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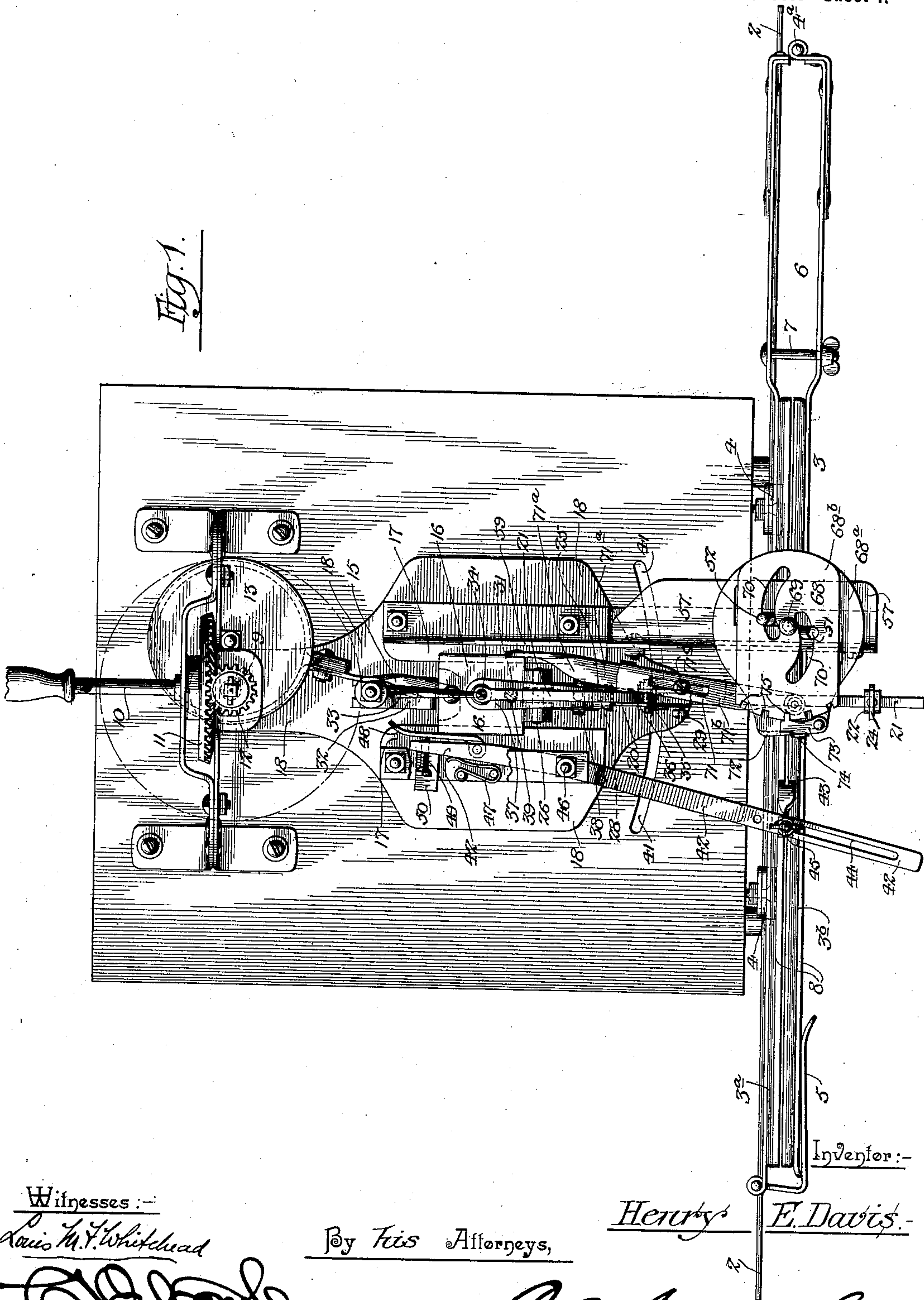
Patented Aug. 2, 1898.

H. E. DAVIS.
SAW FILING MACHINE.

(Application filed Nov. 22, 1897.)

(No Model.)

3 Sheets—Sheet 1.



Inventor:—

Henry E. Davis.

By His Attorneys,

C. A. Snow & Co.

Witnesses:—

David M. F. Whithead

[Signature]

