C. A. WALTER.

SELF STRAIGHTENING SLED.

APPLICATION FILED MAY 15, 1915.

1,197,084.

Patented Sept. 5, 1916.

2 SHEETS—SHEET 1.

FIG. 1.

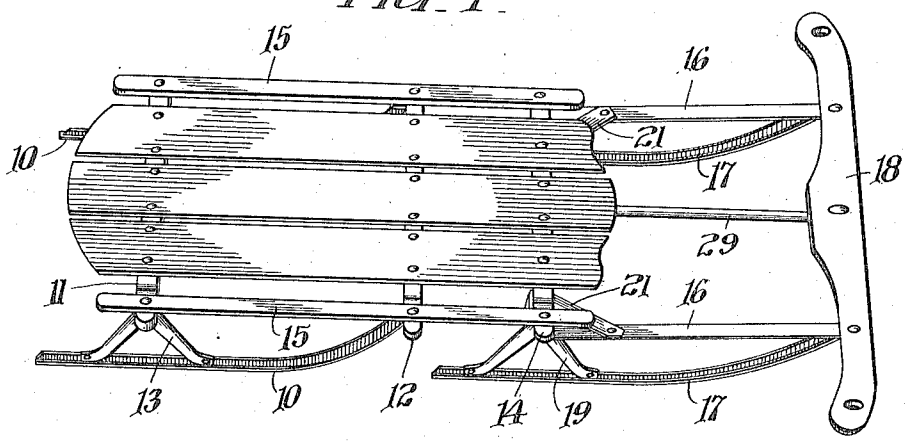
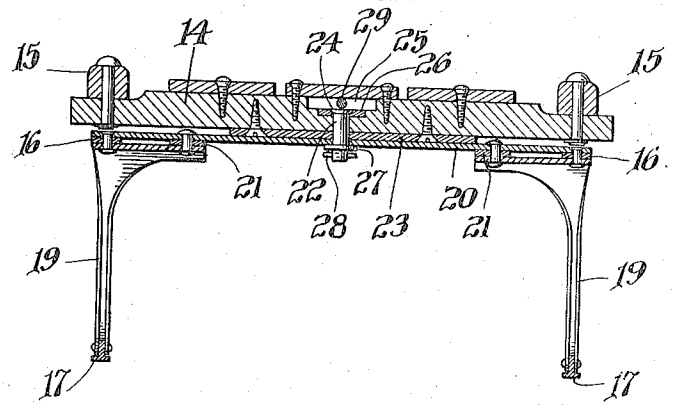


FIG. 4.



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2 SHEETS—SHEET 2.

FIG. 2.

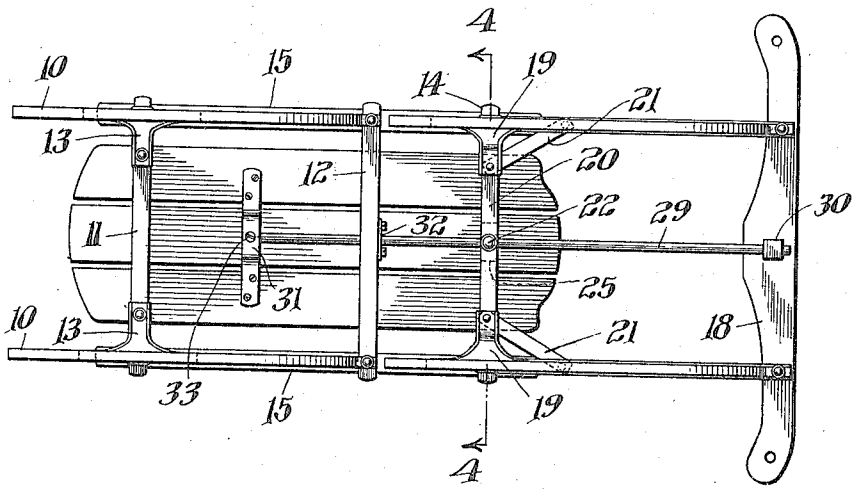
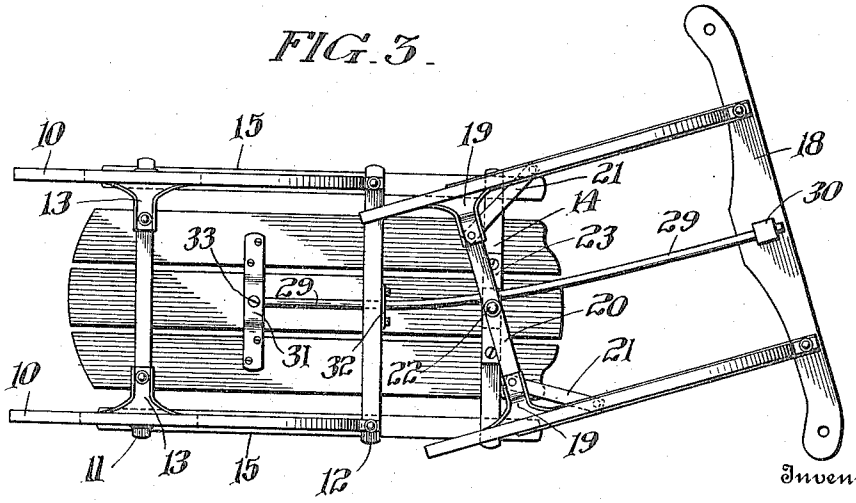


