Aug. 4, 1953 O. L. MAYNARD 2,647,649

TRASH MOVING FORK FOR TRACTORS

Filed June 28, 1951 2 Sheets-Sheet 1

Fig. 1

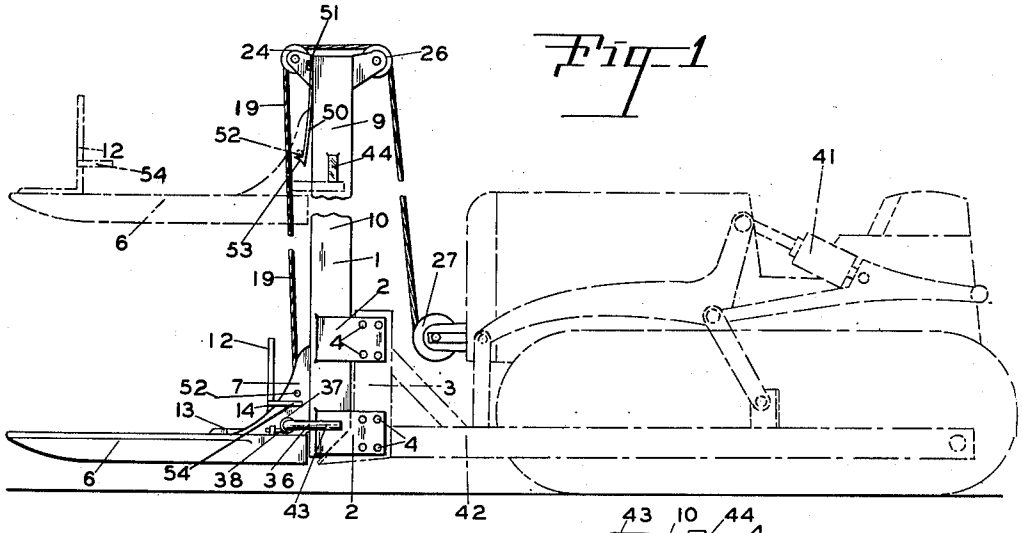

Fig. 2

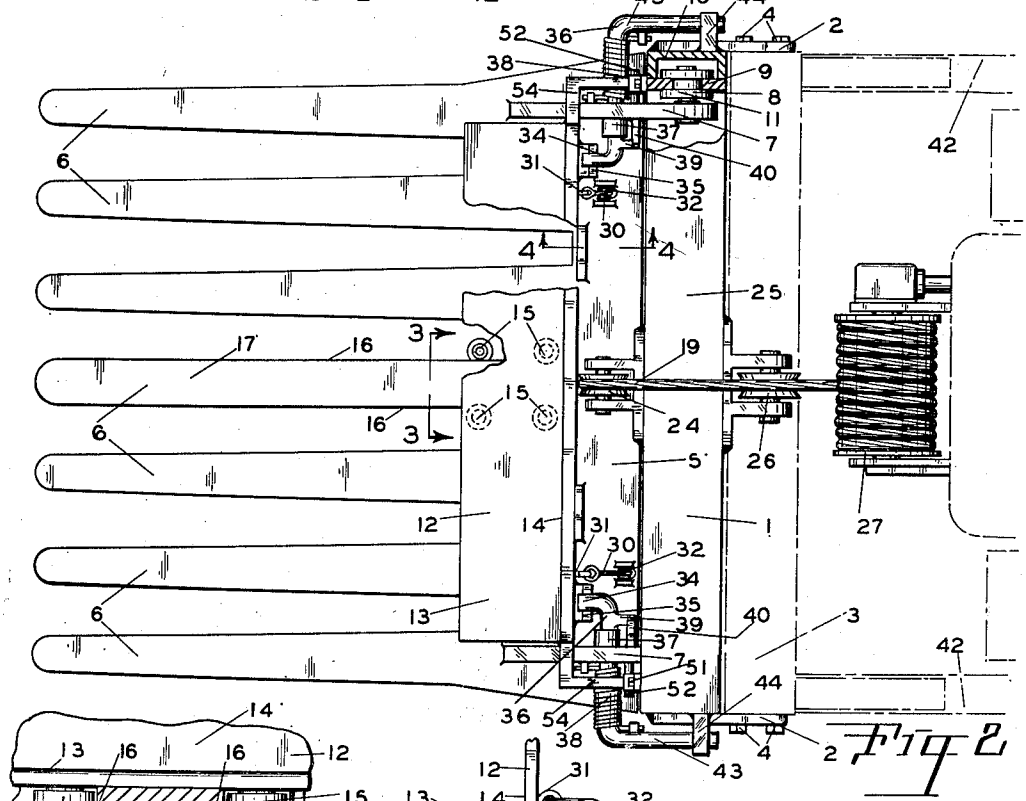

Fig. 3

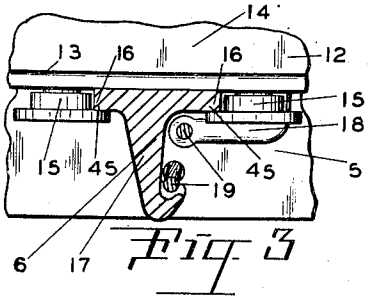

Fig. 4

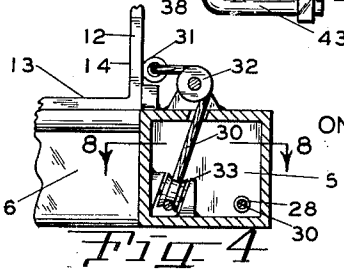

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Fig 9

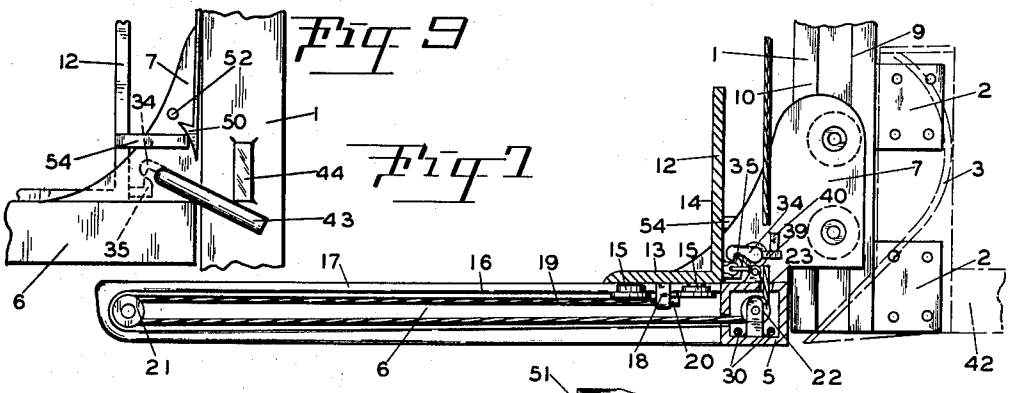


Fig 7

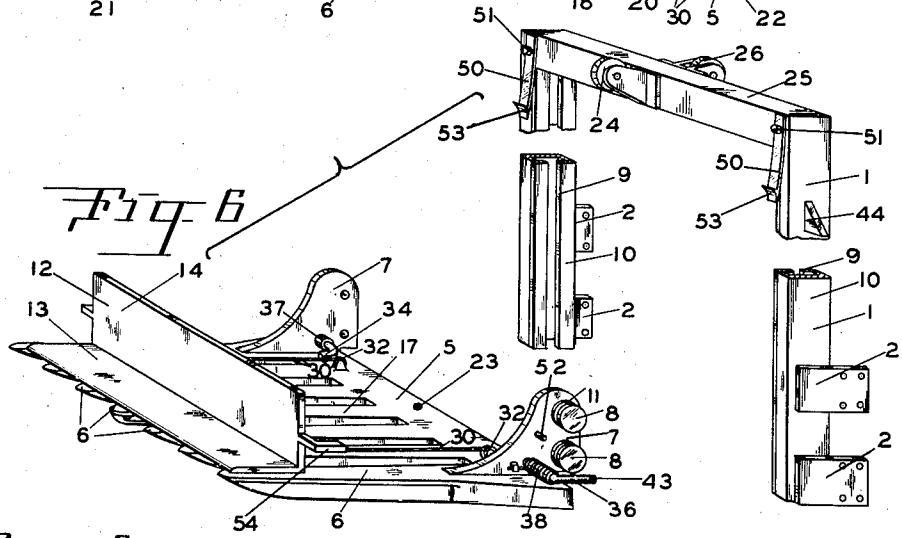


Fig 6

Fig 5

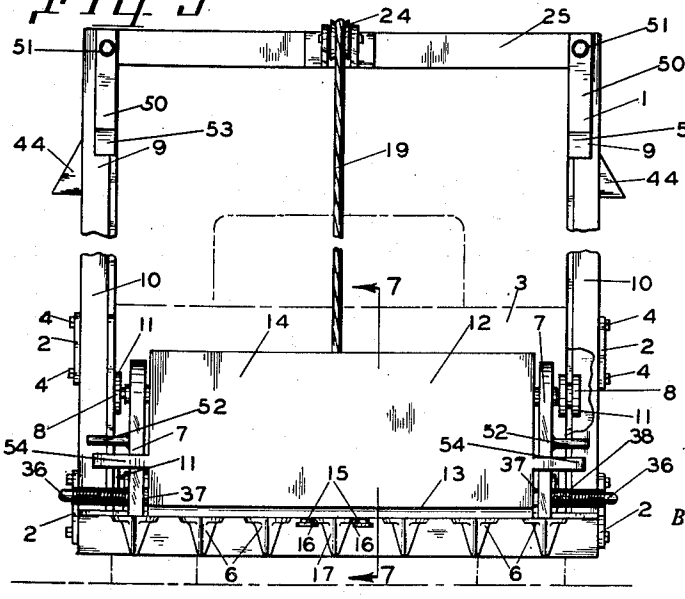
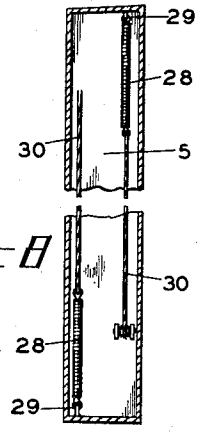


Fig 8



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TRASH MOVING FORK FOR TRACTORS

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3 Claims. (Cl. 214—514)

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This invention relates to trash moving forks, which are particularly adapted to tractors for the moving of limbs, stumps and the like in land clearing.

The primary object of my invention is to provide a fork to be attached to bulldozers of tractors adapted to move limbs, stumps and other trash, piling the same on piles for burning.

My new and improved fork is adapted to be operated from a hoisting drum associated with the tractor. This new fork is adapted to pass underneath a pile of trash, picking the same up and elevating it to a high level from where it can be dumped on to a pile of trash to be burned.

My new and improved lifting fork is so designed as to be easily attached to the bulldozer on the tractor.

These and other incidental objects will be apparent in the drawings, specification and claims.

Referring to the drawings:

Figure 1 illustrates my new and improved lifting fork in its relation to a bulldozer, the tractor unit, the tractor and bulldozer being illustrated in broken lines, the fork unit being partially broken away for the saving of space on the drawing.

Figure 2 is a plan view of Figure 1, parts broken away for convenience of illustration.

Figure 3 is a fragmentary enlarged sectional detail, taken on line 3—3 of Figure 2.

Figure 4 is an enlarged fragmentary sectional view, taken on line 4—4 of Figure 2.

Figure 5 is a front elevation of Figure 1, partially broken away to save space on the drawings.

