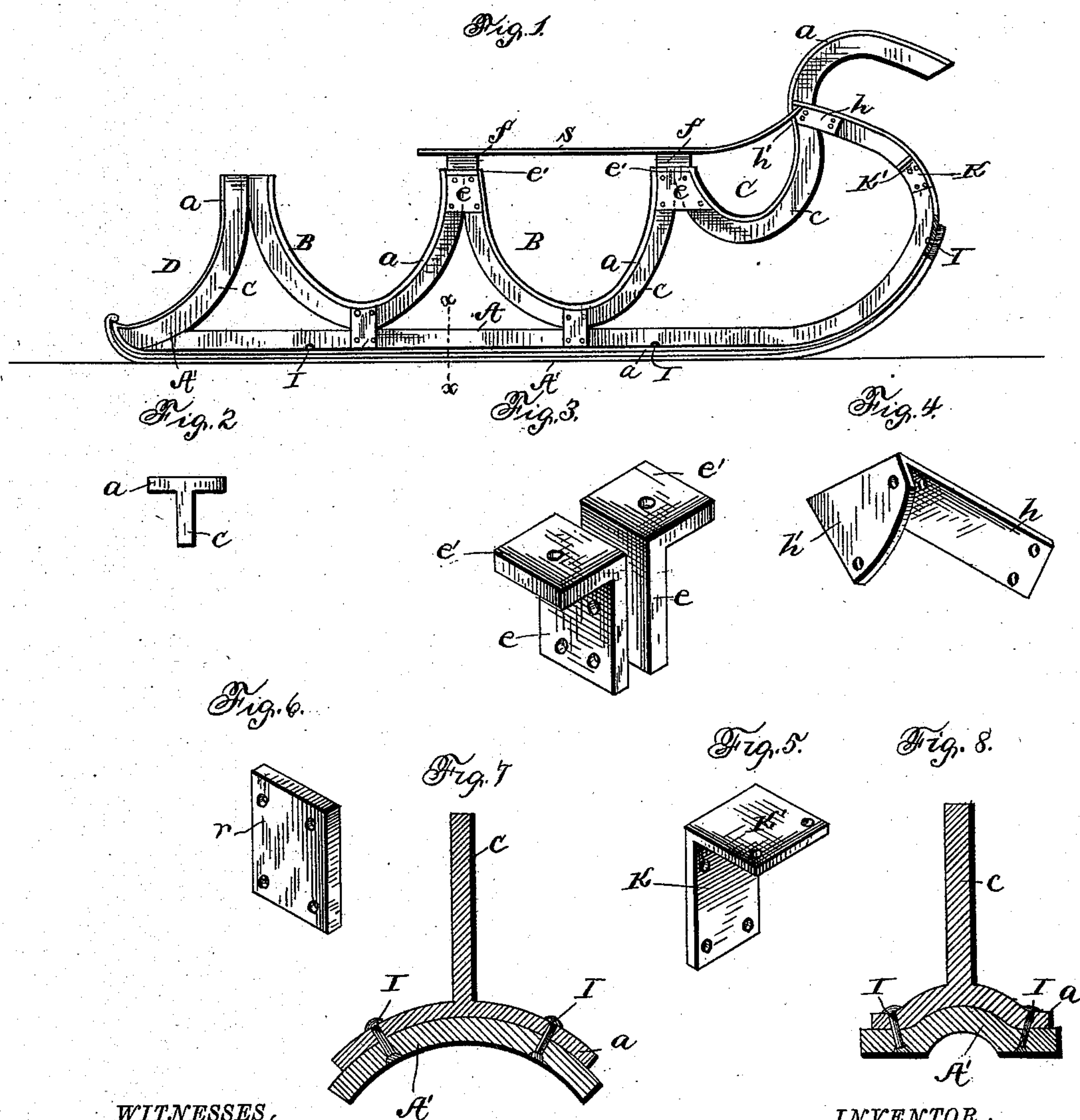


(No Model.)

V. D. JOHNSON.
SLED.

No. 402,019.

Patented Apr. 23, 1889.



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SPECIFICATION forming part of Letters Patent No. 402,019, dated April 23, 1889.

Application filed January 3, 1887. Serial No. 223,266. (No model.)

To all whom it may concern:

Be it known that I, VICTOR D. JOHNSON, a citizen of the United States, residing at Mount Pleasant, in the county of Henry and State of Iowa, have invented a new and useful Improvement in the Construction of Sled or Sleigh Runners, of which the following is a specification.

My invention is an improvement on my patent, No. 331,303 of December 1, 1885, and relates to an improved manner of constructing sled or sleigh runners of T or analogous transversely-shaped or angular metal bars, and has for its object not only an improved runner, but a more convenient as well as more economic method of constructing said runners.

My former patent (above named) contemplates the formation of a runner by bending one continuous bar, so that its several curves will form the several requisite parts of a runner without severing the bar, which requires fixed lengths of bars for each particular size and pattern of runner made, and therefore involves the liability of heavy loss by wasted fragments in the use of bars not made in lengths especially suited for the particular runner for which they are intended, which loss can be largely obviated by carefully cutting ordinary bars into the different lengths required for different curves or elements of a runner, thereby making each of a separate piece and afterward joining them together. By thus cutting the bar there is also a saving of metal equal to that required in making the short bends at the forward ends of the runners and at the tops of the knees, as is required in my former patent above named. A still further advantage derived by cutting the bar into suitable lengths for making the several curves or elements of a runner is the greater convenience obtained thereby in handling said pieces while bending them.