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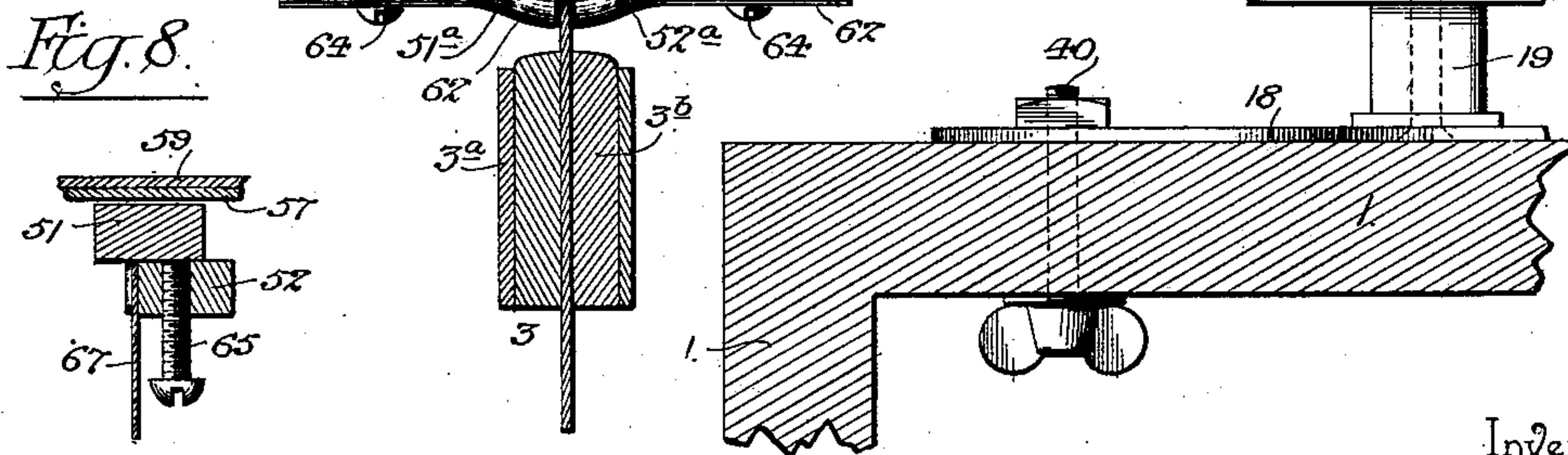
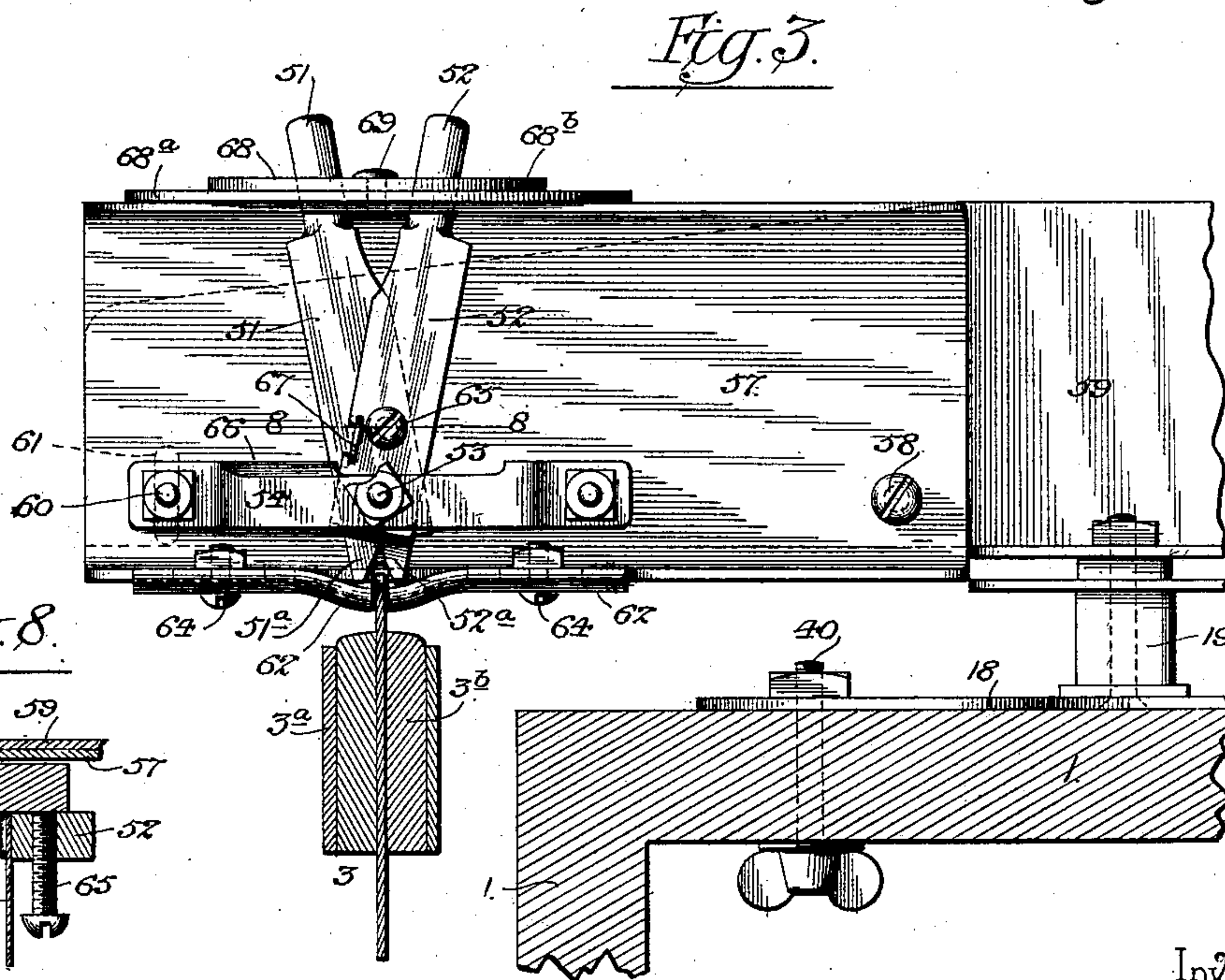
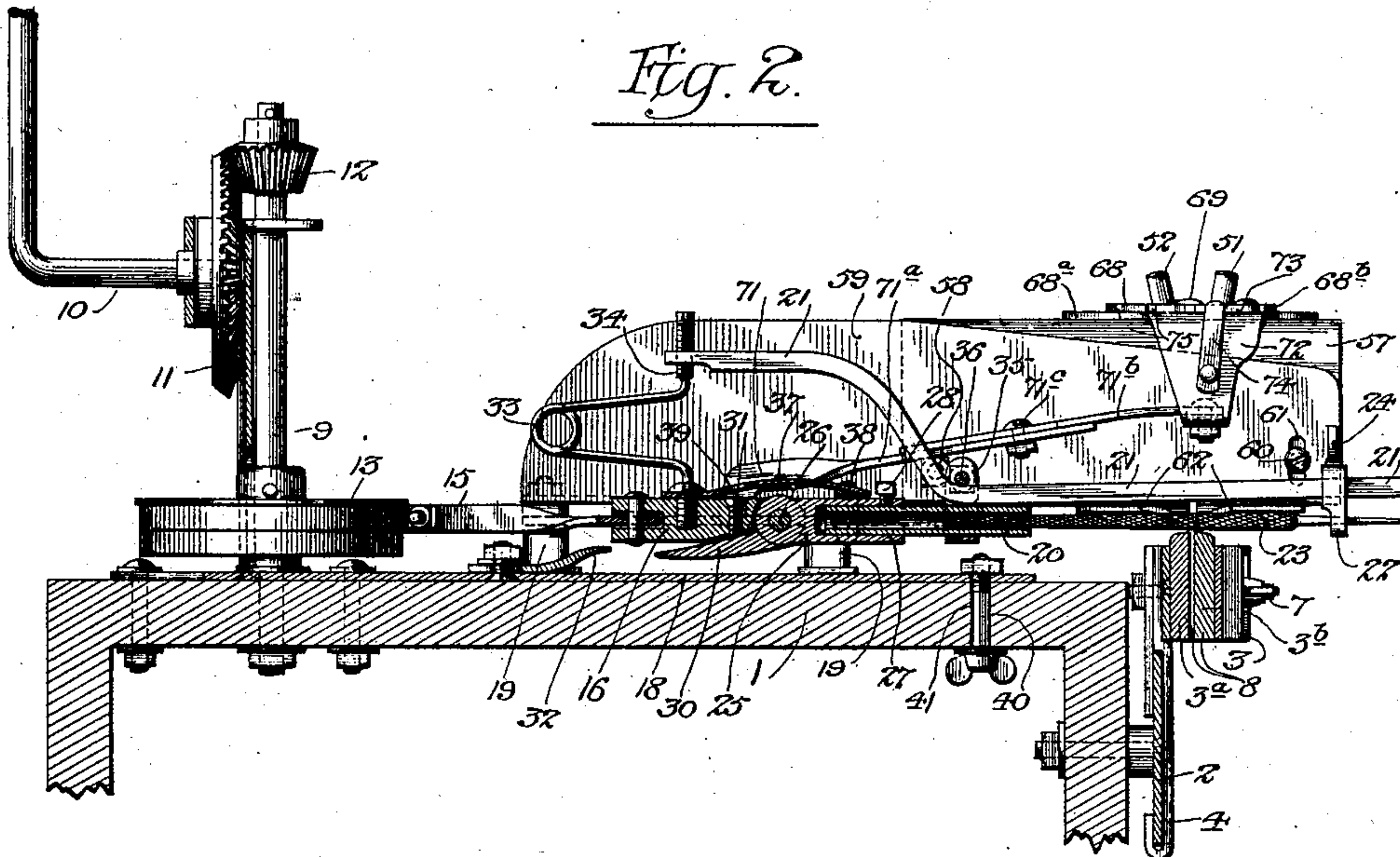
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SAW FILING MACHINE.

