

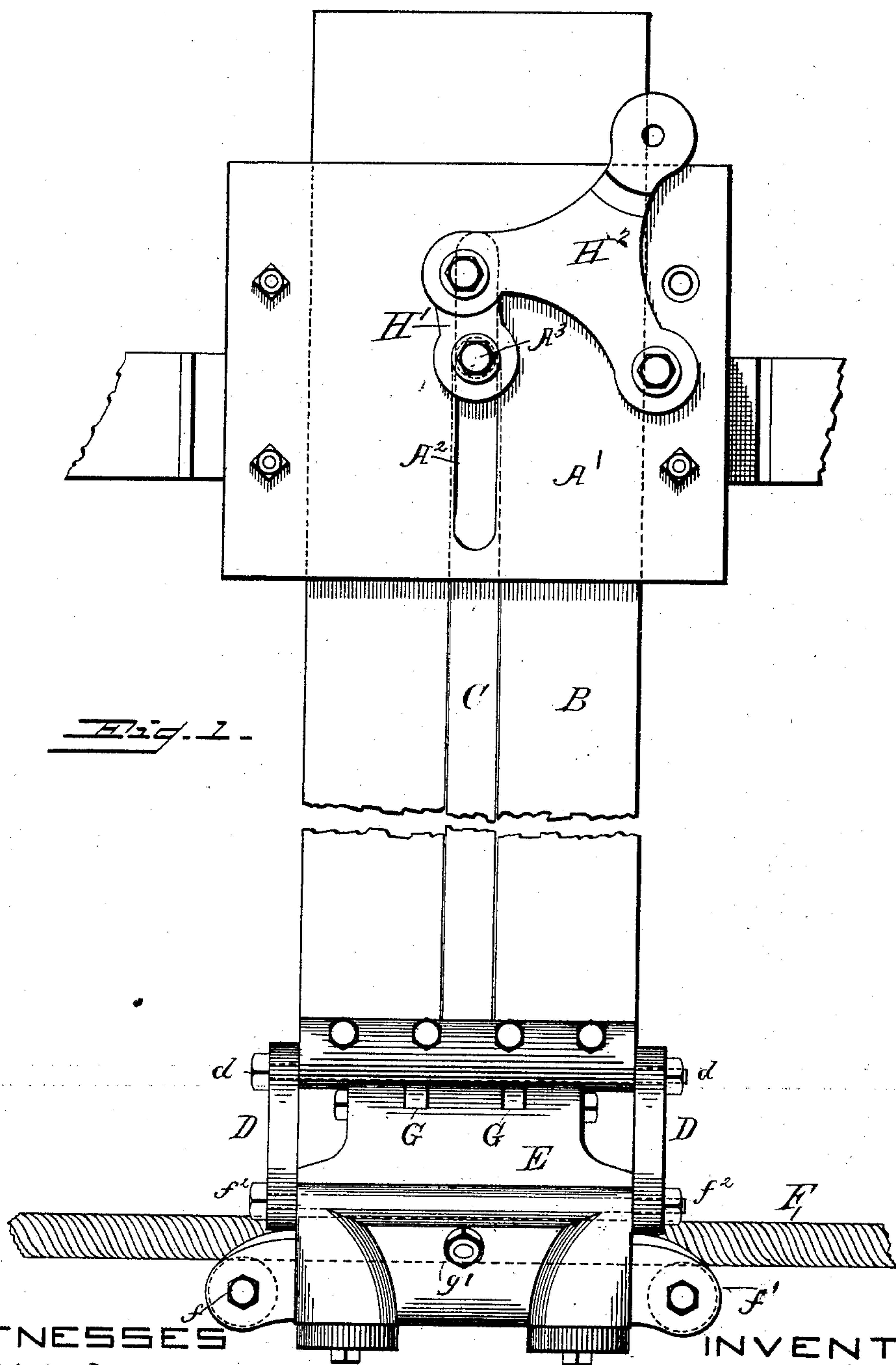
(No Model.)

4 Sheets—Sheet 1.

E. SMITH.
GRIP FOR TRACTION CABLES.

No. 371,103.

Patented Oct. 4, 1887.



WITNESSES
Willie Powell.
J. B. McGinn.

INVENTOR
Eugene Smith
By Connolly Bros
Attys

(No Model.)

