

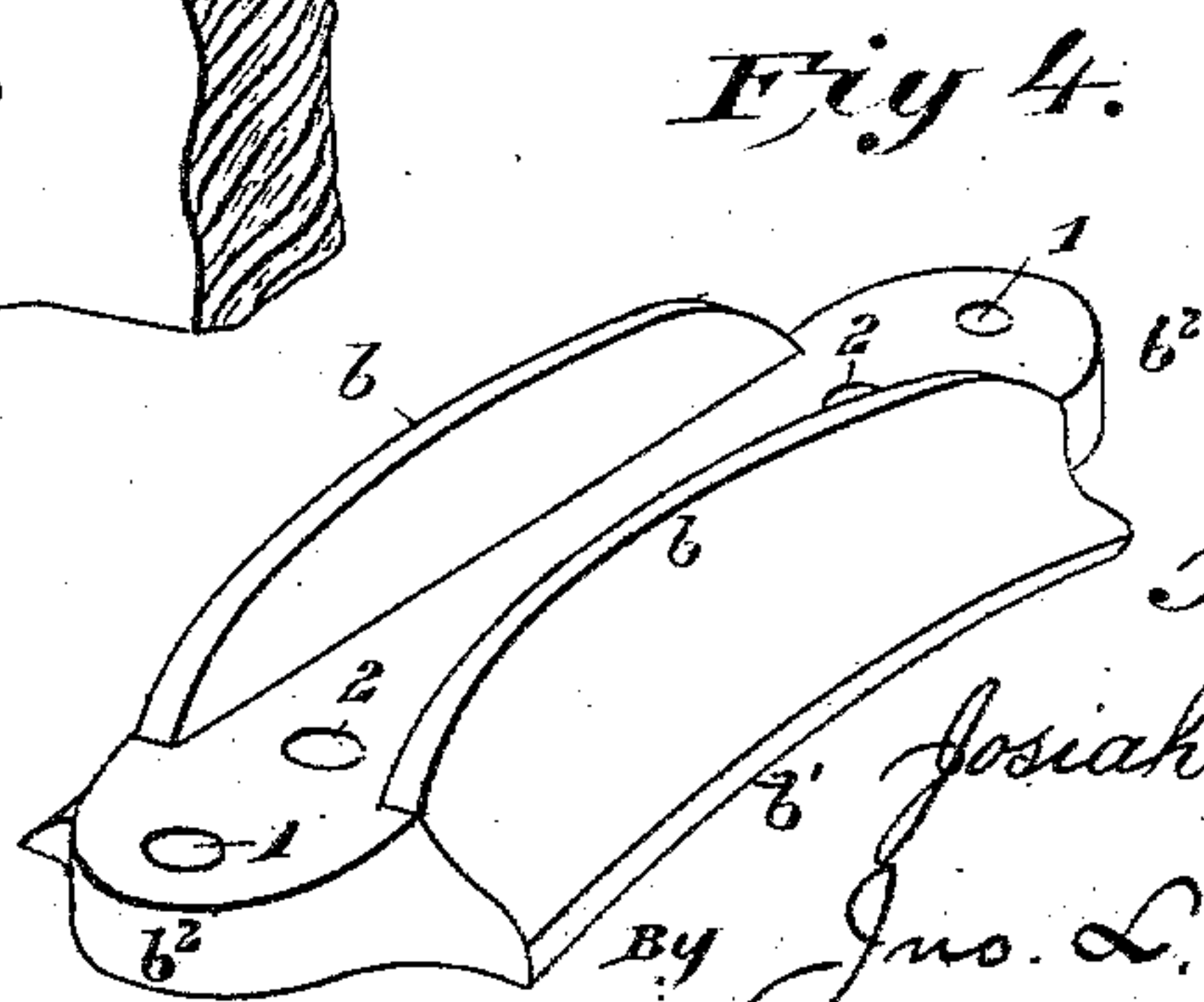
