

C. A. TEAL.

MACHINE FOR BENDING METAL PLATES.

No. 173,689.

Patented Feb. 15, 1876.

Fig. 1.

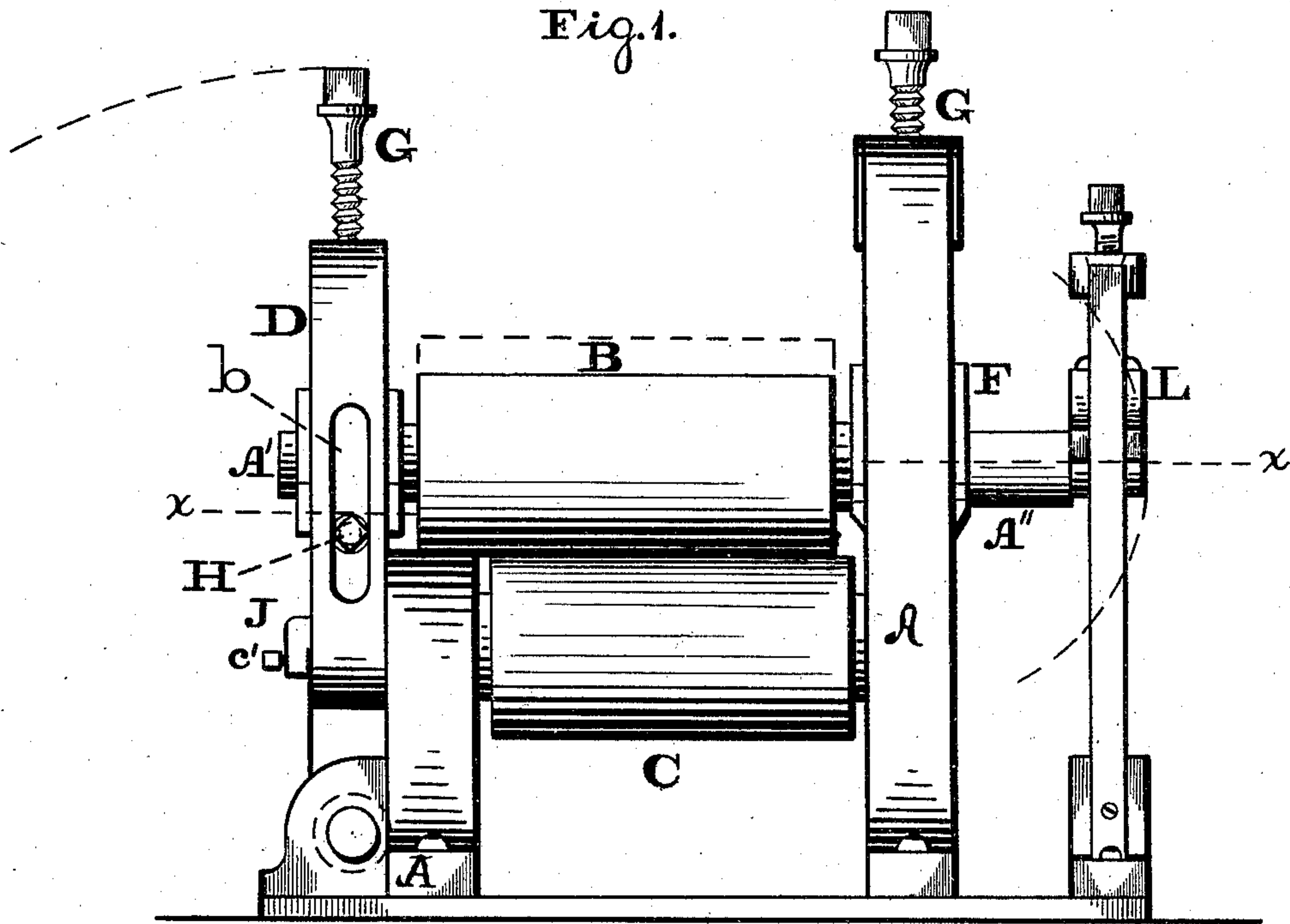
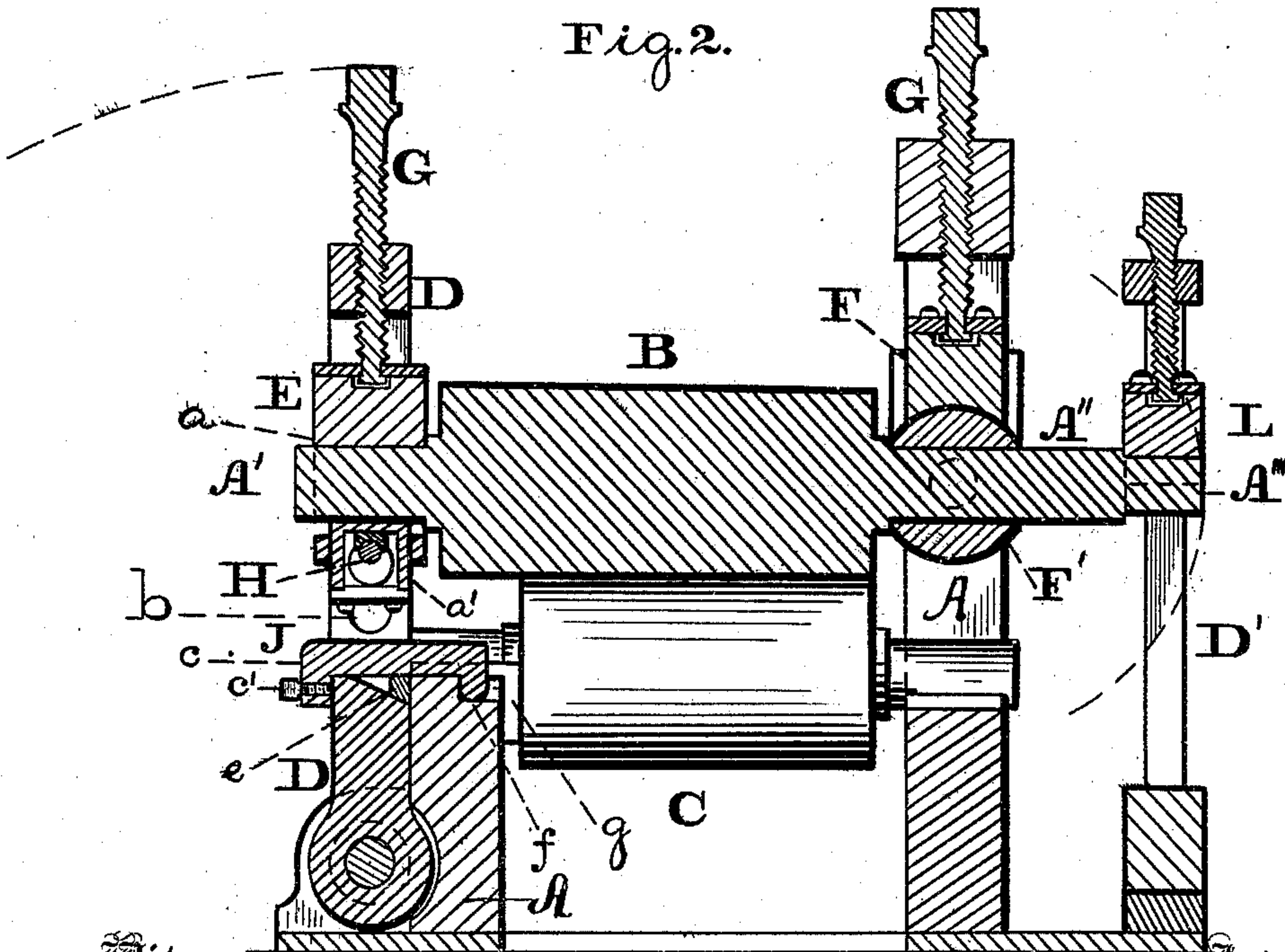