(Application filed Nov. 22, 1897.)

(No Model.)

3 Sheets—Sheet 2.



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3 Sheets—Sheet 3.

Fig. 4.

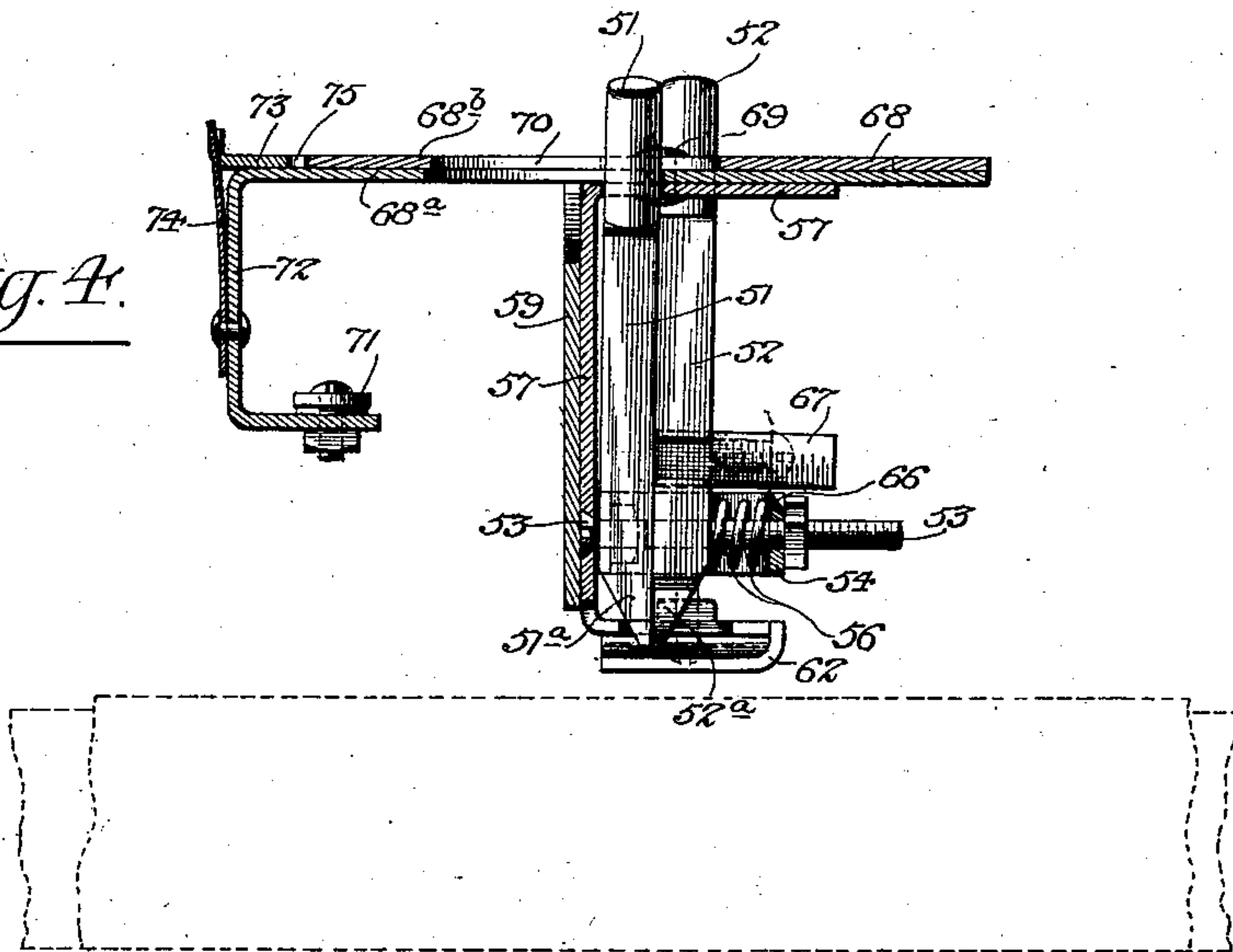


Fig. 5.

