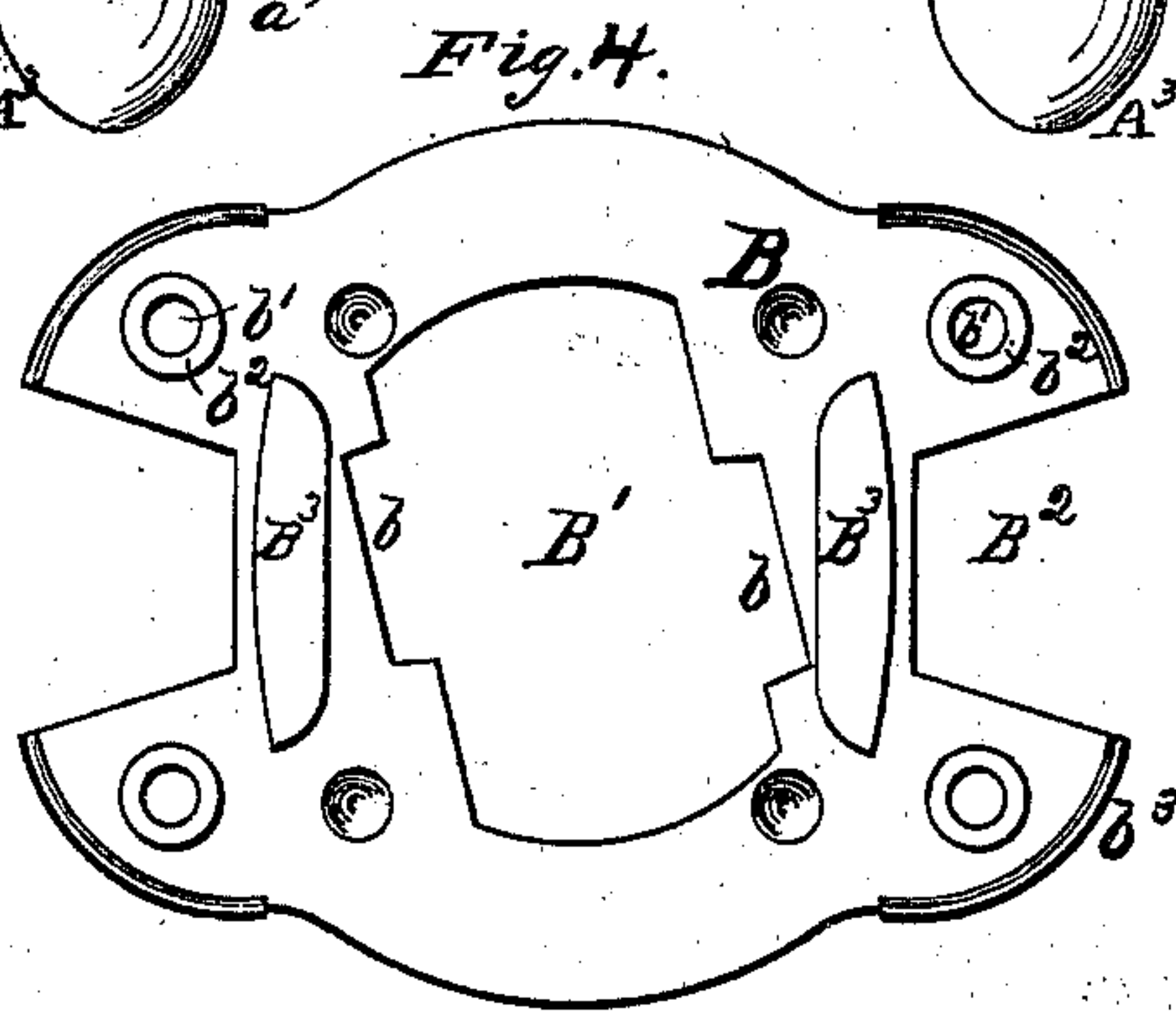
