(No Model.) 2 Sheets—Sheet 1.

C. F. WAGONER.

SLED PROPELLER.

No. 589,487. Patented Sept. 7, 1897.

Fig. 1.

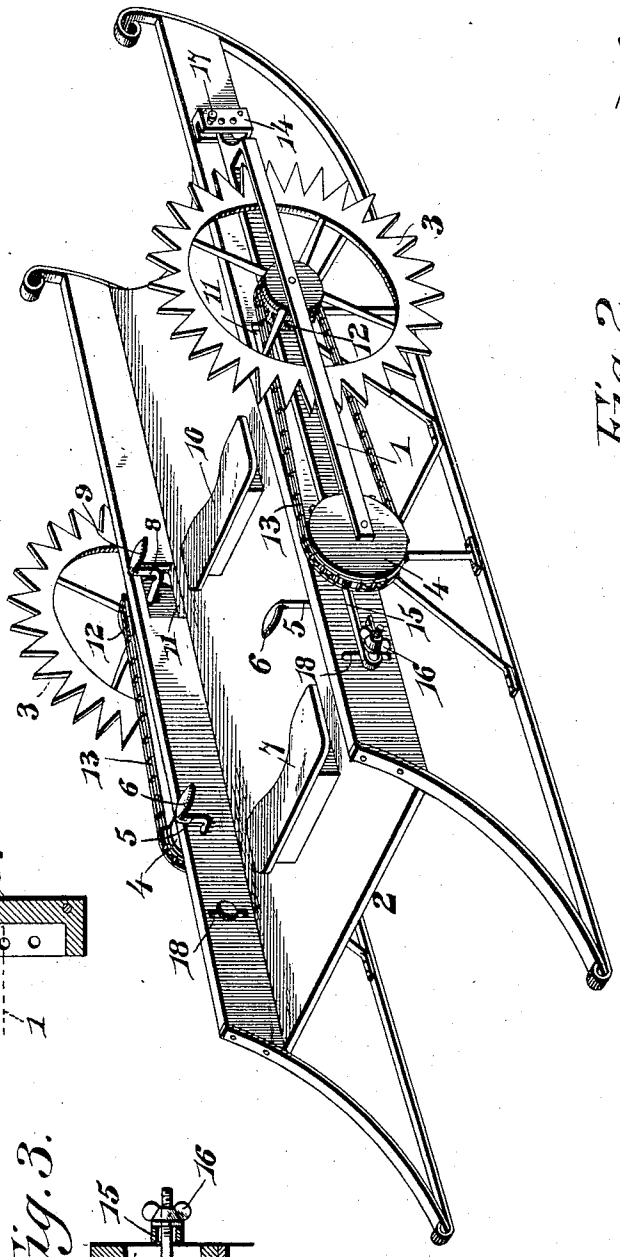


Fig. 2.

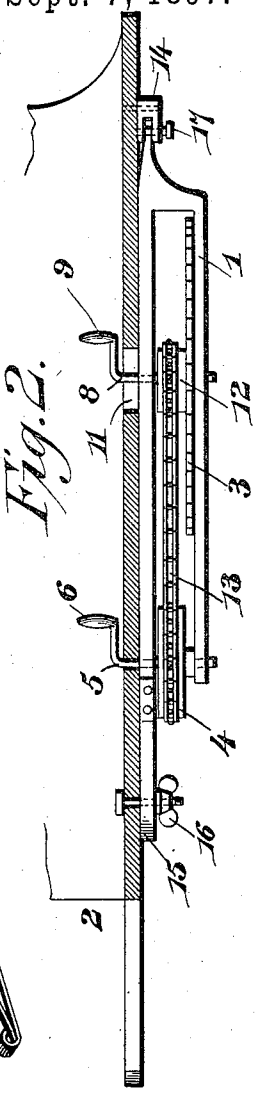


Fig. 4.

Fig. 3.

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By his Attorneys,

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(No Model.) 2 Sheets—Sheet 2.

C. F. WAGONER.

SLED PROPELLER.

