

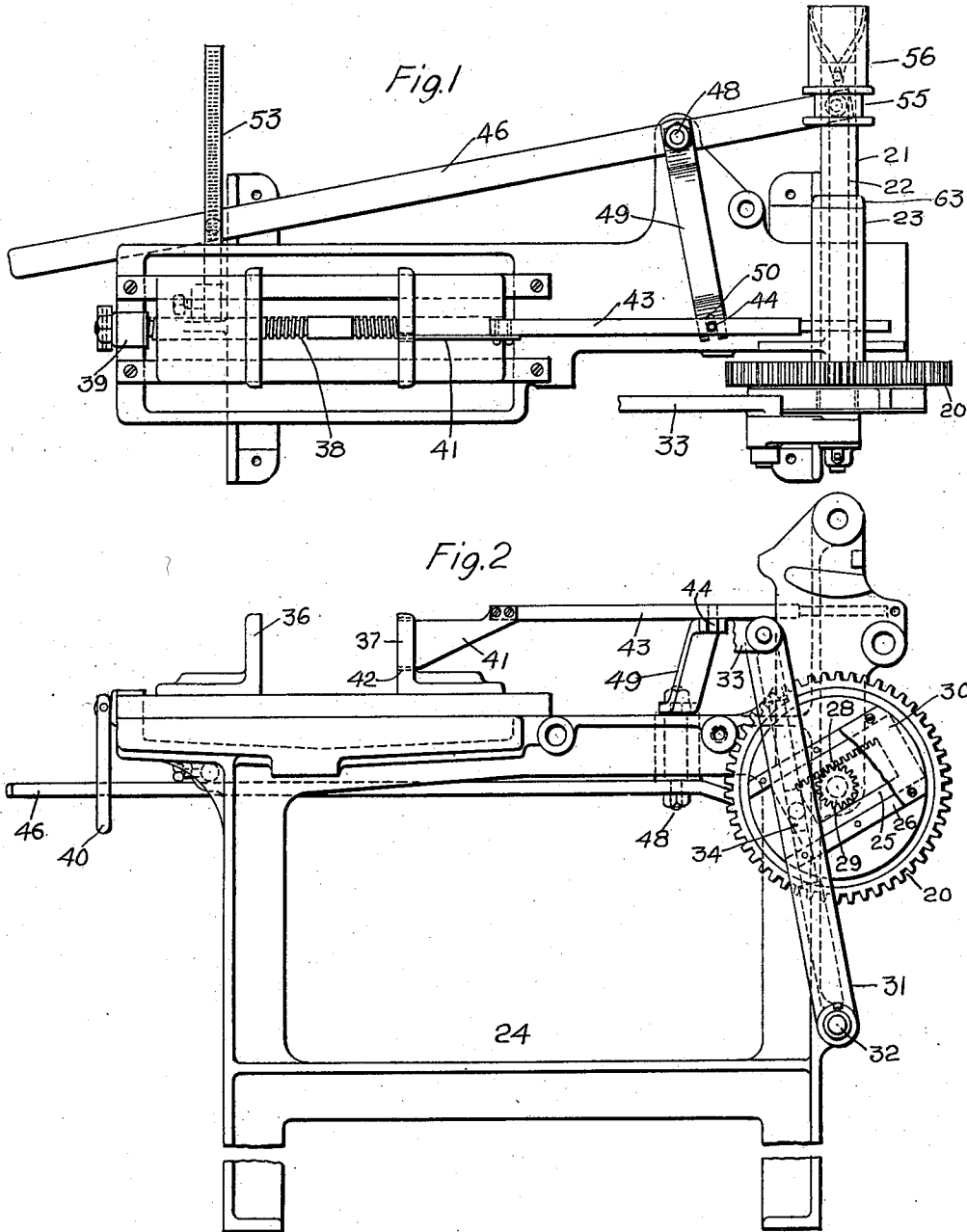
E. S. BRADFORD, JR. & M. OLSON.
STROKE ADJUSTING MECHANISM FOR POWER HACKSAWS.

APPLICATION FILED AUG. 5, 1910.

981,837.

Patented Jan. 17, 1911.

