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PATENTED OCT. 10, 1905.

B. M. W. HANSON & A. E. THAYER.
TAPER TURNING AND BACK REST ATTACHMENT FOR LATHES.

APPLICATION FILED MAY 31, 1904.

3 SHEETS—SHEET 1.

Fig. 1.

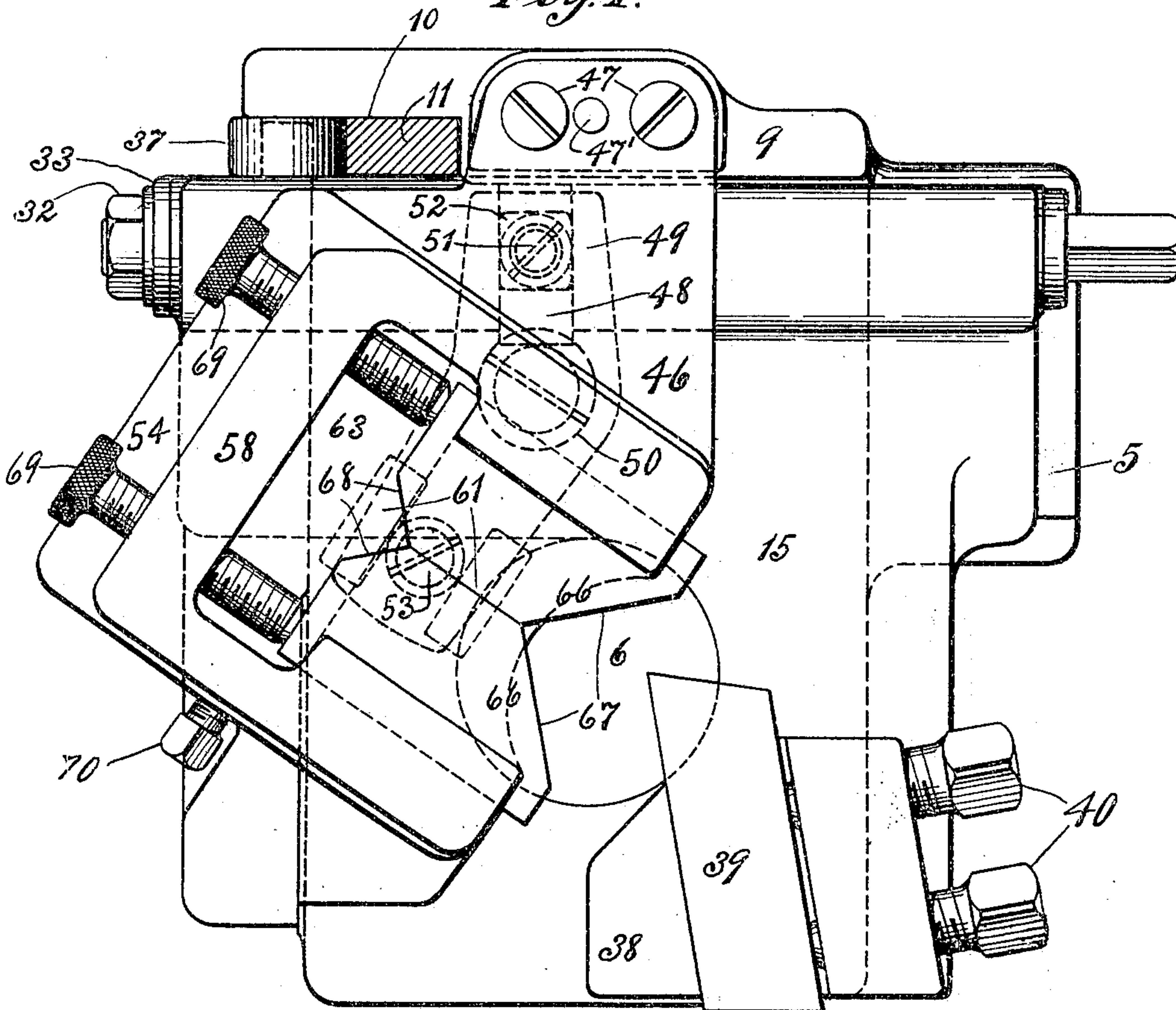
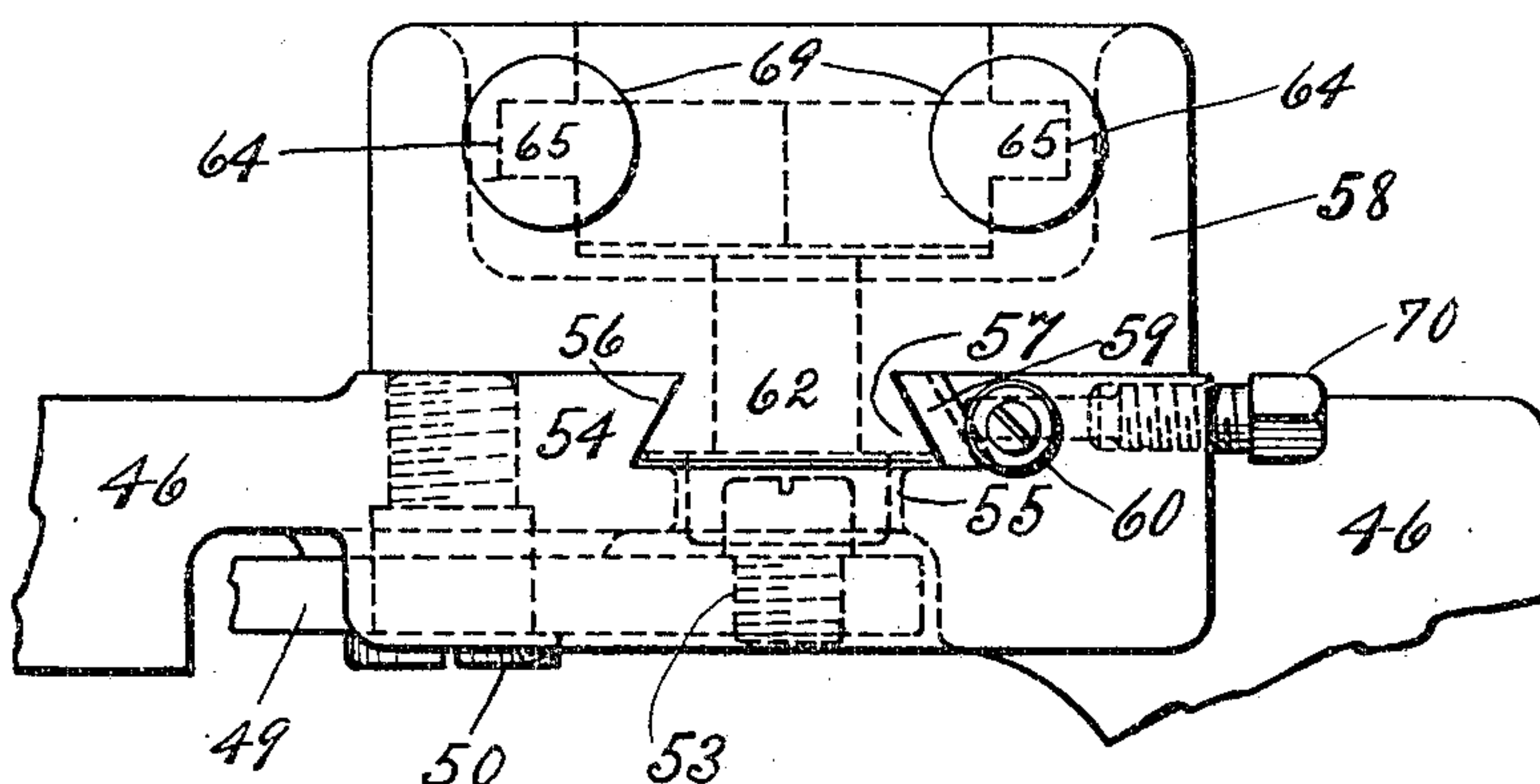


