

(No Model.)

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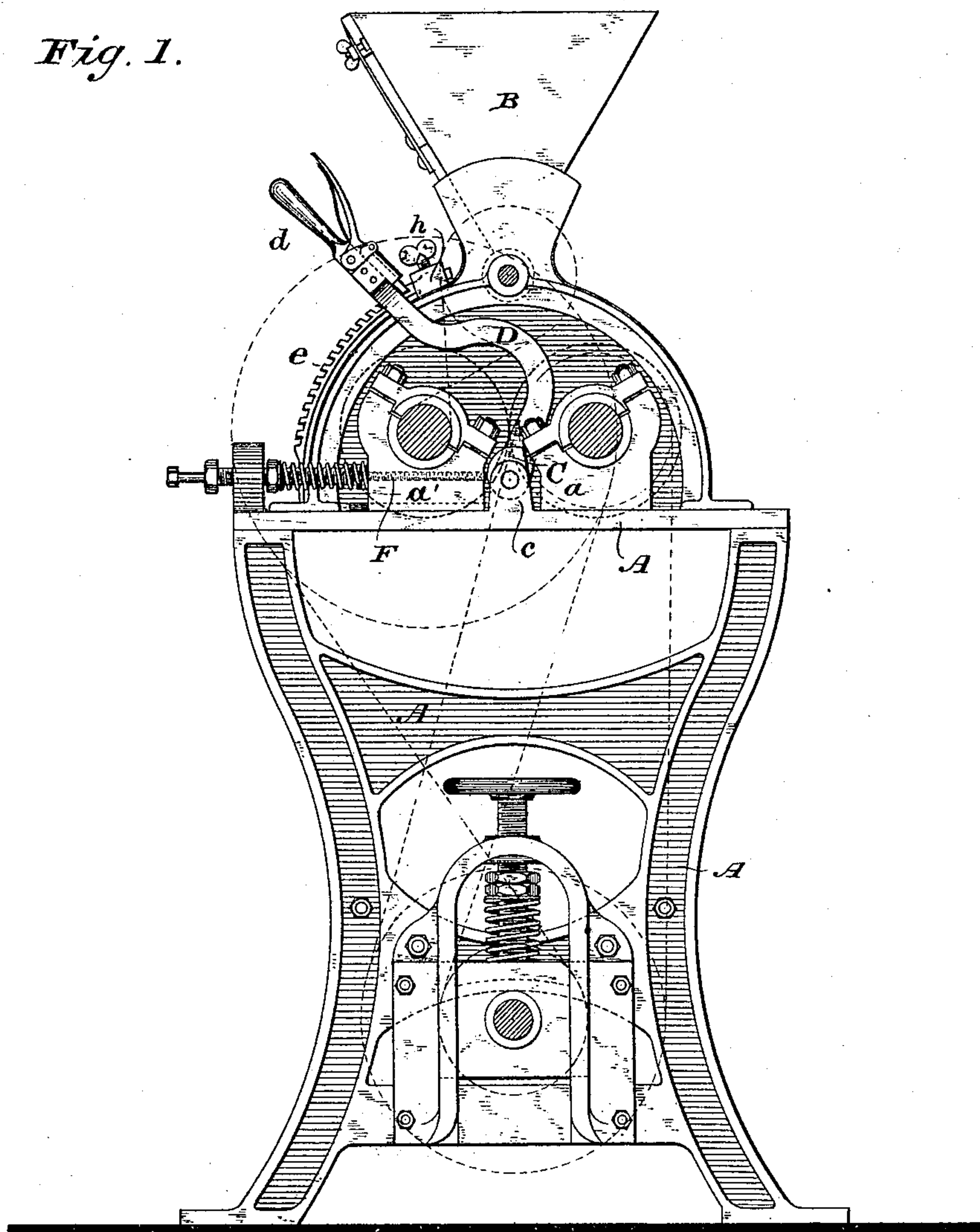
J. STEVENS.

ROLLER MILL.

No. 370,097.

Patented Sept. 20, 1887.

Fig. 1.



WITNESSES

Wm A. Skinkley
Alfred C. Newman,

INVENTOR

John Stevens

By *his* Attorneys

Ramison & Ramison

(No Model.)

