Apr. 24, 1923. 1,453,232

S. ZUKOWSKI

SLED

Filed Feb. 21, 1922 2 Sheets-Sheet 1

Fig. 1.

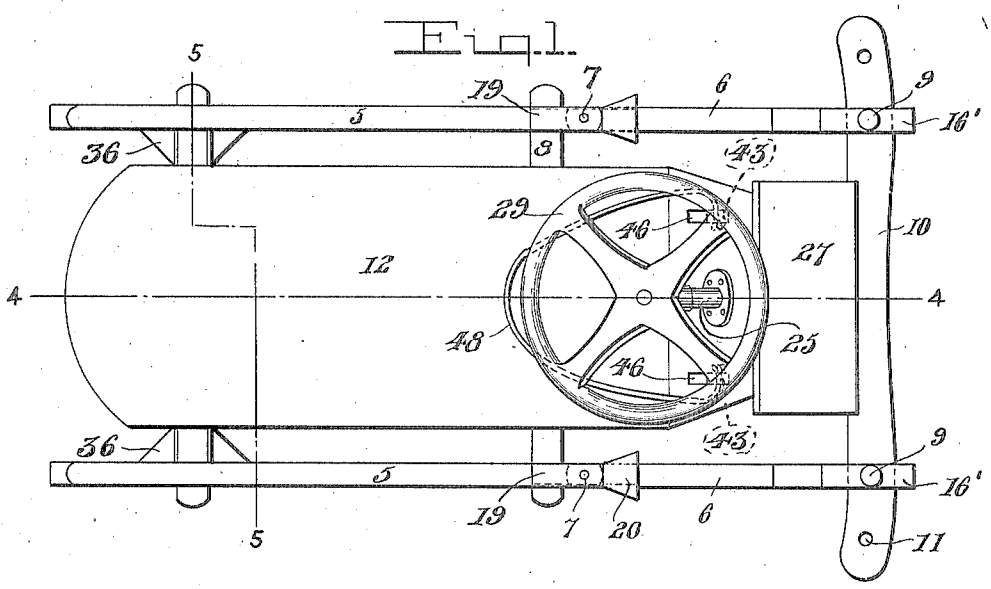


Fig. 2.

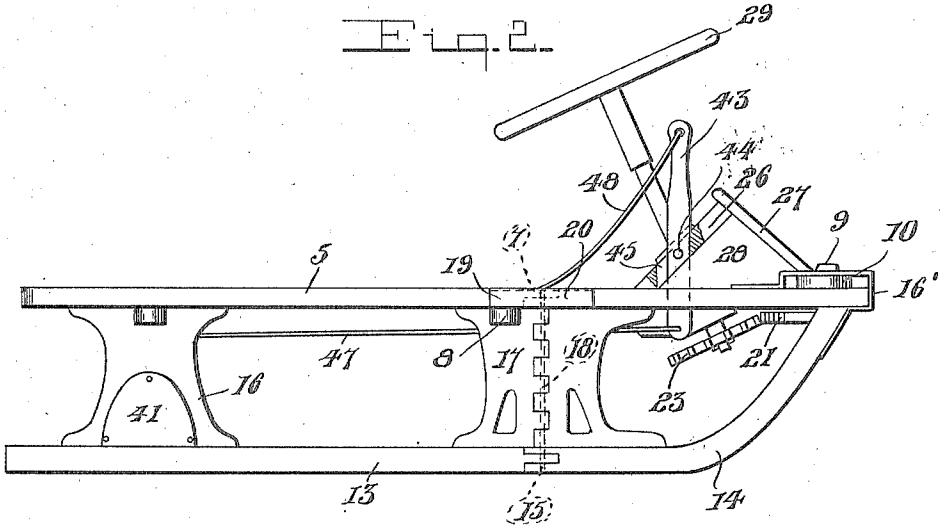
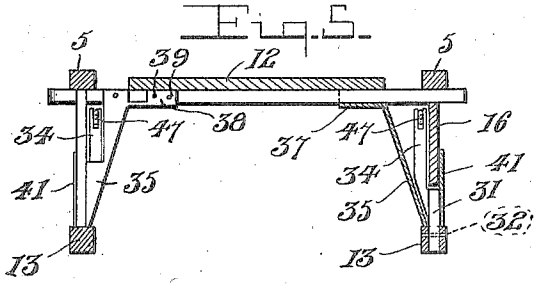


Fig. 5.



