LATCH FOR DETACHABLE DEBRIS RECEPTACLE

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1. Claim. (Cl. 280—47.26)

The present invention relates to sweepers and more particularly to sweepers of the type employing a rotating brush, which brush in addition to sweeping, flings the debris into a receiver such as a basket.

One object of the present invention is to provide a novel latch for a sweeper of the type having a debris receptacle and a handle supporting means attached to the receptacle, said latch being adapted to readily detach the debris receptacle from the handle.

Another object of the present invention is to provide, for a sweeper of the type described, a latch detachably connecting the debris receptacle to the sweeper with such latch being of simple construction and readily openable.

Still another object of the present invention is to provide for a sweeper a latch of the type described which latch is readily opened yet urged towards closed position upon application of forces to the latch by the sweeper structure engaged thereby.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein preferred forms of embodiments of the invention are clearly shown.

In the drawings:

Fig. 1 is a perspective view of a sweeper constructed in accordance with the present invention;

Fig. 2 is a side elevation view, partly in section, of the sweeper of Fig. 1;

Fig. 3 is a partial, side elevation view illustrating in greater detail the lower end of the handle, the brush adjusting mechanism, and the lower receptacle to handle attaching bracket;

Fig. 4 is a side elevation view illustrating one of the side plates included in the frame, the gear wheel and pinion for rotating the brush;

Fig. 5 is a partial perspective view of the upper left receptacle to handle attaching bracket;

Fig. 6 is an end elevation view, partially in section, of the upper left receptacle to handle attaching bracket of Fig. 5;

Fig. 7 is a side elevation view of the upper right receptacle to handle attaching bracket.

Referring more in detail to the drawings, the sweeper shown includes a frame indicated generally at 10 which includes a pair of oppositely disposed side plates 11 and 12. Each of these plates is cast with a stationary axle means in the form of an insert 13, Fig. 4. A pair of spaced wheels 15 and 16 are rotatably mounted on the axle means and disposed on opposite sides of the frame. These wheels are encased in rubber tires 17, as shown in Fig. 1, which rest on the surface being cleaned.

A gear wheel 20, Fig. 4, is carried on each of the axles 13 and is covered by the wheel. The gears engage with pawls carried on the wheels 15 and 16 and are driven thereby. These pawls not shown, engage the inner teeth shown on the gears 20 and provide for driving the gears in one direction only. A pinion gear 23 engages the outer teeth shown on the gears 20 and in turn rotates the reel shaft 24 upon which a brush 25 is mounted. This brush is driven to rotate in a clockwise direction, as viewed in Fig. 2.

Top and bottom tie rods 27 and 28 are connected between the side plates in vertically spaced positions. These rods are secured at each end with set screws in the shoulders 28a formed in the side plates. A shoulder 29, in the form of an arcuate-shaped rib, projects inwardly from each side plate. As seen in Fig. 2, the lower shoulder or rib 29, and shoulder 28a are spaced vertically from one another. The intermediate shoulder 29 is spaced forwardly of the upper rod 27 and rearwardly of shoulder 28a.

The brush 25 is raised or lowered relative to the surface being cleaned by adjusting the position of the side plates with respect to the wheels about which they are free to pivot. To facilitate this adjustment the side plates are drilled, as indicated at 44, Fig. 4, so that each end of the top tie rod 27 extends through the opening 44. A square headed set screw 45, Fig. 1, retains rod 27 in place. The brush adjusting bracket 46, Fig. 3, is in the form of a casting having a slotted shank portion 47 and an elbow. This bracket is supported by the elbow which is drilled and pressed fitted over the outer end of the tie rod 27 projecting through the side plate. A carriage bolt and wing nut, as indicated are provided to hold the side plates in the adjusted position. Thus when the wing nut is loosened the side plates, which support the brush assembly, are free to slide up or down to the extent of the length of the slot in bracket 46.

A handle, generally indicated at 55, is provided for manipulating the sweeper. This handle is shown engaging at its lower end with the axle means 13. The lower handle section is flattened at one end and punched to provide an opening of sufficient diameter to snap over the end of the axle 13.

A bracket 51 having a curved top portion adapted to fit over the handle 55, is secured thereto by suitable means. The bottom part of the bracket projects below the handle edge and is provided with a slot 77 for receiving the forward end of the debris receptacle.

The debris receptacle 40 is formed with a flat bottom 65 of resilient sheet metal and canvas back and side walls as indicated at 66 and 67. The canvas back and side walls are formed with hems 74 through which the receptacle frame rod 75 and 76 are received. At the bottom the canvas is folded and the outer edges of bottom 65 crimped or folded over to grip the canvas. A pair of support rods 70, Fig. 2, for the receptacle are secured to the bottom 65 near the rear edge thereof. The upper ends of rods 70 are secured to loops 78 by screws 79. These loops are threaded onto horizontal rod portion 75 of the receptacle frame. The rods 70 are formed of resilient material and include the loop 72. Rods 70 normally urge the receptacle frame 75—76 upwardly and since the handle 55 is normally fastened to the frame, as will hereinafter be described, said rods 70 normally Yieldingly urge the handle upwardly. It will be noted that the debris receptacle is formed with an upwardly sloping bottom 71 which provides for sliding the debris rearwardly in the receptacle and prevents spilling when sweeping over rough surfaces.

