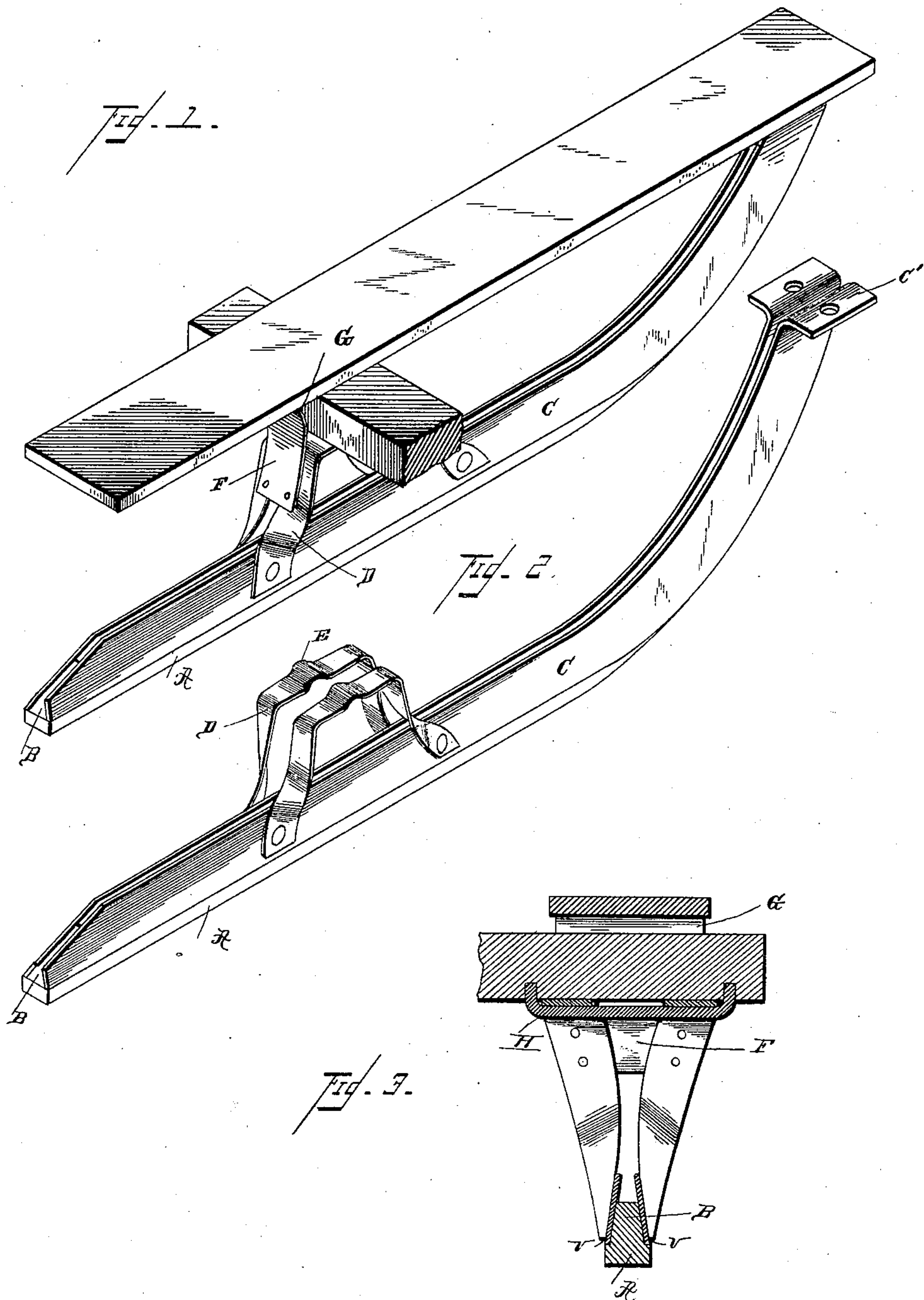


(No Model.)

J. A. JOHNSON.  
BOB SLED.

No. 407,595.

Patented July 23, 1889.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

JOHN A. JOHNSON, OF MADISON, WISCONSIN.