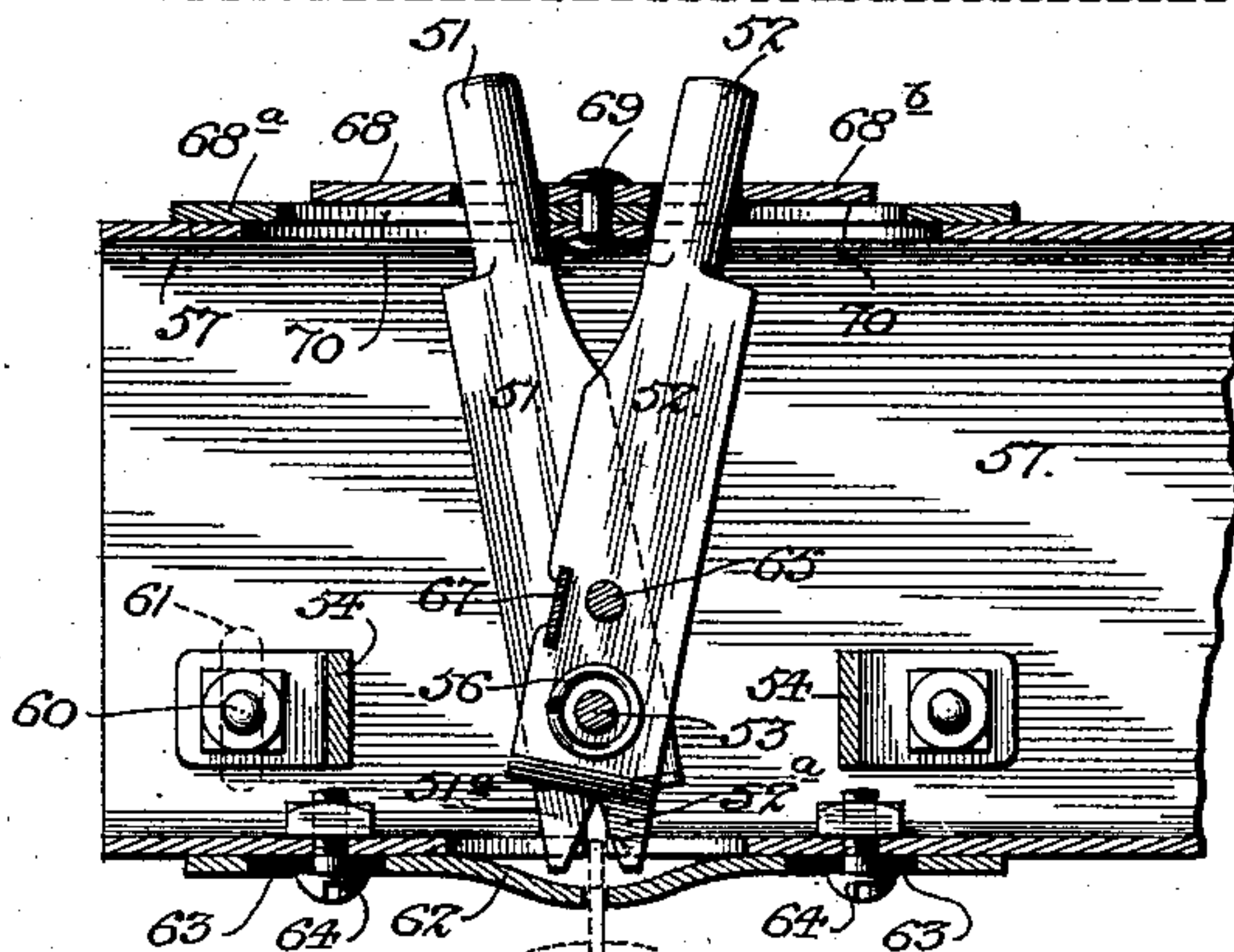


Fig. 6.