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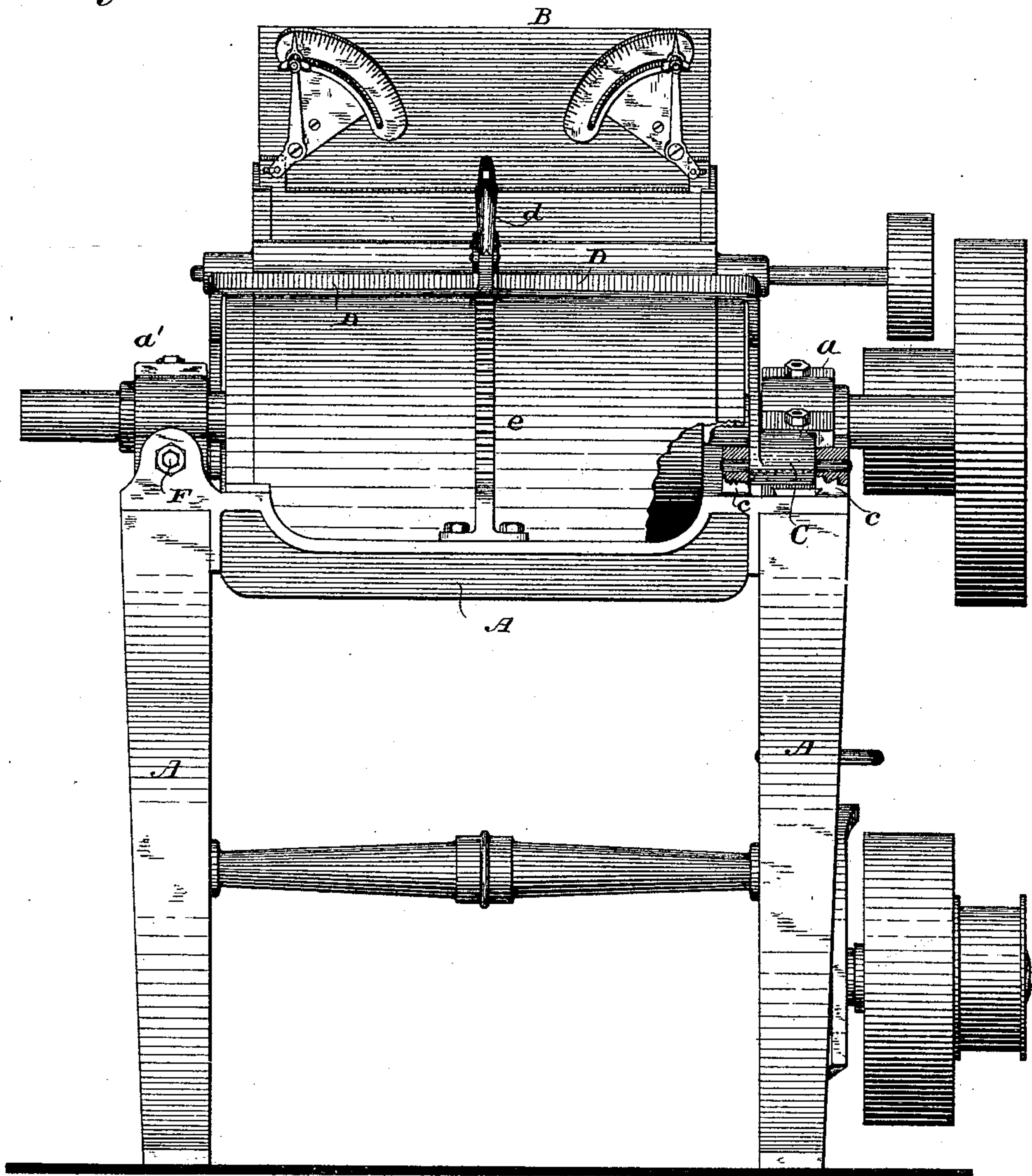
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Fig. 2.



WITNESSES

Wm A. Skink
Alfred C. Newman,

INVENTOR

John Stevens

By *his Attorneys.*

Russell W. Russell

(No Model.)