2 SHEETS—SHEET 1.



WITNESSES:

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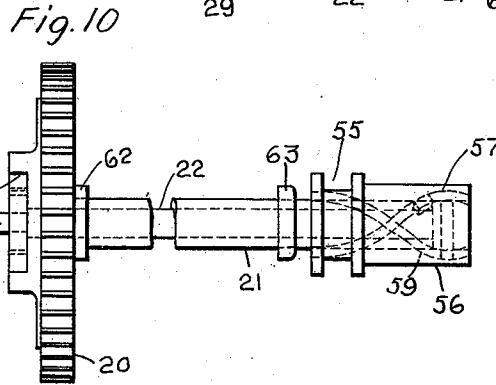
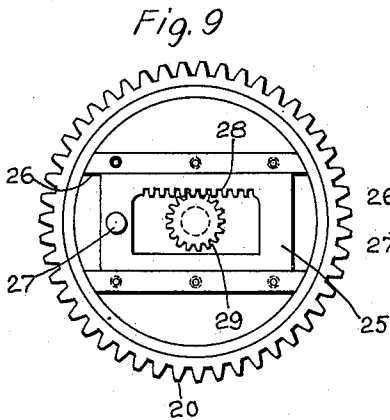
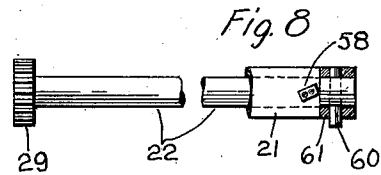
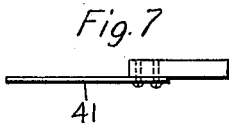
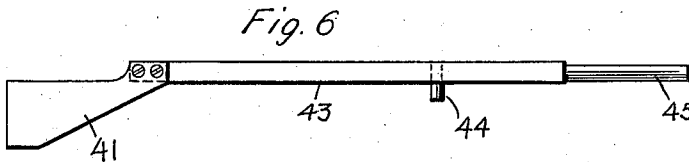
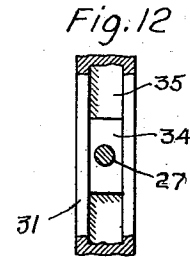
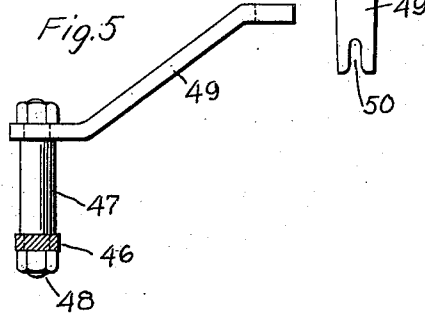
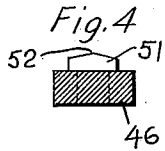
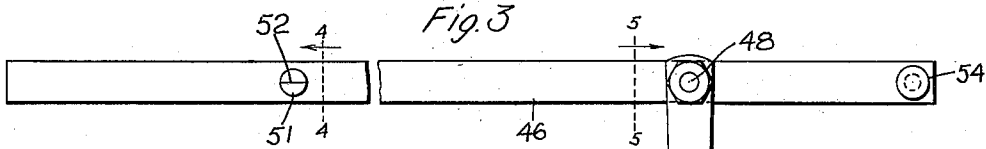
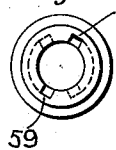


Fig. 11



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UNITED STATES PATENT OFFICE.

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STROKE-ADJUSTING MECHANISM FOR POWER-HACKSAWS.

981,837.

Specification of Letters Patent. Patented Jan. 17, 1911.

Application filed August 5, 1910. Serial No. 575,843.

To all whom it may concern:

Be it known that we, (1) EDWARD S. BRADFORD, Jr., and (2) MAURITZ OLSON, citizens of the United States, residing at (1) Chicopee, county of Hampden, State of Massachusetts, and (2) Bridgeport, county of Fairfield, State of Connecticut, have invented an Improvement in Stroke-Adjusting Mechanism for Power-Hacksaws, of which the following is a specification.

