No. 720,878. PATENTED FEB. 17, 1903.

H. BLOW.

KNEE FOR SLEIGH RUNNERS.

APPLICATION FILED APR. 3, 1902.

NO MODEL.

Fig. 1.

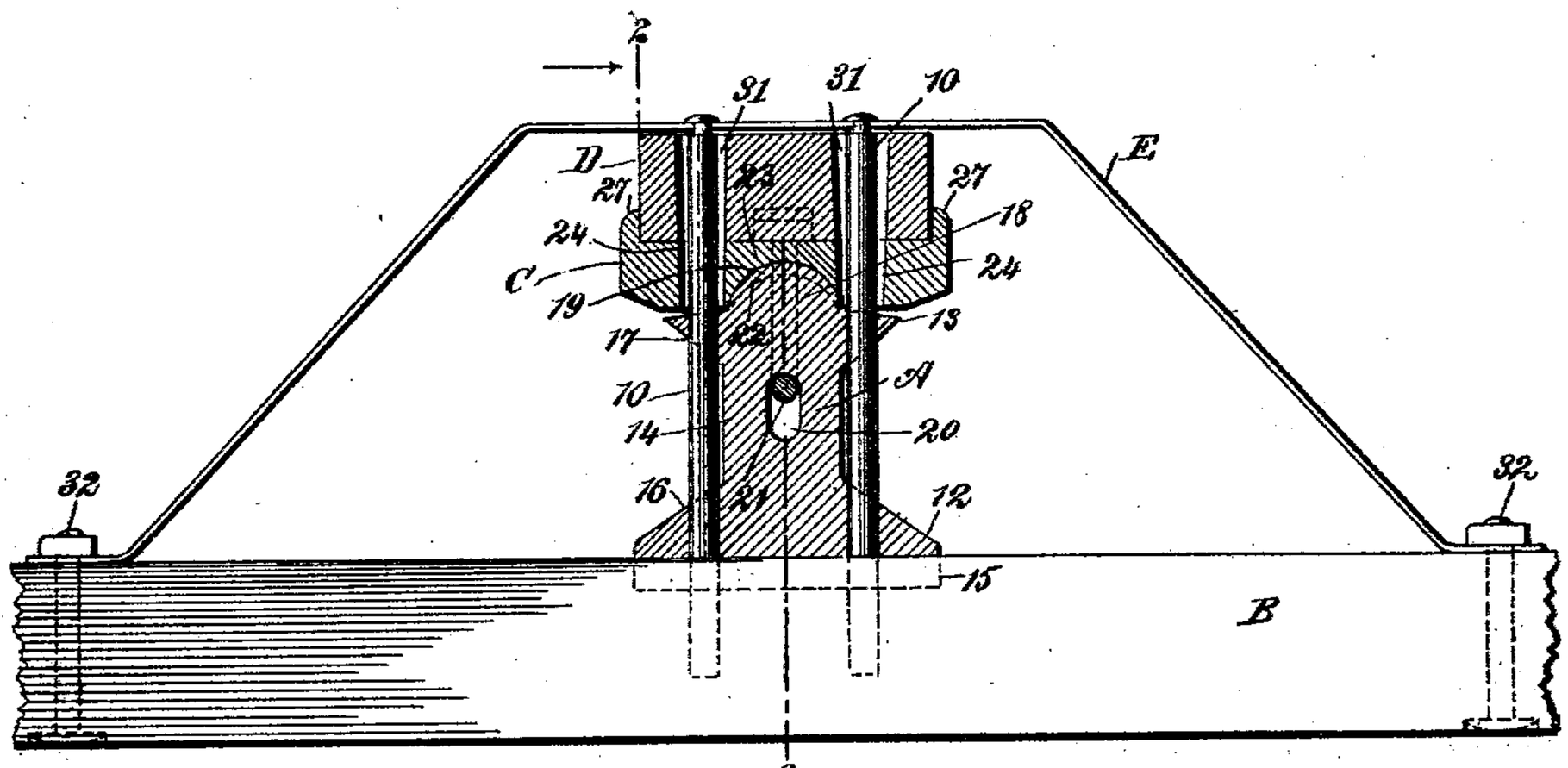


Fig. 2.

Fig. 3.