Fig. 2.



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Fig. 3.

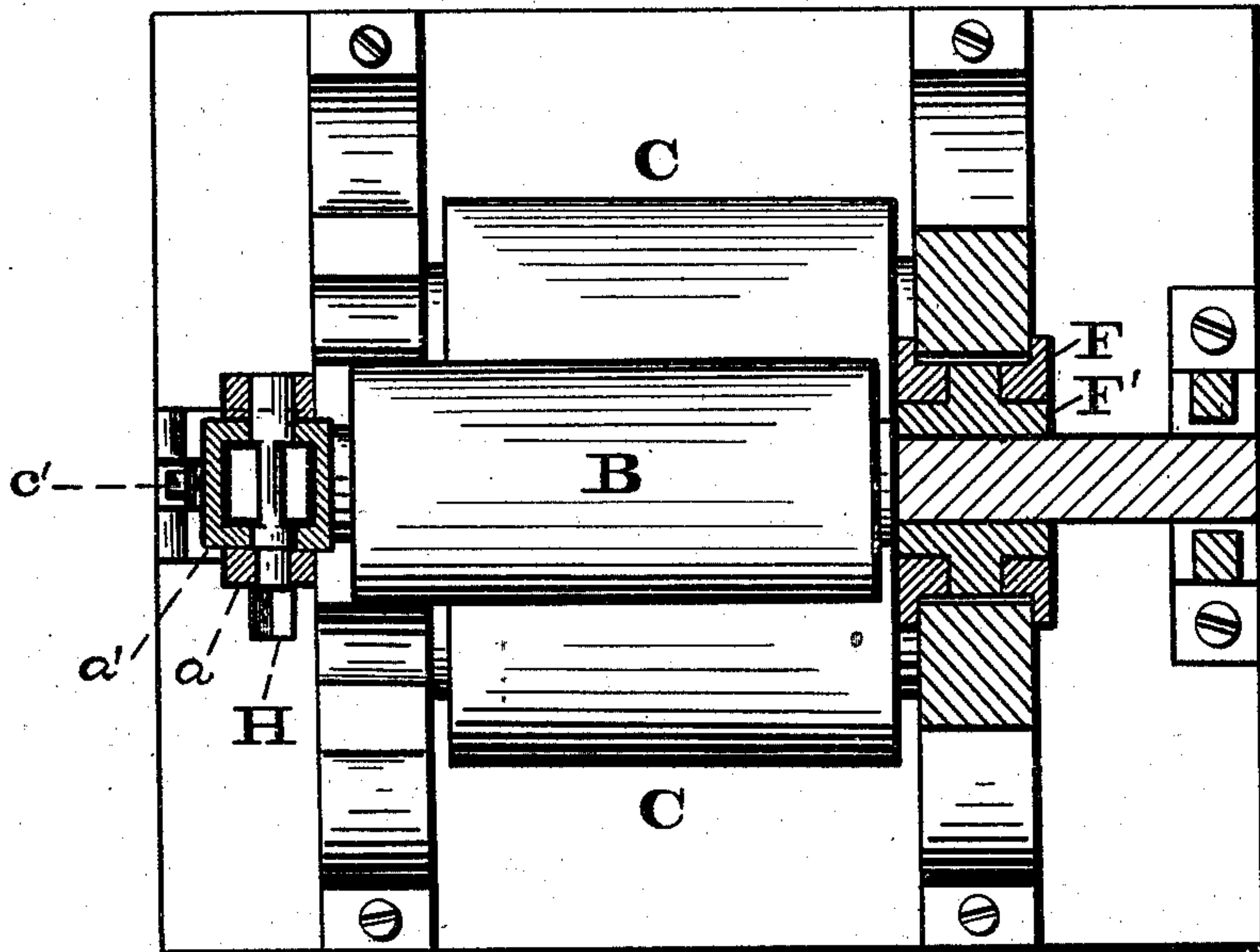


Fig. 4.

