W. M. GENTLE & J. K. COOPER.

WHEELED SCRAPER.

APPLICATION FILED AUG. 30, 1909.

1,021,517.

Patented Mar. 26, 1912.

5 SHEETS—SHEET 1.

Fig. 1.

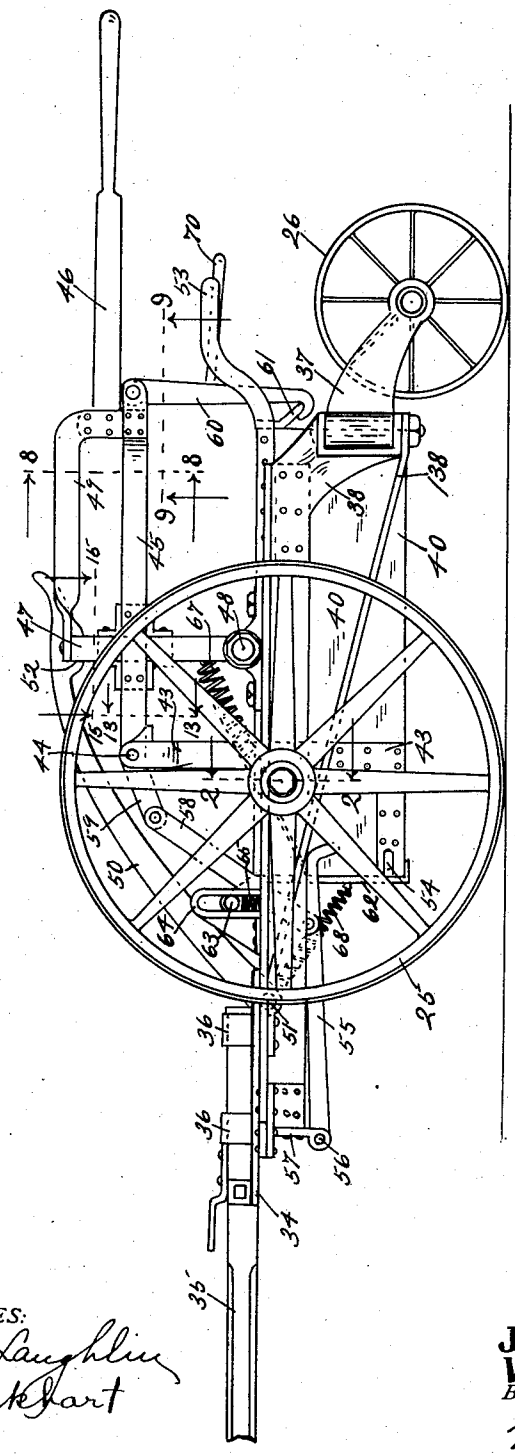


Fig. 3.

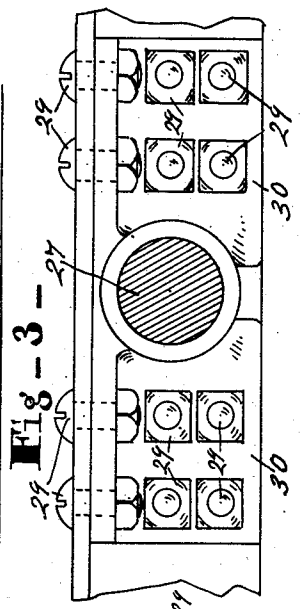
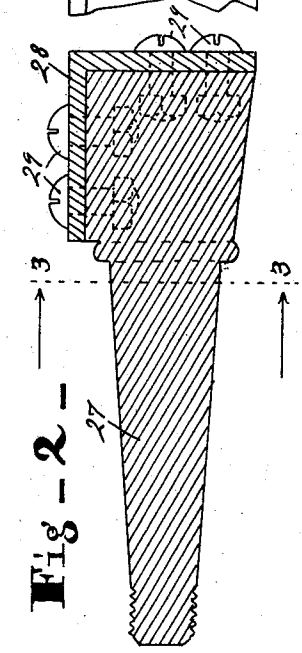


Fig. 2.



