

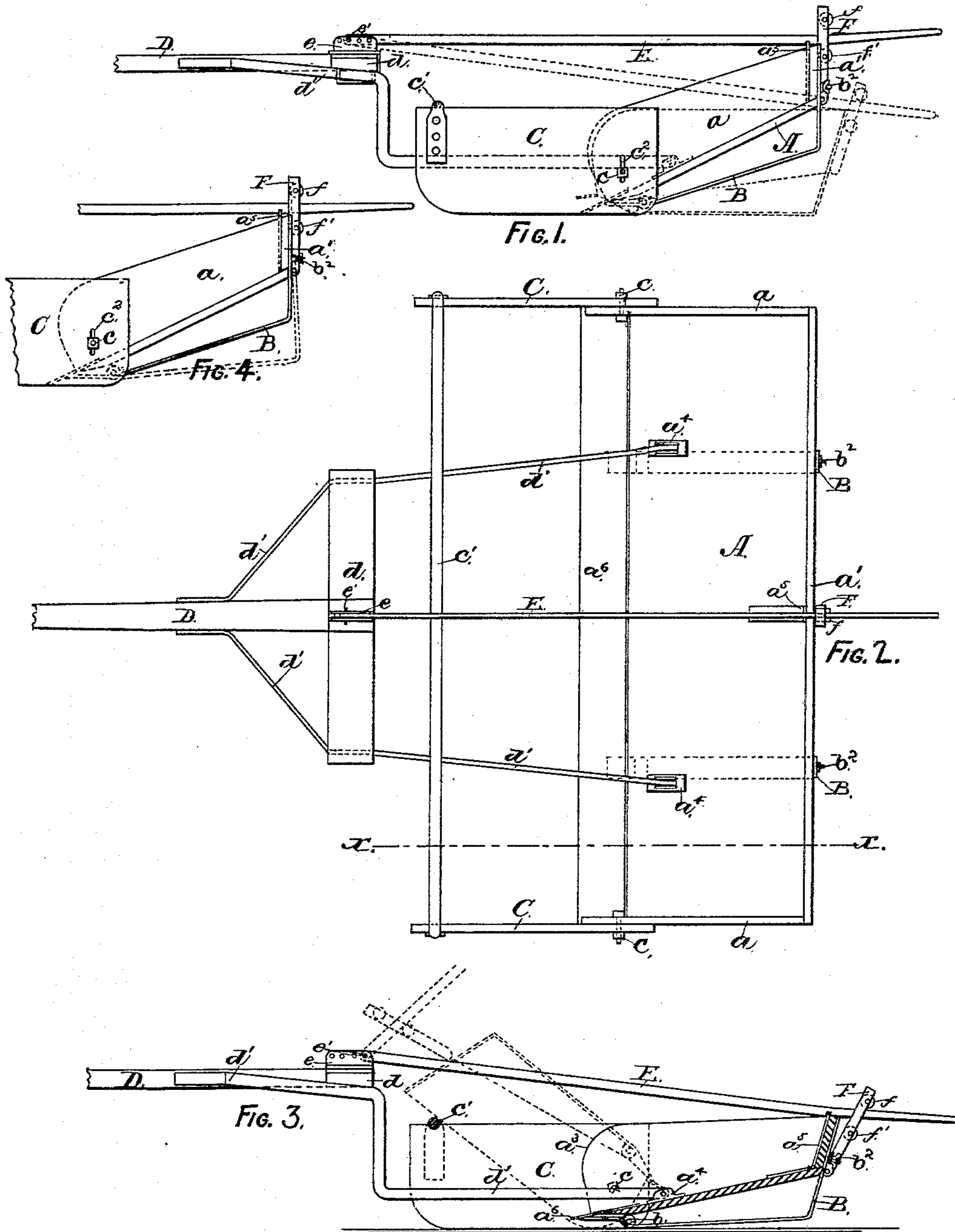
(No Model.)