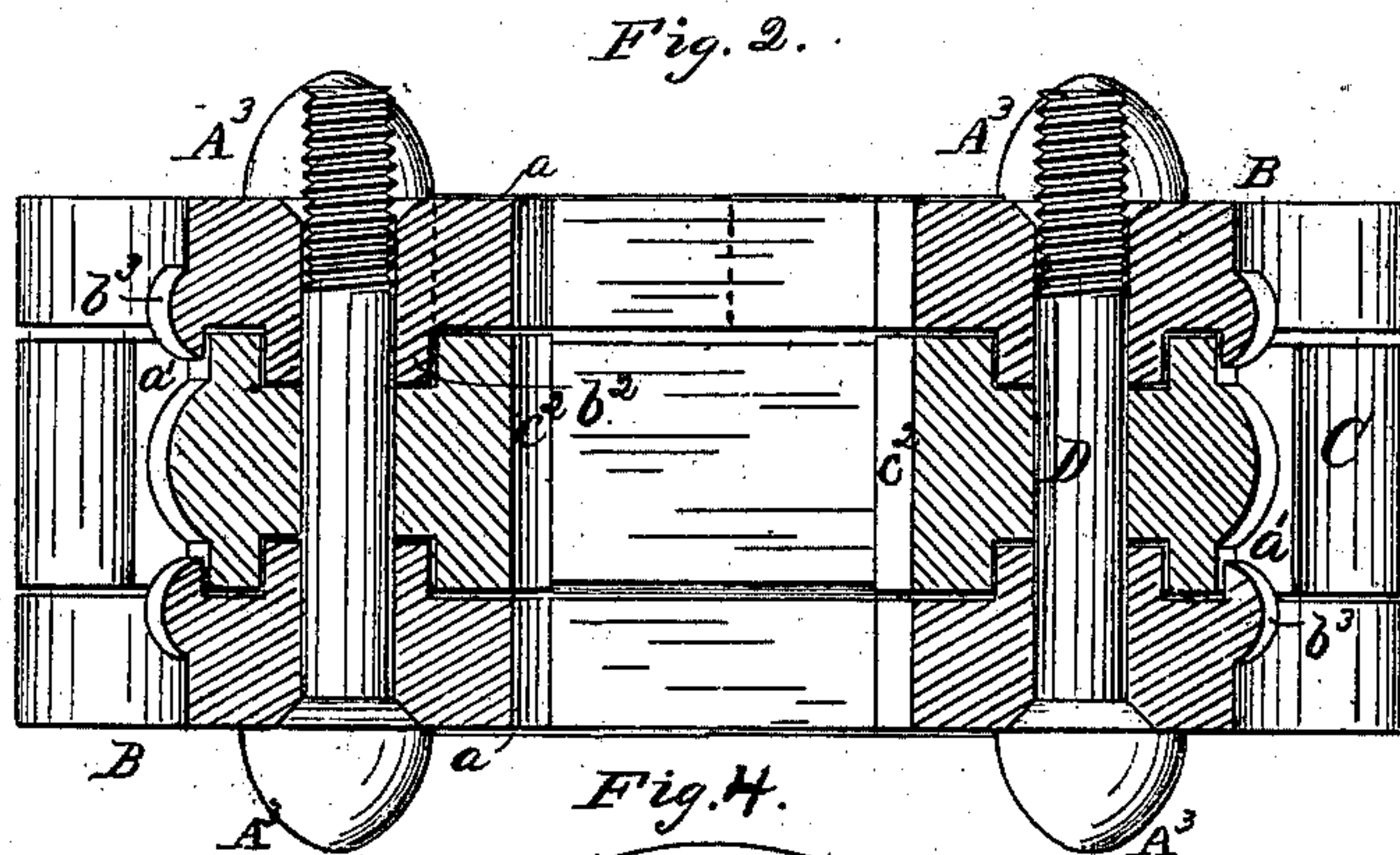