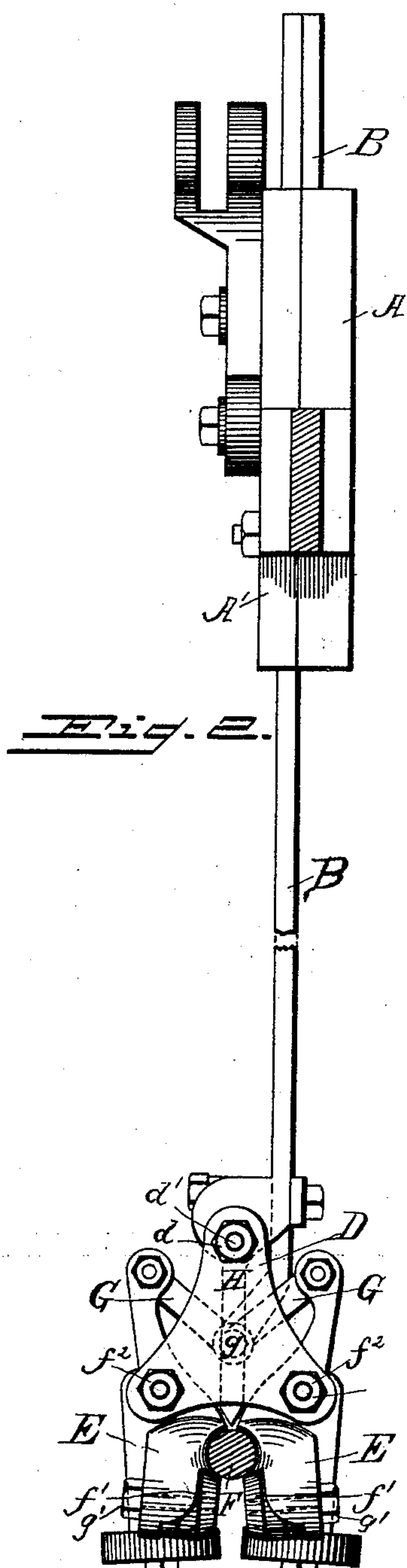
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E. SMITH.