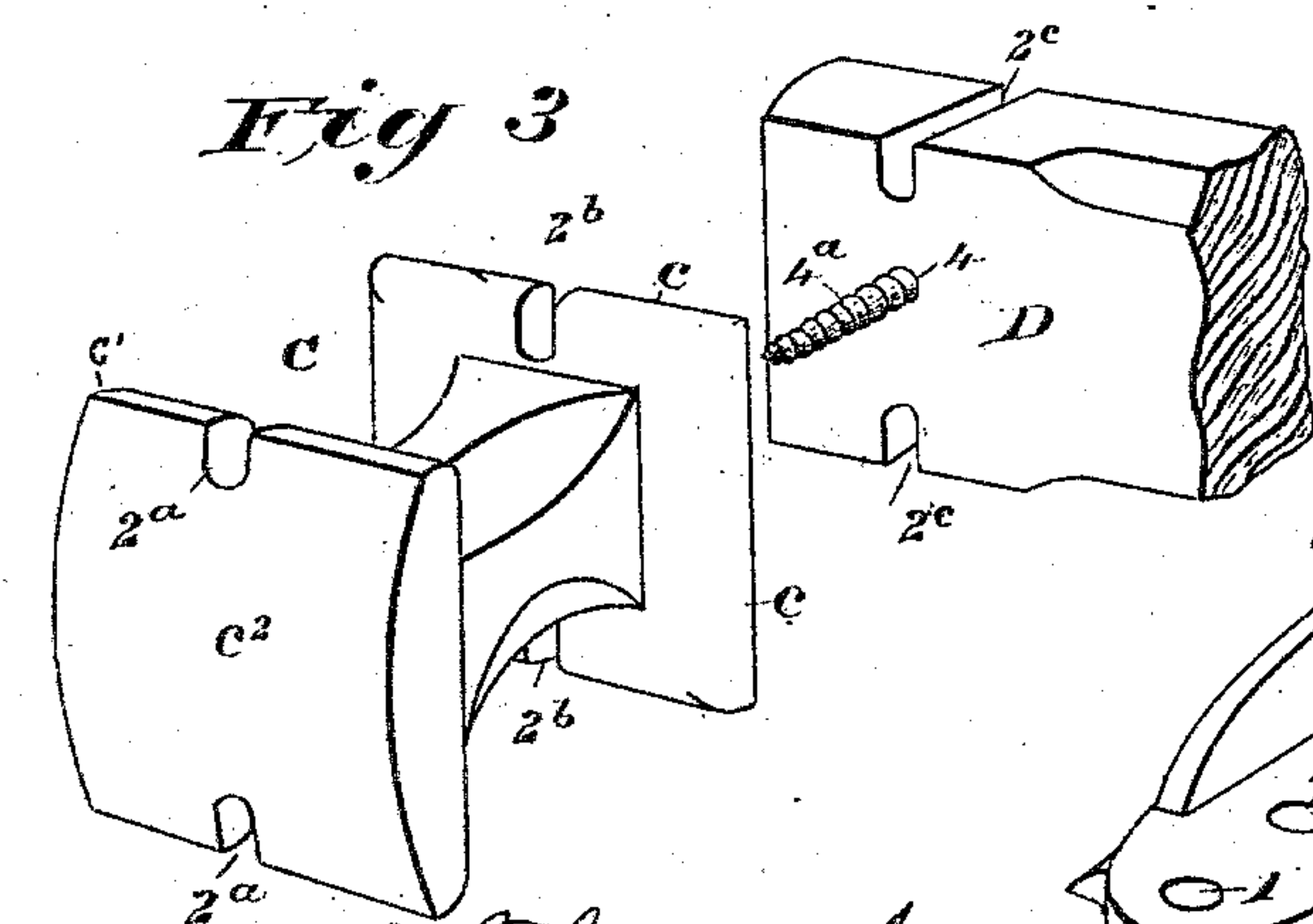
