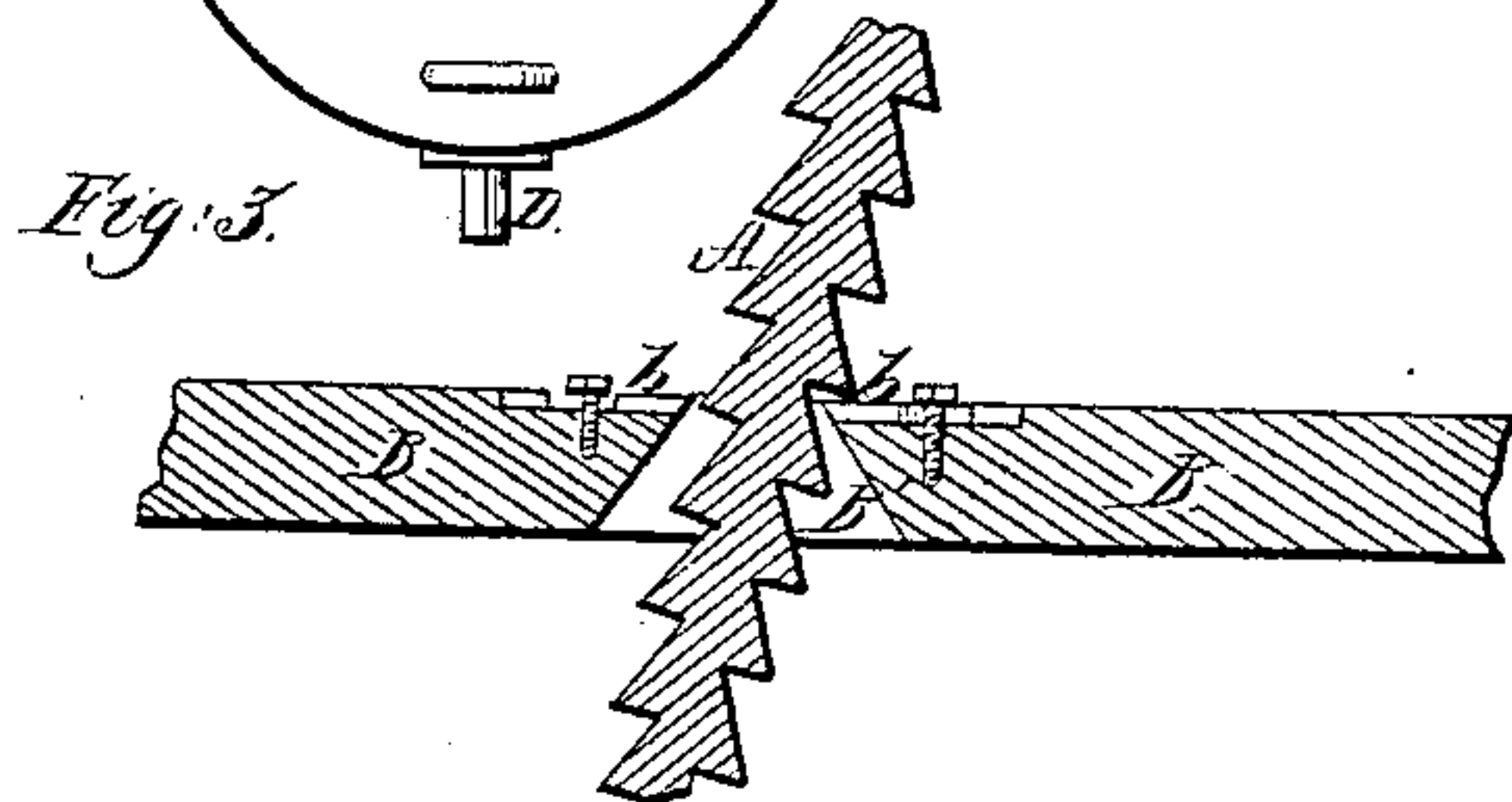