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Fig. 3.

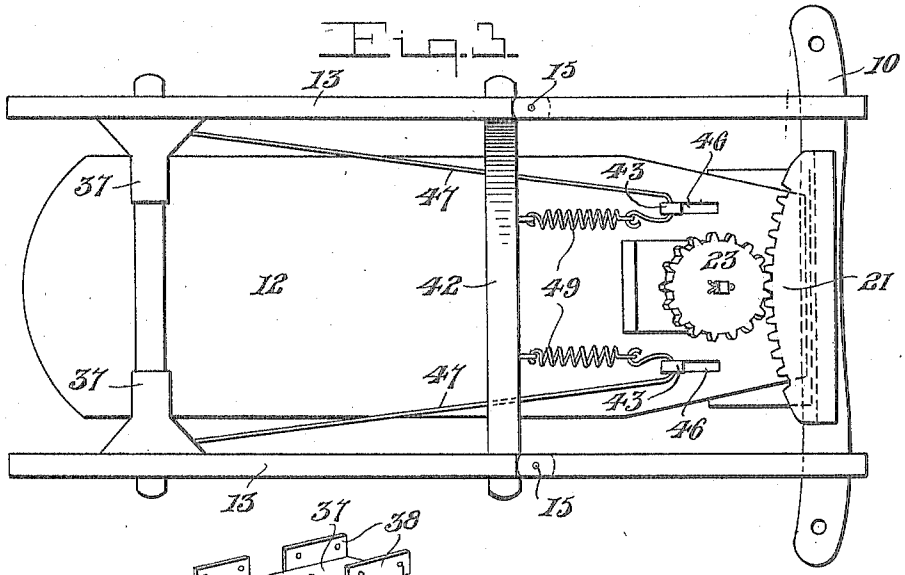


Fig. 6.

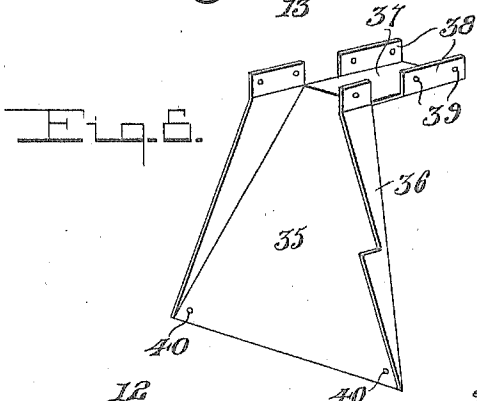
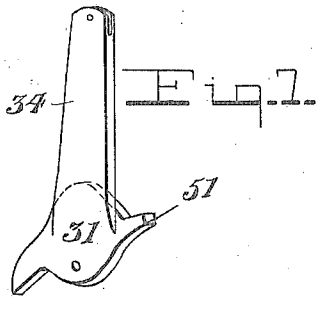


Fig. 4.

Fig. 7.



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Patented Apr. 24, 1923. 1,453,232

UNITED STATES PATENT OFFICE.

STEFAN ZUKOWSKI, OF PASCOAG, RHODE ISLAND, ASSIGNOR OF FORTY-FIVE PER CENT TO LUDWIK OKONIEWSKI, OF PASCOAG, RHODE ISLAND.

SLED.

Application filed February 21, 1922. Serial No. 538,198.