Fig. 2.



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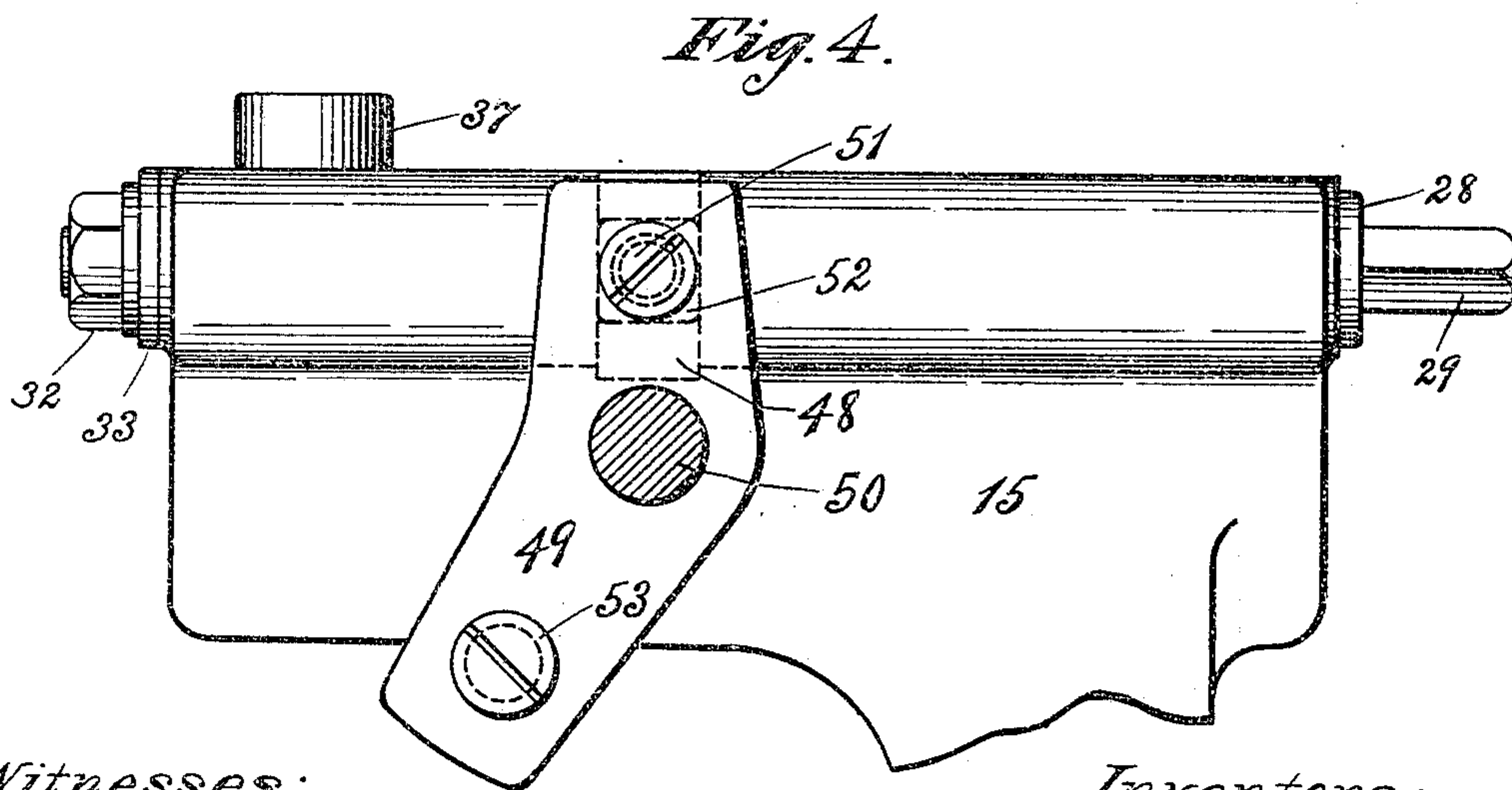
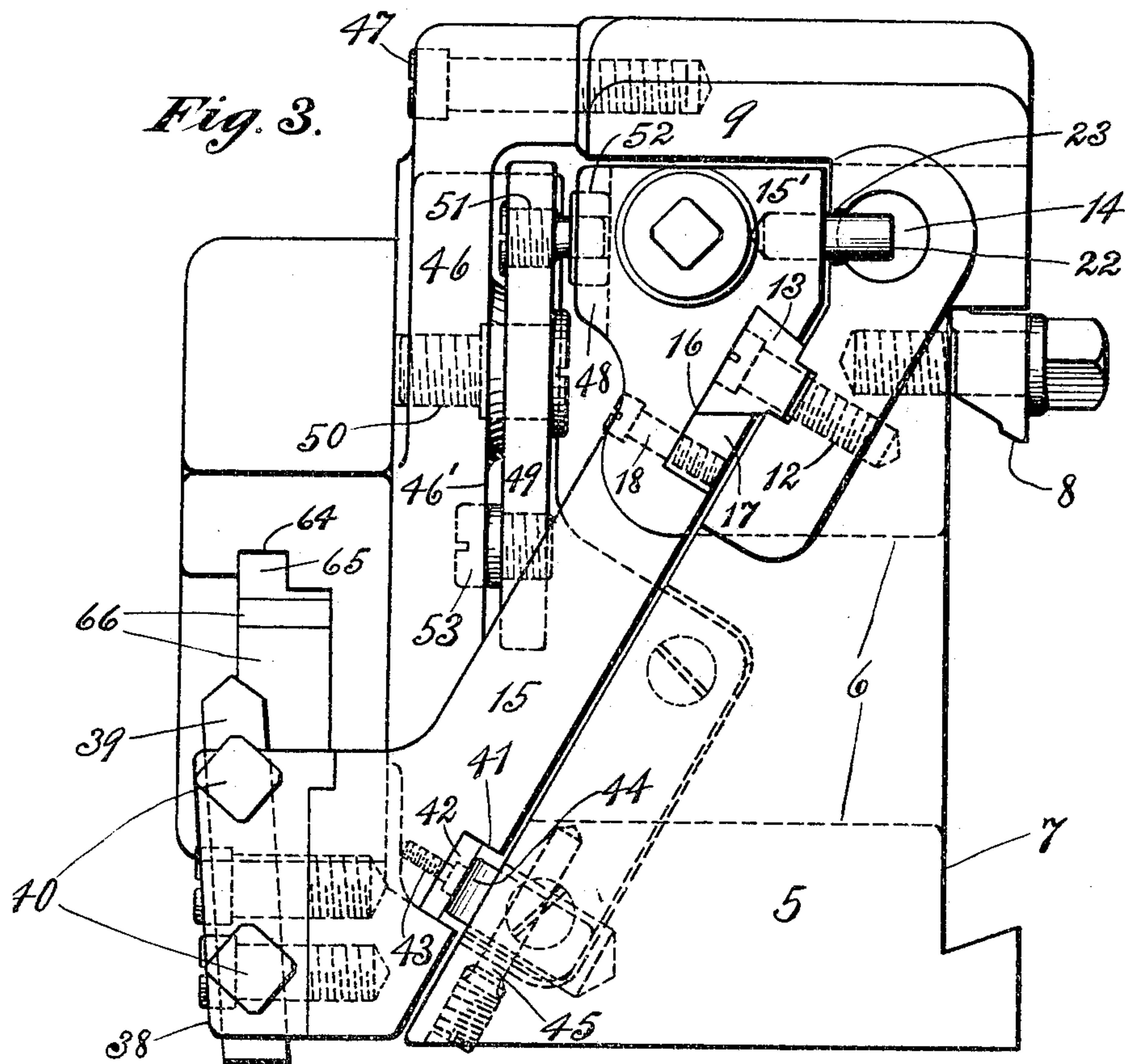
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 5.

