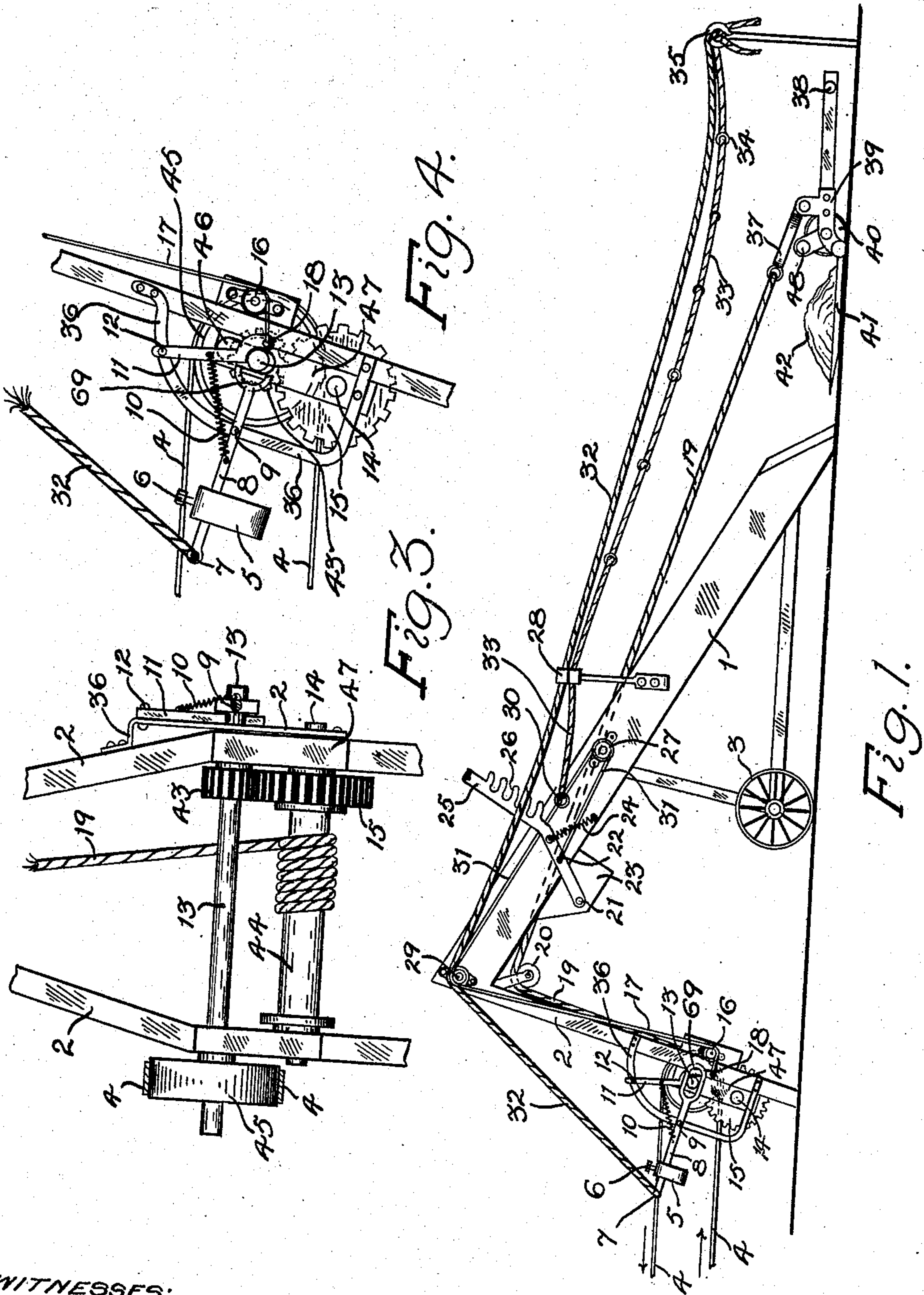


911,633.

J. K. VOORHEES & V. V. SPEER.
WAGON LOADING DEVICE.
APPLICATION FILED FEB. 6, 1908.

Patented Feb. 9, 1909.
3 SHEETS—SHEET 1.



WITNESSES:
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Ila Haydank.

INVENTORS
John H. Voorhees and Victor V. Speer.

