No. 855,673. PATENTED JUNE 4, 1907.

O. SCHMACHTENBERGER.

SAW FILING MACHINE.

APPLICATION FILED MAY 26, 1906.

6 SHEETS—SHEET 1.

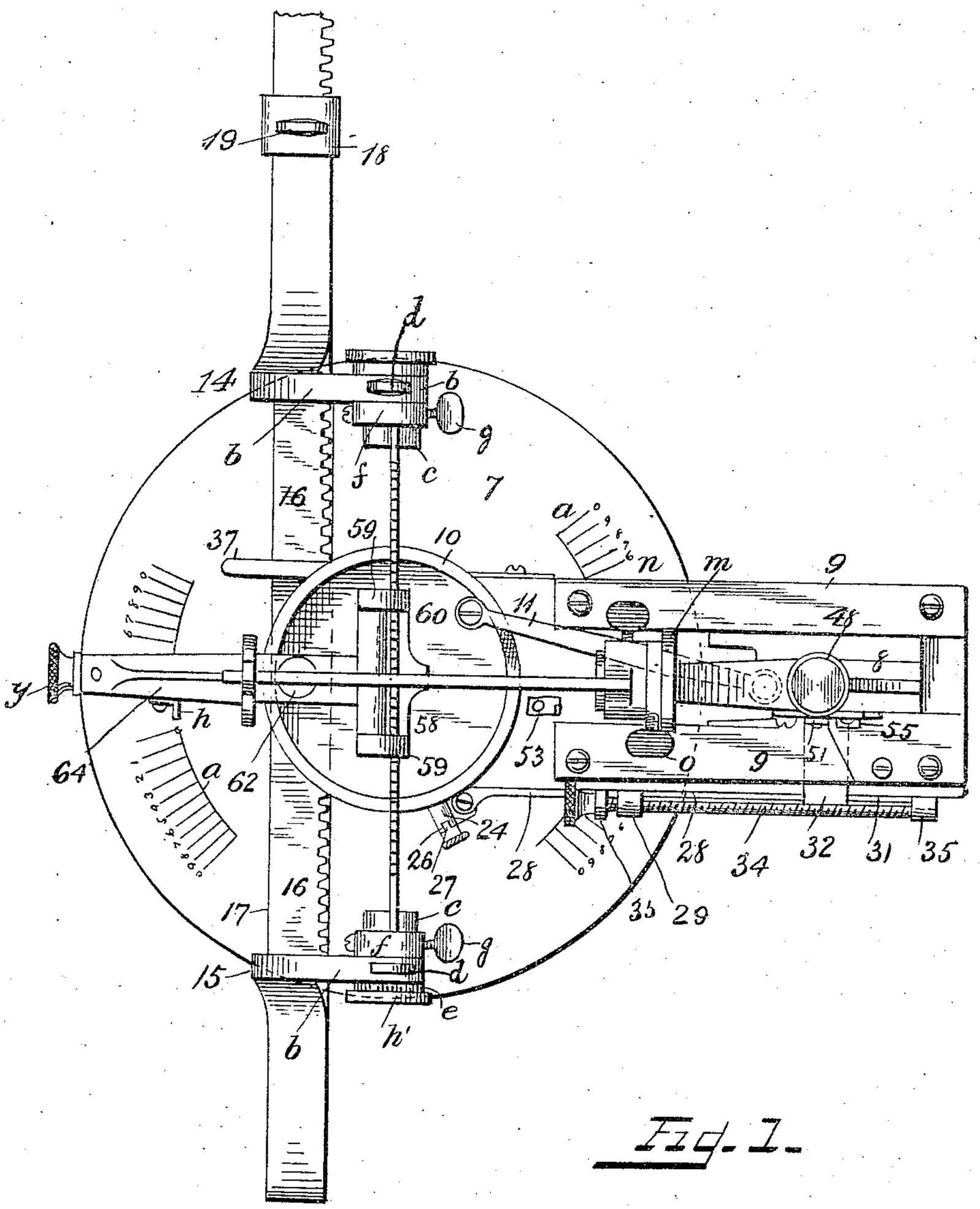

Fig. 1.

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J. H. Miller.

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6 SHEETS—SHEET 2.