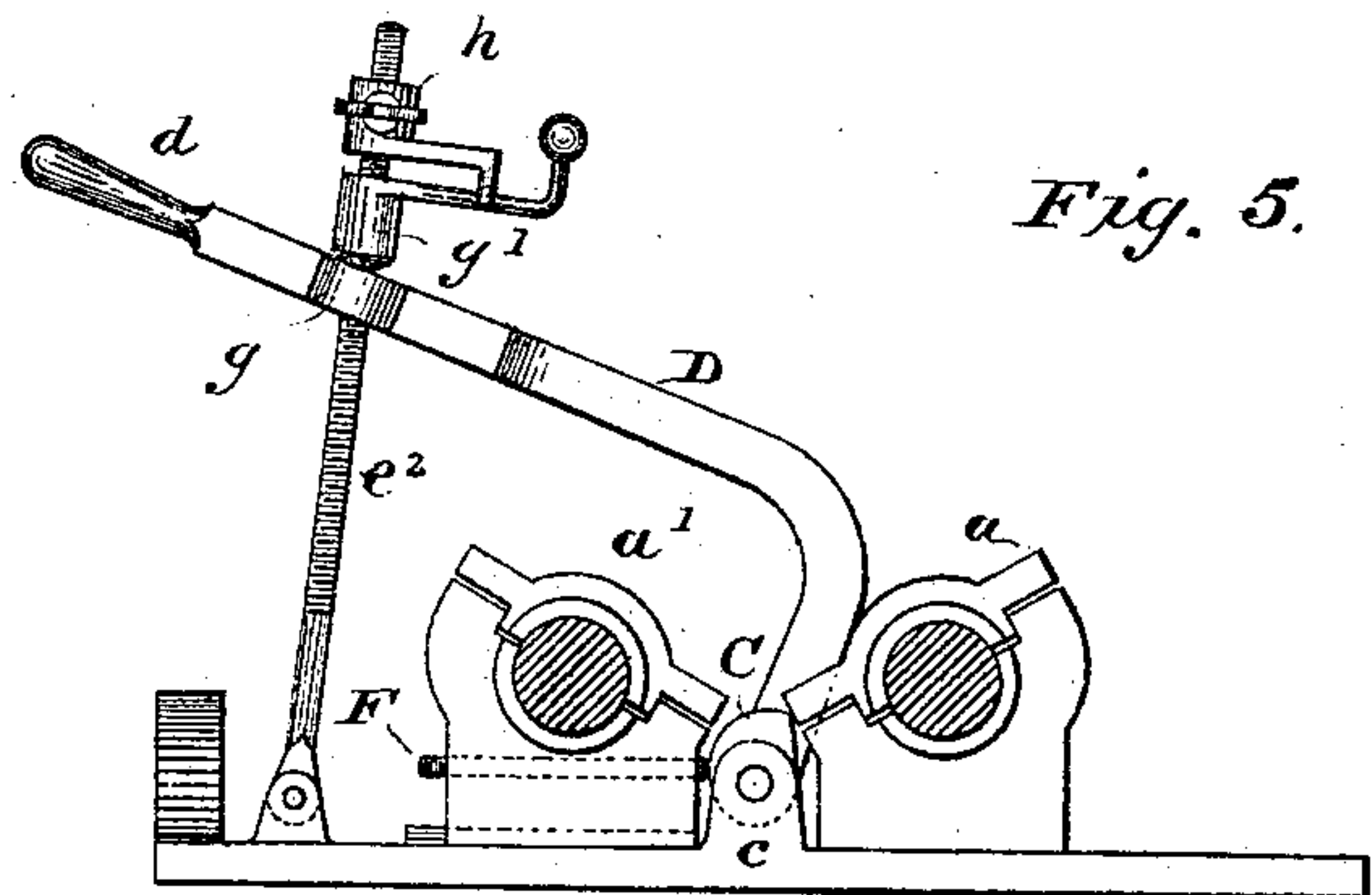
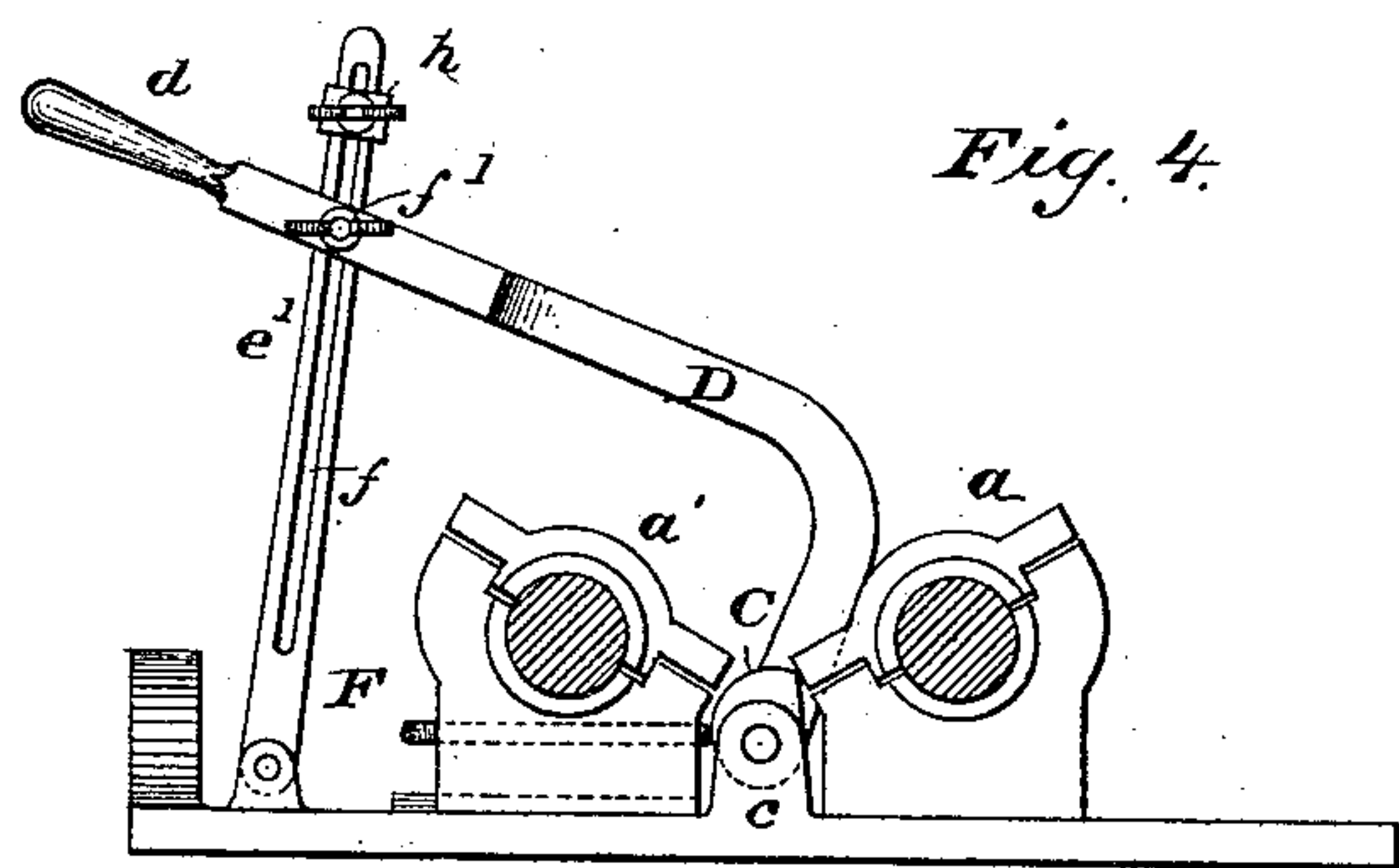