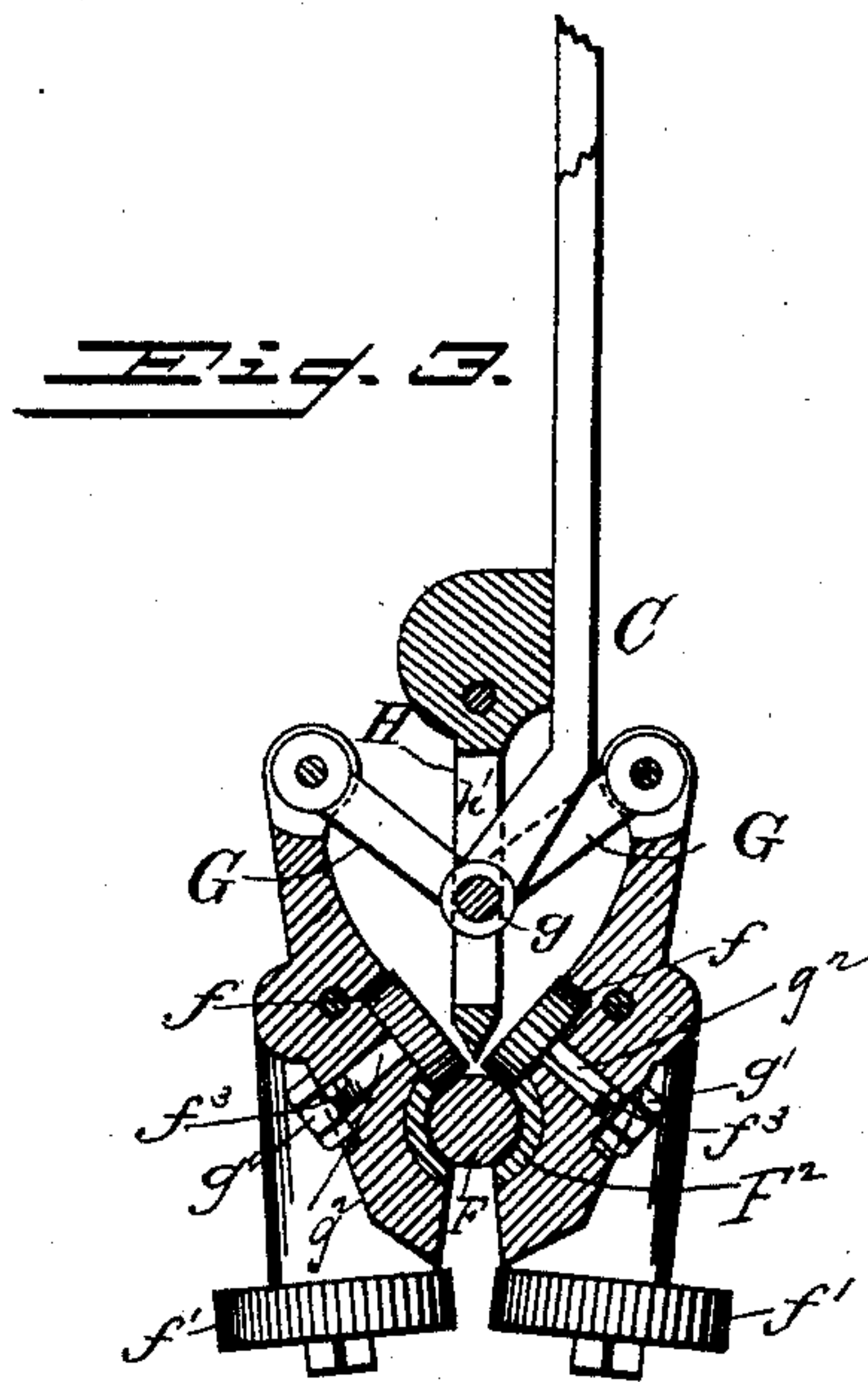
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