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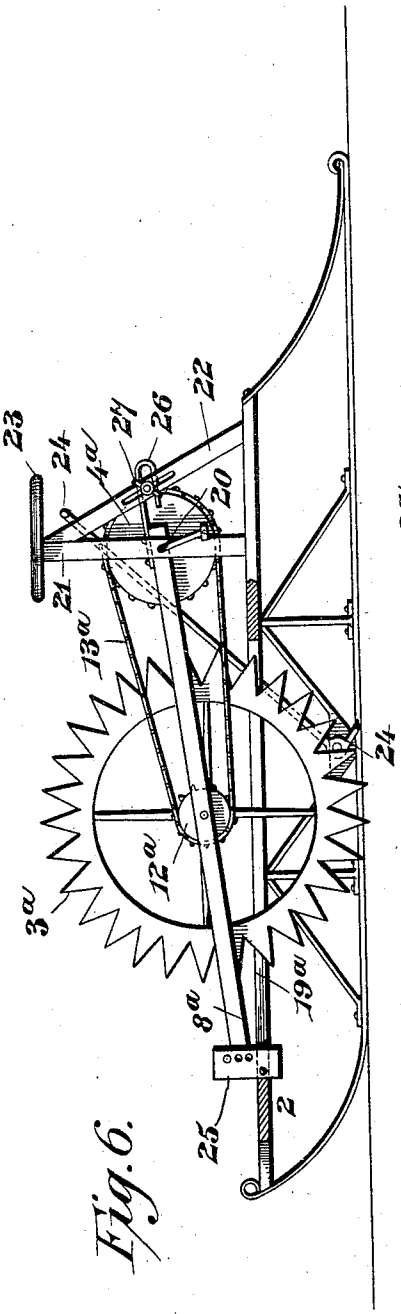


Fig. 6.

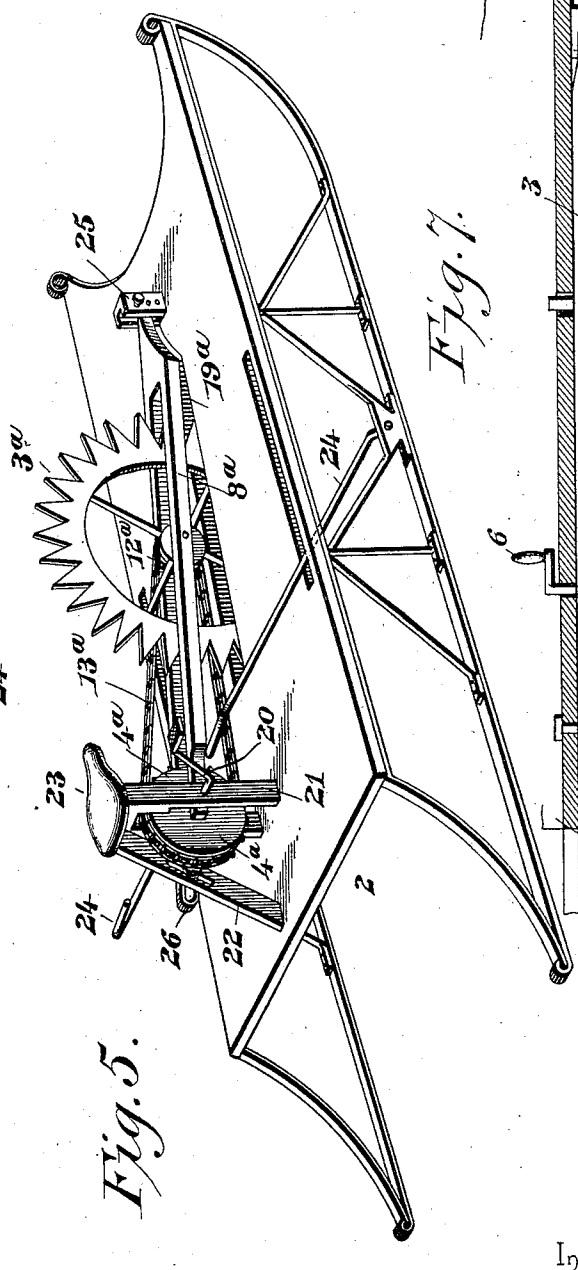


Fig. 5.

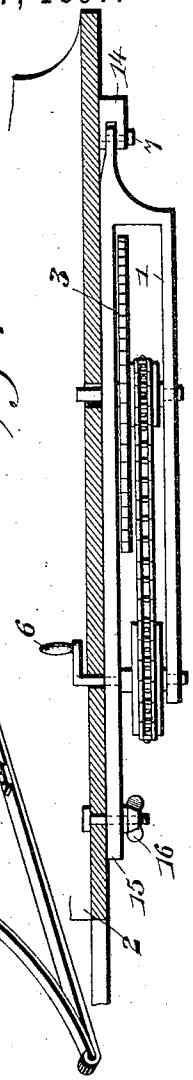


Fig. 7.

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UNITED STATES PATENT OFFICE.