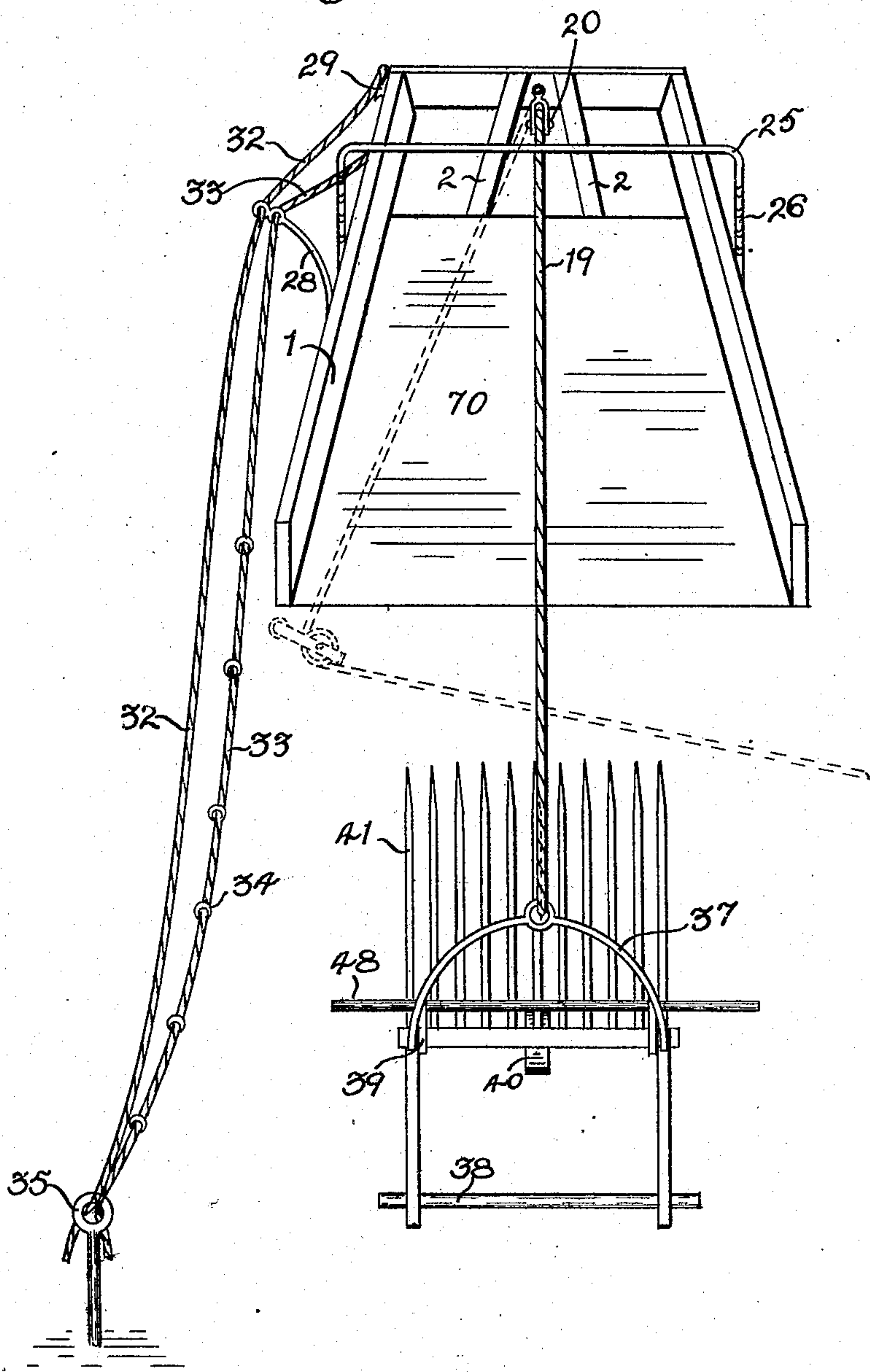
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Fig. 2.