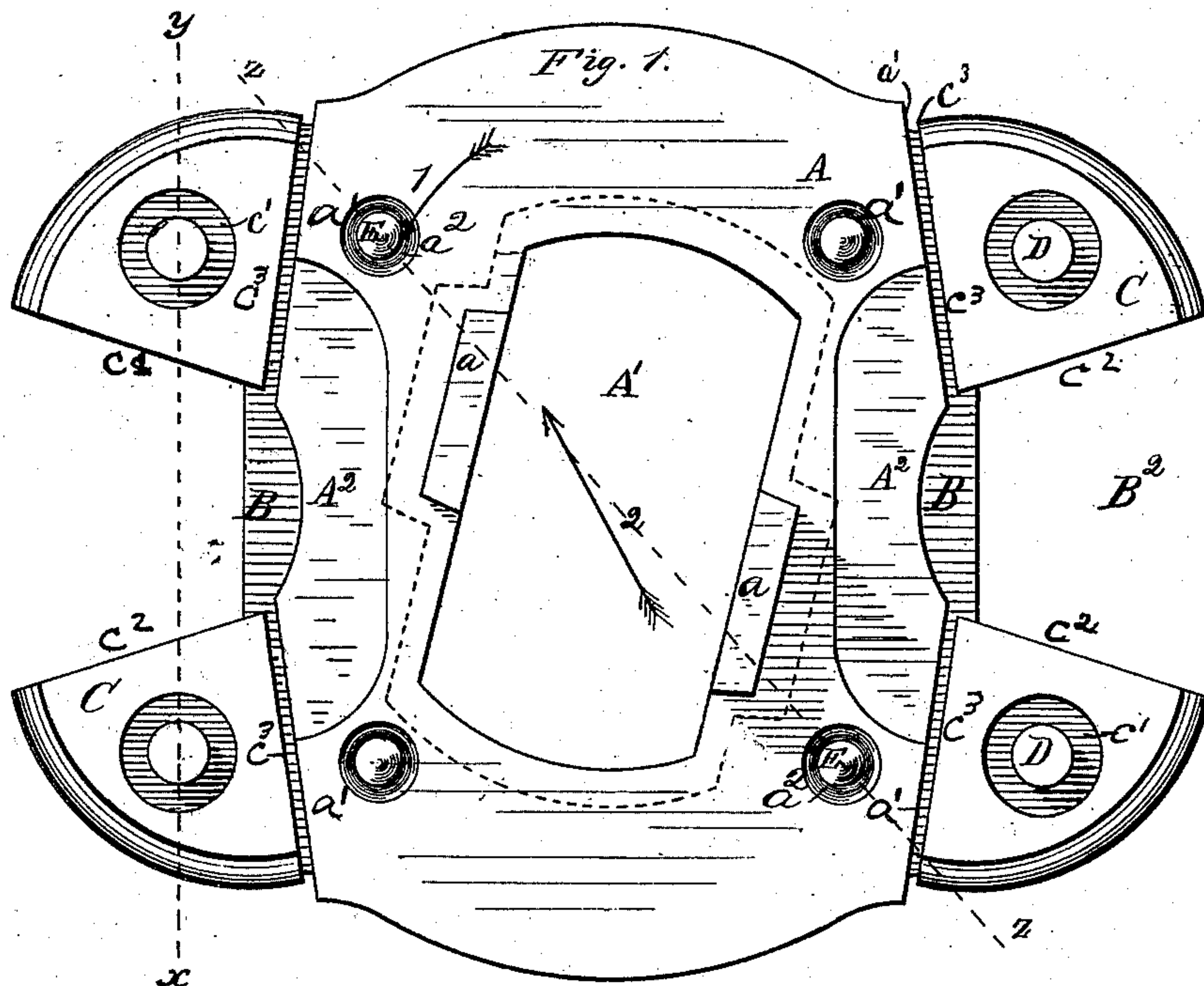