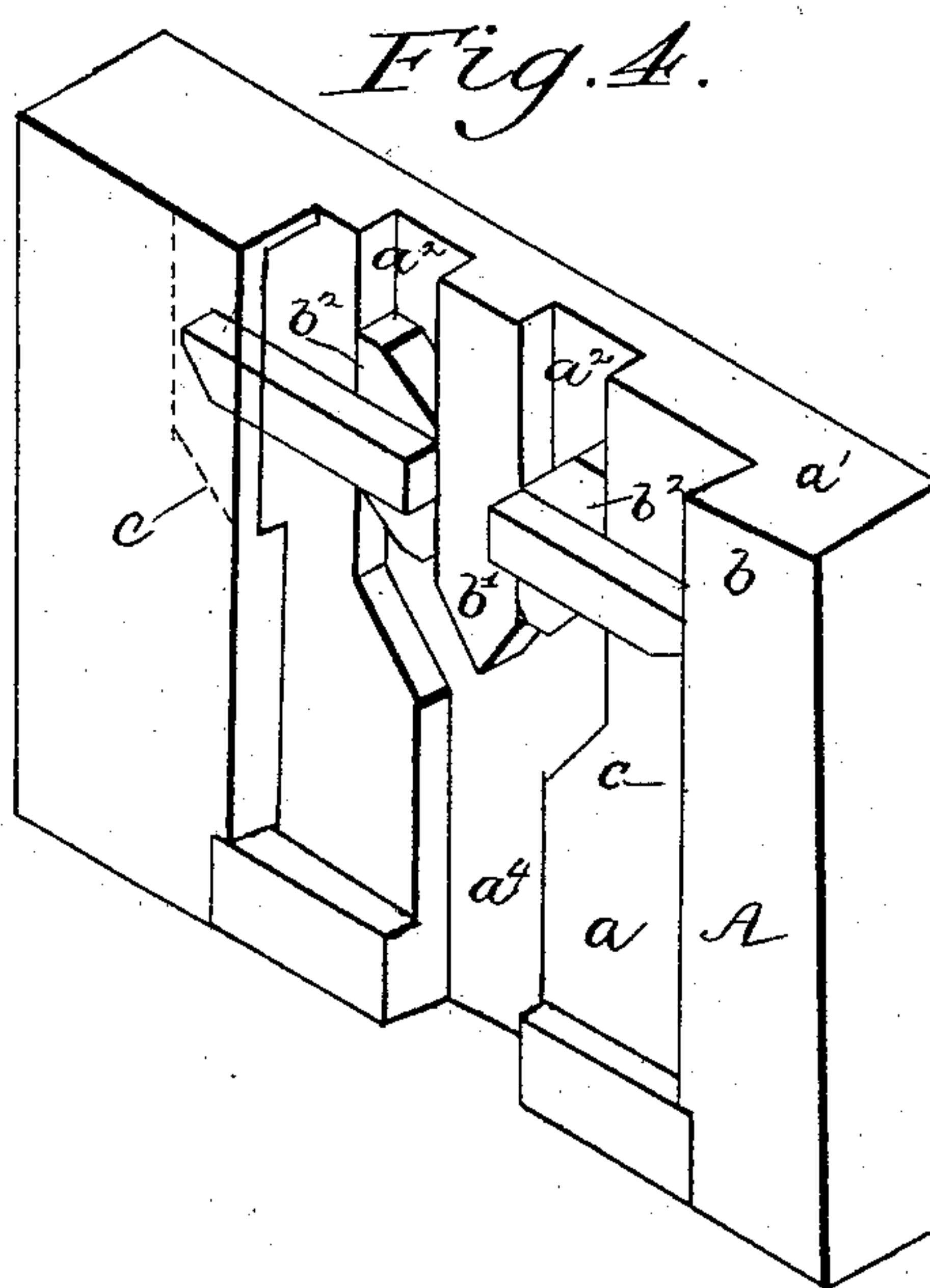
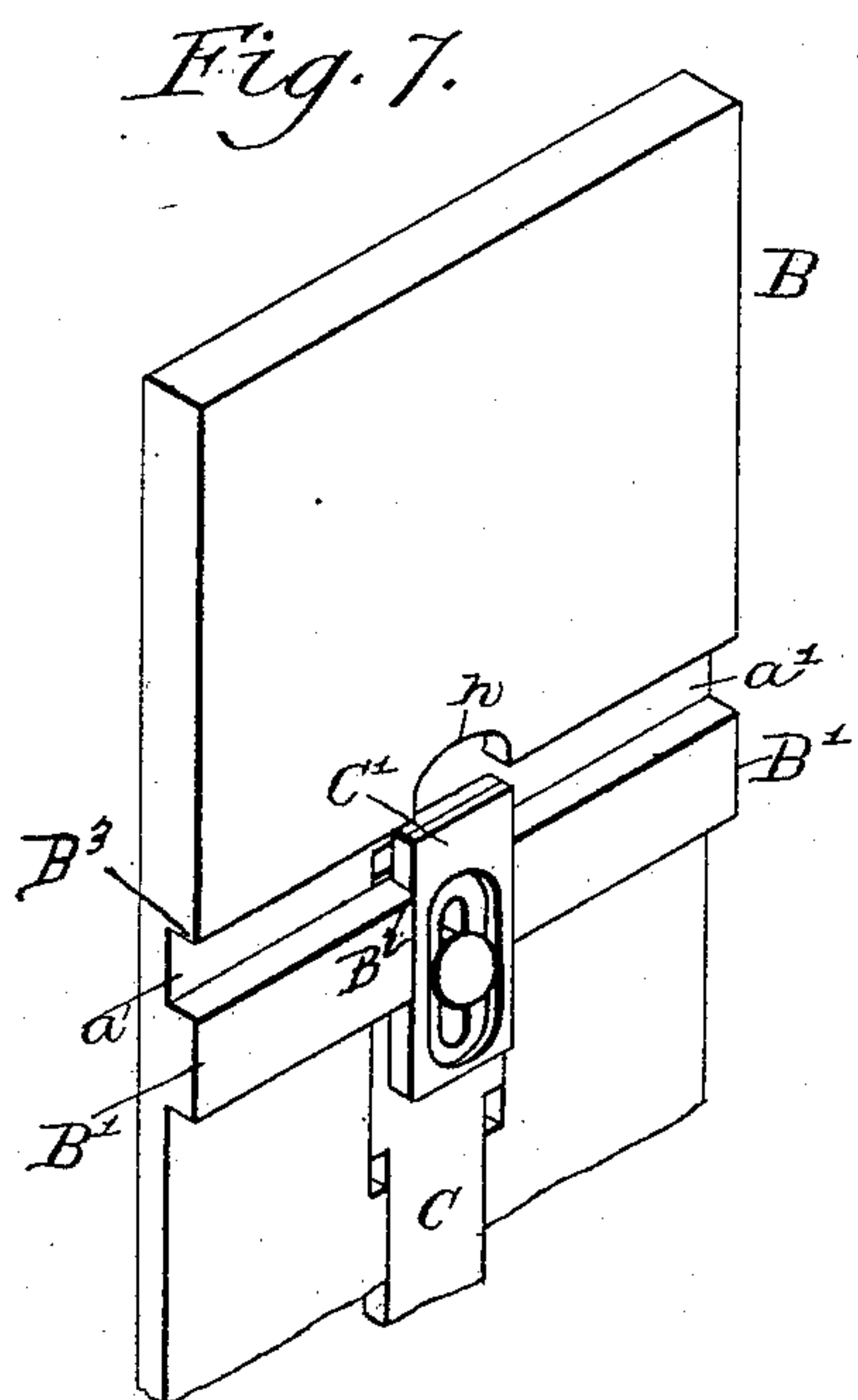