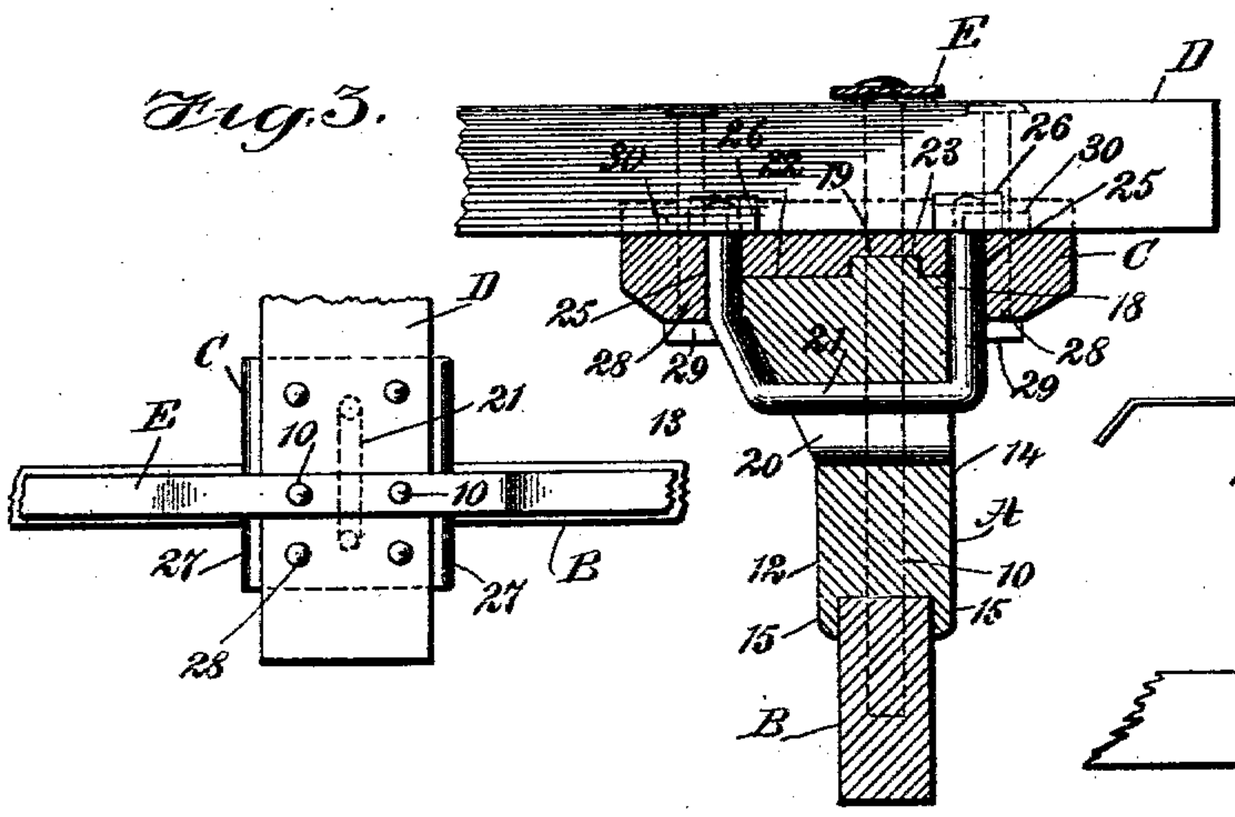
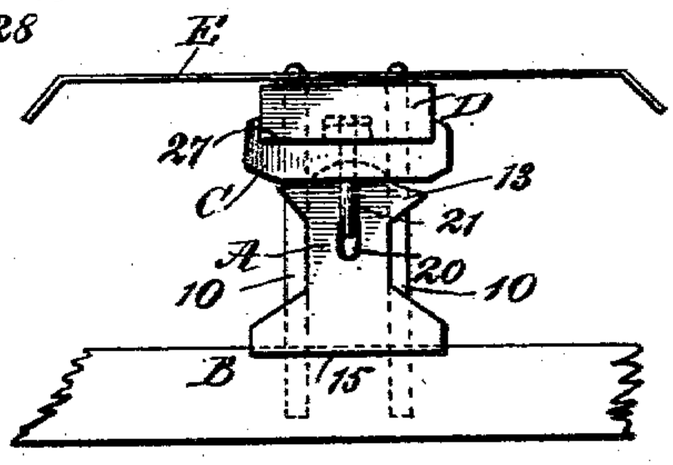


Fig. 4.