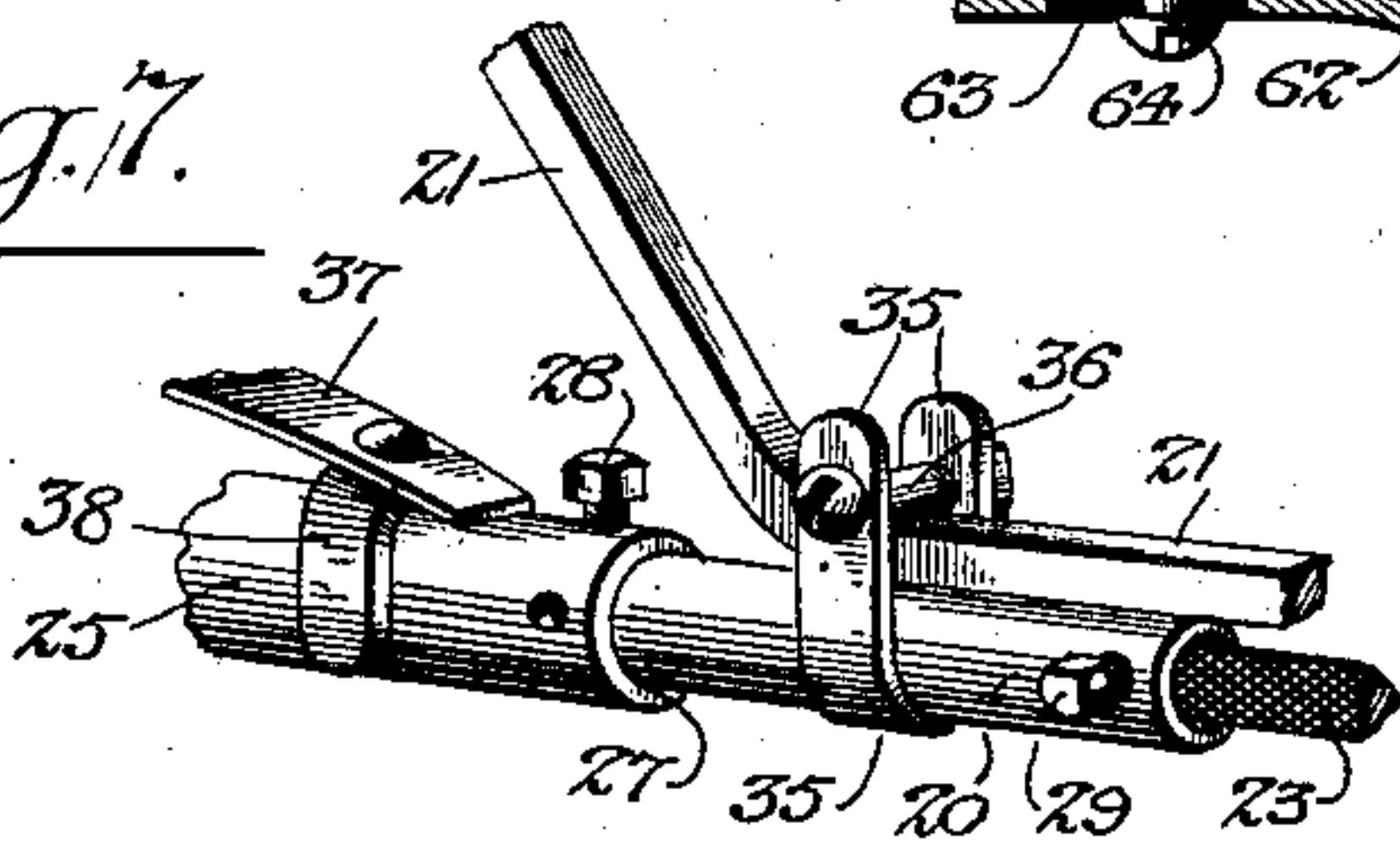
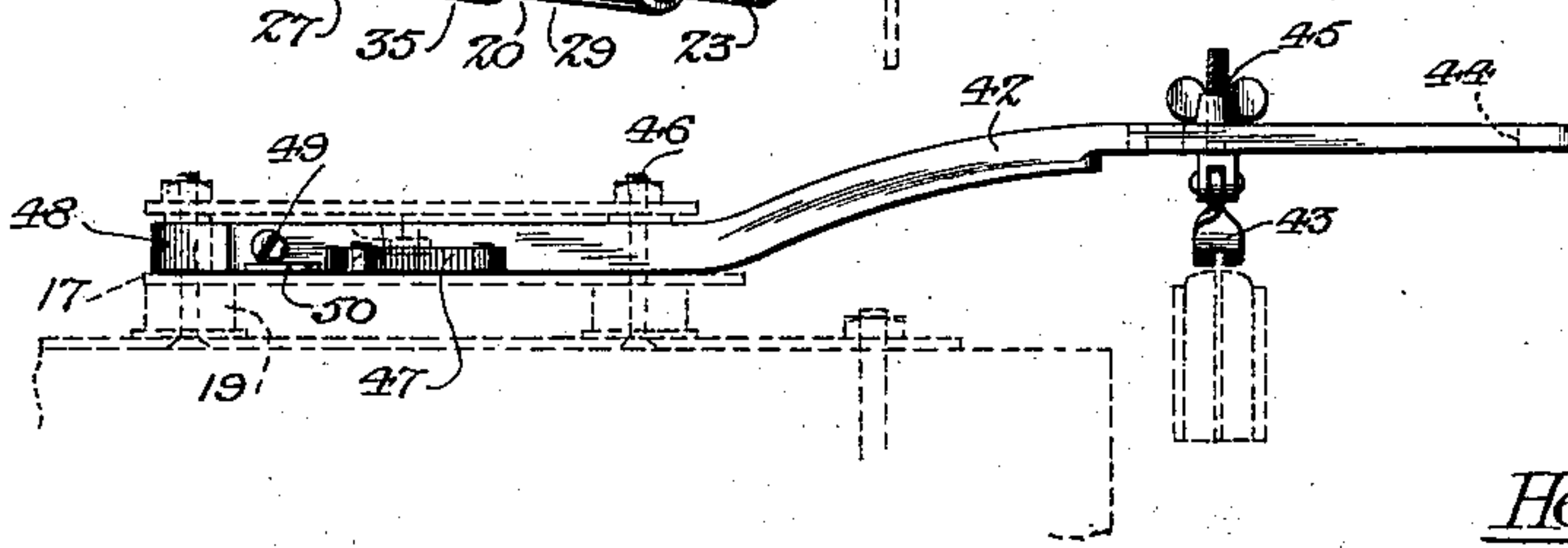


Fig. 7.



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UNITED STATES PATENT OFFICE.

HENRY E. DAVIS, OF BRUNNER, TEXAS, ASSIGNOR OF ONE-HALF TO
WILLIAM J. ROHDE, OF HOUSTON, TEXAS.

SAW-FILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 608,282, dated August 2, 1898.

Application filed November 22, 1897. Serial No. 659,460. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. DAVIS, a citizen of the United States, residing at Brunner, in the county of Harris and State of Texas, have invented a new and useful Saw-Filing Machine, of which the following is a specification.

My invention relates to saw filing and setting machines, and has for its object to provide a simple, compact, and efficient construction and arrangement of parts, including certain means of adjustment, whereby the desired relative arrangement of parts may be secured to suit the various kinds of saws which may be operated upon thereby.

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 plan view of a machine constructed in accordance with my invention. Fig. 2 is a longitudinal central section of the same, taken in the plane of the file-carrier. Fig. 3 is a partial side view to show the saw-setting devices. Fig. 4 is a transverse vertical section of the saw-setting devices. Fig. 5 is a detail longitudinal section of the saw-setting devices. Fig. 6 is a side view of the feed-arm and contiguous parts. Fig. 7 is a detail view in perspective of the file-arm. Fig. 8 is a detail horizontal section through the file-setting arms on the plane indicated by the line 8 8 of Fig. 3.

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

Supported by a suitable base 1 is a file holding and carrying device, consisting of a cross-sectionally flat track-bar 2 and a carriage having a saw-clamp 3 and travelers 4, said travelers depending at intervals from the carriage and engaging the upper and lower edges of the track-bar. The clamp consists of a fixed member 3^a and a swinging or pivotal member 3^b, hinged, as at 4^a, to the fixed member and adapted to be normally held in operative relation with said fixed member by means of a locking device, consisting in the construction illustrated of a swinging latch 5, which is mounted upon the fixed member of the clamp and is adapted to swing over the free end of the movable swinging member.

The members of the clamp are offset contiguous to one end, preferably their hingedly-connected extremities, to form a holder 6 of sufficient width for a saw-handle, and connecting said members contiguous to their offsets is a tension-bolt 7, provided with a thumb-nut which when tightened draws the sides of the holder 6 toward each other. The inner sides of the body portions of the members are fitted with friction bars or plates 8, of wood or similar soft frictional material, to bear against opposite side surfaces of a saw-blade when the latch 5 is in its operative position.

The base supports an upright or perpendicular shaft 9, with which any suitable operating devices may be connected, those shown in the drawings consisting of a cranked driving-shaft 10, having a bevel-gear 11, which meshes with a pinion 12 on the main shaft 9. The main shaft carries an eccentric 13, of which the stirrup is connected by a pitman or rod 15 with a cross-head 16. This cross-head is mounted at its lateral grooved edges upon guides 17, supported by and parallel with a bed-plate 18, suitable spacing-blocks 19 being interposed between the bed-plate and said guide-plates to hold the latter at the desired interval from the former.