W. H. DICKEY.
Millstone Driver.

No. 228,043.

Patented May 25, 1880.



Witnesses:

A. N. Low.

J. S. Barker

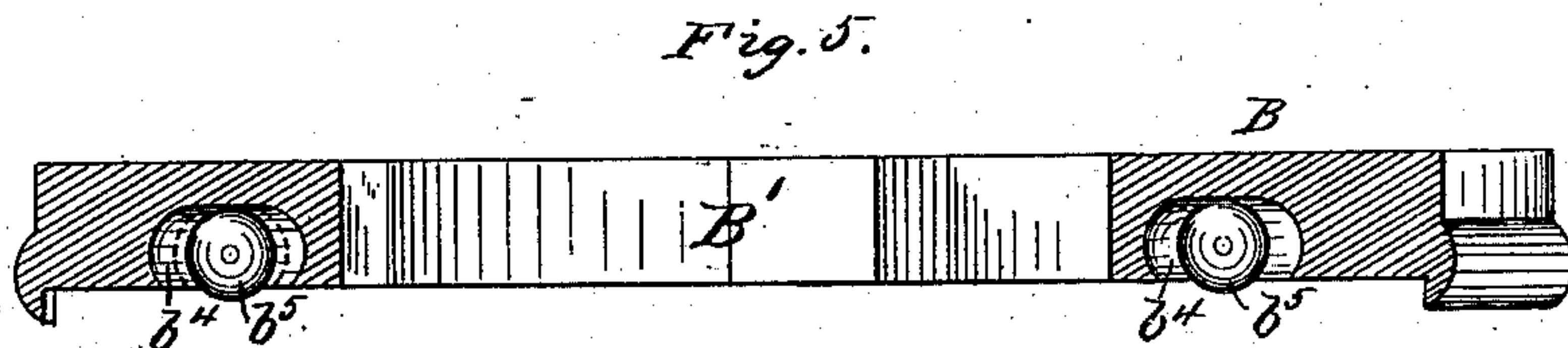
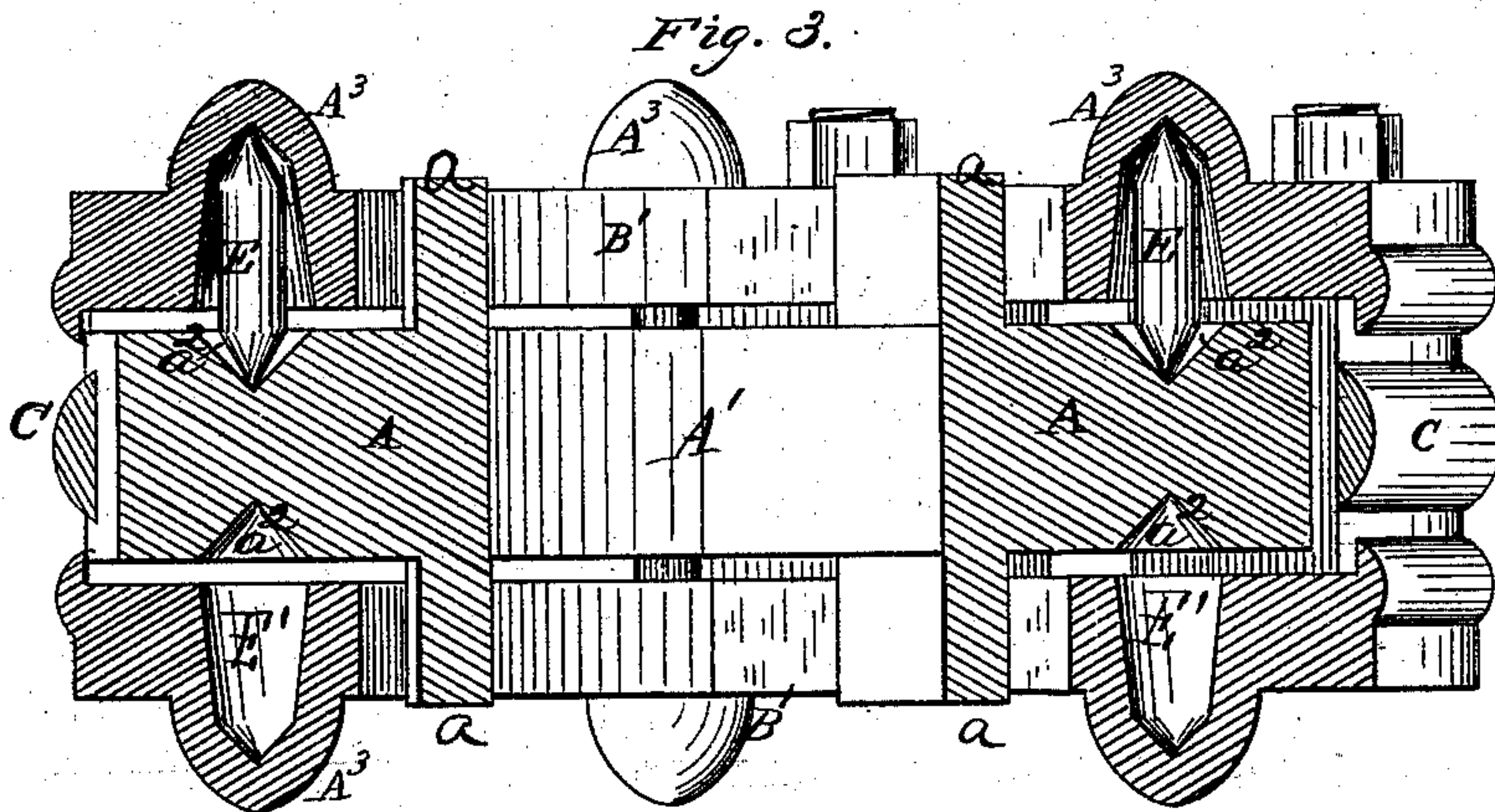
Inventor:

William H. Dickey
by H. B. Dumbleton
Att'y

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UNITED STATES PATENT OFFICE.

