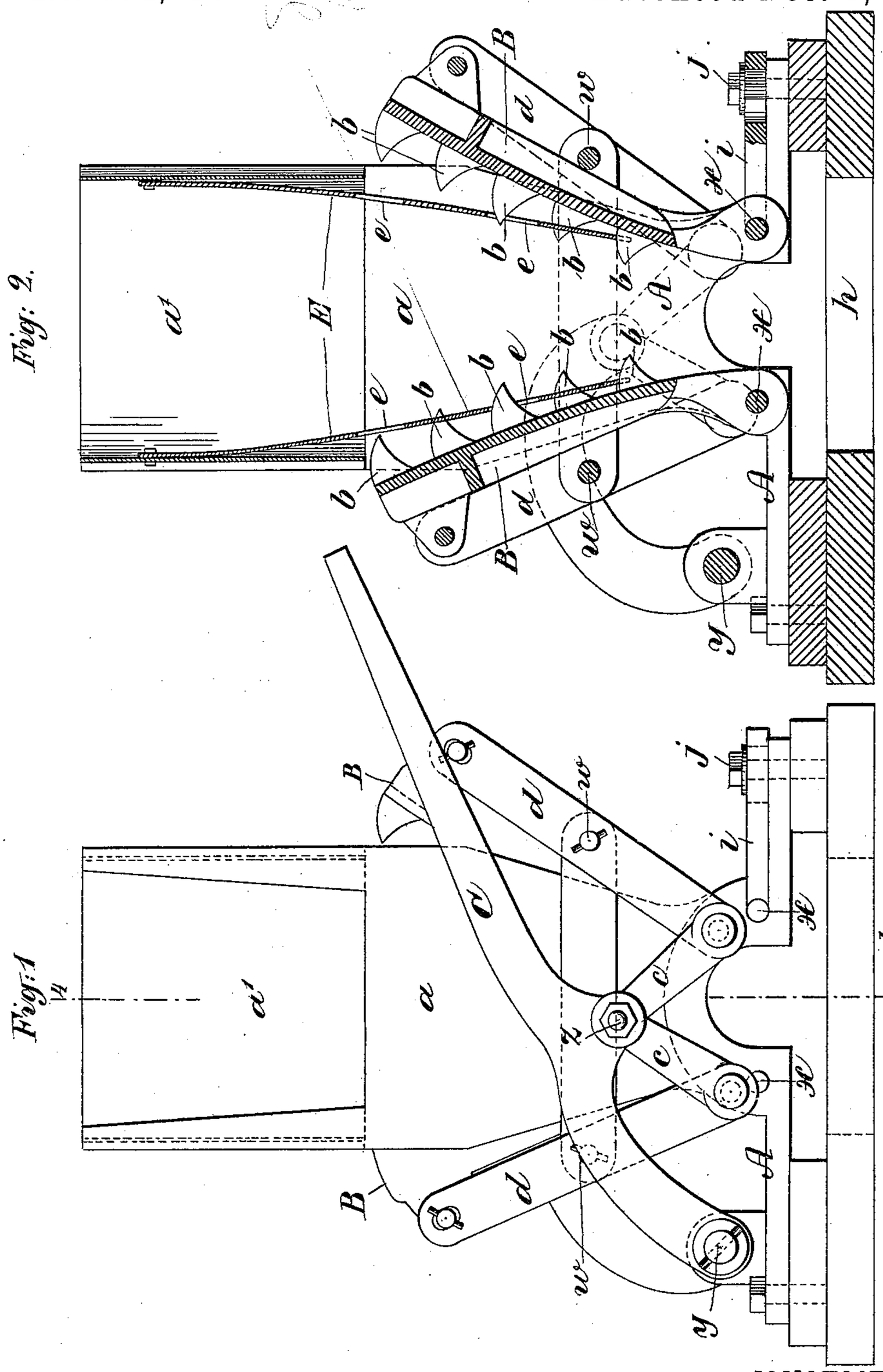
(No Model.) 3 Sheets—Sheet 1.

