(No Model.) 2 Sheets—Sheet 1.

J. S. FIELD & W. J. SHEDD.

SCRAPER FOR REMOVING SNOW, &c.

No. 589,255. Patented Aug. 31, 1897.

FIG. 1.

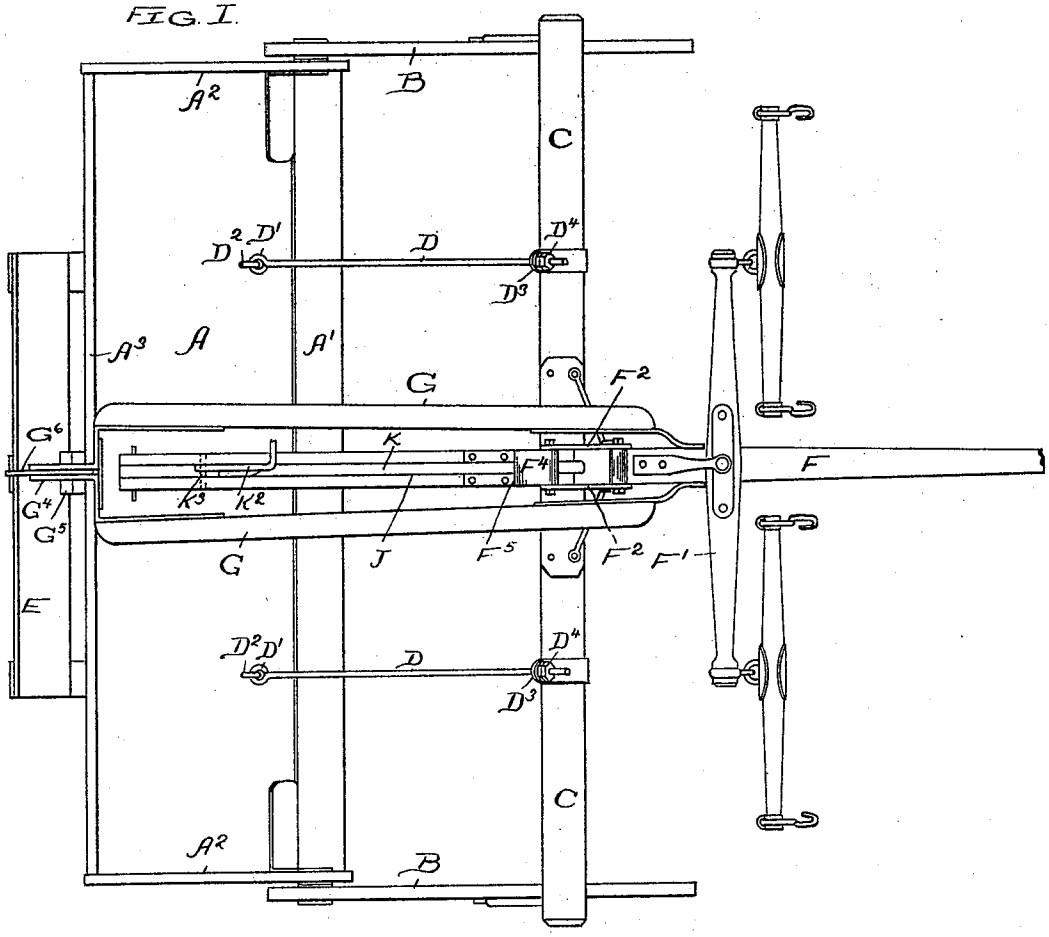
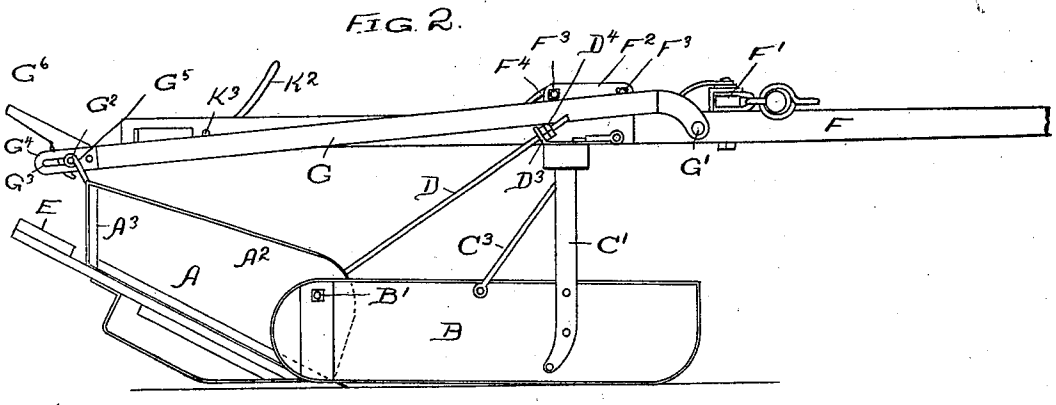