The cross-head forms one member of a file-carrier, of which the other main member is a file-arm, consisting of a file heel-socket 20 and a toe-socket-supporting arm 21, which is fulcrumed upon the heel-socket. The toe-socket is shown at 22 and is designed to support one end of a file 23, of which the other end is inserted in the tubular member 20 of the heel-socket. Said toe-socket is fitted to slide upon the supporting-arm 21 and is provided with a clamping device, such as a thumb-screw 24, for locking it at the desired adjustment.

The heel-socket comprises, in addition to the tubular member 20, a pivotal supporting member 25, mounted for swinging movement in a vertical plane upon the cross-head by means of a transverse bolt 26, and itself provided with a tubular seat 27, in which the tubular member 20 is fitted for axial and rotary adjustment. Said tubular member is locked at the desired adjustment by means of a set-screw 28, and it will be understood that the rotary adjustment thereof is designed to give the desired pitch to the faces of the file in

order to suit saw-teeth of different lengths. The file is secured in the tubular member 20 by means of a set-screw 29.

Extending rearwardly from the pivotal member 25 of the heel-socket is a trip-finger 30, which projects under the cross-head and is limited in upward movement, thus limiting the depression of the toe of the file-carrier arm, by means of an adjustable stop 31, consisting of a screw which is terminally arranged in the path of the upward movement of said trip-finger. The function of the trip-finger is, in connection with a stationary trip 32, to raise the toe of the file-carrier arm at the end of the backward stroke in order to permit the forward feeding movement of a saw by the means provided for that purpose. Said trip consists of an upwardly and forwardly inclined plate, under the front extremity of which the point of the trip-finger passes, and it will be seen that as the rearward movement of the cross-head continues said trip-finger will be gradually depressed to correspondingly elevate the file.

In order to normally and yieldingly maintain the file in contact with the teeth of a saw or in position to engage therewith, I employ a toe-depressing spring 33, supported by the cross-head and arranged to cooperate with a rearwardly-extending portion of the supporting-arm 21, one extremity of said spring, which is of the V type, being seated upon an adjustable rest 34, consisting of a screw threaded in the extremity of the supporting-arm, whereby the tension of the spring may be varied to exert any desired pressure at the toe of the file. The means illustrated in the drawings for mounting the supporting-arm upon the heel-socket consist of a yoke 35, embracing the tubular member 20 of said socket and having a fulcrum-pin 36, said supporting-arm extending between the tubular member 20 and said fulcrum-pin. Said fulcrum-pin in the construction illustrated consists of a screw or bolt, and it is obvious that by tightening the same the arms of the yoke may be drawn toward each other to properly clamp the tubular member 20, whereas when rotary adjustment of said tubular member is desirable to change the inclination of the face of the file said yoke may be loosened and the supporting-arm arranged in a truly vertical position thereover. Also in this connection I prefer to employ a heel-depressing spring 37, which is attached to the cross-head and bears terminally upon the pivotal member 25 of the heel-socket. Said free end of the heel-depressing spring is preferably provided with a stirrup 38. Also said heel-spring is provided with an opening 39, through which the head of the adjustable stop 31 is accessible.

It is also desirable under certain circumstances to change the diagonal position of the file-carrier arm to produce different bevels of the saw-teeth, and therefore I preferably mount the bed-plate for pivotal movement

about the main shaft 9 as an axis. To lock this bed-plate at the desired adjustment, a securing device, such as a clamping-bolt 40, is extended through a slot 41 in the base, said slot being segmental and concentric with the above-mentioned main shaft 9.

In connection with the above-described mechanism I employ saw-feeding devices, consisting of a feed-arm 42, carrying a feed-pawl 43, which is adjustably mounted upon the arm by means of a slot 44 and a locking device, as a clamping-nut 45, and means for communicating motion from the filing mechanism to said arm. In the construction illustrated the feed-arm is pivotally mounted, as at 46, and is arranged at its rear end in the path of the cross-head 16, the same being yieldingly held in such position to correspondingly maintain the feed-arm in a retracted position by means of an actuating-spring 47. Mounted upon the feed-arm for the direct contact of the cross-head is a throw-plate 48, having a deflected rear end by means of which lateral throw is imparted to the rear end of the feed-arm. This plate is preferably pivoted at its front end to the feed-arm and is engaged by an adjusting-screw 49, of which the head, which forms an index, traverses a gage-plate 50, carried by the feed-arm. By means of this plate the extent of adjustment of the throw-plate may be gaged, and hence the required throw of the feed-arm is secured to suit the size of teeth on the saw which is being dressed.

The setting devices include setting-levers 51 and 52, mounted upon a common pivot-pin 53 within a keeper 54. The setting-lever 51 is held from axial movement by means of a nut 55, countersunk therein and threaded upon the pivot-pin 53, and the axially-movable lever 52 is yieldingly held in contact with or pressed toward the axially stationary lever 51 by means of a spring 56. This mechanism, including the setting-levers and the keeper, is carried by an adjustable supporting-plate 57, which is pivoted, as at 58, upon a vertical bracket-plate 59, rising from the bed-plate 18, and said supporting-plate is secured at the desired adjustment by means of a clamping-bolt 60, extending through a slot 61 in the bracket-plate, whereby the vertical adjustment of the setting-jaws 51^a and 52^a of the setting-levers may be varied with relation to the saw carrier or clamp, and carried by the supporting-plate are adjustable holding-plates 62, terminally arranged upon opposite sides of the plane of a saw-blade at the bases of the teeth thereof to prevent deflection of the saw-blade during the setting of the teeth. Said holding-plates are preferably slotted, as at 63, and engaged by fastening devices, such as bolts 64, whereby the interval between their extremities may be suited to the thickness of the saw-blade. Furthermore, it is desirable to so dispose the setting-levers as to properly bear in opposite directions against contiguous saw-teeth, and in order that this interval may

be adapted to the length of the saw-teeth or the intervals therebetween I employ adjusting devices, consisting in the construction illustrated of a screw 65, threaded, for instance, in the lever 52 and bearing terminally against the surface of the lever 51, the upper reduced edge 66 of said keeper 54 constituting an index for designating graduations on a gage-plate 67, which is carried by and projects laterally from the axially-movable setting-lever 52, whereby the interval between the setting-jaws may be ascertained with accuracy to suit the gage of the saw.