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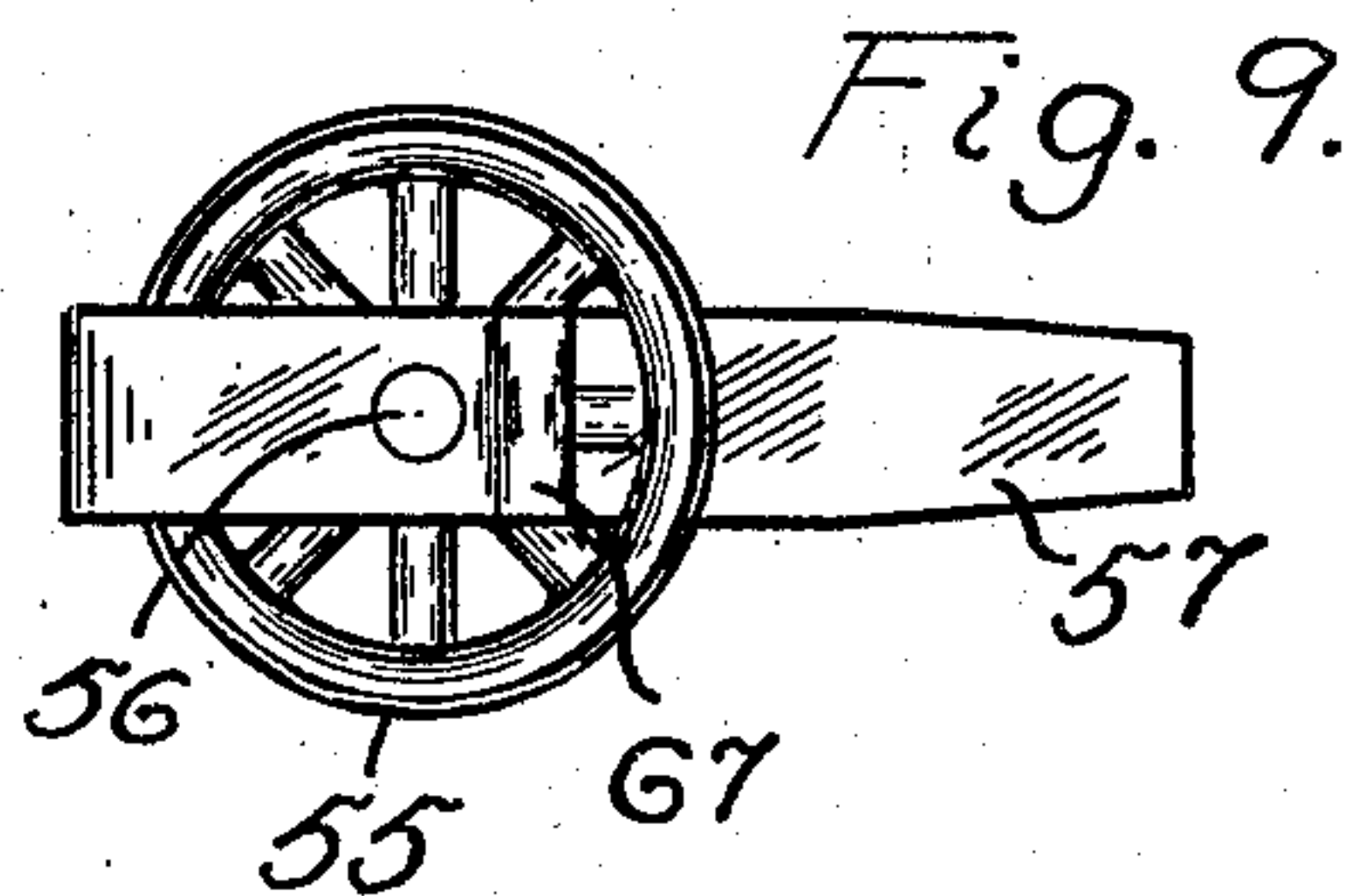
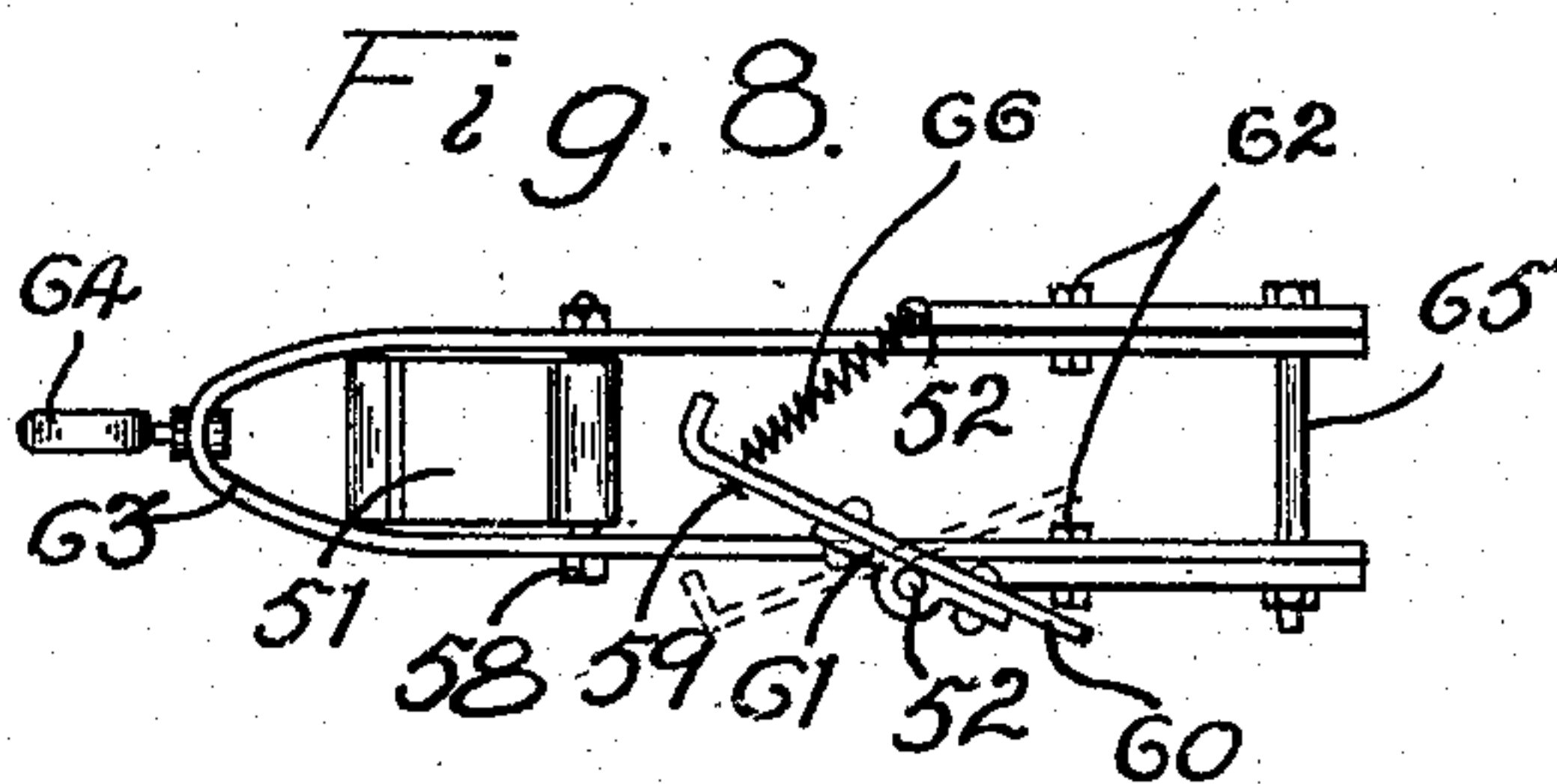
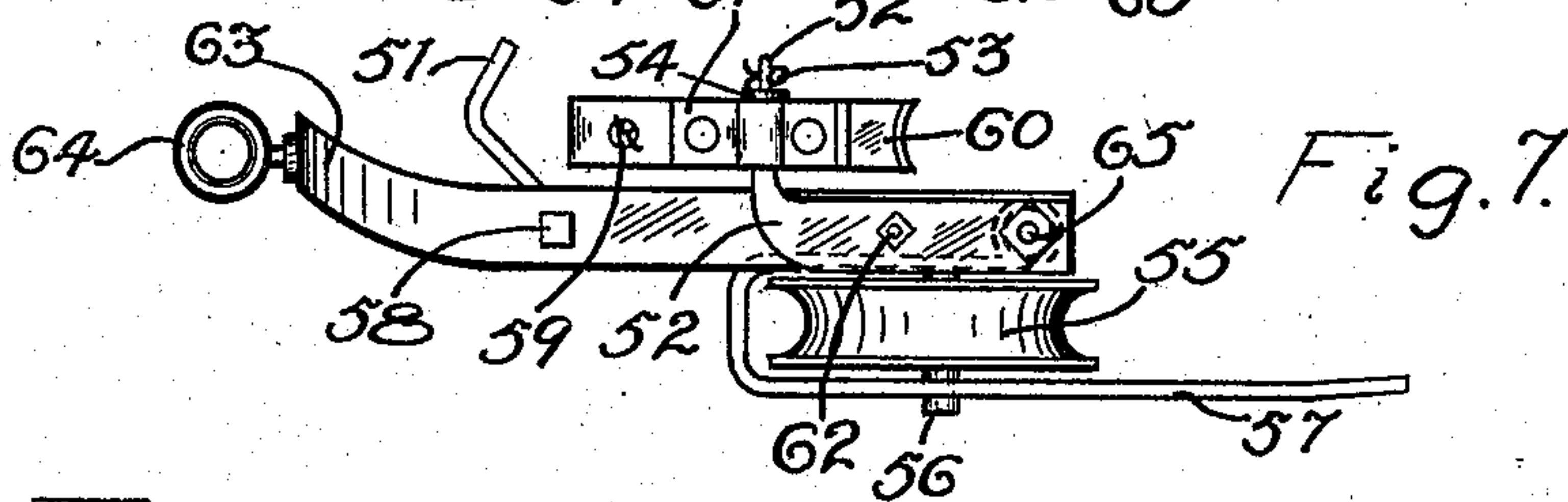