## BOB-SLED.

SPECIFICATION forming part of Letters Patent No. 407,595, dated July 23, 1889.

Application filed April 10, 1889. Serial No. 306,653. (No model.)

### *To all whom it may concern:*

Be it known that I, JOHN A. JOHNSON, a citizen of the United States, and a resident of Madison, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Bob-Sled Runners; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in sled-runners, the primary object being the production of a runner which will be comparatively light in weight, strong and durable, and inexpensive.

The invention consists, first, of a sled-runner having a cast-metal shoe formed with an upper cut-away beveled portion and a runner proper formed of two strips of wrought metal secured to the flange of the shoe; further, in a runner consisting of a cast-metal shoe, a wrought-metal runner of two parts, a knee of wrought metal in two parts, and a curved support for the cross-beam on said knee; further, of a sled-runner having a knee formed of two parts having a curved bearing for the cross-beam and standards secured to the knee for supporting the rave; and, finally, the invention consists in the construction, arrangement, and adaptation of parts, substantially as hereinafter described and claimed.

Figure 1 represents a perspective view of a sled-runner embodying my invention with the rave and cross-beam in position. Fig. 2 represents a perspective view of the runner with the rave and cross-beam removed. Fig. 3 represents a sectional view through the runner and shoe.

Referring by letter to the drawings, in which similar letters of reference denote corresponding parts in said figures, A designates the shoe, which is made of cast metal and formed with an upper cut-away and beveled portion B.

C designates the runner, formed of two strips of wrought metal adapted to be secured to the sides of the flange B and to have their lower edges supported by shoulders *b b*, formed by said cut-away portion, and the ends of the runner are bent outward to pro-

vide lateral ears C' for supporting the rave. By forming the shoe A with the cut-away upper portion having the inclined shouldered sides I provide a convenient seat for the runners and means whereby they may be securely bolted, riveted, or otherwise suitably secured to the shoe, the runners of course, by the shape of the upper portion, being inclined correspondingly and converging toward their upper end.

D designates the knee, consisting of two strips of wrought metal bent as shown, having a bed or support provided with a curved ridge or projection E, forming a bearing for the cross-beam. To the opposite sides of the knee are secured or formed therewith standards F, showing ears G, on which the rave is supported. Adapted to pass beneath the knees D and to fit in the curved ridges or projections thereof is a bar H, provided with up-turned ends which pass into recesses in the under side of the cross-beam, said bar forming a bail or keeper upon which the runner may oscillate or rock.

From the foregoing it is evident that the rave is firmly supported on the standards and runner and that the cross-beam is supported on the knee in such manner as to permit the same to oscillate or rock, thereby passing easily over obstructions.

It is also evident that by making the runner and knee in parts of wrought metal, as described, they are light in weight and yet possess great strength and durability and are less expensive of production.

The wrought-metal part of the runner, instead of being made of two pieces of wrought metal, may be made of one piece shaped like the letter U or the letter V with the opening downward, the flange on the shoe coming up between the two walls of the wrought-metal part.

It is further evident that the manner of making the shoe and securing the same to the runner possesses advantage, and the numerous advantages of my runner will be readily understood and appreciated by all skilled in the art.

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

1. The combination, with a shoe, of a runner consisting of two parts secured to said shoe and having their forward ends flanged outwardly to form a support for the rave of  
5 a sled, substantially as set forth.

2. The combination, with the cross-beam of a sled, of a runner and a knee consisting of two angular pieces having the upper bearing or supporting portions secured to the  
10 cross-beam, substantially as set forth.

3. The combination, with a cross-beam of a sled, of a runner, a knee consisting of two angular pieces having upper bearing or supporting portions, said portions being provided  
15 with central ridges, and a keeper or bail passing beneath the upper portions of the shoes

and fitting in the ridges thereof, the upturned ends of the said keeper or bail passing into the cross-beam of the sled, substantially as set forth. 20

4. In a sled, the combination of a runner, shoes secured thereto, a bail or keeper, a cross-beam, and standards secured to the knees and provided with supporting-flanges for the rave, substantially as set forth. 25

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

JOHN A. JOHNSON.

Witnesses:

J. H. NICHOLS,

A. E. PROUDFIT.