J. E. RICHARD.

ICE BREAKER OR CRACKER.

No. 464,039. Patented Dec. 1, 1891.



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(No Model.) 3 Sheets—Sheet 2.

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Fig. 4.

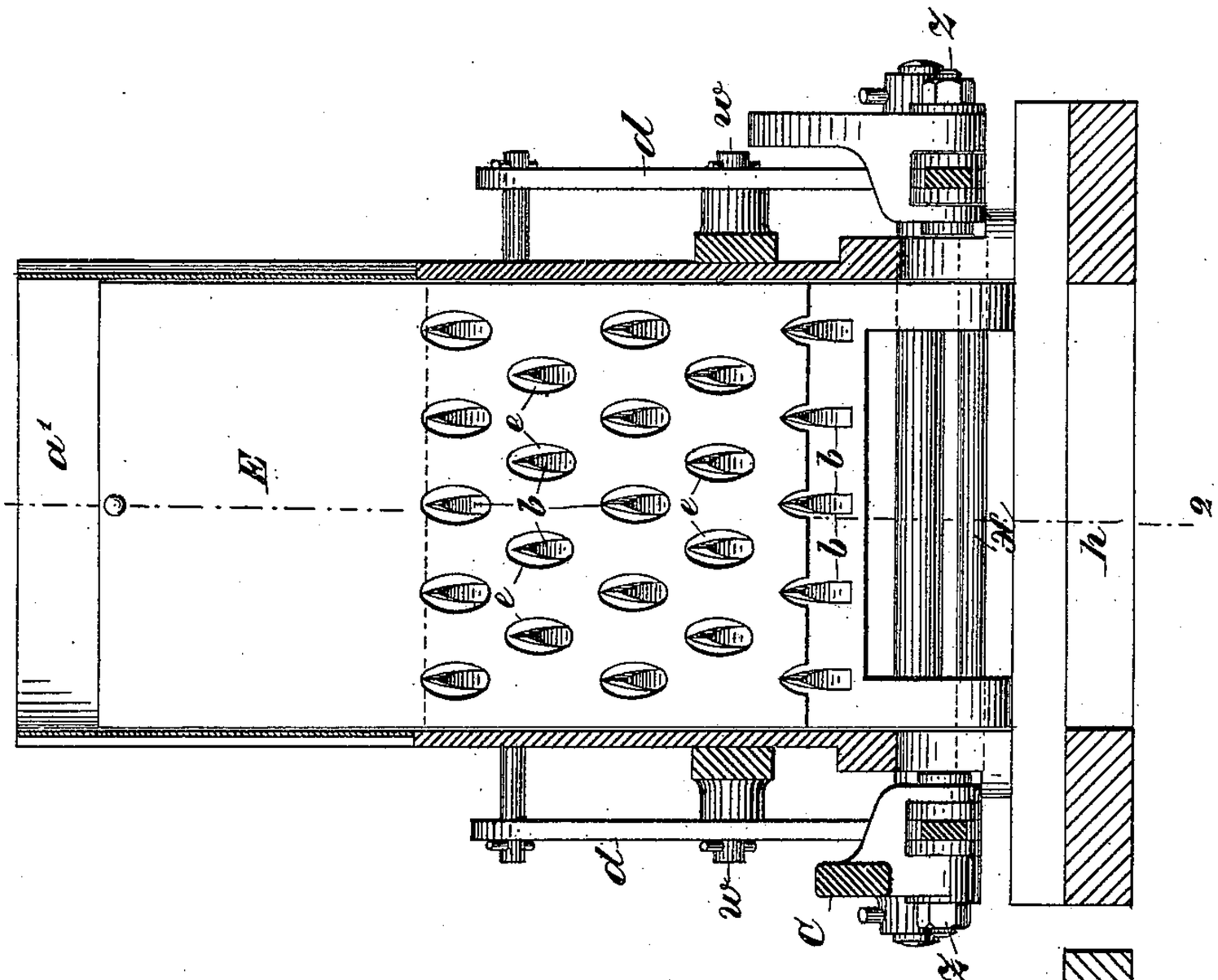
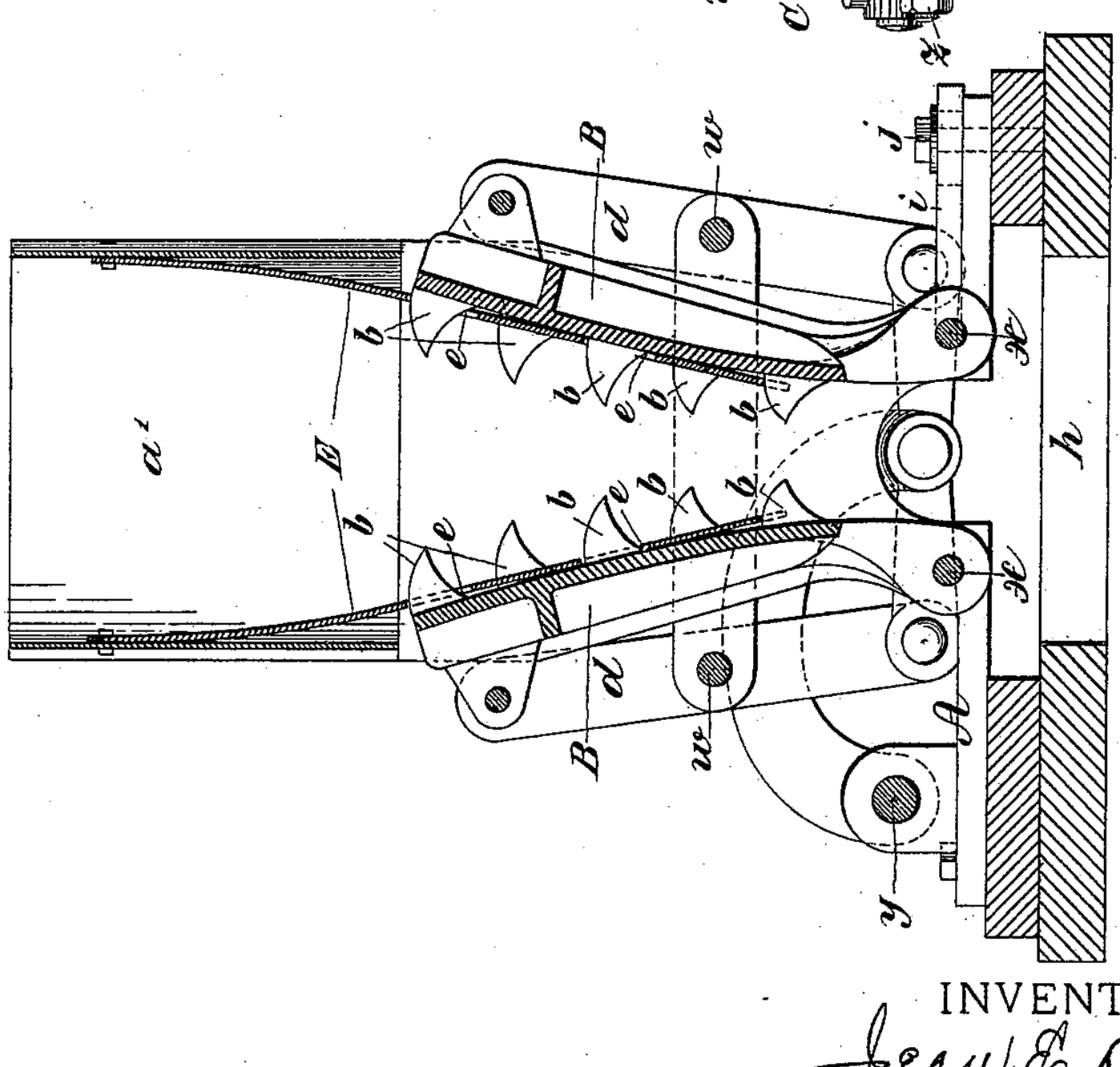


Fig. 3.