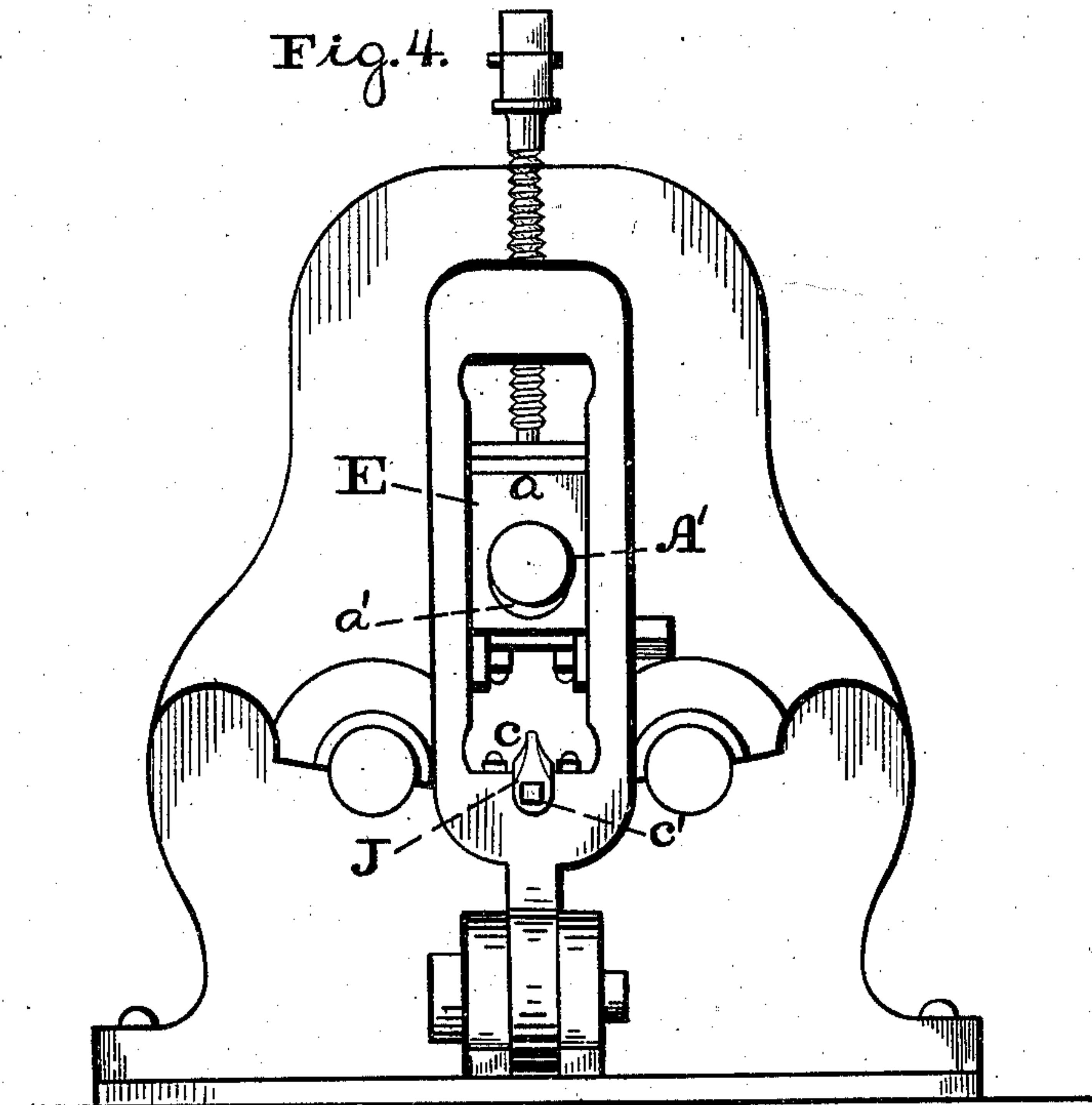
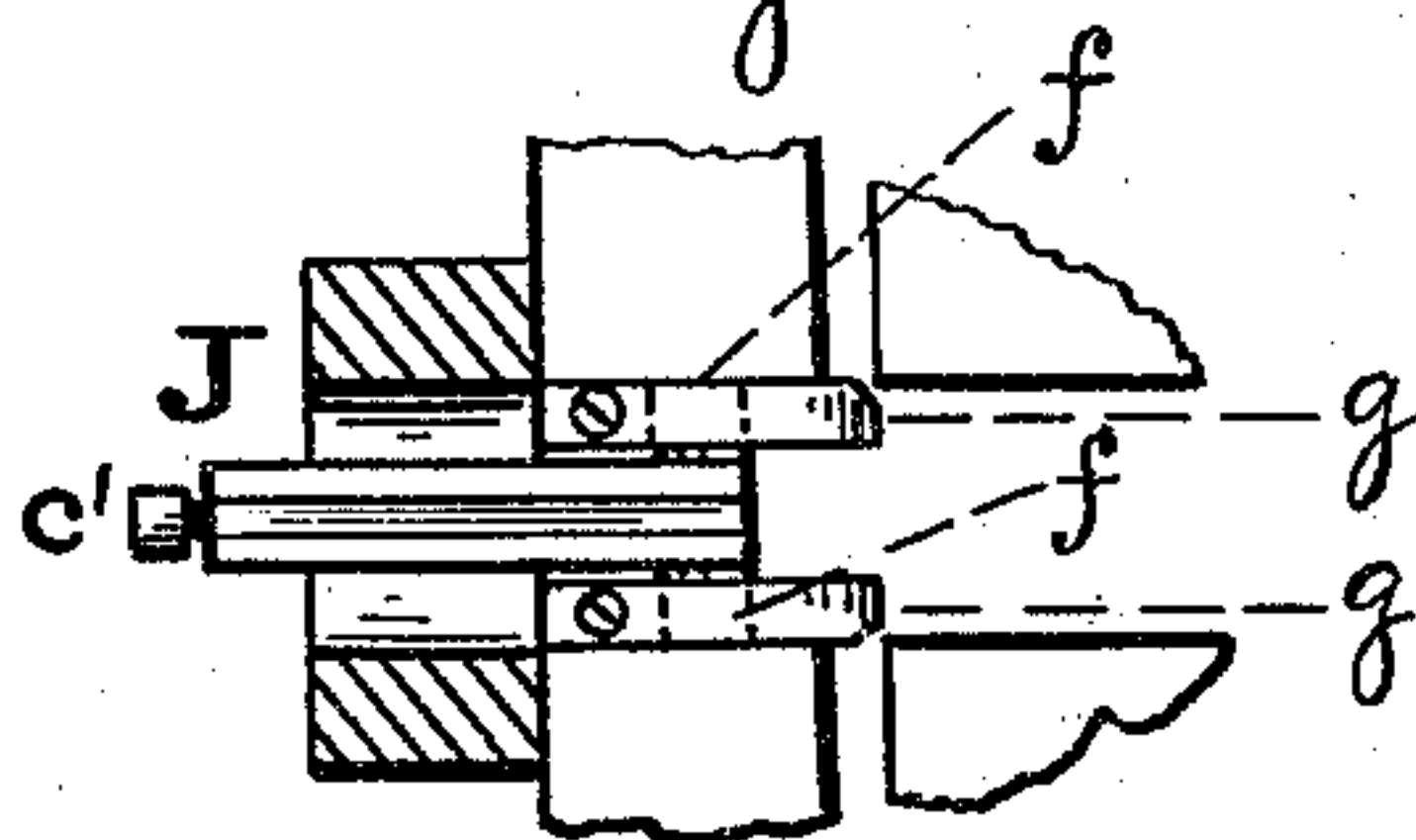