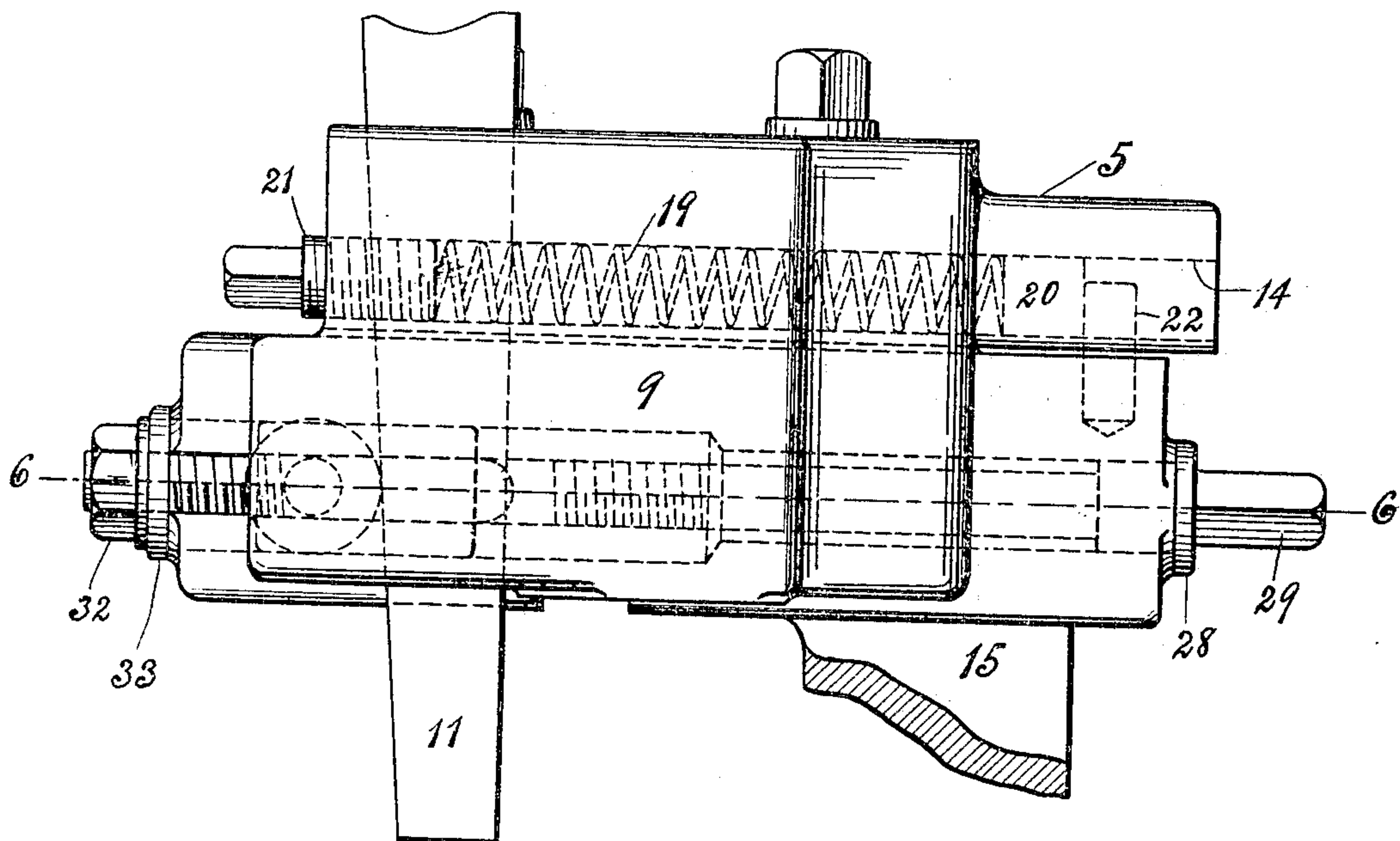


Fig. 6.