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(No Model.) 3 Sheets—Sheet 3.

J. E. RICHARD.

ICE BREAKER OR CRACKER.

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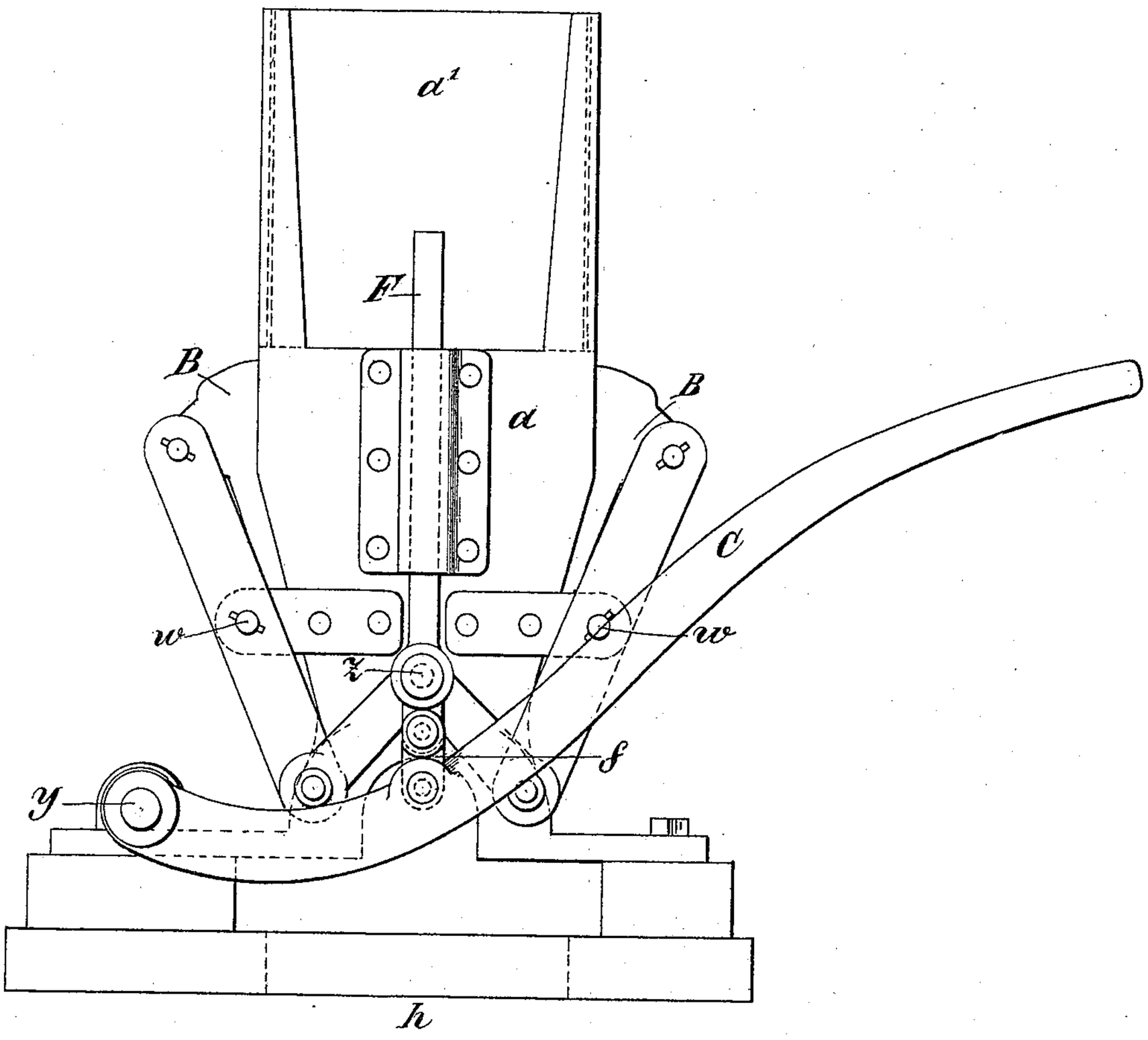
Fig: 5.