WILLIAM H. DICKEY, OF JACKSON, MICH., ASSIGNOR TO ALLEN BENNETT AND
GEORGE S. BENNETT, OF SAME PLACE, ONE-THIRD TO EACH.

MILLSTONE-DRIVER.

SPECIFICATION forming part of Letters Patent No. 228,043, dated May 25, 1880.

Application filed September 30, 1879.

To all whom it may concern:

Be it known that I, WILLIAM H. DICKEY, of Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Millstone-Drivers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is a plan view of my improved millstone-driver with one of the plates with which the movable portion is composed detached. Fig. 2 is a vertical section taken on line $x y$, Fig. 1. Fig. 3 is a section on line $z z$, Fig. 1. Fig. 4 is a detached view, reduced, of the plate which has been removed from Fig. 1; and Fig. 5 is a vertical section of a modification of Fig. 3.

My driver is composed of practically two parts, one of which is attached firmly to and rotates with the spindle, the other part or member being supported upon the member which is carried upon the spindle, and is free to move thereon in a horizontal plane and in any direction.

The member A, which is attached to the spindle, is of substantially the form shown in Fig. 1, and is provided with a central opening, A' , which fits tightly upon the squared portion of the spindle, and when a spindle of other form in cross-section is used the opening in the center of the member A should be correspondingly shaped.

$a a$ represent legs projecting from both sides of the member A and at right angles thereto, the outer ends of the legs being designed to rest upon the shoulder which is formed at the lower end of the squared portion of a spindle, for the purpose of supporting the driver upon the spindle.

A^2 represents recesses in the sides of the member A. $a^2 a^2 a^2 a^2$ are seats in the member A.

The other member of my driver consists of two plates, B B, and intermediate blocks, C C C C, interposed between the plates at their corners, these parts being firmly secured to

each other by means of bolts D. Each plate is provided with a central opening, as at B' , said opening being of greater size in both directions than the opening A' in the member A, to permit the second member to move freely in any direction in a horizontal plane relative to the member A. Each plate is also recessed, as at b , to receive the legs a , which legs are a little longer than plates B B are thick. Each plate is notched or recessed at its end, as at B^2 , thus leaving jaws or ears at each corner of the plate. Each ear is provided with a bolt-hole, b' , and with a boss, b^2 , rising from the face of the plate and surrounding the bolt-hole. Each block C is provided with a bolt-hole, and the circular recess c' upon each side fitting closely the bosses or rims on the plates B. Each plate is further provided with rims or flanges b^3 , which fit closely the curved outer surfaces of the blocks C, for the purpose of furnishing an additional support for said blocks. The inner faces, c^2 , of the blocks form continuations of the inner faces of the jaws of the plates, and the faces c^3 of the blocks C correspond to the opposing faces or walls a' of the member A.

It will be seen that the interlocking surfaces of the plates B B and corner-blocks C support these blocks against the thrust of the block A, thus preventing their displacement and relieving the bolts from lateral strain.

By constructing the floating member of the plates B B, corner-blocks C, and bolts D, I am enabled to secure the desired strength of this part, while at the same time it is made very light, because the plates may be made of malleable iron, and it will be readily understood that making the corner-blocks C separate from the plates is desirable, from the fact, first, that the faces of the blocks which engage with the bail and with block A may be made very hard, (and hence wear well and with but little friction,) while the plates may be made soft, tough, and strong; and, secondly, that in case of wear upon either of the faces of these blocks, or other injury, they can be readily replaced.

Each plate is provided upon its inner face with the raised portions or ribs B^3 , of such form and size as will enter the recesses A^2 in

the member A, the function of these ribs B³ being to strengthen the plates.

It will also be seen that in consequence of the projecting ribs B³ entering the recesses A² these interlocking surfaces would prevent the member A from being accidentally removed from between the plates B B in case the legs *a a* and pivots or studs E were dispensed with. Thus the ribs are adapted not only to strengthen the plates B B, but also to retain the member A in its place.

Each plate is provided near the corners with domes A³, which are hollow, and the cavities being conical in form at their upper ends, by preference.

E E E E are vibrating studs, pointed at each end, their lower ends resting in the seats *a*² of the member A, and of such length that the upper plate is supported upon the studs a short distance—say a quarter of an inch—above the member A.

It will be readily understood that by this construction of parts I am enabled to make the plates B of malleable iron and very light, while retaining the requisite strength, and by making the blocks C of ordinary cast-iron I cheapen the construction.