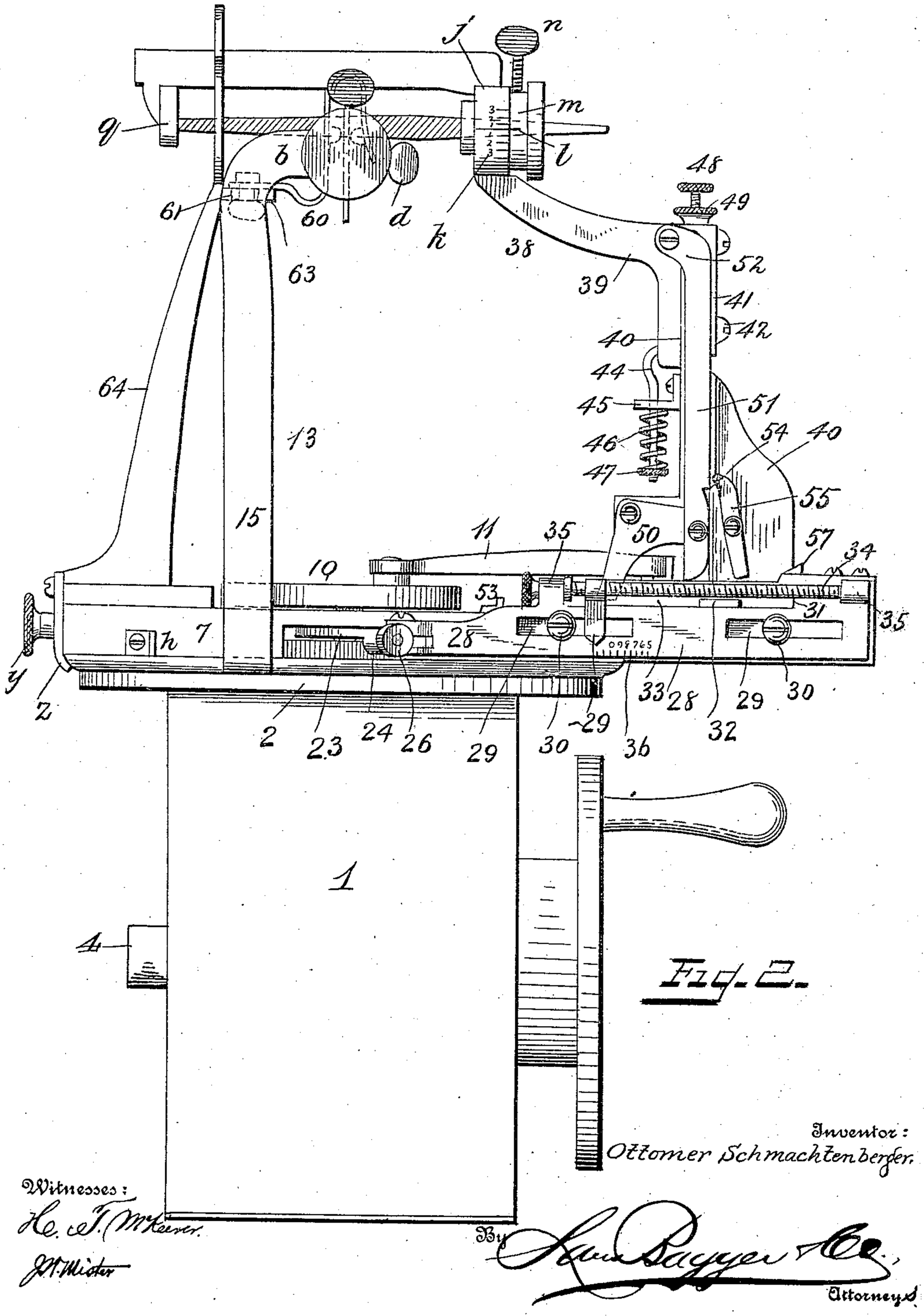

Fig. 2.

Witnesses:
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6 SHEETS—SHEET 3.

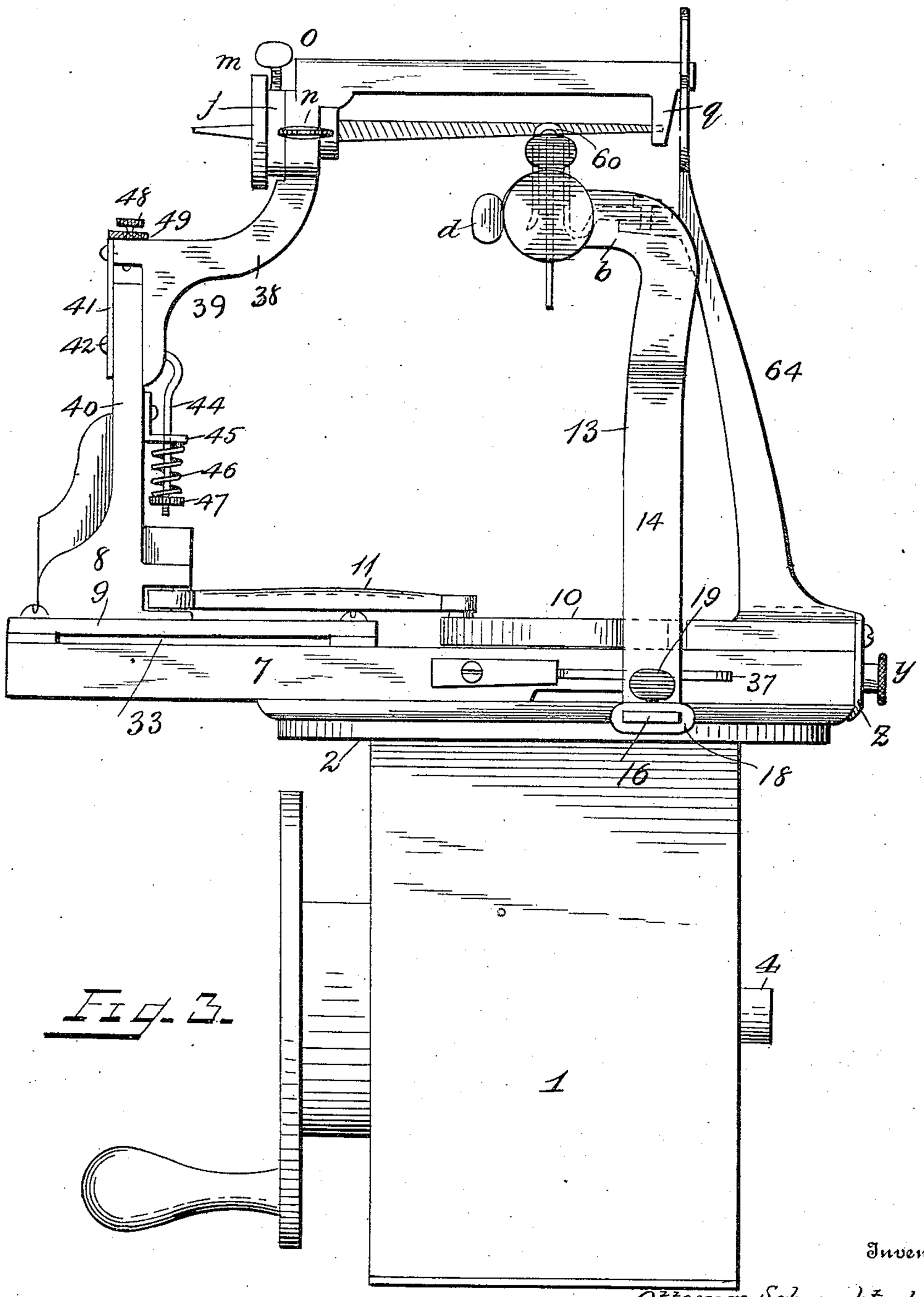

Fig. 3.