Figure 6 is an exploded perspective view of the fork assembly, parts broken away in the saving of space on the sheet.

Figure 7 is an enlarged fragmentary sectional view, taken on line 7—7 of Figure 5.

Figure 8 is a plan sectional view, taken on line 8—8 of Figure 4.

Figure 9 is an enlarged fragmentary detail side view of the frame and the fork assembly illustrating the automatic locking mechanism.

Referring more specifically to the drawings:

My new and improved lifting fork consists of a frame 1, having brackets 2 forming part thereof and adapted to be removably secured to the bulldozer blade 3 as by bolts 4, the said bulldozer blade being shown in broken lines.

The fork unit itself consists of a hollow cross frame member 5, having forks 6 extending forwardly therefrom and forming part thereof. Upwardly extending brackets 7 form part of the fork assembly and have trunnion wheels 8 journalled thereto. These trunnion wheels are adapted to work up and down within the tracks 9 formed within the vertical uprights 10 of the frame 1. The trunnion wheels run up and down within the said tracks 9 and have flanges 11, which are adapted to embrace the sides of the tracks 9 as best illustrated in Figures 2 and 5. This design tends to stabilize the movement of the forks up and down within the side frames 10.

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Slidably mounted on the top of the forks 6 is a plow 12 for removing the trash from the forks when dumping the same on to a pile of trash. This plow consists of a base plate 13 and a back 14.

Referring to Figure 2, trunnion wheels 15 are journalled to the bottom of the base plate 13 and are adapted to be guided along the edges 16 of the fork 17. These trunnions stabilize the position and movement of the plow in its operation, and also maintain the said plow in contact with the top surface of the forks, best illustrated in Figure 3.

Extending down and forming part of the base plate of the plow 12 is a boss or clamp 18 to which the cable 19 is dead-ended to by way of the usual cable ferrule 20. The cable 19 is trained about the sheaves 21 located at the point of the fork 17, and is brought back into the cross frame member 5 best illustrated in Figure 7, where it is trained about the sheave 22 and brought up through the opening 23 and trained about the sheave 24 located on the upper cross frame 25 of the main frame 1, then trained over the sheave 26 and down to the hoisting drum 27 forming part of the tractor. The operation of this cable will be later described.

The plow 12 is maintained in the retracted position as illustrated in Figures 1, 2, 5 and 7 by the action of the springs 28, which are dead-ended within the cross frame 5 at 29 at their one end and connected to the cables 30 at their opposite end, the cable 30 having its opposite ends connected to the plow 12 at 31, referring particularly to Figures 2 and 4, the said cable operating over the idler sheaves 32 and 33. The plow is locked in this position by the dogs 34 engaging the latches 35, the said latches being part of the plow. The dogs 34 form part of the cranks 36, which are journalled within the brackets 7 at 37.

A spring 38 causes the dogs 34 to engage the latches 35, the forward movement of the latches being arrested by the cam 39 forming part of the crank which engages the stops 40, forming part of the bracket 7 as best illustrated in Figure 2.

I will now describe the operation of my new and improved lifting fork. The tractor is moved forward while the fork is in the position illustrated in Figure 1. The fork being raised or lowered by the usual lifting cylinder **41** on the tractor, which raises and lowers the bulldozer blade **3** by way of the side members **42**. The fork is forced underneath a pile of trash after which the hoisting drum **27** is started to revolve, reeling up the cable **19** lifting the forks to the broken line position.

At this point the arm **43** of the crank **36** engages the stops **44** located on the vertical frames **10**. This unlatches the dog **34** from the latch **35** releasing the plow, and on further operation of the hoist **27** the plow will be forced forward by the pull of the cable forcing the load of trash off the ends of the forks. The pull of the cable in operating the plow is of sufficient pressure to maintain the forks in their raised position until the plow reaches the end of its travel as indicated by the position in Figures 1 and 6.