WITNESSES:

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HENRY BLOW, OF ELLISTON, MONTANA, ASSIGNOR OF ONE-FOURTH TO WILLIAM BLOW, OF ELLISTON, MONTANA.

KNEE FOR SLEIGH-RUNNERS.

SPECIFICATION forming part of Letters Patent No. 720,878, dated February 17, 1903.

Application filed April 3, 1902. Serial No. 101,228. (No model.)

To all whom it may concern:

Be it known that I, HENRY BLOW, a citizen of the United States, and a resident of Elliston, in the county of Powell and State of Montana, have invented a new and Improved Knee for Sleigh-Runners, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a construction of sleigh-runner whereby splitting of the bunk will be obviated and an oscillation of the runner is permitted of at least five inches at either end, thus preventing any twisting action on the bunk, as one end of the runner may drop freely while the other end rises without straining any portion of the structure above the runners, as the bunk will remain level.

Another purpose of the invention is to provide a construction of knee which will not tend to weaken the bunk and wherein the cap on the knee is so constructed as to extend upward on either side of the bunk to hold it in place and also to prevent too great a pressure on the bolts connecting it with the bunk.

Another feature of the invention is to provide a rocking clip connection between the cap and the knee which will prevent the cap from rising off the knee and bending the rave or pushing it off of the standards, and yet not interfere with the rocking motion of the knee relative to the cap, which arrangement also prevents snow and ice getting into the grooves between the knee and cap and freezing, thus interfering with the action of the knee.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a portion of a runner and a vertical section through the improved knee and its accessories. Fig. 2 is a vertical section taken practically on the line 2 2 of Fig. 1. Fig. 3 is a plan view of the improved knee and its accessories, and Fig. 4 is a side elevation of a portion of a runner and knee.

Where the knee A is to be attached to the runner B two guide-rods 10 are secured to the runner, extending upward therefrom a desired distance, as is shown in Fig. 1. The knee A consists of a base-section 12, a head-section 13, and a body-section 14. The base-section is adapted to have an extended bearing upon the runner B and is of greater length longitudinally and horizontally than the other sections of the knee and is provided with downwardly-projecting side flanges 15, which engage with the outer and inner faces of the runner, affording the knee a firm and extended seat upon the runner. The head-section 13 of the knee is larger than the body-section 14, but preferably smaller than the base-section 12, and while the outer side surface of the knee is preferably straight or in the same vertical plane from top to bottom, the upper portion of the knee at the inner side surface of the head-section is inclined upward and inward from the body-section, as is shown in Fig. 2, and the front and rear surfaces of the head-section also extend upward and outward from the corresponding surfaces of the body-section of the knee, as is illustrated in Figs. 1 and 4. Apertures 16 and 17 are respectively made in the forward and rear extensions of the base and head sections of the knee, through which apertures the guide-rods 10 pass some distance beyond the top of the knee, and these rods serve to hold the knee stationarily upon the runners. The upper surface of the knee is flat adjacent to its front and rear edges; but at the center of said upper surface of the knee a transverse rib 18 is formed segmental in cross-section and extending from side to side of the head of the knee, and immediately between the guide-rods 10 and therefore at a point immediately over the runner an auxiliary segmental rib 19 is formed upon the main rib 18, the length of the auxiliary rib being in direction of the longitudinal axis of the runner, as is shown in Figs. 2 and 3. Finally, in the construction of the knee a vertical elongated slot

20 is produced in the body-section thereof, extending from side to side, which slot loosely receives the bow-section of a substantially U-shaped clip-bolt 21, whose side members are rounded at their extremities and are adapted to extend upward beyond the head-section of the knee in conformity with the side surfaces of said head-section, as is shown in Fig. 2, so that the clip-bolt is capable of rocking motion in direction of the front and rear of the runner.

