

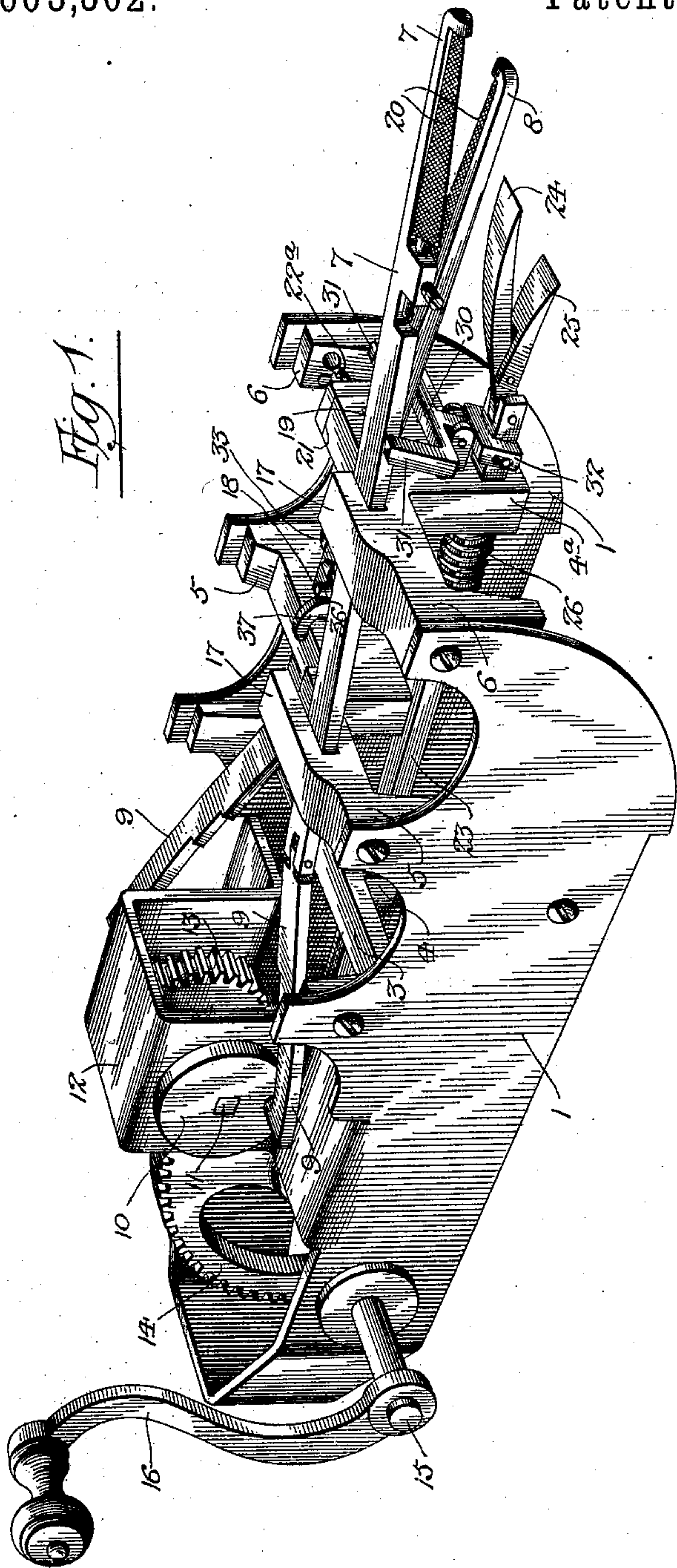
(No Model.)

2 Sheets—Sheet 1.

J. H. & W. H. WALTERS.
GIN SAW FILING MACHINE.

No. 603,302.

Patented May 3, 1898.