This invention has for its object to provide stroke adjusting mechanism for power hack saws which by a movement of a lever will adjust the length of the stroke to correspond with the spacing of the jaws, that is, with the width of the piece of work that is to be operated upon, so that the full length of the saw blade may be utilized under the varying conditions of use and wearing away of the central portion of the blade will be prevented.

With this object in view we have devised the novel mechanism which we will now describe referring to the accompanying drawings forming a part of this specification and using reference characters to indicate the several parts.

Figure 1 is a plan view of the frame of a hack saw machine showing only the mechanism which relates to the adjustment of the stroke; Fig. 2 a side elevation corresponding therewith; Fig. 3 a plan view of the stroke adjusting lever detached; Fig. 4 a section of the lever on an enlarged scale on the line 4—4 in Fig. 3 looking in the direction of the arrow; Fig. 5 a section of the lever on the line 5—5 in Fig. 3 looking in the direction of the arrow, and showing the stud and arm in elevation; Fig. 6 an elevation of the stroke adjusting bar detached; Fig. 7 a plan view of the inner end of the bar and the contact plate; Fig. 8 a detail view partly in section of the pinion shaft and the sleeve which carries the gear wheel; Fig. 9 an elevation of the gear wheel and slide as seen from the left in Fig. 10; Fig. 10 an elevation of the gear wheel and inner and outer sleeves detached; Fig. 11 a detail elevation as seen from the right in Fig. 10, and Fig. 12 is a detail rear elevation of the operating lever.

For convenience in illustration and de-

scription we have omitted the driving mechanism and the saw and have only illustrated the present invention which is limited to the stroke adjusting mechanism.

20 denotes a gear wheel carried by a sleeve 21 which is mounted on a shaft 22 and journaled in a bearing 23 upon the framework which is indicated as a whole by 24. Upon the outer face of the gear wheel is a slide 25 which is adapted to reciprocate in ways 26 and is provided with a pin 27. The slide is provided with an internal rack 28 which meshes with a pinion 29 carried by shaft 22 and is retained in place by a cover plate 30 having a slot, not shown, through which pin 27 projects. Reciprocatory movement is imparted to the saw, not shown, from gear wheel 20 by means of an operating lever 31 pivoted upon the frame work as at 32 and connected to the saw frame by means of a link 33. Connection with the gear wheel is made by means of a sliding block 34 lying in a groove 35 in the lever and provided with a hole which receives pin 27.

The work to be operated upon is held by jaws 36 and 37 which are moved toward and from each other to grip or release the work by means of a right and left threaded screw 38 which is mounted to rotate on the frame work, one of the bearings being indicated by 39, and which is provided with a pivoted operating handle 40. The length of the stroke of the saw is controlled from the work by means of a contact plate 41 which is adapted to slide in a slot 42 in jaw 37 and to be placed in engagement with the piece of work to be operated upon. Plate 41 is carried by a stroke adjusting bar 43 which is provided with a downwardly projecting pin 44 and the rear end of which consists of a guide 45 which slides in the frame work.

46 denotes the stroke adjusting lever having rigidly secured thereto a stud 47 which is mounted to oscillate in the frame work as at 48. Stud 47 has rigidly secured thereto, so as to swing with the lever, an arm 49 having at its outer end a slot 50 which receives pin 44 on the stroke adjusting bar, so that oscillation of the lever will swing the arm which in turn will reciprocate the stroke adjusting bar carrying the contact

plate. The stroke adjusting lever is provided with a boss 51 having an engaging edge 52 adapted to engage a notched locking bar 53 which is rigidly secured to and
 5 extends outward from the frame work, notches on the under side of the bar being indicated by dotted lines, see Fig. 1. The resiliency of the lever acts to retain the boss in engagement with the notches.

10 At the other end of the lever, the right end as seen in Figs. 1 and 2, is a roller 54 which travels in a circumferential groove 55 in an outer sleeve 56 mounted to both oscillate and slide on sleeve 21. Outer sleeve 56
 15 is provided with a spiral slot 57 which is engaged by a pin or block 58 (in the present instance a block) which projects from sleeve 21, and opposite thereto with a spiral slot 59 which is engaged by a pin or block 60 (in
 20 the present instance a pin) which projects from a collar 61 at the outer end of shaft 22. This collar is of uniform diameter with sleeve 21 and lies within outer sleeve 56. As already stated sleeve 21 is journaled
 25 within a bearing 23 on the frame work and the sleeve is retained against longitudinal movement by the hub 62 of gear wheel 20 and by a collar 63 on the sleeve which bears against the opposite end of the bearing.