FIG. 3.



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SELF-STRAIGHTENING SLED.

1,197,084. Specification of Letters Patent. Patented Sept. 5, 1916.

Application filed May 15, 1915. Serial No. 28,339.

To all whom it may concern:

Be it known that I, CHARLES A. WALTER, a citizen of the United States, residing at Duncannon, in the county of Perry and State of Pennsylvania, have invented a certain new and useful Self-Straightening Sled, of which the following is a specification.

My invention relates to bob sleds in which the front bob is normally held in centered position by resilient means.

The purpose of my invention is to perform the centering or "straightening" operation by a spring bar or rod which shall straighten the bob with regard to its vertical movement as well as with regard to its horizontal steering movement.

Further purposes of my invention are to have the spring act upon the steering bar, and at a considerable distance from the pivot of the bob rather than upon the rear frame of the bob; to give additional length to the spring by extending it past the pivot for the front bob; to provide for easy and quick removal and replacement of the spring; and to simplify and cheapen the construction at the same time that it is made stronger.

Further purposes will appear in the specification and particularly in the claims.

I have preferred to illustrate my invention by but one of the various forms in which it may appear, selecting one which is simple, practical, efficient and inexpensive and which at the same time well illustrates the principles of my invention.

Figure 1 is a perspective view of the preferred embodiment of my invention. Fig. 2 is a bottom plan view of the structure seen in Fig. 1. Fig. 3 is a view corresponding to Fig. 2, but with the parts in altered position. Fig. 4 is a section of Fig. 2 upon the line 4—4, looking in the direction of the arrows.

I have applied my invention to a conventional form of double bob sled in which the runners 10 of the rear bob are secured to the three part top shown through cross strips or benches 11, 12 using chairs or supports 13 near the rear of the bob, to form the relatively fixed member and a front bob pivoted to one or other of these parts to form the relatively movable member. In the illustration, a third bench 14 is secured beneath the front of the top as a convenient support for the pivot for the front bob and hand rails 15 unite the benches. The front bob is shown as made up of top and bottom runner sections 16, 17, steering bar 18, chairs 19, rear frame bar 20 and braces 21.

In order to provide a metallic bearing surface for the bar 20 and stiffen and support the king pin 22, I have attached a strip 23 to the bench 14. The king pin is shown as terminating at its upper end in a head 24 flush with the lower wall of a recess 25 where the upper part of the bench 14 is cut away for a purpose hereinafter described. The head is chamfered to fit into a countersunk washer 26. The king pin passes through the bench, strip, frame bar and washer 27 and is secured by cotter 28. This provides one convenient form of pivotal attachment for the front bob, and the joint is loose enough to permit movement of the entire front bob vertically upon the king pin to accommodate inequalities in the track.

The self-straightening function to which my invention is directed is accomplished by a spring which, for convenience, I shall here call a rod though it may have other cross sections than the round section preferred by me and need not be straight. Its rear end is anchored in any suitable way in the relatively fixed member and its front end preferably engages with the guide bar 18, or other front part of the pivoted bob, here the front bob, in order to obtain as long a leverage as possible for effective straightening with as light a spring as possible and delicacy of adjustment to the straightened position.

Passing the spring through the recess 25 secures the advantage of permitting the spring to shift laterally at the pivot point without requiring a bend in the centrally located straight spring preferably used nor that the spring shall be exposed by lying low in the sled. While my invention would be valuable even if this side movement of the spring at the pivot were not provided, this side movement still further extends the length of the effective spring utilized by making it possible to anchor the spring to the rear of the king bolt. The spring 29 is here connected with the front of the pivoted or steering bob by means of an eye 30 upon the under side of the guide bar 18. After

passing through the recess 25 it is anchored at the rear in the relatively fixed member in the illustration, Figs. 2 and 3, by passing it through a hole in the bench 12 and into a strap or brace 30 which may form a socket limiting its endwise movement. It will not ordinarily be necessary to extend the spring as far as the bench 11. In order to protect the bench 12 from the strain at this fulcrum point, I have supported the rod by a plate 31 secured upon the side of the bench. I have also reinforced the bench 12 where the rod 29 passes through it by a plate 32 which is secured to the bench.