Witnesses:—

Louis H. Whitehead

[Signature]

By Their Attorneys,

C. A. Snow & Co.

Inventors:

James H. Walters

William H. Walters

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

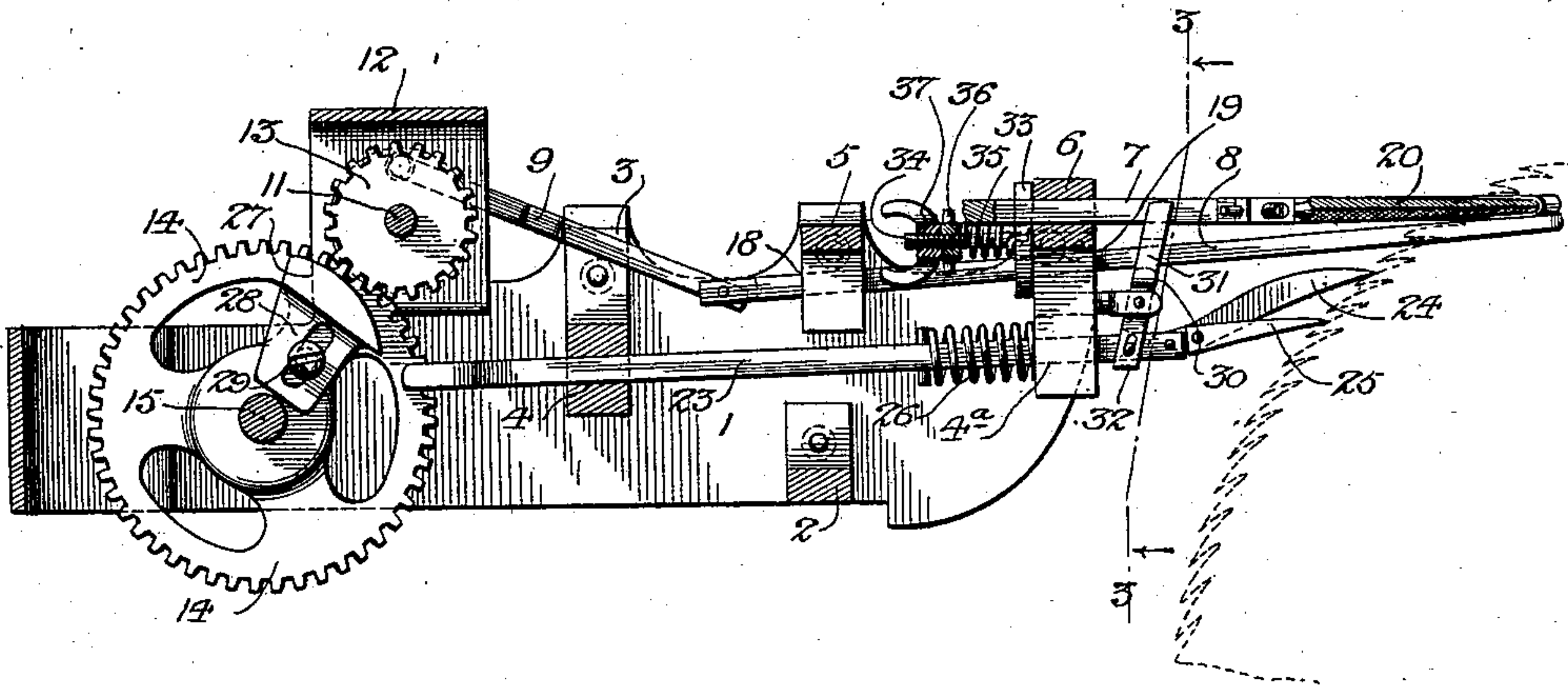


Fig. 3.