Fig. 5.



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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN MACHINES FOR BENDING METAL PLATES.

Specification forming part of Letters Patent No **173,689**, dated February 15, 1876; application filed December 1, 1875.

*To all whom it may concern:*

Be it known that I, CHARLES A. TEAL, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Bending Metal; and I do hereby declare the following to be a clear and exact description of the nature thereof, sufficient to enable others skilled in the art to which my invention appertains to fully understand, make, and use the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front view of the apparatus embodying my invention. Fig. 2 is a central longitudinal vertical section thereof. Fig. 3 is a horizontal section of the housings and plan view of the rolls. Fig. 4 is a side elevation. Fig. 5 is a top view of a detailed portion.

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

My invention relates to an apparatus for bending metal of cylindrical or taper form; and it consists in so constructing the bearings for the journal of a roll that the space in which the journal rotates may be elongated or enlarged, whereby, when the yoke which supports the bearings is swung out or down, said bearing may be readily cleared of the journal. It also consists in mounting one journal of a roll in a hinged bearing, whereby the roll may be readily tilted for taper work. It also consists in an auxiliary bearing for preventing falling of the tilting roll. It also consists in a sliding shackle adapted to lock the yoke in position and provide means for conveniently unlocking the same.

Referring to the drawings, A represents the frame or housing on which are mounted rolls B C C, which receive power in any suitable manner. To the base or other proper portion of the frame or housing there is jointed a yoke, D, in the upper part of which there is fitted a vertically-adjustable bearing, E, for one journal, A', of the upper roll B, the other journal, A'', being mounted on a bearing, F', which is hinged to a vertically-adjustable block, F, fitted in the frame on the side opposite to the yoke D, the adjustment being accomplished by means of screws G, in well-known manner.

