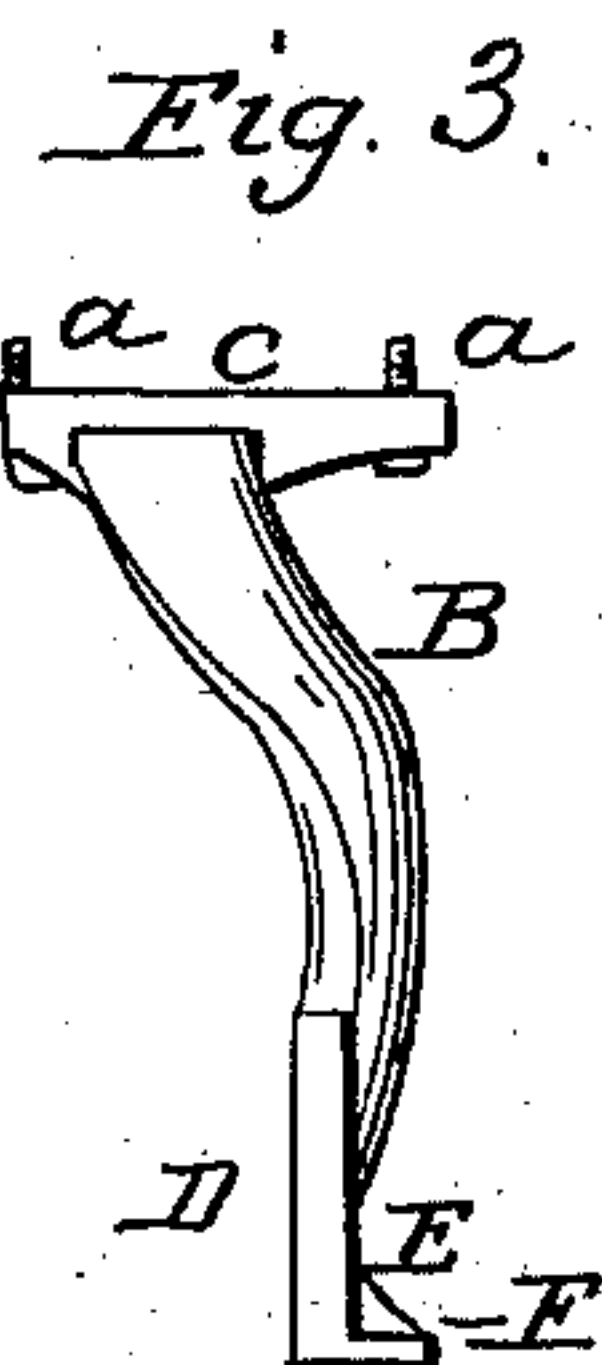
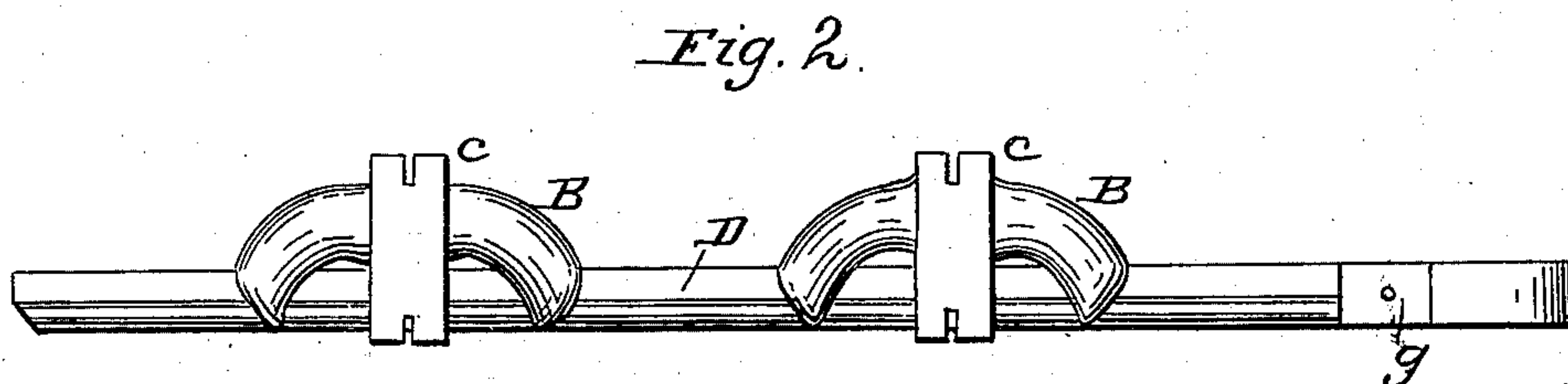
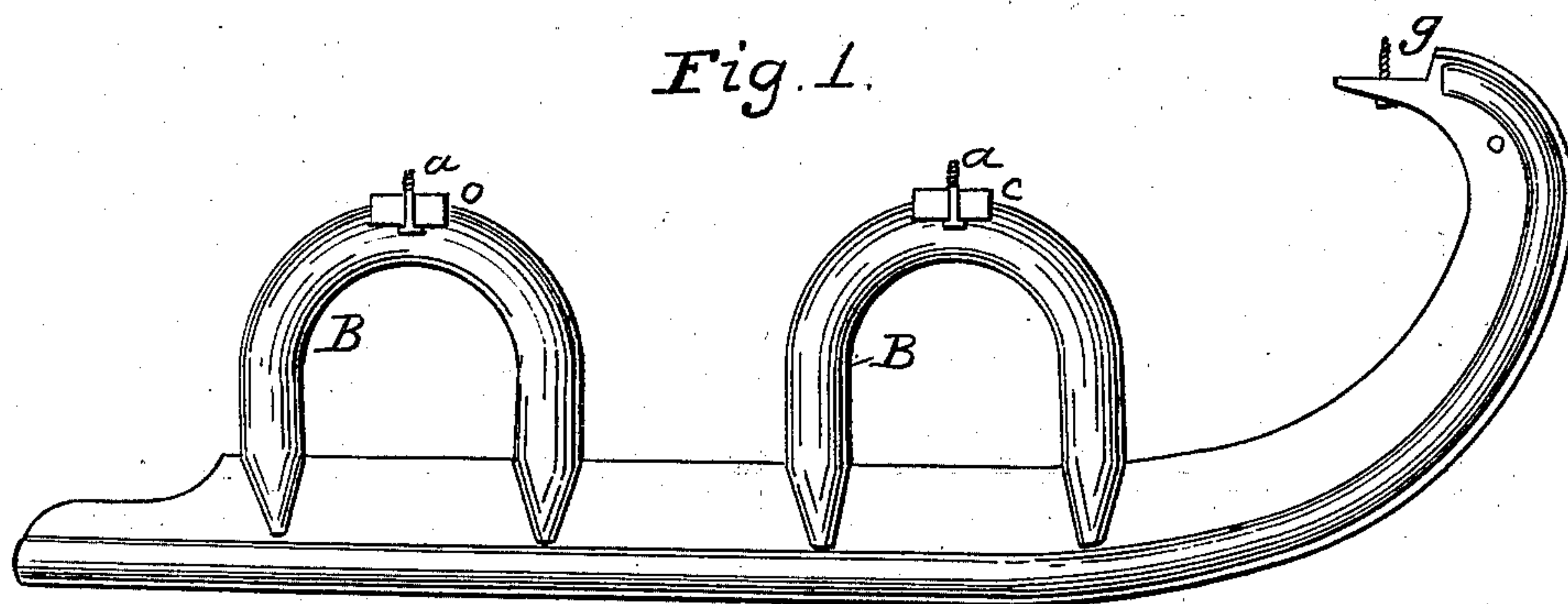


