ABSTRACT OF THE DISCLOSURE

A snow removal device which can be used as a snow shovel, a push-lift device, a scraper or pusher by adjusting the angle between the blade and the handle. Means are associated with the handle and the blade to effect such adjustment.

This application is a continuation-in-part of Ser. No. 551,014, filed May 18, 1966, now abandoned, and entitled “Snow Removal Device.”

The common snow shovel has, of course, been well known and widely used for many years. While such device works quite well when there is an accumulation of snow, it is not very efficient or effective for the removal of light, shallow snow or light snow which has been packed down to any extent, as when it is partly frozen or in the form of ice. Under such conditions, it is highly desirable to have a different type of implement such as a scraper which can cut and break up the hard compact snow surface. The necessity of utilizing two separate instruments is, however, inefficient and disconcerting and, additionally, makes it necessary to have a second such device available.

There are also certain disadvantages with the common snow shovel in the removal of heavy or deep snow, since such device is extremely limited with respect to the quantity of snow which one shovelful can remove. It is thus quite desirable in such situations to have a device which can be used as a pusher to facilitate the removal of large quantities of snow with a minimum amount of effort. Although some devices of this type have been known prior to this invention, they are intended to be used only as snow scoops or plowlike devices and are not capable of adjustment for the other uses set forth above.

A heavy snow shovel has also been disclosed heretofore which can be used as a pusher. When used in the pusher position, however, the blade is essentially perpendicular to the snow covered surface which has the disadvantage of binding when the blade strikes a protruding rough surface. To remove large quantities of light, deep snow with a minimum amount of effort, it is desirable to have the blade in such nearly perpendicular position, and accordingly the present invention represents a distinct improvement over such device in that, when in the pusher-shovel position, the binding characteristics of such device are minimized, but the desirable pusher features are retained. Similarly, when the pusher-shovel position of the present invention is used, the device assimilates the desirable versatile and easy-to-operate characteristics of the common shovel and thereby minimizes the disadvantages of the common snow shovel and the previously disclosed pushing device while retaining the desirable features thereof.

Additionally, conventional snow shovels are not adequate for pushing or piling up light snow. There is no known variation of the common snow shovel which can be used to push, lift and discharge the snow in one movement as when piling snow. Thus, the present invention is particularly unique in being capable of pushing, lifting and discharging light snow in one movement, as will be explained more fully hereinafter.

It is a principal object of the present invention, therefore, to provide a snow removal device which can be adjusted to be capable of use as a shovel, a push-lift device, a scraper or a pusher.

Yet another object of this invention is the provision of a device which is sufficiently versatile in its characteristics to be capable of removing large quantities of light, deep snow with a minimum of effort.

It is an additional object of this invention to provide a snow removal device in which light snow can be pushed, lifted and discharged in a single movement.

A further object of this invention is the provision of a snow removal device which is relatively light in weight and of sufficiently simple construction to be readily usable by practically any individual.

Other objects, features and advantages of this invention will become apparent to those skilled in the art after a reading of the following, more detailed description of the invention.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawings:

FIG. 1 is a fragmentary perspective view of the rear side of one form of the snow removal device of this invention;

FIG. 2 is a section view taken along line 2—2 of FIG. 1;

FIG. 3 is a fragmentary end view taken upon line 3—3 of FIG. 2;

FIG. 4 is a perspective view illustrating the front side of the snow removal device;

FIG. 5 is a fragmentary perspective view of the rear side of a modified form of this invention;

FIG. 6 is a section view taken upon the line 6—6 of FIG. 5;

FIG. 7 is a fragmentary end view taken upon line 7—7 of FIG. 6; and

FIG. 8 is a fragmentary section view taken upon line 8—8 of FIG. 7.

Referring now more particularly to FIGS. 1—4 inclusive, the snow removal device of this invention is designated generally by the numeral 1 and comprises a blade 2 and a handle attachment means 3 connected to the blade. The adjustment means or mechanism is designated generally as numeral 4 and includes a latch member 5 associated with and connected to the handle H. As shown, most clearly in FIG. 2, the handle in the uppermost shovel position is substantially flush against the rear side of the blade and thus serves to support the blade as the device is used. The handle attachment includes, in this embodiment, a pair of flanges 6 extending outwardly therefrom, each of which has a series of teeth 8 which are adapted to be engaged by the latch member and thereby prevent the handle from undesired movement. A cross bolt 9 extends between the two flanges to provide rigidity to the adjustment mechanism; other conventional means such as rivets, etc., may, of course, be used in lieu of bolt 9, if desired. A helical spring 10 encircles the handle and, as shown more clearly in FIG. 2, is in contact with the latch member adjacent the transversely extending projection 11 on the lower end thereof. In this embodiment, a pair of annular rings 11 and 12 are also provided on movement as when piling snow. Thus, the present invention is particularly unique in being capable of pushing, lifting and discharging light snow in one movement, as will be explained more fully hereinafter.