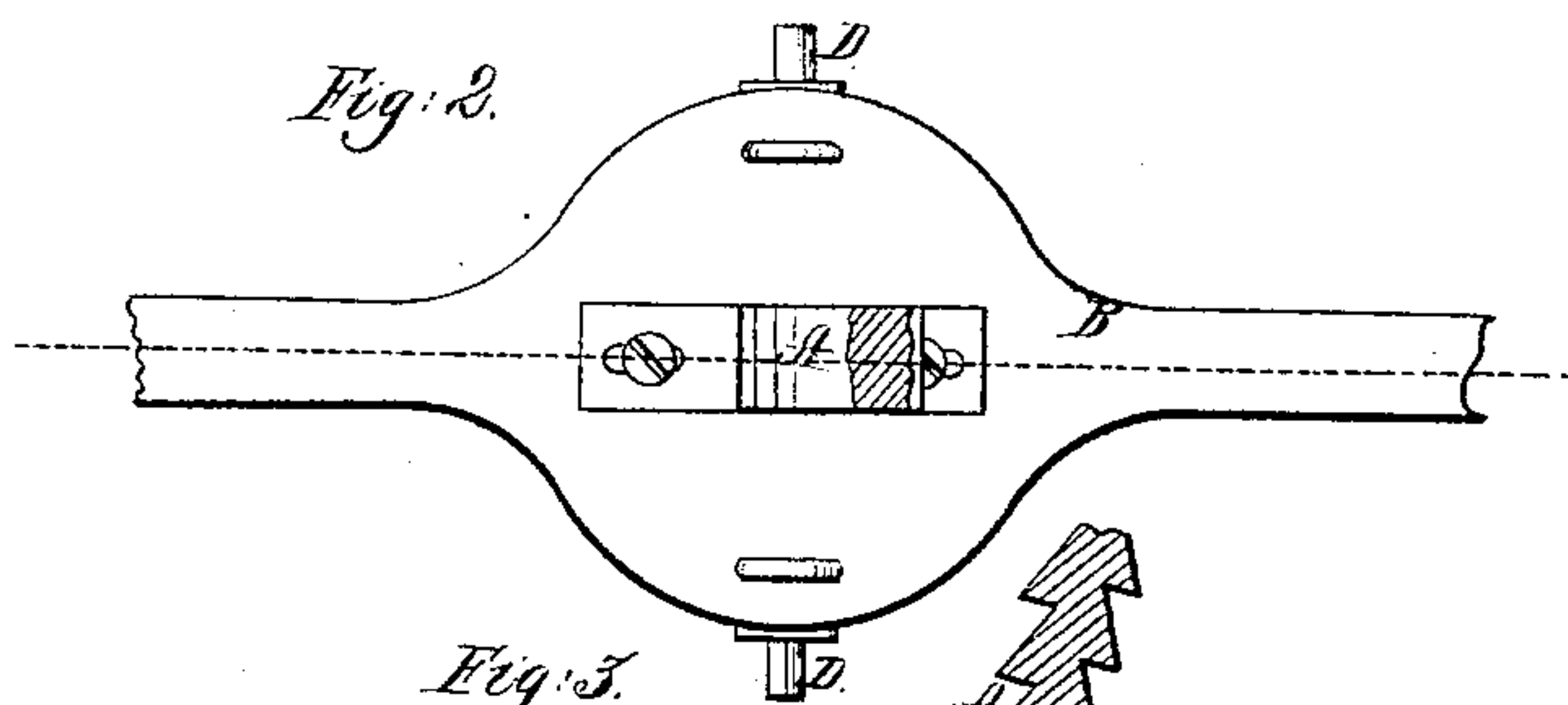
