

(No Model.)

W. L. HAAG.
SLEIGH.

No. 558,556.

Patented Apr. 21, 1896.

Fig. 1.

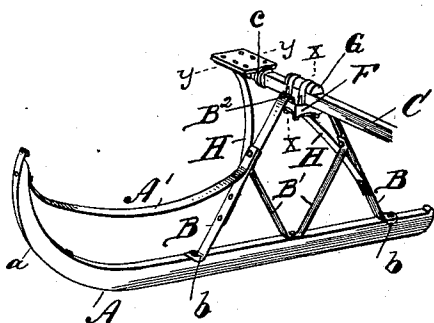


Fig. 4.

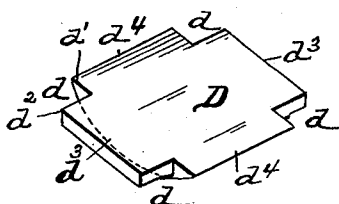


Fig. 2.

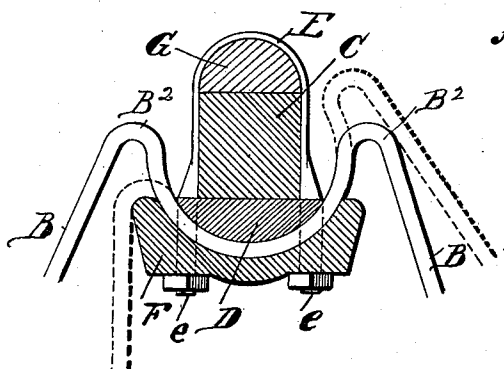


Fig. 5.

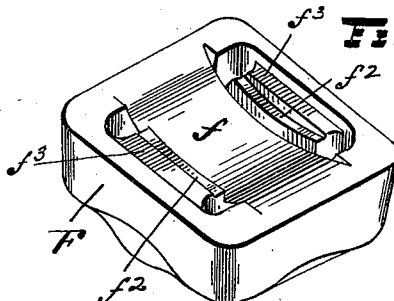


Fig. 3.

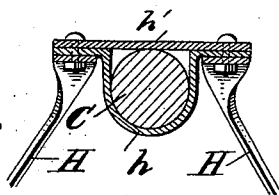
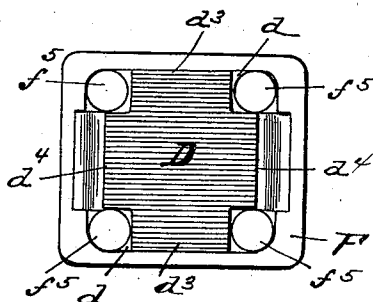


Fig. 6.



WITNESSES

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SLEIGH.

SPECIFICATION forming part of Letters Patent No. 558,556, dated April 21, 1896.

Application filed October 4, 1895. Serial No. 564,590. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. HAAG, a citizen of the United States, and a resident of Lansing, in the county of Ingham and State of Michigan, have invented new and useful Improvements in Sleighs; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

My invention is related to that class of sleighs termed "bob-sleighs" or "carriage-runners." Its object is to connect the bolster or carriage-axle to the knee of the sleigh by a clamp solidly attached to the bolster or axle and movable on the knee instead of a clamp which is a part of the knee and movable on the axle.

It consists of a knee so constructed that it forms a semicircular rest for the bolster, which has a clamp solidly attached to it, through which the curved portion of the knee passes, and in which it moves forward or backward as the runner is thrown up or down in passing over the inequalities of the road, and in the peculiar construction and arrangement of the several parts, as hereinafter more particularly set forth and claimed.

Figure 1 is a perspective view of my sleigh-knee or carriage-runner. Fig. 2 is a section through the upper part of the knee and the bolster on the line *x x* in Fig. 1. Fig. 3 is a section through the support of the outer end of the bolster on the line *y y* in Fig. 1. Fig. 4 is a perspective view of the semicylindrical block attached to the under side of the bolster. Fig. 5 is a perspective view of the retaining-block on the under side of the semicircular top of the knee, showing the recess for the knee and for the block attached to the bolster. Fig. 6 is a plan view of the retaining-block, showing the block on the under side of the bolster resting on its recess.

In the drawings, A represents the runner provided with the usual shoe *a*.

A' is a brace or rave connected to the front end of the runner and extending back to the front leg of the knee, to which it is securely riveted or bolted.

BB are the front and back legs of the knees some distance apart on the runners, inclined

toward each other, so as to be but a short distance apart at the top. These legs are prolonged in the feet *b b*, provided with flanges to embrace the runner, and are securely fastened to the runner by bolts passing through the feet *b b* and the runner and shoe.

