

H. B. ROSS.
ADJUSTING MEANS FOR PLANER HEADS.
APPLICATION FILED APR. 15, 1907.

919,958.

Patented Apr. 27, 1909.

4 SHEETS—SHEET 1.

Fig. 1.

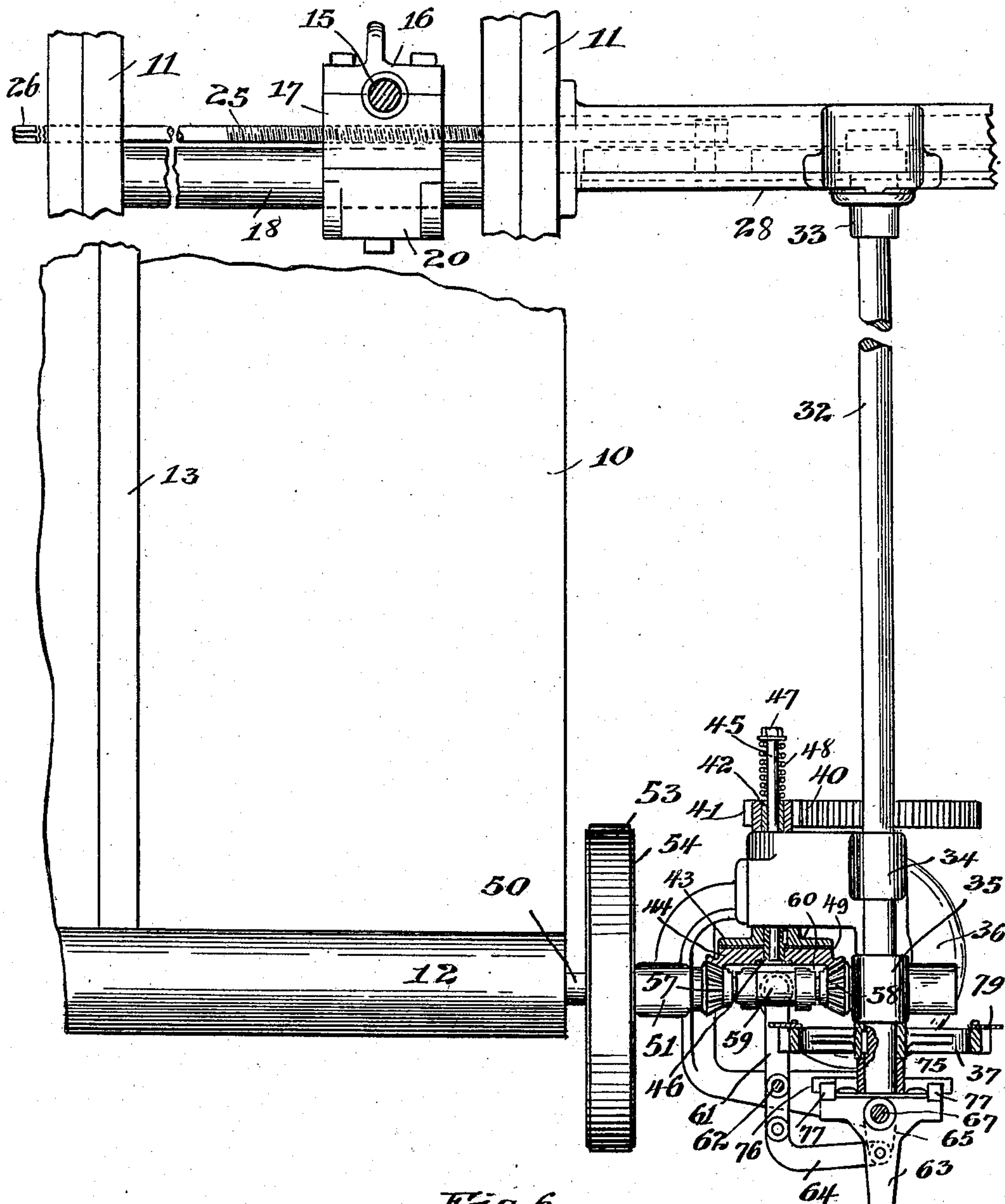


Fig. 6



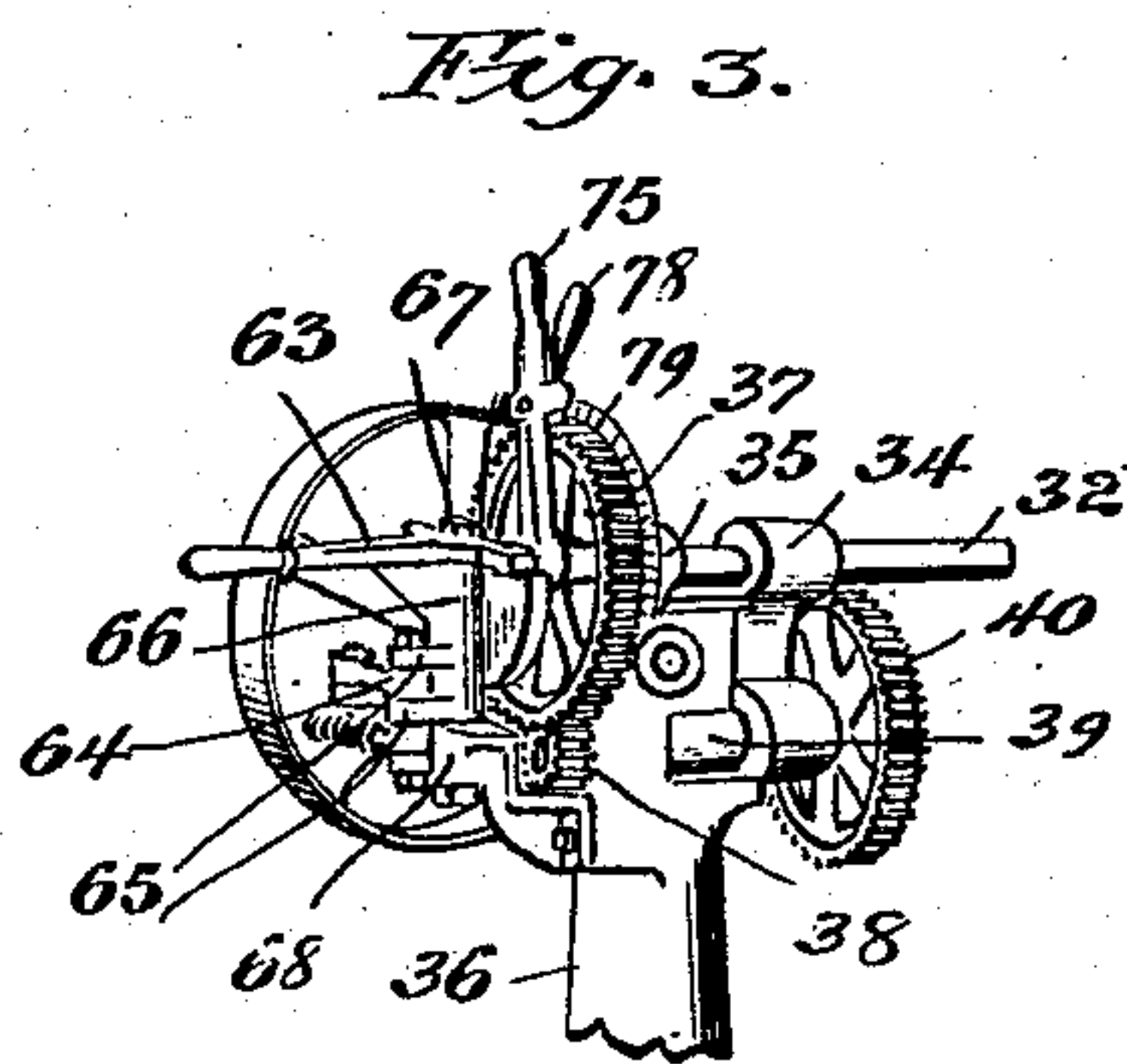