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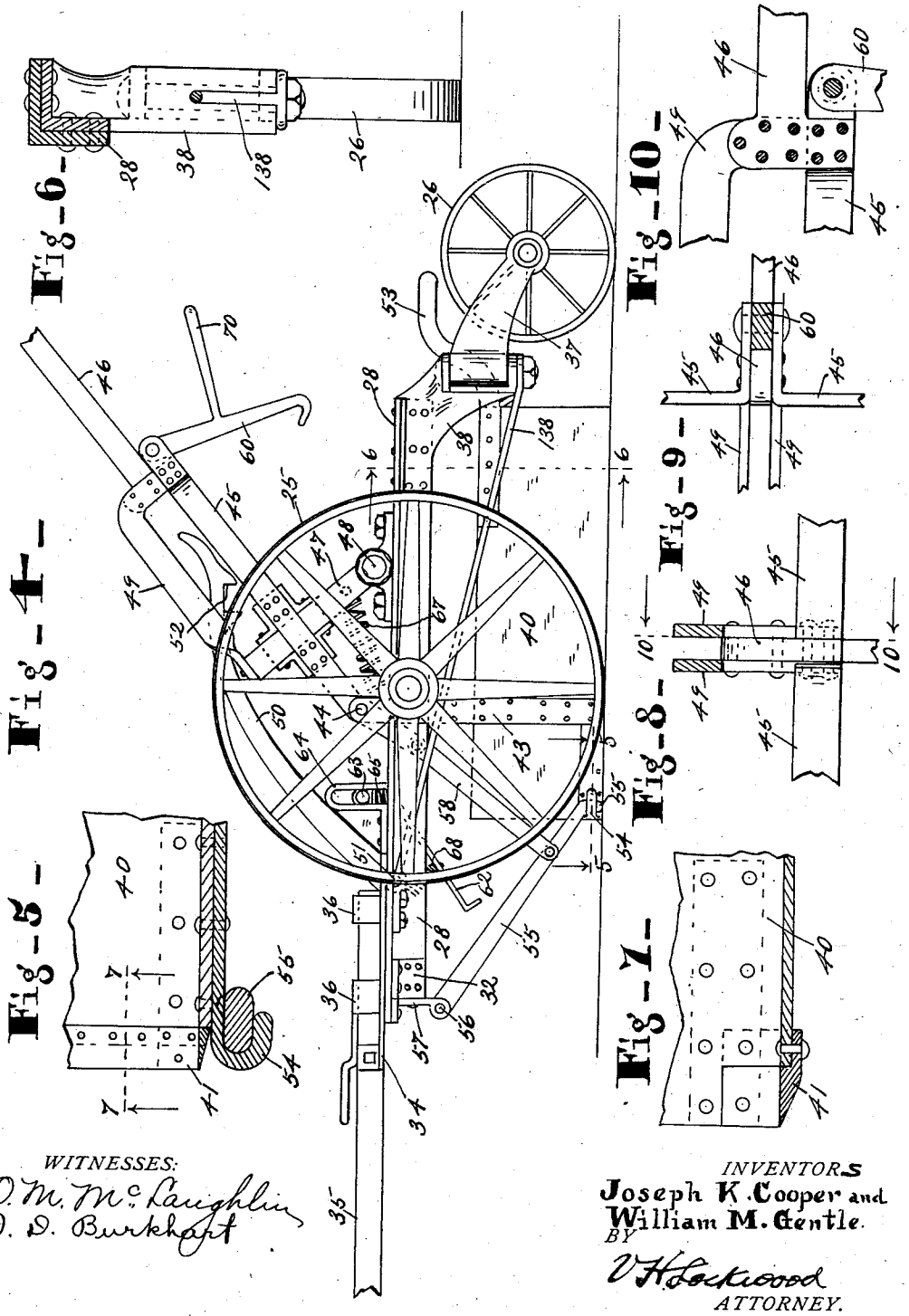

Fig-6-

Fig-4-

Fig-5-

Fig-10-

Fig-9-

Fig-8-

Fig-7-

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5 SHEETS—SHEET 3.

Fig. 13.

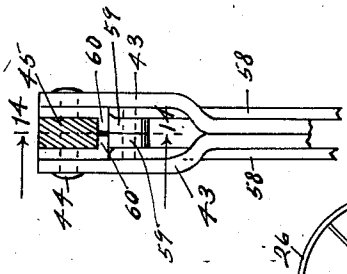


Fig. 11.

