

(No Model.)

F. G. JOHNSON.

AUTOMATIC GRAPPLING BUCKET.

No. 254,824.

Patented Mar. 14, 1882.

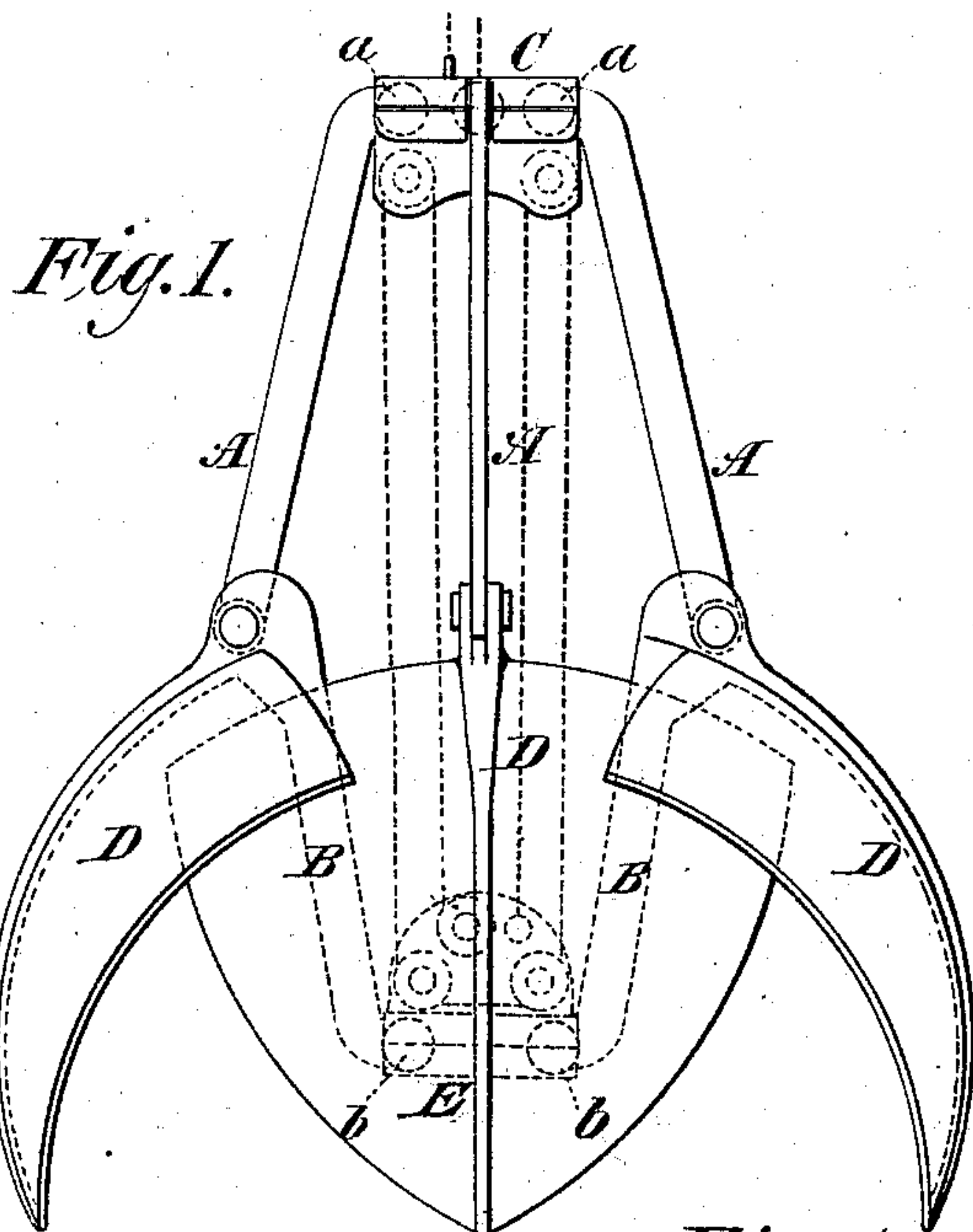


Fig. 1.

