No. 836,921. PATENTED NOV. 27, 1906.

S. M. CHASE & W. C. STOCKLIN.

TRUCK.

APPLICATION FILED DEC. 6, 1905.

2 SHEETS—SHEET 1.

Fig. 1

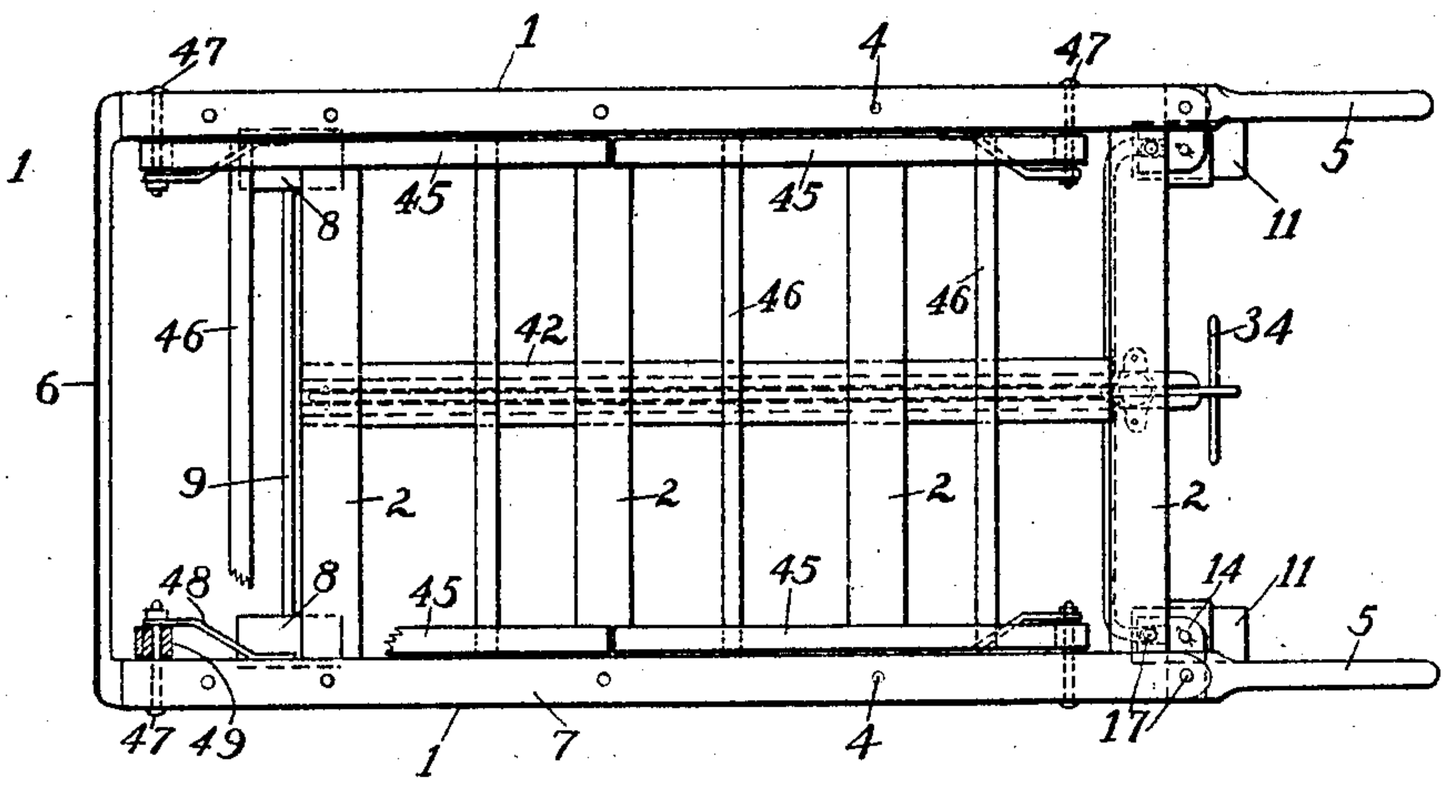