CHARLES F. WAGONER, OF EAGLE LAKE, MINNESOTA.

SLED-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 589,487, dated September 7, 1897.

Application filed March 24, 1897. Serial No. 629,060. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. WAGONER, a citizen of the United States, residing at Eagle Lake, in the county of Blue Earth and State of Minnesota, have invented a new and useful Sled-Propeller, of which the following is a specification.

The invention relates to improvements in sled-propellers.

The object of the present invention is to improve the construction of sled-propellers and to provide simple and efficient propelling mechanism designed to be arranged at the sides or center of a sled to enable the same to be operated by hand or foot and adapted to engage the ice yieldingly to form a positive contact for the same, and capable of sinking into depressions and rising over raised portions or projections which might otherwise offer obstruction to the sled.

The invention consists in the construction and novel combination and arrangement of parts, as hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a perspective view of a sled provided with propelling mechanism constructed in accordance with this invention. Fig. 2 is a horizontal sectional view of one side of the sled. Fig. 3 is a detail sectional view illustrating the construction of the tension device. Fig. 4 is a similar view illustrating the construction of the guide for the front end of the spring-frame. Fig. 5 is a perspective view illustrating a modification of the invention and showing the propelling mechanism arranged at the center of the sled. Fig. 6 is a longitudinal sectional view of the same. Fig. 7 is a sectional view similar to Fig. 2, the sprocket-gearing being arranged at the outer face of the propelling-wheel.

Like numerals of reference designate corresponding parts in the several figures of the drawings.

1 designates a resilient or spring-actuated frame pivotally mounted near its front end on the exterior of a sled 2, and designed to be arranged at each side thereof, as illustrated in Fig. 1 of the accompanying drawings. The spring-frame, which carries the propelling mechanism and which is disposed longitudinally of the sled, is provided with a longitudinal opening receiving a propelling-wheel 3 and a sprocket-wheel 4, which is mounted on a crank-shaft 5. The crank-shaft 5, which is journaled in suitable bearings of the sled, preferably constitutes the pivot of the spring-frame and extends through the side of the sled, being provided at its inner end with a crank-handle 6, arranged within convenient reach of a rear seat 7, in order that the operator occupying the rear seat 7 may readily grasp the rear crank-handles of the propelling mechanism and operate the same.

The propelling-wheel, which is provided at its periphery with projections or spurs, extends below the runners of the sled in order to engage the ice, and it is mounted on a crank-shaft 8, journaled in suitable bearings of the spring-frame and provided at its inner end with a crank-handle 9. The crank-handle 9 is arranged adjacent to a front seat 10, and the crank-shaft, which extends through an opening 11 of the side of the sled, is adapted to be operated by the person occupying the front seat.

A sprocket-pinion 12 is mounted on the front crank-shaft and is connected with the propelling-wheel, the sprocket-pinion and the sprocket-wheel being connected by a sprocket-chain 13, so that either or both of the crank-shafts may be operated in propelling the sled. The sprocket-chain 13 may, as illustrated in Figs. 1 and 2 of the accompanying drawings, be located adjacent to the side of the sled, with the front sprocket-pinion interposed between the propelling-wheel and the sled, but, as illustrated in Fig. 7 of the drawings, the sprocket-chain may be located at the outer face of a propelling-wheel in order to bring the latter closer to the sled.

The front end of the spring-frame, which preferably tapers to a point, is arranged in a vertical guide 14, and it is forced downward by a spring 15, mounted at the rear end of the frame and engaged by a suitable tension device 16. The guide 14 consists of a vertical block provided with a groove extending downward from the top of the block to within a short distance of the bottom thereof, and the said guide is provided with perforations for the reception of a pin 17, which is adapted to form a stop to prevent the frame from swinging upward too far, and which is also

adapted to maintain the spring-frame in an elevated position to hold the propelling-wheel clear of the ice when it is desired to employ the sled for coasting or for any other purpose where the propelling mechanism is unnecessary.

The spring 15 extends rearward from the frame and is located in rear of the pivotal point of the same, and it is preferably provided at its rear end with a return-bend forming a loop, through which passes a set-screw, which constitutes the tension device 16. The set-screw, which is arranged in a slot 18, is adapted to be raised and lowered to regulate the tension of the spring, as will be readily understood. The spring 15 may be constructed separate from the frame 1 and be riveted or otherwise secured to the same, which will enable the frame to be constructed of material different from the spring, but, as illustrated in Fig. 7 of the accompanying drawings, the spring may be formed integral with the frame.

