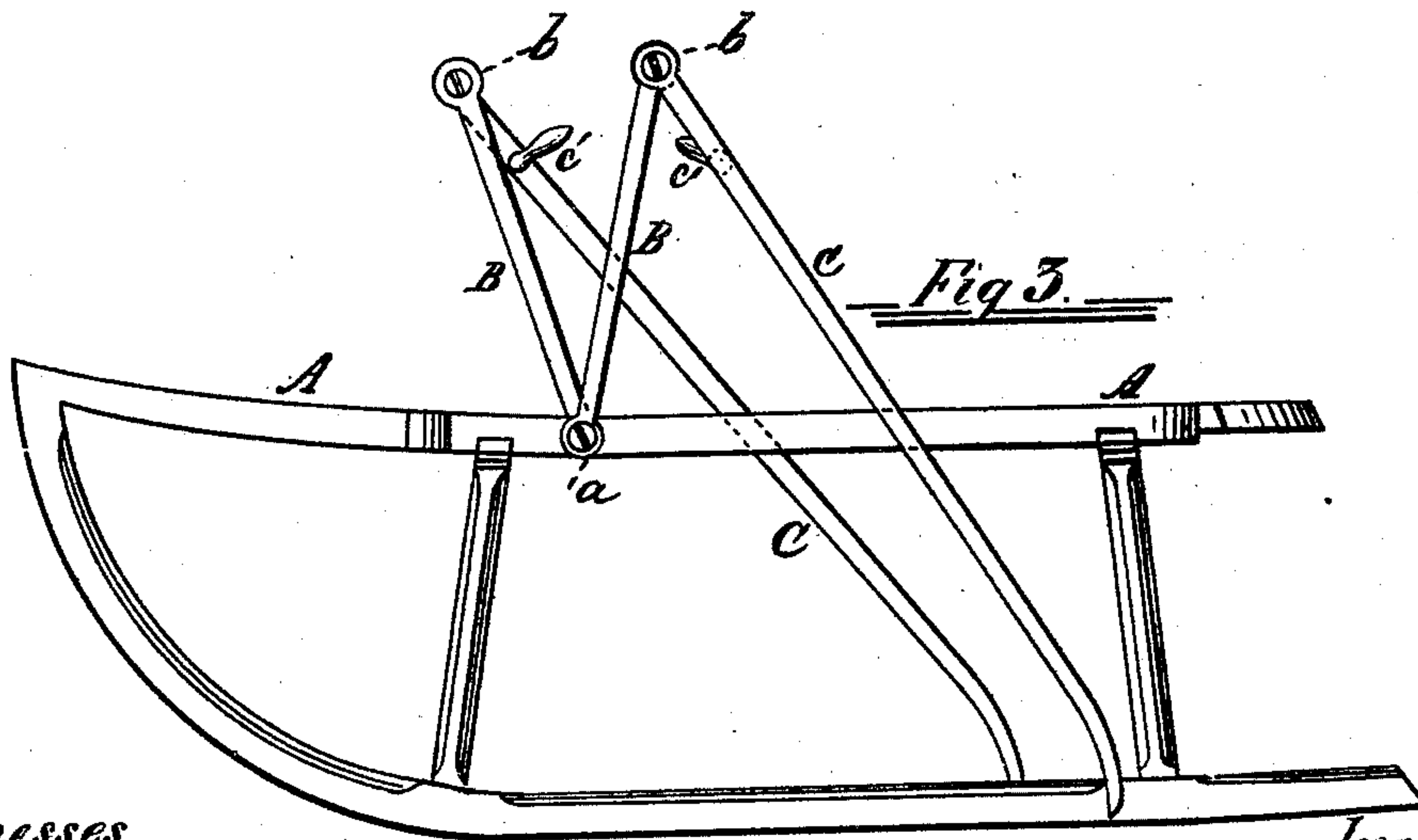