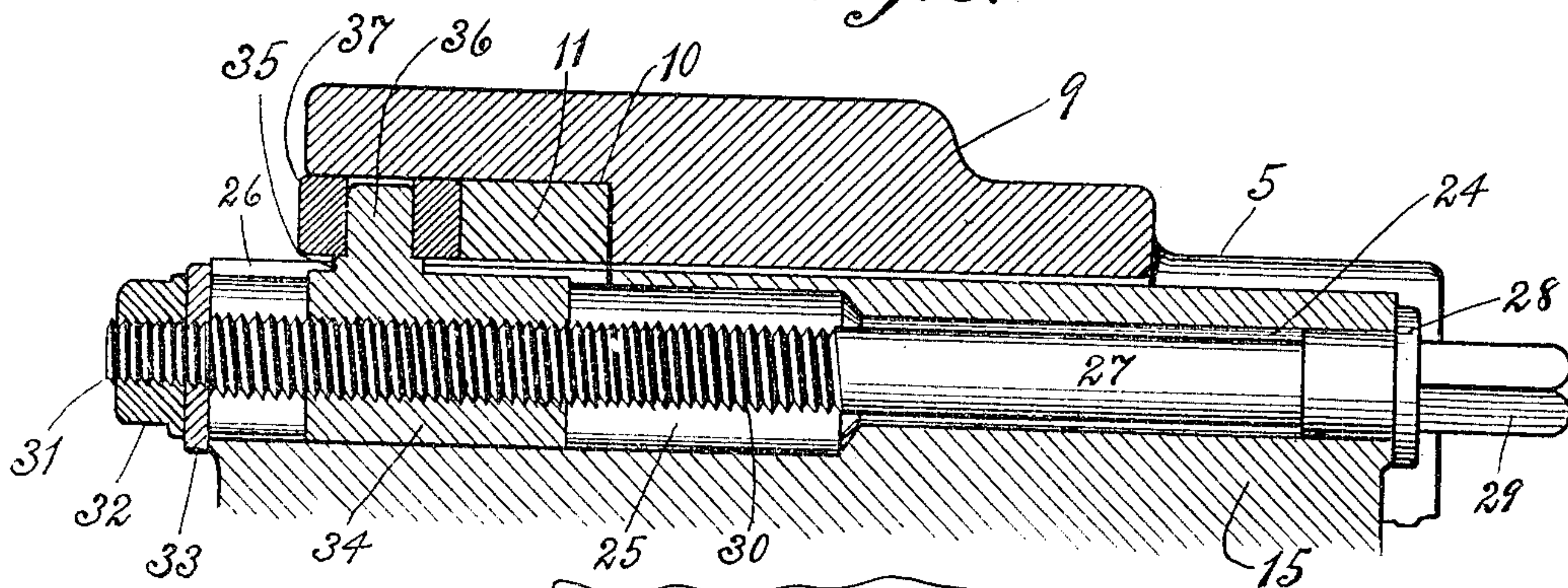
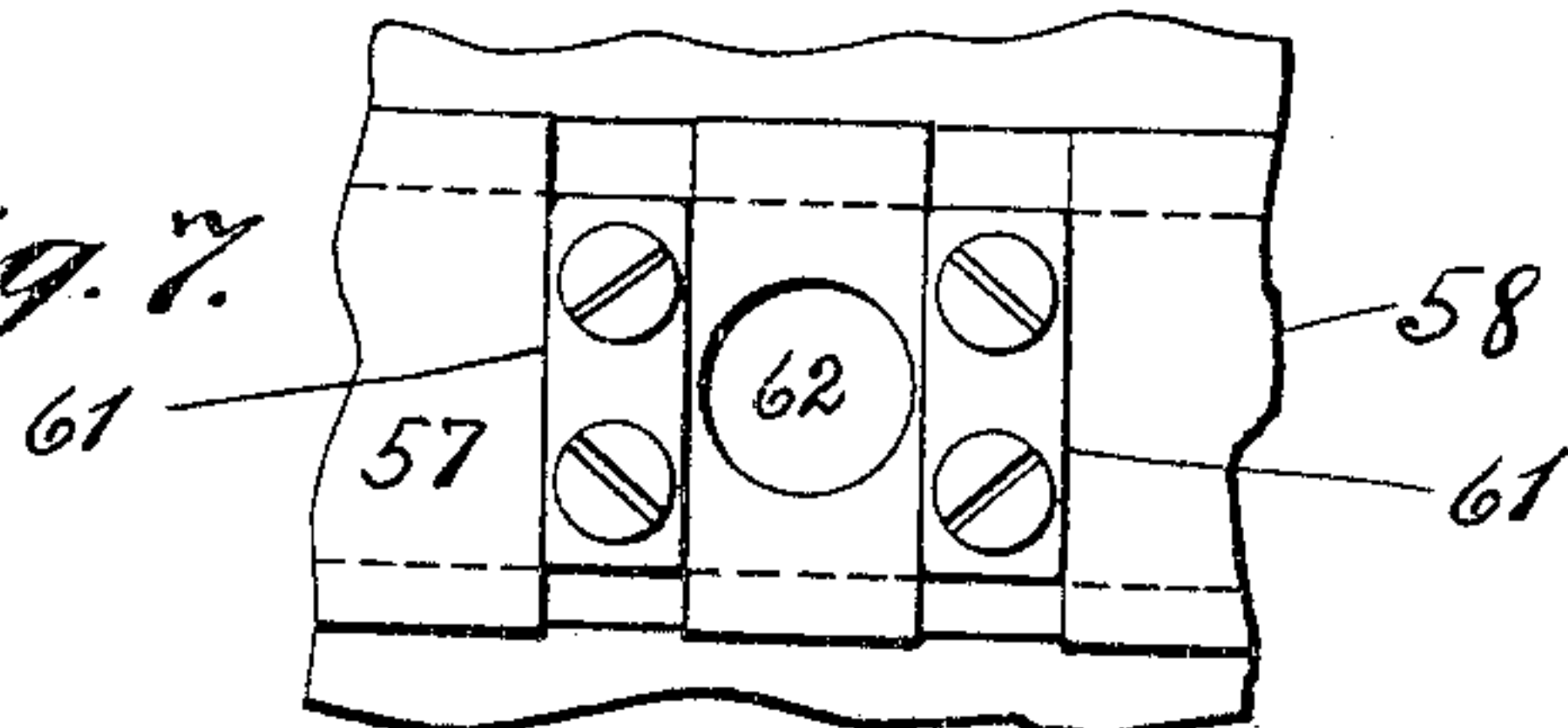