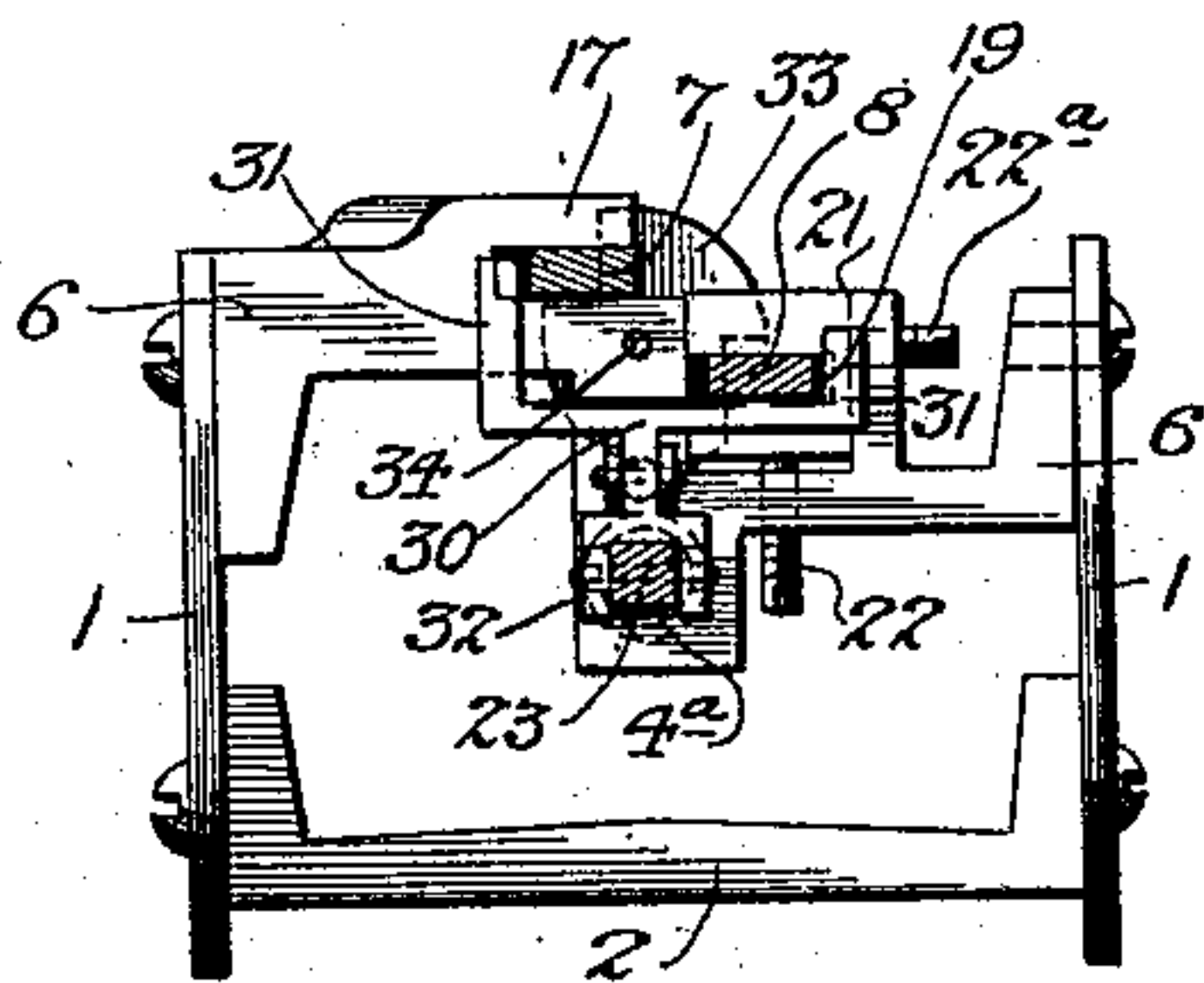