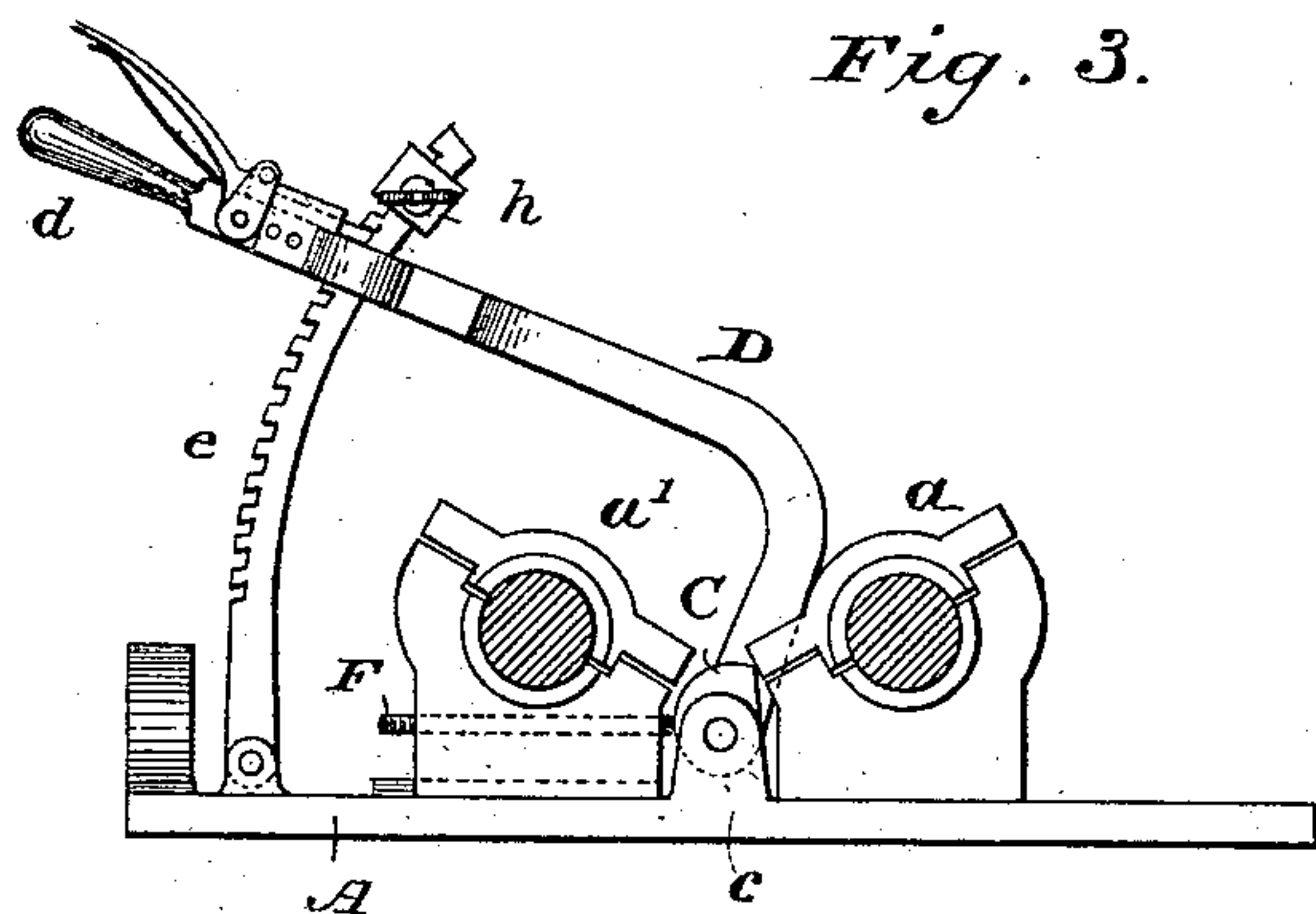
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Alfred C. Newman,