30 The operation is as follows: In Figs. 1 and 2 the jaws are shown as well opened and the stroke adjusting lever has been swung to a position to carry the stroke adjusting bar and contact plate well backward
 35 and out of the way. As soon as the work to be operated upon is in position the jaws are closed upon it by means of right and left threaded screw 38 in the usual manner. The lever is then swung outward from the
 40 position shown in Fig. 1 moving the stroke adjusting bar and contact plate toward the left and through the slot in jaw 37 until it engages the work, the lever being retained in any position in which it is placed through
 45 the engagement of boss 51 with the notched locking bar. Movement of the lever in either direction will, by means of roller 54, move outer sleeve 56 longitudinally upon sleeve 21. Sleeve 21 being fixed to the gear
 50 wheel rotates only with the gear wheel and for the purposes of this description may be considered stationary. Owing to the engagement of pin or block 58 which projects from sleeve 21 with spiral slot 57 in outer
 55 sleeve 56, it follows that sleeve 56 must also oscillate on sleeve 21 when moved longitudinally thereon. This oscillation or partial rotation of sleeve 56 is transmitted to shaft 22 and the rotary movement of said shaft
 60 is doubled through the engagement of pin or block 60 which extends from the collar on shaft 22 and engages spiral slot 59 in outer sleeve 56. Shaft 22 carries pinion 29, and

the rotary movement of this pinion through its engagement with rack 28 on slide 25 re- 65
 ciprocates said slide in the ways in the outer face of gear wheel 20, moving pin 27 toward or from the center of rotation of the gear wheel. As the slide is moved in or out pin 27 which engages sliding block 34 in operat- 70
 ing lever 31 will be moved toward or from the center of rotation of the gear wheel and will consequently lengthen or shorten the arc of movement of the operating lever, which in turn through link 33 will corre- 75
 spondingly lengthen or shorten the stroke of the saw. It will of course be understood that the parts are so proportioned and positioned as to accurately accomplish this result. In practice the full length of the saw is operative upon any piece of work. If the contact plate is moved well backward as when in engagement with a relatively large piece of work the stroke of the saw is correspondingly shortened. If the contact plate is moved farther inward, that is toward the left in Figs. 1 and 2, as when in engagement with a relatively small piece of work, the stroke of the saw is correspondingly lengthened and the cutting of the 9
 metal will proceed much more rapidly.

Having thus described our invention, we claim:

1. In a power hack saw the combination with means for holding the work, an operating lever by which the saw is reciprocated, of a contact plate, a stroke adjusting lever by which said plate is moved into engagement with the work and mechanism intermediate said lever and the operating lever 100
 whereby the stroke of the operating lever is varied to correspond with the size of the work that is engaged by the contact plate.

2. In a power hack saw the combination with an operating lever by which the saw 105
 is reciprocated, of jaws, a contact plate adapted to pass through one of said jaws and engage the work, a bar by which said plate is carried, a stroke adjusting lever having an arm by which said bar is reciprocated and mechanism intermediate said lever and the operating lever whereby the stroke of the operating lever is varied to correspond with the size of the work that is engaged by the contact plate. 115

3. In a power hack saw the combination with jaws, an operating lever by which the saw is reciprocated, of a contact plate, a stroke adjusting lever by which said plate is moved into engagement with the work, 120
 means for locking the stroke adjusting lever and mechanism intermediate said lever and the operating lever whereby the stroke of the operating lever is varied to correspond with the size of the work that is en- 125
 gaged by the contact plate.

4. In a power hack saw the combination with an operating lever for reciprocating the saw and means for holding the work, of a contact plate independent of the holding means, a stroke adjusting lever and connections whereby the contact plate is moved into and out of engagement with the work and mechanism controlled by the stroke adjusting lever whereby the stroke of the operating lever is varied to correspond with the size of the work.

