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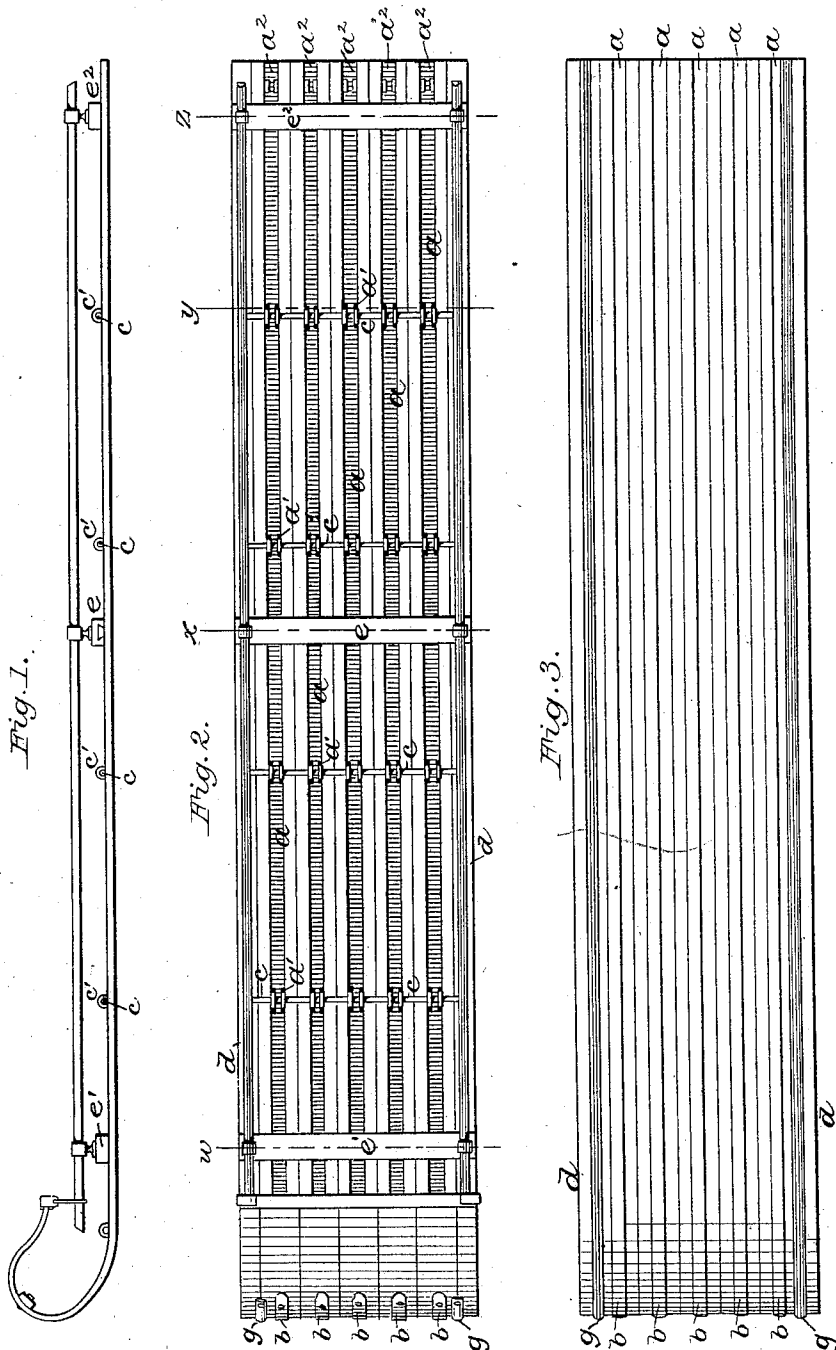
2 Sheets—Sheet 1.

C. H. EMERSON.

COASTING TOBOGGAN.

No. 367,279.

Patented July 26, 1887.