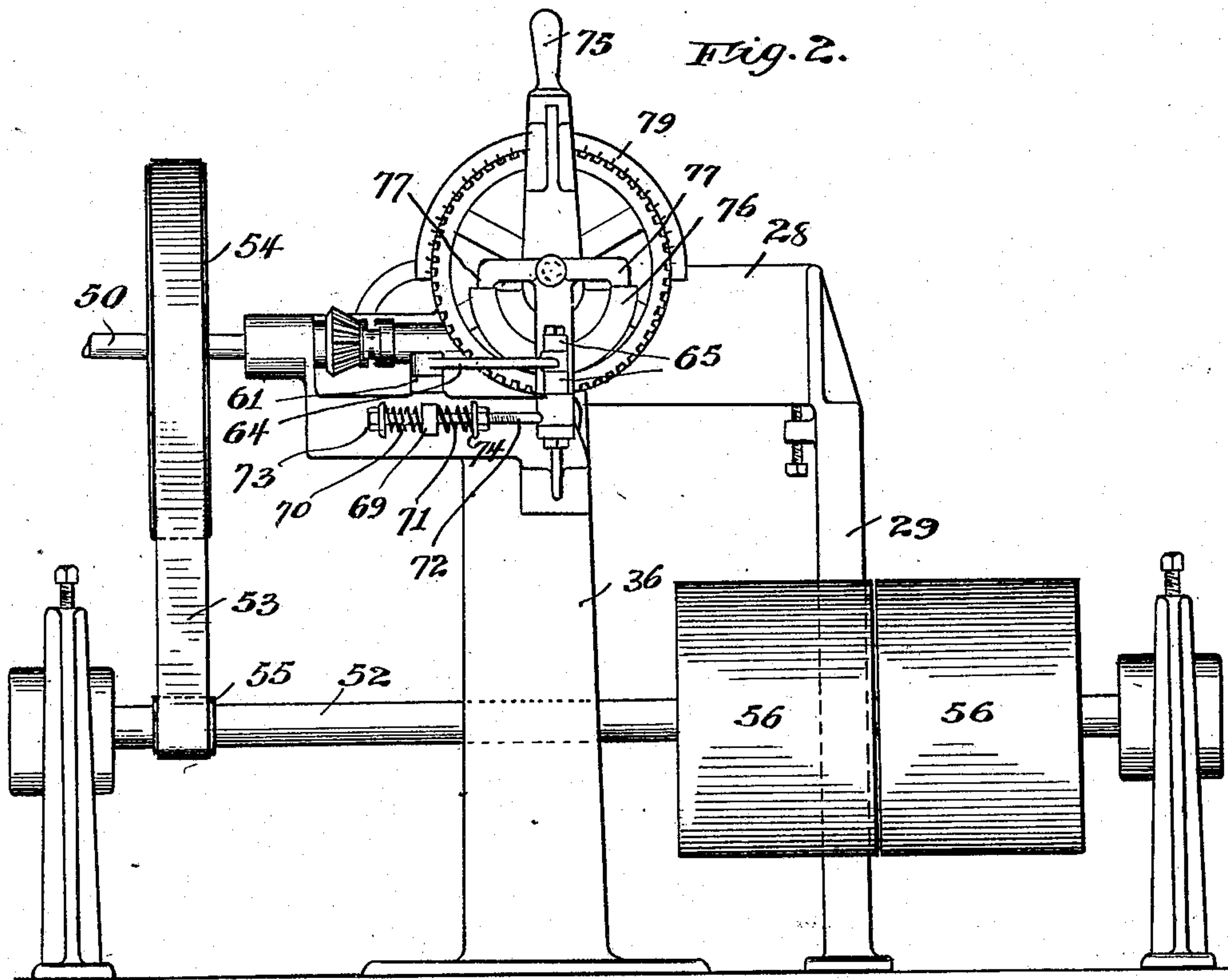
Witnesses,
J. E. Mann
Walter M. Fuller

Inventor,
Harry B. Ross
By *Offield Toble & Luthic*
Atty's.

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4 SHEETS—SHEET 3.

Fig. 4.