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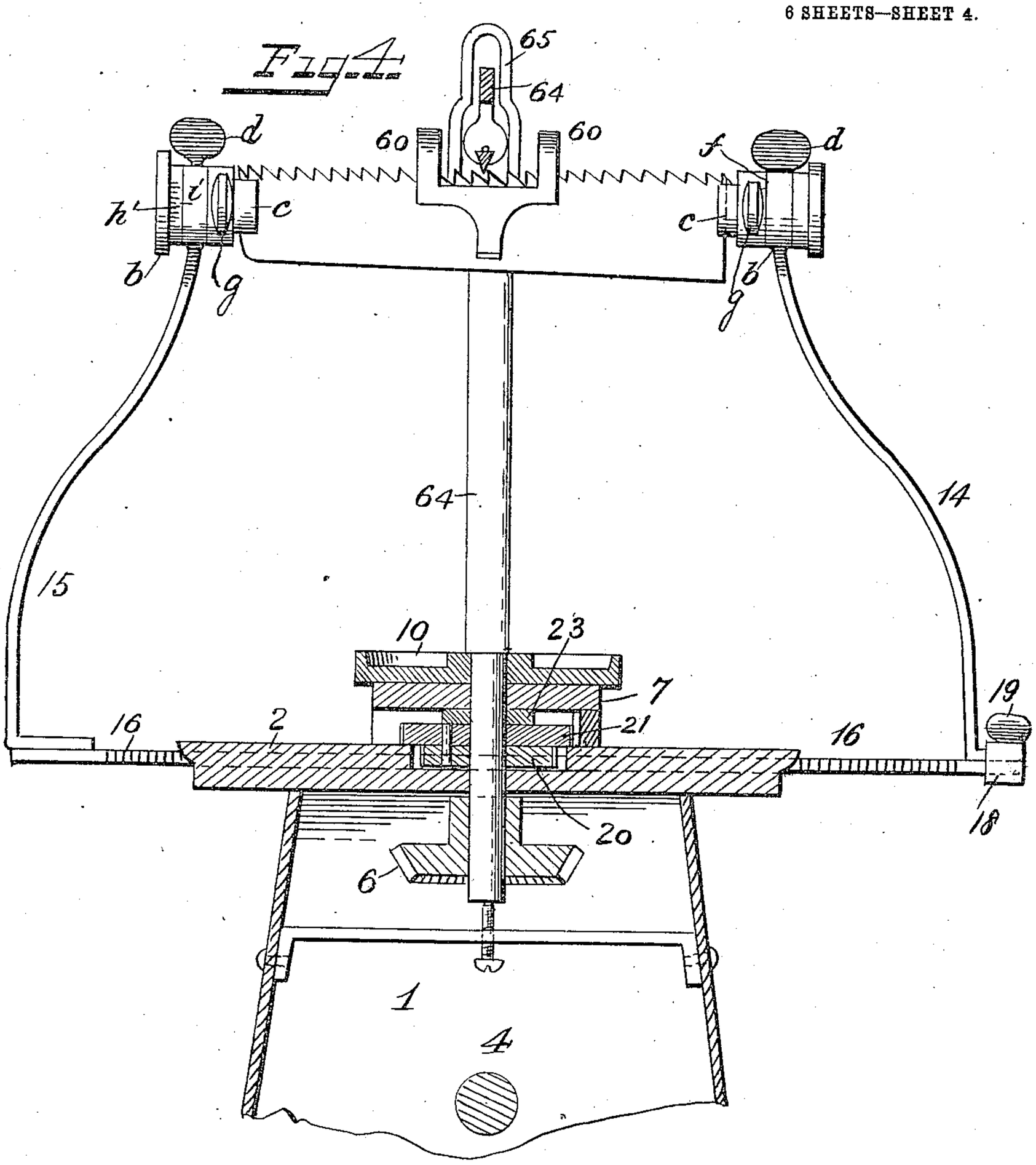
6 SHEETS—SHEET 4.

Fig. 4.



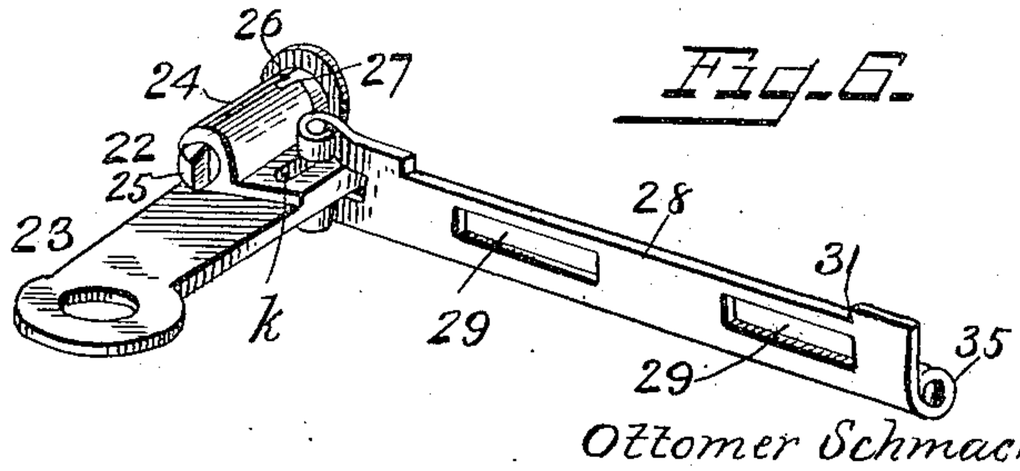


Fig. 6.

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6 SHEETS—SHEET 5.