2 Sheets—Sheet 1.

G. A. BIRCH.
SNOW SCRAPER.

No. 323,491.

Patented Aug. 4, 1885.



Witnesses:
S. B. Brewer,
Chas. F. Scattergood.

Inventor:
Geo. A. Birch,
by William H. Low,
Attorney.

(No Model.)

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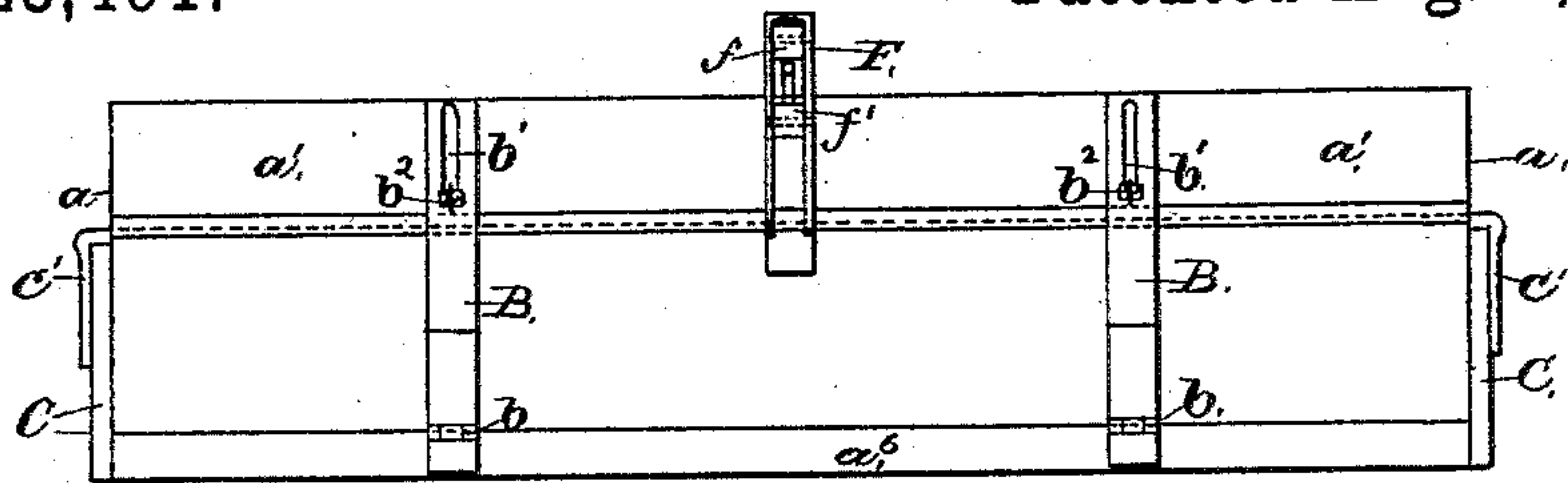


FIG. 5.