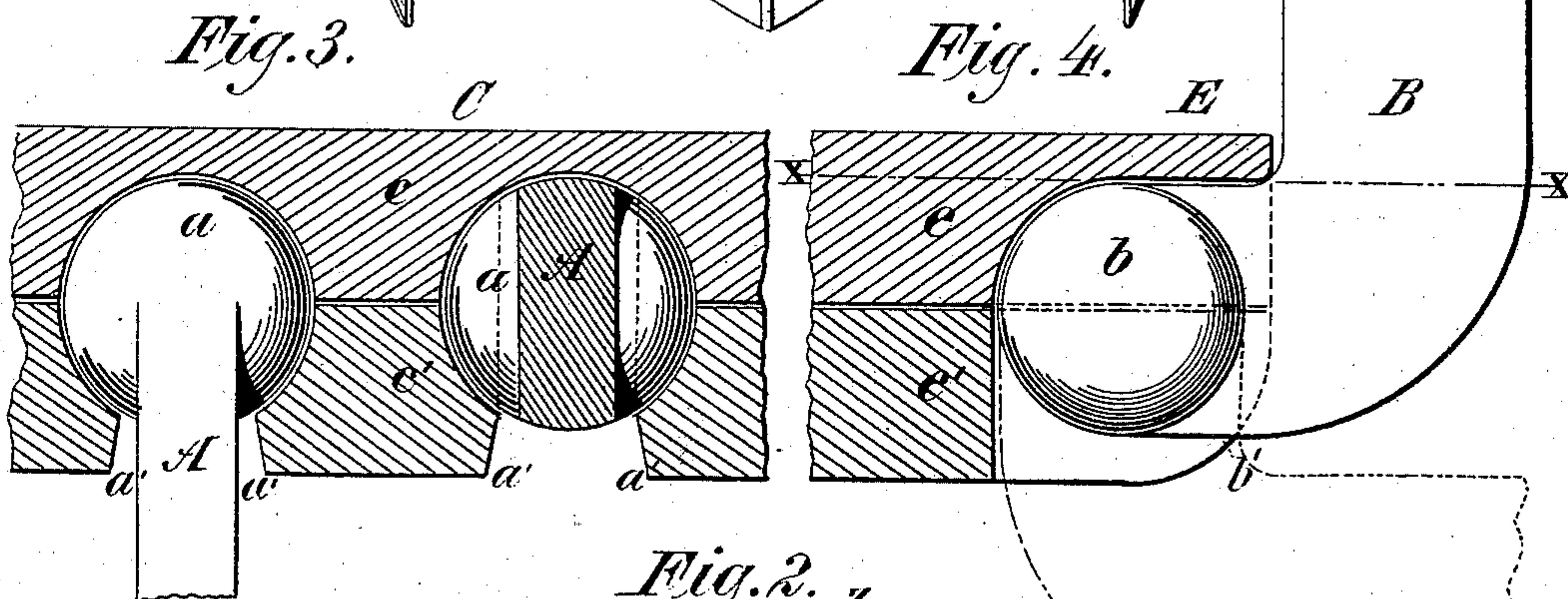


Fig. 3.

Fig. 4.