It is a principal object of the present invention, therefore, to provide a snow removal device which can be adjusted to be capable of use as a shovel, a push-lift device, a scraper or a pusher.

Yet another object of this invention is the provision of a device which is sufficiently versatile in its characteristics to be capable of removing large quantities of light, deep snow with a minimum of effort.

It is an additional object of this invention to provide a snow removal device in which light snow can be pushed, lifted and discharged in a single movement.

A further object of this invention is the provision of a snow removal device which is relatively light in weight and of sufficiently simple construction to be readily usable by practically any individual.

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FIG. 5 is a fragmentary perspective view of the rear side of a modified form of this invention;

FIG. 6 is a section view taken upon the line 6—6 of FIG. 5;

FIG. 7 is a fragmentary end view taken upon line 7—7 of FIG. 6; and

FIG. 8 is a fragmentary section view taken upon line 8—8 of FIG. 7.

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the handle between which the helical spring extends, although other suitable limiting means may also be used. A reinforcing tab 13 is provided at the bottom of the blade to facilitate removal of snow or the breaking up of compacted snow or ice. As can also be clearly seen in FIGS. 1, 2 and 4, the blade is curved slightly from the end 13 to the upper end, which facilitates its use as a snow shovel.

As shown in FIG. 2, the handle 14 is pivotally attached to the blade 2 as at 14 whereby it may be moved relative to the blade. As thus shown, the handle may be positioned at different angles with respect to the blade, the transversely extending lower projection of the latch member being positioned in the appropriate slot 7 in flanges 6 to lock and secure the handle in the desired position. If the device is to be used as a conventional shovel, the handle will, of course, be locked in the uppermost position shown in phantom lines whereas if a scraping device is desired, the handle will be in the intermediate position as shown in full lines in FIG. 2. If it is desired to use the device as a plow, the handle will be positioned as shown in the lower phantom line. It will thus be appreciated that merely by raising the latch member 5 and thus compressing the spring 9, the latch will be easily removed from the slot, and the handle may then be readily pivoted about its axis for the desired adjustment.

As shown in FIGS. 1-4, the handle 14 has an extended heel or socket 21 attached thereto by bolts, rivets, welding, etc. The socket has notches 22 and 23 therein into which the lower portion or latch of latch member may be inserted to adjust the angle between blade 20 and handle 25. The extended heel preferably has the upper edges thereof bent over and folded adjacent the heel as shown at 26 to rigidify the same. For this purpose, the heel may also have reinforcing groove 27 therein.

The latch mechanism is attached to the handle by bolts 30 and 31 and includes a latch 32 which is reciprocably mounted in bracket 33 for insertion and removal from the notches to provide the desired adjustment. In order to secure the latch within the notches, the bracket 33 is folded and bent slightly, as shown at 35 in FIG. 8, and the engagement with latch 32 is doubled and folded closely adjacent itself as at 36 to provide a snug, spring fit between the latch and the bracket 33 and hence insure that the latch will remain in the position desired. The latch and bracket may be of spring steel to facilitate the necessary spring fit, and the latch may be aluminum and the bracket steel to provide increased friction therebetween. The bolt 31 in conjunction with slot 37 serves as the stop means to prevent the latch from being withdrawn from the bracket when raised.

In the embodiment of FIGS. 5-8, only two notches are shown, which function as the shovel and push-lift or scrapper positions. If it is desired to use the device in the pushing position, the latch can be raised and the handle moved relative to the blade until the latch has cleared the back surface of extended heel 21. When this occurs, the latch 32 will be lowered until the bottom surface thereof contacts the upper surface of heel 21. Since the handle is pivotally attached to the adjustment mechanism through bolt 37, it will, of course, remain in the desired position. This embodiment, therefore, eliminates a pair of notches in the adjustment means but retains the versatility of the device and permits adjustment to the desired positions.

The embodiment illustrated in FIGS. 5-8 has a further advantage in that, because of the extended heel, snow will not come in contact with the handle and attachment mechanism at the point of connection to the shovel, which might tend to hinder operation of the device due to the presence of frozen or tightly compacted snow therein. The extended heel also provides sufficient rigidity so that this cross bolt 8 of the FIGS. 1-4 form may be eliminated.