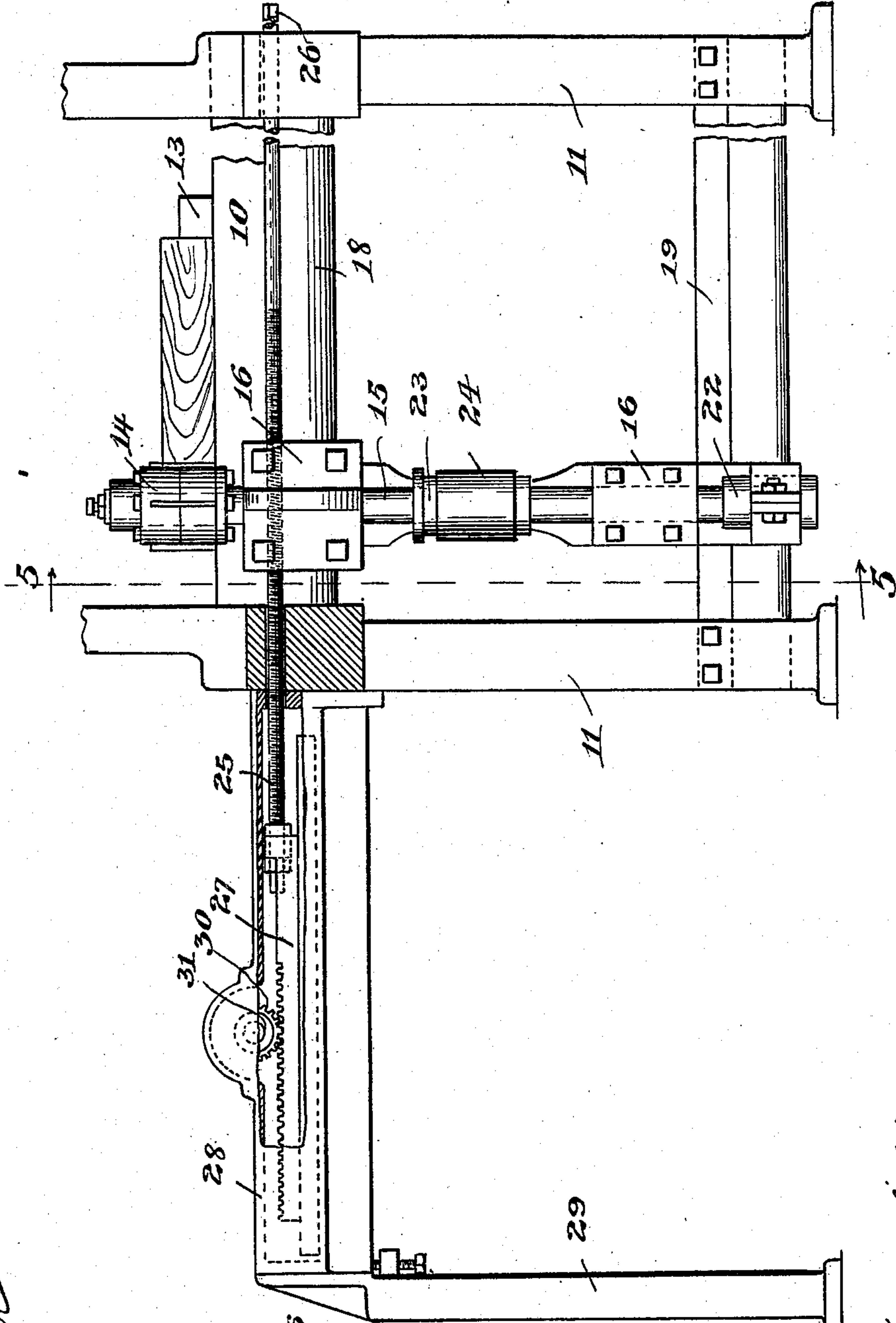
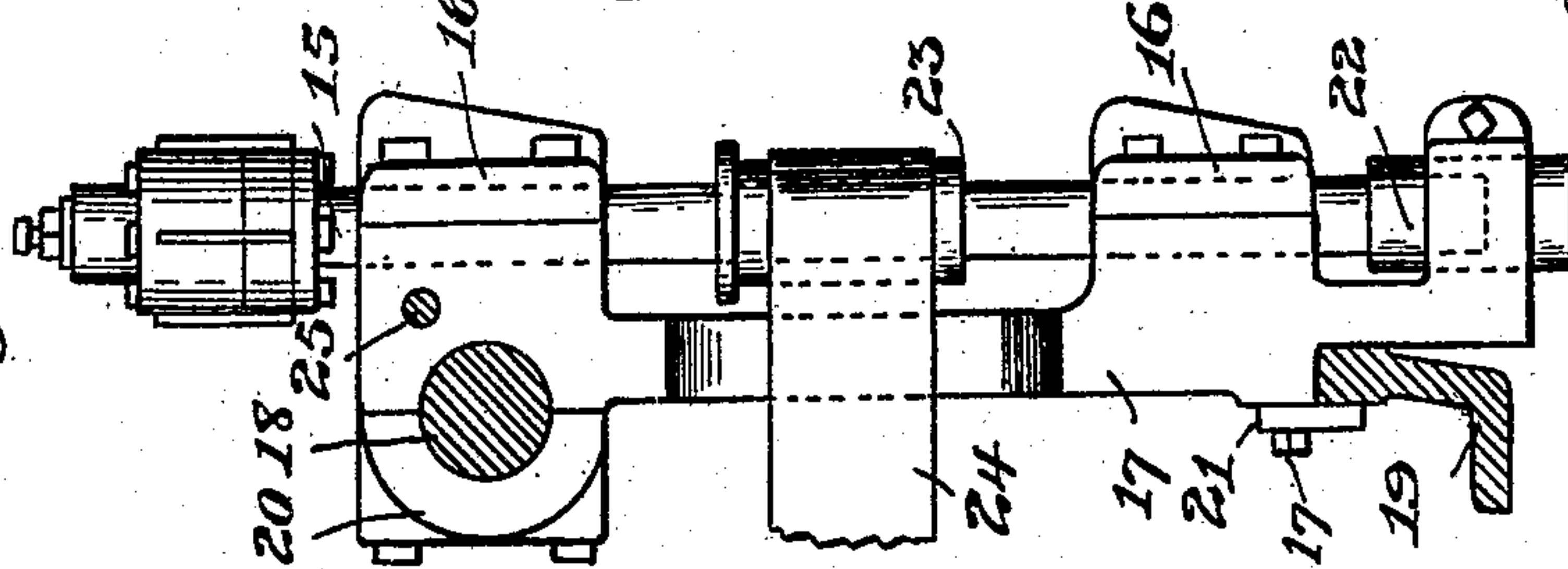


Fig. 5.