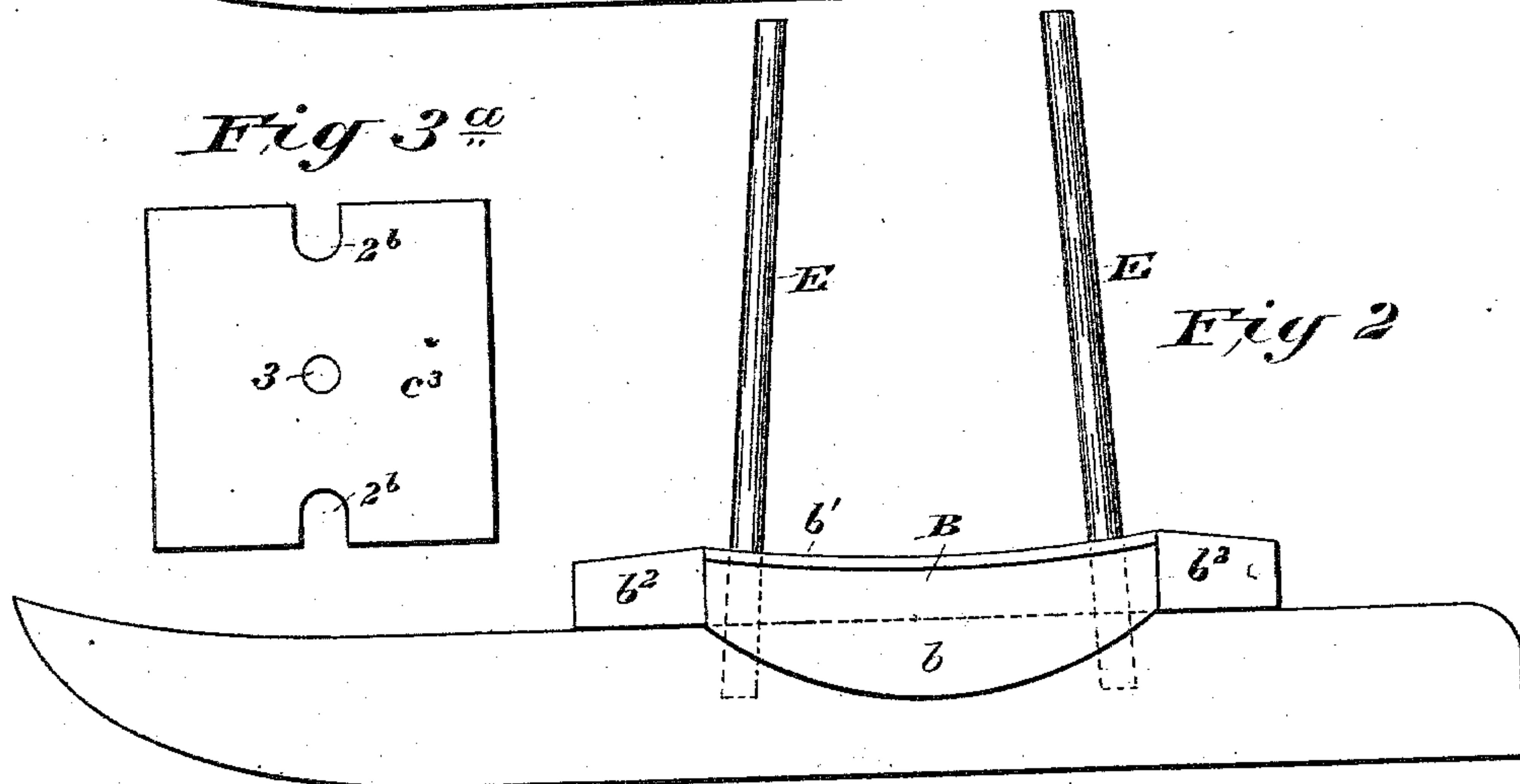