Fig. 3

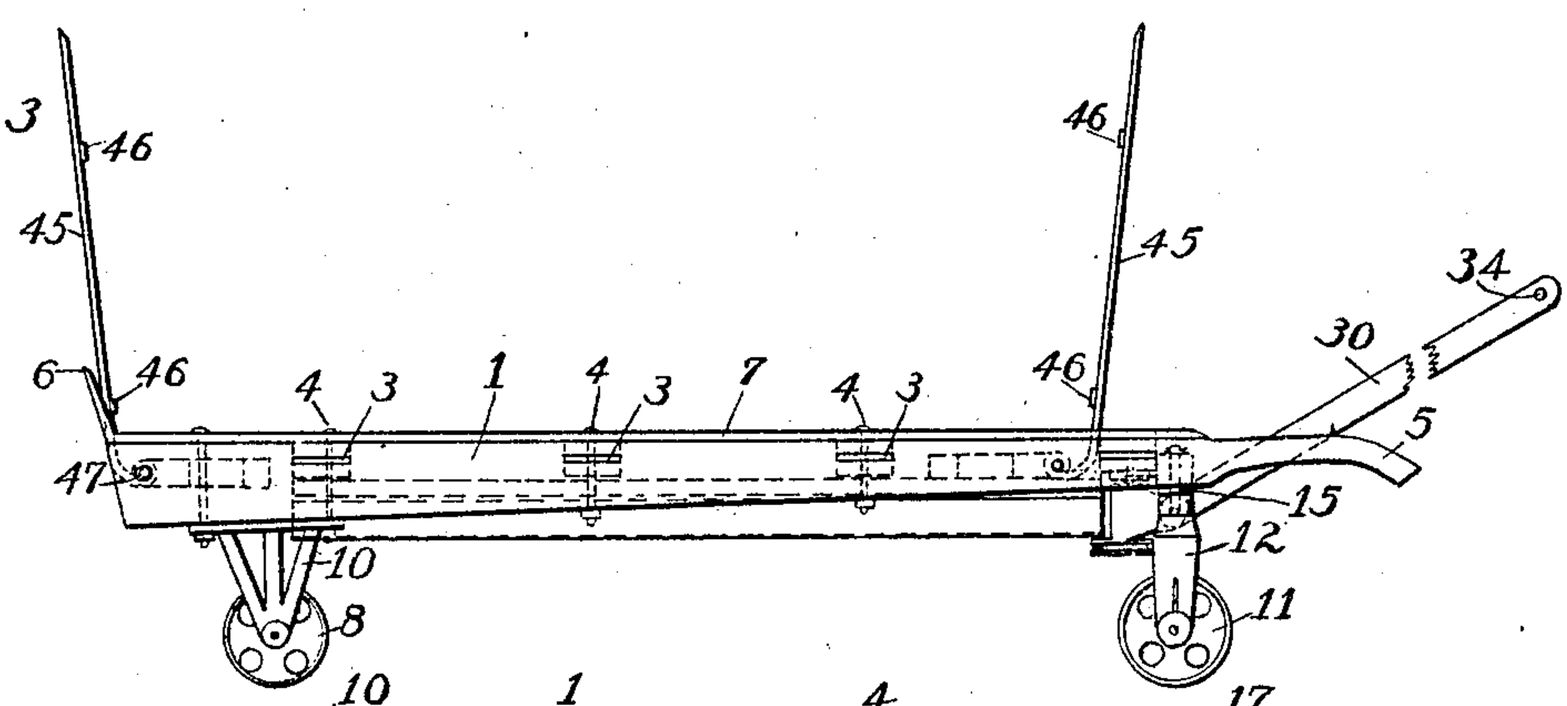
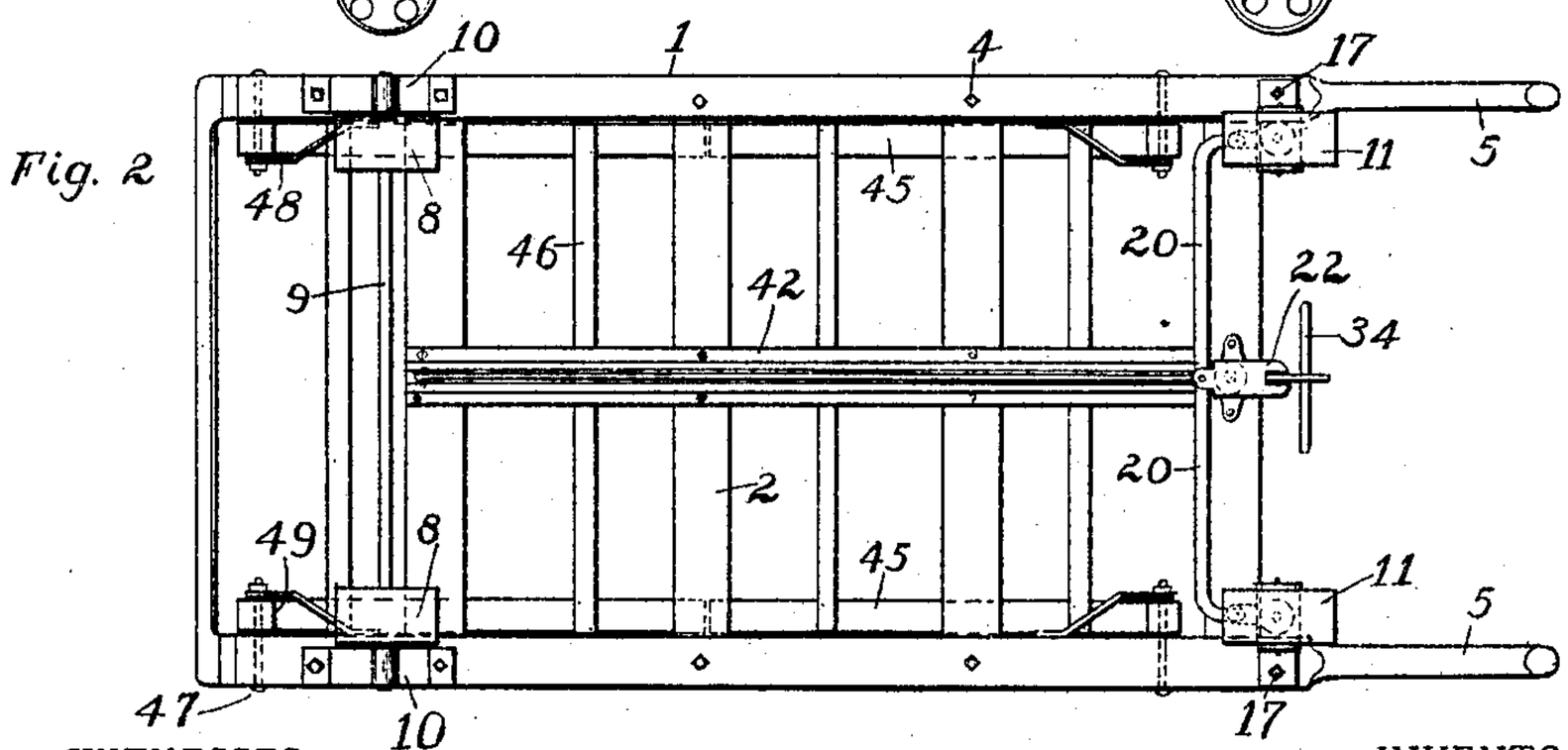