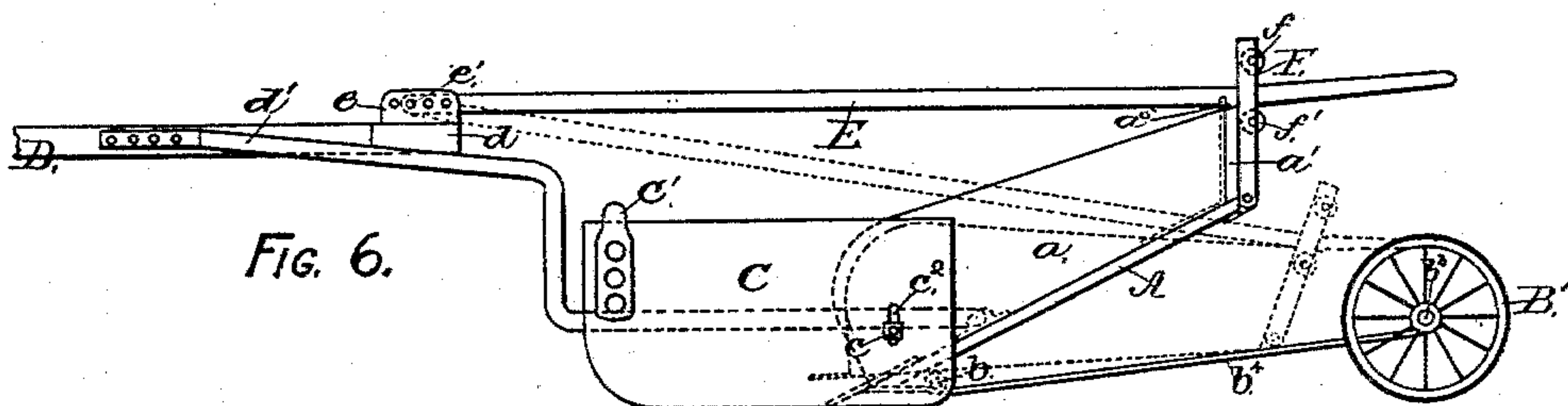


FIG. 6.

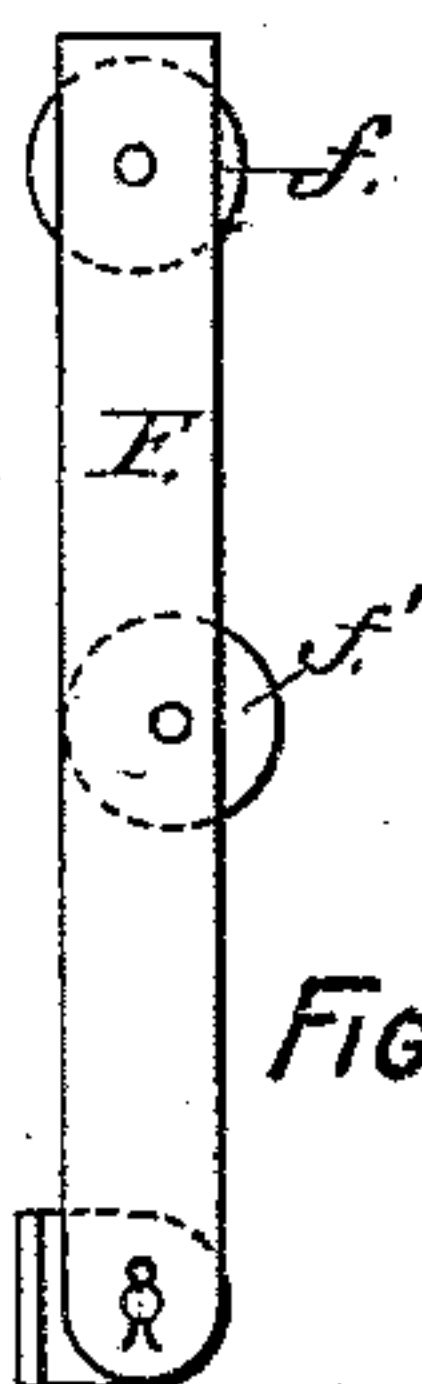


FIG. 7.