B' is a bar of the same width as the knee, fastened at its central point to the runner, at the middle point between two feet of the knee, having its two ends turned upward as braces to the two legs B B of the knee to which they are firmly riveted. This construction makes the knee strong enough to carry a heavy burden and to resist great strain either forward or backward.

The upper or central part of the knee is bent downward between the two legs in a semicircle to form the curve B², on which the axle or bolster C rocks.

D is a semicylindrical block fastened to the under side of the axle or bolster C near its outer end. The axle or bolster is of the ordinary construction, except the block D, which takes the place of the usual bearing for the hub. The upper or flat face of the block D is in contact with the axle and the rounded or lower face bearing on the curved part B² of the knee.

Recesses *d d d d* are cut in the block D at each of its four corners, forming the shoulders *d' d' d' d'* and *d² d² d² d²*. These shoulders rest against the bolts *e* on the clips E, which pass through the recesses *d* and the perforations *f* in the retaining-block under the curved top of the knees.

The arms or projections *d³ d³* on the block D are flat on their under side with square ends and rest on a flat shoulder at the end of the recess *f* in the retaining-block F and against the wall or end of the recess.

The arms or projections *d⁴ d⁴* do not entirely cover the sides of the curved recess *f*, but leave an opening between the bearing-block D and the retaining-block F for the reception of the curved top B² of the knee, which supports the axle or bolster.

F is the retaining-block under the curved top B² of the knee attached to the axle or bolster by the bolts *e* at the ends of the clips E, passing through the perforations *f*. A concave recess *f* is formed in the upper side of

the block, having the same curvature as the under side of the semicircular top of the knee. At the ends of this recess a curved ledge or shoulder f^2 is cut, having the same curvature
 5 as the under side of the bearing-block D, which rests upon it, leaving a space or opening between the under side of the bearing-block and the concave recess f of the proper size and form to receive the curved top B^2 of
 10 the knee. The dotted outline of the upper part of the knee in Fig. 2 of the drawings shows the extent of the play of the knee on the axle or bolster.

Another shoulder f^3 is cut above the shoulder f^2 in both ends of the recess, having a flat straight surface and side for reception of the arm $d^3 d^3$ of the bearing-block D. The end walls of the recess f , engaging with the ends of the bearing-block D, prevent any lateral
 20 play of the knee on the axle or bolster.

G is a semicylindrical block or saddle on the top of the axle for the purpose of obtaining a longer bearing for the clips E, which straddle the block and axle, and the ends
 25 pass down through the recesses $d d$ on the bearing-block and the perforations f^5 through the block F, where they are secured by screws and nuts. It is evident that this block G may be entirely omitted if the bolster is large
 30 enough to afford sufficient bearing for the clips.

H H are two braces or arms projecting outward from the lower part of the front and back legs of the knee and inclining toward
 35 each other at about the same inclination as the inclination of the legs of the knees. The downwardly-projecting curved plate h and the flat plate h' above the curved plate h are firmly attached to the outer upper ends of
 40 the arms H H in a horizontal position by bolts or rivets. These two plates form a semitubular socket, having its axis in a straight line with the axis of the bolster or axle of the

sleigh. The outer end of the axle or bolster C is rounded to engage with this socket, and
 45 is provided with the collar C' to prevent end play of the socket on the axle. These braces or arms thus connected with the outer end of the axle or bolster prevent any lateral motion of the runner either inwardly or outwardly,
 50 while leaving it free to work backward or forward as it passes over the inequalities of the road.

What I claim as my invention is—

1. The combination of a sleigh-knee, having a downwardly-curved upper end, with a
 55 block through which the downwardly-curved upper end of the knee passes firmly attached to the bolster, and the bolster above the knee, all substantially as described.

2. The combination of the downwardly-curved upper portion B^2 , of the knee, with the retaining-block E, through which the
 60 downwardly-curved portion of the knee passes firmly attached to the bolster, and the bolster above the knee, all substantially as described.

3. The combination of the knee having a curved top which rocks on the bolster, the bolster convex on its lower side to rest on the
 65 curved top of the knee, and the retaining-block through which the curved top of the knee passes firmly attached to the bolster, all substantially as described.

4. The combination of the knee having a curved upper end with a bolster resting on
 75 the curved upper end of the knee, a retaining-block under the curved part of the knee firmly attached to the bolster, the arms extending from the knee supporting the socket, and the socket for the reception of the end of
 80 the bolster, all substantially as described.

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Witnesses:

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