E. G. WOOD.

SNOW SCRAPER.

APPLICATION FILED JULY 10, 1915.

1,161,275.

Patented Nov. 23, 1915.

Fig. 1.

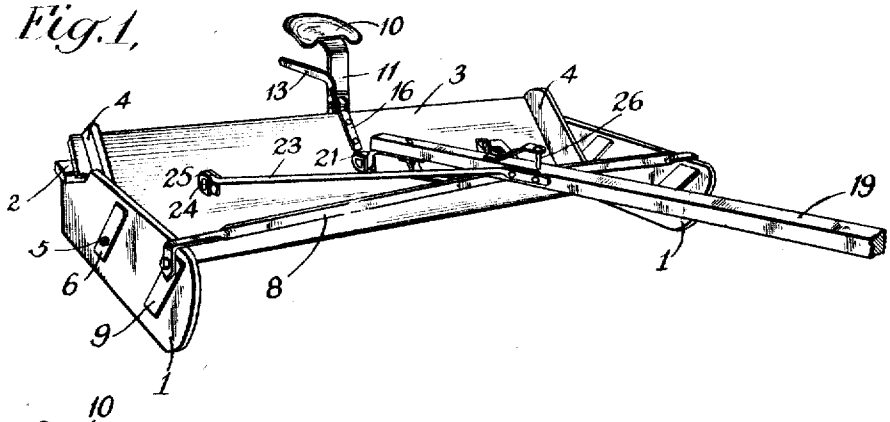


Fig. 2.

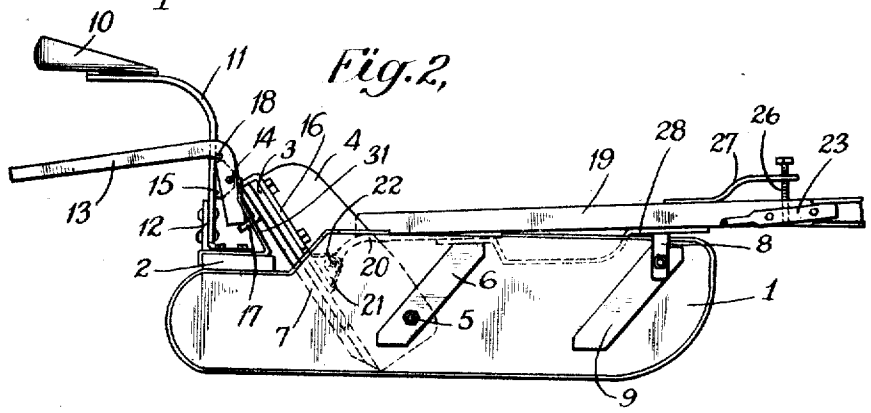
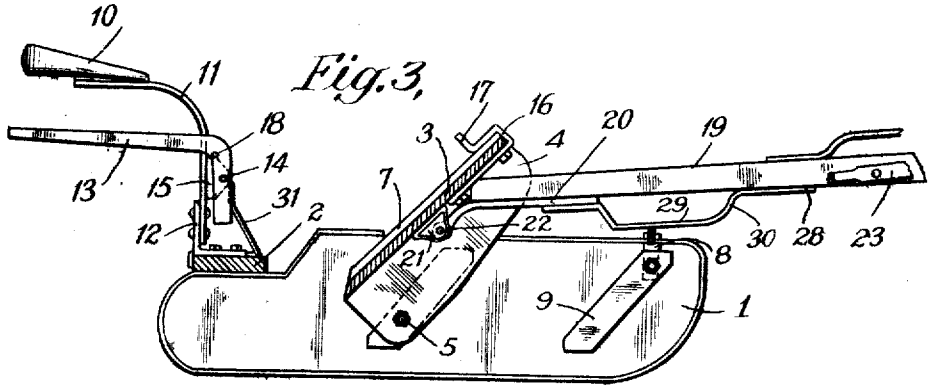


Fig. 3.



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SNOW-SCRAPER.

1,161,275. Specification of Letters Patent. Patented Nov. 23, 1915.

Application filed July 10, 1915. Serial No. 39,162.

To all whom it may concern:

Be it known that I, ELLIS G. WOOD, a citizen of the United States, residing at Hudson, in the county of Columbia and State of New York, have invented certain new and useful Improvements in Snow-Scrapers, of which the following is a specification.

My invention relates to a scraper for removing snow and ice chips from ice fields in order that the ice may be harvested, and particularly to that class of snow scraper which is adapted to be drawn by horses.

I have provided an improved construction with the general object of increasing the rapidity, efficiency and economy with which the snow may be removed.