Witnesses

*Lowell Barth*

*Benj. Hill*

Inventor

*Charles H. Emerson*

By *his* Attorney

*Wm. M. Wood*

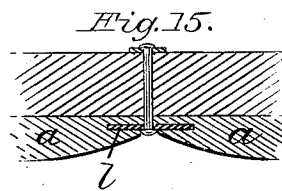
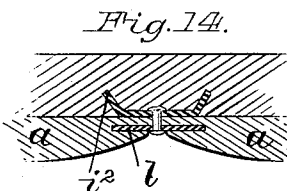
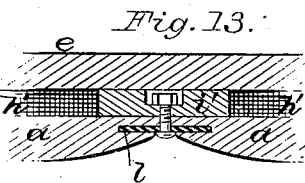
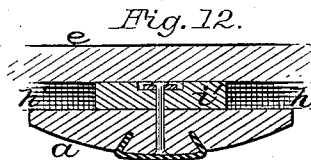
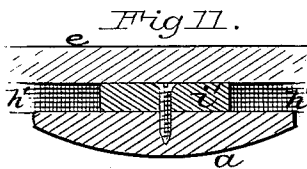
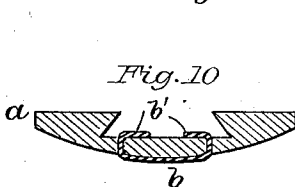
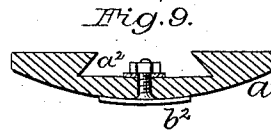
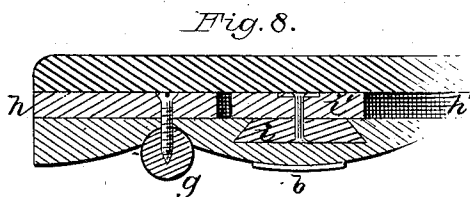
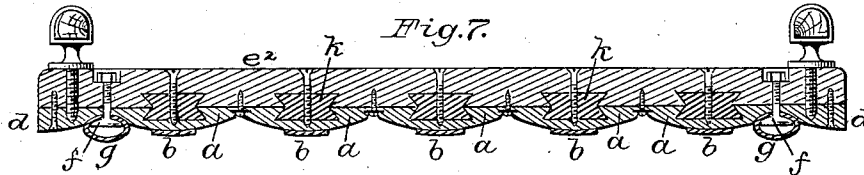
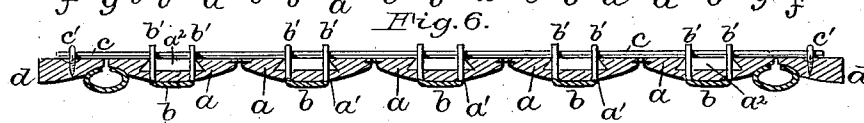
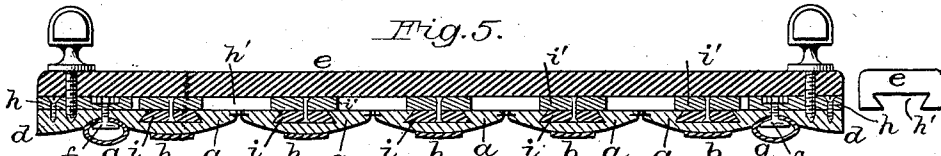
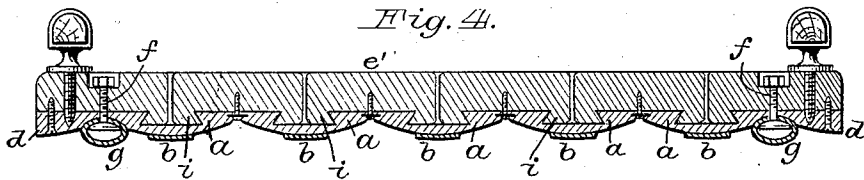
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*Lowell Bartle*

*Benz Hill*

Inventor

*Charles H. Emerson*

By his Attorney

*Wm. C. Wood*

# UNITED STATES PATENT OFFICE.

CHARLES H. EMERSON, OF YONKERS, NEW YORK.

## COASTING-TOBOGGAN.

SPECIFICATION forming part of Letters Patent No. 367,279, dated July 26, 1887.

Application filed January 17, 1887. Serial No. 224,623. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. EMERSON, of Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Coasting-Toboggans; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of my invention.

In my Letters Patent No. 353,547, dated November 30, 1886, I disclosed certain improvements in shoes for slat-toboggans. My present improvements have in part been devised with special reference to the application of shoes, not only so that their bearing-surfaces shall not be impaired by securing devices, but also so that the desired flexibility of the toboggan shall not be impaired.

