(No Model.)

G. A. BIRCH.

SNOW SCRAPER.

No. 404,952. Patented June 11, 1889.

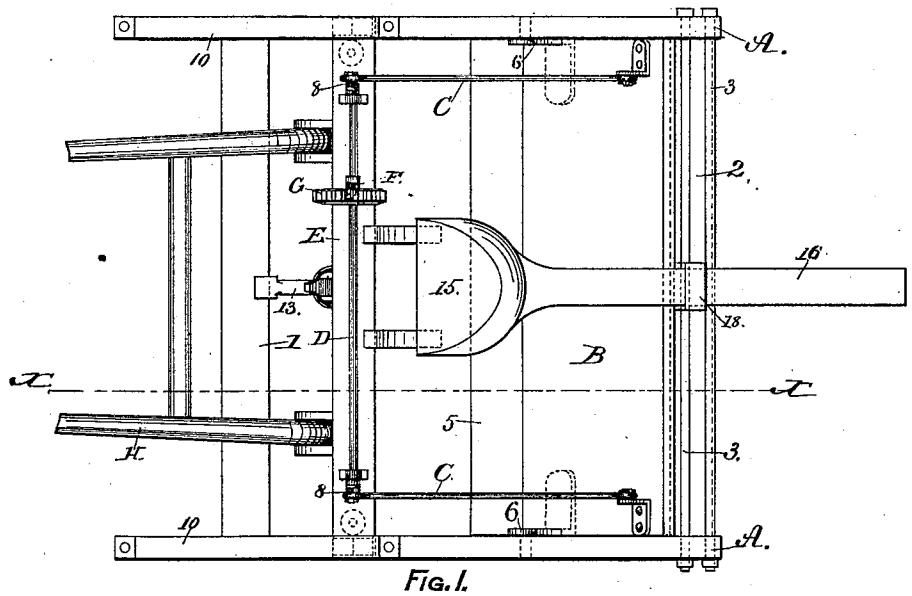


FIG. 1.

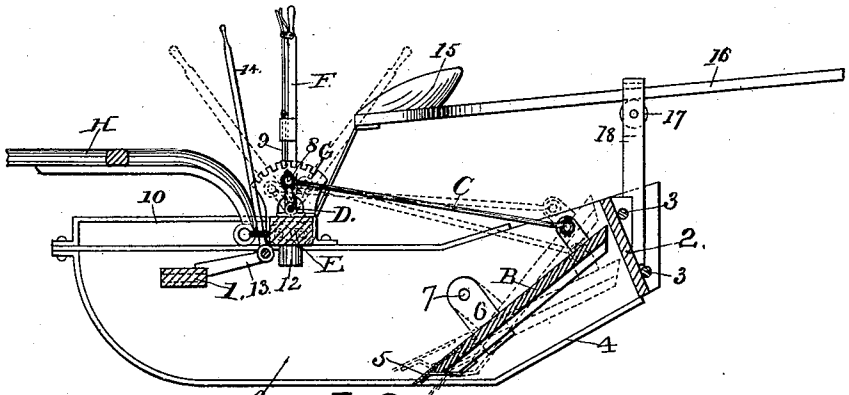


FIG. 2.

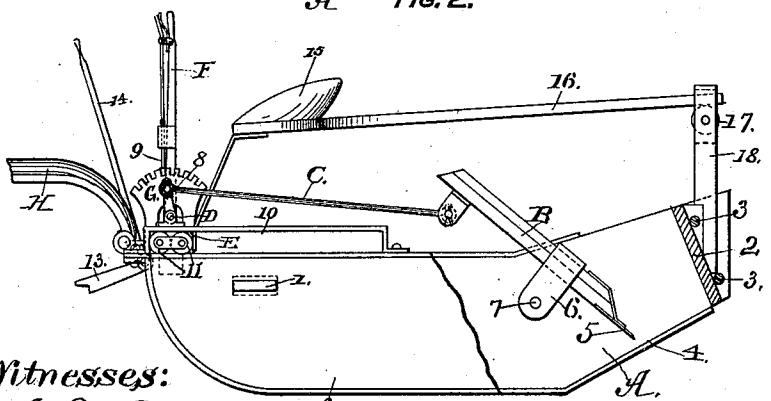


FIG. 3.

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UNITED STATES PATENT OFFICE.

GEORGE A. BIRCH, OF EAST GREENBUSH, NEW YORK.

SNOW-SCRAPER.

SPECIFICATION forming part of Letters Patent No. 404,952, dated June 11, 1889.

Application filed March 3, 1888. Serial No. 266,083. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. BIRCH, of East Greenbush, in the county of Rensselaer and State of New York, have invented new and useful Improvements in Snow-Scrapers, of which the following is a specification.

This invention relates to improvements on the snow-scraper for which Letters Patent of the United States No. 360,196 were granted me on the 29th day of March, 1887, and the object of this present improvement is to render the apparatus more effective in its operation. This object I attain by the mechanism illustrated in the accompanying drawings, which are herein referred to and form part of this specification, and in which—

Figure 1 is a plan view of my scraper with the face-board adjusted in position for scraping. Fig. 2 is a longitudinal section of the same at the line X X; and Fig. 3 is a side elevation with the nearest runner broken away, showing the face-board in position for dumping the snow therefrom.

As represented in the drawings, A designates the sleigh or runners on which the face-board or scraper is mounted for the purpose of moving it from place to place. Said runners are rigidly connected at a required distance apart by means of a cross-tie 1 near their forward end, and near the rearward end by a back-board 2 and tie-bolts 3. The under side of said runners at the rearmost end have an upwardly-inclined face 4, on which the weight of the apparatus and its superimposed load is borne when it is being drawn up a hillside. The back-board 2 forms a stationary back piece for the face-board B when the latter is loaded or is accumulating its load.