Fig. 7.



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UNITED STATES PATENT OFFICE.

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TAPER-TURNING AND BACK-REST ATTACHMENT FOR LATHES.

No. 801,785.

Specification of Letters Patent.

Patented Oct. 10, 1905.

Application filed May 31, 1904. Serial No. 210,473.

To all whom it may concern:

Be it known that we, BENGT M. W. HANSON, a citizen of Sweden, and ARTHUR E. THAYER, a citizen of the United States of America, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Taper-Turning and Back-Rest Attachments for Lathes, of which the following is a specification.

Our invention relates to taper-turning attachments for lathes, and has for its object the provision of an improvement comprising taper-turning devices and a back-rest controlled by an element of said devices and following either the conformation of the taper or incline produced upon the stock or the rough stock just ahead of the line of cut.

A further object of the invention is the provision of a back-rest conforming to the movements of the turning-tool, so that the stock will be supported at all points during the action of the tool upon it.

A further object of the invention is the provision of a movable back-rest and a pivoted lever actuated by the tool-carrying slide, so that said back-rest will be in contact with the work during the entire traverse of the tool along the same.

A further object of the invention is the provision of reversible back-rest blocks whereby said blocks may be made to bear either upon the rough stock just ahead of the tool or upon the turned stock at the rear of the tool.

Other objects of the invention will be set forth in the detailed description which now follows.

In the accompanying drawings, Figure 1 is a front side view of the improved attachment with the taper bar in section. Fig. 2 is an end view of the back-rest part of the attachment, showing a fragment of the stationary member of the attachment. Fig. 3 is an end view of the attachment. Fig. 4 is a detail view, partially broken away, showing the lever for actuating the back-rest slide. Fig. 5 is a top view. Fig. 6 is a section on line 6-6 of Fig. 5, and Fig. 7 is a rear plan view of part of the back-rest slide.

Like numerals designate similar parts throughout the several views.

Referring to the drawings, the numeral 5 designates a plate perforated at 6 to receive

the stock and having at its rear side a recess 7 and an inclined gib 8, by which it may be secured to a projection of dovetail shape on the turret or other part of a lathe. (Not shown.) At its top the plate 5 is provided with an overhanging extension 9, and said extension is slotted at 10 to receive a taper bar or pattern 11, as illustrated in Figs. 1, 5, and 6. Secured to the member 5 by screws 12 is a guide-bar 13, and in said member is a transversely-extending bore 14, the purpose of which will be hereinafter stated.

Designated by 15 is the movable member of the attachment, and it consists of an inclined L-shaped plate, the top of which fits beneath the overhanging part 9 of the member 5. On its rear side the movable member is recessed at 16 and is fitted upon the guide-bar 13, being secured in place upon said guide-bar with a capability of sliding movement thereon by a gib 17 and screws 18, as shown in Fig. 3. In the bore 14 of the member 5 is a coiled spring 19, and said spring bears at one end against a plug 20 and at its other end against a screw-plug 21, by means of which the tension of the spring may be regulated. (See dotted lines, Fig. 5.) Projecting from the movable member 15 near its upper end is a pin 22, and said pin passes through a longitudinal slot 23 in the member 5, enters the bore 14 thereof, and receives the thrust of the spring-actuated plug 20.

