

June 20, 1961

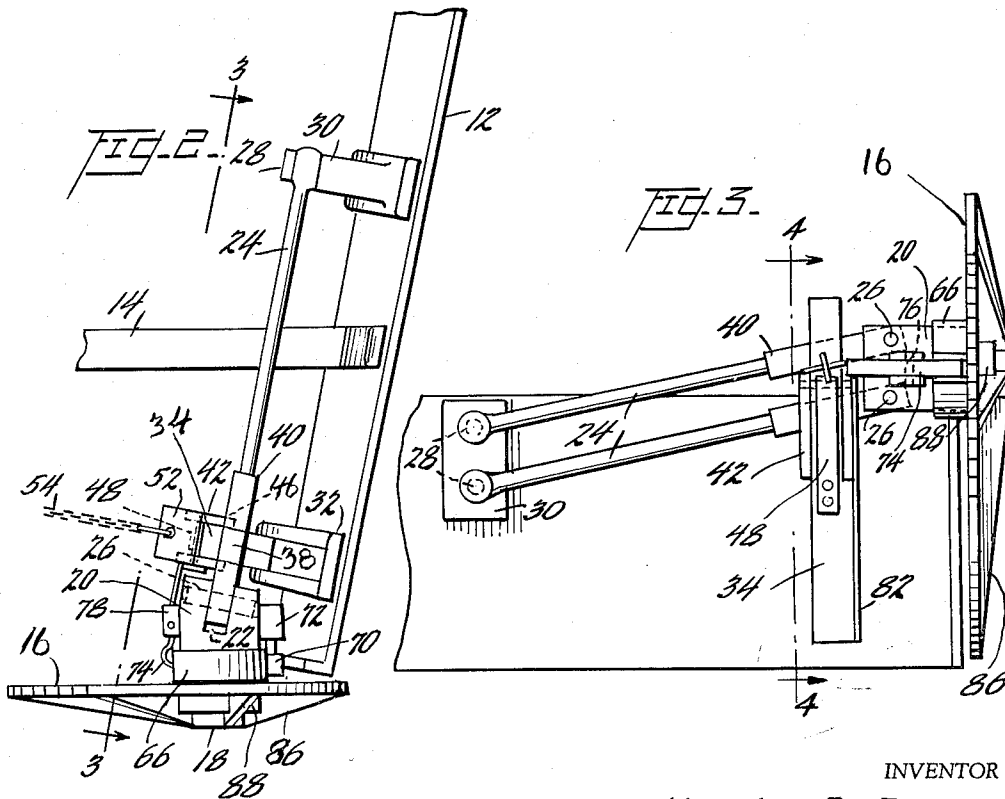
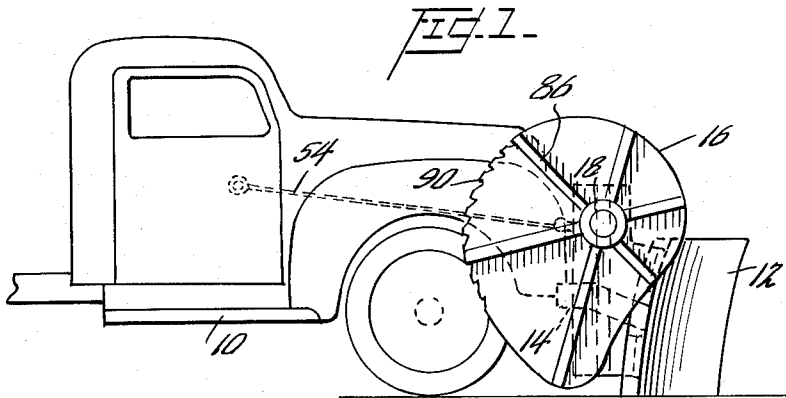
S. L. BURNS