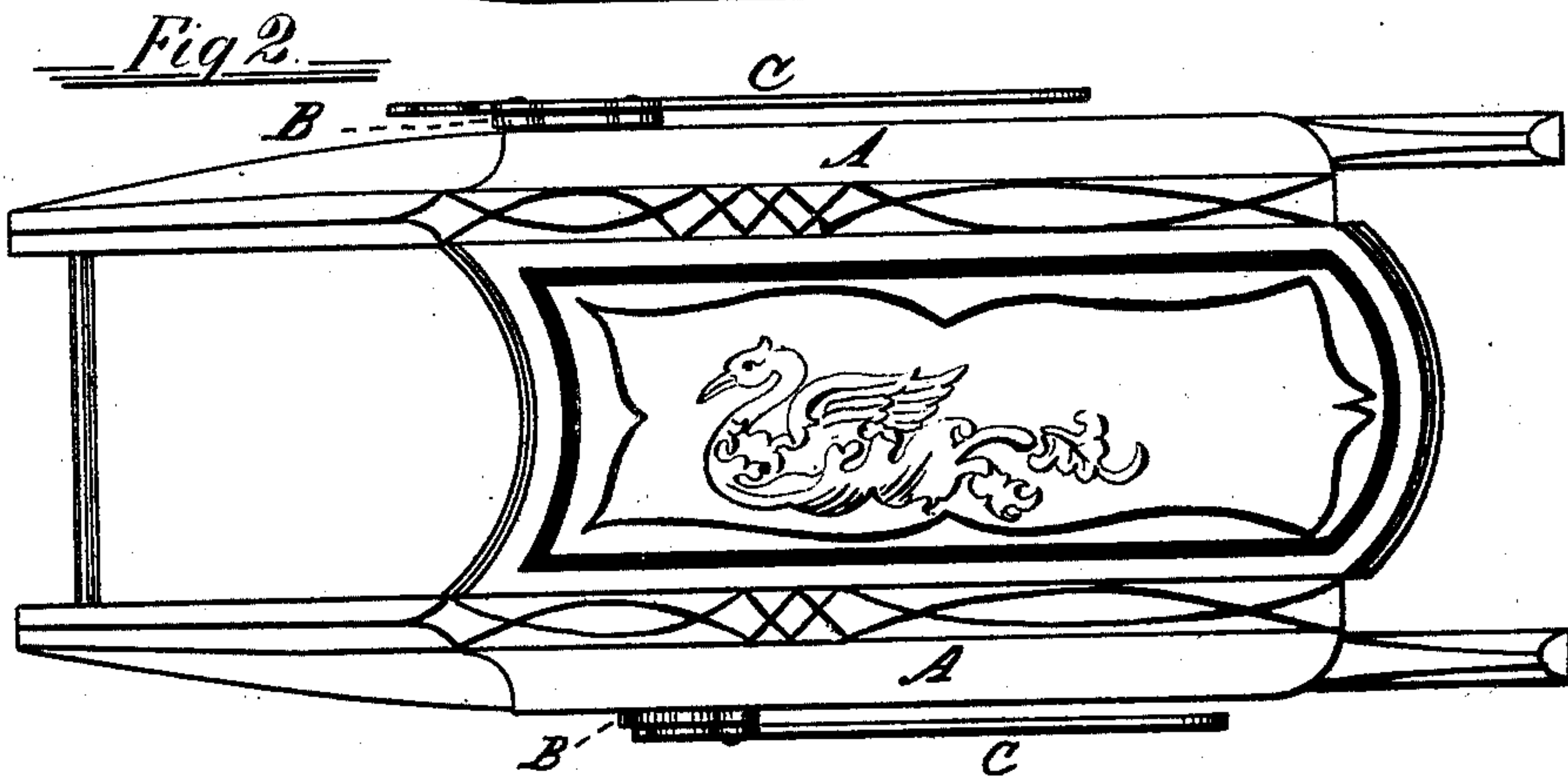