Fig. 2



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2 SHEETS—SHEET 2.

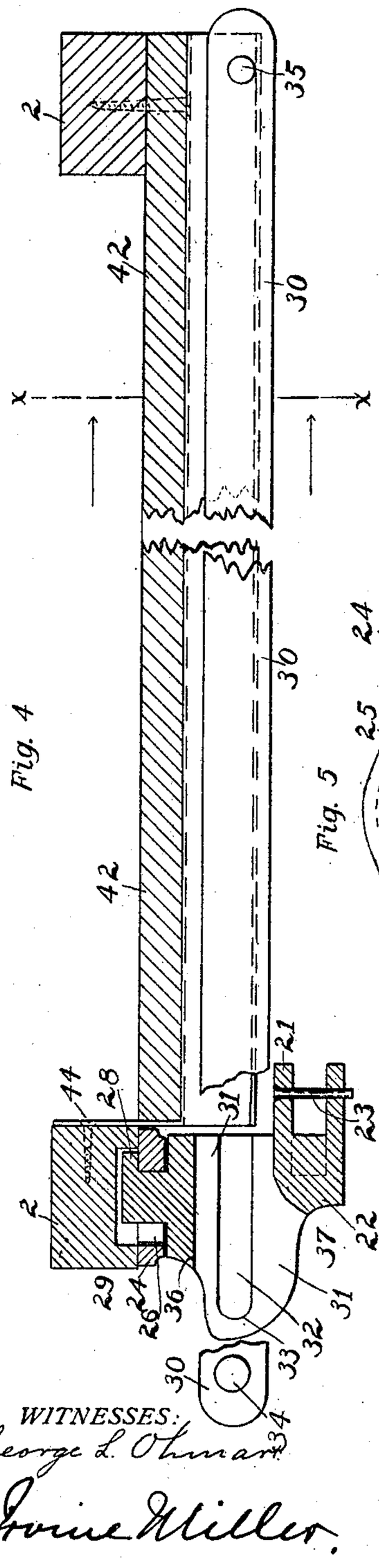

Fig. 4

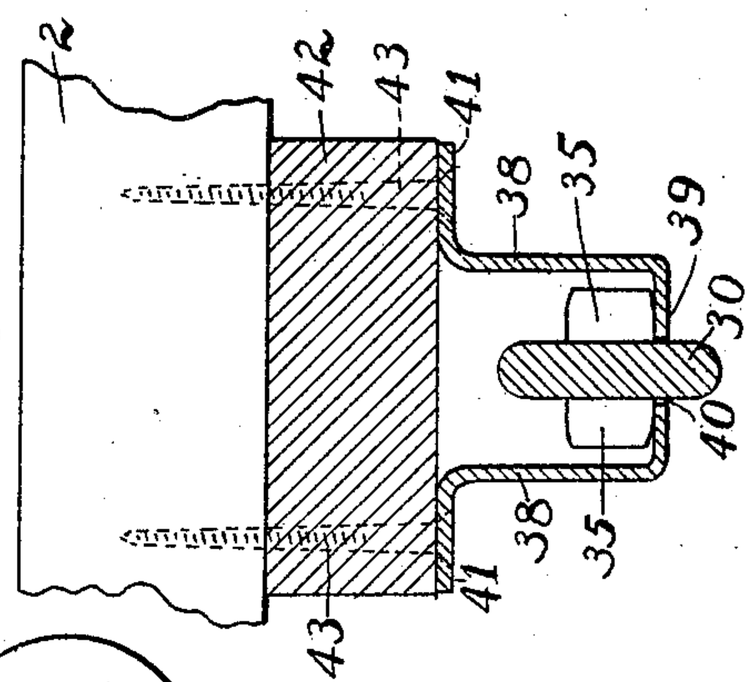

Fig. 6

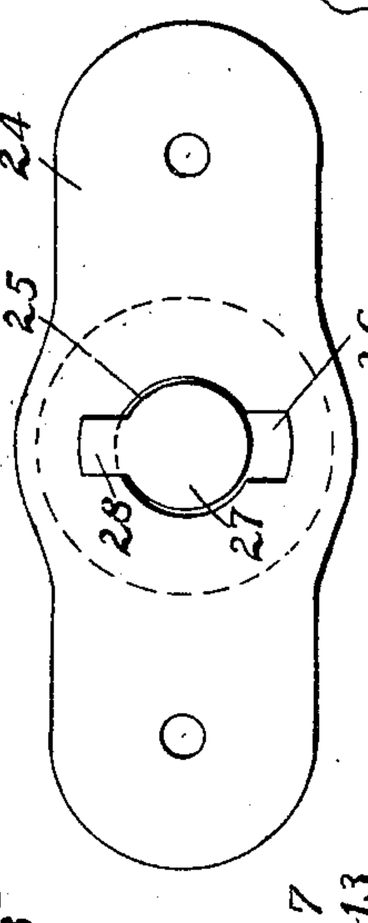

Fig. 5

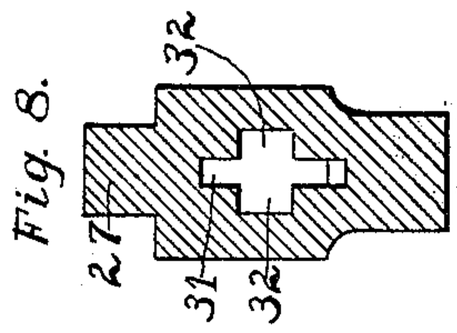

Fig. 8.

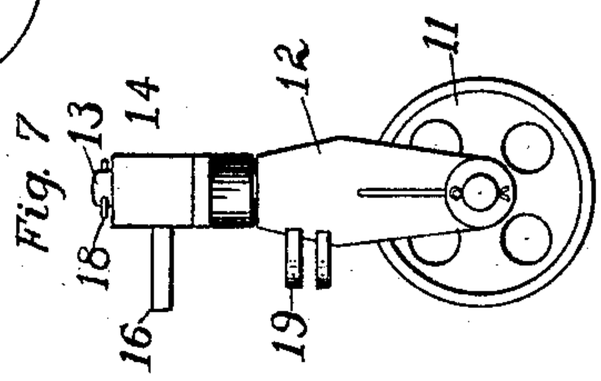

Fig. 7

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UNITED STATES PATENT OFFICE.