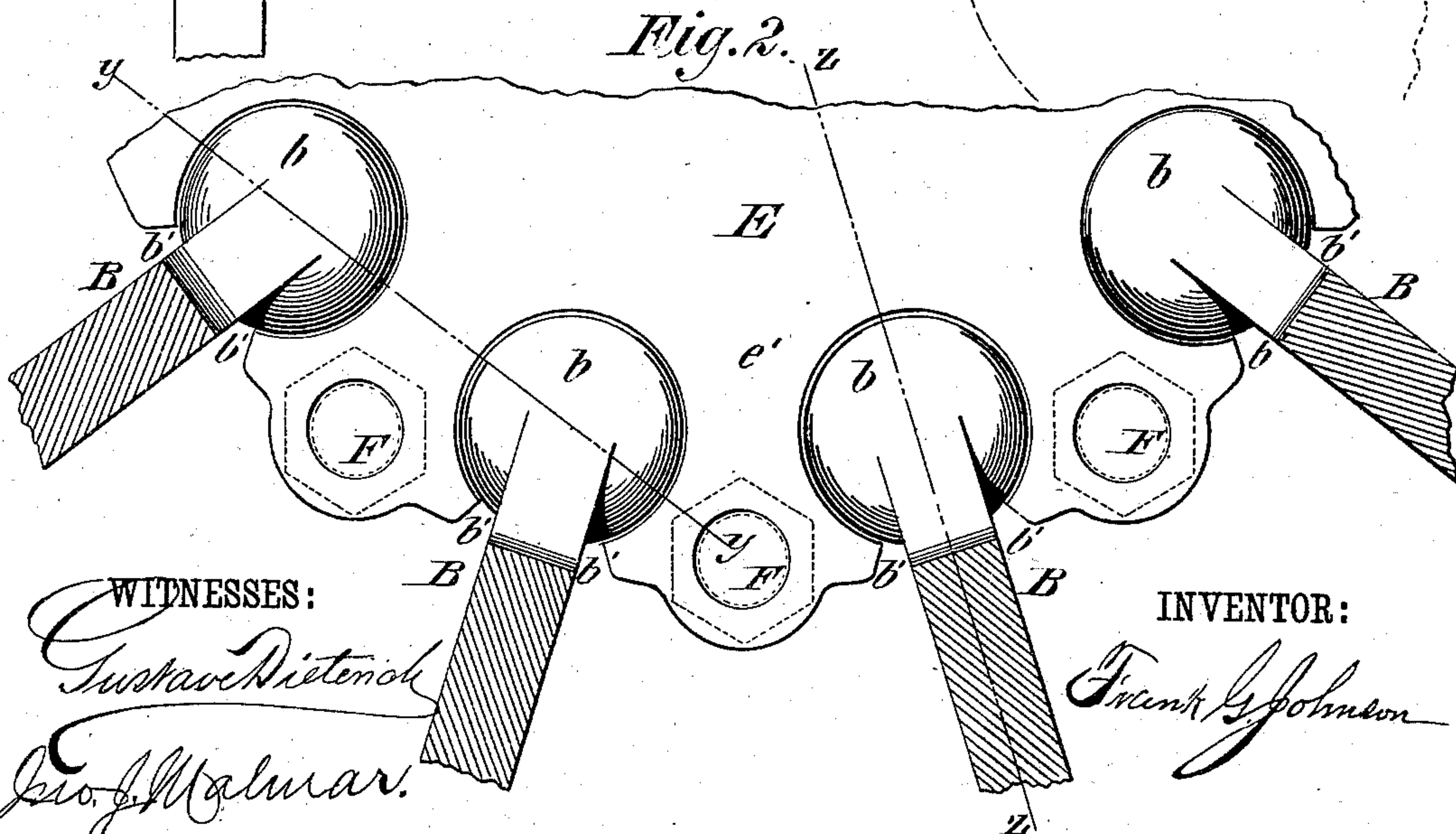


Fig. 2. \mathbb{Z}

WITNESSES:

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UNITED STATES PATENT OFFICE.

FRANK G. JOHNSON, OF BROOKLYN, NEW YORK.

AUTOMATIC GRAPPLING-BUCKET.

SPECIFICATION forming part of Letters Patent No. 254,824, dated March 14, 1882.

Application filed August 1, 1881. (No model.)

To all whom it may concern:

Be it known that I, FRANK G. JOHNSON, a citizen of the United States, residing in the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Automatic Grappling-Buckets, and of which I do hereby declare that the following is a full, clear, and exact specification, reference being had to the accompanying drawings, in which like letters refer to like parts.

My invention relates more particularly to a semi-globular grappling-bucket for which Letters Patent of the United States were granted to me March 1, 1881, and numbered 238,293, and for which Letters Patent for improvements in the same were allowed me April 25, 1881.

The improvement herein described consists in the method of constructing the joints, which by experience it is found are more practicable and useful than those heretofore employed.

Referring to the accompanying drawings, Figure 1 represents a general view of the bucket; Fig. 2, a horizontal section from above through the line *x x* in Fig. 4; Fig. 4, a vertical section through the line *z z* in Fig. 2; Fig. 3, a vertical section through the head-plate C, Fig. 1.

B B are the carrying-arms, to which are fastened the curved blades D D of the bucket. A A are the working-arms, which connect the head-plate C with the carrying-arms B B and D D. By drawing the head-plate C and the foot-plate E together by means of the closing and hoisting chain the bucket is closed, and by lifting on the opening and lowering chain the head-plate C is lifted and the bucket is opened. When stones and other unyielding bodies happen to come between the edges of the blades as the bucket is being closed the bucket is submitted to great strain in lateral directions, unless the joints between the head-plate C and the working-arms A A, as also between the foot-plate E and carrying-arms B B, are so constructed as to allow each of the blades D D perfect freedom to move or swing in either direction horizontally away from its adjacent blade, so that any two adjacent blades can stride any unyielding object, which, together with the

necessary opening-and-closing motion of the blades in a vertical direction, necessitate that the said joints be universal in their action.

To provide such a joint in an automatic grappling-bucket, constructed substantially as above described and referred to, constitutes the object of my invention, which is described as follows: The top or upper end of the working-arms A A terminate in the form of a perfect globe or ball, *a a*, Fig. 1, and the head-plate C is divided horizontally into two equal halves and held together by suitable bolts, as shown by F F in the foot-plate E. On the adjacent faces of these two halves of the head-plate C are countersunk corresponding semi-globular indentations or sockets to receive the balls *a a*, there being working freedom between the said balls and the said sockets. To allow these working-arms A A freedom to move in a vertical direction, the two halves of the head-plate C are cut away in a V-shaped form from the sockets (containing the balls *a a*) to the periphery; and to allow them (the arms A A) to move sufficiently far in either lateral direction, as above described, the upper half of the head-plate C is also cut away in a V-shaped form from the sockets to the upper surface, as shown at *a' a'*, Fig. 2.

The joints between the foot-plate E and the carrying-arms B B are made in the same way as above described, and for the same reasons, as shown by Figs. 2 and 4, except the lower half, instead of the upper half, of the foot-plate is cut away in a V-shaped form from the socket to the lower surface to allow the lateral motion of the carrying-arms B B.

The above-described cutting of the head-plate C and the foot-plate E, in combination with the described ball-and-socket joints, not only admit of the several blades D D being moved bodily in a horizontal direction away from each other, but admit also the points of the blades D D to converge or diverge more or less from each other, which is also essential to give the bucket the necessary freedom to adjust itself to irregular forms and unyielding objects.

The vertical form of the several blades D D of the bucket is that of a circle whose center is at the working-point of the carrying-arms B B, where they are secured, as above described, to

the foot-plate E, so that the central vertical line of each blade follows in the curved track of its point.

The horizontal shape of the bucket is that of a circle, so that the bucket, when closed, is in form substantially semi-globular.

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

In connection with the semi-globular bucket,

Fig. 1, the combination of the head-plate C and foot-plate E with the ball-and-socket joints, substantially in the manner and for the purposes described.

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Witnesses:

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