My invention consists in bending pieces of T or other transversely-angular shaped metal bars so as to form separately the respective curves required for making a sled or sleigh runner, and in the manner hereinafter shown of attaching said bent pieces together and the fixtures thereto attached, so as to constitute a perfect runner having superior strength and of extreme lightness.

It further consists in forming both the lower part, or shoe of the runner, and the sole with inverted gutters in their under sides, so shaped by bending the parts involved as to fit each other, thereby securing the advantages of a light but stout guttered runner.

I will further describe my invention by referring to the accompanying drawings, which constitute part of this specification, of which—

Figure 1 is a side elevation of a runner having two sled-benches and part of a fender or rail attached thereto. One of the knees, however, is represented uncapped for more clearly showing the manner of arranging the curved-pieces forming said knees. Other figures are made on a larger scale, of which Fig. 2 is a cross-section of a T-bar used in making the several curved elements of a runner. Fig. 3 is a perspective of a pair of knee-caps detached. Fig. 4 is a coupling-plate for fastening the lower and upper sections of the runner together at its forward end. It is also provided with a projecting flange for attaching the forward end of a fender or rail to it. Fig. 5 is a lug to be fastened to the forward part of the runner as a means of attaching the draft devices to the sled. Fig. 6 is a coupling-plate, (shown detached,) and is for fastening the inverted-arch-curved sections of the runner to the under or sliding bar; and Figs. 7 and 8 are transverse sections of the runner and sole combined, as at the dotted line $x x$, showing different forms of the gutter.

Similar reference-letters will indicate like parts in the different figures.

A is the main sliding bar or shoe, which is made with the cross-flange a of the bar downward, and which may be provided with an additional sole, A' , attached underneath it. B are inverted arches made of separate pieces of like bar as the runner A, having the cross-flange a of the bar on the concave side. D is a curved section of similar bar forming half of an inverted arch, which is fastened to the rear end of the sliding bar A. C represents a piece of similar bar, which may be curved, as most desirable, for shaping the forward part of the runner of either a sleigh or heavy sled. These several parts are coupled and fastened together as follows:

The inverted arches B are arranged on the sliding bar A, as shown, and are fastened

thereto by means of the plates *r*, one of which is placed on either side of the runner, being fitted snugly to the central rib-flange of the bars and between the cross-flanges *a* of the contiguous parts, and securely fastened by riveting through all. The forward end of the bar A is in like manner fastened to the curved bar *c* by means of plates *h*. One of said plates *h* on each runner is provided with a laterally-projecting flange, *h'*, to which the forward ends of fenders or rails *s* are attached. The several contiguous upper ends of the inverted-arch-shaped pieces B and of the half-arched pieces D, and the rear end of the curved pieces C, constituting bench-knees, are fastened together, respectively, by means of the knee-caps, Fig. 3, which caps are placed (one on each side) against the sides of the central flanges, with the flanges *e'* of said caps projecting laterally each way as a means of fastening the sled-benches to them, and are securely fastened together by riveting through all of said parts. Fig. 1 shows two of said knees thus capped and having the sled-benches *f* placed on them. Lugs K, Fig. 5, may be fastened to the forward end of the runners for attaching the draft devices of a sled (as tongue or thills) to the flanges K' thereof in any of the known ways of the art, or holes may be made through the rib-flanges of the runner in lieu thereof for the reception of the pivots of an ordinary roller-bar for a sled-tongue. The soles A', being shaped to fit the under surface of the runner, are securely fastened thereto by means of rivets I or otherwise, which soles when worn out may be conveniently replaced with new ones, thereby greatly extending the durability of the runners.

Having thus fully described my invention, so as to enable others to understand the same, what I claim as new, and desire to secure by Letters Patent, is—

1. A sled or sleigh runner having a shoe, A, shaped as shown, with one or more semi-circular inverted arch-bars, B, resting on said shoe, constituting bench-knees, with a curved brace, D, fastened to the rear end of said shoe as auxiliary to the rear point of a segment, B, and a brace, C, fastened to the forward end of said shoe, supporting the forward point of an inverted segment, B, all formed of separate pieces of T-iron or steel bars, so placed that the web-flange *c* of the respective pieces will lie inward and bear against each other at the several connecting-points, with plates *r* placed on each side of the flanges *c* and riveted to both the shoe A and segments B, and the knee-caps *e*, in pairs, having laterally-projecting flanges extending in opposite directions, being firmly riveted to opposite sides at the meeting-points of the segments B and those also of the braces C and D, with said segments serving as bench-supports, all substantially as shown and described.

2. In combination with a sled or sleigh runner constructed of T or other transverse forms of metal bars, the combination of the bar or shoe A and sole A', both being curved transversely to fit each other, so as to form a longitudinal inverted gutter underneath them, substantially as shown, for the purpose specified.

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Witnesses:

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