E. W. LOCKWOOD & B. T. FREDERICK,

Cast Iron Sleigh Runner.

No. 74,556.

Patented Feb. 18, 1868.



Witnesses:

Jno R Woodbury
D. B. Abell

Inventors:

E. W. Lockwood
B. T. Frederick

United States Patent Office.

E. W. LOCKWOOD AND B. T. FREDERICK, OF MARSHALLTOWN, IOWA.

Letters Patent No. 74,556, dated February 18, 1868.

IMPROVEMENT IN CAST-IRON SLEIGH-RUNNERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, E. W. LOCKWOOD and B. T. FREDERICK, of Marshalltown, in the county of Marshall, and State of Iowa, have invented a new and useful Improvement in Bob or Sled-Runners; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a side elevation of our improved bob or sled-runner.

Figure 2 is a top or plan view of the same; and

Figure 3 a rear end elevation of one runner and knee.

This invention relates to an improvement in the construction of cast-metal bob or sled-runners; and it consists in the construction of the runner and knees, the latter being provided with supports for the raves, all cast in one piece.

Similar letters of reference indicate like parts in the several figures.

D is the runner, curved at its forward end, as shown in the drawings, and extending back sufficiently to form a shoulder, *g*, for the reception of the end of the rave. On the outside of the runner, at its lower edge, a flange, *F*; is formed to increase the width of the bearing-surface. B B are the knees, of inverted U-shape, and cast with the runners D, their curved portions being uppermost, and provided at the central part of such curve with horizontal supports *c*, for the reception of the cross-bars and raves. These supports are placed transversely of the knees, and slotted at each end for the passage of the bolts, by which they are secured to the cross-bars. The lower portions of the knees are nearly vertical, but their upper portions are curved inward, as shown in fig. 3. By this construction they form an effectual brace against all lateral movement, and enable the face of the runner to be always parallel with the upper surface of the support *c*.

It has been discovered that by making the knee V-shape in their transverse section, greater strength is obtained, where they act as braces for the runners and cross-bars, than by making them round or square.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The U-shaped metallic knees B, provided upon their upper curved sides with the slotted horizontal supports *c*, the runners D, having the shoulder *g* for the reception of the end of the rave, all cast in one piece, substantially as described for the purpose specified.

2. The metallic knees B, when made V-shaped in their transverse section, and curved vertically, to form a brace for the runners D and supports *c*, substantially as described for the purpose specified.

E. W. LOCKWOOD,
B. T. FREDERICK.

Witnesses:

JNO. P. WOODBURY,
T. B. ABELL.