FIG. 2.



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(No Model.) 2 Sheets—Sheet 2.

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FIG. 3.

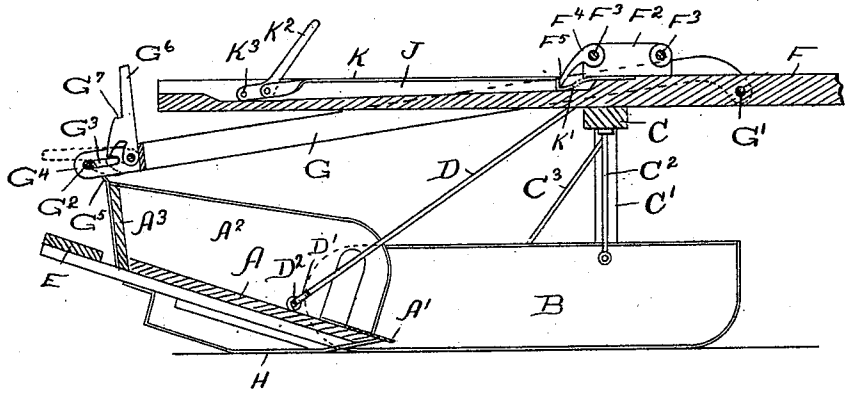
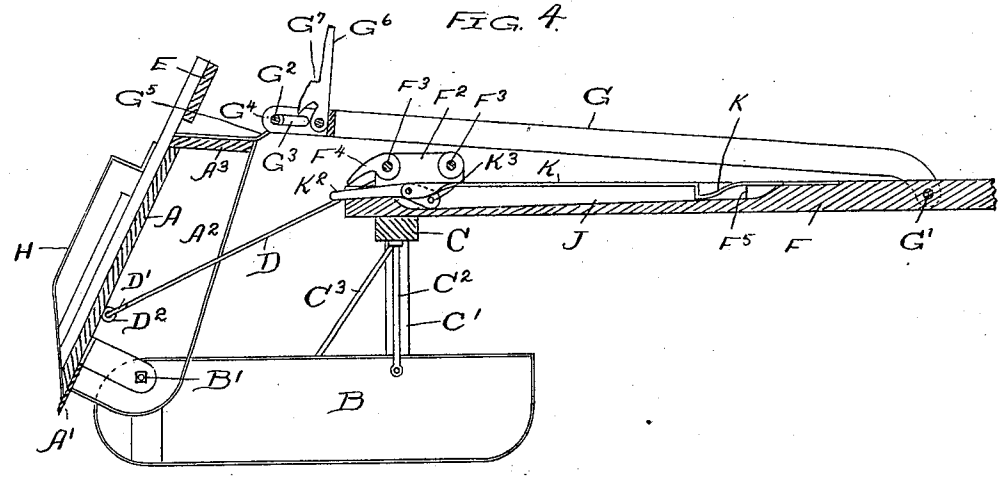


FIG. 4.



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UNITED STATES PATENT OFFICE.

JOHN S. FIELD AND WILLIAM J. SHEDD, OF CHICAGO, ILLINOIS.

SCRAPER FOR REMOVING SNOW, &c.

SPECIFICATION forming part of Letters Patent No. 589,255, dated August 31, 1897.

Application filed May 28, 1896. Serial No. 593,406. (No model.)

To all whom it may concern:

Be it known that we, JOHN S. FIELD and WILLIAM J. SHEDD, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Scrapers for Removing Snow, &c., of which the following is a specification.

This invention relates to certain improvements in scrapers for scraping the snow from ice-fields.