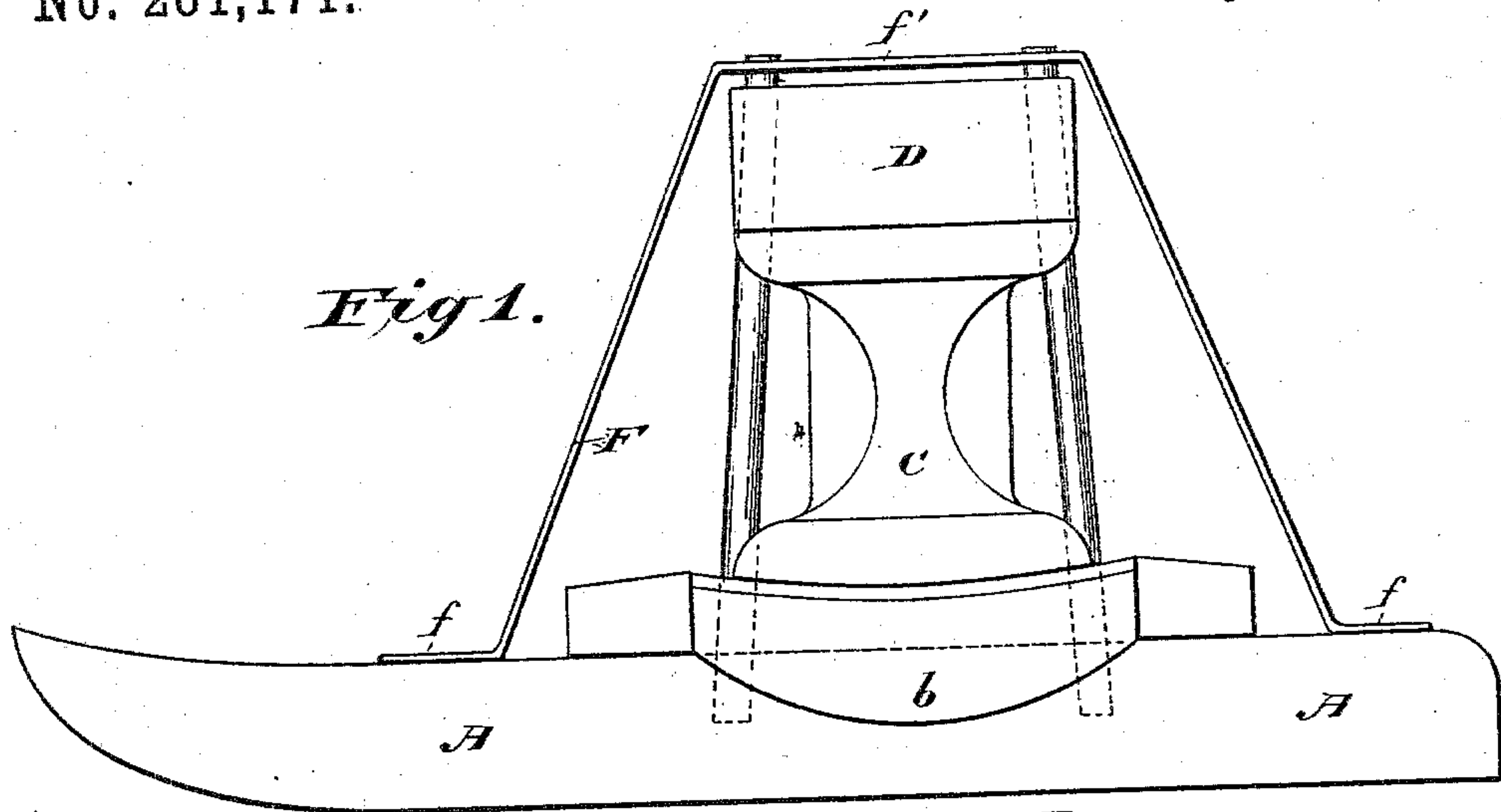
(No Model.)