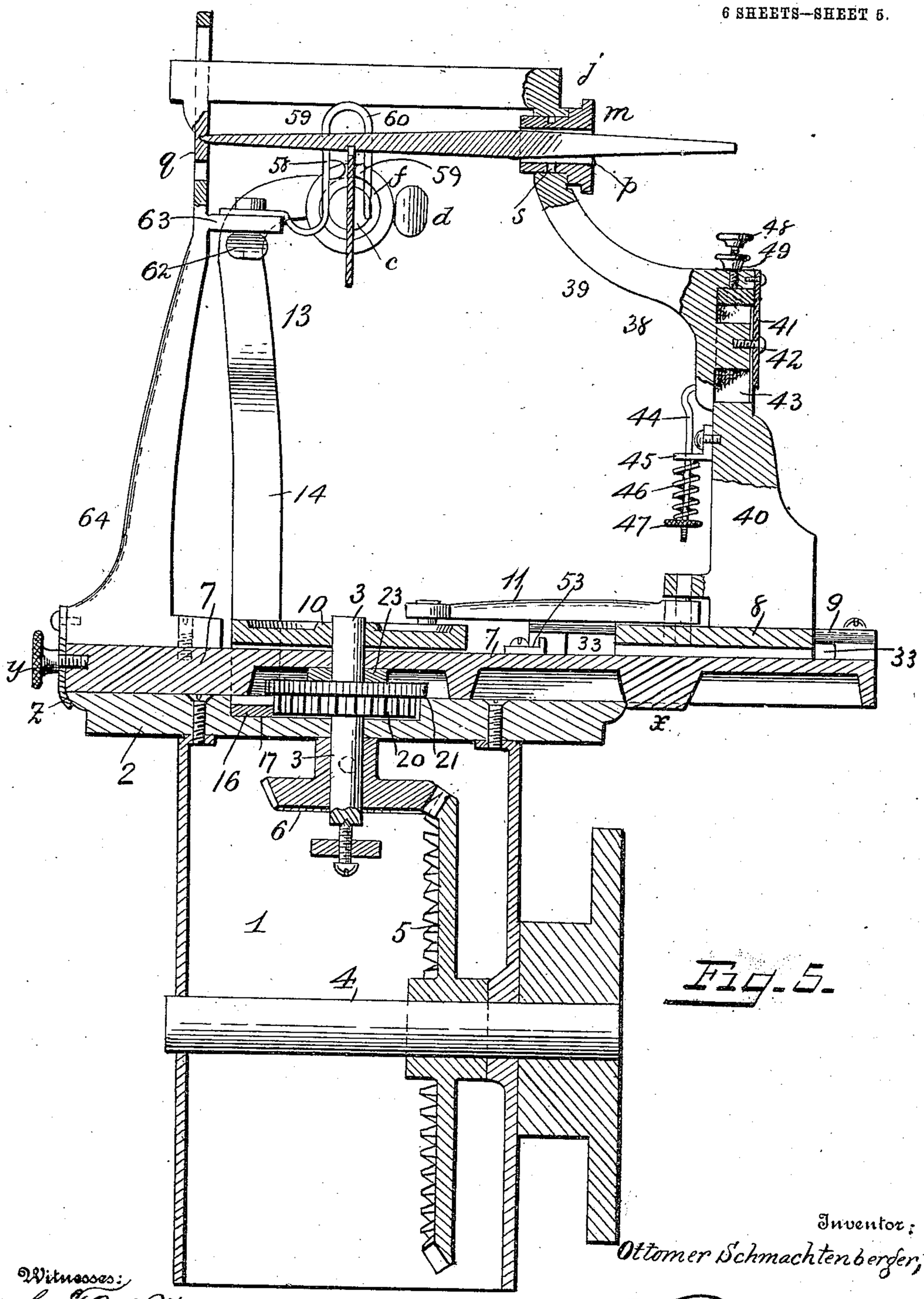

Fig. 5.

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No. 855,673. PATENTED JUNE 4, 1907.

O. SCHMACHTENBERGER.

SAW FILING MACHINE.

APPLICATION FILED MAY 26, 1906.

6 SHEETS—SHEET 6.

Fig. 7.