The object which we have had in view has been to adapt the scraper to be easily drawn after it has gathered a load, relieving the horses of some portion of the labor involved in moving the scraper from the field being cleaned to the point where it is to be dumped. To this end the scraper is adapted to be tipped back from its gathering position onto runners with which it is provided and which are secured to its under side, thereby raising the gathering edge away from the ice and enabling the scraper to be moved upon the runners to the dump.

A second feature of the invention relates to the construction by which the dumping is accomplished. In order to render this operation easy, the labor attending it is devolved upon the horses in the following manner: The rear portion of the scraper is attached to the tongue and the tongue is movable longitudinally in its socket or keeper and is retained in its normal acting position while scraping and while moving the load by a latch, which can be released by the driver at will, so that when released the tongue moves forward in its keeper and the power of the draft is transferred to the rear edge of the scraper instead of the front edge, which receives the draft ordinarily. This transfer of power results in a reversal or tipping over of the scraper by the horses and the dumping of the load.

These features of construction will be better understood from the description given below when considered in connection with the accompanying drawings, wherein—

Figure 1 is a plan, and Fig. 2 a side elevation, of our improved scraper. Figs. 3 and 4 are longitudinal vertical sections showing the apparatus in different positions.

In the drawings, A represents the scraper proper, armed with the metal plate or blade A′ at its forward edge and having raised ends A^2 and back A^3 to enable it to retain the gathered snow. It is also pivotally connected at each end to side runners B by pivots B′. Upon the runners B is mounted the tongue-supporting frame, consisting of cross-beam C, uprights C′, and braces C^2 and C^3. Draft-rods D also extend from beam C to the forward part of the scraper, as shown, so the power of the draft may be transmitted directly to the central portion of the scraper and the pivots B′ thus relieved of a part of the burden. In order to permit the various changes in position of the scraper, these rods are pivotally attached to the scraper in any suitable way—as, for instance, by forming eyes D′ in their ends, which interlock with other eyes D^2 let into the scraper—and their upper ends pass through openings in the bent-up ends of metal straps or plates D^3 upon the beam and are free to slide forward in such straps, but cannot pull out of them, because of the nuts D^4 upon the ends of the rods. These nuts are adjusted so as to insure the proper action by the draft-rods and can be changed whenever necessary.

E is a platform attached to the back of the scraper A and adapted to afford the driver a place on which to ride while the scraper is being moved from the point of loading to that of unloading.

The draft-tongue, by means of which the scraper is drawn, is shown at F, and F′ is the doubletree to which the horses are attached. The tongue is normally attached to the beam C, so that the power is transmitted directly to the latter by means of devices which can be released when the dumping takes place, and consisting, preferably, of vertical plates F^2, one at each side of the tongue and both rigidly secured to the beam, cross-bolts F^3 uniting the upper edges of said plates, and a gravitating-latch F^4, pivoted upon one of said bolts and engaging the notch or shoulder F^5 in the tongue, as seen at Fig. 3, whenever the horses move forward. The tongue is also connected to the rear of the scraper by the frame G. This frame is attached at its forward end to the tongue by the pivot G′ and at its rear end to the scraper by the pivot G^2, passing through elongated slot G^3 in the arm

G^4, projecting rearwardly from the frame and secured in an outstanding bracket G^5, attached to the scraper. A notched lever G^6 is pivoted to the arm G^4 and is adapted to engage the pivot G^2, as in Fig. 2, when the scraper is positioned for gathering a load. By this engagement the scraper is held in proper position to clear up the snow, and when a load has been gathered the driver releases the locking-lever G^6 from the pivot and the scraper can then be tipped backward, so as to throw its weight upon the runners H, attached to its bottom, and lift the scraping-blade A′ out of contact with the surface of the ice. This movement will be understood from Fig. 3, in which the scraper is shown as resting upon the runners H, and it carries the pivot G^2 outward to the rear end of the slot G^3. In this position the scraper with its load of snow can be easily moved from the ice-field, being cleared to the place of dumping, and the driver can ride upon the platform E while it is being moved without any danger of tipping the scraper any farther back, because the slot G^3 prevents any further backward movement. At the same time also the scraper may be locked against tipping forward while it is being drawn to the dump by depressing the notched hand-lever G^6 to its lowermost position. (Indicated in broken lines at Fig. 3.) In this position the shoulder G^7 upon the lever acts as a lock to the pivot G^2.