A cap C is mounted to rock upon the head-section of the knee and extends horizontally beyond all sides thereof, and in the bottom of this cap a central recess 22 is made, semicircular in cross-section and located at right angles to the runner B, which recess 22 receives the segmental rib 18 on the knee, and in the wall of said main recess 22 a transverse auxiliary recess 23 is made to receive the auxiliary rib 19 on the head of the knee. At the end portions of the auxiliary recess 23 transversely-elongated openings 24 are cut in the cap, through which the guide-rods 10 loosely pass. These openings 24 are of much greater diameter than the diameter of the guide-rods 10 and taper upwardly and outwardly at their front and rear walls to permit the cap to have rocking motion on the knee A. At the ends of the main recess 22 in the cap apertures 25 are located, through which the threaded ends of the clip-bolts 21 are passed and secured by nuts 26. The bunk D fits upon the cap C, extending at right angles to the runner, and the cap is preferably provided with flanges 27 at its front and rear upper edges to extend up at corresponding sides of the bunk to strengthen the same. The bunk D and the cap-plate C are rigidly fastened together by bolts 28, passing through the cap at each side of the knee and through the bunk, the heads of the bolts being countersunk in the bunk and the lower ends of the bolts having nuts 29 applied.

Where the bolts 28 pass through the cap C, bosses 30 are provided at the top of the cap to strengthen the same, as is shown in dotted lines in Fig. 2, and the under face of the bunk is provided with recesses to receive the bosses and recesses to receive the nuts 26 of the clip-bolt 21. The bunk is further provided with tapering openings 31, registering with the openings 24 in the cap, through which openings 31 the guide-rods 10 are passed, and the bunk is enabled to rock with the cap C upon the knee A.

The rave E is attached to the runner B by rave-bolts 32, and where the rave crosses the bunk the guide-rods 10 are passed through it and are headed, whereby the rave and runner rise and fall together, and the rave is not affected by the rocking movement of the knee upon the cap C. The knee is shorter than ordinary from the runner to the bunk because a portion of the space is occupied by the cap C, and the shorter the knee the stronger it is, all things else being equal. The knee has an extended bearing upon the runner and sits firmly thereon, and this, together with the oscillation at the cap, prevents to a great extent the bending of the runner under the knee.

It will be observed that there are no ends of nuts or bolts extending above the upper face of the bunk to interfere with the revolving of the bolster, and the knee and cap are preferably made of steel to fit any single-kneed sleigh now in use. By this method of construction I claim to have strengthened the bunk with the cap.

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

1. The combination with a sleigh-knee provided with flanges at its base adapted to engage with the side faces of the runner, and with an elongated vertical opening between its top and bottom, the knee being also provided with a rib upon its upper surface, segmental in cross-section and extending at right angles to the runner to which the knee may be applied, the said rib being provided with an auxiliary rib extending at right angles to the main rib, of a cap fitted to the upper surface of the knee, having recesses therein to receive the two ribs on the knee, the said cap being provided with flanges extending upwardly from opposite sides, a U-shaped clip-bolt passed loosely through the elongated opening in the knee, the ends of which clip-bolt are attached to the cap, a bunk resting on the upper face of the cap between the side flanges thereof, the bunk and cap being provided with registering downwardly-tapering openings, bolts connecting the bunk and cap, guide-rods for the knee passed through the same and through the tapering openings in the cap and bunk, and a rave secured to the upper ends of the said guide-rods, for the purposes set forth.

2. The combination with a runner, of a knee having front and rear extensions at its upper and lower ends and provided with openings extending through said extensions, downwardly-extending flanges at the sides of its lower end, an elongated vertical opening between its ends, and at its upper end with a transverse segmental-shaped rib and an auxiliary rib extending at right angles to the main rib, a cap-plate having flanges at its front and rear upper edges and provided with transverse and longitudinal recesses in its under face to receive the ribs of the knee, and with downwardly-tapering openings, a U-shaped clip passed through the elongated vertical opening of the knee and its ends secured to the cap-plate, a bunk rigidly secured to the upper face of the cap-plate between the flanges thereof and provided with downwardly-tapering openings registering with the openings of the cap-plate, vertical rods se-

cured to the runner and passing up through the openings of the knee, cap-plate, and bunk, and a rave having its ends secured to the runner, the central portion of the rave passing over the bunk and secured to the upper ends of said rods, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY BLOW.

Witnesses:
WILLIAM BLOW,
WILLIAM T. KUEHN.