5. The combination with an operating lever and jaws for holding the work, of a contact plate adapted to pass through one of said jaws and engage the work, a stroke adjusting lever by which said plate is reciprocated and mechanism operated from the stroke adjusting lever for regulating the stroke of the operating lever to correspond with the position of the contact plate, for the purpose specified.

6. The combination with jaws, an operating lever and means for imparting reciprocatory motion thereto, of a contact plate adapted to engage the work, a stroke adjusting lever by which said plate is reciprocated and mechanism operated from the stroke adjusting lever for regulating the stroke of the operating lever.

7. The combination with an operating lever and means for holding the work, of a rotating member, a slide carried thereby, operating connections intermediate the slide and the operating lever, a contact plate adapted to engage the work and means intermediate said slide and the contact plate whereby the slide is adjusted to regulate the stroke of the operating lever.

8. The combination with an operating lever and means for holding the work, of a rotating member, a slide carried thereby and provided with a pin, a sliding block in the operating lever engaged by said pin, a contact plate adapted to engage the work, a stroke adjusting lever by which said plate is reciprocated and connections intermediate said lever and the slide whereby said slide is adjusted to correspond with position of the contact plate.

9. The combination with an operating lever and means for holding the work, of a rotating member, a slide carried thereby, connections between said slide and the operating lever, means for adjusting the slide to regulate the oscillation of the lever, a contact plate adapted to engage the work, a stroke adjusting lever by which said plate is reciprocated and operating connections between the stroke adjusting lever and the means for regulating the oscillation of the operating lever.

10. The combination with an operating lever, means for holding the work, a ro-

tating member and a slide carried thereby which engages the lever and is provided with a rack, of a sleeve by which the rotating member is carried, a shaft journaled in the sleeve, a pinion on said shaft engaging the rack, a contact plate adapted to engage the work, a stroke adjusting lever by which the contact plate is reciprocated and connections intermediate said lever and the shaft whereby the shaft and pinion are rotated by movement of the stroke adjusting lever to regulate the stroke of the operating lever.

11. The combination with an operating lever, means for holding the work, a rotating member, a slide carried thereby and provided with a rack and connections between the slide and the operating lever, of a sleeve by which the rotating member is carried, a shaft journaled in said sleeve, a pinion on said shaft engaging the rack, a contact plate adapted to engage the work, a stroke adjusting lever for reciprocating the contact plate and connections intermediate said lever and the shaft for rotating the shaft and pinion.

12. The combination with an operating lever, means for holding the work, a rotating member, a slide carried thereby and provided with a rack and connections between the slide and the operating lever, of a sleeve by which the rotating member is carried, a shaft journaled in said sleeve, a pinion on said shaft engaging the rack, an outer sleeve mounted to oscillate and slide on the rotating member carrying sleeve and having spiral slots, connections between said slots and the rotating member carrying sleeve and the shaft respectively, a stroke adjusting lever engaging the outer sleeve, a sliding contact plate adapted to engage the work and connections between said plate and the stroke adjusting lever.

13. The combination with an operating lever, means for holding the work, a rotating member, a slide carried thereby and provided with a rack and connections between the slide and the operating lever, of a sleeve by which the rotating member is carried, a shaft journaled in said sleeve, a pinion on said shaft engaging the rack, an outer sleeve mounted to oscillate and slide on the rotating member carrying sleeve and having a circumferential groove, spiral slot and pin connections between said sleeves and between the shaft and the outer sleeve, for the purpose set forth, a stroke adjusting lever engaging the groove in the outer sleeve, a contact plate adapted to engage the work and operating connections between the contact plate and the stroke adjusting lever.

14. The combination with an operating lever, jaws for holding the work one of which is provided with a slot, a contact plate

adapted to pass through said slot and engage
the work and a bar by which said plate is
carried, of a stroke adjusting lever having
an arm engaging the bar and a boss having
5 an engaging edge, a notched locking bar en-
gaged by said boss, for the purpose set forth,
and connections controlled by said lever for
adjusting the throw of the operating lever
to correspond with the position of the con-
10 tact plate.

In testimony whereof we affix our signa-
tures, in presence of witnesses.

EDWARD S. BRADFORD, JR.

MAURITZ OLSON.

Witnesses for Bradford:

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