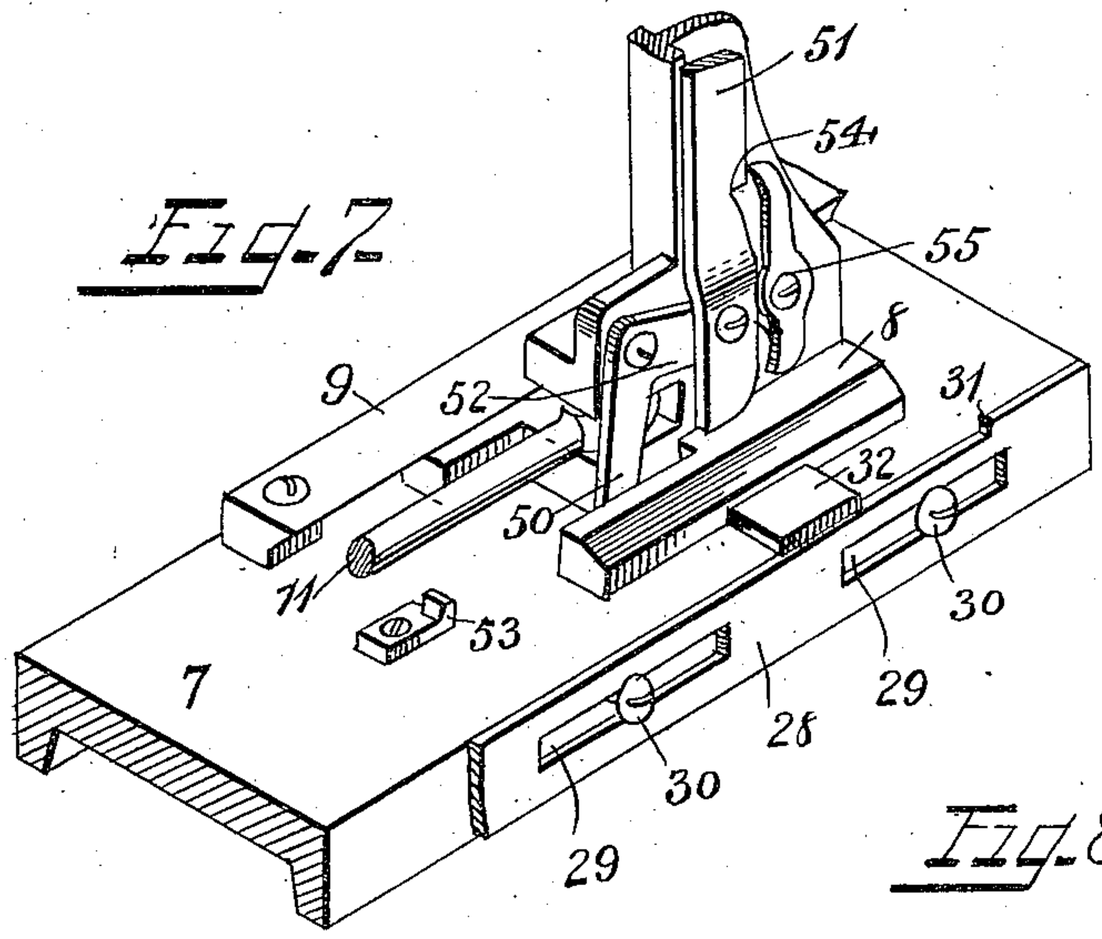
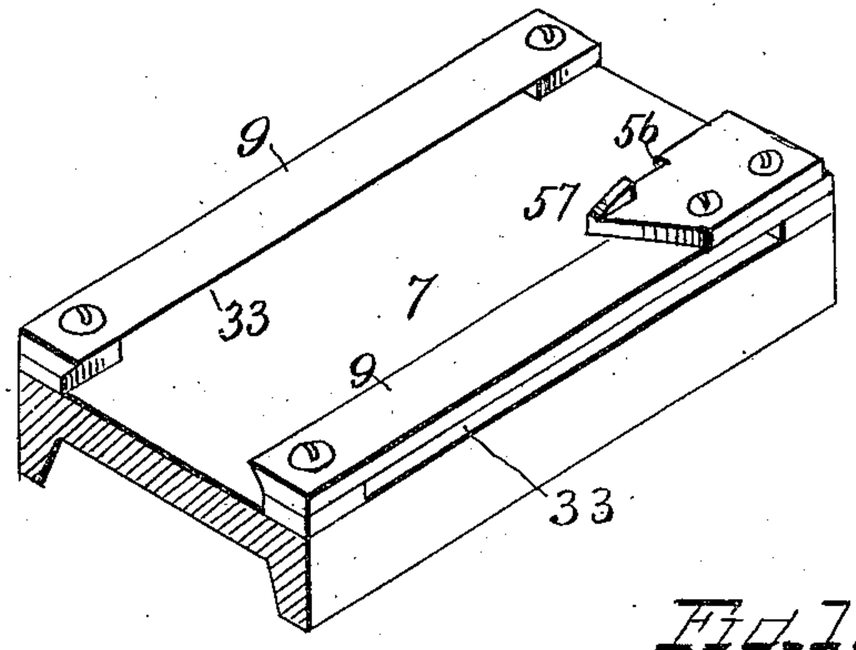


Fig. 8.



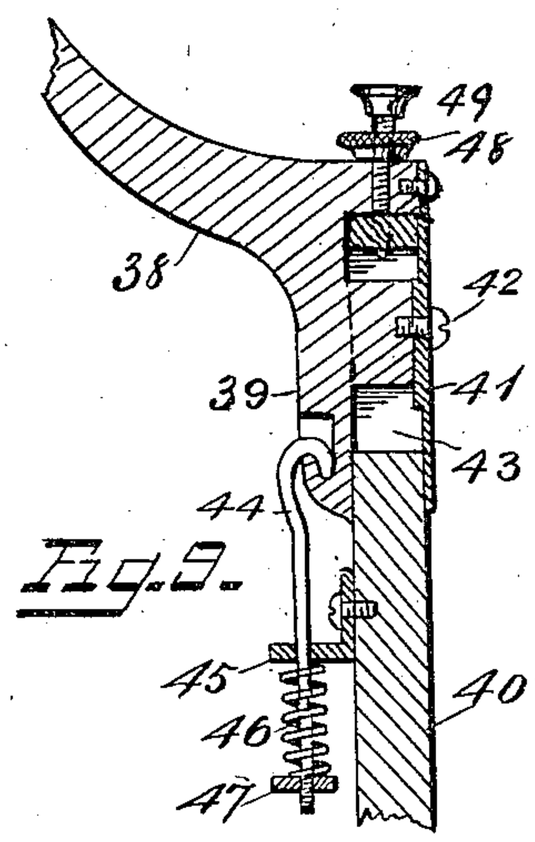
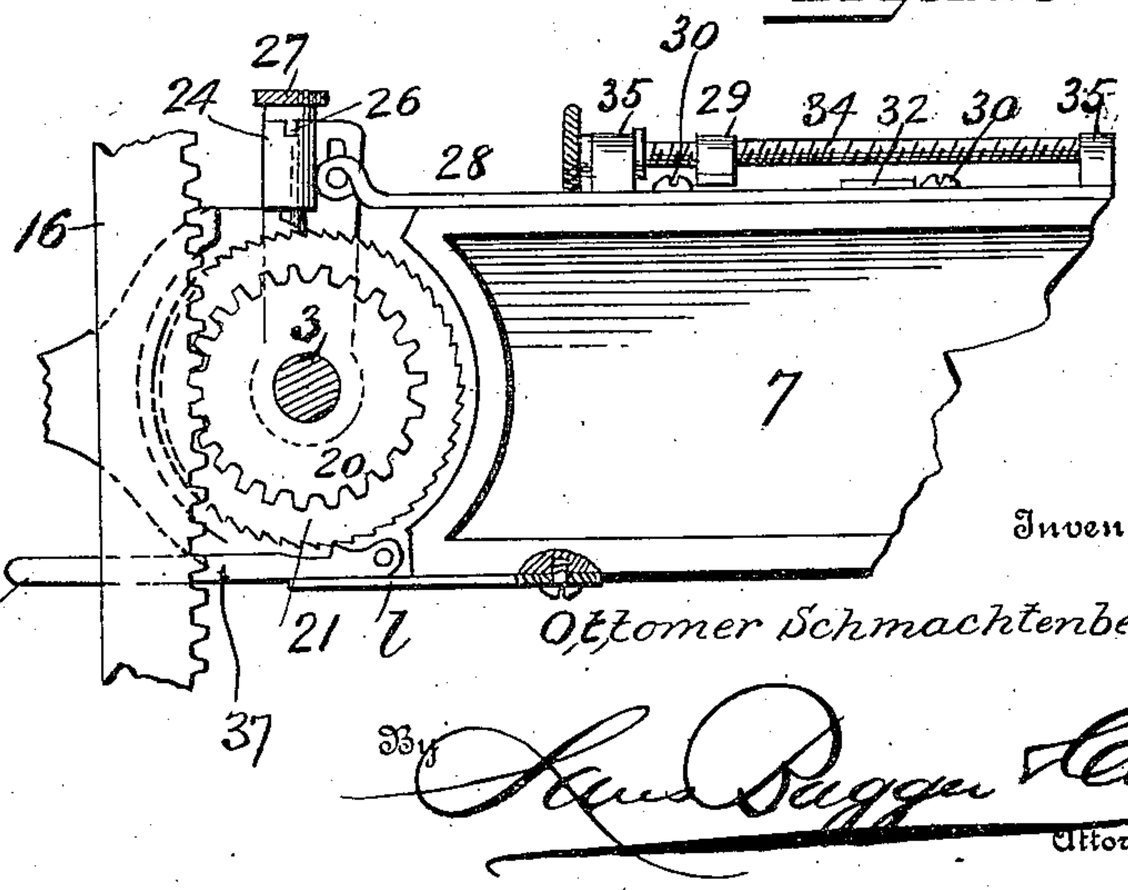