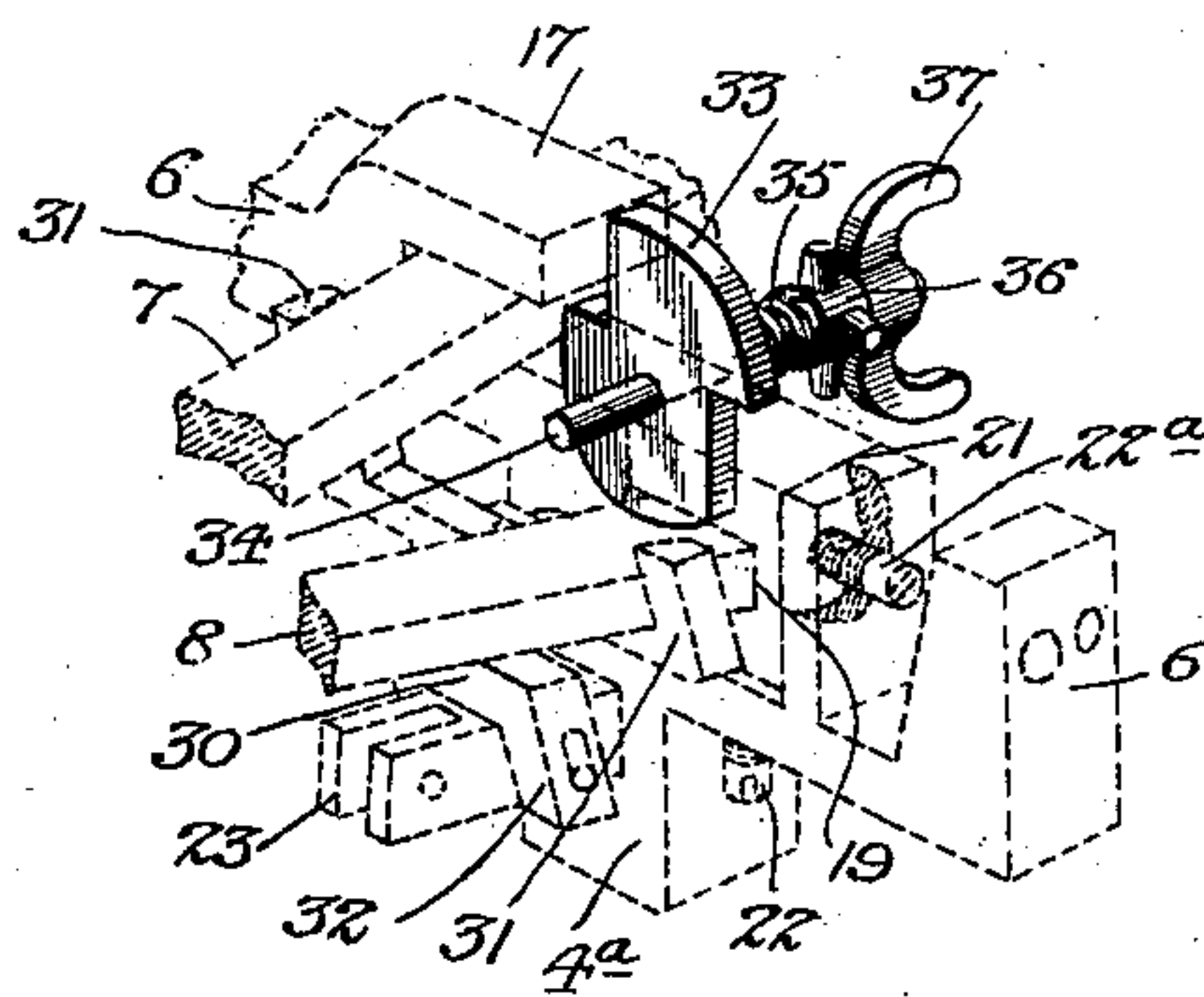