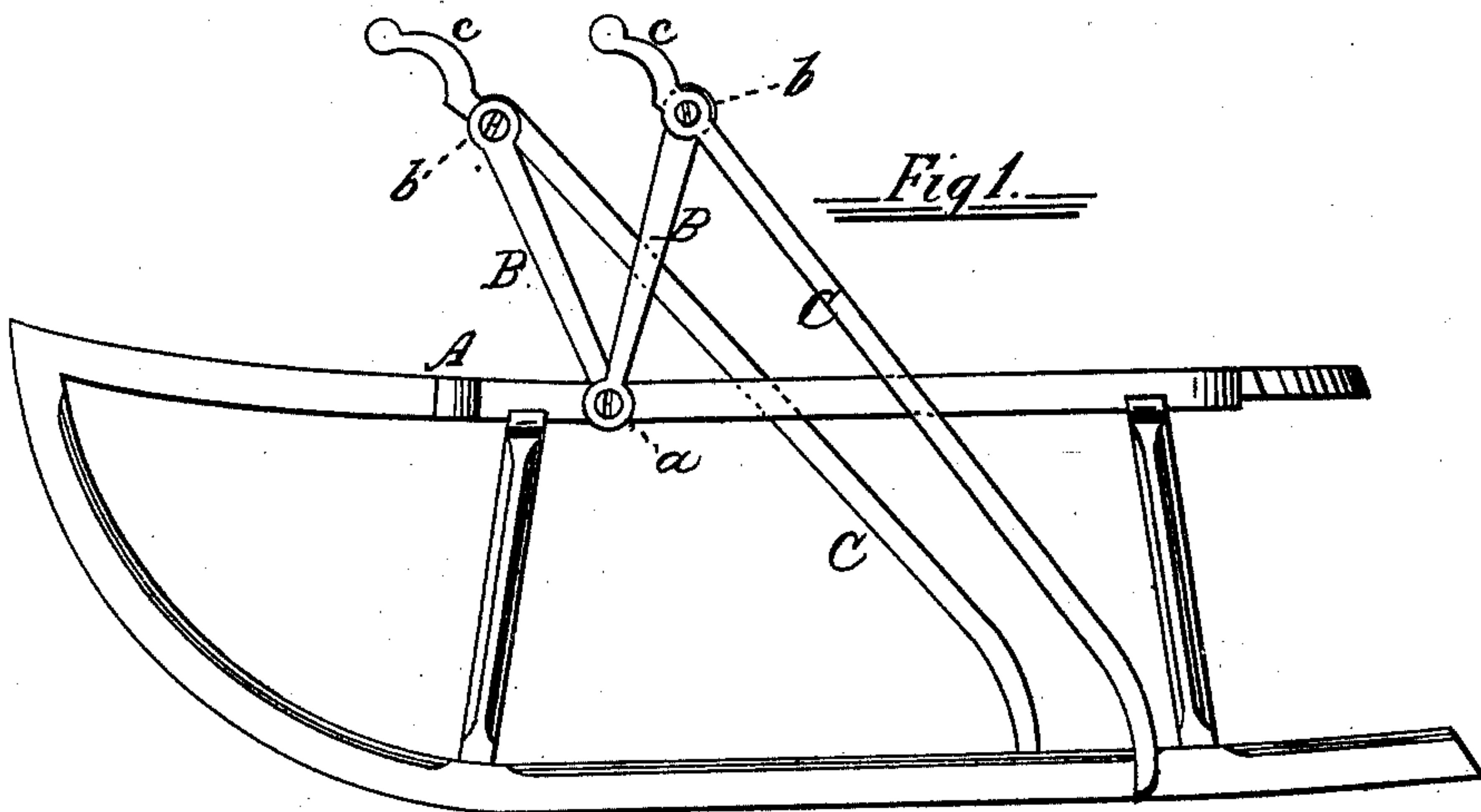