Fig. 9.

Fig. 10.



Witnesses:
H. T. McKenzie
J. H. Minter

Inventor:
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By Lacey Bagger & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

OTTOMER SCHMACHTENBERGER, OF ROODHOUSE, ILLINOIS.

SAW-FILING MACHINE.

No. 855,673. Specification of Letters Patent. Patented June 4, 1907.

Application filed May 26, 1906. Serial No. 318,917.

To all whom it may concern:

Be it known that I, OTTOMER SCHMACHTENBERGER, a citizen of the United States, residing at Roodhouse, in the county of Greene and State of Illinois, have invented certain new and useful Improvements in Saw-Filing Machines, of which the following is a specification.

My invention relates to improvements in saw-filing machines. Its object primarily is to provide for accomplishing the saw-filing operation in a simple and effective manner and to readily perform various adjustments of the parts required in obtaining the set of the saw-teeth and depth of filing of the saw; and to gage the machine according to the size of the saw to be filed, as well as to provide for requisitely adjusting the file.

Said invention consists of sundry combinations of parts including certain structural features substantially as hereinafter fully disclosed and specifically pointed out by the claims.

In the accompanying drawing illustrating the preferred embodiment of my invention—Figure 1 is a plan view thereof. Figs. 2 and 3 are opposite side elevations of the same. Fig. 4 is a vertical transverse section of the machine. Fig. 5 is a vertical longitudinal section taken in the line of the driving shaft. Fig. 6 is a perspective view of the ratchet actuating pawl or dog for the saw carrier. Fig. 7 is a broken enlarged detailed view showing more particularly the contrivances for immediately actuating said dog or pawl and adjunctive parts, with the upstanding portion of the pitman, eccentric and shaft actuated-cross head in horizontal section. Fig. 8 is also a broken enlarged detailed perspective view showing more especially the guides for the cross-head to which is connected the pitman actuated from the driving shaft, and adjunctive parts. Fig. 9 is a vertical section taken through the yieldingly retained member or arm of the saw-file carrier and the upstanding portion of the aforesaid cross-head and adjunctive parts. Fig. 10 is a broken horizontal section produced through the driving shaft, below the saw-carrier rack-bar member, viewing upward toward and disclosing said rack-bar member, its engaging pinion and the ratchet and pawl or dog engaging said ratchet for actuating said pinion.

In carrying out my invention, I suitably mount upon a pedestal or support 1 or otherwise, the operative parts thereof, together with a fixed disk or plate 2. A vertical shaft 3 is supported in position in any suitable way under said top plate or disk and extends thereabove, and geared therebelow to a driving shaft 4 also suitably supported and actuated by hand or belt-driven from any suitable motor (not shown) by means of intergeared pinions 5 and 6 secured upon the shafts 4 and 3, respectively. Said shaft 4 is equipped with a pulley for the application of a belt thereto in taking the driving power from a motor.

A swinging table 7 arranged above, and resting upon the disk or top plate 2, has passing freely therethrough the shaft 3 and is of the general outline disclosed, said table being held against movement as the machine is in operation by a stop x fixed to the underside of said table and engaging the edge of said top-plate and by a set-screw y arranged oppositely upon the table and effective to cause a spring-plate z to impinge or bind upon that edge of said top-plate or disk, in opposition to the stop x. Said table has suitably supported thereon a sliding cross-head 8 arranged between guides 9 fixed to, or cast with said table, and upon the shaft 3, above said table, is suitably keyed a crank 10 having pitman connection 11 with said cross-head, said cross-head having an upstanding extension which will be designated and the purpose thereof noted later. The disk or top-plate 2 has suitably scribed thereon indicia or scales a, a, upon opposite portions thereof as relate to the swinging table 7, a pointer or index h upon the swinging table registering therewith, to provide for gaging or indicating the desired bevel to be imparted to the saw-teeth in effecting the saw-filing operation, the duplicating of the indicia providing for the use of the parts as in shifting the swinging table from right to left and vice versa as will be readily understood.