The effect upon the spring by reason of the steering of the sled will be seen from Fig. 3. The bending caused by steering movement of the front bob will be greatest near the bench 12 and the rod will be moved laterally in the slot 25, coming back to center when the lateral pressure upon the front bob ceases. With vertical rocking movement of the front bob, lifting of the front of the bob in the form shown will bring the spring into contact with the end of the sled top which may permissibly yield slightly to the pressure of the spring. This engagement of the spring with the sled top is incidental however, to the location of the spring against the under side of the top, and can readily be avoided by spacing them. I have preferred the arrangement shown because it kept the spring high out of the way and interfered as little as possible with the bench 14. There will be relatively little vertical rocking of the bob, so little that I have not considered it necessary to give the recess 25 extra depth to permit the rod to move vertically in it much, with the result that there may be engagement of the rod with the top and bottom limits of the recess 25 through which the rod passes, causing the bending of the rod to occur chiefly at, or close to the bench. The action of the rod will therefore be substantially the same for the vertical as for lateral movement of the front bob, securing the same result of aligning the two bobs of the sled.

My spring may be inserted and withdrawn easily and quickly to obtain the self-centering benefit or remove the spring, as the wish of the owner may indicate. In order to overcome any tendency of the spring to work out of its position, a set screw may be placed at any convenient point of rod support and I have shown such a set screw 33 as performing this function and located at the rear end of the rod. Ordinarily, it will not be required.

I recognize that my invention possesses advantages for use in straightening after vertical movement which could be attained by using a strip or rod spring, flexible and resilient chiefly or only in a vertical direction, and that it also possesses advantages in centering after the lateral movement of steering a bob, which could be attained by the use of a strip or rod spring flexible and resilient chiefly or only in a lateral direction, but find that I can obtain the advantages of both by the use of a spring which is flexible and resilient in both directions of movement. Though the spring strength required would not be equal in the two directions, I find the simplest and best form of spring to be one having equal spring capacity in the two directions. Of the various polygonous forms of which this would be true, I have preferred to use the round rod.

It will be evident that various features of my construction shown may be omitted while still securing some of the advantages of my invention and that within the scope of my claims the structure may be greatly varied.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a device of the character stated, a sled top, a bob fixed thereto, a bob movably secured thereto and having movement in both vertical and horizontal directions and a spring rod connecting the fixed bob and top with the movable bob and resiliently opposing movement in both directions.

2. In a device of the character stated, a relatively fixed bob, a sled top secured thereto, a relatively movable bob, a pivot connecting the movable bob to the relatively fixed bob and top and a spring rod connecting the relatively fixed and movable parts, extending both forward and backward from the pivot of the movable bob substantially through the axis of the pivot and capable of lateral movement where it passes the axis of the pivot.

3. In a device of the character stated, a relatively fixed sled top and rear bob, a circular spring rod extending longitudinally of the rear bob and anchored in the fixed parts, a front bob, bodily movable relatively to the top, a steering bar secured to the front bob against angular movement with respect to the runners, pivotal connection between the relatively fixed and movable bobs located between the anchorage and the end of the spring rod and a connection between the front end of the spring rod and the steering bar of the front bob.

4. In a device of the character stated, a sled top, a rear bob secured thereto, a spring rod extending longitudinally of the sled top and anchored at its rear end with respect thereto, a front bob, a single pivot between the front bob and sled top, said pivot being spaced from said top to allow room for the spring between, and a steering bar for the front bob connected with the front end of the spring and with the front bob.

5. In a device of the character stated, a

sled top, a relatively fixed bob secured thereto, a relatively movable bob pivoted thereto and capable of vertical movement and spring bar means for straightening the front bob after vertical movement.

6. In a device of the character stated, a sled top, a bob secured thereto, a bob pivoted thereto and capable of lateral and vertical movement, a steering bar on the movable bob and a spring extending longitudinally with respect to the bobs engaging the steering bar at its front end and anchored at its rear end to straighten the movable bob with respect to either the horizontal or vertical movement.

7. In a device of the character stated, a sled top, fixed and movable bobs connected therewith, a pivot between the movable bob and the sled top spaced from the top and a spring for the centering of the movable bob passing between the pivot and top.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."