SHERWOOD M. CHASE AND WILLIAM C. STOCKLIN, OF COLUMBUS, OHIO, ASSIGNORS TO THE CHASE FOUNDRY AND MANUFACTURING COMPANY, OF COLUMBUS, OHIO, A CORPORATION OF OHIO.

TRUCK.

No. 836,921. Specification of Letters Patent. Patented Nov. 27, 1906.

Application filed December 6, 1905. Serial No. 290,586.

To all whom it may concern:

Be it known that we, SHERWOOD M. CHASE and WILLIAM C. STOCKLIN, citizens of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Trucks, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to trucks, and more particularly to that class known as "hand-trucks" adapted to be propelled or drawn about by hand.

The invention has for its object to provide a convertible truck the parts of which may be so adjusted or arranged as to permit it to be used either as an ordinary two-wheel tilting truck partly supported by grasping the handles formed on the frame or as a four-wheel truck having a draft-bar and steering-wheels controlled thereby supported entirely on its four ground-wheels and preferably provided with guards at the ends of the truck-platform to prevent the load from falling off when piled up to a considerable height.

To the above ends our invention consists in certain novel features, which we will now proceed to describe and will then particularly point out in the claims.

In the accompanying drawings, Figure 1 is a plan view of a truck embodying our invention in one form, the same being shown arranged for use as a two-wheel tilting truck. Fig. 2 is an inverted plan view of the same similarly arranged. Fig. 3 is a side elevation showing the truck arranged as a four-wheel steering-truck with end guards. Fig. 4 is an enlarged longitudinal sectional view taken in a vertical plane along a portion of the center of the truck and partly broken away. Fig. 5 is an enlarged plan view of the steering-head and its pivot-casting detached. Fig. 6 is a detail sectional view taken on the line $x\ x$ of Fig. 4 and looking in the direction of the arrows. Fig. 7 is a detail side elevation of one of the steering-wheels and its mounting detached; and Fig. 8 is a detail sectional view through the steering-head, taken transversely in a vertical plane through its axis of rotation.

In the said drawings we have shown the truck as comprising a frame, body, or platform, which is preferably constructed of two longitudinal side pieces 1 and a suitable number of cross-pieces 2, four being shown in the present instance. The cross-pieces are preferably secured to the side pieces by having their ends mortised into the same, as indicated at 3, the connection being completed by means of bolts 4, passing through both members. The side pieces 1 are provided at one end with handles 5, which are similar to those usually employed in two-wheel tilting trucks. The other ends of the side pieces are connected by the shoe 6 usually employed in tilting trucks, said shoe being made of metal and preferably formed in one piece with two guard-strips 7, which extend longitudinally along the tops of the side pieces 1 and serve not only to protect these latter against wear, but also to protect the end guards when lowered into inoperative position, as hereinafter set forth. The end of the truck which carries the shoe 6 is supported by ground-wheels 8, mounted on an axle 9, which is supported in bearing-brackets 10, secured to the under side of the side pieces 1.

The handle end of the truck is provided with ground-wheels 11, which when the truck is used as a four-wheel truck constitute steering-wheels, by means of which the truck is guided. To this end each wheel 11 is mounted in a yoke or fork 12, having an upwardly-extending bearing pin or shank 13, which swivels in a bearing-block 14, secured to the truck-frame. Each bearing-block 14 is preferably so constructed as to have two of its sides at right angles to each other, as shown in Fig. 1, so as to fit in the angle between the side piece and cross-piece to which it is connected. Said bearing-block is preferably secured to said parts by means of an apertured lug 15, which extends under the side piece 1, and a similar apertured lug 16, arranged at right angles to the lug 15 and extending under the cross-piece 2. Said lugs are secured in position by bolts 17. We have shown the bearing-shank 13 as detachably secured in the bearing-block by means of a split pin 18, removably inserted in a suitable aperture in the projecting upper end of said shank. Each fork 12 is provided with apertured lugs 19 for the pivotal connection between them of one end of the corresponding