2,988,831

ATTACHMENT FOR SNOW REMOVAL EQUIPMENT

Filed Jan. 31, 1958

2 Sheets-Sheet 1



INVENTOR

Stanley L. Burns

BY

*Perkins and Walsh*

ATTORNEYS

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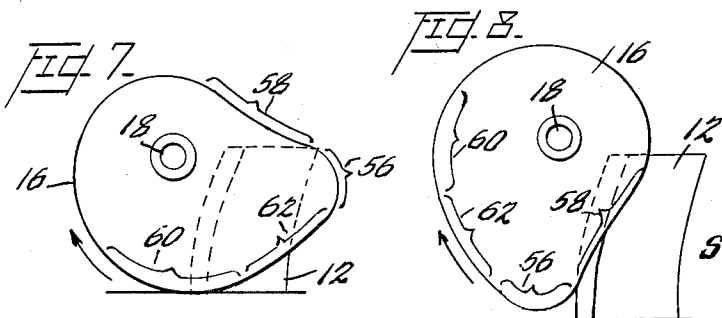
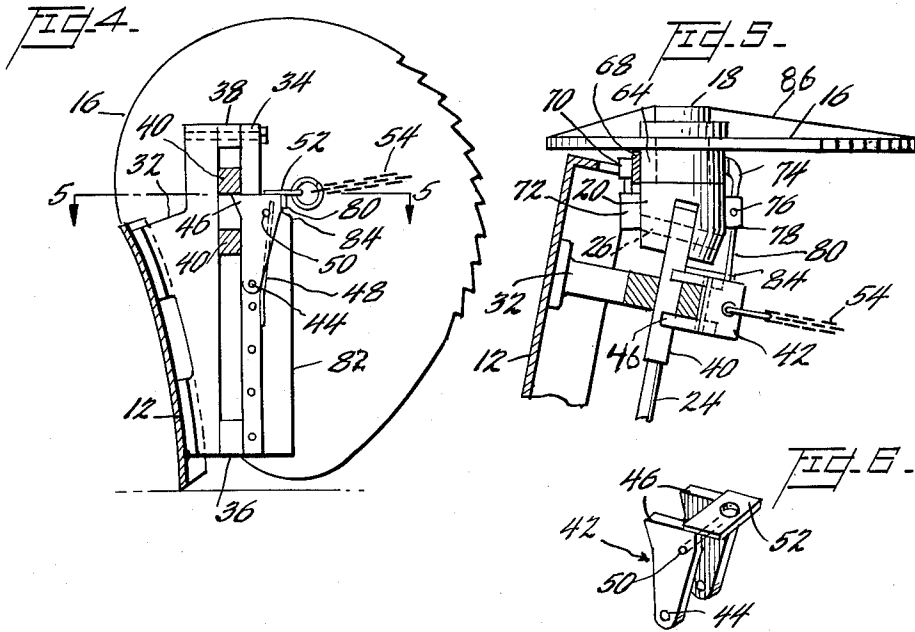
S. L. BURNS

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ATTACHMENT FOR SNOW REMOVAL EQUIPMENT

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2 Sheets-Sheet 2



INVENTOR  
*Stanley L. Burns*

BY *Parker and Walsh*

ATTORNEYS

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ATTACHMENT FOR SNOW REMOVAL  
EQUIPMENT

Stanley L. Burns, Proctor, Vt.  
Filed Jan. 31, 1958, Ser. No. 712,541  
11 Claims. (Cl. 37-50)

This invention relates to an attachment for a dozer blade.

Hereinafter, by the term "dozer blade," I mean a vehicle-mounted blade for the pushing movement of earth or snow.

Such blades themselves are frequently arranged for attachment to the forward end of motor vehicles. In northern climates, motor vehicles that are normally, or at least during the summer, devoted to other purposes, are equipped with dozer blades to keep streets and roads clear of accumulated snow. The blade is mounted at an angle to the path of travel, leading off to the side of the street. As the vehicle moves forward with the blade closely adjacent the paved surface, the snow is scraped up and spills off the outer end of the blade to pile up at the curb or similar marginal portion of an uncurbed road. Such disposal method, although somewhat less slightly than complete physical removal of the snow, is much more economical and represents just about the most economical method of dealing with a heavy snow problem where removal of the snow from the street proper is necessary to maintain a free flow of traffic.

It has long been recognized that the uniform discharge or spillage of snow from the outer edge of the scraper was undesirable since it tended to pile up snow in banks across intersecting streets, driveways and cross-walks. This has required the usage of substantial amounts of hand labor to clear such embankments away. If this service is performed by the authority responsible for clearing the streets, the expense for dealing with the snow is greatly increased while, if left to the individual whose access to the street is blocked, much ill-will is engendered.

I have devised an attachment, easily attachable to or capable of being incorporated with a conventional dozer blade, for intermittently blocking the end discharge of a dozer blade so that, by the manipulation of a simple control, the operator of a vehicle-mounted dozer, can prevent the discharge of snow from the end of the dozer blade whenever it passes a stretch of curbing that ought not to be blocked.

For a fuller understanding of the invention, reference should be had to the accompanying drawings, wherein:

FIGURE 1 is a side elevation of my invention, assembled upon a vehicle-mounted dozer;

FIGURE 2 is a plan view of the invention as shown in FIGURE 1, drawn to a larger scale;

FIGURE 3 is a rear elevation of the matter shown in FIGURE 2, viewed as indicated by the lines 3-3 and with certain nonessential parts omitted to furnish a better disclosure of the remaining parts;

FIGURE 4 is a section in elevation, taken along the lines 4-4 of FIGURE 3;

FIGURE 5 is a section in plan, taken along the lines 5-5 of FIGURE 4;

FIGURE 6 is an enlarged perspective of the latch member employed; and

FIGURES 7 and 8 are schematic side elevational views showing the operation of the device, FIGURE 7 showing the apparatus in snow blocking position and FIGURE 8 showing the device in snow discharge position.