Fig. 4.



Witnesses :-

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Inventors:-
James H. Walters:-
William H. Walters:-

UNITED STATES PATENT OFFICE.

JAMES H. WALTERS, OF MOORESVILLE, NORTH CAROLINA, AND WILLIAM HENRY WALTERS, OF WAYNESBOROUGH, GEORGIA.

GIN-SAW-FILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 603,302, dated May 3, 1898.

Application filed October 28, 1897. Serial No. 656,664. (No model.)

To all whom it may concern:

Be it known that we, JAMES H. WALTERS, residing at Mooresville, in the county of Iredell and State of North Carolina, and WILLIAM HENRY WALTERS, residing at Waynesborough, in the county of Burke and State of Georgia, citizens of the United States, have invented a new and useful Gin-Saw-Filing Machine, of which the following is a specification.

Our invention relates to gin-saw-filing machines, and has for its object to provide a simple, durable, and compact arrangement of parts for operating and guiding reciprocatory file-carriers; to provide a simple and efficient construction and arrangement of saw-feeding devices; to provide a readily-adjustable tension device for varying the pressure of the file-carriers toward the saw, and to provide simple means, in connection with the saw-feeding devices, for tripping the file-carriers at the end of a desired number of strokes to remove the files from the teeth of the saw to permit feeding of the latter.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a filing-machine constructed in accordance with our invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a transverse section on the line 3 3 of Fig. 2. Fig. 4 is a detail view in perspective of the file-carrier trip and tension devices.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

The frame of the filing-machine embodying our invention comprises side plates 1, connected at intermediate points by cross-bars 2 and 3 (the latter of which is provided with an intermediate guide 4) and also by cross-bars 5 and 6, provided with guides for file-carriers 7 and 8. These file-carriers are connected by means of pitmen 9, with crank-disks 10, carried by a driven shaft 11, which is mounted transversely in a connecting-arch 12, spanning the frame near its rear end, and said driven shaft receives motion by means of

a pinion 13, with which meshes a driving-gear 14 (of larger diameter than said pinion) on the driving-shaft 15. Any suitable means, such as a crank-arm 16, may be provided for actuating the driving-shaft.

The cross-bars 5 and 6 are provided with preferably open-ended guides 17 for the file-carrier 7, and are also respectively provided with guides 18 and 19 for the file-carrier 8, all of said guides being elongated transversely to allow of sufficient transverse movement of the free ends of the file-carriers to disengage the files 20, carried thereby, from the teeth of a saw. (Indicated in dotted lines in Fig. 2.) Furthermore, while the guides 17 and 18 are fixed and may be formed integral with the bars 5 and 6, by which they are carried, the guide 19 is adjustable in a plane perpendicular to the transverse movement of the file-carriers or in a plane parallel with a saw which is being filed. To accomplish this adjustment, the guide 19, which consists of a slotted block, is fitted for adjustment in a parallel-sided seat 21 in the front cross-bar 6, and an adjusting device, such as a screw 22, is mounted on the cross-bar to bear terminally against the under side of the block to vary the position of the guide, and hence of the file-carrier 8, to secure the desired vertical interval, or interval measured in the plane of the saw-blade, between the files to suit the interval between the contiguous teeth of the saw which is being filed, (it being well known that different gin-saws are provided with teeth spaced at different intervals.) The guide-block is secured at the desired adjustment by means of a set-screw 22^a, mounted in the side wall of the seat and impinging terminally against the block.

The saw-feeding mechanism, which we have illustrated in the drawings, consists of a slide or plunger 23, mounted contiguous to its rear end in said guide 4 and at its front end in a similar guide 4^a, depending from the front cross-bar 6; feed-pawls 24 and 25, carried by said plunger or slide to terminally engage the teeth of the saw; a return-spring 26 for yieldingly holding the plunger or slide in its retracted position with the feed-pawls out of contact with the teeth of the saw, and a cam 27 on the driving-gear for intermittent con-

tact with the end of the plunger or slide to advance it, and thus cause the feed-pawls to engage the teeth of and actuate the saw. In the construction illustrated the cam 27 is adjustably mounted upon the driving-gear by means of a slotted ear 28, engaged by a set-screw 29, whereby the cam may be positioned to cause the desired throw of the feed-pawls to move the saw a distance corresponding with the interval between contiguous teeth thereof. The object in using a plurality of feed-pawls, as is well known in the art, is to insure the forward feeding of a saw at each operation of the slide or plunger, even should said saw have one or more broken or displaced teeth. Should one pawl fail to feed the saw, by reason of the absence of a tooth, the other pawl will perform the required feeding function.