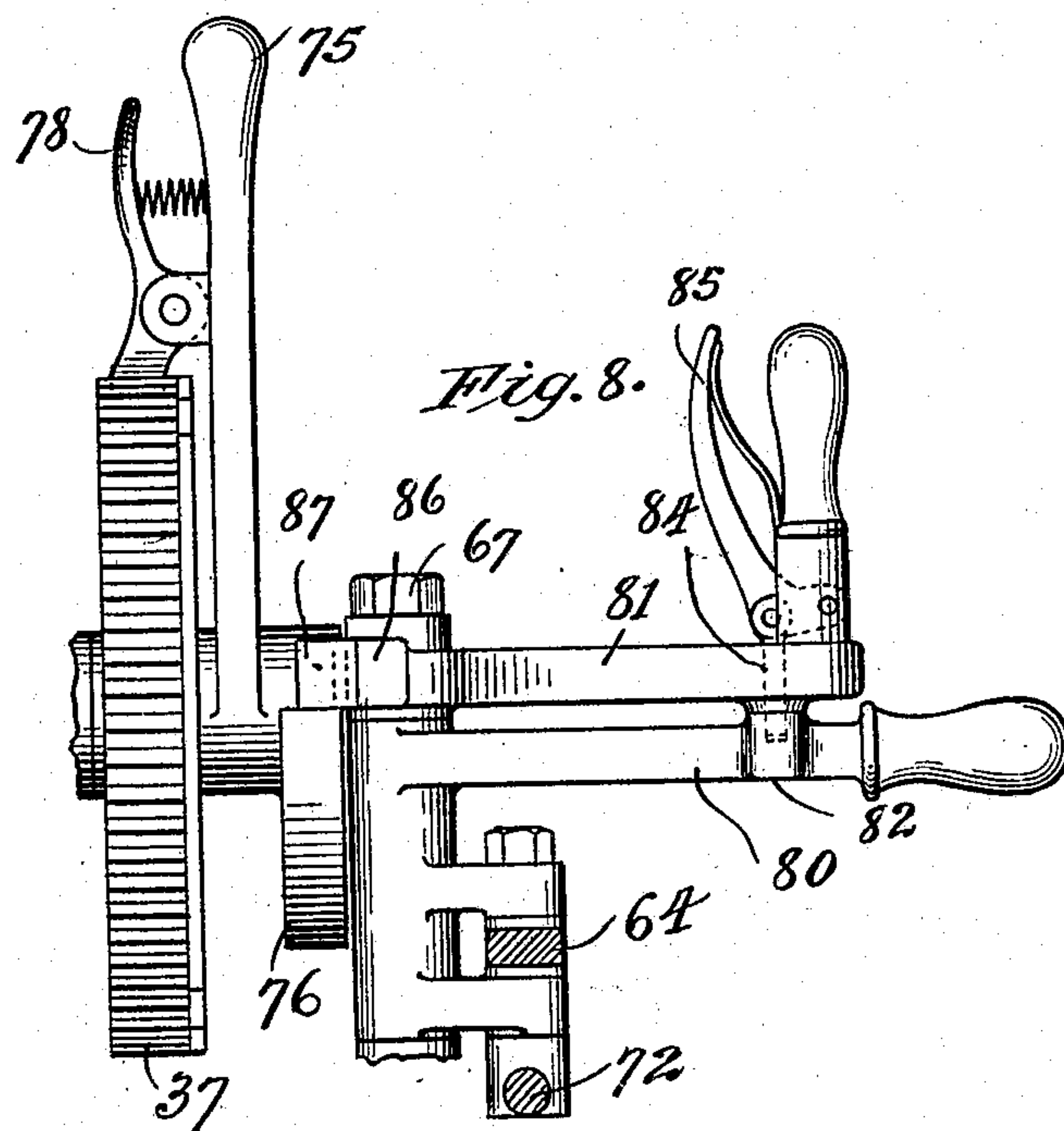
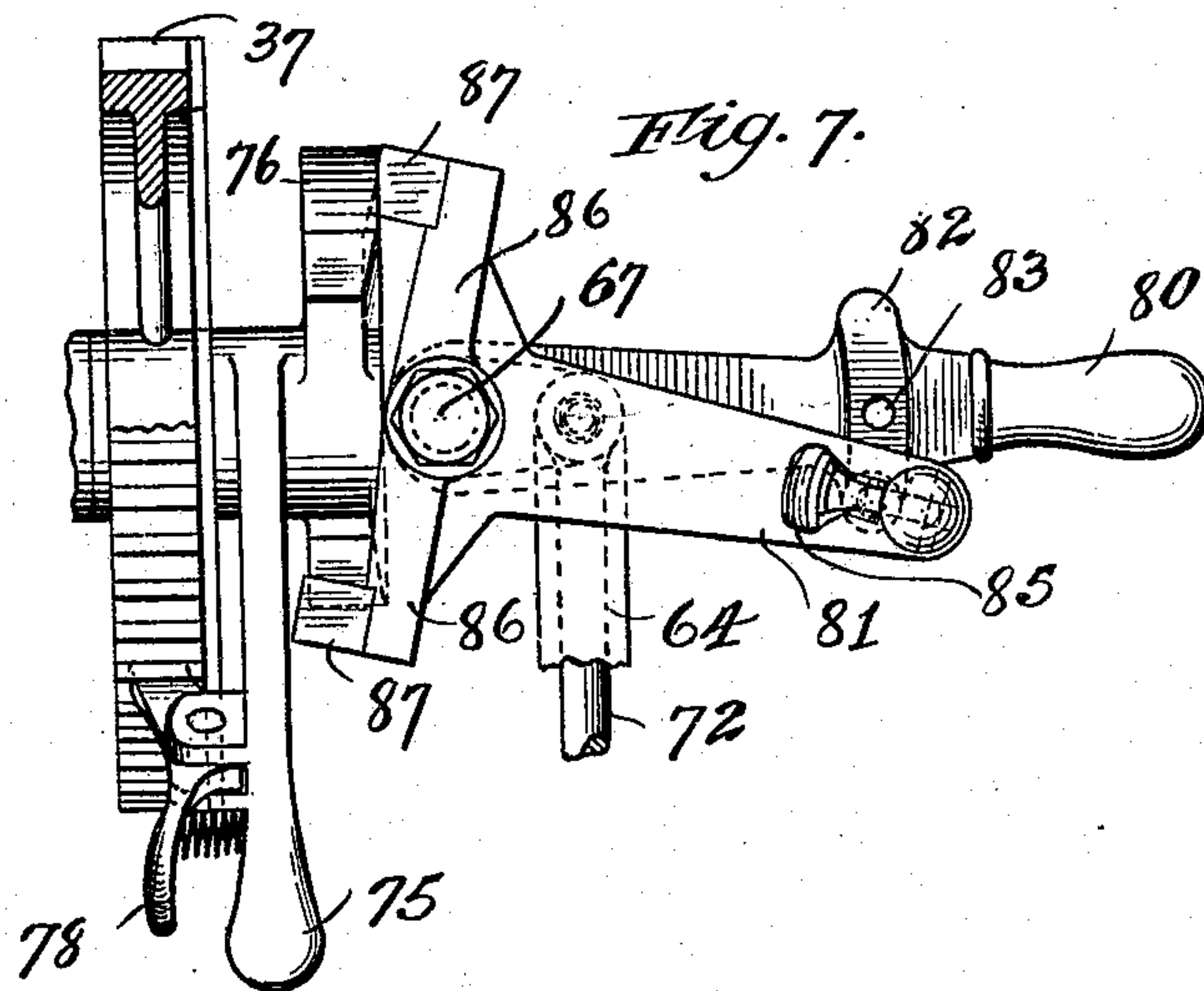
Witnesses:
S. D. Mann,
Walter M. Fuller

