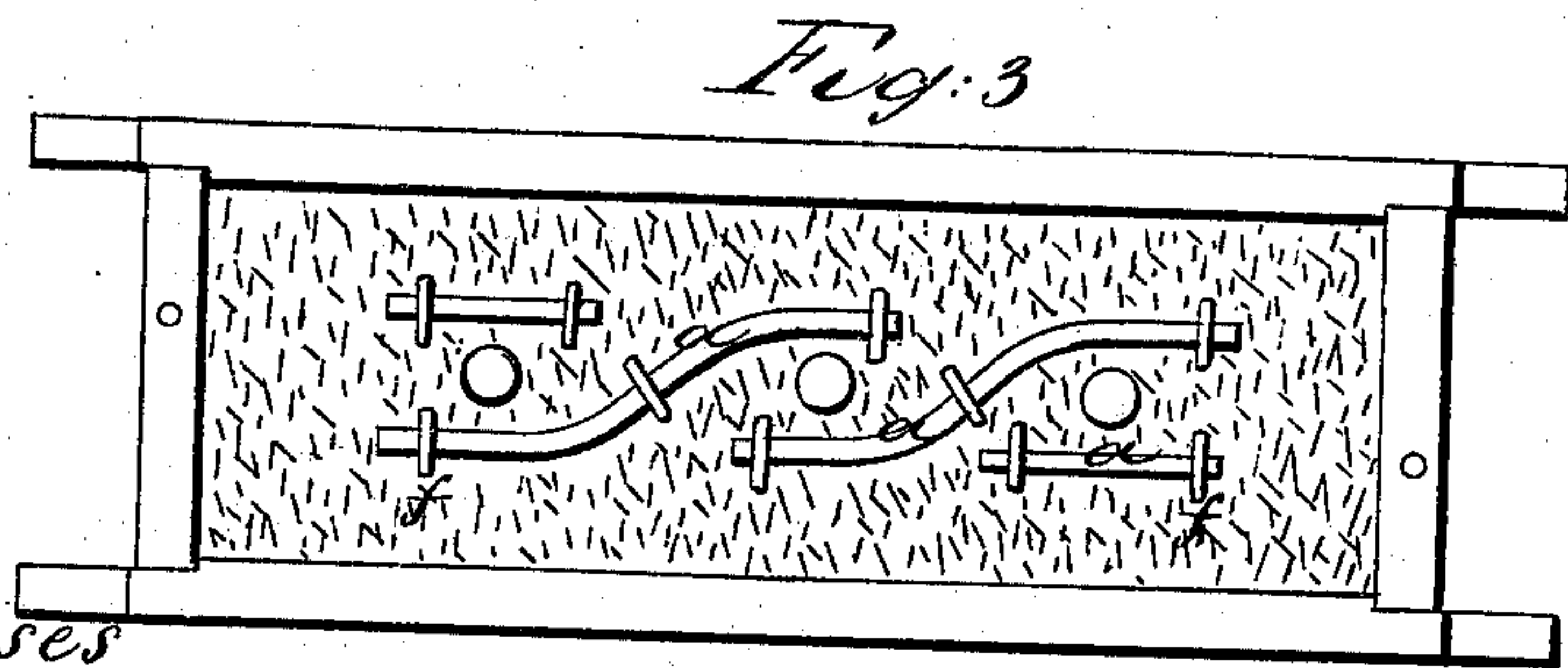
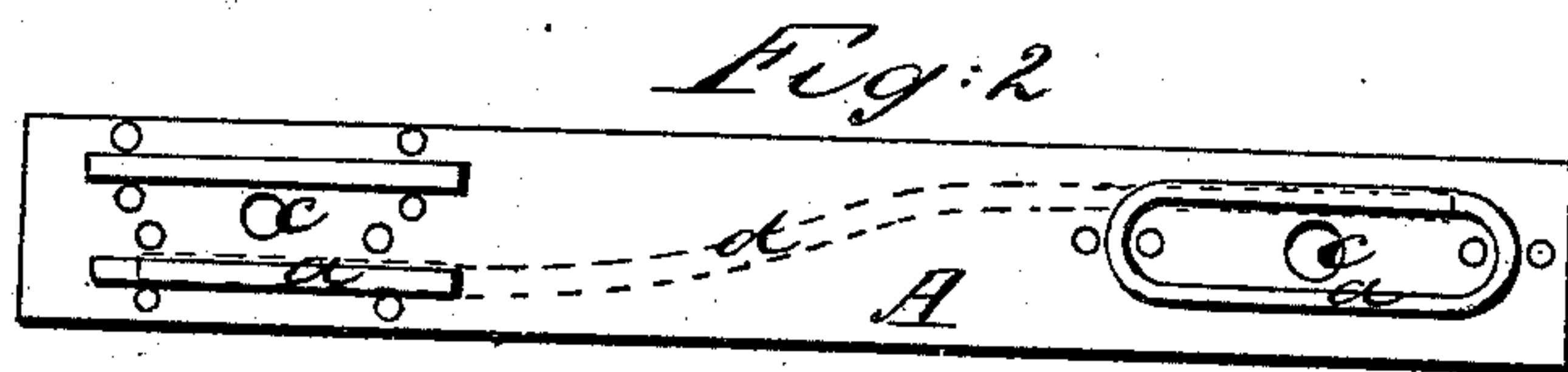
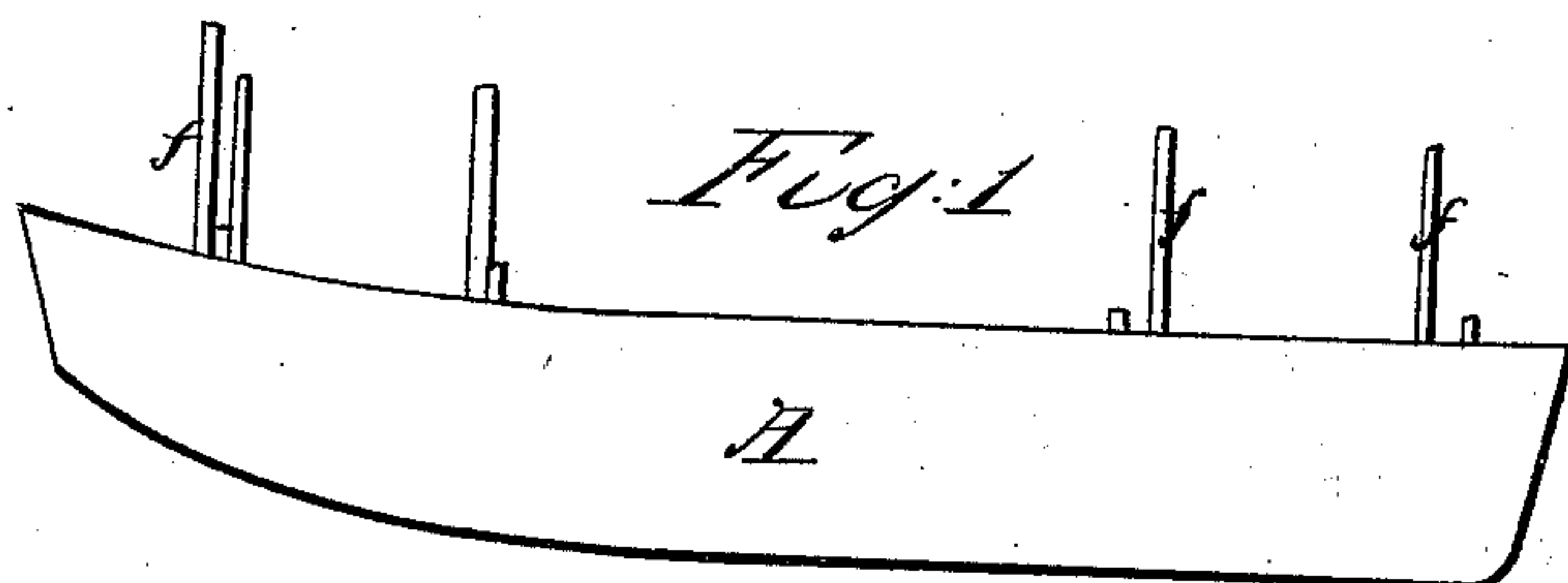