It is obvious that the file-carriers will perform a plurality of complete reciprocatory movements for each rotation of the master or driving gear, and hence between two consecutive operations of the feeding mechanism; but at the moment of feeding, the saw to bring other teeth into operative position with relation to the file, it is necessary to wholly withdraw the files from contact with the saw to prevent injury to the teeth just dressed. To accomplish this object, we employ a trip mechanism actuated by the saw-feeding devices and having for its essential elements a trip 30, consisting of a yoke having parallel side arms 31, beveled at their inner surfaces to engage the exterior side edges of the file-carriers and also provided with a bifurcated arm or extension 32, which is pivotally connected to the front end of the plunger or slide of the feeding mechanism. It will be seen that the forward movement of the plunger or slide causes the backward movement of the trip-yoke and by reason of the relatively diagonal positions of the file-carriers the inward lateral movement of the file-carriers to remove the files laterally from the saw-teeth. The initial forward movement of the plunger or slide, preparatory to the engagement of the feed-pawls with the teeth of the saw, actuates the trip-yoke, which is positively connected with said plunger or slide, and thus removes the file from contact with the saw-teeth before the feeding movement of the saw is initiated.

As above described, the file-carrier guides are of such construction as to allow lateral movement of the carriers to vary the positions of the files transversely with relation to the saw, and this feature of the construction also enables us to employ tension devices, cooperating with the file-carriers for varying the pressure of the files against the saw-teeth, and thus vary the extent and rapidity of the filing operation. The preferred construction of tension device consists of a bearing-plate 33, interposed between the inner edges of the file-carriers and pivotally mounted at an intermediate point for rocking movement upon

a fulcrum pin or spindle 34, which, in the construction illustrated, projects rearwardly from the front cross-bar 6. This bearing-plate is fulcrumed between the horizontal planes of the file-carriers to bear terminally in opposite directions against the inner edges of said carriers, and inasmuch as the bearing-plate is arranged in rear of the point of intersection of the file-carriers it will be seen that outward pressure by the bearing-plate will cause the files to press inwardly upon opposite sides of the teeth of a saw. The means which we have devised and prefer for holding the bearing-plate in contact with the file-carriers, and thereby holding the carriers pressed outwardly, are of yielding construction and include a torsion-spring 35, attached at one end to the bearing-plate and at the other end to a tension-adjusting disk 36, and locking means for securing said disk with the torsion-spring at the desired adjustment. In the construction illustrated the torsion-spring for actuating the bearing-plate is of the coiled type and is arranged concentrically with the spindle or pin upon which said bearing-plate is mounted, and it is obvious that the turning of the adjusting-disk serves to actuate the bearing-plate with greater or less force to cause the desired outward pressure upon the file-carriers. When the above construction is employed, we preferably adopt a locking device (for holding the adjusting-disk in the desired position) consisting of a thumb-nut 37, threaded upon said spindle or fulcrum-pin of the bearing-plate.

The coiled construction of torsion-spring is preferable for the purpose described, for the reason that it allows a slight yielding movement of the bearing-plate approximately parallel with the file-carriers, when the friction at the points of contact of said carriers with the bearing-plate is excessive, and by threading the adjusting-disk 36 upon the fulcrum pin or spindle of the bearing-plate, the adjustment of the torsional tension of the spring will also serve to adjust the axial tension thereof, while the locking device, when constructed as a thumb-screw, will serve to securely hold the adjusting-disk against accidental movement, both revolutely and axially.

The peculiar means for mounting the slide or plunger operating cam upon the driving-gear—namely, by means of a slot and an engaging set-screw—provides for varying the adjustment of said cam both radially and angularly or pivotally. It is obvious that the radial adjustment of the cam will vary the throw of the slide or plunger in extent, whereas the pivotal adjustment of the cam is designed to vary the throw of the slide or plunger in abruptness or rapidity. It will be seen that by inclining the face of the cam to the direction of its movement or its path the slide or plunger may be advanced either rapidly or gradually, as may be preferred.

Various changes in the form, proportion, and the minor details of construction may be

resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described our invention, what we claim is—

1. In a saw-filing machine, the combination with reciprocatory laterally-movable file-carriers, and operating devices, of a rocking plate, bearing in opposite directions against said carriers, and adjustable means for yieldingly holding said plate in operative engagement with the carriers, substantially as specified.