J. AMES.

SLED.

No. 281,171.

Patented July 10, 1883.



Attest. { Geo. T. Smallwood Jr.
Chas. A. Cooper

Inventor:

Josiah Ames

By Jno. L. Condon
att.

UNITED STATES PATENT OFFICE.

JOSIAH AMES, OF EAST SAGINAW, MICHIGAN, ASSIGNOR TO FRANK J. KNAPP,
OF SAME PLACE.

SLED.

SPECIFICATION forming part of Letters Patent No. 281,171, dated July 10, 1883.

Application filed March 16, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOSIAH AMES, a citizen of the United States, residing at East Saginaw, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Attachments for Sleigh-Runners, of which the following is a specification.

My invention relates to an improved arrangement of devices for attaching the runners to sleigh-bodies, the said invention being applicable to sleighs of all kinds, but particularly to sleds used in the transportation of timber.

My invention has for its object the attachment of runners to sleigh-bodies in such manner as to enable the runners to pass readily over uneven surfaces without raising or jolting the load, and in such manner, also, as to prevent the runner from listing or turning over in the event of striking an obstruction.

To these ends my invention consists in a pyramidal frame or housing attached at its larger portion or base to the upper side of the runner, and embracing at its smaller portion or apex the front and rear sides of the body-beam and upper end of the knee; also, in the combination, with said frame or housing, of a specially-formed bearing-plate or saddle, and a specially-formed knee having a simple and detachable form of connection with the body-beam, all as hereinafter set forth.

Various devices have heretofore been produced for attaching the runners to sleighs in such manner as to render the runner capable of passing over uneven surfaces without jolting the load; but all such have been quite inefficient, either from lack of strength or of mobility in the runner. In such devices, where the runner was sufficiently movable, the connections between the runner and the sleigh-body were so weak that the runner would list over upon striking an obstruction, and where the connections were sufficiently strong to prevent listing they were so arranged as to incapacitate the runner for free play in passing over uneven surfaces. My improved attachment overcomes the defects of previous structures, and, while accomplishing the objects—strength and mobility—heretofore desired, pos-

sesses in addition the advantages of being simple and self-clearing in its movable parts.

In order that my invention may be fully understood, I will now proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a portion of a runner, one end of a body-beam, and the sleigh-knee with my improvements attached. Fig. 2 is a similar view, the beam and knee being removed. Fig. 3 is a perspective view of the knee and a portion of the beam in detached position, showing their attaching device. Fig. 3^a is a top view of the knee. Fig. 4 is an under side perspective view of the saddle.

To the upper side of the runner A, which may be of any preferred form, is attached a bearing-plate or saddle, B. This saddle is preferably a metal casting, and is formed on its under side with two downwardly-extending lugs or flanges, *b*, which embrace the sides of the runner A between them. The saddle is attached to the upper side of the runner by a bolt which passes down through a hole, 1, drilled through an extension or ear, *b*², formed on each end of the saddle. The central upper side of the saddle is formed with a concavity, *b*¹, the line of curvature of which extends longitudinally of the saddle. This concavity or concave bearing-surface is of such width as to considerably overhang each side of the runner. At each end of the saddle, just within the hole 1, is drilled or otherwise formed an oblique hole, 2, through which pass the lower ends of the strengthening-rods, hereinafter described.

C designates the knee, which is formed preferably of a solid casting, and is I-shaped in side elevation. The upper and lower ends of this knee are each formed with a broad cap having four sides or flanges, *c c'*, as shown. The lower end is formed with a convex bearing-face, *c*², the line of curvature of which corresponds to that of the saddle-face *b*¹, upon which the knee rests. The front and rear flanges, *c'*, of the knee are each formed with a U-shaped recess, 2^a, while the corresponding upper flanges, *c*, are each formed with a similar

recess, 2^b, in alignment with the lower recess, 2^a. The upper end of the knee is formed with a flat face, c³, in the center of which is a socket, 3, to receive the fastening device, hereinafter 5 described.

D designates the transverse body-beam of the sled, the front and rear sides of the ends of which are provided with vertical recesses 2^a, each of which registers with the corre- 10 sponding recess, 2^b, of the knee. An eye or aperture, 4, is formed through the end of the beam, and registers with the socket 3 of the knee. A pin, 4^a, passes downward through the eye and into the socket, so as to connect 15 the beam to the knee.

E E designate two strengthening-rods, the lower ends of which pass through the holes 1 of the saddle B and into suitable cavities or sockets formed in the upper side of the runner 20 A, registering each with the corresponding hole, 1, as indicated by dotted lines in Figs. 1 and 2. These rods E pass obliquely upward in front of and behind the knee and beam, converging toward their upper ends, which 25 pass through suitable holes or eyes formed in the rave F, as shown. The rave F is of an inverted-U shape, the extremities of which are attached to the upper side of the runner A, in front of and behind the saddle, by suitable 30 bolts passing downward through the ends of the rave and into the runner; or any other preferred form of attachment may be used. The arms f of the rave extend obliquely and convergently upward, and are continued in the 35 form of a horizontal portion, f', which passes over and above the beam D, and through which the upper ends of the rods E pass.