In the upper part of the movable member 15 is a bore 24, enlarged to form a chamber 25, the top wall of said chamber being slotted at 26. A rod 27, having a collar 28, an angular head 29, exterior to said collar, and a threaded section 30, is mounted in the bore and chamber, the collar 28 closing one end of said bore, as illustrated in Fig. 6. At its end opposite the collar 28 the rod 27 is reduced and provided with a thread 31 of different pitch from thread 30 for the reception of a nut 32, said nut bearing against a washer 33 and the latter closing the outer end of chamber 25. In the chamber 25 is mounted a nut 34 for the screw 30, and said nut is provided with an angular shoulder 35, which fits in the slot 26, thus preventing rotation of the nut, and with a stud 36, upon which is journaled a roller 37, said roller bearing against the outer side of the taper-bar 11, as shown in Fig. 6.

Upon the lower end of the movable mem-

ber 15 is a tool-seat 38, which may be either attached to said movable member, as shown, or integral therewith, as desired. In the seat 38 is fitted a tool 39, the latter being clamped in place by screws 40, as illustrated in Fig. 1. In the rear side of the movable member a groove or rabbet 41 is formed for the reception of a steel wear-plate 42, held in place by screws 43, said wear-plate cooperating with an antifriction-roller 44, journaled on a pintle 45, and thus serving to reduce friction between the movable member and the member 5 at the point where the greatest strain is applied by the action of the tool upon the stock.

A back-rest support or hanger 46 is secured by screws 47 and a pin 48 to the overhanging part 9 of the member 5, and on its rear side said support is reduced at 46' for a purpose hereinafter stated.

In its upper part the movable member 15 is of increased thickness at 15' to afford the necessary strength after the bore 24 and chamber 25 have been formed therein, and in the sides of said part 15' is formed a vertical guide-groove 48, as shown in Figs. 1, 3, and 4.

Designated by 49 is a lever which is pivoted by a bolt 50 to the back of the hanger 46. In the upper end of this lever a bolt 51 is inserted, said bolt having a stud-like extension upon which is mounted a block 52, movable in the guide-groove 48 of the member 15. Adjacent to its lower end this lever is provided with a screw 53, the head of which projects to the outer side of the lever, for a purpose hereinafter described. An enlargement 54 projects angularly from the hanger 46, and in said enlargement is formed a slot 55 (see dotted lines, Fig. 2) and a guideway 56. In this guideway is fitted the tongue 57 of a back-rest slide 58, said tongue being retained in place by a gib 59, which may be adjusted to take up wear by a screw 60. On the back of the tongue are secured two separated blocks 61, intermediate which a perforation 62 is formed through the slide, as illustrated in Figs. 2 and 7, and fitted between said blocks is the head of the screw 53, which is shown provided with a groove to receive a screw-driver which may be inserted through the perforation 62 to withdraw the screw from lever 49 when it is desired to dispense with the use of the sliding back-rest.

In its front portion the back-rest slide 58 is chambered at 63, and the sides of said chamber are provided with guide-grooves 64 for the reception of ribs or tongues 65 in line with the sides of interchangeable blocks 66, said blocks having inclined work-engaging surfaces 67 on one end and smaller inclined work-engaging surfaces 68 on their opposite ends and being reversible end for end to bring either of said surfaces into engagement with stock. In this way the blocks 66 may be made to engage stock of different diameters.

In the end of the slide 58 are fitted screws

69, the ends of which bear against the extremities of the blocks 66, and by said screws the blocks may be adjusted as desired. If it is desired to cause the blocks to bear upon the cut portion of the work and to follow the taper thereof as it is formed by the tool, they are arranged as illustrated in Figs. 2 and 3; but if it should be desired to have them engage the rough stock in advance of the tool said blocks may be reversed side for side and their ribs 65 again inserted in the guide-grooves 64. In the latter event, however, the lever 49 will be disconnected by withdrawing the screw 53 through the perforation 62, as above described, and the back-rest blocks will be adjusted to proper position by the screws 69, and the slide 58 will then be secured against movement by the screw 70.

As will be observed by reference to Fig. 3, the tongues 65 of the blocks 66 are so placed in the grooves 64 that the bearing-surfaces of said blocks extend inward and support the stock during the taper-turning operation, thus constituting a following back-rest. When, however, it is desirable to turn rough stock, said blocks are withdrawn from the guide-grooves, are turned sidewise from left to right, and their ribs are again inserted in the grooves, thus forming a leading back-rest. If it is not desired to turn a taper on the rough stock, the lever 49 will be disconnected, as above stated. It will thus be seen that with the improved construction provision is made for either a leading or a following back-rest and also for ordinary turning, which may be readily accomplished when the lever 49 is disconnected in the manner stated.

Our invention is designed to be employed with some sliding part of a lathe and may be mounted on a support projecting from the turret thereof. As the taper-bar is carried by the attachment it is arranged to engage a suitable stop (not shown) and to be held stationary as the attachment moves toward said stop.