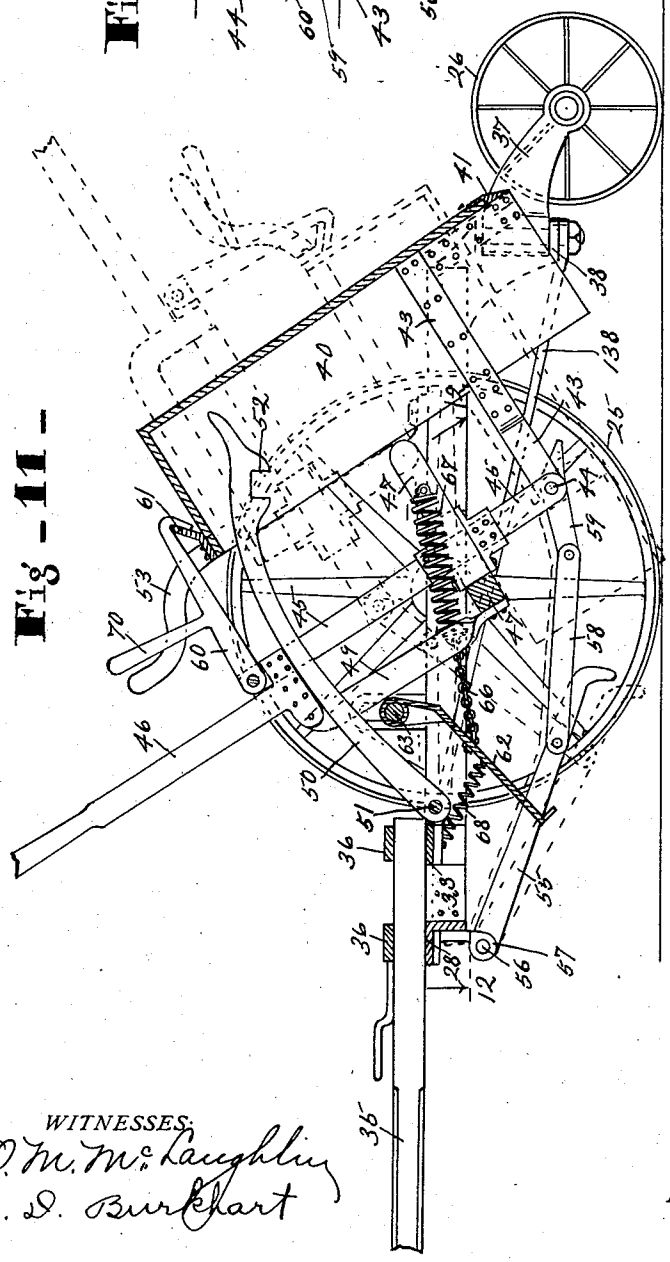


Fig. 15.

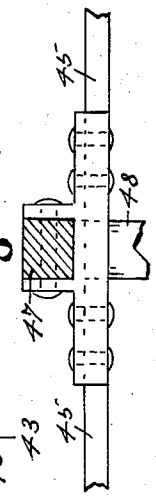


Fig. 12.

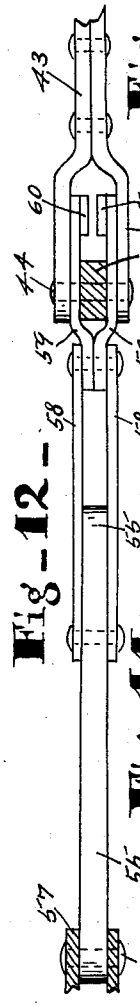
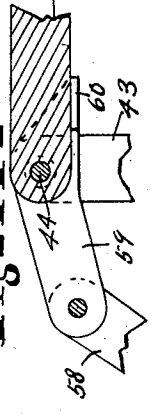


Fig. 14.



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5 SHEETS—SHEET 4.