2. In a saw-filing machine, the combination with reciprocatory laterally-movable file-carriers, and operating devices, of a fulcrumed plate bearing at its ends in opposite directions against said carriers, and a torsion-spring for actuating said plate, substantially as specified.

3. In a saw-filing machine, the combination with reciprocatory laterally-movable file-carriers, and operating devices, of a fulcrumed bearing-plate having its arms in contact with said carriers to yieldingly press them in opposite directions, a torsion-spring, for actuating said plate, provided with an adjusting-disk, and means for securing the said adjusting-disk at the desired adjustment, substantially as specified.

4. In a saw-filing machine, the combination with reciprocatory laterally-movable file-carriers, and operating devices, of a fulcrumed bearing-plate terminally arranged to bear in opposite directions against the file-carriers, a torsion-spring terminally connected to the bearing-plate, a revoluble adjusting-disk attached to the opposite end of the torsion-spring, and a clamping or jam nut arranged in operative relation with the adjusting-disk, substantially as specified.

5. In a saw-filing machine, the combination with reciprocatory laterally-movable file-carriers, and operating devices, of a fulcrumed bearing-plate arranged to bear at its extremities in opposite directions against the carriers, a coiled torsion-spring connected at one end to the bearing-plate, an adjusting-disk connected to the opposite end of the said spring and capable of revoluble and axial adjustment, and means for locking said disk at the desired adjustment, substantially as specified.

6. In a saw-filing machine, the combination with reciprocatory laterally-movable file-carriers, and operating devices, of a fulcrumed bearing-plate arranged to bear terminally in opposite directions against said carriers and capable of axial yielding movement approximately parallel with the paths of the carriers, an actuating-spring for holding said bearing-plate torsionally and axially in its normal position, and adjusting devices for said actuating-spring, substantially as specified.

7. In a saw-filing machine, the combination with reciprocatory laterally-movable file-carriers and operating devices, of saw-feeding mechanism including a slide or plunger mounted for reciprocation in a plane approximately parallel with the file-carriers, a spring for returning the slide or plunger and yieldingly holding it in its normal position, operating devices for periodically advancing the slide or plunger, and a trip-yoke pivotally mounted at an intermediate point for swinging movement, and having parallel arms arranged in operative relation, respectively, with diagonally-disposed surfaces of the file-carriers, and adapted, when actuated, to move said carriers laterally in opposite directions, said trip-yoke having a slotted connection with the slide or plunger, whereby the yoke is yieldingly held in its normal position by the return-spring of the slide, substantially as specified.

8. In a saw-filing machine, the combination with a supporting-frame, of a driving-gear, file-carriers operatively connected with the driving-gear, saw-feeding mechanism, including a spring-retained slide or plunger terminally arranged contiguous to the driving-gear, a cam mounted upon the driving-gear for radial and pivotal adjustment, and adapted for contact with the contiguous extremity of said slide or plunger, means for securing said cam at the desired adjustment to vary the extent and rapidity of throw of the slide or plunger, and a trip-yoke operatively connected with said slide or plunger and having arms arranged in operative relation with inclined surfaces on the file-carriers, substantially as specified.

9. In a saw-filing machine, the combination with a supporting-frame, of a driving-gear, file-carriers operatively connected with the driving-gear, saw-feeding mechanism, including a spring-retained slide or plunger terminally arranged contiguous to the driving-gear, a radially and pivotally adjustable cam carried by the driving-gear for contact with the contiguous extremity of said slide or plunger, and having a radially-disposed slot, a set-screw engaging said slot to secure the cam at the desired radial and pivotal adjustment, and a trip-yoke operatively connected with said slide or plunger and having arms arranged in operative relation with inclined surfaces on the file-carriers, substantially as specified.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of witnesses.

JAMES H. WALTERS.

WILLIAM HENRY WALTERS.

Witnesses:

J. C. McLEAN,

JNO. S. BLOUNT,

R. N. BERRIEN, Jr.