Inventor:
Harry B. Ross
B. J. Offield, Towle & Luthin, Attys.

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4 SHEETS—SHEET 4.



Witnesses,
J. J. Mann,
Walter M. Fuller

Inventor,
Harry B. Ross
By *Offield Towle & Lutherman*
Attys.

UNITED STATES PATENT OFFICE.

HARRY B. ROSS, OF BELOIT, WISCONSIN, ASSIGNOR TO THE BERLIN MACHINE WORKS, OF
BELOIT, WISCONSIN, A CORPORATION OF WISCONSIN.

ADJUSTING MEANS FOR PLANER-HEADS.

No. 919,958.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed April 15, 1907. Serial No. 368,396.

To all whom it may concern:

Be it known that I, HARRY B. ROSS, a citizen of the United States, residing at Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Adjusting Means for Planer-Heads, of which the following is a specification.

My invention relates to means for adjusting the planer head of a timber sizer, but its use is not limited to machines of this character, since it is capable of advantageous employment in mechanisms of various kinds where adjustments of parts are desirable. Its object is to provide a construction whereby the workman may shift a handle a varying amount corresponding to the adjustment desired as indicated on a graduated scale and then release the same, the adjusting mechanism controlled by the handle acting automatically to bring the planer head to the desired position and stop it at that point. It is apparent then that with my improved device the attendant merely has to set the handle to the adjustment wanted and the machine automatically accomplishes the adjustment without further attention on the part of the workman.

The preferred embodiment of my invention has a rod or shaft having a screw-threaded connection with the planer head, the rod also having means, such as a squared end for the application of a wrench or handle, whereby a manual adjustment of the head may be secured by turning the rod. The automatic adjustment mentioned above, however, is secured by the mechanism set forth below. A constantly-rotated driving shaft is provided and also a driven shaft, the latter having a rack and pinion connection with the threaded rod whereby movement of the head may be obtained by a longitudinal shifting of the rack and rod by means of the rotation of the driven shaft and pinion. This driven shaft is connected to a short jack-shaft by a train of gears and the latter shaft is equipped with a bevel gear with portions of which on opposite sides of its axis mesh a pair of bevel pinions loosely mounted in the driving shaft, a double clutch being provided to temporarily connect either one of the bevel pinions to the shaft on which it is mounted, whereby turning of the driven shaft and movement of the planer

head in either direction may be secured. A suitable handle is provided for controlling the clutch, springs being supplied to return the handle automatically to its normal position, which corresponds to the inoperative condition of the clutch or clutches, after it has been displaced or shifted to one side rendering one clutch or the other active.

Mounted on the driven shaft and adapted to rotate therewith is a scale graduated to agree with the adjustments of the planer head, and coöperating with this scale and adapted to be locked thereto in any position so as to turn therewith is a second clutch-controlling or scale handle. This latter handle has integral therewith, or at least mounted so as to move simultaneously therewith, a segment, and the first mentioned clutch-controlling handle has a pair of ears or lugs co-acting with the segment. When in normal position the segment or scale handle stands vertically, and, when in such position, the two lugs of the clutch handle overlap the ends of the segment of the scale handle preventing movement of the segment and handle in either direction until the clutch handle had been shifted to one side. This displacement of the clutch handle throws one or the other clutch into operation and the driven shaft and scale begin to rotate, the planer head also moving. The operator can now turn the scale handle to the adjustment desired and lock it to the scale so that both will turn with the driven shaft and simultaneously with the movement of the planer head. As soon as the scale handle is thus shifted the segment coacting with one or the other lug or ear of the clutch handle prevents the latter from resuming its normal or ordinary position under the influence of its springs until the scale handle returns to its normal vertical position whereupon the lugs snap over the ends of the segment, the scale handle becomes locked in its natural or normal position, the clutch is thrown out of operation by the clutch handle shifting to central or normal position, and the movement of the planer head ceases. Obviously the adjustment of the planer head is automatically secured and the graduation on the scale at the vertical or normal position of the scale handle at all times indicates the adjustment or position of the planer head whether the parts are moving or are at rest.

Between the driving and driven shafts a frictional connection is interposed so that under abnormal conditions, if such happen, no breakage of any part of the device will occur.

In the accompanying drawings I have illustrated the preferred embodiment of my invention, and on the various views like reference characters refer to the same parts throughout.

Figure 1 is a fragmentary plan view of a portion of a timber sizer equipped with my improved adjusting means for the planer head, certain parts of the mechanism being sectioned in order to more clearly illustrate the construction; Fig. 2 is an end elevation of my improved adjusting means; Fig. 3 is a perspective view on a reduced scale of a portion of the adjusting device; Fig. 4 is a rear end elevation of the machine certain parts being broken away and other parts being sectioned to more clearly show the details of the structure; Fig. 5 is a vertical section on line 5—5 of Fig. 4; Fig. 6 is a plan view of a modified form of graduated scale; and Figs. 7 and 8 are views of a modification of controlling handles.

The complete timber sizer is a more or less complicated structure and in the accompanying drawings illustrating my invention and forming a part of this specification I have omitted as much of the machine as possible, at the same time showing the device sufficiently so that a complete understanding of my invention may be had. In the machine as ordinarily constructed there are two planer heads for trimming or smoothing off the edges of the boards or planks and each has an automatic adjusting device similar to that described below, but on the drawing I have shown and in this specification I have described only one of these adjusting means since it will be apparent from an understanding of this construction that the same may be duplicated to secure proper adjustments of both heads.