The means illustrated in the drawings for operating the setting-levers consist of a pivotal cam-plate 68, mounted, as at 69, upon the supporting-plate 57 and having eccentric or cam slots 70 for respectively engaging the reduced upper extremities of the levers, and this cam-plate is connected by means of a pitman 71 with the cross-head, whereby oscillatory movement is communicated to the cam-plate to alternately spread and contract the setting-jaws. I preferably employ a cam-plate of sectional construction, wherein the main section 68^a is pivoted upon the supporting-plate 57 and has a depending ear 72 for connection with said pitman, while the adjustable section 68^b is provided with the cam-slots 70 and is mounted coaxially with the main section for rotary adjustment with relation thereto. This adjustment enables the operator to vary the extent of throw of the setting-levers, and thus secure the desired degree of set in the saw-teeth or degree of deflection of the saw-teeth from the plane of the blade. The adjustable member of the cam-plate may be locked in the desired position with relation to the main member thereof by any suitable devices, such as a locking-pawl 73, yieldingly held by a spring 74 in engagement with one of a series of notches 75 in the contiguous peripheral edge of the adjustable member. In this connection I also employ a pitman 71 of extensible construction, the same comprising relatively-adjustable members 71^a and 71^b, one of which is slotted, together with suitable means, such as a bolt 71^c for locking said members at the desired extension.

The operation of the various parts of the mechanism embodying my invention will be readily understood from the foregoing description, and it will be noted that when the parts are properly adjusted to suit the gage of the saw, both the filing and setting mechanisms being provided with means for accomplishing this object, the operations of the parts are automatic and are accomplished by the continuous rotation of the driving-shaft. Furthermore, it will be observed that a greater or less bevel of tooth may be secured by the angular adjustment of the bed-plate upon the base of the apparatus, such adjustment being angular with relation to the plane of the saw-blade carrier or clamp.

It will be observed, furthermore, that the flexible connection between the toe and heel

supporting devices of the file and the independent yielding means for depressing the toe and heel supporting devices secures a peculiar pressure and movement of the file across the teeth of the saw, which approximates the movement imparted thereto by hand. For instance, when the heel of the file is bearing upon the saw-tooth the toe is depressed, while when the toe is resting upon the saw-tooth the heel is depressed. Obviously this rocking movement is slight; but it is sufficient to secure a certain amount of drag, which is more efficient in filing a saw-tooth than a straight or direct reciprocatory movement thereof, with the pressure applied equally to toe and heel at all times.

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 my invention, what I claim is—

1. In a machine of the class described, a file-carrier having a reciprocatory member mounted in guides for linear movement, flexibly-connected toe and heel supports for the file, one of which is movably mounted upon said reciprocatory member, and the other of which is movably mounted upon the first-named support, and independent yielding means for depressing the toe and heel supports, substantially as specified.

2. In a machine of the class described, a file-carrier having a heel-socket, a toe-socket, and a supporting-arm for the toe-socket fulcrumed upon the heel-socket, and independent yielding means for depressing the toe and heel sockets, substantially as specified.

3. In a machine of the class described, a file-carrier having a heel-socket, a toe-socket, and a pivotal supporting-arm for the toe-socket, and means for yieldingly depressing the heel-socket and elevating the rear end of said supporting-arm, substantially as specified.

4. In a machine of the class described, a file-carrier having a heel-socket, a toe-socket, and a pivotal supporting-arm for the toe-socket, means for yieldingly depressing the heel-socket and elevating the rear end of said supporting-arm, and tension-adjusting devices for varying the yielding pressure upon the supporting-arm, substantially as specified.

5. In a machine of the class described, a file-carrier having a heel-socket, a toe-socket, and a supporting-arm fulcrumed upon the heel-socket and carrying the toe-socket, a heel-socket-depressing spring, a toe-socket-depressing spring, and an adjustable rest on the supporting-arm for the toe-socket-depressing spring, to vary the tension thereof, substantially as specified.

6. In a machine of the class described, a file-carrier having a pivotal heel-socket, including a revolubly-adjustable file-seat and means for locking the same at the desired adjustment, a toe-socket, and a supporting-arm for the toe-

socket, fulcrumed upon said adjustable member of the heel-socket by means of a yoke, and independent yielding means for depressing said heel and toe sockets, substantially as specified.

7. In a machine of the class described, a file-carrier having a heel-socket, a supporting-arm fulcrumed upon the heel-socket, a toe-socket adjustably mounted upon, for movement parallel with, the supporting-arm, and means for yieldingly depressing the toe and heel sockets, substantially as specified.

8. In a machine of the class described, a file-carrier having a heel-socket including a pivotal member, and a tubular member or file-seat fitted for axial and revoluble adjustment upon the pivotal member, means for securing said tubular member or seat at the desired axial and rotary adjustment, a supporting-arm fulcrumed upon the heel-socket, a toe-socket supported by said arm, and means for yieldingly depressing the toe and heel sockets, substantially as specified.

9. In a machine of the class described, a reciprocable cross-head and means for operating the same, a file-carrier mounted upon the cross-head for pivotal movement, toward and from its operative position, yielding means for normally maintaining the file-carrier in its operative position, a tripping device having one of its members consisting of a trip-finger projecting rearwardly from the file-carrier and the other member consisting of a trip arranged in the path of the first-named member, and adapted, when engaged therewith, to tilt the file-carrier from its operative position in opposition to said yielding means, one of the members of the tripping device being adjustable in a direction parallel with the path of the cross-head, to vary the extent and initial point of the tilting movement of the carrier, and means for securing the adjustable member at the desired adjustment, substantially as specified.

10. In a machine of the class described, a reciprocable cross-head and means for operating the same, a file-carrier mounted upon the cross-head for tilting movement toward and from its operative position, yielding means for normally maintaining the file-carrier in its operative position, said carrier having a rearwardly-extending trip-finger, projecting in the opposite direction from a file supported by the carrier, an adjustable inclined trip arranged in the path of said trip-finger for depressing the latter to tilt the file-carrier, and means for securing the trip at the desired adjustment, to vary the extent of tilting movement of the file-carrier, and the point at which it is tilted, substantially as specified.

11. In a machine of the class described, a pair of cooperating setting-levers, and means for oscillating the same in opposite directions to bear against opposite sides of contiguous saw-teeth, yielding means for pressing one of said levers toward the other, and an adjusting device carried by one lever and bearing

against the other for varying the interval therebetween, in opposition to said yielding means, substantially as specified.