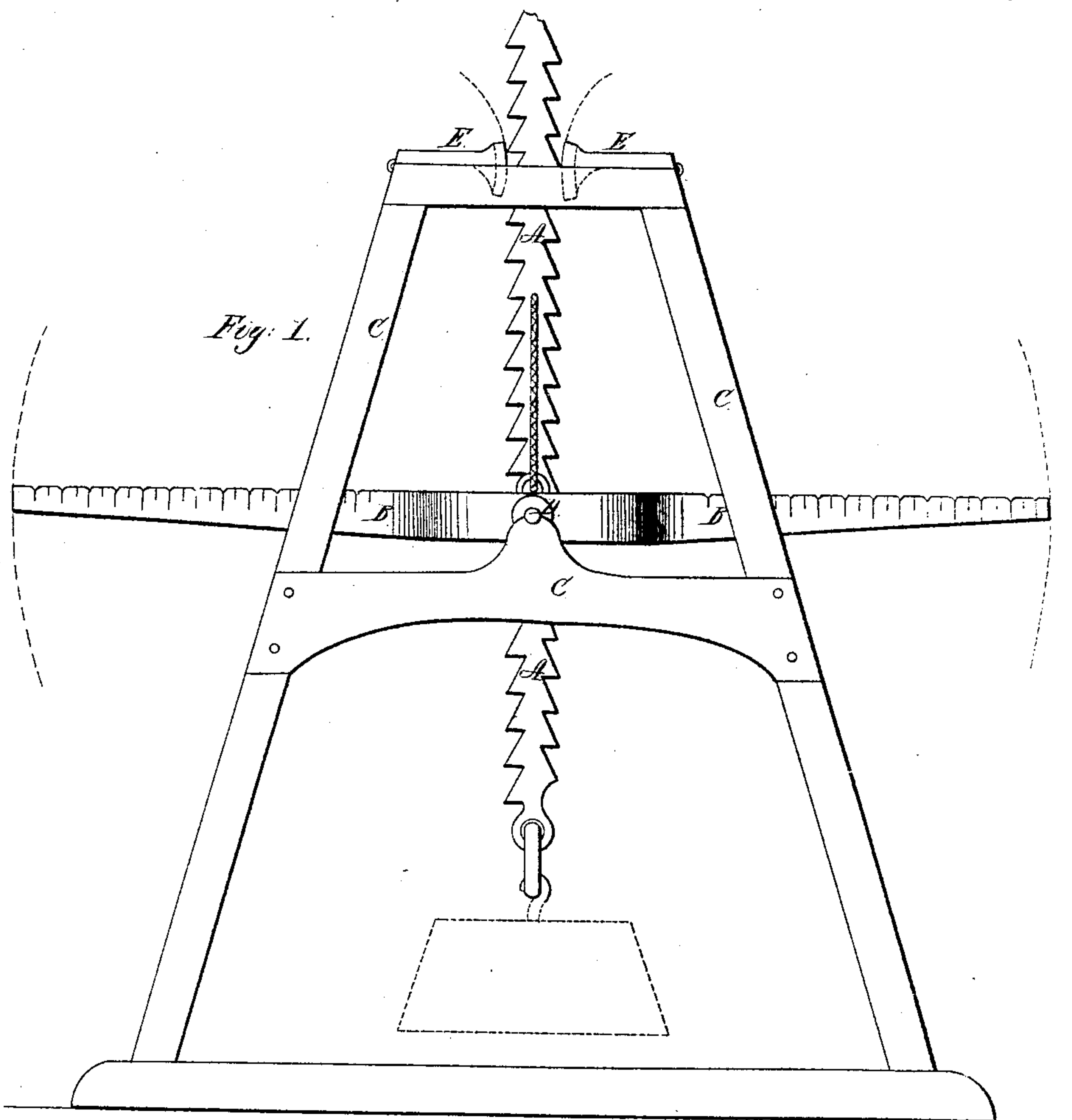