A saw-carrier 13 comprising principally upright members or arms 14, 15 and a horizontal rack or toothed member 16 is arranged to fit into, and have movement within a recess or slot 17 formed in the plate or disk 2, and to which rack-member the arm 15 is fixed and to one end of which is adjustably

applied or connected the opposite arm 14. This adjustable connection is effected by means of a set-screw equipped sleeve 18 of the arm 14 receiving the rack-bar member 16 and its screw 19 engaging the latter to permit of accommodating saws of different sizes or lengths as presently more fully appreciated. Said member has geared or meshed therewith a pinion 20, freely through which passes the shaft 3 and to said pinion is fixed a ratchet 21 also through which freely passes said shaft. The arms 14, 15 have their upper ends formed into inturned lateral terminals *b*, within which are held end-slitted or slotted holders or pivots *c* by means of set-screws *d* applied to work in the edges of said lateral terminals and engage said pivots or holders, said holders or pivots being adapted to receive in their slits or slots the ends of the saw-blade. These saw-blade holders or pivots are constructed preferably as shown, having circular or disk-shaped heads, for their convenient engagement or grasping by the fingers, and are also provided each with a shoulder *e* upon one side of a lateral arm terminal and with a collar *f* upon the opposite side of said terminal, for the retention of said holders or pivots against endwise displacement and yet permit of the turning of said holders as they are manually actuated in suitably adjusting the same with the saw-blade. Additional set-screws *g* are also employed in this connection, working in the collars *f* and engaging the slitted or slotted portions of said pivots or holders, for clasping or clamping the ends of the saw-blade within the slits or slots of the latter. Upon the inner surface of the headed portion of one of the pivots or holders *c*, is scribed a scale or indicia *h'* for indicating, in connection with a right-line *i* upon the arm at that end of the machine, the angular position of the saw with regard to a vertical plane, and whereby the same may be controlled by requisitely manipulating the holders with that end in view, as will be readily appreciated.

A pawl arm 22, practically of the outline shown, has an inner flat portion 23 loosely inserted upon the shaft 3, and an outer tubular portion 24 equipped with a spring-seated pawl 25 effective to engage the ratchet 21 and having an outer headed end, beyond the corresponding end of said tubular portion, provided with opposite lugs 26 adapted, when the pawl is in its effective position or engagement with the ratchet, to be forcibly held in corresponding notches 27 in said end or edges of said tubular portion by its spring-action. Said pawl proper may therefore be moved outward, by suitably grasping and manipulating it, so as to retract or withdraw its lugs from said notches 27 and engage said lugs with the edges or end of said tubular portion and thus permit of the retention of said pawl out of engagement with said ratchet as required in shifting the position of the pawl relatively to the ratchet. Said tubular portion of the pawl arm is pivotally connected to a slide or plate 28 receiving within elongated slots 29 headed lugs or screws 30 projecting laterally from the swinging table 7. Said slide or plate has also upon its upper edge, at its end distant from said dog, a shoulder or offset 31 adapted to be engaged by a lateral projection or lug 32 upon the cross-head 8 extending through and moving within either of duplicate longitudinal slots 33 provided between said swinging table and the guides 9 thereon, the duplicating of said slots being required as in shifting of the pawl arm 22, the slide or plate 28 and their adjunctive parts. A manually actuated screw-threaded stem or rod 34, suitably mounted in upstanding eye-terminals or brackets 35 integral with the upper edge of the slide or plate 28, carries a pointer or index A registering with graduations 36 scribed upon said plate, by the requisite adjustment of which rod or screw the pointer or index would indicate in connection with said scale or graduations the desired gage or number of the saw for filing. This is apparent from the fact that, by requisitely turning the screw-threaded rod 34 for setting the finger or index A at the required point upon the scale 36, said finger at the same time will vary the length of the slot 33 in the slide 28 within which the cross-head lug 32 reciprocates, and accordingly vary the distance between the left-hand shoulder 35 of said slide and said finger, which will, of course, provide for varying the stroke or movement of said slide actuating the pawl 25 propelling the ratchet 21, and thus control the movement of the saw-carrier as required for gaging the number of teeth to the inch to be sharpened or treated. In the opposite edge of the swinging table 7 is also seated a dog or latch 37 spring-retained in engagement with the ratchet 21 to hold the ratchet against reverse movement when actuated. When it may be required to return the saw-carrier to initial position or starting point, as when the rack-member 16 has reached its maximum limit of movement, the two dogs 22 and 37 are suitably disengaged from the ratchet 21 by moving the same into withdrawn or retracted position, the pawl 22 being adjusted as before noted, and the dog 37 retained by hand during the manual movement or manipulation of the saw-carrier, as will be apparent.

A file-holder 38 is herein employed, comprising a bracket or support, practically right-angled in general outline, with one arm 39 suitably superposed with regard to the before referred to upstanding portion or ex-

tension (40) of the cross-head 8 and having a vertically yielding connection therewith. This connection is preferably formed by stepping, as it were, said arm 39 upon said cross-head extension 40 and fixing a vertical plate-like piece 41 to the upper end of said arm, so that it may extend downward upon the same side of said extension and which is equipped with a stud or pin 42, shown herein in the form of a screw, entering said arm 39, said extension having a vertical slot 43 receiving said arm. Said arm has suitably connected thereto, near its lower end, a rod or stem 44, itself extending downward through an apertured bracket 45 fixed to the part 40 of the cross-head 8. Said rod or stem is equipped, below said bracket 45 with a preferably helical spring 46 delivering its pressure downward upon said rod or stem, the latter being provided with a nut 47 at its lower end, upon which the corresponding end of said spring bears and by means of which is effected the delivery of said pressure to said rod or stem and from it to the file-holder member 38, thus putting the latter under pressure when in its elevated position to provide for the automatic descent of the file-holder when tripped as presently will appear. The pressure or tension of said spring may be readily controlled or compensated by suitably manipulating the nut 47 as will be readily understood. An additional adjusting screw 48, working through a jam-nut 49 and in the upper end of the part 39 of the file-holder 38 and engaging the upper end of the part 40 of the cross-head 8 so as to affect the movement of said file-holder member, is adapted, by suitably manipulating said adjusting screw, to control the depth of the cutting or filing action of the file as will be apparent from the operation thereof.