connecting-bar of the steering mechanism. Said connecting-bars are indicated by the reference-numeral 20, and their outer ends are pivotally connected to the forks 12, while their inner ends are pivotally connected between lugs 21 of the steering-head 22, the pivot being indicated at 23. This steering-head is mounted on the under side of the cross-piece 2 nearest the handle end of the truck, its connection being a swiveled one, so that it pivots around a vertical axis. We prefer for this connection the construction shown, in which 24 indicates a pivot-plate secured to the under side of the cross-bar 2 and having a central pivot-aperture 25, provided with a slot or recesss 26 at one side. The steering-head has a pivot pin or shank 27, which fits said pivot-aperture 25 and is provided with a lug 28, extending laterally therefrom and adapted to pass through the slot or groove 26. A recess 29 is formed in the under side of the cross-piece 2 to receive the upper end of the pivot-shank 27 and the lug 28 thereon. The parts may be assembled by causing the lug 28 to register with the groove 26, whereupon the pivot-shank may be passed up through the bearing-plate and turned so that the lug 28 will rest on top of the bearing-plate 24 and hold the parts together. When the connecting-bars 20 are connected to the steering-head, the movement of rotation of said head is so limited as to prevent the lug from registering with the groove, so that there is no liability of the steering-head becoming accidentally disconnected when the truck is in use.

30 indicates a draft-bar so related to the steering-head when in operative position that it will control the movements of said steering-head, swinging it around its pivotal axis, and thereby correspondingly turning the steering-wheels in the proper direction, said draft-bar being so constructed that it may be moved into a position under the truck body or platform so as to be out of the way. The arrangement is preferably such that when the draft-bar is placed in this inoperative position it locks the steering-head against movement, and thereby holds the steering-wheel forks stationary, preventing them from swinging around out of position, and thereby causing them to act in this respect like the ordinary fixed legs usually employed at the same points in the common two-wheel tilting truck, except for the fact that they present a rolling contact to the ground or other supporting-surface. The construction which we prefer for this purpose is that shown, in which the steering-head is provided with a longitudinal slot 31, through which the draft-bar may slide longitudinally. The side walls of this slot are provided with grooves 32, extending from that end of the steering-head nearest to the truck-body toward but not to the other end of said steering-head and each terminating in a shoulder 33, which forms a stop to limit the outward movement of the draft-bar. The draft-bar is provided at one end with a suitable handle 34, by means of which it may be readily operated, while its other end is provided with a transverse pin 35, projecting beyond the same on each side and adapted to fit the grooves 32. It will be seen that the draft-bar may be drawn outward until the pin 35 bears against the stops 33, whereupon the draft-bar may be used to swing the steering-head in either direction. The draft-bar extends sufficiently rearward beyond the pin 35 to engage with the top wall 36 of the slot 31, and thereby prevent the forward end of the draft-bar from falling to the ground when said bar is drawn forward into operative position. The lower wall of the slot 31 is cut away at its forward end, as indicated at 37, so as to permit the projecting rear end of the draft-bar to move downward, thereby permitting its front or handle end to be moved upward into convenient reach of the operator. This construction constitutes, in effect, a pivotal connection between the steering-head and draft-bar, which renders the latter readily manageable.

In order to provide a convenient housing for the draft-bar when in inoperative position, we provide a slideway under the truck-body, within which the draft-bar may be slid and supported and where it will be protected and out of the way. Our preferred construction of this housing or slideway is that shown, in which said housing is composed of two longitudinally-extending plates or bars 38, having their lower edges extended toward each other, as indicated at 39, forming flanges to support the pin 35, there thus being formed between said plates a slot 40, in which the lower portion of the draft-bar fits and slides. This housing engages the draft-bar in such a way as to hold it in a fixed relation longitudinally of the truck, and the engagement of the forward end of the draft-bar with the steering-head serves to hold the steering-head in alinement with the housing and prevent its rotation, with the results hereinbefore specified. When the draft-bar is drawn out so that it clears the housing, the draft-bar may then be swung laterally for the purpose of operating the steering-head and steering-wheels. The bars 38 are provided at their upper ends with laterally-extending flanges 41, by means of which they are secured in position, and this is preferably effected by securing to the under side of the cross-pieces 2 at their centers a longitudinally-extending center piece 42, to the under side of which the flanges 41 are secured by screws 43, which also serve to secure the longitudinal piece 42 to the cross-pieces 2. The plates 38 have the forward ends of their flanges 41 extended beyond the end of the

center piece 42, said extensions being bent upward and secured to the rear face of the front cross-piece 2 by means of screws 44.