To all whom it may concern:

Be it known that I, STEFAN ZUKOWSKI, a citizen of Poland, residing at Pascoag, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Sleds, of which the following is a specification.

This invention relates to certain new and useful improvements in occupant-steered sleds, and has particular reference to the provision of a sled of this kind which may be conveniently controlled by the occupant for directing its travel in the desired path and for controlling the speed of movement and for stopping the same.

The primary object of the invention is to simplify an improved sled of the above type.

A specific object of the invention is to provide a construction of sled whereby convenient and efficient steering may be had.

Another object of the invention is to provide a sled of the above kind which shall be simple and durable in construction.

Still another object of the invention is to provide a simple and efficient means for stopping the sled when desired so that an efficient brake is provided.

With the above general objects in view the invention consists of the novel combination and arrangement of parts hereinafter more fully described in connection with accompanying drawings, and in which like reference characters designate corresponding parts throughout the several views.

In the drawings:—

Figure 1 is a top plan view of a sled constructed in accordance with the present invention;

Figure 2 is a view in side elevation and partly broken away and in section of the device shown in Figure 1;

Figure 3 is a bottom plan view of the device shown in Figure 1;

Figure 4 is a substantially central longitudinal sectional view taken upon line 4—4 of Figure 1;

Figure 5 is a transverse sectional view taken substantially upon line 5—5 of Figure 1;

Figure 6 is an enlarged perspective view of one of the rear brace and brake spur housings, and

Figure 7 is an enlarged perspective view of one of the pivoted brake members.

Referring more in detail to the several views, the preferred construction of the sled embodies the provision of longitudinal upper rails 5 having forward end sections 6 pivoted as at 7 for horizontal swinging movement and having its rear section rigidly connected in spaced relation as well as in parallel relation by means of cross bars 8 which are suitably secured to the under faces of the rail bar in the position shown in Figures 1, 2 and 5. The forward ends of the hinged rail sections 6 are pivotally attached as at 9 to the end portions of a combined steering bar and foot rest 10 of the usual form which has projecting ends provided with apertures as at 11 for convenience in attaching a rope or the like in case it is desired to pull the sled. The cross bars 8 support the usual platform 12 which extends from the rear ends of the rails 5 to a point slightly rearwardly of the forward ends of the sections 6 and which lies under the steering bar 10 as clearly shown in Figure 4.

A longitudinally disposed runner 13 is disposed beneath each side rail 5, and each runner includes a forward section 14 pivoted as at 15 for horizontal swinging movement with the rail section 6 to which the upturned ends of the runner sections 14 are attached by any suitable means such as a strip of sheet metal 16′ having fastening devices driven therethrough and extending also over the steering bar 10 as shown clearly in Figure 2. The side rails 5 are rigidly connected to the runners 13 so that said runners support the rails 5 at the desired elevation relative thereto, by means of suitable braces 16 situated at the rear of the sled and having its upper and lower edges respectively engaging the under and upper surfaces of the rails 5 and runners 13, the runners and rails being secured to these bolster boards by means of nails or the like, and forward bolster boards 17 which are formed in vertical half sections hingedly connected as at 18 in the same vertical plane as the pivotal connections 7 and 15 of the rail sections and runner sections. The forward bolster boards are secured in place similarly to that described in respect to the bolster boards 16 and it will be seen that the rear sections of the bolster boards 17 are stationary while the forward sections thereof may swing with the rail sections 6 and the runner sections 14 in a horizontal direc-

tion. In this way a very durable and efficient support for the rail sections 6 are provided for maintaining the desired relation between the runner sections 14 and 6 at the rear ends of said rail and runner sections. Any suitable form of journal member 19 formed of sheet metal may be attached to the forward ends of the rear rail sections 5 and they include forwardly projecting flared portions 20 overlying the rear ends of the rail sections 6 so as to permit swinging movement of the latter and at the same time to form a protector against catching of clothing in the pivots or pivotal connection between the rail sections.