In this connection one portion of my invention involves the use of a shoe provided with securing-studs which loosely occupy openings or slots in the slats, which constitute the bottom of the toboggan, whereby, although the shoes are properly secured in place, they do not impair the flexibility and resiliency of the toboggan, because they are not secured to the main cross-bars, and as the shoe and the slat are bent or sprung the studs can play or move in said slots without liability of deranging the proper relations of the shoes with those portions of the toboggan to which they are applied. In my said prior Letters Patent I disclosed metal shoes secured to the slats by means of side flanges on the shoes, which embraced portions of the slats, and hence they were secured in place on the slats without the aid of studs and independently of the cross-bars, and while that construction is specially valuable in certain classes of goods, I now find it desirable in certain other classes to employ studs which do not impair the bearing-faces of the shoes, and to secure the shoes to the slats independently of the usual cross-bars to which the slats are secured. Metal shoes have also heretofore been applied to the bottoms of toboggans by means of bolts passing through the shoe from its bearing-face, and also through the bottom and the usual or main cross-bars; but, as before stated, my present shoes have an unimpaired bearing-face, and their studs

pass loosely through slots in the slats, and are secured thereto wholly independently of said main cross-bars. In one of its best forms the shoe is provided with integral securing-studs, and the slats are each slotted to receive said studs. Separate shoe-studs can, however, be employed, and slots for receiving them can be provided between any two bearing-slats, in accordance with one portion of my invention, and in this case the shoes and studs, co-operating with novel coupling-blocks engaged by said studs, can be relied upon for coupling the shoe and slats together, the latter being clamped between said blocks and the upper side of a shoe, and said blocks can also serve as means for connecting with the shoe and slats an overlying cross-bar, which is grooved so as to receive and interlock with said blocks.

Another feature of my invention consists in uniting the slats to the cross-bars by means of dovetailed connections, which, while effecting a reliable union of those parts, afford a desirable degree of flexibility conducive to high speed. This mode of coupling the slats and cross-bars is of value, whether the slats be shod or unshod. In their best form these connections are double dovetailed coupling-blocks riveted together, so as to swivel on each other, and one block occupies a dovetailed groove in the slat and the other a similar groove in the cross-bar. A single coupling-block can, however, be used with fair results as to flexibility. These coupling-blocks in various forms can also be used independently of shoes and their studs for flexibly clamping two slats together and for uniting a cross-bar to the united block and slats.

Instead of wholly relying upon cross-bars, as heretofore applied or as now devised by me, for binding the slats together, I now use a few main cross-bars and intervening slender and flexible locking-bars, which are loosely secured to each slat, so that while said locking-bars co-operate with the main cross-bars as strengthening devices a lighter, much more resilient, and flexible toboggan is afforded than if said cross-bars were used in lieu of said locking-bars. With one form of my slat-shoes said locking-bar is relied upon for securing the shoes to the slats, and I have also provided for closing the spaces between the slats

by means of flexible plates, which are employed both with and without securing-studs and coupling-blocks.

After fully describing my improvements, in connection with the drawings, the features deemed novel will be specified in the several clauses of claim hereunto annexed.

Referring to the drawings, Figures 1, 2, and 3 illustrate in side, top, and bottom views, respectively, a toboggan embodying all of my improvements. Fig. 4 illustrates the same in cross section on line *w*, Fig. 2. Fig. 5 illustrates the same in cross-section on line *x*, Fig. 2, and also shows a cross-bar in end view. Fig. 6 illustrates the same in cross-section on line *y*, Fig. 2; Fig. 7, the same in cross-section on line *z*, Fig. 2. Fig. 8, in section, illustrates a modification of one of the main shoes, its stud, and a dovetail locking-block. Figs. 9 and 10 illustrate in section modifications of my slat-shoes. Figs. 11 and 12 illustrate, respectively, a coupling-block applied to the top of unshod and shod slats. Fig. 13 illustrates in section a pair of slats, a cross-bar, a coupling-block, a stud, and a flexible plate, which occupies grooves in the slats in accordance with portions of my invention. Fig. 14 illustrates in section a pair of slats, a stud, a flexible plate, and a special form of coupling-block for uniting a cross-bar to the slats. Fig. 15 illustrates in section a pair of slats, a flexible plate, and a stud directly applied to a cross-bar without the intervention of a coupling-block.

My present improvements, as a whole, have special value in connection with high-priced toboggans of unusual length, with a view to extraordinary carrying capacity and high speed. Such a toboggan will obviously warrant the use of shoes which would be generally deemed too rigid on a short toboggan, and the matter of the weight involved is of comparatively little consequence, requiring only its carriage by two persons or dragging it by one person.

