the same in its return down the chute, a bail connected with the fork or carrier and said arms or pivots being located below the points of connection of the bail in order that the draft through the same will assist in dumping the fork or carrier.

18. A fork or carrier adapted to travel on

an inclined chute and having a wheel journaled on its rear lower portion at the middle thereof to assist and guide it in its movement down the chute.

19. A fork or carrier adapted to travel on an inclined chute of greater width than the carrier, means on the upper portion of the carrier to dump the same, and a wheel journaled on the rear lower portion of the carrier to assist and guide it in its movement down the chute after being dumped.

20. A fork or carrier consisting of two upright spaced-apart side members, a cross-head and a cross-bar transversely uniting the same, means on the cross-head to hold the material, a laterally-extending pivot on each side of the members above the cross-head, a bail pivotally connected at its rear ends to the fork or carrier and having on each of its sides a lateral projection, a spring-actuated and recessed lever fulcrumed on the fork or carrier near each of its sides and adapted to engage the projections on the bail.

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