Debris swept up by the brush is directed against the hood 32. This hood provides for discharging the debris backward over the brush and into the receptacle. The hood 32 is formed from a thin flat piece of resilient sheet metal. The lower end of the hood is inserted under the upper tie rod 27, over shoulder 29, and under the lower shoulder 28a, as seen in Fig. 2. The retaining or abrupt members 27, 28a and 29 support and form guide means frictionally holding the hood accurately in position through the inherent resiliency of the hood. When...
mounted the hood is held with its forward side engaging the upper and lower members 27 and 28a and its rear side engaging the intermediate member 29. The hood is thus slidably mounted and adjustable.

In operation, the sweeping tine 99 which is pivoted up or down within the bracket 46 until the brushes just touch the grass or surface to be swept. The hood 32 is then slid up or down to adjust it with respect to the surface being cleaned and then fastened in that position, and which adjustment does not substantially vary the angle of discharge of debris into the receptacle. By lowering the hood, the sweeper can be used on sidewalks and like surfaces since the sweepings from the brushes cannot be thrown forward of the sweeper.

Since the brush is carried by the side plates 11 and 12, and since the side plates are secured to the handle 55, the brush can be lowered by pushing downwardly on the handle. Thus the brush can be readily manipulated to sweep in dales in the lawn.

Referring to Figs. 5, 6, and 7, the means for removably attaching the upper end of the debris receptacle 40 to the handle 55 is shown in detail. An S-shaped latch portion 80 is secured to the handle 55 by means of the screws 83. The latch portion 80 is formed with a flat portion 85 to which a second latch portion or keeper 95 is pivotally mounted by means of the pivot 86 and washer 88. Latch portion 80 is formed with a T-shaped open slot having an entrance 96 which is opened to receive the crossrod 75 when the latch portion 95 is in the raised position shown by the dotted lines in Fig. 7. After the rod 75 is inserted through the slot entrance 96 it will rest in the slot portion 92. A similar slot portion 91 is provided in the latch portion 80 so that the same part design can be used for both the right and left side of the sweeper. Fig. 5 shows the latch portion 80 adapted for use in the left side. Fig. 7 shows the latch portion 80 adapted for use on the right side of the sweeper. It will be noted that latch portion 95 is formed with a notch 98 for confining the crossrod 75 in the slot portion 92 when the latch portion 95 is in the closed position. From the preceding description it is seen that the present invention provides a simple two piece latch construction which can be readily opened and closed for removing and attaching the debris receptacle to the sweeper handle. When the latch is in the closed position, there is no tendency for any forces applied to the latch, by rod 75, to open the door since the rod 75 is confined on three sides by the walls of slot 92, and on the fourth side by latch portion 96. Any force applied to latch portion 95, by the rod 75, must be the direction of the longitudinal axis of slot portions 91 and 92. Hence such force will tend to force latch portion 95 toward a more tightly closed position since any such force will tend to rotate latch portion 95 about its pivotal mounting in a direction of rotation which forces the latch towards the closed position. For example, in Fig. 7, any force applied to latch portion 95, by rod 75, will tend to rotate latch portion 95 in a counterclockwise direction as viewed in Fig. 7. Since resilient rods 70 yieldingly urge rod 75 upwardly against the keeper 95, such resilient force, as applied, yieldingly holds the keeper in latched position.

Thus the debris receptacle 40 can be readily attached to or detached from the sweeper frame 10. The handle portions of said frame means, debris receptacle means positioned to said handle means and extending downwardly therefrom, said receptacle means including a bottom plate, an upper, horizontally extending cross rod portion 101 which is carried by brackets 100, which depend from the bottom 65 of the sweeper.

While the form of embodiment herein shown and described constitutes a preferred form, it is to be understood that other forms may be adapted falling within the scope of the claim that follows.

We claim:

A lawn sweeper comprising frame means, wheels rotatably mounted at opposite sides of said frame means, generally U-shaped handle means secured to said frame at the free end of each leg portion adjacent said wheels for manipulating the sweeper, said handle means having side portions and a connecting top hand portion, said handle means extending upwardly and rearwardly from said frame means, debris receptacle means positioned to said handle means and extending downwardly therefrom, said receptacle means including a bottom plate, an upper, horizontally extending cross rod portion 101 which is carried by brackets 100, which depend from the bottom 65 of the sweeper.

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