More particularly, my improved construction provides a seat upon which the operator can ride, which makes it easier for him not only in going over the level ice, but also in passing through the heavy snow or dump where the snow has been piled. The weight of the operator on this seat also increases the pressure upon the scraper which is desirable in many conditions of snow.

My construction also provides a manually operable device, preferably a latch and lever construction, which may be operated either from the seat or while the operator is walking on the ice, to permit the dumping and inverting of the scraper, upon operation of the lever to remove the same from contact with the latch plate.

Another feature of my invention consists in the manner in which the pole for drawing the scraper is secured and supported. I have so arranged the support for the pole as to relieve the horses from carrying the weight of the pole upon their collars, both when the scraper is operating, and when it is being returned over the snow in inverted position. The pole and the braces therefor lead directly to the scraper plate, thus making the pull quite uniform throughout the entire length of the scraper, the pole and braces also being of advantage, in the manner in which they are located, in that they help to prevent the snow from passing over the top edge of the scraper plate.

Other objects of my invention consist in the details of construction and combinations of parts to be particularly described and pointed out in the following specification and appended claims.

In order that a clearer understanding of my invention may be had, attention is hereby directed to the accompanying drawings forming part of this application and illustrating certain embodiments of my invention.

In the drawings, Figure 1 represents a front perspective view of my improved scraper with the scraper plate in operative position, Fig. 2 represents a side elevation of the same, and Fig. 3 represents a vertical section parallel to one of the side runners of the construction, the scraper plate being shown in inverted position.

Referring to the drawings, side runners 1, 1 are provided, each of which is of reduced height at the rear, a transverse frame member 2 extending across and being secured to the runners at the rear portions thereof of reduced height. The scraper plate 3 extends transversely between the runners and is provided with forwardly extending sides 4, 4. The scraper plate is pivotally supported by bolts or studs 5, one of which extends through a side member 4 of the scraper plate and the adjacent runner 1 at each end of the scraper plate. Each side runner 1 is provided with a reinforcing metal plate, through which the pivot bolt 5 extends. The scraper plate 3 is of wood, preferably being formed of matched boards, reinforced on the rear thereof with transverse metal straps 7, the scraper plate being provided at its lower edge with a metallic scraper knife. The side members 4 of the scraper plate and the runners 1 are also preferably of wood. A metallic front cross brace 8 extends across the front of the runners 1 and has downturned ends which are secured to the outer sides of the runners, through metal reinforcing straps 9.

The operator's seat 10 is mounted on a metallic seat post 11, which is secured by means of an angle 12 to the transverse frame member 2. The hand-lever 13 is pivotally supported at 14 from a plate 15 secured to post 11. A metallic latch plate 16 is secured to the scraper plate 3, to extend about the upper edge of the same, this latch plate having an outwardly bent end 17 extending substantially at right angles to the rear surface of scraper plate 3 as shown.

When the scraper is being operated, the flange 17 of latch plate 16 abuts against the lower end of lever 13 as shown in Fig. 2,

the scraper plate being maintained at a suitable rearwardly inclined angle for scraping. The pivots 5 of the scraper plate being near the lower portion thereof, there is a constant tendency of the scraper plate during operation to swing forwardly about pivots 5 into the inverted position shown in Fig. 3. This movement is prevented during the scraping operation by the contact of latch plate 17 with the lower end of lever 13, the lever 13 normally standing during operation in the position shown in Fig. 2, the weight of the rearwardly extending handle portion of the lever maintaining the lever in this position, in which a stop pin 18 secured to the lever contacts the seat post 11. The pressure exerted by plate 17 against the lower end of the lever during the scraping operation is directed substantially in line with the pivot 14 of the lever so that there is no tendency to cause the oscillation of the lever. When it is desired to dump the snow which has been scraped, lever 13 is raised to remove its lower end from contact with the flange 17 of the latch plate, whereupon as the scraper is moved forwardly, the pressure of the snow against the lower edge of the scraper plate causes the same to swing forwardly about pivots 5 into the inverted position shown in Fig. 3, thus dumping the snow. To return the scraper to normal position, it is only necessary to back the horses slightly, when the scraper plate will swing back into the position shown in Fig. 2 in which it may be retained by the engagement of lever 13 with the latch plate.

The pole 19 has secured to the rear end thereof a metal strap 20, the flattened end of which extends between a pair of ears 21 of a metal casting which is secured to the central portion of the forward side of scraper plate 3. A horizontally arranged pin 22 extends through the ears 21 and the end of member 20 to form a pivot about which pole 19 may oscillate in a vertical plane. A pair of diagonal braces 23 are secured to the opposite sides of pole 19, the rear ends of braces 23 being pivoted as shown at 24 to the scraper plate toward the opposite ends of the same and in substantially the same horizontal plane as the pivot 22 for the pole, pivot pins 24 for the braces each being mounted in a casting 25 similar to that in which the pivot pin for the pole is mounted. The pin 26 on which the whiffle-tree may be mounted extends upwardly from pole 19 and is held rigidly in position by the metal strap 27 secured to the pole.