In the toboggan illustrated there are five main bearing-slats, *a*, each having a rounded lower surface, and all (or some of them) are provided with shoes *b*. One feature of novelty in this connection consists in providing any desired number of the slats *a* with a series of short longitudinal slots or openings, *a'*, and their shoes are provided with vertical securing-studs *b'*, which extend upward through said slots and enable a shoe to be so coupled to a slat that it will be securely maintained in proper contact therewith, and yet not materially impair the flexibility of the toboggan, it being obvious that the slat and shoe can be readily sprung or bent, because the openings or slots *a'* permit a sufficiently free longitudinal play, as between the studs and the slat, to permit either to be bent freely. In its best form this slat-shoe has integral studs *b'*, as clearly shown in Fig. 6, which are bent upward and extend above an upper surface of the slat, and are provided with holes or eyes

for the reception of a slender flexible locking-bar, *c*, which extends across the tops of the slats and is common to all of the shoes. The use of these locking-bars *c* will obviously enable a less number of the usual cross-bars to be used than would otherwise be required, because said locking-bars serve as binders for flexibly uniting all of the slats. Said bars may be composed of strong hard wood, or of iron, steel, or brass rod or wire of suitable size, and preferably round or half-round in cross section. The front ends of the slat-shoes *b* are bent to conform to the surface of the hood, and are firmly riveted to the front bent portions of the slats.

At each side of the toboggan there is a side slat, *d*, which is substantially one-half as wide as a slat, *a*; but it carries no shoe. Each side slat, as well as the adjacent slat *a*, at or near each of the main cross-bars *e* and *e'*, is laterally recessed, so as to afford between said slats a slot or opening to serve the same purpose as the hereinbefore-described slots *a'*, in receiving securing-studs *f*, used in connection with a pair of main shoes, *g*, each shoe being located between a side slat, *d*, and the adjacent slat, *a*. In its best form this main shoe is composed of sheet metal bent into the form of a longitudinally-slotted flattened tube, as shown. Each securing-stud *f* is provided with a rectangular head having rounded edges, so that it may conform to the interior upper surface of the shoe, and the shank is threaded to receive a coupling-block, *h*, which extends each way from the stud and overlies the two adjacent slats, so that when said block is secured to the stud the shoe and both slats are well clamped together. The front ends of the shoes *g* are flattened, bent to conform to the hood, and firmly clamped to the adjacent slats and to a hood cross-bar.

The coupling-blocks *h* may be composed of metal, in which case they can be drilled and tapped to operate as nuts; but if made of wood they are each preferably recessed on top to receive a washer and a nut tapped to engage with the stud *f*, as shown. In lieu of having the head of the stud *f* within the shoe *g*, the nut may be placed therein, in which case the head of the bolt may be tapered like a screw-head and slotted to receive a screw-driver.

Each coupling-block *h* is angular at its sides to enable it to operate as a dovetail when it occupies a longitudinal dovetail groove, *h'*, in a cross-bar, *e*, so that each pair of blocks *h* serves to first couple the shoe *g* with the two slats and then to unite them with a cross-bar. The slats *a* are also coupled to the cross-bars in a novel manner. Each slat has on its upper side a central longitudinal groove, *a''*, inclined or angular at its sides for the reception of a dovetail block, *i*, which is coupled to a second dovetailed block, *i'*, by means of a bolt, screw, or rivet. The blocks may be constructed integrally, if desired, although I prefer them at the middle cross-bar in two pieces, as shown,

because of the greater flexibility afforded thereby. It will be seen that said blocks stand at right angles to each other, so that when one occupies the groove  $a^2$  in a slat,  $a$ , the other occupies the dovetail groove  $h'$  in the cross-bar  $e$ . This mode of coupling the cross-bars to the slats in a toboggan of the variety shown need only be employed in connection with the middle cross-bars,  $e$ , because of the central twisting strains to which the toboggan is exposed, and it will be seen that while a thoroughly desirable union of these parts is thus obtained, there is a capacity for more or less flexibility at each and every point of connection. As a rule, a single screw will serve to secure a cross-bar against undue longitudinal movement, and said screw may be passed through the bar into one of the coupling-blocks; but I prefer that both ends of the cross bar groove  $h'$  be closed, either by a short inserted block or by the coupling-blocks  $h$ , so that each of the screws or bolts by which the hand-rail posts are secured may pass through the cross-bar and the block and into or through the side rail. The front bar,  $e'$ , should be more rigidly secured to the slats than the middle bar,  $e$ , and at the same time its connections should afford sufficient play between the connected parts to secure the desired degree of flexibility. The coupling-blocks  $i$  are either integral with the cross-bar  $e'$  or riveted thereto, and are dovetailed into the grooves  $a^2$  of the slats.

