

UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN SLED-RUNNERS FOR VEHICLES.

Specification forming part of Letters Patent No. 161,985, dated April 13, 1875; application filed July 23, 1874.

To all whom it may concern:

Be it known that I, THOMAS W. PORTER, of Revere, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Sleds; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to which it relates to practice it.

This invention relates to improvements in sleds formed with metallic runners, and principally to the class known as traverse runners, or where four are placed beneath the same vehicle; and the invention consists in a cast-metal runner, in which are inserted tree-nails or bar-bolts, by casting the metal around them, or by machine-fittings, for the purpose of connecting the runner with the bars. It also consists in a coupling, which is secured to the wooden bar or beam, and receives the bar-bolts in grooves, holes, or seats, thereby coupling the runner and the bars together. It further consists in a cast-metal runner formed with a seat for the wheel of a vehicle, and apertures for the reception of the clamping-bars, by which the wheel is secured in its seat. It also consists in a cast-metal runner formed with a raised part to either receive the axle of the wheel in a hole in the runner proper, or to receive boxes in which the axle is inserted. It further consists of a whiffletree-rest, formed on the front runners, which support the whiffletree, which is pivoted to the support. It also consists in a chill-hardened projecting central part of the bearing-face of the runners.

Figure 1 is a side elevation of a runner intended for two bars. Fig. 2 is a side elevation of a wheel-runner. Fig. 3 is a side elevation of the axle-runner. Fig. 4 is a side elevation of a traverse runner intended for one bar. Fig. 5 is a vertical section taken on line A B, Fig. 2, showing the wheel and clamping bars and bolts, also in section. Fig. 6 is a horizontal section taken on line C D, Fig. 3, and showing the clamping-bolts in section, through the axis of the axle-hole in the box. Fig. 7 is also a horizontal section taken on line E F, Fig. 3. Fig. 8 is a vertical section taken on line G H, Fig. 2. Fig. 9 is a vertical section taken on

line I J, Figs. 1, 2, 3, showing the configuration of the cross-section of the runners. Fig. 10 is a side elevation of the coupling, and shows the bar-bolt and runner in vertical section. Fig. 11 is a horizontal section taken on line M N, Fig. 4, and showing the coupling and bar-bolts. Fig. 12 is a similar section, showing the coupling slightly modified. Fig. 13 is also a similar section, showing the bar-bolt passing through the center of the coupling.

In the drawings, *a*, Fig. 1, is a long runner, having tree-nails or bar-bolts *bb* for two bars. *cc* are bosses cast around bolts *b*. *d* is the eye or hole for the roller-gudgeon. In Fig. 4, *a* is the runner, *b* the bar-bolt, *e* the cap-rail, *f* the coupling, *g* the whiffletree-support, *h* the chill-hardened projection, which is cast upon the runner, and, being but about one-third the full width of the tread, serves as the wearing-surface when the snow is solidly packed, or when the runner is in contact with rocks or gravel. The dotted lines in Fig. 9 show this projection in vertical section. In Fig. 2, *i* is a depression or curve formed between the bearings J K, which may be either formed as part of the runner *a*, as shown at *k*, or they may be inserted, as shown at J. Upon these bearings the wheel rests, and of whatever diameter it may be, these bearings give it a fair seat. It is locked in position by means of bars or yokes passing through holes or passages *ll* formed through the runner and yokes bearing upon the felly, while screw-bolts passing through both pairs of yokes bind the whole together. In Fig. 5, 1 is the yoke passing through hole *l*, 2 is the yoke that bears upon the felly, and 3 3 are the bolts passing through the yokes. The position of the tire and felly resting on bearing J is plainly shown in this figure. In Fig. 3, *m* is a raised portion of runner *a*, surmounted by a bed, *n*, in which is seated the box *o*, held in place by cap P and the screw-bolts 4, which pass through it into the bed *n*, as is plainly shown in Fig. 6. Through box *o* is a hole, *r*, Figs. 3, 6, 8, for the axle, and by inserting this wooden box it can be readily fitted to all sizes of axles. This box may be divided by a horizontal line, as shown in Fig. 3. In Fig. 10, *s* is the wooden beam or bar which unites the pair of runners, and *f* is the coupling, in the top of which the bar is in-

serted and secured by bolts, rivets, or other means. The vertical portion of this coupling bears upon the runner, while grooves in the sides receive the bolts *b b*, as is shown in Fig. 11. If the sled is to be used upon uneven ground, one of the grooves may be enlarged, as shown at *u*, Fig. 12, while the other bolt may pass through a hole, as shown at *V*; or, if it is desirable that the sled be very loose-jointed, but one bolt may be used, as shown at *b*, Fig. 12, or any combination of these modifications may be employed in any desired case.

As shown in the drawings, one, two, or more bars may be used with each pair of runners, having the bolts *b* inserted in them, but for most purposes but one bar will be necessary. The runner shown in Fig. 4 may be advantageously used in lieu of the front wheels of wheeled vehicles, while either the runner shown in Figs. 2 or 3 are used in lieu of the hind wheels, as the front gear is readily detached at the king-bolt, while substituting a simple runner for the hind wheels saves the labor of unshipping the entire gear. The runner shown in Fig. 2 may, for similar reasons, be oftentimes used advantageously upon the same vehicle with either No. 3 or No. 4. The bolt *b*, Fig. 10, is shown as indented or notched near its lower extremity, which is for the purpose of affording a firm hold upon it by the cast metal when it is poured around the bolt.

I do not claim, broadly, a cast-metal sled-runner, as runners of that material, in the form of plank or broadside runners, so called, have been used; nor do I claim, broadly, a runner formed either to be placed beneath a wheel, or upon the axle when the wheel is removed, for I am aware that runners for both these purposes have been used; nor do I claim,

in the abstract, a knee or coupling to unite the bar and runner of a vehicle, as these also have been used; nor do I claim a sled-shoe having a hardened projection formed thereon; but

What I do claim is—

1. A cast-metal sled-runner, provided with the wrought-iron bar-bolts *b b*, substantially as described and shown.

2. A cast-metal runner in which the bolts *b b* are inserted and secured in the bosses *c c* by means of flowing the melted metal around and shrinking it upon the bolts, as described.

3. A cast-metal runner formed to receive the wheel in seat *i*, and with apertures *l l*, in which to insert the clamping-bars, whereby the wheel is secured in position by clamps connecting with the runner directly beneath the wheel-seat, as set forth.

4. A cast-metal hub-runner formed with the raised part *m* for the support of the axle, substantially as described and shown.

5. The insertible box *o*, in combination with a hub-runner, substantially as described and shown.

6. The bracket *g*, formed as part of the runner, substantially as and for the purposes specified.

7. The coupling *f*, formed to receive the bar *s* and the bar-bolts *b*, substantially as described and shown.

8. A cast-metal runner having the chill-hardened projection *h* formed thereon, as and for the purposes specified.

THOS. W. PORTER.

Witnesses:

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EBEN HUTCHINSON.