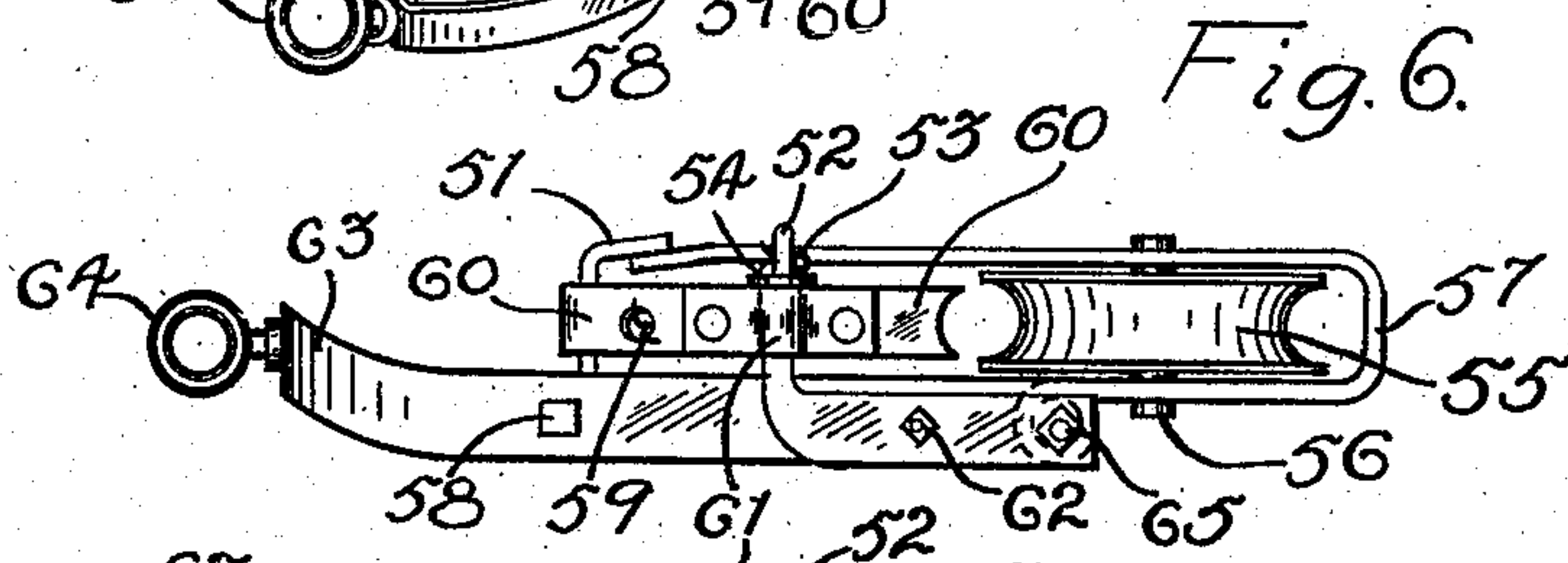
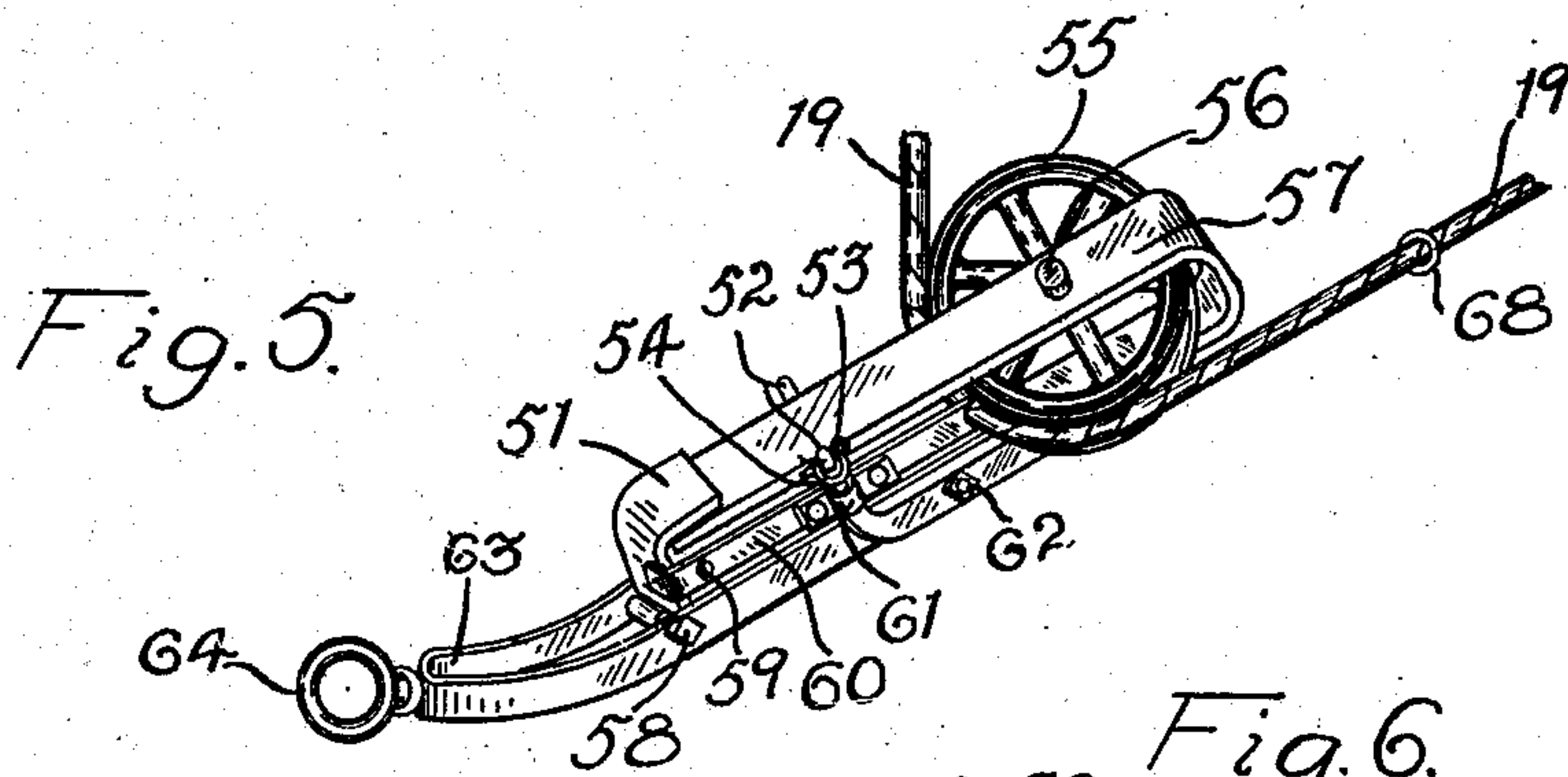
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3 SHEETS—SHEET 3.