The main bed or table 10 of the timber sizer is supported on suitable side frames 11, 11 and at the forward end of the machine there is provided the usual roller 12 to aid in advancing the material to the planing knives. Extending longitudinally on top of bed 10 is a guide 13 against which one edge of the board or plank slides while its other edge is being planed. The cutter head 14 of the planer (Figs. 4 and 5) is fixed to an upright shaft 15 rotatably mounted in bearings 16 on a vertical support 17 which is adapted to slide horizontally crosswise the machine on a comparatively large stationary shaft or rod 18 and a transverse bar 19, the parts 18 and 19 being suitably supported at their ends on the side frames or supports 11, 11.

It will be readily understood from an in-

spection of Fig. 5 that the support 17 is provided with a bearing 20 in which the cylindrical shaft or rod 18 slides. At its lower end the support 17 is suitably shaped so as to bear against the side of guide bar 19 and is held in position by a plate or strap 21 bolted to the member 17. The lower end of shaft 15 is supported in a step bearing 22 and the shaft is also equipped with a pulley 23 over which passes a driving belt 24, power being supplied from any suitable source, not shown. Passing through the member 17 and having a screw-threaded connection therewith is a transverse rod 25 which passes through the side frames 11 and is equipped at one end with an angular head 26 to which may be applied a handle or wrench for turning the rod and thereby manually adjusting the head. The other end of the screw-threaded rod 25 is connected to a rack 27 slidably mounted in a casing 28 projecting laterally from the side of the machine and at its outer end supported by a post 29. Meshing with the teeth of this rack is a pinion 30 fixed to the end of a driven or operating shaft 32 extended longitudinally of the machine and at one side thereof. At its rear end this shaft turns in a bearing 33 on the side of the casing 28 and at its front end it turns in two bearings 34 and 35 at the top of an upright pillar or post 36. Keyed to shaft 32 at its front end is a gear 37 which meshes with a smaller gear 38 on a short shaft 39 rotatably mounted on the standard 36 below shaft 32, as is clearly shown in Fig. 3. At the inner end of this short shaft a gear 40 is provided which coöperates with a pinion 41 fixed to the rear end of a hollow shaft 42 suitably mounted in a bearing on the standard 36. A plate or disk 43 is keyed to the front end of hollow shaft 42, and also on the same end is loosely mounted a bevel gear 44. A rod 45 having heads 46 and 47 at its front and rear ends extends through the hollow shaft and gear 44, and a coiled expansion spring is interposed between the rear head 47 and the adjacent end of the hollow shaft. Between the adjacent faces of disk 43 and gear 44 is interposed a leather or other suitable washer 49 and it is the function of the spring-pressed rod 45 to pull the gear into operative frictional engagement with the washer and disk 43 so that under normal conditions a rotation of the gear causes a turning of the hollow shaft and the train of gearing mentioned above. However, if for any reason it is impossible for the shaft 42 to turn then the gear 44 can still revolve overcoming the frictional resistance between itself and the disk 43.

Extended across the front end of the machine is a driving shaft 50 rotatably mounted in suitable boxes 51 and driven from a power shaft 52 below it by means of a belt 53 passing around pulleys 54 and 55 on

shafts 50 and 52 respectively. As will be readily understood, shaft 52 receives its rotation from any convenient and desirable source of power through one or more pulleys 56 mounted thereon. Loose on shaft 50 I provide a pair of bevel gears 57 and 58 the teeth of which mesh with the teeth of bevel gear 44 on opposite sides of its axis, and I also equip the device with a double clutch member 59 which may cooperate with either one of the clutch hubs 60 at the inner ends of the bevel gears whereby the rotation of shaft 50 may be transmitted to gear 44 through one bevel pinion 57 or 58 according to the direction of shifting of double clutch sleeve 59.

An arm or lever 61 pivoted on the standard 36 at the point 62 is connected at its inner end to the double clutch sleeve 59 and at its outer end is connected to a horizontal clutch-controlling handle 63 by means of a link 64 which at one end extends between and is pivoted to two lugs 65 projecting outwardly from the hub 66 of the handle, as is clearly indicated on Fig. 3. Handle 63 is rotatably supported on an upright bolt 67 passing through the hub of the handle and also through an outwardly extended bracket 68 bolted to standard 36. Projecting forwardly from the face of the standard is a fixed stop 69 (Fig. 2) against the opposite faces of which press the ends of a pair of coil springs 70 and 71 which encircle a rod 72 pivotally connected to one of the arms 65 of the handle hub. The other ends of these springs abut against stops 73 and 74 on the rod and act to bring the handle 63 to its central or normal position after the same has been displaced or shifted to either side, provided certain mechanism described below permits such return of the handle to its ordinary position.

A second clutch-controlling or scale handle 75 is loosely mounted on shaft 32 directly in front of gear 37 and at its lower end has a substantially semi-circular segment 76 integral with or firmly fixed to the handle. The inner end of handle 63 is considerably broadened and is equipped with a pair of lugs or fingers 77 which in the normal position of both handles overlap the ends of segment 76, as is shown in Figs. 1, 2 and 3, so that handle 75 cannot be swung in either direction without first shifting handle 63 to one side or the other. On the side or face of handle 75 toward the gear 37 is mounted a spring-pressed pivoted manually-actuated locking dog 78 the foot or tongue of which is adapted to enter any one of the notches or spaces between the teeth of gear 37. Fixed to the inner face of gear 37 so as to rotate therewith and with shaft 32 I provide a graduated scale 79, the graduations of which indicate adjustments of the planer head and are opposite the notches

of the gear so as to indicate into which notch the dog 78 should enter to secure the adjustment desired.