As set forth below, one of the objectives of the present invention is the provision of a device with which light snow can be pushed, lifted, and discharged in a single movement. Not only can this objective be achieved by locking the blade in the intermediate position as used in piling snow, but, also, by releasing the latch mechanism to permit free swinging movement of the blade as set forth below. The latch mechanism of FIGS. 5 through 8 is easier to release than the latch mechanism of FIGS. 1 through 4 since it is not spring-biased to engage the flange or heel, but it will be apparent that a hook or other such arrangement could readily be used to retain the latch mechanism of FIGS. 1 through 4 out of engagement with the notches 7. The range of movement of the blade when thus freed may extend from the push position to the shovel position, or such movement toward the shovel position may be limited as by inserting a stop such as a pin or bolt 40 into the notch 22.

With the blade free to move as above described, a natural downwardly inclined pushing effort applied through the handle will cause the blade to swing against the block 40 as the blade is pushed along the ground to push the snow in front of the blade. When a blade full of snow has thus been accumulated, one need only release the pushing effort from the handle and the snow will be automatically assumed the pushing position as it is lifted and hence facilitate discharge of the snow therefrom.

The shovel will, of course, normally be made out of metal, preferably a light material such as aluminum, although other materials such as cast iron may be used provided they are naturally used in conventional snow shovels may be employed. Alternatively, suitable plastic materials may be used for the blade or the handle or both, if desired.

If, therefore, particularly point out and distinctly claim as my invention:

1. A snow removal device comprising a blade, an extended heel mounted on said blade having notches in the upper portion thereof, a handle connected to said extended heel, a bracket mounted on said handle having a latch member reciprocably mounted therein for engagement with said notches in said extended heel, whereby the angle between said blade and said handle may be adjusted, the upper edges of said extended heel being bent over and folded adjacent said blade for facilitating the retention of said latch member therein, and the lower portion of said latch member being doubled and folded closely adjacent itself to provide a spring fit between said latch and said bracket.

2. A snow removal device comprising a blade, handle attachment means mounted on said blade, a handle connected to said attachment means, means associated with said handle adapted to cooperate with said attachment means to adjust the angle of said blade with respect to said handle, said attachment means comprising an extended heel mounted on said blade and including means in the upper portion thereof with which said means associated with said handle cooperate to adjust the angle of said handle with respect to said blade, said means associated with said handle comprising a bracket mounted on said handle having a latch member reciprocably mounted therein for engagement with said means in said extended heel, said bracket being bent slightly to facilitate the retention of said latch member therein, and the lower portion of said latch member being doubled and folded closely adjacent itself to provide a spring fit between said latch and said bracket.

3. A snow removal device comprising a blade, a handle pivotally attached to said blade for pivotal movement between a first position wherein said handle is substantially flush against the rear side of said blade for shoveling snow and a second position wherein said blade is sub-
stantially perpendicular to said handle for pushing snow, latch means for locking said blade in either of said first and second positions, and means for retaining said latch means in a position permitting free swinging movement of said blade during use, whereby a downwardly inclined pushing force applied through said handle will cause the blade to move in the direction of said first position as the blade is pushed along the ground for pushing snow in front of the blade, and releasing the pushing force will permit the blade automatically to move toward the second position to facilitate discharge of the snow therefrom.

4. The snow removal device of claim 3 further comprising releasable stop means for limiting the movement of said handle toward said first position during such free swinging movement thereof.

5. The snow removal device of claim 3 wherein said latch means comprises an extended socket on said blade for receipt of said handle, said socket having notches in the upper portion thereof engageable by a latch member carried by said handle, a bracket on said handle, said latch member being closely slidably received in said bracket, said bracket being bent slightly to facilitate retention of said latch member therein, and stop means to prevent said latch member from being withdrawn from said bracket.

6. The snow removal device of claim 5 wherein the lower portion of said latch member is doubled and folded closely adjacent itself to provide a spring fit between said latch member and said bracket.

7. The snow removal device of claim 3 wherein said latch means comprises an extended socket on said blade for receipt of said handle, said socket having notches in the upper portion thereof engageable by a latch member carried by said handle, said extended socket including reinforcing means in the upper portion thereof to rigidify the same, said reinforcing means comprising the upper edges of said extended socket bent over and folded adjacent said socket.

8. A snow removal device comprising a blade, a handle pivotally attached to said blade for pivotal movement between a first position whereat said blade is substantially inclined with respect to said handle for shoveling and pushing snow and a second position whereat said blade is substantially perpendicular to said handle for pushing snow, latch means for locking said blade in either of said first and second positions, and means for retaining said latch means in a position permitting free swinging movement of said blade during use, whereby natural pushing force applied against said handle will cause the blade to move in the direction of said first position as the blade is pushed along the ground for pushing snow in front of the blade, and releasing the pushing force will permit the blade automatically to move toward the second position to facilitate discharges of the snow therefrom.

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