B is the face-board or scraper, which has the rearmost side of its lower edge beveled upwardly to form a scraping-edge at that point, which is provided with a metallic strip or shoe 5 to give it greater endurance for wear. Said face-board is loosely fitted between the runners A, and is provided at each end with a lug 6, having a trunnion 7 projecting laterally therefrom, the same forming offset pivots on which said face-board can be tilted, and whereby the scraping-edge of said face-board will be raised from the surface of the ice, as indicated by dotted lines in Fig. 2, when required to stop the apparatus from scraping or for passing over any slight obstruction. The face-board B is connected by means of rods C to the cranks 8 of a transverse shaft D, that is journaled on a sliding cross-bar E. The rods C are pivoted to the face-board B, so as to form a flexible joint therewith. The shaft D is provided with a hand-lever F, having a spring-bolt 9, which is fitted to engage in the notches of a quadrant G, so as to rock said shaft and hold it at any point of its movement, and thereby change the angle of inclination of the face-board B, as indicated by dotted lines in Fig. 2, to suit the requirements of the occasion.

The sliding cross-bar E is fitted to slide in loops 10, which are secured to the upper edge of the runners A at the foremost part of the latter, and to facilitate the sliding movement of said cross-bar it is preferably provided with rollers 11 at each end, and upon its under side with rollers 12, which bear against the inner sides of the runners to prevent any endwise movement of said cross-bar. Shafts H for a single horse or a pole for a team of horses is attached to the cross-bar E, so that the strain applied by the animal-power will act directly upon said cross-bar. To the forward edge of the latter there is pivoted a drop-latch 13, which is fitted to engage with the cross-tie 1 of the runners, so as to secure the cross-bar E in its rearmost position while the apparatus is performing its work of scraping. A hand-lever 14 is formed or fixed upon the drop-latch 13 for disengaging the latter from the cross-tie 1, so that the cross-bar E can be drawn forward to the foremost end of the loops 10, and thereby effect the tilting over of the face-board B into the position shown in Fig. 3 for the purpose of dumping the load of snow from said face-board.

A driver's seat 15 is supported by the sliding bar E, and is provided with an arm 16, which extends rearwardly therefrom, and which is supported on a roller 17, that is journaled in a stud 18, which is secured to a stationary part of the apparatus. By this arrangement of the driver's seat the driver is enabled to remain in the same position in respect to his distance from the horse during all changes of the position of the sliding bar E.

My snow-scraper operates in the following manner: The scraper with the animals hitched thereto being on the ice-field, with the scraping-edge of the face-board regulated to penetrate to the required depth into the snow, the animals are started forward to draw the scraper, and the snow that is thereby removed from the ice will be forced up onto the face-board B until the required load is accumulated thereon. Then the driver, by means of the hand-lever F, tilts the face-board to raise its scraping-edge clear from the surface of the ice, the weight of the load on the face-board is borne on the runners A, and in this condition it is drawn to the dumping-ground. On reaching the latter the driver, without stopping the movement of his horses, raises the outer end of the drop-latch 13 to release the sliding bar E, thereby leaving the latter free to move forward independently of any movement of the runners A, and by this forward movement of the sliding bar E the face-board B is caused to tilt over and dump the load that has been resting thereon. The apparatus, with its face-board still overturned, is then drawn from the dumping-ground to the ice-field, and on reaching the latter the horses are backed to push the sliding bar E rearwardly until the drop-latch 13 becomes re-engaged with the cross-tie 1, and in accomplishing this latter movement the face-board B is restored to its position for scraping.

It will be seen that the stationary back-board 2, which is permanently secured to the runners A, forms a back piece for the face-board B, which projects above the uppermost edge of the latter when arranged in position for scraping, and thereby forms a guard to prevent the snow, when it is passing up the inclined face of the face-board, from falling over the upper edge of said face-board to the ice from which it has just been removed.

I claim as my invention—

1. In a snow-scraper, the combination of a sleigh or runners provided with a tilting face-board that is loosely fitted thereto, and a sliding cross-bar to which the animal-power is attached, and which is provided with a latch that is fitted to engage with a fixed part of said sleigh, the said sliding cross-bar being connected by pivoted rods to said face-board, as and for the purpose herein specified.

2. In a snow-scraper, the combination of a sleigh or runners provided with a loosely-fitted tilting face-board, a sliding cross-bar to which the animal-power is attached, and which is provided with a latch that is fitted to engage with a fixed part of said sleigh, and a rocking crank-shaft journaled on said cross-bar and provided with a hand-lever having a spring-latch that is fitted to engage in a notched quadrant, the cranks of said rock-shaft being connected by pivoted rods to said face-board, as and for the purpose herein specified.

3. In a snow-scraper, the combination of a sleigh or runners provided with a stationary back-board, and a tilting face-board, which is loosely pivoted directly to said runners and whose uppermost edge is fitted to lie in close proximity to the face of said back-board, and the latter projecting above the uppermost edge of said face-board, so as to form a guard which will prevent the snow from escaping over the upper edge of the face-board, as and for the purpose herein specified.

4. In a snow-scraper, the combination of a sleigh or runners provided with a standard having a friction-roller journaled therein, and a sliding cross-bar having a driver's seat erected thereon, said seat being provided with a rearwardly-projecting arm which bears upon said friction-roller, as and for the purpose herein specified.

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