The tipping or dumping of the load is accomplished by the horses, preferably by the following devices: In a longitudinal groove J in the rear portion of the tongue is located a slide K, having an incline K′, which while the snow is being gathered and the load is being moved to the dump is located under and a little in advance of the gravitating latch F^4. When the dump is reached, the driver, through the medium of the lever K^2, moves the slide rearwardly, and thereby lifts the latch out of engagement with the shoulder F^5 of the tongue, so that as the horses continue to move they will draw directly upon the frame G instead of cross-beam C, and as the tongue is now free to move longitudinally upon the cross-beam this results in a reverse or dumping operation, or, in other words, the turning of the scraper upon its pivots from the position shown at Fig. 3 to that shown at Fig. 4. The tongue slides forward in this movement, while the runners and tongue-supporting frame remain stationary, and continues to move forward independently of the other parts named until the scraper has turned over as far as it can, or sufficiently to insure the discharge of its load, and when the scraper has reached this position the whole machine again moves together. The extent of the independent movement of the tongue will be understood from a comparison of Figs. 3 and 4.

When the tongue moves forward to effect the dumping, it at once carries the shoulder F^5 in front of the pawl, and, during the remainder of the forward movement the pawl, cannot engage either the tongue or the slide, because it is made broad, so it will ride during such remaining movement upon the straight unshouldered upper surface of the tongue.

After the dumping the driver tips the scraper back to the position shown at Fig. 3 and drives back to the place being cleared. He then tips it to and locks it in its gathering position given at Fig. 2. He also, by returning the lever K^2, which is fulcrumed at K^3, from its Fig. 4 position to that of Fig. 3, moves the slide K to its normal place in readiness for the next releasing operation, and the latch F^4 is also allowed to drop into engagement with the shoulder F^5 upon the tongue.

While our improved scraper has been devised, primarily, for use in scraping snow from ice-fields, it obviously may be put to other uses, and some of its most valuable features need no change to adapt it to use in scraping dirt. Obviously, also, the construction we have shown may be changed in various ways without departing from the spirit of our invention.

The draft connections D, whereby the draft-frame is connected to the central portion of the scraper A, are desirably made rigid and unbending, as when thus made they do not bend under the weight of the snow or interfere in any way with the operation of the machine.

We claim—

1. The scraping-machine consisting of the scraper A, the runners, B, the tongue supported upon said runners, and movable longitudinally thereon, a latch and shoulder for attaching the tongue to its supports, a slide K and lever K^2 for releasing said latch from the shoulder, and a draft connection between the rear side of the scraper A and the tongue, substantially as specified.

2. The combination with the scraper A of the draft-frame to which the scraper is pivoted and draft connections made adjustable by a screw and nut between the central portion of the scraper and said frame, substantially as specified.

3. The machine for scraping ice-fields &c., having a draft-frame a pivoted and reversible scraper A, provided with under runners H upon which it may ride with the gathered snow, a tongue releasably attached to the draft-frame and also attached to the rear of the scraper and adapted when released to overturn it by the forward movement of the horses, and means upon the tongue for locking the scraper in the riding position, substantially as specified.

4. The machine for scraping ice-fields &c., having a draft-frame a pivoted and reversible scraper A provided with under runners H, a tongue releasably attached to the draft-frame, and connections between said tongue and the rear of the scraper whereby the

scraper may be dumped by the horses, and whereby the scraper may also be locked in position while carrying the load upon said runners, substantially as specified.

5. The combination with the draft-frame and the releasable scraper, of the draft-rods D pivotally attached at one end to the forward portion of the scraper, and adjustably attached at their other ends to the draft-frame, substantially as specified.

6. The combination with the draft-frame and the reversible scraper, of draft-rods D pivotally attached at one end to the forward portion of the scraper, and at their other ends to the frame by fastenings which permit the rods to slide in them, substantially as specified.

7. The combination of the draft-frame and the pivoted reversible scraper, of draft-rods D pivotally attached to the scraper, and attached to the draft-frame by means of plates through which the ends of the rods pass freely and nuts upon the ends of the rods, substantially as specified.

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