*T. B. Titus.*

*Casting Sleigh Shoes.*

*N<sup>o</sup> 98,530.*

*Patented Jan. 4, 1870.*



*Witnesses*

*J<sup>d</sup> Lorenzo Gage*  
*J<sup>d</sup> H. Clement*

*Inventor*

*T. B. Titus*

*per J<sup>r</sup> I. Loughborough*

# United States Patent Office.

T. BENTON TITUS, OF PHELPS, NEW YORK.

*Letters Patent No. 98,530, dated January 4, 1870.*

## IMPROVEMENT IN SLEIGH-SHOES.

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

*To all whom it may concern:*

Be it known that I, T. BENTON TITUS, of Phelps, in the county of Ontario, and State of New York, have invented a new and useful Improvement in Sleigh-Shoes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is an elevation of my invention.

Figure 2 is a plan view.

Figure 3 is an inverted view of the cope of the mould, in which I cast my improved shoe.

The object and nature of my invention will be understood by reference to the specification and drawings; and to enable others to make and use the same, I will scribe its construction.

In the body of a cast-iron sleigh-shoe, A, figs. 1 and 2, I provide the strips *a* of wrought-iron, steel, or other suitable metal.

The strips *a* are sustained in their places, while the molten metal is being run into the mould, by staples *f*, fig. 1, which are inserted in the sand at the sides, top, or bottom of the mould, as desirable. After the castings are removed from the mould, these staples are cut off even with the surface.

It is necessary that the strips or rods *a* be made in short sections, as shown, since I find, by experiment, that if long strips of wrought-metal are used, they

warp, by expansion, when the molten metal comes in contact with them, and push aside the sanded dies, which are placed in the mould to form the bolt-holes, thus rendering the casting defective.

It is also desirable that the strips should "break joints," or be so arranged that a cross-section at any point on the shoe would cut one or more of the wrought-metal rods, as shown in fig. 3. If necessary, these strips may be bent in any desired form, to avoid the bolt-holes in the centre of the shoe.

In narrow shoes, it may be advantageous to employ thin strips of metal, placed edgewise, whereby greater vertical strength is obtained, and there is less liability of their interfering with the bolt-holes.

It is evident, that if the shoe should break at the bolt-holes, or any other point, the wrought-metal strips would hold the parts in place. This shoe has thus the well-known advantages of a cast shoe, and the toughness of a wrought-metal one, combined in a very cheap and efficient manner.

What I claim as my invention, and desire to secure by Letters Patent, is—

A cast-iron sleigh-shoe, with short sections of wrought-metal, substantially as set forth.

T. BENTON TITUS.

Witnesses:

JAS. LORENZO GAGE,  
F. H. CLEMENT.