The operation of this mechanism is as follows:—Assuming that it is desired to move the planer head either inwardly or outwardly, that is toward or away from the guide 13, the operator grasps handle 63 and turns it to one side or the other according to which direction he desires to have the planer head move. This turning of the handle withdraws one of the fingers or lugs 77 away from one of the ends of the semi-circular segment 76 thereby freeing the handle 75 and allowing the same to be turned in one direction. As soon as handle 63 is moved to one side or the other one of the clutches 59—60 is rendered operative keying one of the bevel pinions 57 or 58 to the constantly rotating driving shaft 50 whereby the revolution of the latter is transmitted through the bevel gear 44 and the frictional connection between the bevel gear and disk 43 to the hollow shaft 42. This rotation in turn is transmitted through gears 41 and 40 to shaft 39 and from the latter through gears 38 and 37 to shaft 32. The turning of this latter shaft because of its rack and pinion connection with the screw-threaded rod 25 shifts the latter longitudinally at the same time moving the support 17 and the cutter head 14 inwardly or outwardly in accordance with the direction of the previous turning of handle 63. It is apparent then that as soon as handle 63 is moved the planer head begins to move also. Handle 75 having been freed by the shifting of handle 63, it is now turned by the operator, who first lifts the dog 78 out of the notch in which it happens to be, and swings the handle around until the dog is opposite the graduation on scale 79 corresponding to the adjustment of the planer head desired. The workman then releases the dog and allows its foot to enter the notch opposite the graduation thereby locking the handle to the gear 37 and to the scale 79 which is fastened to the gear. Attention is directed to the fact that as soon as handle 75 is swung away from its normal vertical position its segment 76 passes behind the rear end of one of the fingers or lugs 77 of handle 63 thereby preventing spring 70 or 71 from returning handle 63 to its normal central position until the scale handle 75 has been moved with gear 37 and scale 79 to its ordinary vertical position at which time handle 63 is freed or released so that its springs may return it to normal position with both lugs 77 overlapping the two ends of the segment. As soon as handle 63 resumes its normal position the clutch which in the meantime has been active is rendered inoperative and no further travel of the planer head occurs, it at this time having traveled

an amount such that it is brought to a position corresponding to the graduation opposite the locking dog of handle 75.

It should be noted that the graduation on scale 79 at the normal vertical position of handle 75 always corresponds to the adjustment of the planer head regardless of whether the parts are moving or are at rest and also regardless of whether or not handle 75 is in its ordinary vertical position or is displaced to one side. The workman merely has to operate the handles 63 and 75 locking the latter to the scale opposite the proper graduation and then he can leave the machine alone and the adjusting device will automatically bring the planer head to the position desired and stop it at that point without further attention on the part of the operator.

If for any reason the planer head cannot move as for example by the presence of a board between the head and the guide 13 no injury results to the apparatus by the operator attempting to secure an automatic adjustment since the frictional connection between gear 44 and disk 43 permits the gear to turn without a rotation of the hollow shaft 42, it being understood that the rotation of this latter shaft is prevented by the inability of the planer head to move toward the guide 13.

A fine manual adjustment of the head may be readily secured by applying a wrench or handle to the angular end of rod 25 and turning the rod so that the head is moved because of the threaded connection between the rod and head. It should be noted that both handles 63 and 75 control the double clutch, the former directly and the latter indirectly by preventing the former from resuming its normal position corresponding to the inactive condition of both clutches.

I have described above the construction and operation of a desirable embodiment of my invention but it should be understood that the invention is susceptible of other embodiments and that numerous minor mechanical changes may be made in the device shown and described without departure from my invention, for example, instead of using the separate scale 79 fastened to the gear 37, I may make the graduation on the gear itself as is illustrated in Fig. 6. The manual screw-thread adjustment of the planer head may be wholly omitted if desired, and the rod 25 may be cylindrical and supplied with no screw threads. Other changes will readily occur to those skilled in the art, and such changes may be made in the structure described without sacrificing the benefits and advantages of the invention.

It will be noted that in the operation of the machine described above one or the other clutch is rendered active and operative as soon as handle 63 is shifted to one side to

unlock handle 75. The result is that gear 37 and scale 79 begin to move immediately, and that the locking dog of handle 75 has to be slipped into the proper notch of the scale while the latter is rotating. In those machines where the parts move slowly this is not objectionable, but in other cases I find it desirable to have the gears still or stationary while the scale handle is being turned to the adjustment wanted, and to meet this need I have devised the structure shown in Figs. 7 and 8. This device is substantially like that set forth above, except that instead of a single handle 63 I use two horizontal handles 80 and 81, both being rotatably mounted on the upright bolt or shaft 67. The controlling handle 80 is connected to the clutches by link 64, as is the handle 63 in the form of device described above, and this handle is spring pressed to central normal position by springs 70 and 71 acting on rod 72. Handle 80 has a transverse strip or curved flat portion 82 centrally apertured at 83 to accommodate the lower end of a locking pin 84 vertically slidable through a locking handle 81 and adapted to be actuated by a spring-pressed handle 85 pivoted on handle or lever 81. At its inner end and on opposite sides of bolt 67 the lever or handle 81 has lateral extensions 86 equipped at their ends with projections or stop lugs 87 which in the normal and inactive condition of the parts overlap the ends of segment 76 on handle 75.

The operation of this modified structure is as follows: Fig. 8 shows the parts in normal positions, levers or handles 80 and 81 being in central position and locked together by pin 84 the end of which is seated in recess or hole 83 so that the two levers or handles in effect constitute a single handle or lever, the fingers or lugs 87 overlying the ends of segment 76 whereby handle 75 is locked in normal vertical position. To change the adjustment of the planer head, the operator grasps handle 81, presses the handle 85 to lift the locking pin 84 out of recess 83, and then swings handle 81 a small amount to one side or the other according to the desired direction of movement of the planer head. This turning of handle 81 is slight but is sufficient, however, to remove one finger or lug 87 forwardly away from one end of segment 76, the other finger or lug 87 passing further over the other end of the segment, as is shown in Fig. 7. Scale handle 75 is now free to move in one direction, and the workman, after releasing the dog 78 from the notch of the gear in which it is resting, turns the handle until the dog is opposite the graduation on the scale corresponding to the desired adjustment of the planer head, and allows the dog to enter the notch or space between the teeth of gear 37 opposite this graduation. The above-men-

tioned shifting of handle 81 is comparatively slight, and the pin 84 rides on the top surface of the curved flat portion 82 of handle 80. The workman now turns handle 80 in the same direction as the previous shifting of handle 81, thereby throwing one clutch into action, and, when this lower handle comes directly beneath the upper handle or lever, pin 84 under the influence of its spring drops into hole 83 and locks the handles together. This locking of the handles together renders one or the other of springs 70 or 71 active upon handle 81 through handle 80 so that one of the fingers or lugs 87 is pressed against the front face of segment 76. Gear 37 and handle 75 locked thereto are now being rotated by the shaft of the gear, and when handle 75 reaches its normal vertical position the planer head will have been adjusted the proper amount, and the displaced lug 87 which has been riding on the face of the segment slips over its end, locking handle 75 in upright position. This return of the segment and upright handle to normal position allows the joined or united handles or levers 80 and 81 to resume their central position under the spring pressure exerted upon them and in this manner the active clutch is made inactive, whereby the movement of all of the parts ceases with the planer head in properly adjusted position. It should be noticed that with this device the gear and scale do not begin to turn until handle 80 is shifted, which does not occur until handle 75 has been clutched or locked to the gear.