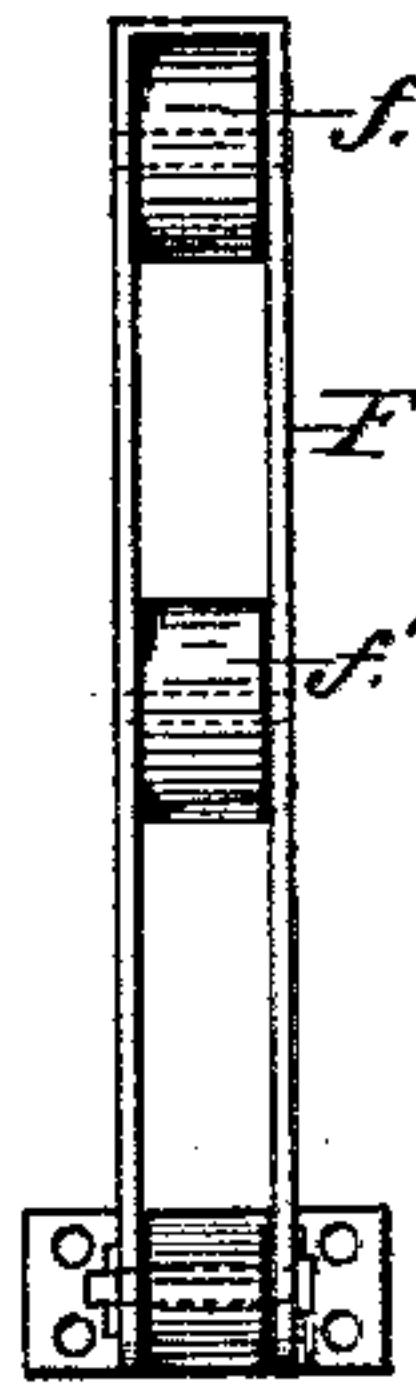


FIG. 8.

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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. 323,491, dated August 4, 1885.

Application filed March 20, 1885. (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.

My invention relates to improvements on the snow-scraper for which Letters Patent of the United States, No. 293,620, were granted to me on the 19th day of February, 1884; and the object of my present improvements is to render the scraper more effective in its operation. This object I attain by means of the construction illustrated in the accompanying drawings, which, being herein referred to, form part of this specification, and in which—

Figure 1 is an end elevation of my scraper arranged for scraping off the snow close to the surface of the ice; Fig. 2, a plan view of same; Fig. 3, a vertical section at the line $x x$, Fig. 2, of my scraper adjusted to leave a thin covering of snow over the ice; Fig. 4, a partial end elevation of my scraper, showing the adjustability of the runners; Fig. 5, a rear elevation of Fig. 1; Fig. 6, a modified form of my scraper wherein trailing-wheels are substituted for the runners, and Figs. 7 and 8 are respectively a side and rear elevation of the hinged roller-frame used at the rear of my scraper.

As shown in the drawings, A is the face-board of the scraper, which may be made of any preferred size. Said face-board has on its upper face, end pieces, a , and a back piece, a' , for the purpose of adapting it to carry a large load of snow, which will gather thereon in the operation of scraping. The end pieces, a , are rounded, as at a^3 , for the purpose of facilitating the overturning of the face-board and to form a bearing on which the weight of the overturned face-board may be borne. The foremost edge of the face-board is beveled on its under side, and provided with a metallic scraping-shoe, a^3 , which projects beyond the adjacent ends of the end pieces, a . Runners B are attached to the under side of the face-board A, for the purpose of facilitating the transportation of the apparatus when loaded with snow from one part of the field to another. The forward ends of said runners are jointed, as at b , to the face-board A, and their

upturned rearmost limbs have slotted openings b' , through which the binding-screws b^2 are inserted to secure the rear ends of said runners to the back piece, a' , in such manner that the runners B may be adjusted to different angles in respect to the face-board A, as indicated by dotted lines of Fig. 4. The face-board A is pivotally connected by bolts c to the "cleaners" C, which are a pair of independent runners connected together at their forward ends by a cross-bar, c' . The bolts c pass through vertically-slotted openings c^2 in the cleaners C, so as to permit the face-board A to be adjusted at different angles to suit the character of the work in which the scraper may be used.

D is a pole to which the animals for drawing the scraper are attached in the usual manner. Said pole has a cross-bar, d , fastened to its rear end, and branch bars d' , secured to the pole D and cross-bar d , extend backward and are jointed to the hinge-plates a^4 , secured to the upper face of the board A, whereby a flexible joint between the pole D and face-board A is formed. The said branch bars are offset, as at d' , so as to maintain the pole D at or near a horizontal line and to retain the fulcrumed end of the lever E at or about the plane of the upper edge of the back piece, a' , when the face-board A is locked in its angular position, as shown in Fig. 1.