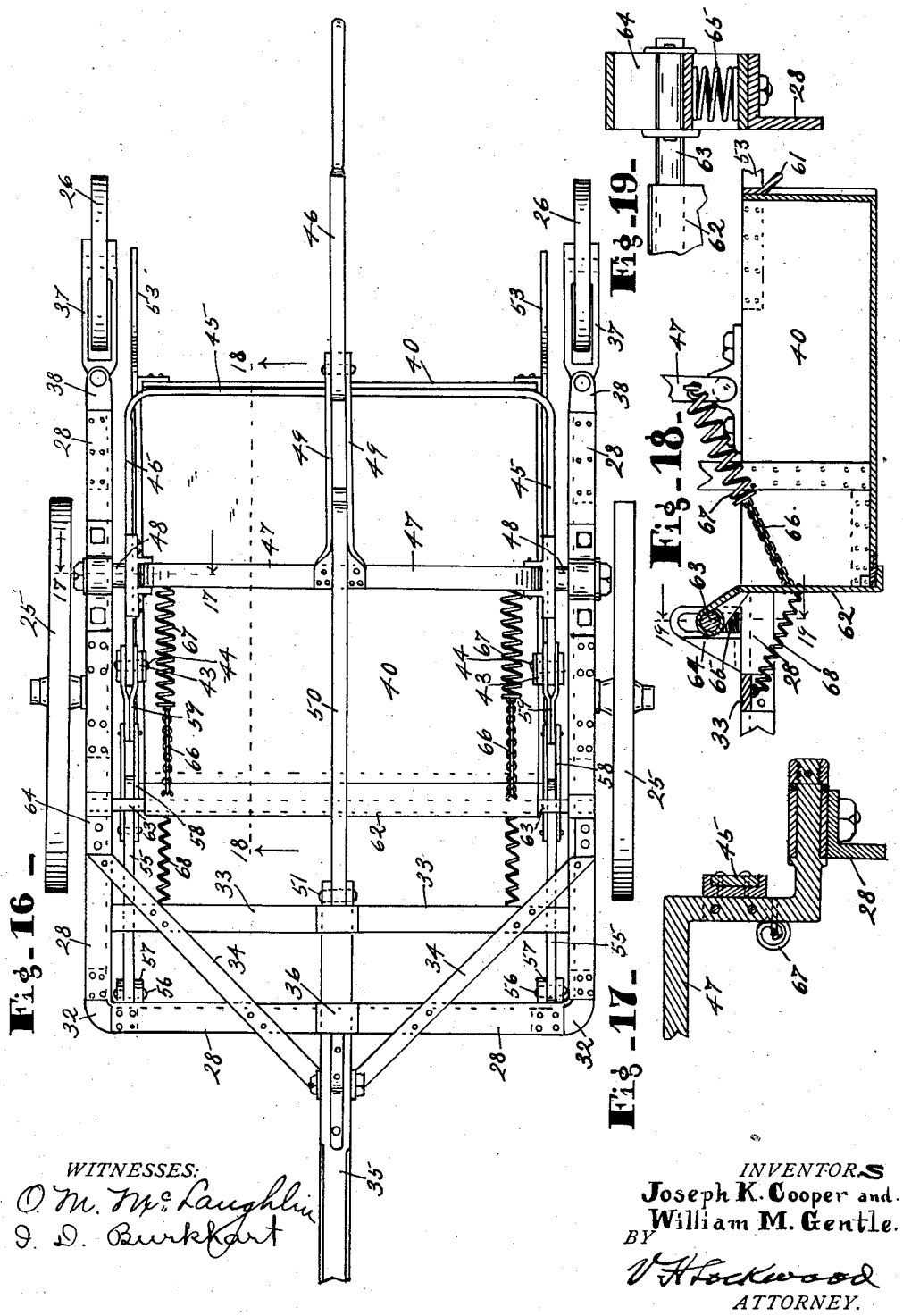

Fig. 16.

Fig. 19.

Fig. 18.

Fig. 17.