In both forms of my device the lugs 77 or 78 co-acting with the ends of segment 76 when handle 77 is in its normal position, act to maintain the planer head in position so that no crowding can displace it, rotation of shaft 33 being positively prevented.

I claim:

1. In a device of the character described, the combination of an adjustable member, a normally-idle adjusting means therefor, a movable scale graduated to correspond to the various positions assumable by said adjustable member, a scale handle movable both with and relatively to said scale, means for locking said scale handle at any set position on said scale, controlling means for throwing said adjusting means into and out of operation, means acting on said controlling means to shift the same and throw said adjusting means out of operation, means to move said scale and scale handle simultaneously with the movement of said adjustable member, a second handle governing the operation of said controlling means, the normal position of each of said handles corresponding to the inoperative condition of said adjusting means, and means coöperating with said handles which prevents the re- turn of said governing handle to its normal

position after it has been displaced and thrown said adjusting means into operation until said scale handle has resumed its normal position and the adjustable member has reached the adjustment indicated by the scale handle on the scale, substantially as described.

2. In a device of the character described, the combination of an adjustable member, a normally-idle adjusting means therefor, a movable scale graduated to correspond to the various positions assumable by said adjustable member, a scale handle movable both with and relatively to said scale, means for locking said scale handle at any set position on said scale, controlling means for throwing said adjusting means into and out of operation, means acting on said controlling means to shift the same and throw said adjusting means out of operation, means to move said scale and scale handle simultaneously with the movement of said adjustable member, a second handle governing said controlling means, the normal position of each of said handles corresponding to the inoperative condition of said adjusting means, and means co-acting with said handles which prevents the return of said governing handle to normal position after it has been displaced and thrown said adjusting means into operation until said scale handle has resumed its normal position and the adjustable member has reached the adjustment indicated by the scale handle on the scale, said co-acting means also locking said scale handle in normal position when said governing handle is in its normal position, substantially as described.

3. In a device of the character described, the combination of an adjustable member, a normally-idle adjusting means therefor, a movable scale graduated to correspond to the various positions assumable by said adjustable member, a scale handle movable both with and relatively to said scale, means for locking said scale handle at any set position on said scale, controlling means for throwing said adjusting means into and out of operation, means acting on said controlling means to shift the same and throw said adjusting means out of operation, means to move said scale and scale handle simultaneously with the movement of said adjustable member, a second handle governing said controlling means, each of said handles having a normal position corresponding to the inoperative condition of said adjusting means, a segment movable with said scale handle, lugs actuated by said second handle and adapted in the normal positions of both handles to overlap the ends of said segment whereby movement of said scale handle is prevented without first moving said second handle, either of said lugs being adapted to ride on said segment when said scale handle

is displaced from its normal position whereby said second handle is prevented from resuming its normal position until said scale handle has returned to its normal position
 5 and the adjustable member has reached the adjustment indicated by the scale handle on the scale, substantially as described.

4. In a device of the character described, the combination of an adjustable member, a
 10 normally-idle adjusting means therefor, a movable scale graduated to correspond to the various positions assumable by said adjustable member, a scale handle movable both with and relatively to said scale, means for
 15 locking said scale handle at any set position on said scale, controlling means for throwing said adjusting means into and out of operation, means acting on said controlling means to shift the same and throw said ad-
 20 justing means out of operation, means to move said scale and scale handle simultaneously with the movement of said adjustable member, a second handle governing said controlling means, a third handle to lock and
 25 unlock said scale handle, each of said handles having a normal position corresponding to the inoperative condition of said adjusting means, means to lock said second and third handles together, and means between said
 30 scale handle and third handle to prevent the return of said second and third handles to their normal positions when locked together after they have been displaced to throw said adjusting means into operation until said
 35 scale handle has resumed its normal position and the adjustable member has reached the adjustment indicated by the scale handle on the scale, substantially as described.

5. In a device of the character described, the combination of an adjustable member, a
 40 normally-idle adjusting means therefor, a movable scale graduated to correspond to the various positions assumable by said adjustable member, a scale handle movable
 45 both with and relatively to said scale, means for locking said scale handle at any set position on said scale, controlling means for throwing said adjusting means into and out of operation, means to move said scale and
 50 scale handle simultaneously with the movement of said adjustable member, a second handle governing said controlling means, a

third handle to lock and unlock said scale handle, each of said handles having a normal position corresponding to the inoperative
 55 condition of said adjusting means, means acting on said second handle to return it to normal position, means to lock said second and third handles together, and means between said scale handle and third handle to
 60 prevent the return of said second and third handles to their normal position when locked together until said scale handle has reached its normal position and the adjustable member has assumed the adjustment indicated
 65 by the scale handle on the scale, substantially as described.

6. In a device of the character described, the combination of an adjustable member, a
 normally-idle adjusting means therefor, a
 70 movable scale graduated to correspond to the various positions assumable by said adjustable member, a scale handle movable both with and relatively to said scale, means for locking said scale handle at any set po-
 75 sition on said scale, controlling means for throwing said adjusting means into and out of operation, means to move said scale and scale handle simultaneously with the movement of said adjustable member, a second
 80 handle governing said controlling means, a third handle to lock and unlock said scale handle, each of said handles having a normal position corresponding to the inoperative condition of said adjusting means, means
 85 acting on said second handle to return it to normal position, means to lock said second and third handles together, and means between said scale handle and third handle which prevents the return of said second
 90 and third handles to normal position when locked together until said scale handle has returned to its normal position and the adjustable member has reached the adjustment indicated on said scale by said scale handle,
 95 said latter means locking said scale handle in its normal position when the third handle is in its normal position, substantially as described.

HARRY B. ROSS.

Witnesses:

FREDERICK C. GOODWIN,
 WALTER M. FULLER.