It will be seen that when the draft-bar is slid back into its housing under the truck-frame the truck may be used as an ordinary two-wheel tilting truck, and when said draft-bar is drawn out into operative position the truck is at once converted by this operation into a four-wheel truck provided with steering-wheels, which are controlled by the lateral movements of the draft-bar. Thus all of the advantages of both forms of truck are combined in a single structure, which may be used as a tilting truck to get the load upon the truck-body and may be at once converted into a four-wheel steering-truck by the simple operation of drawing out the draft-bar, thus relieving the operator from the necessity of supporting any portion of the load.

Four-wheel trucks are frequently employed for the transportation of loads piled thereon to a considerable height and are usually provided with means for preventing the load from falling off at the ends, where the danger of such falling off is greatest from the stopping and starting of the truck. We prefer to provide the truck with guards, which may be swung up into operative position at the ends thereof to hold the load in place when the truck is used as a four-wheel truck and which may be swung down into inoperative position out of the way when the truck is being used as a two-wheel truck. Our preferred construction for this purpose is that shown, in which there is provided at each end of the truck-frame a guard composed of longitudinal members 45 and transverse connecting members 46. Each guard is pivotally connected at one end to the truck-frame, the connection being preferably effected by means of pivot-bolts 47 passing through the side pieces 1 and through supporting-brackets 48, secured to the inner sides of the side pieces. The ends of the longitudinal members 45 of the guard are bent around those portions of the pivot-bolts 47 which lie between the side pieces and brackets 48, as indicated at 49, thus effecting the pivotal connections between the guard and pivot-bolts and holding the same against lateral displacement. The guards are so arranged that when they are swung up into operative position they pass somewhat beyond a true vertical position and are supported by resting against adjacent portions of the truck. In the construction shown the guard at one end of the truck rests against and is supported by the shoe 6, while the guard at the other end of the truck rests and is supported against the end cross-pieces 2. The guards are so constructed and their pivots so located that when they are swung down into inoperative position they lie upon the cross-pieces 2, the guard-strips 7 extending above them or lying flush with them, so as to protect said guards.

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

1. In a hand-truck, the combination, with a truck-frame provided with a shoe at one end, handles at the other end, and ground-wheels located at the shoe end thereof, of steering-wheels permanently located at the handle end of the truck-frame, and a draft-bar arranged to be moved under the truck-frame in inoperative position when the truck is used as a two-wheel truck and to be extended into operative position when the truck is used as a four-wheel truck, said draft-bar being movable laterally when in said last-mentioned position, and being connected to the steering-wheels so as to move the same to different angular positions by its lateral movements, substantially as described.

2. In a hand-truck, the combination, with a truck-frame provided with a shoe at one end, handles at the other end, ground-wheels located at the shoe end thereof, and a guide-way or housing extending longitudinally thereof, of steering-wheels permanently located at the handle end of the truck-frame, and a draft-bar arranged to slide longitudinally in said housing and operatively connected with the steering-wheels, said draft-bar being adapted to be moved into the housing in inoperative position when the truck is used as a two-wheel truck and to be drawn out into operative position when the truck is used as a four-wheel truck, substantially as described.

3. In a hand-truck, the combination, with a truck-frame provided with a shoe at one end, handles at the other end, ground-wheels located at the shoe end thereof, and a guide-way or housing extending longitudinally thereof, of steering-wheels permanently located at the handle end of the truck-frame, and a draft-bar arranged to slide longitudinally in said housing and operatively connected with the steering-wheels, said draft-bar being adapted to be moved into the housing in inoperative position when the truck is used as a two-wheel truck and to be drawn out into operative position when the truck is used as a four-wheel truck, said housing locking said draft-bar and steering-wheels against movement when the bar is engaged therein, and said draft-bar being free to swing laterally to operate the steering-wheels when disengaged from said housing, substantially as described.

4. In a hand-truck, the combination, with a truck-frame provided with a shoe at one end, handles at the other end, and ground-wheels located at the shoe end thereof, of steering-wheels having their mounts swiveled at the handle end of the truck-frame, a

steering-head also swiveled at the handle end of the frame and operatively connected to the steering-wheel mounts, and a draft-bar connected to said steering-head and arranged to be moved into and held in inoperative position under the truck-frame when the truck is used as a two-wheel truck and to be extended into operative position when the truck is used as a four-wheel truck, substantially as described.