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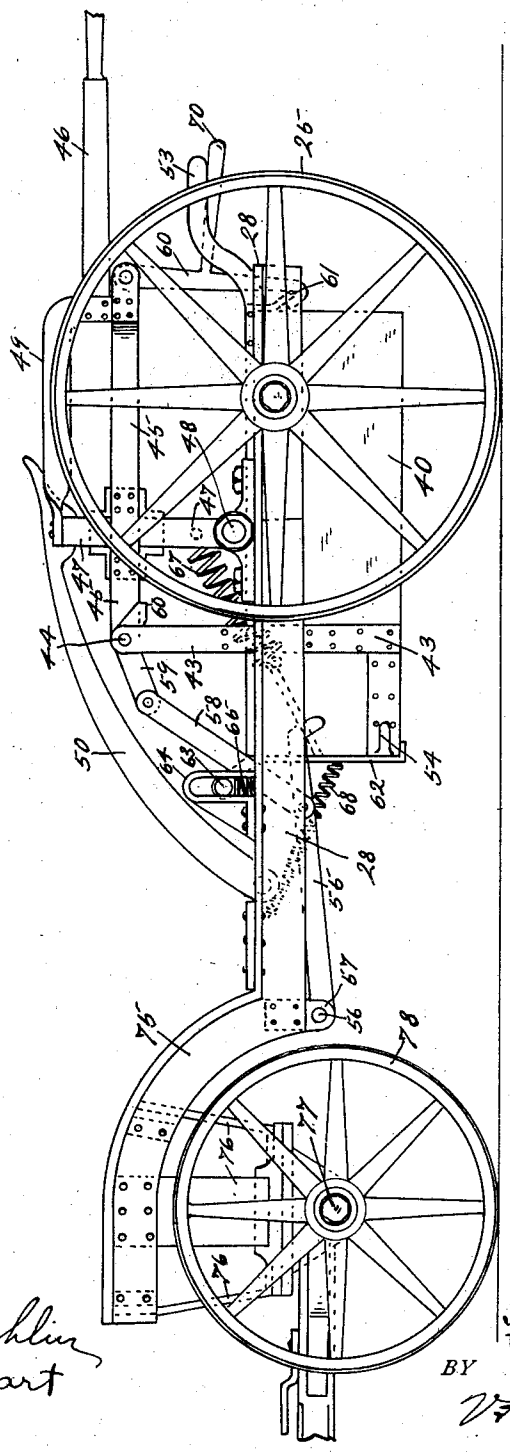
5 SHEETS—SHEET 5.

Fig. 20.



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UNITED STATES PATENT OFFICE.

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WHEELED SCRAPER.

1,021,517. Specification of Letters Patent. Patented Mar. 26, 1912.

Application filed August 30, 1909. Serial No. 515,159.

To all whom it may concern:

Be it known that we, WILLIAM M. GENTLE and JOSEPH K. COOPER, of Greenwood, county of Johnson, and Indianapolis, county of Marion, respectively, in the State of Indiana, have invented a certain new and useful Wheeled Scraper; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like letters refer to like parts.

The object of this invention is to improve the construction of wheel supported scoops or scrapers for excavating dirt and the like, so as to take the load off the necks of the team, and also to facilitate the manipulation of the parts of the device in loading, transporting and dumping.

Heretofore scoops and scrapers have been mounted on only a pair of wheels, so that the balancing of the load had to be controlled by the forward end of the tongue and its connection with the team, and that renders such devices very severe upon the team. Also, the frame has usually been movable under the influence of the scoop or scraper so as to vary its position and its effect upon the necks of the team.

One feature of the invention consists in mounting the scraper or scoop in connection with a frame carried by more than two wheels, so as to relieve the necks of the team from any portion of the load.

Another feature of the invention consists in mounting the frame on a pair of main supporting wheels adapted to carry most of the load, and upon swivel or like wheels for carrying a small portion of the load, and balancing the same so as to relieve the necks of the team from any downward pull of the tongue.

Another feature consists in the improvements herein shown in the mounting and manipulation of the door for closing the forward end of the scraper during transportation and while loading, so that the door will be maintained securely closed regardless of the vertical vibrations or movements of the scraper while traveling over the road.

Another feature consists in means for locking the scraper in position in relation to the frame during transportation and while loading regardless of a portion of the scoop or scraper which from time to time may have the heaviest portion of the load.

Another feature of the invention consists in means for automatically holding the draw bars down in locking position with the scoop or scraper while loading.

Another feature consists in employing a frame that is never altered in position during the operation of the device.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims.