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UNITED STATES PATENT OFFICE.

JEAN E. RICHARD, OF NEW YORK, N. Y.

ICE BREAKER OR CRACKER.

SPECIFICATION forming part of Letters Patent No. 464,039, dated December 1, 1891.

Application filed March 12, 1891. Serial No. 384,803. (No model.)

To all whom it may concern:

Be it known that I, JEAN E. RICHARD, a citizen of the United States, residing in the city, county, and State of New York, have invented certain Improvements in Ice Breakers or Crackers, of which the following is a specification.

My invention relates to a machine for cracking ice into small bits, and is especially adapted for those who have use for broken ice, as ice-cream makers, undertakers, keepers of saloons, &c. The machine is also well adapted for use in the household where cracked ice is needed.

My improvements will be hereinafter fully described, and their novel features carefully defined in the claims.

In the accompanying drawings my invention is embodied in an ice-cracking machine, of which—

Figure 1 is an end elevation, and Fig. 2 a vertical transverse section, taken in the plane indicated by the line 2 2 in Fig. 4. This view shows the cracking-jaws retracted. Fig. 3 is a view similar to Fig. 2, but showing the jaws closed or advanced. Fig. 4 is a longitudinal vertical section of the machine, taken in the plane indicated by line 4 4 in Fig. 1. Fig. 5 is an end elevation of the machine similar to Fig. 1, illustrating a slightly-modified construction of the jaw-operating mechanism.

A represents the main frame of the machine, which may be of cast-iron, and *a a* are the end plates of said frame, which form, with the jaws of the cracker, the lower portion of the hopper of the machine. The upper portion *a'* of the hopper may be of sheet metal, as galvanized iron, for example.

B B are the ice-cracking jaws, pivoted at *x x* below in the main frame. These jaws are provided on their inner opposed faces with spurs or pointed studs *b*, rather thickly set on the faces of the jaws. These jaws move inward and outward simultaneously when the machine is in operation, the movement being effected, as herein shown, by the mechanism I will now describe, premising that as the mechanisms at the opposite ends of the machine are alike, or duplicates, except as to the operating-lever, it will only be necessary to minutely describe one.

C is the operating-lever, which is fulcrumed at *y* and coupled at *z* to a toggle composed of two links *c c*. The outer ends of the toggle-links are coupled, respectively, to the lower parts of two upright levers *d d*, fulcrumed at *w*, and coupled at their upper ends, respectively, to the jaws B B. When the lever C is depressed, the jaws are moved inward or toward one another, and when said lever is elevated the jaws are retracted or moved outward.

When the jaws are retracted, as represented in Fig. 2, it is necessary to sheathe the spurs *b* or withdraw them from the hopper, so as to leave a clear and smooth way for the large lump or piece of ice in the hopper to freely descend into the space between the jaws, and to effect this I provide the device I will now describe.

Secured at their upper edges to the respective side walls of the hopper are pendent aprons E, which will by preference be of thin sheet-steel. These aprons may bear on the respective jaws B at their lower ends with an elastic pressure in the manner of leaf-springs. Each apron is furnished with apertures *e*, one corresponding to or registering with each spur *b* on the jaws B behind it. When the jaws are brought together, the spurs are protruded through the apertures in the apron and penetrate the block of ice, and when the jaws are retracted the spurs withdraw through the apertures in the aprons, particularly at the upper part of the latter, and thus allow the block of ice to descend by gravity to a position where the jaws may again act on it.