The bearing E is made in two parts or sec-

tions, which consist of the bearing block proper *a*, and a sliding part, *a'*; which latter is adapted to be raised and lowered by means of an eccentric rod, H, which is fitted to said sliding part *a'*, and has its bearings in the block *a*.

In order to permit the eccentric rod H to move with the bearings E in its vertical adjustments, the sides of the yoke are all slotted transversely, as at *b*, and the ends of the rod project through said slots *b*, one end of the rod being conveniently accessible for operation.

To the lower portion of the frame or housing, at the side adjacent to the yoke D, there is secured a sliding shackle, J, for the yoke; which shackle consists of a bar, having one end pivoted to the frame or housing and its other end formed with a head, *c*, carrying a screw, *c'*. On the upper face of the lower wall of the slot or passage in which the bearing E is located, there is an inclined face, *e*, extending horizontally, and having its highest point toward the outside of the yoke, said face being so arranged that, at a proper time, the head *c* of the shackle will ride thereon and engage with the yoke.

The inner end of the shackle has laterally-projecting lugs *f*, which are fitted in longitudinally extending guides *g*, attached to the housing, said guides permitting sliding motions of the shackle. From the frame or housing there rises a housing, D', which receives a vertically-adjustable block, L, and against the lower face thereof the end of the journal A'' of the roll B comes to a bearing, for which purpose said journal is extended beyond the bearing F', as more clearly shown at A''', Fig. 2.

The operation is as follows: The rolls will be properly adjusted relatively to the thickness of the plate to be passed between them; and when the bending is accomplished, it is necessary to remove the plate. For this purpose, the screw *c'* of the shackle J is loosed and the shackle elevated, so as to be disengaged from the yoke D, said shackle being then moved in so that both hands of the workman are free for subsequent manipulations. The yoke may now be swung outward and downward on its axis and moved clear of the journal A', whereby the yoke affords no obstacle or stop to the removal of the bent plate. Ow- ing, however, to the axial motion of the yoke and the concentric bearings of the journal A',



the latter will bind in the bearings. To prevent this is the object of the sliding part *a'* of the bearing E. The eccentric rod H is rotated so as to lower the said sliding part *a'* of the bearing E; and it will be seen that this elongates the opening in which rotates the journal A', consequently, when the yoke is swung out or opened, the bearing will fully clear itself of the journal A'. The yoke is then lowered, and it will be seen that the roll B has lost its support on one end or journal, and as the other journal is fitted in the hinged block F, the roll will drop; but the extended portion A''' of the journal A'' has a bearing against the block L, whereby the roll will be properly held or supported. After the plate has been removed, the yoke will be raised or closed. In this movement the head *c* of the shackle J rides freely over the inclined face *e* of the yoke. The shackle is then drawn forward so that the head clears the upper outer edge of said face and engages with the yoke, and the screw *c'* is tightened, whereby the yoke will be held securely in position. The eccentric rod H is then rotated so as to raise the sliding part *a'* of the bearing E, and complete the concentricity of said bearing, whereby the journal A'' is properly mounted.

The rolls may be readily adjusted to bend the plates in taper form by properly operating the screw G so as to tilt or incline the roll B. In this movement, the bearing F' of the journal A'' turns on its axis without disturbing the housing or bearings of the other rolls. The bearing E of the journal A' conforms to the incline of the roll, the lower end of the screw G being freely swiveled to said block E, so as

not to interfere with said conformation, and the slot *b* having sufficient width as not to cause binding of the rod H against the walls thereof.

The rod H will be provided with stops to limit the rising and lowering motions of the sliding part *a'* of the bearing E.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The hinged yoke D in combination with the bearing E, provided with the sliding part *a'*, operating as described and for the purpose set forth.

2. The combination of the rolls C B, the latter being supported at one end in a hinged bearing, F', in the adjustable bearing block F, substantially as and for the purpose set forth.

3. The roll B, having the extended axis A''', in combination with the bearing F F' and auxiliary bearing L, substantially as and for the purpose set forth.

4. The combination with the housing and hinged yoke of the shackle J, formed with laterally-extending lugs, and the longitudinally-extending guides *g*, whereby said shackle has both axial and sliding motions, substantially as and for the purpose set forth.

5. The yoke D, with inclined face *e*, in combination with the shackle J, formed with a head, *c*, substantially as and for the purpose set forth.

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Witnesses:

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