The rear cross-bar,  $e''$ , should be more strongly and rigidly coupled to the slats than either of the others, and hence, as with the front cross-bar, the studs  $f$  extend directly through said cross-bar  $e''$ , and their nuts are set up firmly thereon. The slats  $a$  are secured to the rear cross-bar by means of coupling-blocks which are not only fitted to dovetail into the grooves  $a^2$  in the slats  $a$ , but also to occupy dovetail grooves in the cross-bar, but crosswise thereof, and the bar, the block, and slat are clamped together by means of a screw passing downward through the bar, all substantially as shown in Fig. 7. Single coupling-blocks, occupying only the groove in the slat, may also be used with this rear cross-bar, which can then be ungrooved on its under side.

The side slats,  $d$ , are preferably further secured by means of small screws passing downward through the coupling-blocks  $h$ , and also at the rear and front cross-bars; and at each end of a transverse locking-bar,  $c$ , said side slats should have a staple or a screw-eye, as at  $c'$ , for receiving the end of the locking-bar.

The combination of the slats, the heavy or main cross-bars, of any kind, and the intermediate locking-bars,  $c$ , I deem of special value, whether the slats  $a$  have shoes or not; but in the latter case the several slats will each be provided with screw-eyes or staples, like those at  $c'$  on the side slats, it being obvious that the binding effect of the main cross-bars will be supplemented by the locking-bars, which are so flexibly connected with the

slats as in effect to approximate closely to the dovetailed connections at the cross-bar  $e$ . The slats are further secured together and to the cross-bars by means of novel plates interposed between the slats, as will be hereinafter fully described.

Instead of the double coupling-blocks  $i, i'$ , a single block can be successfully used with a flat-topped slat, as shown in Figs. 11 and 12, wherein the block  $i'$  is, as before described; but it is directly secured to the slat. With an unshod slat the block-securing screw should be passed downward through the block into but not through the slat, as in Fig. 11; but if the slat be shod, the blocks can be secured to the slats by means of copper or other rivets, as shown in Fig. 12, the shoe there illustrated being of the kind disclosed in my aforesaid Letters Patent, and it is applied after the blocks have been riveted to the slat. The single coupling-block can also be successfully employed, independently of a main shoe, for flexibly clamping two slats at their edges, as illustrated in Fig. 13, wherein the two slats  $a$  are laterally slotted at their coincident edges for the reception of a thin flexible plate,  $l$ , which in turn is bolted or riveted to the coupling-block  $i'$ , and the latter is dovetailed to occupy the longitudinal dovetailed groove  $h'$  in the cross-bar  $e$ . In lieu of the longitudinal dovetailed groove in the cross-bar, it may, as shown in Fig. 14, have transverse inclined grooves for the reception of the correspondingly-bent ends of a coupling-block,  $i'$ , composed of metal, and riveted under clamping strain to the plate  $l$ , which is as in Fig. 13. The cross-bar and block thus united provides for a strong but flexible connection, although not quite so flexible as when the cross-bar is longitudinally grooved, although the cross bar itself is rendered more flexible because of the transverse slots therein. Whether these plates  $l$  serve merely as slat locking or binding devices, co-operating with studs or rivets, or also as means for coupling the slats together and breaking the joints between the slats, or solely perform this latter function, they are a radically novel and valuable feature. As shown in Figs. 4, 5, 6, and 7, these plates  $l$  extend throughout the length of the slats, and, coupling them together at their coincident edges, they serve to close the spaces between the slats, thus excluding snow and contributing greatly to the strength of the toboggan, without impairing its flexibility or preventing the slats from freely shrinking and swelling without liability of splitting or deranging the securing devices. As shown in Figs. 4 and 15, the plate  $l$  is directly riveted or screwed to the cross-bar  $e'$ , and it will be obvious that a desirable union of the slats with a cross-bar will be obtained even if no dovetailed connections be used, as will be desirable in cheap toboggans, wherein economy in construction must be duly considered. When said plates are not to be engaged

by securing-studs, they can be made of quite thin sheet metal, preferably non-corrosive—such as zinc, tin, or brass—but other materials may be used without departure from my invention.