A segment gear 21 disposed in a horizontal position beneath the forward end of the platform 12 and having a rearwardly curved rear edge provided with teeth has an upstanding flange 22 upon its forward edge which is rigidly attached in any suitable manner against the under face of and to the steering bar 10 shown clearly in Figure 4, and the teeth of the segment gear 21 mesh with the teeth of a third gear 23 which is suitably fixed upon the lower end of a steering shaft 24 located rearwardly of said segment gear 21 and journaled in a suitable housing 25 which is fixed in a suitable inclined opening provided in the forward central end portion of the platform 12. The housing 25 also extends through an opening in an inclined foot board 26 that is suitably spaced by forwardly inclined lugs 27, the foot board 26 being fastened to the platform 12 and supported by end wall members 28 shown in Figure 2, to which the board 27 is also attached. The steering shaft 24 has a steering wheel 29 fastened upon its upper end whereby the gear 23 may be turned for shifting the segment gear 21 and the steering bar 10 laterally and in the desired direction so as to effect steering of the sled as is obvious. The rearward curvature of the toothed edge of the segment gear is required as the swinging movement of the runner sections bring the segment gear nearer to the third gear 23 and the same will be positioned when the runner sections 14 are positioned for travelling straight ahead.

Each bolster board 16 is provided with a cut out 30 extending upwardly from its lower edge and in each cut out a ground engaging spur 31 is pivoted, said spur being preferably pivotally attached to the adjacent runner section as at 32 and this runner section is slotted vertically as at 33 so that the ground engaging spur may move downwardly into engagement with the ground for stopping the forward travelling movement of the sled as well as backward movement thereof should the necessity for the latter arise. An upwardly projecting arm 34 is provided for each ground engaging spur at the inner faces of the bolster boards 16, the levers or arms 34 being in a different vertical plane than that within which the spur 31 is located, and said arms 34 being protected from dust and dirt as well as from being clogged with snow through the medium of sheet metal housing 35 of the specific form shown in Figure 6. As shown in this Figure the housing comprises a plate portion with flanged edges indicated at 36 and with an angular upper end 37 provided with upwardly directed pairs of side flanges 38, the flange 37 being adapted to rest flatly against the under surface of the adjacent cross member or bar 8 and the flanges 38 being adapted to flatly engage the side edges of said bar 8 as clearly shown in Figures 3 and 4. The flanges 38 are provided with suitable apertures 39 so that nails or the like may be driven therethrough into the rod 8 so as to rigidly secure the housing 35 in place in connection with further nails adapted to be driven through openings 40 provided in the lower edge of the plate portion of the housing and into the adjacent portion of the adjacent bolster board. The recesses 30 are closed at the outer sides of the bolster board 16 by suitable sheet metal plates, one of same being shown at 41 in Figure 2. The housings 35 thus prevent clogging of the arms 34 so that their free operation is secured and also form base members for providing a rigid sled construction. A suitable curved metallic plate member 42 may be provided between the rear sections of the front bolster board 17 with its ends secured to the rear runner sections and with its intermediate portions resting against the undersurface of the forward cross bar 8 at the central portion of the latter.

A lever 43 is pivotally mounted adjacent the steering wheel 29 at each side of the latter as at 44 (see Figure 2), said levers 43 being extended downwardly through suitable slots 45 provided in the foot boards 26 and slots 46 provided in the platform 12. The lower ends of the levers 43 are connected to the arms 34 by means of links 47, the arms 34 at one side being connected only to the lever 43 at that side of the steering post so that the levers 43 may be independently operated if desired. Such independent operation serves to quickly swerve the sled to one side or the other while at the same time having a braking effect. The two levers 43 may however be connected by a flexible member or rope 48 for the simultaneous operation of the same should stopping be desired without changing the direction of the sled. It will be readily seen that rearward movement of the levers 43 will cause forward movement of the links 47 and arms 34 so as to swing the spurs 31 into engagement with the ground and that a reverse movement of said levers will disengage the spur

from the ground. In order to hold the spurs normally disengaged, helical springs 49 are attached to the links 47 near the levers 43 and extend rearwardly where they are attached to the forward cross bar 8.