E is a hand-lever fulcrumed in a bracket, e , fixed near the rear end of the pole D. Said lever is adapted to retain the face-board A in an angular position while the scraper is performing its work, and to overturn said face-board for the purpose of dumping the gathered load of snow. Said lever extends rearward, and is provided with a notch in its lower edge, which engages with a catch-plate, a^5 , secured to the back piece, a' , in such manner that the face-board A may thereby be locked in an angular position. The lever E passes through a roller-frame, F, which is hinged to the rear side of the face-board A, and which contains an upper roller, f , and a lower roller, f' , the first of which bears against the upper edge of the lever E in the operation of overturning the face-board in dumping the load of snow therefrom, and the other bears against the lower edge of said le-

ver in turning the face-board back into its angular position. For the purpose of changing the angular position of the face-board A to suit the requirements of different kinds of work, the bracket *e* is provided with a series of holes for receiving the fulcrum-pin *e'*, and by changing said pin into different holes the face-board can be adjusted to stand at different angles, as occasion requires.

When the parts are in the position shown by the full lines of Fig. 1, with the animals attached to the pole D, the scraper is ready to perform its work, and as it is drawn forward the snow will be gathered on the face-board A. When a sufficient quantity is collected thereon, the lever E is raised far enough to disengage it from the catch-plate *a⁵*, thereby permitting the face-board A to tilt down into the position indicated by dotted lines in Fig. 1, wherein the weight of said board and its superincumbent load will rest upon the runners B, and in this condition the scraper and its load can be readily drawn upon said runners to the dumping-ground. To dump the load, the lever E is turned upward on its fulcrum-pin *e'*, and moved continuously against the upper roller, *f*, until the face-board A is in the reversed position indicated by dotted lines in Fig. 3. In this last-named position the weight of the apparatus will be distributed, part being borne on the cleaners C and part on the rounded portion *a³* of the end pieces of the face-board, and in this condition the apparatus will be drawn back to the ice-field to resume its work of scraping. On reaching the required point the lever E will be raised to restore the face-board A to its first-described position, where said lever will re-engage with the catch-plate *a⁵*, and the apparatus will be in condition for a repetition of its operations, as described.

The cleaners C are of especial service in scraping light bodies of snow, and in clearing up the field of snow that may fall from the scraper; also for cleaning up ice-chips produced by the marking and planing tools on the ice-field. In such cases the cleaners will prevent

the snow and chips from being pushed out sidewise at the ends of the scraper. In scraping heavy bodies of snow the use of cleaners may be advantageously dispensed with until the greater part of the snow has been removed, after which the use of the cleaners may be resumed with great advantage.

In the modification shown in Fig. 6, trailing wheels B' are substituted for the runners B. Said trailing wheels are fixed on an axle, *b³*, which is connected to the face-board A by means of bars *b⁴*, which are hinged at *b* to the face-board. When so constructed the face-board A, when released from its engagement with the lever E, will drop down onto the bars *b⁴*, so that a portion of the weight of said face-board and its load will be borne on the wheels B'.

While I have described my scraper as being provided with the cleaners C, which is my preferred means of constructing them, it must be understood that said cleaners may be dispensed with when desired, and comparatively good results may be obtained thereby.

I claim as my invention—

1. In a snow-scraper, the combination, with a face-board, A, a pole, D, hinged to said face-board, and provided with a lever, E, which is adapted to lock the face-board in an angular position, and a roller-frame, F, hinged to the face-board, as described, of the cleaners C, provided with slotted openings *c²*, and pivoted to the end pieces, *a*, as and for the purpose specified.

2. In a snow-scraper, the combination, with the face-board A, of the runners B, adjustably connected to said face-board, as and for the purpose specified.

3. In a snow-scraper, the combination of a roller-frame, F, hinged to the face-board A, and a lever, E, adapted to lock said face-board in an inclined position and to overturn the same, as herein specified.

GEORGE A. BIRCH.

Witnesses:

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S. B. BREWER.