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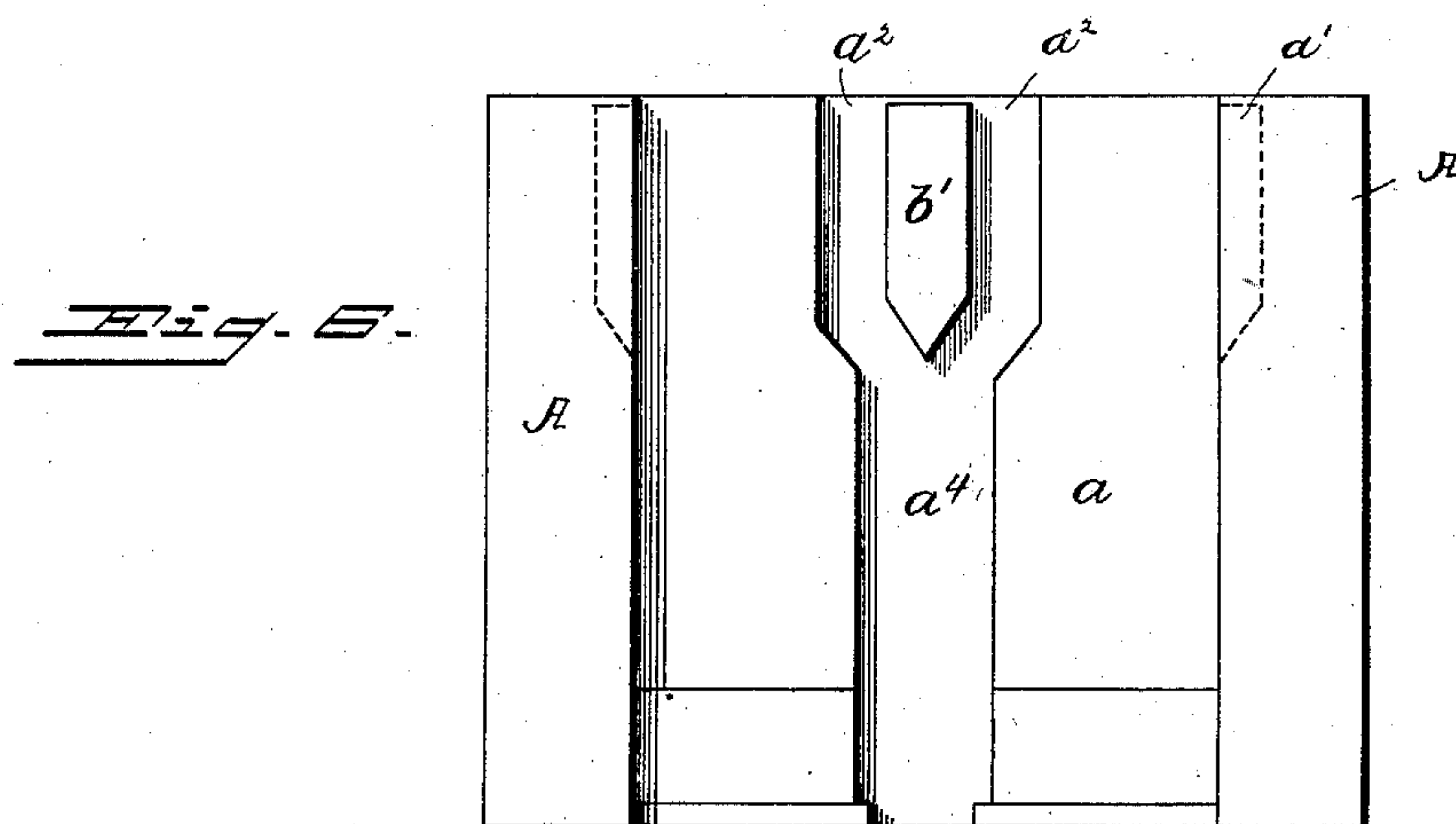
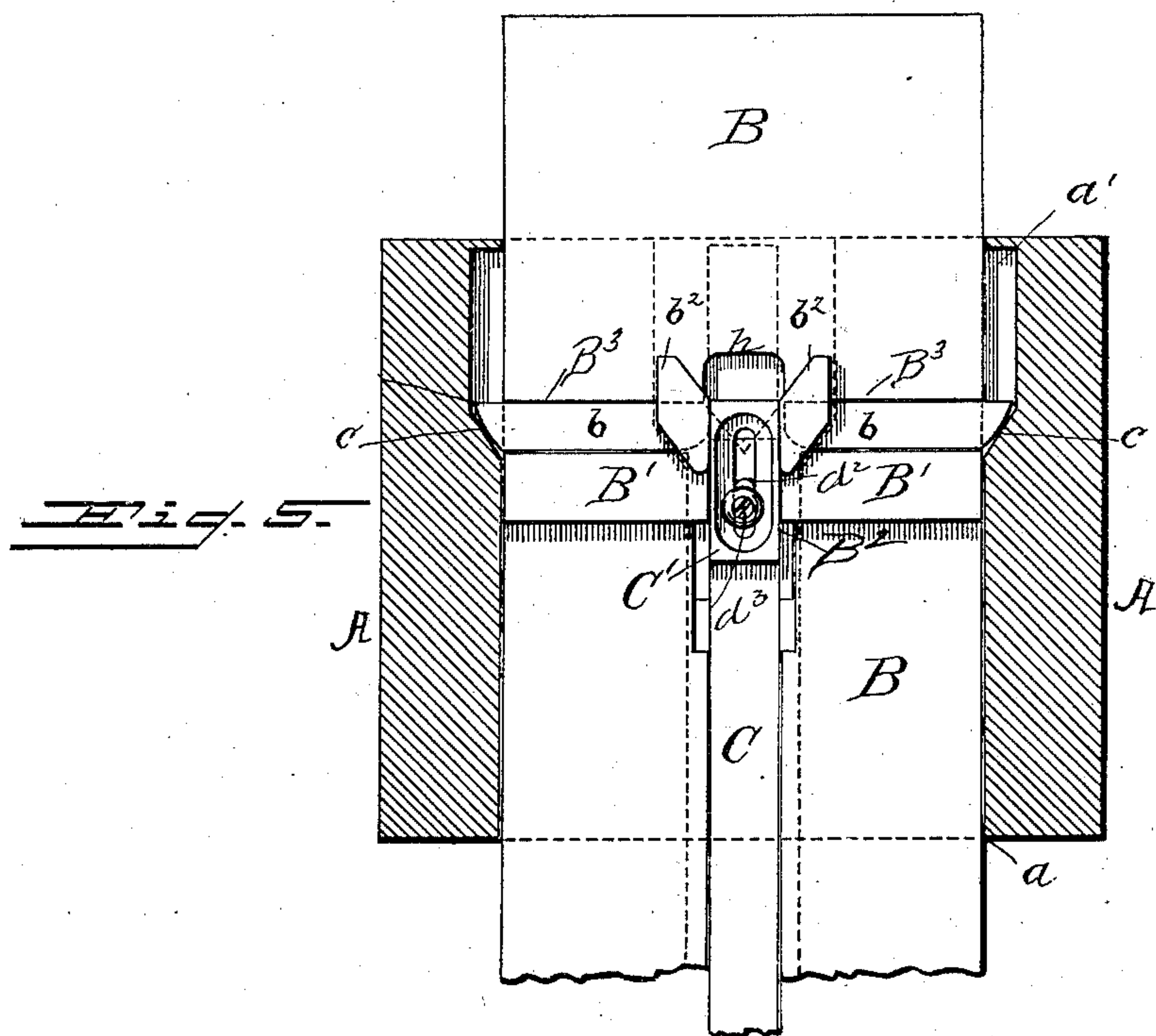
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UNITED STATES PATENT OFFICE.