An angular or bell-crank like lever 50 is carried by the cross-head 8, and has one end or arm pivoted or connected to a flat or plate-like bar or link 51 pivoted or connected at the terminal of its upper end angular extension 52 to the corresponding end of the file-holder member 38, the connection between said lever 50 and said link 51 being formed a short distance above the lower end of the latter and which end is somewhat offset from said lever for its engagement with another part as presently seen. The other arm or end of the lever 50 is adapted as the parts are in action to be engaged at the end of the stroke or movement of the file-holder, or after the file has performed its filing stroke, with a stud or projection 53 fixed upon the upper surface of the swinging table 7, and thereby elevate the file-holder and permit its retention thus elevated by the engagement with an undercut shoulder 54 on the link 51 of a spring pressed latch or dog 55 pivoted upon the cross-head upstanding portion or extension 40. This condition will continue until the cross-head has reached the end of its travel or movement and the file-holder has been moved to bring the file in approximate initial position when the lower end of the dog or latch 55 will engage and be tripped by a shoulder 56 upon one of the guides of the cross-head and thus permit the link 51, with the file-holder, to automatically descend ready to again begin filing action upon another saw-tooth, the saw-carrier in the meantime having received its required feeding movement through the gearing and rack-bar, ratchet and pawl mechanism, and the cross-head lateral stud or extension engaging the slide actuating the the pawl all as aforesaid and which will be readily understood from the foregoing description. In order to lessen concussion and to cause the link-bar 51 to gradually descend, an inclined upstanding lug 57 is provided upon the same cross-head guide having the shoulder 56, and contiguous to the latter, so that just as said link-bar descends, as the dog or latch 55 is tripped, said lug 57 will be in alinement with said link-bar and accordingly allow the latter to slide downward upon and off its inclined upper edge as the cross-head is carrying the aforesaid parts forward for effecting the saw-filing operation. The file-holder has its practically horizontal arm provided at one end with a pendent ring or collar-like formation *j* and upon the outer surface of said collar is a scale or graduations *k* for indicating, in connection with a right-line *l* on a sleeve *m*, through which passes, and within which is held by a set-screw *n* said file, the pitch it may be required to impart to the saw-teeth, said sleeve itself passing through said collar. The sleeve *m* has in its outer circumference an annular groove *s* receiving the inner end of a set-screw *o* working or screw-threaded into the collar *j* to provide for the retention of the latter against longitudinal or endwise movement upon the sleeve *m* and yet allow, by suitably manipulating or loosening the set-screw *o*, the adjustment or turning of said sleeve, with the file which, as previously stated, it carries, in properly disposing the file to the saw-teeth, as well understood. Said sleeve has also a longitudinal notch *p* indenting or produced in the wall of its aperture to receive an angular edge of the file and aid the set-screw *n* in effecting the retention of the file in fixed position in said sleeve. Of course in reversing the parts side for side the sleeve *m* is accordingly readjusted to properly dispose the designating line *l* thereon with relation to the aforesaid indicia or scale upon the collar *j* the same directions being also observed with regard to the like indicia above noted in shifting the position of the saw &c. The top arm of the file-holder has depending therefrom, near its free end a recessed pendant or

lug *q* to receive and support that end of the file.

A suitable clamp or guide 58 aiding the steadying and retention of the saw in place, is suitably arranged so as to enable the jaws 59 thereof, connected together in parallel position by overhanging and bowed springs 60, to embrace the saw-blade near its teeth as shown, one jaw terminating in a central pendant or finger piece for the manipulation of the same as required. The opposite jaw has a slotted bracket and set-screw connection 61, 62 with a ledge or projection 63 of an upstanding arm 64 of the swinging table. The upper end of the arm 64 has a slot-terminated opening 65 through which opening is passed the file, while through the slot is guided and steadied the top arm or bar of the file-holder.

I claim—

1. A machine of the character described, employing a table, a slidable cross-head arranged thereon, a file-holder having a yielding up and down connection with said cross-head and means for actuating said cross-head, said file-holder having connected thereto a link-member, and said cross-head equipped with an angular lever connected to said link-member and means located in the path of movement of the cross-head for operating said angular lever.

2. A machine of the character described, employing a table, a cross-head arranged to slide upon said table, a file-holder having a yielding up and down connection with said cross-head and means for actuating said cross-head, said file-holder having pivoted thereto a link-bar, an angular lever carried by said cross-head and having one arm connected to said link-bar and its other arm adapted to be engaged by a stud or projection upon said table for effecting the elevation of said file-holder, and a spring actuated latch effective for engagement with a shoulder or projection upon said link-bar, and means for tripping said latch or dog.

3. A machine of the character described, employing a table, a sliding cross-head equipped with a file-holder having a downward extended arm let into and slidable in an upstanding extension of said cross-head, means effecting connection between said arm and said extension and holding said file-holder in yielding normal position, means for carrying a saw for the action of the file and means for actuating said saw-carrier, and means for actuating said cross-head.

4. A machine of the character described, employing a gage-screw carrying a pointer or index, a saw-carrier, having a rack-bar, a pinion-equipped shaft having its pinion engaging said rack-bar, a ratchet carried by said shaft and a pawl engaging said ratchet, said gage-screw being equipped with a pointer for registering with a scale or indicia upon a sliding bar connected to said pawl, and a sliding cross-head actuated from said shaft and provided with means for actuating said sliding bar.

5. A machine of the character described, employing, in connection with the saw-carrier, an upstanding arm and clamp or guide members equipped with jaws and connected together in parallel position by overhanging bowed springs effective to enable said jaws to embrace the saw-blade, said guide-members having connection with said upstanding arm.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

OTTOMER SCHMACHTENBERGER.

Witnesses:
G. H. RONEY,
W. B. STRANG.