The operation of this structure is as follows: The several parts being put together, as shown, 40 when the sled is drawn over an uneven surface, the runner A will undulate or rise and fall horizontally from its front to its rear end, and this movement will cause the lower end of the knee to work back and forth upon the concave 45 face of the saddle, causing the rods E to alternately enter and withdraw from the recesses in the lower flanges of the knee. The rods E will at their upper portions, however, be always within the recesses in the sides of the 50 beam and upper flanges of the knee, yet not thereby impeding the free play of the runner, such upper recesses playing vertically upon the rods. It will be seen that the knee will apparently oscillate pendulum like within the 55 frame, the greatest movement being at its lower end and the least movement at its upper end with the beam. Of course the knee does not actually move, the runner being the movable part; but it is so stated for the pur- 60 pose of illustration merely. Now, should the runner, while at any stage of its movement, strike obliquely against a stump, rut, or other obstruction, it will not list or turn over, being prevented therefrom by the rods E in the 65 embrace of the recesses 2^b and 2^c, and also by

the upper end of the knee taking the oblique thrust against the beam and the lower end of the knee taking such thrust against the saddle B, both and all such resistances being counter 70 to the line of thrust; and, furthermore, it will be seen that when the runner and knee and beam are buried in a drift the clods of snow will not remain in the parts, but will be thrown out by the movement between such parts, thus rendering the device operative under the most 75 unfavorable conditions; and, finally, it will be seen that, owing to the peculiar formation of the knee and its arrangement with the other parts of the structure, a very slight proportion of working-strain is exerted upon the 80 point of attachment between the knee and beam, so that a very slight form of connection is sufficient to unite the two.

I am aware of the patent of B. F. Brown, No. 257,651, granted May 9, 1882, which shows 85 a structure analogous but not similar to mine. This device of Brown's is one of those which secure a strong connection, but at a total sacrifice of mobility in the runner.

I am also aware of the patent of D. G. Miller, 90 No. 264,322, granted September 12, 1882, which embodies a device wherein the mobility of the runner is secured at a great sacrifice of strength in the connections between the run- 95 ner and the sleigh-body; and I am also aware of other patents showing structures containing elements which are analogous to particular elements of my structure, such being combined and arranged in a new useful manner in my improved structure. 100

It is to be understood that I do not confine myself exclusively to the precise structure of the pyramidal housing hereinbefore described, as the parts which are separable may, if de- 105 sired, be formed integral, so that the entire device may be made up and applied to any form of sleigh.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent: 110

1. The combination, with the body-beam of a sleigh or sled and its attached knee, of a pyramidal frame or housing secured at its wider portion or base to the upper side of the runner and converging upwardly at its sides 115 to its upper narrower portion or apex, said housing being so arranged as to embrace the front and rear sides of the beam and the upper end of the knee within its upper and lesser portion, and forming at its lower and greater 120 portion the limits of the free movement of the lower end of said knee.

2. The saddle B, attached to the upper side of the runner, and provided with the lugs b and the broad concave portion b', the knee C, 125 formed with broad upper and lower ends, and having the convex lower end, c², flat upper end, c³, and recesses 2^a 2^b, and the beam D, provided with recesses 2^c, and connected to the knee C by the pin 4^a, in combination with the 130

upwardly-convergent strengthening-rods E,
passing through the saddle B and resting in
the upper side of the runner, and the rave F,
secured at its extremities to the upper side of
5 the runner and passing up over and above the
beam D, said rave being formed with eyes or
holes in its horizontal upper portion to re-
ceive the upper ends of the rods E, substan-
tially as and for the purposes specified.

In testimony whereof I affix my signature in to
presence of two witnesses.

JOSIAH AMES.

Witnesses:

GEO. B. BROOKS,

CHARLES F. MARSKEY.