By constructing the blocks C with the circular recesses *c'* and the plates with the bosses and circular flanges which engage with the blocks C, I practically relieve the bolts D from all lateral strain.

By the use of the legs *a*, which project a short distance through the plates B, I prevent said plates from coming in contact with the shoulder of the spindle, and thus insure the desired freedom of movement of the parts, and by supporting the second member, consisting of the plates B and corner-pieces C, upon the vibrating studs or links E, I practically avoid all friction between the members and secure a delicacy of adjustment not attained in any driver of which I have knowledge.

The operation of this driver is substantially as follows: The device is mounted upon a millstone-spindle in such relation to the runner-stone that the heels of the bail enter the recesses B² in the end of the driver, and when power is applied to the spindle in the direction indicated by the arrow 1 the vertical walls or shoulder *a'* upon diagonally-opposite corners of said plate engage with the corresponding opposing faces of the corner-blocks C, and in case the relation of parts be such that the member A, when the driver is first moved, engages with one only of the blocks C, the effect of such contact and impulse will be to move the movable member of the driver upon a line drawn diagonally through the opening A', as indicated by the arrow 2 in Fig. 1, until two of the blocks at diagonally-opposite corners of the device are in contact with both the heels of the bail and the driving-faces of the member A, so that power will be applied to both heels of the bail equally, as will be readily understood from an examination of Fig. 1.

Although in the drawings I have shown the spindle-opening A' arranged diagonally to a line drawn through the openings which are made to receive the heels of the bail, yet in practice I prefer to make such opening with its longer diameter at right angles to such line, thus providing that the driver may be used to drive a stone in either direction—that is to say, with the sun or against the sun—without inverting the position of the driver, in which case the lower plate may be made without the cavities or domes; but when the spindle-opening is arranged diagonally, as in Figs 1 and 4, I prefer to invert the driver for driving the stone in the opposite direction and support the second member upon the member A by means of vibrating studs placed in the recesses marked E' in Fig. 3.

In Fig. 5 I have shown a modified form of the plate B and its anti-friction support. In this drawing the plates are constructed with chambers *b*⁴, preferably one at each corner, in which chambers are seated anti-friction balls *b*⁵ of such size as to suspend the second member of the driver at a proper distance above the first member, A, the balls rolling to permit the second member to properly shift its position relative to the first member and the bail.

When preferred, the chambers in the plate B may be cast with their openings of less diameter than the diameters of the balls, as indicated in dotted lines, so that they (the balls) will be retained permanently within the plates, it being of course understood, in casting, the balls are to be coated with sand or its equivalent and placed within the molds as cores to form the chambers, the sand being afterward removed, as will be readily understood by all who are familiar with the process of casting.

It is very desirable that the seats for the anti-friction supports should be formed in the lower side of the upper plate, B, instead of in the upper side of the driving-block A, in order to insure that said seats shall not fill up with flour.

What I claim is—

1. In a millstone-driver, the combination, with the block A, adapted to be mounted on the spindle, of the upper and lower plates, B B, each provided with a central opening of greater diameter in all directions than the opening in the block A, and rigidly connected at their corners to the removable block C, substantially as set forth.

2. In a millstone-driver, an upper and lower plate connected at their corners and provided with jaws adapted to engage with the bail of the stone, in combination with an interposed plate having legs projecting therefrom and adapted to support the driver upon the millstone-spindle, substantially as set forth.

3. The combination, in a millstone-driver, of an inclosing-plate provided upon its inner face with ribs B³, and an interposed block or member, A, provided with recesses A², adapted to receive the ribs, substantially as set forth.

4. In a millstone-driver, the movable mem-

ber, consisting of the plates B B and corner-blocks C, united by bolts and provided upon their outer faces with interlocking surfaces adapted to prevent the blocks from being moved out of proper position when in operation, substantially as set forth.

5 5. In a millstone-driver, the combination, with a central block, A, adapted to be supported upon the spindle, of two plates, B B, provided with central openings of greater diameter in both directions than the diameter of the opening in block A in corresponding di-

rections, corner-blocks connecting the plates B B and adapted to engage with the bail of the stone, and the vibrating studs E', the upper plate being recessed to receive the upper ends of said pivots, substantially as set forth. 15

In testimony that I claim the foregoing I have hereunto set my hand.

WILLIAM H. DICKEY.

Witnesses:

JOHN S. BARKER,
H. H. DOUBLEDAY.