EUGENE SMITH, OF PHILADELPHIA, PENNSYLVANIA.

GRIP FOR TRACTION-CABLES.

SPECIFICATION forming part of Letters Patent No. 371,103, dated October 4, 1887.

Application filed January 11, 1887. Serial No. 224,051. (No model.)

To all whom it may concern:

Be it known that I, EUGENE SMITH, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Grips for Traction-Cables; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a side view, and Fig. 2 an end view, partly in section, of the grip and its operating mechanism; Fig. 3, a sectional view of the grip; and Figs. 4, 5, 6, and 7, detail views of portions of the grip and its operating mechanism.

My invention has for its object to provide an improved form of "grip" for traction-cables; and my improvements consist in the peculiar construction and combination of parts hereinafter fully described and claimed.

Referring to the accompanying drawings, A represents a block or plate designed and adapted to be firmly and rigidly secured to the bottom or sills of a car, and which affords a bearing and guide for a vertically-movable hanger or bar, B.

C represents a bar or rod which fits and has liberty of vertical movement in the plate B. This rod is slotted longitudinally at d^2 , for the passage of a bolt, d^3 , which is inserted in the block or plate A, and in order that the rod may have liberty of movement within a limited distance independently of the plate B. On the lower end of plate B are two end pieces, D, secured in position, one at each edge of said plate, by a bolt and nut, $d d'$, and which afford bearings for the gripping-jaws E E. Said jaws are designed and adapted to be clamped on the cable F, and they carry contacting pulleys or rollers $f f'$, two at each end and two in the middle. The jaws E E are fulcrumed at $f^2 f^2$ in the pieces D D, their upper extremities being connected by toggle-levers G G. I prefer to employ two sets of toggle-levers to connect the jaws. The sliding bar or rod C has its lower end pivotally connected with the central joints or knuckles, g , of the toggle-levers G, so that when said bar C is lifted or drawn upwardly, sliding in the hanger

or plate B, the jaws E E will be clamped upon or will grip the cable F, and when said bar C is moved downwardly in the hanger the jaws will be opened free of the cable.

H is an extension-piece bolted to the lower end of the hanger B, and having a slot or opening, h' , through which the toggle-levers work. It forms a guide for said levers, and, as its lower edge is wedge-shaped, it assists in opening or spreading the jaws. The act of closing the jaws is effected by an upward pull of the rod or bar C, and their opening by a downward thrust or movement of said rod or bar. To raise the jaws bodily (in order to pass a crossing cable) after they have released their grip on their own cable, and to lower them again into position for gripping and then lift them while the grip is on, the following construction is provided.

The block or plate A is formed with a vertical groove or channel, a , in which the bar or hanger B slides, and in the sides or edges of this plate, opening into the channel a , are formed mortises or recesses a' , adapted to receive and permit play and movement of the horizontal bars or slides $b b$. In the inner surface of the plate or block A—that is, at the base of the channel a —is formed another and narrower channel, a'' , which is divided at its upper portion into two channels, $a^2 a^2$, by a frog, b' , having an angular or V shaped end with sides parallel with the oblique portions of the channels a^2 .

The bar or hanger B carries near its upper end a transverse slot, B' , divided into two parts by the slot B^2 in said hanger, and at a short distance above said cleat the hanger B is re-enforced or shouldered, as shown at B^3 , thus forming a channel or guide for said slides $b b$. As the hanger B is raised and lowered, it moves the slides $b b$, which rest on the cleat B' , as shown in Fig. 5. The slides $b b$ carry on their inner ends the diamond-shaped cam-blocks b^2 , adapted in size and shape to slide into the channels a^2 , into which they are thrust when brought into contact with the frog b' , at such time allowing the bar or rod C to rise between them. When the hanger B is at its lowest point of depression and the jaws of the grip are open, as will be the case, the slides $b b$ are in contact at their inner ends, being