It is to be understood that the main shoes *g* may be widely varied in construction without departure from my invention—as, for instance, instead of being tubular, they can be solid, as shown in Fig. 8, in which case, if the shoe be of metal, the securing-studs would be threaded at both ends and tapped into holes in the shoe, and when the latter is solid it can be made of hard fine-grained wood or shod with steel plate, and then, instead of bolts, screws can be used, as shown, passing downward through the coupling-block *h* into the shoe. So, also, can the slat-shoes be varied in form, and their securing-studs correspondingly varied—as, for instance, as shown in Fig. 9, wherein the shoe *b'* has its securing-studs centrally located thereon; but they freely occupy slots or openings in the slat *a*, and are provided with nuts which bear on plates or washers, which bridge the slots and thus provide for the flexibility desired.

If the long shoe-locking bars *c* be not desired, each shoe *b* may have short bars or pins; or, as shown in Fig. 10, the studs *b'* may be bent toward each other on top of the slat or in the dovetailed groove, thus dispensing wholly with the shoe-locking bar at the rear end of the toboggan, as shown in Fig. 2.

With the main shoes constructed and applied in their best form, the slat-shoes may be in whole or in part omitted when economy is sought; but I prefer in large toboggans to have a full set of shoes, even if the central shoes are composed of fine hard wood and dovetailed into slats composed of the ordinary material.

It will be obvious that the slots occupied by the shoe-securing studs should be varied in length, according to the size and form of the studs, it being only necessary that in the bending and springing of the combined shoe and slat the studs should have sufficient play in said slots to not permit the shoes to impair the flexibility of the toboggan.

In high-priced toboggans of extra length I embody all of the several features of my invention; but more or less of said features can obviously be omitted with a view to reduction in cost, and many of said features can be profitably employed in cheap light toboggans of the ordinary lengths.

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

1. In a coasting-toboggan, the combination of a series of slats, cross-bars to which said slats are secured, and metal shoes provided with securing-studs which do not impair the bearing-faces of said shoes and extend upward through the slats, loosely occupy slots therein, and are secured at the top thereof, substantially as described, whereby said shoes have a perfect bearing-face and can be coupled

to the slats independently of said cross-bars and resilient flexibility secured in both the slats and the shoes.

2. In a slat-bottomed toboggan, the combination, with slats having on top a longitudinal dovetailed groove, a cross-bar provided with a dovetail groove, and dovetailed coupling-blocks, each of which occupies a slat-groove and also the groove in a cross-bar, substantially as described, whereby the cross-bar and the slats are flexibly coupled together.

3. In a slat-bottomed toboggan, the combination, with a pair of slats, of a bearing-shoe provided with a securing-stud located between said slats and co-operating with a coupling-block, between which and said shoe said slats are clamped, substantially as described.

4. The combination, with a flexible wooden toboggan-slat, of a flexible metal shoe provided with integral studs passing upward through said slat and secured at the upper surface or top thereof, substantially as described.

5. In a slat-bottomed toboggan, the combination, with the slats, of slat-shoes provided with securing-studs extending through the slats and a transverse locking-bar passing through said studs on top of the slats, substantially as described.

6. In a slat-bottomed toboggan, the combination, with the slats, of the main cross-bars and the slender locking-bars *c*, between said cross-bars, and loosely coupled to the slats, substantially as described.

7. The combination, with the bottom of a toboggan, of a tubular shoe longitudinally slotted and a securing-stud occupying the slot in said shoe and engaging with the overlying portion of the toboggan, substantially as described.

8. In a slat-bottomed toboggan, the combination of a pair of slats, a stud, and a dovetailed coupling-block for clamping the edges of both slats, and a cross-bar grooved for the reception of said coupling-blocks, substantially as described.

9. The combination, with a series of slats, each having on top a longitudinal dovetailed groove, of a cross-bar coupled to said slats by means of dovetailed connections, substantially as described.

10. In a slat bottomed toboggan, the combination of slats having their edges laterally grooved or slotted throughout their length and a thin flexible plate occupying the lateral grooves in the slats, substantially as described.

11. In a slat-bottomed toboggan, the combination of slats having their edges laterally grooved or scored, plates occupying said grooves, and studs passing through said plates and into overlying portions of the toboggan, substantially as described.

CHARLES H. EMERSON.

Witnesses:

PHILIP F. LARNER,  
HOWELL BARTLE.