Referring to Figures 1, 2, 5 and particularly 9, a positive means of holding the forks in the broken line position as indicated in Figure 1 is provided by a spring hanger **50** which is secured to the uprights **9** at **51**. When the fork is raised to the position shown in Figure 1, the bell crank **43** strikes the stop **44**, this disengages the hook **34** from the dog **35** permitting the plow **12** to travel towards the dotted position from the position shown in Figure 9 to the dotted position shown in Figure 1. The arms **54** carried by the plow **12** also strike the hook **50** of the hanger at the same time the bell crank **43** engages the stop **44**. This moves the hanger to the position illustrated in Figure 9, and when the plow moves away forward, these arms will permit the hook **50** to engage the pin **52**, which will support the fork assembly until the plow is returned to the position shown in Figure 9, when it will engage the hook **50** unlatching the same from the pin **52** and allowing the fork assembly to lower, at which time the hook **34** will engage the dog **35** holding the plow in this position until again disengaged by the arm **43** engaging the stop **44**.

The fork **17**, referring to Figure 3, is so shaped as to protect the cable **19** and provide tracks **45** on which the trunnion wheels **15** operate.

What I claim is:

1. Apparatus for moving trash, comprising a frame, a hollow casing from which project a series of forks, flanges projecting from the casing, rollers on the flanges, said rollers operating in the guideways, a plow slidably mounted on the forks, means for locking the plow to the series of forks including triggers, trips on the frame with which the triggers cooperate to release the latches when the forks and plow are elevated, means between the frame and the forks for holding the latter in elevated position, means for elevating the forks and plow to latch releasing position and by continued operation slide the plow outwardly on the forks, means for returning the plow to the rear of the forks while elevated, after the elevating means has been released, and means for freeing the forks and plow from the frame to permit same to drop by gravity to normal position.

2. Apparatus for moving trash comprising a frame having a pair of vertical guides, a series of connected forks including a rear hollow cross bar

and a pair of flanges, rollers on the flanges to operate in the vertical guides, a plow supported on the forks, latches between the hollow cross bar and the plow, the latches having spring actuated triggers, pins extending outwardly from the flanges, projections extending rearwardly from the plow, a cable attached at one end to the plow and trained over pulleys to a point above where the forks are to be elevated, means between the plow and the hollow cross bar for returning the plow to the rear of the forks after the plow has been advanced to a forward position on the forks, lugs on the side of the frame in the path of movement of the triggers, spring catches on the front of the frame in the path of movement of the rearwardly extending projections, and means for pulling the cable, whereby, when the cable is operated the forks and plow will be elevated together until the triggers contact with the lugs to release the latches and the pins engage the catches, while continued pull on the cable will project the plow forwardly on the forks, slacking of the cable permitting return of the plow to the rear of the forks for the projections to contact with the catches to release said catches from the pins to permit the forks and plow to fall by gravity.

3. Apparatus for moving trash comprising a frame having a pair of vertical guides, a series of connected forks slidably mounted in the vertical guides, a plow mounted to slide on the forks, means to normally retract the plow against the frame, catches near each end of the plow, latches mounted on the forks to engage the catches to lock the plow to the forks until the forks reach an elevated discharge position, the latches having rearwardly extending arms, springs on the latches to retain them in engaged position with the catches, lugs on the frame to engage the arms to disengage the latches when the forks and plow have reached elevated discharge position, pins extending from the sides of the forks, yielding supports projecting from the frame to engage under the pins and hold the forks and plow in elevated discharge position, projections on the plow to disengage the yielding supports from the pins when the plow is retracted from discharge position and a single cable attached to the bottom of the plow and trained over rollers under the forks and connected to a source of power to elevate the forks and plow and thereafter slide the plow on the forks, the plow being retracted on the forks when the cable is slackened and the projections engaging the yielding supports to disengage the same from the pins to allow the plow and forks to fall by gravity and the latches to engage the catches to hold the plow and forks together.

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