In the drawings Figure 1 is a side elevation of the machine with the forward portion of the tongue broken away and with the parts arranged for transportation of a load. Fig. 2 is a vertical section through an axle and the portion of the frame to which it is attached, on the line 2—2 of Fig. 1. Fig. 3 is a section on the line 3—3 of Fig. 2. Fig. 4 is a view similar to that shown in Fig. 1 with the parts of the machine shown in loading position. Fig. 5 is a horizontal section on the line 5—5 of Fig. 4. Fig. 6 is a vertical section on the line 6—6 with the scraper omitted. Fig. 7 is a vertical section on the line 7—7 of Fig. 5. Fig. 8 is a vertical section on the line 8—8 of Fig. 1. Fig. 9 is a horizontal section on the line 9—9 of Fig. 1. Fig. 10 is a section on the line 10—10 of Fig. 8. Fig. 11 is a central vertical longitudinal section through the device and as shown in Fig. 1, with the parts, however, shown by full lines in their position at the end of the dumping operation and by dotted lines in the position at the beginning of the dumping operation. Fig. 12 is a horizontal section on the line 12—12 of Fig. 11. Fig. 13 is a vertical section on the line 13—13 of Fig. 1. Fig. 14 is a section on the line 14—14 of Fig. 13. Fig. 15 is a section on the line 15—15 of Fig. 1. Fig. 16 is a plan view of the device with the parts in the same position as shown in Fig. 1. Fig. 17 is a section on the line 17—17 of Fig. 16. Fig. 18 is a vertical section on the line 18—18 of Fig. 16. Fig. 19 is a horizontal section on the line 19—19 of Fig. 18. Fig. 20 is a side elevation of a modified form of the invention.

In the machine as herein shown, there are two main supporting or traction wheels 25 adapted to carry the main weight of the device, and a pair of swivel wheels 26, for assisting in supporting, and particularly for balancing the load and taking all weight

off the horses' shoulders. The main supporting wheels 25 are mounted on short axles 27 secured, as shown in Figs. 2 and 3, to the side portions of the main frame 28 by screws 29. As shown in Fig. 3, there are side wings 30 integral with the axle 27 and in angle iron form so as to fit in the angle of the main frame bar 28 and thereby make the connection between the two parts stronger and more secure. The main frame bar 28 appears in Fig. 16, consisting of a front portion and two lateral portions rigidly secured together. At their corners, the top flanges of the angle bar 28 are cut so that said bar can be bent at right angles, as shown in Fig. 16, and a curved plate 32 is fitted in under the top plates of the bar and riveted thereto, as shown in Fig. 16, whereby said main frame bar 28 can be made substantially of one piece. There is a cross bar 33 extending between the sides of the frame bar 28, as seen in Figs. 11 and 16, and there are diagonal brace bars 34 secured to the sides and front portions of the frame bar 28 and also to the cross bar 33 projecting forwardly and bolted to the sides of the tongue 35. The inner end of the tongue lies upon the front portion of the frame bar 28, and also the bar 33 and is held in place by straps 36. Swivel wheels 26 are mounted in frames or supports 37 and swiveled in the brackets 38 secured to the rear ends of the frames 28, and braced by the brace rods 138 extending from the lower end of the brackets 38 to the forward part of the frame bar 28, see Figs. 1 and 16. The wheels 25 and 26 are so arranged that the most of the load comes upon the large wheels 25, but the most of the load is to the rear of said wheels, so that a portion of it is received by the wheels 26, enough, at least, to always relieve the horses' necks from any downward pull by the tongue.

The scraper 40 is suspended below the frame while loading and carrying a load, see Figs. 1 and 4, but so as to be dumped, as shown in Fig. 11, and therefore, said scraper is not as wide as the frame 28. This scoop, as will appear in Fig. 11, has a bottom, side and rear walls, but is open at the front, and there is a cutting edge 41 secured to the forward edge of the bottom. The scraper is supported chiefly by the bars 43, there being a pair of these bars attached to each side wall of the scraper, one bar on the inside, and one on the outside and riveted thereto. At their upper ends the bars are pivoted at 44 to the lifting bars 45, see Fig. 4. There is a lifting bar 45 at each side of the machine, and at the rear end they are bent inwardly and brought together and riveted to the forward end of the hand lever 46, see Fig. 10. The lifting bars 45 are secured at right-angles to an inverted U-shaped frame or bar 47, there being an upper portion extending transversely across the machine with downwardly extending end portions that are fulcrumed to the frame by the pins 48, see Figs. 4 and 16. A pair of bars 49 extend from the upper central portion of the bar 47, see Fig. 16, rearwardly, and at their rear ends are turned downwardly and riveted to the forward end of the hand lever 46, as shown in Fig. 10. They brace the parts to which they are connected and are also spaced apart to form guides for the locking bar 50, see Figs. 1 and 11, which at its front end is fulcrumed at 51 to the middle portion of the cross bar 33 and at its rear end has a rectangular notch 52 adapted to engage and hold the bar 47 and thereby maintain the scraper in the transporting position.