WITNESSES

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JOHN K. VOORHEES, OF CEDAR FALLS, AND VICTOR V. SPEER, OF CEDAR FALLS
TOWNSHIP, IOWA.

WAGON-LOADING DEVICE.

No. 911,633.

Specification of Letters Patent.

Patented Feb. 9, 1909.

Application filed February 6, 1908. Serial No. 414,511.

To all whom it may concern:

Be it known that we, JOHN K. VOORHEES and VICTOR V. SPEER, citizens of the United States of America, and residents of Cedar Falls, Blackhawk county, Iowa, and of Cedar Falls township, Blackhawk county, Iowa, respectively, have invented certain new and useful Improvements in Wagon-Loading Devices, of which the following is a specification.

Our invention relates to improvements in wagon loading devices, and the objects of our improvements are these: first, to use power-actuated means for forward traction on the loading fork or scoop arranged to be set in motion or stopped by one man only, the operative handling the fork or scoop; second, an improved device for putting the operative driving mechanism in or out of gear, and third, means whereby the fork or scoop may be handled and used to cover a wide extent of ground to be cleared. These objects we have accomplished by the mechanism which is hereinafter described and claimed, and which is illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of our improved wagon loading device. Fig. 2 is a plan view of the forward part of same, taken in perspective from the forward end thereof. Fig. 3 is a rear elevation of the driving-gearing and its mounting. Fig. 4 is a side elevation of the driving mechanism showing the detail on a larger scale of the elements operative to engage or disengage the driving-gears. Fig. 5 is an enlarged detail perspective view of the separable pulley-block used when connected to a fixed structure, to change the line of direction of the fork cable. Fig. 6 is a side elevation of said separable pulley-block, with the parts engaged. Fig. 7 is a side elevation of the same, showing the parts disengaged. Fig. 8 is an upper plan view of a portion of the separable block, with the pulley and its housing removed. Fig. 9 is a plan view of the pulley and its housing plate as detached from the other parts of the block.

Similar numbers refer to similar parts throughout the several views.

Our improved mechanism may be mounted as shown on a frame composed of the parts 1 and 2, arranged to support each other at their angles of juncture, or may be otherwise mounted as desired, since we do

not seek to claim any specific form of supports, provided that the parts thereof are so placed that a wagon may be moved thereunder for the purpose of loading.

A driving-belt 4, adapted to be actuated by any suitable source of power such as an internal-combustion engine, passes about and drives the belt-wheel 45 on the left-hand end of a driving-shaft 13, the latter being mounted in the brackets attached to the uprights 2—2, with its right-hand end upwardly movable in a longitudinally-slotted opening 46 in the bracket 47. A drum 44 is placed below and parallel with the shaft 13, and has its ends rotatably mounted in the lower parts of said brackets.

The numerals 43 and 15 designate respectively a driving-pinion secured to the shaft 13 and a driven gear-wheel secured to the drum-shaft 14, and adapted to interact when the shaft 13 is in its lowermost position. The shaft 13 is driven continuously, the pinion 43 being lifted out of engagement with the gear-wheel 15, when it is desired to disconnect from the source of power. The rear end of a draft-cable 19 is secured to the drum 44 to be wound thereon, the other end of said cable then being carried forward over a pulley 20 suspended from said frame to be secured to the bail 37 of a fork or scoop 39.