moved into such position by the inclines *c c*
 at the base of the mortises *a'* acting on the
 beveled extremities of the slides. At the same
 time the bar C is also at its lowest position,
 5 with its upper end below the blocks *b²*. Now,
 in raising the grip the first motion is to lift
 the bar C independently of the hanger B, so
 as to sufficiently close the jaws upon the cable
 to enable the latter to be lifted from the pul-
 10 leys. As soon as this is effected, the bar C,
 (or the slotted block C' thereon,) coming in
 contact with the slides *b b*, causes the hanger
 B to be raised, thus raising the jaws and in-
 closed cable until the blocks *b²* come in con-
 15 tact with the frog *b'*. The slides *b* are then
 moved outwardly, the blocks *b²* entering the
 channels *a²* and the extremities of the slides
 entering the mortises *a'*, and by the time the
 slides are sufficiently separated to permit of a
 20 further independent movement of the bar C
 the grip will have been lifted as high as may
 be necessary. A further movement of the bar
 C serves to tighten the jaws upon the cable.
 The upward movement of the bar C is limited
 25 by a shoulder or recess at *h*.

The object of the slotted block C', which is
 attached to the upper end of the bar C, is to
 allow the latter sufficient play after tightening
 the grip for the release and regaining of a pur-
 30 chase on the cable.

The plate A and included portions of the
 grip lifting and operating devices are covered
 by a cap or plate, A', bolted to the plate A.
 The plate A' is slotted at A² to allow play for
 35 the connecting-pin A³, to which is coupled the
 bell-crank H² by a connecting-link, H'. The
 crank H² is fulcrumed to the plate A' and op-
 erated by a suitable lever.

Referring again to the jaws, it may be stated
 40 that the object of the pulleys *f'* is to lessen
 friction on the shoes F², which are preferably
 removable from the jaws for repair and re-
 placement.

Among the many advantages incident to the
 45 form of grip described, it may be mentioned
 that the parts are smaller, lighter, and less
 cumbersome and expensive than others in gen-
 eral use. The movement of the grip or jaw
 closing bar to close the jaws is a pull, instead
 50 of a downward thrust, and hence need not be so
 large or so strong as those required in other
 grips.

The jaws open below and reversely to those
 in common use, and hence may be lowered and
 55 applied to the cable at any point, while, should

any obstruction occur, as by the loosening of
 strands or the like, the cable may be instantly
 dropped and taken up again when the obstruc-
 tion is passed.

What I claim as my invention is as follows: 60

1. In a cable-grip, the combination, with the
 lifting hanger or slide and a jaw-supporting
 frame secured to the lower end thereof and
 comprising the end pieces, D, and the bolts *d*,
 of the jaws E, pivotally supported upon the 65
 bolts *d d* between their upper and lower edges
 or extremities, the vertically-moving slide C,
 and the toggles G G, connected at their upper
 and outer ends to the upper extremities of the
 jaws and at their inner and lower ends con- 70
 nected to the slide C, substantially as described,
 whereby an upward independent movement of
 the slide C will cause the jaws to close upon
 the cable.

2. In a cable-grip, the combination, with the 75
 gripping-jaws, the supporting-hanger, and a
 bar for opening and closing said jaws, of mech-
 anism, substantially as described, whereby the
 cable is first caught, then raised, and finally
 grasped and held, substantially as described. 80

3. In a cable-grip, the combination, with the
 gripping-jaws, of the movable supporting
 hanger and lifter B, jaw opening and closing
 bar C, slides *b b*, blocks *b²*, channels *a' a²*, and
 frog *b'*, substantially as described. 85

4. In a cable-grip, the combination, with the
 jaw-supporting hanger and the frame attached
 thereto, to which the jaws are pivoted, of the
 jaws pivotally connected to said frame between
 their upper and lower edges, the vertically- 90
 moving slide for closing and opening the jaws,
 and a pair of toggles connected to the upper
 edges of the jaws above their point of attach-
 ment to the hanger and coupled together and
 to the slide below the point of connection of 95
 the toggles to upper edge of the jaws, substan-
 tially as set forth.

5. In a cable-grip, the combination, with the
 gripping-jaws, of anti-friction rollers located
 in recesses in the upper parts of the jaws, and 100
 the detachable jaw-shoes supported upon the
 shafts of the anti-friction rollers, substantially
 as described.

In testimony that I claim the foregoing I
 have hereunto set my hand this 5th day of 105
 January, 1887.

EUGENE SMITH.

Witnesses:

EDWARD E. PAXSON,
 WILL H. POWELL.