Having reference now to FIGURE 1 of the drawings, the numeral 10 designates a suitable vehicle upon which is mounted a scraper blade 12 by means of mounting brackets 14. Such brackets are usually arranged to per-

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mit the raising and lowering of the scraper blade 12 but, as the manipulation of such forms no part of my invention, I will not go into the detail thereof. For the purpose of further description, it will be assumed that the blade is maintained continually in scraping relationship to the paved surface.

At the outer end of the blade 12, a plate 16 of generally kidney shape is mounted for rotation upon spindle 18. As shown in FIGURES 1 and 8, the plate 16 is arranged to allow free discharge from the outer end of blade 12. When the plate is rotated in clockwise direction, as will hereafter be described, it falls into the position shown in FIGURE 7 wherein discharge is substantially prevented from the end of the blade 12. Upon further rotation of the plate, it is returned to the position shown in FIGURE 8 for discharge of the snow.

Referring now to FIGURES 2 to 6, the spindle 18 extends outwardly from spindle block 20, to support plate 16 for rotation. Plate 16 is secured upon spindle 18 in any suitable manner to permit it to rotate without appreciable endwise movement on the spindle. The spindle block 20 is slotted at 22 to receive the eye heads of a pair of support rods 24. The heads of the rods 24 are connected to the spindle block 20 by means of a pair of pivot pins 26 to permit limited vertical movement of the block 20 as will be described. At their opposite ends, the rods 24 have an additional pair of eyes to receive pins 28 projecting from mounting bracket 30.

A guide bracket 32 is secured to the outer portion of blade 12, just inwardly of the pivoted mounting of spindle block 20. The mounting bracket 30 and guide bracket 32 constitute the only connection of the attachment to the scraper blade 12 and, as will be readily apparent from an inspection of the drawings, these brackets afford a simple arrangement for connecting and disconnecting the attachment to the scraper. In this way, the scraper is not limited for use with the attachment.

Appropriately secured to guide bracket 32 at the upper and lower portions thereof, is guide bar 34. Spacers 36 and 38 hold the bracket and bar apart to form a substantially vertical, closed channel in which the support rods 24 may move. By forming the outer ends 40 of rods 24 in rectangular shape, a substantial bearing surface will be provided for controlling the vertical movement of the spindle block 20.

A latch member 42 pivoted at 44, has a pair of lips 46, flat upon the upper face for supporting the under face of end 40 of the upper of the two rods 24, to hold the spindle yoke in its extreme uppermost position. The under face of lips 46 is tapered to permit outward displacement of the latch 42 as the rods 24 move upwardly past the tapered face. The outer end of a leaf spring 48 bears against a pin 50 extending between the side members of latch 42 to cause the latch to hold the spindle block in its uppermost location. A plate 52 connecting the two side members of latch 42 affords a means for attachment of operating line 54 extending into the cab of vehicle 10.

Referring once more to FIGURES 7 and 8, it will be seen that the plate 16 is normally held in the position shown in FIGURE 8 with the lowermost portion of the plate clearing the street level. The latch member 42 does not hold the shoulder of square portion 40 closely against the spacer member 38. When the latch 42 is released, the plate supporting assembly will descend until plate 16 comes in contact with the pavement and the friction of lobe 56 with the pavement will cause the plate to move in a clockwise direction. As soon as contact is made between plate 16 and the ground surface therebeneath, rotation begins so that, when the portion 60 reaches the low pavement-contacting position, the portion 62 will have been brought opposite the end of the scraper

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blade 12 to fully block the discharge of snow. The plate 16 will continue to rotate due to the contact of its edge with the pavement until it once more returns to the position shown in FIGURE 8 as the blade reaches the end of the portion of the curb to be kept clear, at which point the snow is free to discharge again. The latch member 42 urged by spring 48, falls in place under the end 40 of arm 24. As explained below, rotation of plate 16 will be stopped at this point.

In order to hold the plate 16 fixed against rotation, a brake system may be provided. An inward extension 64 of the plate 16 forms a brake drum. Brake-band 66 having lining 68 is hinged at 70. The brake hinge 70 is supported from an extended ear 72 of the spindle block 20. The brake is actuated by arm 74 pivoted at point 76 upon a pin extending between ears 78 formed on spindle block 20. The inward extension 80 of arm 74 is made to travel upon the rib-like runner 82. The brake is shown in braking position in FIGURES 2 to 5. When the line 54 is tripped, causing the latch 42 to release the uppermost of arms 24, the inner portion 80 of brake actuating arm 74 rides out over the sloping portion 84 of runner 82, thrusting the outer portion 74 of the brake actuating arm inwardly toward spindle 18 to spread the two halves of brake-band 66 apart to release the brake plate. When the arms 24 are raised by the continued rotation of the plate 16, the action is reversed.