On a stud 9 on a bracket 36 projecting rearwardly from the right-hand support 2 is pivoted medially a lever 8, to whose rear end is connected a slidable weight 5 by a set-screw 6, and whose forward end is provided with a slotted opening 69 adapted to receive the right-hand end of the driving-shaft 13 slidably within. The weight 5, when properly adjusted in position on the rear end of said lever, serves to raise the right-hand end of the driving-shaft 13 to lift the teeth of its pinion 43 out of engagement with the teeth of the gear-wheel 15.

An arm 11 has its upper end pivoted on a stud 12 projecting laterally from the upper part of the bracket 36, and its lower swinging end is curved forwardly in such a manner that its inner curved side is adapted to fit the shaft 13 when in its rearmost position, and in that position securing the shaft in its lowermost position in the slotted opening 46, with the driving-gears in operative engagement. A coiled tension spring 10, connected between the arm 11 and the lever 8 at a point rearward of the pivot of the latter, tends to

keep said arm and its curved portion 18 in contact with the said shaft 13.

The arm 11 may be disengaged from the shaft 13, to permit the weight 5 to elevate said shaft, by the following means: The numeral 17 designates a cable, preferably made of wire, whose rearmost end is secured to the lower end of the hook 18 on the arm 11, the cable then being carried about pulleys 16, 29 and 27 and has its forward end secured to the right-hand upwardly-extending arm 25 pivoted on a stud 21 extending from a hanger 23 on the frame 1. To a ring 30 secured to the cable 17 at a suitable place between the pulleys 29 and 27 is fastened the rear end of a forwardly extending cable 33, the latter supported above the frame 1 by a guide 28. When the cable 33 is drawn forward, the draft upon the cable 17 thereby occasioned causes the hook 18 of the arm 11 to be drawn away from the shaft 13, permitting the latter, impelled by the weight 5 on the lever 8, to be elevated in the slotted guide 69, thus separating the draft upon the draft-cable 19. The same result may be effected automatically by the rearwardly-moving fork or scoop 39 in the following manner: The fork whose bail 37 is connected to said draft-cable, may be constructed in any desired manner, but should have some means, such as the transverse rod 48 for engaging the pivoted arms 25 on the frame 1. The fork may have rearwardly extending tines 41 connected to a cross-bar whose ends are fastened to the side-plates 39, and forwardly extending side-bars connected by a handle-bar 38. Also said fork or scoop may have a caster 40 mounted thereunder, to permit it to be moved with little friction over the ground. The arms 25 may have a plurality of forwardly extending teeth 26, between which the ends of the transverse-bar 48 of the fork or scoop may be received. When the fork 45 or scoop has been drawn up the inclined plane 70 to a point where the ends of the bar 48 engage and draw backward the pivoted arms 25, and the springs 24 connected between the arms and the frame 1 have limited the arms' rearward movement, the draft of 50 the cable 19 upon the forward part of the fork causes it to tip rearwardly to almost a vertical position, and deliver its contents into any receptacle or wagon placed thereunder to receive therefrom. In moving 55 backward, the right-hand arm 25 exercises traction upon the wire cable 17, causing it to trip the hook 18 and thus disengage the gear-wheels 43 and 15 in the manner heretofore described, and stopping the draft upon the cable 19. The cable 19 being thus released, is free to rotate in a reversed direction to permit the fork to slide down the inclined plane 70 by reason of gravity, where it is 65 again available for reloading. The gear-

wheel 43 runs idly until the scoop or fork has been carried to a convenient place for reloading, and then said gear-wheel may be forced downward into engagement with the gear-wheel 15 in order to start the draft-cable 19 in motion backward by the following means.

The numeral 32 designates a cable carried backward through the guide 28 and over the pulley 29 to connect with the rear end of the lever 8. When the operative at the scoop 75 pulls upon the cable 32, the rear end of the lever 8 is elevated, which causes a depression of the lever's forward end, and moves the shaft 13 downward until the gears 43 and 15 reengage. The hook 18 of the arm 11 then, 80 impelled by the spring 10, resumes its seat upon the shaft 13 to secure it in its lowermost position. The springs 24 which draw forward the arms 25, when the pressure upon wire-cable 17 the necessary amount of slackness which permits the bar 11 to retreat to its rearmost position.

In order to allow the operative to distinguish the cables 32 and 33 from each other, 90 rings or projections 34 may be secured upon one of them at short distances apart, for manual contact.

As indicated in Fig. 2 by the dotted lines, the direction of draft of the cable 19 may be 95 changed as follows. To a post or other fixed object a pulley having a separable block may be secured, and such pulley adapted to have the cable 19 reeved through it. When the fork or scoop has been loaded in any part of a 100 yard or building and has been drawn forward to said pulley, the operative may manually separate the parts of the block and release the cable from the pulley, or the block's parts may be automatically spread and the pulley 105 slipped from the cable by the following specific means.