5. In a hand-truck, the combination, with a truck-frame provided with a shoe at one end, handles at the other end, and ground-wheels located at the shoe end thereof, of steering-wheels having their mounts swiveled at the handle end of the truck, a steering-head also swiveled at said end of the truck, operatively connected with the steering-wheel mounts, and slotted longitudinally, and a draft-bar arranged to slide through said steering-head and having a pivot adapted to engage said head when the bar is drawn out, the truck-frame being provided with a housing adapted to receive said draft-bar, which may be introduced into said housing when the steering-head is alined therewith, substantially as described.

6. In a truck of the character described, a truck-frame and steering-wheels having their mounts swiveled thereon, in combination with a steering-head swiveled on said frame, operatively connected with the steering-wheel mounts, and longitudinally slotted, the side walls of said slot having grooves terminating in stop-shoulders at their forward ends, a longitudinal housing carried by the truck-frame, and a draft-bar extending through the slot of the steering-head and movable into and out of the housing, said draft-bar having a transverse pin arranged to engage the grooves of the steering-head and serving as a pivot when in contact with the stop-shoulders thereof, substantially as described.

7. In a truck of the character described, a truck-frame and steering-wheels having their mounts swiveled thereon, in combination with a steering-head swiveled on said frame, operatively connected with the steering-wheel mounts, and longitudinally slotted, the side walls of said slot having grooves terminating in stop-shoulders at their forward ends, a longitudinal housing carried by the truck-frame and having supporting-flanges, and a draft-bar extending through the slot of the steering-head and movable into and out of the housing, said draft-bar having a transverse pin arranged to travel on the supporting-flanges of the housing and in the grooves of the steering-head and serving as a pivot when in contact with the stop-shoulders thereof, substantially as described.

8. In a truck of the character described, a truck-frame, steering-wheels having their mounts swiveled to said frame, a steering-head swiveled to said frame between the steering-wheels, links pivotally connected to said steering-head and the steering-wheel mounts, and a draft-bar connected to said steering-head and arranged to be moved into inoperative position under the truck-frame, substantially as described.

9. In a truck of the character described, a truck-frame, steering-wheels having their mounts swiveled to said frame, a pivot-plate secured to said truck-frame and having a pivot-aperture and radial slot, a steering-head having a pivot-shank and lateral lugs to fit said aperture and slot, and links detachably connecting said steering-head and steering-wheel mounts and limiting the movement of rotation of the steering-head, substantially as described.

10. In a hand-truck, the combination, with a truck-frame provided with a shoe at one end, handles at the other end, ground-wheels located at the shoe end of said frame, and wheels swiveled at the handle end of said frame, said frame having a draft-bar arranged to be moved under the truck-frame in inoperative position when the truck is used as a two-wheel truck and to be extended into operative position when the truck is used as a four-wheel truck, of guards pivotally connected to the truck-frame at the ends thereof and adapted to lie in inoperative position on the truck-frame when said truck is used as a two-wheel truck and to be swung up into operative position when the truck is used as a four-wheel truck, substantially as described.

11. In a hand-truck, the combination, with a truck-frame provided with a shoe at one end, handles at the other end, ground-wheels located at the shoe end of said frame, and wheels swiveled at the handle end of said frame, said frame having a draft-bar arranged to be moved under the truck-frame in inoperative position when the truck is used as a two-wheel truck and to be extended into operative position when the truck is used as a four-wheel truck, of guards pivotally connected to the truck-frame at the ends thereof and adapted to lie in inoperative position on the truck-frame when said truck is used as a two-wheel truck and to be swung up into operative position when the truck is used as a four-wheel truck, the truck-frame being provided with longitudinal guard-strips to protect said guards when folded down, substantially as described.

12. In a hand-truck, the combination, with a truck-frame provided with a shoe at one end, handles at the other end, ground-wheels located at the shoe end of said frame, and wheels swiveled at the handle end of said frame, said frame having a draft-bar arranged to be moved under the truck-frame in inoperative position when the truck is used as a two-wheel truck and to be extended into operative position when the truck is used as a

four-wheel truck, of guards pivotally connected to the truck-frame at the ends thereof and adapted to lie in inoperative position on the truck-frame when said truck is used as a two-wheel truck and to be swung up into operative position when the truck is used as a four-wheel truck, said guards being free to swing past the perpendicular when swung up, and said truck-frame being provided with stops to limit their movement after they have passed the perpendicular, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

SHERWOOD M. CHASE.
WILLIAM C. STOCKLIN.

Witnesses:
H. M. INNIS,
ALICE A. INNIS.