The opening 11 is of sufficient size to permit the front crank-shaft to move freely as the front portion of the spring-frame vibrates, and the vibrations of the same do not affect the relative positions of the sprocket wheel and pinion, and the sprocket-chain remains taut at all times.

In Figs. 5 and 6 of the accompanying drawings a single propelling-wheel 3^a is employed, and the sled is provided with a central longitudinal opening 19, through which the propelling-wheel projects. The propelling-wheel, which is mounted on a spring-frame 8^a, carries a sprocket-pinion 12^a and is connected by a sprocket-chain 13^a with a sprocket-wheel 4^a. The sprocket-wheel 4^a is mounted on a crank-shaft 20, provided at its ends with pedals and journaled in suitable bearings of a supporting-frame 21.

The supporting-frame, which is composed of two sides, is supported by an inclined brace 22 and has a saddle or seat 23 mounted upon the top of it. The sled is propelled similar to a bicycle, and it is guided by means of brake-levers 24, located at opposite sides of the sled and extending upward through longitudinal slots.

The brake-levers, which are fulcrumed near their lower ends on the inner faces of the runners, are adapted to contact with the ice and retard either one or both sides of the sled to guide the same or to check the forward movement thereof.

The spring-frame is constructed substantially the same as that heretofore described. Its front end, which tapers, is arranged in a vertical guide 25, and its rear end is provided with a spring 26, controlled by a tension device 27, which is mounted on the inclined brace of the supporting-frame. The inclined brace is provided with a slot, and the set-screw which constitutes the tension device is mounted in the slot similar to that heretofore described.

In Figs. 1 and 2 of the drawings the sled shown is adapted to be operated by either one or two persons, but, as illustrated in Fig. 7, the gearing may be provided with only one crank-handle at each side of the sled to adapt the latter for one person.

It will be seen that the propelling mechanism is adapted to be mounted on a sled at the center or sides thereof, that it is capable of vertical oscillation to yield to the surface of the ice, and that it is forced downward by a constant spring-pressure, which causes the propelling-wheel to have a positive contact with the ice at all times. It will also be apparent that the oscillation of the propelling mechanism does not affect the sprocket-chain of the gearing, and that when it is desired to use the sled for coasting or similar purposes where the propelling mechanism is unnecessary the latter may be arranged above the runners and out of contact with the ice.

Changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

What is claimed is—

1. In a device of the class described, the combination of a sled, a crank-shaft journaled in suitable bearings, a longitudinal frame pivotally mounted on the crank-shaft and extending therefrom, a spring connected with the frame and extended from the shaft in the opposite direction, a tension device connecting the spring with the sled, a gear-wheel mounted on the crank-shaft, a propelling-wheel mounted on the longitudinal frame, gearing connecting the propelling-wheel with the gear-wheel, and means for limiting the upward movement of the frame, substantially as described.

2. In a device of the class described, the combination of a sled provided with a slot, a crank-shaft journaled in suitable bearings, a longitudinal frame pivotally mounted on the crank-shaft and extending therefrom, a spring connected with the frame and extending from the shaft in the opposite direction and provided at its outer end with a return-bend forming a loop, a set-screw passing through the slot and the loop and securing the spring at the desired adjustment, and propelling mechanism mounted on the longitudinal frame and connected with the crank-shaft, substantially as described.

3. In a device of the class described, the combination with a sled, of a longitudinal frame pivoted near its rear end and capable of vertical oscillation, propelling mechanism mounted on the pivoted frame and provided with a propelling-wheel for engaging the ice, a spring engaging the frame and forcing the propelling-wheel downward, a vertical guide provided with a groove receiving the front of the pivoted frame, and a removable pin mounted on the guide and adapted to be arranged in suitable perforations thereof to limit the upward movement of the frame and to support the same in an elevated position, substantially as described.

4. In a device of the class described, the combination of a sled provided at opposite sides with openings, longitudinal frames arranged at the sides of the sled and capable of vertical movement, front and rear crank-shafts mounted on the frames and extending through the sides of the sled, the front shafts being arranged in the openings of the slides and the rear shafts pivoting the frames to the sled, the propelling-wheels mounted on the front crank-shafts, sprocket-pinions arranged on the same and connected with the propelling-wheels, sprocket-wheels mounted on the rear crank-shafts, sprocket-chains connecting the sprocket-wheels and the sprocket-pinions, and means for forcing the frames downward, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES F. WAGONER.

Witnesses:

ELIJAH M. PRESSNELL,

HOWARD SEAVER.