The scraper 40 has at each rear upper corner a handle 53 and at its lower front corner a catch 54 adapted to be engaged by a draw bar 55 that is fulcrumed at 56 to the lower end of the arm 57 secured to the front portion of the frame bar 28. The inner lower end of said bar 55 is hooked or turned downwardly so as to catch in behind the catch 54. There is one of these bars 55 at each side of the machine, and their function is to hold the forward end of the scraper from rearward movement during the scraping or loading operation, which is shown in Fig. 4.

The device is transported over the gravel, sand or dirt to be excavated so that the scraper drags through it and becomes filled or partially filled. When completely filled by scraping or by dirt being thrown into the scraper, the draw bars 55 are lifted out of engagement with the catches 54 by connecting bars 58 that extend from the rear portion of the bar 55 to short connecting bars 59 that are pivoted between their ends to the forward end of the lifting bars 45, see Figs. 4, 11, 12 and 14. In Figs. 4 and 14 said parts are in their position while loading and transporting, whereas in Figs. 11 and 12 they are shown in the dumping position.

There are lugs 60 on the ends of the bars 59, see Figs. 12 and 14, in position to engage the undersides of the bar 45, so that when the hand lever 46 is pushed downwardly from the position shown in Fig. 4 for the purpose of lifting the scraper for transportation, its first effect is to bear down on the lugs 60 and cause the bars 59 and bars 58 to lift the end of the draw bar out of the catch 54. Thus the draw bars 55 are elevated from the position shown in Fig. 4 to that shown in Fig. 1, and the scraper is also by the operation of said lever 46 lifted to the position shown in Fig. 1. During the lifting of the scraper the lever 46 is moved from the position shown in Fig. 4 down below the position shown in Fig. 1,

and until the hook bar 60 engages the catch plate 61 secured to the rear end of the scraper. Then the lever 46 is lifted upwardly until the notch in the locking bar 50 catches the bar 47. Then the parts are locked and held in their transporting position, as shown in Fig. 1. While being transported it is desirable to close the forward end of the scraper to prevent dirt from rolling or shaking out. This is accomplished by a door 62 that is fulcrumed on a rod 63 in a vertically slotted bearing 64 at each side of the machine on the main frame bar 28 and pushed upwardly by the action of springs 65, see Figs. 18 and 19. The edges of the door 62 are flanged so as to overlap the forward edges of the scraper. The door is moved to a closing position and held closed by a pair of cables 66 connected therewith at one end and with spiral springs 67 at the other end, which springs are secured to the turned down ends of the bar 47. The closing movement of said parts occurs while the lever 46 is in the position shown in Fig. 1, or in any lowered position. When, however, it is desired to dump, the lever 46 is thrown upwardly, as shown in Fig. 11, and then the spring 67 will release the door. When thus released, the door 62 is drawn open forwardly and upwardly by the springs 68 connected to the outside of the door and to the cross bar 33, see Fig. 18. The springs 68 move the door to the position shown in Fig. 11.