A metallic pole supporting member 28 is secured to the under side of pole 19 and is adapted to rest upon the forward cross brace 8 to support the pole and thus take the weight of the same off the collars of the horses. In the form of my invention illustrated, member 28 has a forward portion secured directly to the under side of the pole, which rests upon cross brace 8 when the scraper is in its operative position, as shown in Fig. 2. Member 28 has a portion 29 to the rear of the forward portion referred to, portion 29 being bent downwardly, and joined to the forward portion of the member by a curved portion 30. When the scraper plate is inverted, the pole moves forwardly so that it is supported by contact of portion 29 of member 28 with the cross brace 8, as shown in Fig. 3. This arrangement is used in order that the angle which the pole makes with the horizontal shall be approximately the same when the scraper is inverted as when it is in its normal operative position in order to keep the weight of the same off the collars of the horses. It is evident that since the pivotal support 5 of the scraper plate is forward of the pivotal connection of the pole with the scraper, that this pivotal connection 22 rises, when the scraper is oscillated into its inverted position so that the forward end of the pole would be lowered, if some such means as that at 29 were not provided.

From the construction described, it is obvious that the pole of the scraper is supported, both when the scraper is operated and when it is being returned inoperatively over the snow, in such a manner that the weight of the pole is not borne by the horses. Since the pole and the braces therefor lead directly to the scraper plate as illustrated, the pull on the same is distributed quite evenly throughout the entire length of the scraper. Furthermore, the pole and braces as arranged help to keep the snow being dragged by the scraper plate from passing over the top edge of the same, especially when the snow is light, the pole and braces therefor enabling the scraper to carry a larger load than it otherwise would.

Having now described my invention, what I claim as new therein and desire to secure by Letters Patent is as follows:

1. In a snow scraper, the combination of side runners, a transverse frame member extending between the same, a transverse scraper pivotally supported adjacent its lower edge to said runners, and means for maintaining the scraper in slanting position for scraping, comprising an angular lever pivotally supported from said frame member with one arm extending rearwardly and its other and shorter arm extending forwardly and downwardly, and a latch plate secured to said scraper and extending rearwardly from the same, below the upper edge of the scraper, the upper rear surface of said scraper being adapted to rest against the forward arm of said lever with said latch plate contacting with the bottom edge of

said arm, said lever being movable out of line with said latch plate to permit the forward oscillation of said scraper into inverted position, substantially as set forth.

2. In a snow scraper, the combination of side runners, a scraper plate extending between the same, and having an operative rearwardly and upwardly slanting position, pivotal supports for said scraper plate in said runners, forward of the scraping edge of said scraper plate, a pole pivotally secured by a horizontal pivot to the forward side of said scraper plate to the rear of the pivotal supports of said plate, when the latter is in operative position, a cross-brace extending between the forward portions of said runners, and a pole support, secured to said pole and bearing upon said cross-brace, said pole support having a forward upper portion adapted to bear upon said cross-brace when said scraper plate is in operative position, and a downwardly offset portion adapted to bear upon said cross-brace when said scraper plate is oscillated forwardly into inverted position, substantially as set forth.

3. In a snow scraper, the combination of side runners, a scraper plate extending between the same, and having an operative rearwardly and upwardly slanting position, pivotal supports for said scraper plate in said runners, forward of the scraping edge of said scraper plate, a cross member extending between the forward edges of said runners, a pole adapted to slidingly bear upon said cross-member, and a horizontally arranged pivotal connection between the inner end of said pole and the forward side of said scraper plate, said plate being adapted to be swung forwardly into inverted position, and the bearing portions of said pole adapted to rest upon said cross member, being provided with surfaces at different distances below the axis of said pole, so that said pole maintains substantially the same angle to the horizontal in its forward and rear positions, corresponding to the inverted and operative positions, respectively, of said scraper plate, substantially as set forth.

This specification signed and witnessed this 16th day of April, 1915.

ELLIS G. WOOD.

Witnesses:
J. J. BRYAN,
BENEDICT GIFFORD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

Correction in Letters Patent No. 1,161,275.

It is hereby certified that in Letters Patent No. 1,161,275, granted November 23, 1915, upon the application of Ellis G. Wood, of Hudson, New York, for an improvement in "Snow-Scrapers," an error appears in the printed specification requiring correction as follows: Page 1, line 83, after the word "plate" insert the reference-numeral *6;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 7th day of December, A. D., 1915.

[SEAL.]

R. F. WHITEHEAD,

Cl. 37—5.

Acting Commissioner of Patents.