INVENTOR

John Stevens
By his Attorneys.

Parrish & Parrish

UNITED STATES PATENT OFFICE.

JOHN STEVENS, OF NEENAH, WISCONSIN.

ROLLER-MILL.

SPECIFICATION forming part of Letters Patent No. 370,097, dated September 20, 1887.

Application filed December 4, 1882. Serial No. 78,351. (No model.)

To all whom it may concern:

Be it known that I, JOHN STEVENS, of Neenah, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Roller-Mills for Grinding Grain and other Materials, of which the following is a specification.

In mills of said type one roll of a pair is usually mounted in movable bearings and spring-pressed toward the other or stationary roll, so as to be allowed a yielding play therefrom. Means are also provided to determine the minimum limit of space between the immediate opposing surfaces of the two rolls as the one is urged toward the other by its spring or springs, this space varying according to the nature or stage of the "reduction," and practically the rolls never being allowed to come into actual contact unless smooth and running at the same peripheral speed.

Letters Patent of the United States were granted me on the 5th day of December, 1882, numbered 268,567, describing and claiming as means to this end—that is, to limiting the approach of one roller-surface to the other—and to the further end of positively and instantaneously throwing the movable roll away from the stationary, the employment of cams or eccentrics pivoted between the fixed and the yielding bearing blocks or boxes and pressing against the latter, each cam being provided with a lever, one lever at each side of the machine, with its suitable rack. This arrangement, while, so far as it went, a beneficial and desirable one, required the independent manipulation of two levers to set the movable roll for grinding or to throw it out, and in order to insure the continued parallelism of the opposing surfaces under such adjustments the racks had to be furnished with corresponding scales or distinguishing-marks, that the levers might be co-ordinately moved. Careful and accurate planing and fitting were also necessary at the outset, that the cams might sit properly against the boxes and act equally at each end as their levers were moved from one notch to another along the racks.

My present invention relates particularly to improvements upon the foregoing construction, intended to obviate the deficiencies named and give greater command over the machine; and it consists in the combination,

with stop-cams or eccentrics against which the boxes of the yielding roll abut at each end of said roll, of a single integral forked or yoke-shaped lever common to both, a suitable way along which the lever may be moved and fastened, and an adjustable stop or dog at that end of the way corresponding to the inward movement of the yielding roll, whereby the lever and the cams which it controls will be barred whenever in the action of throwing in said roll it has been brought into the predetermined proximity to the other, and in such other combinations as are hereinafter pointed out and claimed.

In the drawings, Figure 1 is a side elevation of so much of a roller-mill as is necessary to an understanding of my invention; Fig. 2, a front view thereof; and Figs. 3, 4, and 5, details and modifications.

A is the supporting-frame of a roller-mill, provided with fixed boxes *a* for the stationary roll and sliding boxes *a'* for the movable roll, the latter being pressed toward the former yieldingly, and otherwise adjustably controlled by any suitable devices, preferably in the manner and by the mechanism indicated and explained in Letters Patent heretofore granted me—for example, Letters Patent numbered 230,834, August 3, 1880, and 240,282, April 19, 1881—but not necessarily so.

Above the rolls is the usual hopper, B, furnished with feed-roller and adjustable feed-slides or any appropriate feed-regulator.

Lugs *c* rise from the frame-sills or bed-plate between the movable and stationary boxes at each side of the machine—that is, at each end of the pair of rolls—and in these are pivoted cams C, as described in the hereinbefore-mentioned patent, with their active faces arranged to meet and check or bar the sliding boxes as they are urged inward by their springs. To these cams are riveted the arms of a forked or yoke-shaped lever, D, formed in such manner as to straddle the mill-casing, and for neatness and economy of space to fit comparatively close thereover, and having at the center or point of junction of its arms a suitable grasp or handle, *d*, whereby it may be readily raised or lowered to let the yielding roll in or throw it out. The ends of the fork or bar are advantageously bent, as shown in Fig. 1, to bring them nearly vertically between the boxes and allow

them suitable play to effect the purpose of the cams, while leaving the body part and handle low down out of the way of the feed-controlling devices on the face of the hopper, and in approximate parallelism with the bed-plate or sills in the most convenient position for the use of the attendant.

When the mill-casing above the rolls is domed, as commonly in machines heretofore built under my patents, a rack, *e*, may be applied thereto immediately beneath the lever-grasp or handle, and a spring-pressed latch or dog arranged upon the handle to take into the interdental spaces of said rack and hold the lever fast in any given position. Since, however, it is frequently desirable to remove one or more sections of this domed casing to gain access to the rolls beneath, this arrangement will not always be the most feasible; nor will it be when the casing is beveled or angular. Under such circumstances the rack may be set out from the surface of the casing and supported alone by feet bolted to the bed-plate, or it may be hinged to said bed-plate, as in Fig. 3, and confined to the lever by means of a keeper or guideway formed in or upon the shank or handle. In the latter case it need obviously be no more than slightly curved, or even straight, as its flexion upon the pivot will accommodate it to the different positions of the lever.