Owing to the fact that the jaws have a more extended movement at their upper ends than at their pivot-points, I prefer to make the spurs at said upper ends longer than those below, as clearly shown, so that they will withdraw out of the way.

The construction illustrated in Figs. 1 to 4 imparts to one jaw—that at the right in Fig. 2—more movement than to the other jaw by reason of the position of the fulcrum of the lever C; but this difference does not materially affect the operation of the machine, and the construction is simple and economical. However, in Fig. 5 I have shown a modified construction of the jaw-operating mechanism, which, while somewhat more complex than that described, is adapted to impart to

the jaws B an equal extent of movement. In this construction F is a slide mounted in vertical slide-bearings on the frame over the knuckle of the toggle and coupled to said knuckle. This slide keeps the knuckle of the toggle in line during the movement. The lever C is coupled to this slide by a link *f*. The jaws are brought together so nearly at their lower ends, where they are pivoted in the frame, that only bits of ice of the required size can pass between them to the off-bearing chute. (Not shown.)

The operation is simple. The operator puts a block of ice into the hopper, and its weight will cause it to descend into the space between the aprons E. He then moves the lever C up and down, thus causing the spurs on the jaws to alternately pierce the ice from opposite sides and withdraw. The effect will be to crack the lower part of the block of ice into fragments at each operation of the lever, the block descending farther and farther at each retraction of the jaws until the whole of it is broken up and the bits discharged below.

I have shown an aperture *h* in the base-piece upon which the machine is mounted, for the cracked ice to fall through into any kind of chute or receptacle below.

The size of the bits of ice passing through the machine may be regulated to a limited extent by an adjustment provided for the bearings or pivots of one of the cracking-jaws. In the present case I have chosen the jaw B. (Seen at the right in Figs. 1 and 2.) The pivoting journals *x* of the jaw find bearings in horizontal open slots in the frame A and are backed by adjustable slotted plates *i*, which enter said slots and may be secured in place by the screws *j*, which secure the frame to the base. As this screw passes through a slot in the plate *i*, the latter may be shifted and adjusted by loosening said screw. When these plates are drawn back, the journals *x* will move back during the operation of the machine, and thus open a wider outlet for the passage of the ice from between the jaws. The hopper *a'* of sheet metal is removable, and when removed the aprons E are removed with it.

I do not limit myself to any particular size and proportion for the machine, but contemplate making several sizes thereof. The machine may be made very plain or be highly ornamented, as desired.

The jaws B form movable sides to the hopper, occupying openings left in the hopper sides to receive them. These jaws have lugs on their backs near their tops, and a rod passing through these lugs passes also through the upper extremities of the respective upright levers *d*. The aprons E, being attached at their upper extremities to the side walls of the hopper and free to move at their lower ends, serve to form an alternately contracting and expanding chute or way for the ice in its descent; but this expansion and contraction will be limited to the free lower portions of said aprons.

Having thus described my invention, I claim—

1. An ice-cracking machine comprising a hopper to receive the ice to be cracked, two oppositely-arranged inclined vibrating jaws furnished with spurs on their faces, means, substantially as described, for operating said jaws, and inclined aprons E, arranged within the hopper and in front of the respective jaws, said aprons being attached at their upper ends only and free to move toward and from each other at their lower free ends, each of said aprons having apertures coinciding with the spurs on the jaw behind it, substantially as described.

2. In an ice-cracking machine, the combination, with a hopper to receive the ice, having openings at its opposite sides for the jaws, of the vibrating jaws B, pivoted at their lower parts and provided with spurs *b* on their faces, the aprons E, of spring sheet metal, fixed to the hopper at their upper edges pendent in front of the respective jaws B and provided with apertures *e* for the passage of the spurs on the jaws, and mechanism for vibrating said jaws to an extent sufficient to withdraw the spurs thereon through the apertures in the apron, as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JEAN E. RICHARD.

Witnesses:
HENRY CONNETT,
CHAS. A. WALSH.