D. W. De FOREST.
SLED-PROPELLER.

No. 170,715.

Patented Dec. 7, 1875.



Witnesses.

W. Makepeace Edwards.

Ernst Bilhuber

Inventor.

David W. De Forest
per James A. Whitney
att'y

UNITED STATES PATENT OFFICE.

DAVID W. DE FOREST, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN SLED-PROPELLERS.

Specification forming part of Letters Patent No. **170,715**, dated December 7, 1875; application filed November 24, 1875.

To all whom it may concern:

Be it known that I, DAVID W. DE FOREST, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Self-Propelling Sleds, of which the following is a specification:

This invention relates to that class of devices designed to enable a sled to be propelled by the manual effort of the person riding thereon; and its object is to provide a means for such propulsion which shall operate with positive movements, but at the same time be under the perfect and absolute control of the person using the same, both in urging the sled along and in returning the propelling-staff back to its original position after each propulsive stroke, preparatory to another. To this end the invention comprises a propelling-staff, pivoted to the upper extremity of a swinging link, the lower end of which is pivoted to the side of the sled, the whole being so constructed and combined that the apparatus may be operated by the grasp of the operator upon the staff itself, instead of upon a lever actuating such staff, as has been proposed in other plans for self-propelling sleds.

By this novel combination of parts, embracing a new *modus operandi*, the hereinbefore-specified object is effectually secured. It is to be understood that ordinarily, in practice, the propelling devices are to be applied to the sled in duplicate—one set on one side of the sled, and one on the other.

Figure 1 is a side view of a sled made and fitted according to my invention. Fig. 2 is a plan view of the same. Fig. 3 is a side view of the same.

A is the sled, of any ordinary or suitable construction, and, ordinarily, of the size and shape of a hand-sled, so termed. As the devices are represented in the drawings as applied in duplicate—one set on one side of the sled, and one set on the other side thereof—the description of one set, as follows, will suffice for both: B is a link, pivoted at its lower end to the side of the sled, as represented more fully at *a* in Figs. 1 and 2. C is a propelling-staff, which is pivoted at or near its top or upper end to the upper extremity of the link B, as shown at *b*, the lower extremity of the

staff being made sufficiently sharp or acute to insure its holding or catching upon the ice, compact snow, or other smooth surface, upon which the sled is intended to run. The upper end portion of the staff may be made to project above or beyond the pivot *b*, by which it is connected to the link B, as represented in Fig. 1, in which case such upwardly-projecting portion constitutes a handle, *c*, on the staff. When preferred, however, the staff is pivoted at its extreme end to the link, as shown in Fig. 3, in which latter case an inwardly-projecting handle, *c'*, is provided to the staff at a suitable distance below its pivot *b*.

The sled being provided, as herein previously explained, with the aforesaid devices in duplicate, the operation of the mechanism in the propulsion of the sled is as follows: The operator, seated upon the sled in the usual manner, grasps one of the staves C in each hand, either by the handle *c*, when the staves are made with such, or by the handles *c'*, when such are provided. The staves are then brought downward and backward against the ice, snow-covered ground, or other surface upon which the sled is to run, and, coming in contact therewith, find points of resistance, which cause the force applied to the staves in a rearward direction to propel the sled in an opposite or forward direction. When the limit of the rearward stroke of the staves is reached the staves are lifted clear of the ground, and moved forward for a repetition of the stroke. It will be seen that in this operation the force applied to the staves C is caused to act directly in the propulsion of the sled; that the return movement of the staves, by bringing them clear of the ground, prevents all digging, loss of power, and retardation of the sled; and that the staves, being pivoted to the swinging links B, have their movements regulated and controlled, so far as is necessary to secure the accurate movement of the staves, and yet leave the latter free to be moved to any extent of stroke desired, and to be brought clear of the ground in their forward or return movement, as hereinbefore set forth.

I do not claim a propelling-staff operated by an actuating-lever, for the reason that

such device is essentially different from my herein-specified invention; but

What I do claim as my invention is—

The staff C, constructed to be grasped by the hand of the operator, and the link B, pivoted at its upper extremity to the staff C, and at its lower extremity to the side of the sled,

the whole constructed and combined for use and operation substantially as and for the purpose described.

DAVID W. DE FOREST.

Witnesses:

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