Instead of a rack, some other way—for instance, a fixed or hinged arm or bracket, *e'*, such as shown in Fig. 4, or a screw-threaded rod, *e''*, as in Fig. 5—can be employed; and it is intended to include any of these or equivalent forms under the generic term “way” where used in the claims. If the arm or bracket, then it will have a longitudinal slot, *f*, curved or straight, according to circumstances, through which a set-screw, *f'*, will pass into the handle of the lever, to secure the latter against movement. If, on the other hand, the screw-threaded rod is used, it will pass through a suitable bore, *g*, in said lever-handle, and receive above this bore a hand-nut, *g'*, which may be whirled up or down to depress the lever or permit it to rise. With slight changes in the mill-frame the lever can be arranged at the under side of the bed-plate, its arms straddling the trunk or chest beneath the rolls and bent upward instead of downward to their pivots in the lugs on the upper face of said plate, and the cams or cam-acting ends bearing against the movable boxes or against the long adjusting-screw passing therethrough, as before. A lug will then be set out from the bed-plate above the handle or central part of the lever to receive a hand-screw by which to control it; or a rack or other device suitable for the purpose will depend from said bracket.

In starting the machine after a temporary interruption in the same “run,” it is desirable that the rolls shall be quickly and accurately brought to their predetermined grinding adjustment for that run, whatever it may have

been. As one attendant may stop the machine and another have occasion to start it, or as it may not be readily remembered by the proper attendant what the adjustment was from which the rolls were thrown out, and as carelessness is a factor always to be counted upon, it is evident that without some positive control over the resetting of the rolls vexatious mistakes or delays will come. I therefore propose to apply to the rack or other arm along which the lever moves and is adjusted an adjustable stop-dog, *h*, which, after the proper grinding distance between the rolls for any pending run has been determined and secured, will be set up to abut against the lever-handle on the inward side, so as to prevent it from yielding at all in the sense of diminishing the distance between the rolls, but offering no obstruction to its passage in the opposite direction to throw the rolls apart. Therefore, to accurately reset the rolls after an interruption, it will be merely necessary to release the lever and throw it up against the dog, which will stop it, and consequently the movable roll, invariably at the proper adjustment. The shape and construction of this stop-dog will depend upon the shape or construction of the rack or other device along which the lever is moved and locked. In general, it will be a metallic saddle or block provided with a clamping screw or nut. For the screw-rod in Fig. 5 it is shown as resembling a lathe-carrier inverted and clamped to the end of said rod, so as to intercept and stop the handle of the nut as the latter is whirled upward.

In practice an adjustable bearing-surface will be interposed between the movable boxes and the cams, as usual, whenever cams have been employed to throw the rolls apart. Such a surface is readily obtained by extending the long screw *F* (described in my aforesaid patents) through the movable box until its end bears against the cam opposed to said box, as shown.

I claim—

1. The combination, substantially as hereinbefore set forth, with the stop-cams or eccentrics against which the boxes of the yielding roll abut at each end of said roll, and with a single integral forked lever by which they are rigidly connected and actuated, of a suitable way along which the lever may be moved and held, and an adjustable stop or dog at that end of the way corresponding to the inward adjustment of the yielding roll, whereby the lever and the cams which it controls will be barred whenever in the action of throwing in said roll it has been brought into the predetermined proximity to the other.

2. The combination, substantially as hereinbefore set forth, with the sliding boxes *a'*, in which the movable roll is journaled, of the eccentrics *C*, the forked or yoke-shaped lever *D*, connecting both eccentrics, its central handle, *d*, the dog or latch co-operating with said

handle, and the rack *e*, arranged upon the frame beneath said handle and into which the dog takes.

3. The combination, substantially as here-
5 inbefore set forth, of the sliding boxes *a'*, the eccentrics *C*, the integral forked lever *D*, connecting said eccentrics, the central handle and

its co-operating dog or latch thereon, the rack *e*, and the adjustable block or stop *h*, for the purpose described.

JOHN STEVENS.

Witnesses:

ALEX. McNAUGHTON,
I. SHIELLS.