In Figs. 5 to 9 inclusive is depicted a separable pulley-block peculiarly adapted for use in connection with our improved wagon 110 loading device. The ring 64 may be secured to any fixed object near the mouth of the inclined plane 70. Said ring is swiveled to the bend of the plate 63 whose parallel members are connected by cross-rods 58 and 62, the 115 former used as a pivot for the bent plate 51, and the latter being used as a pivot for another bent plate 57. The members of the bent plate 57 are arranged in parallel, with the pintles 56 of an intermediate pulley 55 120 rotatably seated in bearing openings therein. The end of the short member of the bent plate 57 is rolled to form a tubular bearing 67 for the pivot-bolt 65, and the plate 57 with its contained pulley-wheel 55 may when released from the catch-plate 51 under the influence of gravity fall back under the bent-plate 63 as shown in Fig. 7. However, when the plate 57 is brought up to its position shown in Fig. 6, the end of its upper and 130

longer member, which is slightly narrowed and downturned, may be engaged by the inwardly bent end of the plate or catch 51, the latter having its inturned end bent to a greater angle than ninety degrees in order to facilitate the sliding of the slightly bent end of the member 57 from thereunder, or rather to cause the end of the catch to slip off more easily from said bent plate 57, as it will do when the snap-hook 60 is released therefrom.

The snap-hook or catch 60 is in the form of a medially pivoted arm, a bearing-seat thereon being provided by the attached plate 61, in which the upwardly-directed pintle 52 of a bracket secured to the right-hand side of the block by a bolt 62, is received. A coiled tension-spring 66 is connected between the hook end of the arm 60 at an orifice 59 of the latter and the upturned projection of a bracket 52 on the left-hand side of the block, secured to the block by a bolt 62 in a similar manner to the bracket on the right-hand side. The hook of the arm 60 is adapted to engage the catch 51 when the latter is in engagement with the end of the plate 57, to hold said catch and plate in secure connection, aided by the tension of the spring 66. This detachable-pulley-block is useful in connection with our improved wagon loading device in the facility it affords in changing the line of direction of the draft cable 19 so that the fork or scoop may travel over any part of a yard or building, and in the manner in which it may be automatically disconnected from said cable when the fork has arrived with its load at a point where the cable then can haul said fork in a straight line directly up the inclined plane 70.

When it is desired to change the line of draft so that the fork can gather a load from a location out of line with the inclined plane, the operative by hand trips the arm 60 so that its hook releases the catch 51 on the plate 57 of the block, when the catch falls back and the plate 57 with its inclosed pulley may be thrown over to permit the insertion of the cable 19 within the block adjacent to the inner concaved end of the arm 60. The plate 57 is then thrown back and the catch 51 engaged over it, and the latter secured by the hooked arm 60, the whole operation being readily performed when the fork or scoop has descended to the foot of the incline.

The numeral 68 designates a ring secured to a suitable part of the cable 19, and when the fork or scoop has been drawn by the cable to a point where it may then be directed in a straight line rearward up the inclined plane 70, the ring 68 comes into contact with the inner concaved end of the arm 60 and forces that end inward, the hooked end of the arm becoming released from the catch 51, the latter falling back and disengaging the plate 57. The draft of the cable tilts

over the plate 57 with its pulley 55, and the cable then releases itself from the block and is free to be drawn back with the fork or scoop to its dumping position.

Other forms of pulley-blocks having separable parts adapted to be separated automatically may be used in combination with our wagon loading device, and still be covered in principle by the scope of our claims herein, but the specific new construction and use of the separable block above described are reserved to be embodied by us in another divisional application to be filed by us.

In use, the pull-rope 33 is only used to make a quick stop in case of accident, and its rings 34 enable the operator to distinguish it from the cable 32. In use, the separable block does not have to be opened by hand only when first taken up to change the line of direction of cable.

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

1. In a wagon loading device, in combination, an idler winding-drum adapted to be detachably connected with any suitable driving means, a fork or scoop, a draft-cable located intermediate between said fork or scoop and said winding-drum, secured to each, and adapted to be wound upon said drum, means adapted to contact with said fork or scoop and invert the latter to a dumping position, and means for manually connecting and disconnecting said winding-drum with and from its said source of power, and means connected between said driving-means and said fork-engaging means adapted to connect and disconnect said parts automatically when said fork-engaging means are swung forward or backward.
2. In a wagon loading device, in combination, an idler winding-drum adapted to be detachably connected with any suitable driving means, a fork or scoop, a draft-cable located intermediate between said fork or scoop and said winding-drum, secured to each, and adapted to be wound upon said drum, pivoted arms adapted to contact with said fork or scoop and invert the latter to its dumping position, inclined guides for said fork or scoop located anterior to and leading up to said pivoted arms, and means connected between said pivoted arms and said drum-driving means for disconnecting said winding-drum from its said source of power.

3. In a wagon loading device, in combination, a driving-shaft rotatable by means of any suitable source of power, one end of said shaft being movably mounted, a pinion secured on the movable end of said driving-shaft, a winding-drum secured to a shaft whose ends are rotatably mounted in bearings near the bearings of the said driving-shaft, a gear-wheel on the winding-drum shaft adapted to intermesh with the pinion

on the movable end of the driving-shaft, means for shifting said driving-shaft at its movable end to cause it to intermesh with the gear-wheel on the winding-drum shaft, means for shifting the said pinion to disengage it from the said gear-wheel, a fork or scoop, a draft-cable located intermediate between said fork or scoop and said winding-drum, secured to each, and adapted to be wound upon said drum, and means for engaging said fork or scoop adapted to invert the latter to its dumping position, and means connected between the movable end of said driving-shaft and said fork-engaging means adapted to disconnect said driving-shaft from the drum-shaft when said fork-engaging means is thrown back by an impact from said fork or scoop.

4. In a wagon loading device, in combination, a driving-shaft rotatable by any suitable source of power, one end of said shaft being slidably mounted, a pinion on the slidable end of said shaft, a winding-drum having pintles idly mounted in bearings near the bearings of the driving-shaft, a gear-wheel on one pintle of the winding-drum adapted to intermesh with said pinion when its shaft is shifted in one direction, a medially-pivoted lever whose forward end has a slotted bearing within which the movable end of the driving-shaft is received to slide therein, a weight on the rearward end of the said pivoted lever, a pull-cord one end of which is secured to the weighted end of said pivoted lever, means for engaging and shifting the movable end of the said driving-shaft to cause the pinion to intermesh with the said gear-wheel, a fork or scoop, and a draft-cable located intermediate between said fork or scoop and said winding-drum, secured to each, and adapted to be wound upon said drum, and engaging means adapted to contact with said fork or scoop and invert the latter to its dumping position and return it to its former supine position when dumped.