*S. C. Matteson,
Lifting Sack.*

N^o 50,943.

Patented Nov. 14, 1865.



*Witnesses:
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UNITED STATES PATENT OFFICE.

SILAS C. MATTESON, OF OSCEOLA, WISCONSIN.

IMPROVED MECHANICAL MOVEMENT.

Specification forming part of Letters Patent No. 50,943, dated November 14, 1865.

To all whom it may concern:

Be it known that I, SILAS C. MATTESON, of Osceola, in the county of Fond du Lac and State of Wisconsin, have invented a new and useful Mechanical Movement; and I do hereby declare the following to be a full, clear, and exact description of the nature, construction and operation of the same, reference being had to the accompanying drawings, which are made part of this specification, and in which—

Figure 1 is a side elevation of an apparatus illustrating my invention. Fig. 2 is a sectional top view of the double rack and lever, hereinafter referred to; and Fig. 3 is a sectional side view of the same.

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

This invention consists chiefly in the combination of a double rack-bar with a lever of peculiar construction for elevating, dragging, or moving weights or heavy bodies.

The following description will enable others skilled in the art to which my invention appertains to fully understand and use the same.

A represents a double rack-bar, of any suitable material, and having its teeth disposed so that the points of those on either side shall be longitudinally midway between the points of those on the opposite side.

B is a lever, formed with a beveled opening, B', whose upper edges or points, *b b*, alternately constitute the points of action of said lever in moving the rack-bar A. The sides of the opening B' have such bevel or divergence and the points *b b* are at such distance asunder that if the rack-bar or lever be vibrated so as to cause the beveled sides of the opening B' to approach or recede from the rack-bar, then either the rack-bar or lever may be made to move either way in the direction of the length of said rack-bar, which result is produced by the points *b b* engaging with the teeth of the rack-bar as the vibration continues. By the use of these two devices great power may be applied to any object to which it is desired to impart motion.

A few practical illustrations of the mode of operating the device under varying circumstances may serve to clearly define the extent of its utility.

If the machine is to be used for elevating weighty bodies, the lever B is mounted within

a frame, C, and adapted to be vibrated upon the fulcrum D D. The rack-bar A, which occupies the opening B', has the object attached to its lower end by any convenient means—say the ring and hook represented in Fig. 1. By now vibrating the lever B so as to make the sustaining-point *b*, which is engaged with the teeth of the rack-bar, raise the latter, the point *b* on the opposite side of the lever descends while the nearest tooth ascends until it reaches a height a little above the point *b* last mentioned, when a reverse vibration of the lever B throws this point under the tooth which is now next above it, and the tooth and acting point at the opposite side are thus relieved of the weight while the elevation of the rack-bar continues as before. If desired the object may be raised as high as desired by the continued vibration of the lever B, but as soon as the weight depends upon the rack-bar, the upward motion of the latter, together with that of the weight, may be effected by fixing the lever in an immovable position and vibrating the rack-bar itself, and hence giving a swinging motion to the weight or object which is attached to its end. It will be seen that by this mode the weight, by its momentum, is made serviceable in its own elevation.

In view of the above description the lowering office of the apparatus needs no special description.

My apparatus may be used as a horizontal machine—that is to say, it may be laid flat and the power applied by vibrating the lever or rack-bar in a horizontal instead of a vertical plane, as in the elevating process. In this position the apparatus can be used for pushing or pulling, and the weight may, if desired, be attached to and moved with the lever B, in which case the rack-bar A is fixed. When the rack-bar is moved upward by the vibration of the lever it is desirable, if not absolutely necessary, to prevent the rack-bar from swaying or moving laterally. To meet this object I employ the pivoted guides E E, which are turned down in order to steady the rack-bar, but which may be turned aside out of contact therewith to admit of the oscillation of the same. Guides of any form may be employed for this purpose.

This apparatus can be improved possibly by arming the teeth of the rack-bar and the

points of action of the levers with friction-rollers. I further propose to provide the points of action with metallic plates, as shown in Fig. 3, which are held in place by set-screws and adjusted as they become worn by the action of the teeth.

The apparatus may be employed in all cases where power is to be applied to movable objects, such as raising and lowering hay, stone, bales, barrels, mounting cannon, removing houses, and extracting stumps.

By graduating the lever B, as shown in Fig. 1, and applying a weight thereto, it may be used for ascertaining the weight of an object in course of elevation.

The staples F F are for the attachment of ropes, by which the lever B may be suspended by ropes, which may at times be expedient.

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

1. The combination, with the double rack-bar A, of the lever B, formed with the beveled opening B', adapted for the purpose explained.

2. The adjustable guides E E, for steadying the rack-bar during its movement, substantially as described.

3. Graduating the lever B, for the purposes herein specified.

To the above specification of my new and useful mechanical movement I have signed my hand this 29th day of June, 1865.

SILAS C. MATTESON.

Witnesses:

C. D. SMITH,

ALEXR. A. C. KLAUCKE.