It may be desirable to provide ribs 86 terminating in a central boss 88 upon plate 16 to add rigidity thereto. Also, serrated teeth 90 upon the rim of plate 16 are helpful in providing better traction with the pavement. If desired, this may be augmented by the application of hard facing to the rim, laid down by torch.

It is evident that, according to specific need, and utilizing the well-recognized principles of cam design, the configuration of plate 16 may be modified. Generally the basic requirements for plate 16 are: (1) a low area permitting the free discharge of snow when the plate is elevated and serving the additional purpose of rapidly lowering the plate supporting assembly to bring plate 16 into operative position, and (2) a high area having the joint functions of blocking snow discharge when opposite the blade 12 and of raising the plate supporting assembly to non-operative position. If desired, the movement of plate 16 in response to frictional engagement of its rim, may be assisted by the application of counter-weights, positioned just within the rim thereof.

The length of the periphery of plate 16 is chosen to satisfy the average needs of the streets to be cleaned. This will result in leaving some small amount of snow at one edge or the other of the broader driveways unless a larger plate is substituted. In most locations a single size of plate will satisfy all requirements. However, the apparatus is so arranged that plates of different size may easily be exchanged, one for another.

Although it has heretofore been proposed to provide blocking plates for the outer end of scraper blades, such plates have had to be operated by the effort of the vehicle operator, whereas my device is merely released by the operator to be actuated by the forward movement of the vehicle itself and moreover, once released for actuation, the cycle of its operation is automatic.

I claim:

1. In combination with a scraper-type material moving blade, a device for preventing end spill from one end of said blade including: a shaft arranged horizontally with respect to the path of movement of the scraper blade and extending outwardly of said one end of the blade, means for supporting and guiding said shaft for vertical movement and an end plate mounted for rotation upon the outer end of said shaft, said plate having a generally kidney shape with one lobe tapered and being mounted for rotation on said shaft for movement between one position

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blocking the end of the blade and another leaving said end clear.

2. In combination with a scraper-type material moving blade, a device for preventing end spill from one end of said blade including: a shaft arranged horizontally with respect to the path of movement of the scraper blade and extending outwardly of said one end of the blade, means for supporting and guiding said shaft for vertical movement and an end plate mounted for rotation upon the outer end of said shaft, said plate having a modified but generally circular shape and being mounted for rotation on said shaft for movement between one position blocking the end of the blade and another leaving said end clear.

3. The combination of claim 2 wherein the rim of the end plate is serrated.

4. The combination of claim 2 including means for preventing rotation of the end plate.

5. The combination of claim 4 wherein the means for preventing rotation is operative in clear position, while said plate does not block the end of the scraper blade.

6. The combination of claim 2 including means for latching the shaft near the upper limit of vertical movement.

7. The combination of claim 2 wherein the end plate is arranged on the shaft so that it occupies the clear position when the shaft is near its upper limit of vertical movement.

8. In combination with a vehicle-mounted scraper-type material moving blade, a device for preventing end spill from one end of said blade including: a spindle arranged horizontally with respect to the path of movement of the scraper blade and extending outwardly of said one end of the blade, a spindle block for supporting said spindle, interfitting channel and guide means on the blade and spindle block for guiding said block in up-and-down movement and an end plate mounted for rotation upon the outer end of said spindle, said plate having a modified but generally circular shape and being mounted for rotation on said shaft for movement between one position blocking the end of the blade and another leaving said end clear.

9. The combination of claim 8 including latch means for holding the spindle above a point near its upper limit of travel.

10. The combination of claim 9 wherein the latch operating means is located in a remote portion of the vehicle and the spindle block drops by gravity to position the end plate rim in ground-engaging contact.

11. In combination with a scraper-type material moving blade, a device for preventing end spill from one end of said blade including: a shaft arranged horizontally with respect to the path of movement of the scraper blade and extending outwardly of said one end of the blade, means for supporting and guiding said shaft for vertical movement, an end plate mounted for rotation upon the outer end of said shaft, said plate having a modified but generally circular shape and being mounted for rotation on said shaft for movement between one position blocking the end of the blade and another leaving said end clear, a braking surface connected to said plate, a brake shoe mounted on said shaft support for engagement with said brake surface, actuating means for said brake shoe and means on the vertical guide for operating the brake actuating means to engage the brake near the upper limit of shaft travel and to release said brake as the shaft moves downwardly.

#### References Cited in the file of this patent

UNITED STATES PATENTS

2,763,943 Lotz ----- Sept. 25, 1956