5. In a wagon loading device, in combination, a driving-shaft rotatable by any suitable source of power, one end of said shaft being slidably mounted, a pinion on the slidable end of said shaft, a winding-drum secured to a rotatable shaft idly mounted in bearings near the bearings of said driving-shaft, a gear-wheel on said winding-drum shaft adapted to intermesh with said pinion when its shaft is moved in one direction, a medially-pivoted lever whose forward end has a slotted bearing within which the movable end of the driving-shaft is received to slide therein, a slidable weight secured to the rear end of the said pivoted lever, a pull-cord one end of which is secured to the weighted end of said pivoted lever, a movable clutch adapted to detachably engage and hold the movable end of said driving-

shaft in a position where its pinion will intermesh with the said gear-wheel, a tension-spring connected between said clutch and the weighted end of said pivoted lever, a pull-cord connected to said movable clutch, a fork or scoop, and a draft-cable located intermediate between said fork or scoop and said winding-drum, secured to each, and adapted to be wound upon said drum.

6. In a wagon loading device, in combination, a driving-shaft rotatable by any suitable source of power, one end of said shaft being slidably mounted, a pinion on the slidable end of said shaft, a winding-drum having pintles idly mounted in bearings near the bearings of the said driving-shaft, a gear-wheel on one pintle of the winding-drum adapted to intermesh with said pinion when the shaft of the latter is shifted in one direction, a medially-pivoted lever whose forward end has a slotted bearing within which the movable end of the driving-shaft is received to slide therein, a slidable weight secured to the rear end of the said pivoted lever, a pull-cord one end of which is secured to the weighted end of said pivoted lever, a movable clutch adapted to detachably engage and hold the movable end of said driving-shaft in a position where its pinion will intermesh with the said gear-wheel, a tension-spring connected between said clutch and the weighted end of said pivoted lever, a fork or scoop, a draft-cable located intermediate between said fork or scoop and said winding-drum, secured to each, and adapted to be wound upon said drum, pivoted means adapted, when engaged and thrown back by the rearwardly moving fork or scoop, to invert the latter to its dumping position, a pull-cord suitably secured to both said clutch and said pivoted dumping means whereby the latter is caused to move said clutch out of engagement with said driving-shaft when said dumping means is pushed rearward to its limit of movement.

7. In a wagon loading device, in combination, a driving-shaft rotatable by any suitable source of power, one end of said shaft being slidably mounted, a pinion on the slidable end of said shaft, a winding-drum having pintles idly mounted in bearings near the bearings of the said driving-shaft, a gear-wheel on one pintle of the winding-drum adapted to intermesh with said pinion when the shaft of the latter is shifted in one direction, a medially pivoted lever whose forward end has a slotted bearing within which the movable end of the driving-shaft is received to slide therein, a slidable weight secured to the rear end of said pivoted lever, a pull-cord one end of which is secured to the weighted end of said pivoted lever, a movable clutch adapted to detachably engage and hold the movable end of said driving-shaft in a position where its pinion will in-

termesh with the said gear-wheel, a tension-spring connected between said clutch and the weighted end of said pivoted lever, a fork or scoop, a draft-cable located intermediate between the fork or scoop and said winding-drum, secured to each, and adapted to be wound upon said drum, pivoted means adapted, when engaged and thrown back by the rearwardly-moving fork or scoop, to invert the latter to its dumping position, a pull-cord suitably secured to both said clutch and said pivoted dumping means whereby the latter is caused to move said clutch out of engagement with said driving-shaft when said dumping means is pushed rearward by said scoop to its limit of movement, and a pull-cord secured to the last-mentioned pull-cord and furnished with projecting knobs or rings suitably spaced apart from each other.

8. In a wagon loading device, in combination, an idler winding-drum adapted to be detachably connected with any suitable driving-means, a fork or scoop, a draft-cable located intermediate between said fork or scoop and said winding-drum, secured to each, and adapted to be wound upon said drum, means adapted to contact with said fork or scoop and invert the latter to the dumping position, means for connecting and disconnecting said winding-drum from its said source of power, and a pulley secured to some fixed point of attachment, said pulley having a separable block adapted to releasably receive the said draft-cable to change the line of direction of its draft, and means connected thereto adapted to trip and disconnect the pulley from the draft-cable from

either side of the block when the line of direction of the draft of said cable is shifted from one side to the other of the median line of said device.

9. In a wagon loading device, in combination, an idler winding-drum adapted to be detachably connected with any suitable source of power, a fork or scoop, a draft-cable located intermediate between said fork or scoop and said winding-drum, secured to each, and adapted to be wound upon said drum, means adapted to contact with said fork or scoop and invert the latter to the dumping position, means for connecting and disconnecting said winding-drum from its said source of power, a pulley secured to some fixed point of attachment, said pulley having a separable block adapted to releasably receive the said draft-cable to change the line of direction of its draft, a detachable interchangeable pivoted catch connected to said pulley-block and adapted to be shifted from one side of the block to the other when desired to change the line of draft from one side to the other of the median line of the device, and a catch secured to said cable adapted to contact with the said detachable part of said pulley-block to disengage it from the other parts thereof and thus permit the cable to release itself therefrom.

Signed at Waterloo, Iowa, this 25th day of Jan. 1908.

JOHN K. VOORHEES.
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Witnesses:

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