The cross bar 8 preferably projects beyond the outer sides of the rails 5 as shown and the bolster boards 16 are preferably provided with notches in their upper edges to accommodate these cross bars 8.

As the general operation of the device has been discussed in the foregoing description it is believed that the operation and manner of use thereof will be readily apparent to those skilled in the art. It is also believed that the construction and advantages of the invention will be readily appreciated.

As shown clearly in Figs. 4 and 7, the bolster boards 16 are cut out as at 30 in such a manner as to provide stop shoulders 50 adapted to cooperate with a stop lug 51 on the adjacent ground engaging spur 31 whereby the movement of said spur toward and in engagement with the ground is limited to a predetermined extent so that movement of the spur too far beyond the lower surface of the runner members is prevented and consequent damage to the spur is prevented.

Minor changes may be made in the invention without departing from the spirit and scope thereof as claimed.

What I claim as new is:—

1. In a sled of the class described, a plurality of cross bars having a pair of longitudinal upper side rail members disposed thereon and rigidly connected thereby, a platform resting upon said cross bars and secured thereto between and spaced from said side rails, runner members disposed beneath the side rails, braces connecting each runner member with the side rails disposed thereabove and including rear braces having cut outs extending upwardly from their lower edges, ground engaging spurs pivoted in said cut outs, said runner members having slots through which said spurs are projectable for engagement with the ground, upwardly extending arms rigid with said spurs and arranged at the inner sides of said braces, and means at the forward end of the sled operatively connected to the upper ends of said arms for moving said ground engaging spurs into and out of engagement with the ground, said braces being cut out to provide a stop shoulder for each ground engaging spur, and a movement limiting lug upon the spur cooperating with said shoulder for preventing movement of the spur toward the ground beyond a predetermined limit.

2. In combination with an occupant-steered sled having runners and side rails disposed thereabove, braces connecting said runners with said side rails and having cut-outs, ground engaging spurs pivotally seated in said cut-outs, said runners being provided with slots through which said spurs are projectable for engagement with the ground, and means for moving said ground engaging spurs into and out of engagement with the ground.

3. In an occupant-steered sled having runners and side rails disposed thereabove braces connecting said runners with said side rails and having cut-outs, discs eccentrically mounted in said cut-outs, ground engaging spurs projecting from the peripheries of said discs, and means connected to said discs for moving said ground engaging spurs into and out of engagement with the ground.

4. In an occupant-steered sled having braces connecting the runners and side rails disposed thereabove, discs eccentrically mounted in said braces, ground engaging spurs extending from the peripheries of said discs, arms upwardly projecting from said discs, and means connected to said arms for moving said spurs into and out of engagement with the ground.

5. In an occupant-steered sled of the type described, runners, braces connecting the runners, side rails disposed thereabove, discs movably seated in said braces, ground engaging spurs formed integrally with said discs, manually operable means connected to said discs for moving said spurs into engagement with the ground, and means connected to said discs for automatic retraction of said spurs from the ground.

6. In an occupant-steered sled having runners and side rails disposed thereabove, braces connecting said runners with said rails and having cut-away portions, ground engaging spurs pivotally seated in said cut-away portions, movement limiting lugs carried by said spurs, and means carried by said braces cooperating with said lugs for preventing the movement of the spurs toward the ground beyond a predetermined limit.

7. In an occupant-steered sled having runners and side rails disposed thereabove, braces rigidly connecting the runners and side rails, ground engaging spurs pivoted in said runners, means operatively connected to said spurs for moving said spurs into engagement with the ground, and means for automatic retraction of the spurs from the ground.

In testimony whereof I affix my signature.

STEFAN ZUKOWSKI.