12. In a machine of the class described, a setting device having coaxially-mounted setting-levers, means for oscillating said levers in opposite directions, yielding means for holding the levers with their adjacent faces contiguous to each other, and a set-screw mounted upon one of the levers and bearing terminally against the contiguous face of the other lever to vary the interval therebetween, in opposition to said yielding means, substantially as specified.

13. In a machine of the class described, a setting device having coaxially-mounted setting-levers, one of which is axially movable toward and from the other, means for reciprocating said levers in opposite directions, yielding means for maintaining the axially-movable lever contiguous to the cooperating lever, and a set-screw mounted upon one of said levers and bearing against the surface of the other to vary the interval therebetween, in opposition to said yielding means, substantially as specified.

14. In a machine of the class described, a setting device having pivotally-mounted setting-levers, one of which is axially movable toward and from the other, means for operating said levers, adjusting devices for varying the interval between the levers, and a gage carried by one of the levers for traversing a fixed pointer, substantially as specified.

15. In a machine of the class described, a setting device having cooperating pivotal setting-levers, and operating devices for reciprocating the same, one of said levers being mounted for axial movement, yielding means for maintaining the axially-movable lever contiguous to the cooperating lever, adjusting devices for varying the interval between said levers in opposition to said yielding means, and a gage carried by the axially-movable lever for traversing a fixed pointer, substantially as specified.

16. In a machine of the class described, a setting device having oscillatory setting-levers and means for operating the same, holding-plates terminally arranged upon opposite sides of the plane of a saw-blade, and adjustably mounted for movement toward and from and perpendicular to the plane of the same, and means for securing said plates at the desired adjustment, substantially as specified.

17. In a machine of the class described, a setting device having oscillatory setting-levers, a pivotal cam-plate having cam connections with said levers, and means for oscillating the cam-plate, substantially as specified.

18. In a machine of the class described, a setting device having oscillatory setting-levers, a pivotal cam-plate having slots through which the extremities of said setting-levers project, and means for oscillating the cam-plate, substantially as specified.

19. In a machine of the class described, a setting device having oscillatory setting-levers, a pivotal cam-plate of sectional construction including a main oscillatory member, and an adjustable member mounted for angular adjustment upon said main member, and provided with cam-slots through which the extremities of said setting-levers project, and locking devices for securing the auxiliary member at the desired adjustment upon the main member, substantially as specified.

20. In a machine of the class described, a setting device including oscillatory levers, an oscillatory cam-plate operatively connected with said levers and having an angularly-adjustable member provided with the means for communicating motion to said levers, a reciprocatory cross-head and operating devices, and an extensible pitman connecting the cross-head with the cam-plate and comprising relatively-adjustable members, and means for securing the same at the desired adjustment, substantially as specified.

21. In a machine of the class described, the combination with a base and a saw-clamp, of a supporting-plate for saw-setting devices mounted for adjustment toward and from the saw-clamp, setting devices mounted upon the supporting-plate, locking devices for securing the supporting-plate at the desired adjustment, and means for operating the setting devices, substantially as specified.

22. In a machine of the class described, the combination with a base and a saw-clamp, of a supporting-plate for saw-setting devices, mounted for adjustment toward and from the saw-clamp, setting devices mounted upon said supporting-plate, locking devices for securing the supporting-plate at the desired adjustment, operating means for the saw-setting devices, holding-plates mounted upon the supporting-plate for adjustment perpendicular to the plane of a saw-blade, and means for securing said holding-plates at the desired adjustment, substantially as specified.

23. In a machine of the class described, a base, a flat guide-bar supported by the same, a saw-carriage mounted for linear movement upon the guide-bar and provided with a saw-clamp, having travelers to engage opposite edges of the guide-bar, saw filing and feeding devices, and means for communicating motion thereto, substantially as specified.

24. In a machine of the class described, a base, a flat guide-bar on the base, a saw-carriage mounted for linear movement upon the base and having a sectional saw-clamp comprising a fixed member, provided with travelers fitted on said guide-bar, and a movable member hingedly connected with the fixed member, and locking devices for securing the free end of the movable member in its operative position, an angularly-adjustable bed-plate, and saw filing and feeding mechanisms carried by the bed-plate, substantially as specified.

25. In a machine of the class described, a base, a saw-carriage mounted for linear movement upon the base and having a saw-clamp comprising a fixed member, a movable member hingedly mounted upon the fixed member, said fixed and movable members being provided with offset portions to form a handle-seat, and a swinging latch mounted upon the fixed member for engaging and locking the movable member in its operative position, and saw filing and feeding mechanisms, substantially as specified.

26. In a machine of the class described, a base, saw clamping and holding devices carried by the base, a driving-shaft mounted upon and perpendicular to the base, a bed-plate fulcrumed concentrically with and upon the driving-shaft, means for locking the bed-plate at the desired adjustment, and saw-filing mechanism mounted upon the bed-plate and operatively connected with said driving-shaft, the adjustment of said bed-plate being adapted to vary the angular position of the file with relation to the saw-clamp, substantially as specified.

27. In a machine of the class described, the combination with saw-filing mechanism, including a reciprocatory member, of a pivotal feed-arm mounted for swinging movement parallel with the plane of the reciprocatory member, a throw-plate adjustably mounted upon the feed-arm in the path of the reciprocatory member, and means for adjusting the throw-plate to vary the amplitude of vibration imparted by the reciprocatory member to the feed-arm, substantially as specified.

28. In a machine of the class described, the combination with saw-filing mechanism including a reciprocatory member, of a feed-arm mounted for swinging movement parallel with the plane of the reciprocatory member, a pivotal throw-plate mounted upon the feed-arm in the path of the reciprocatory member and capable of adjustment to vary the throw imparted by said member to the feed-arm, and a set-screw for adjusting the throw-plate, substantially as specified.

29. In a machine of the class described, the combination with saw-filing mechanism including a reciprocatory member, of a feed-arm mounted for swinging movement parallel with the reciprocatory member, a throw-plate adjustably mounted upon the feed-arm in the path of the reciprocatory member, an adjusting device for the throw-plate including a screw having a pointer, and a gage-plate traversed by said pointer to indicate the adjustment of the throw-plate, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HENRY E. DAVIS.

Witnesses:

E. F. GRINSTEAD,
IRA P. JONES.