The operation of the machine is as follows: Assuming the device to be as shown in Fig. 1 and is thus transported to the loading place, the lever 46 is thrown upwardly into the position shown in Fig. 4. To do this, however, it is necessary to disengage the lugs 60 from the scraper by the short handle 70. That lets the scraper down on the ground, or the lowered position, as shown in Fig. 4. After this occurs the hook points of the draw bars 55 engage the catches 54, as shown in Fig. 4. The team is driven forwardly then and the workman holds the scraper handles 53 so as to elevate the rear part of the scraper and operate it as scrapers are usually operated until as much as can be loaded into the scraper is accomplished in this manner, and if desired, more dirt can be shoveled into the scraper until a load is obtained. During the dragging of the scraper for loading it, the pull comes on the draw bars 55 and also on the fulcrums 48 through the bars 47, 45 and 43. During the loading the joint between the bars 58 and 59 is below a straight line between the joints 44 and the connection between the bars 55 and 58, so that the bars 55 will be pushed downwardly and held in locking position by the parts 58, 59, 45 and 47, and the escape of the bars 55 will be impossible during the loading. After the loading the scraper is first elevated for transportation, and this is accomplished by the hand lever 46 being drawn downwardly from the position shown in Fig. 4 to even a lower position than as shown in Fig. 1 and until the catch bar 60 can be caught into engagement with the rear end of the scraper. Then the lever 46 is moved to the position shown in Fig. 1, when the locking bar 58 engages the bar 47. The parts are then all in the position shown in Fig. 1 and the load can be transported to the dumping place. In dumping, the upper end of the locking bar 50 is first released and then the lever 46 pushed upwardly to the dotted line position shown in Fig. 11. This tilts the scraper so that the lower forward edge catches in the ground or dirt, and then the further movement of the device by the team will further tilt the scraper and move it toward the full-line position shown in Fig. 11 until the parts have been turned on the bearings of the fulcrums 48 far enough to be top-heavy and over-balance toward the front, and then the upper portion will by gravity tilt toward the front to the position shown in Fig. 11. After the contents are discharged by pushing forwardly against the lower end of the scraper, the mechanism can be over-balanced in the other direction and thrown somewhat to the dotted line position shown in Fig. 11, and then by pulling down the lever 46 the parts will be moved to the position shown in Fig. 1.

The modified form shown in Fig. 20 differs from the construction just described only in the matter of the location of the smaller transporting wheels and the changes in the frame. The frame is extended forwardly and has an upwardly curved portion 75 that has a turn table 76 that is supported by the axle 77 of the front wheels 78.

What we claim as our invention and desire to secure by Letters Patent is:

1. The combination of a scraper with its forward end open, a wheel supported frame, means mounted in connection with said frame for supporting and dumping the scraper, vertically slotted bearings in said frame, a door for closing the forward end of the scraper, and lateral projections from the upper end of the door fitting in said bearings whereby the door will have vertical play.

2. The combination of a scraper with its forward end open, a wheel supported frame, means mounted in connection with said frame for supporting and dumping the scraper, vertically slotted bearings in said frame, a door for closing the end of the scraper with projections fitting in said door and frame for holding the door closed although mounted independently of the scraper.

3. The combination of a scraper with its

forward end open, a wheel supported frame, means mounted in connection with said frame for supporting and dumping the scraper, a door for closing the forward end of the scraper that is pivotally mounted in said frame, means connected with and controlled by said dumping means for closing said door, and a spring for opening said door.

4. The combination of a scraper, a wheel supported frame, means pivotally mounted in connection with said frame for supporting said scraper, catches on the forward end of the scraper, draw bars pivotally mounted in connection with the forward end of the frame for engaging said catches for loading, and jointed connecting bars pivoted to said scraper supporting means and said draw bars, whereby the joint between said connecting bars will hold the draw bars down in locking engagement, substantially as set forth.

5. The combination of a scraper, a wheel supported stationary frame, a rocking frame pivotally mounted in connection with said stationary frame, bars pivoted to said rocking frame for supporting the scraper, draw bars pivotally attached at their front ends to the stationary frame and hooked at their rear ends, catches on the forward end of said scraper in position to be engaged by said draw bars, connecting bars pivoted to said draw bars near their lower ends, and bars pivoted to the upper ends of said connecting bars and to said rocking frame and provided with stops for limiting their oscillatory movement and arranged so that when the scraper is being brought to the loading position the rocking frame will move the connecting bars extending therefrom to the draw bars, so that the joint between them will pass a straight line between the pivotal connection of said connecting bars and the draw bars and rocking frame, respectively.

6. The combination of a substantially horizontal frame, a tongue rigidly secured to the frame, a cross bar pivoted to the frame, a lever mechanism secured to the cross bar, and upright arms secured to the scraper which extend upwardly and are pivoted to the lever mechanism, said pivot points of the lever mechanism and scraper arms being higher when loading than the pivot points of the cross bar.

In witness whereof, we have hereunto affixed our signatures in the presence of the witnesses herein named.

WILLIAM M. GENTLE.
JOSEPH K. COOPER.

Witnesses:
G. H. BOINK,
O. M. MCLAUGHLIN.