From the above description it will be seen that the spring 19 always tends to force the plug 20 toward the right, and as said plug bears against the pin 22 the slide 15 will be forced in the same direction, thereby holding the roller 37 in constant engagement with the side of the taper bar 11, and thereby causing the tool 39 to copy the incline of said taper bar upon the stock. Interchangeable taper bars, each having a different degree of taper, may be employed with the machine, so that any desired degree of taper to the inch may be turned, and this taper will be a correct one—i. e., not longitudinally curved, as in old constructions in which swinging cutter-holders are employed.

As the turning-tool is carried by a depending part of the slide 15 the thrust of the work against said tool tends to push the slide down-

ward, and thus to hold the guideway thereof firmly against the block 13 of the fixed member 5, and thereby avoiding chattering or lost motion.

5 To adjust the turning-tool to stock of varying diameters, the screw 27 is turned by a wrench applied to its head 29, and as said screw has no longitudinal movement in the slide 15 it will be evident that as the screw
10 is rotated in the nut 34 the slide will be actuated, the pin 22 of said slide acting against plug 20, and thereby compressing the spring 19 until the tool is brought to the required place.

15 In the operation of our attachment it is first secured to the desired movable part of a lathe, and the tool having been properly adjusted said part is advanced. During this advancing movement the forward or smaller end of the
20 taper bar 11 will come into engagement with the stop hereinbefore described, and consequently said taper bar will be gradually retired, the spring 19 causing, through the instrumentalities described, the slide 15 to re-
25 cede in accordance with the degree of taper of the bar and the roller 37 being held in firm engagement with the side of said bar during the entire turning operation. As the slide 15 is actuated in the manner described the lever
30 49 is gradually turned on its pivot and imparts a progressive retreating movement to the slide 58, carrying the back-rest blocks, and said blocks are therefore always kept in contact with the taper on the stock as it is
35 formed by the turning-tool. Binding of the lever 49 as it swings on its pivot is prevented by the movement of the block 51 in the slot 48 of the movable member 15 and of the head of screw 53 between the blocks 61 of the dove-
40 tail projection 57.

Our invention is not limited to the precise details of construction illustrated and described nor to employment with any particular style of machine.

45 Having thus described our invention, what we claim is—

1. The combination, with a support, having a hanger rigid therewith, and overlapping said support, of a member movable on the support
50 beneath the hanger; a tool-holder carried by said movable member; a slide; a back-rest carried by the slide; a lever pivoted to the hanger; a sliding connection between said lever and the movable member; and a sliding connection between said lever and the back-rest slide.
55

2. The combination, with a support having an overhang, of a movable member; a pattern for controlling the action of the movable member; a tool-holder carried by the movable member; a hanger rigid with said overhang; a back-rest slide mounted on the hanger; and a device operated by the movable member for progressively actuating said back-rest slide.
60

3. The combination, with a support having

an angular extension, of a movable member; 65
a tool-holder carried by said movable member; a back-rest slide mounted on said angular extension of the support; a back-rest carried by said slide; a lever pivoted to the rear side of the support; means carried by said lever for
70 engaging said back-rest slide; and means also carried by said lever and in engagement with the movable member.

4. The combination, with a support, of a movable member having a guide-groove; a 75
tool-holder carried by said movable member; a lever pivoted to a part of the support; a projection from said lever; a block carried by said projection and working in the guide-groove; a back-rest slide; a back-rest carried
80 by said slide; means for connecting the lever with the back-rest slide; a taper bar; and a roller carried by the movable member and in contact with said taper-bar.

5. The combination, with a support, of a 85
movable member mounted for sliding movement thereon; a tool-holder carried by the movable member; a taper bar carried by the support; means for causing an element of the movable member to be held in engagement
90 with the taper bar; a hanger secured to the support; a slide on said hanger; a back-rest carried by the slide; and a device operated by the movable member for actuating said slide. 95

6. The combination, with a support, of a movable member; a tool-holder carried by the movable member; a taper bar loosely mounted in the support; a roller carried by the movable member and in engagement with said taper
100 bar; means for actuating the movable member to press said roller against the taper bar; a hanger secured to the support; a lever pivoted to said hanger; a slide to which one end of said lever is connected; means for connect-
105 ing the other end of said lever to the movable member; and a back-rest carried by the slide.

7. The combination, with a support, of a tool-carrying member movable thereon; a back-rest carried by said support, and having
110 guide-grooves; and laterally-reversible back-rest blocks, each having a rabbet forming a projection at one side of its transverse center, said projection being adapted to fit the guide-groove when the blocks engage the cut por-
115 tion of the work to constitute a following back-rest, and also to fit said groove when the blocks are reversed to engage rough stock in advance of the cutting-tool, to thus form a leading back-rest. 120

In testimony whereof we affix our signatures in presence of two witnesses.

BENGT M. W. HANSON.
ARTHUR E. THAYER.

Witnesses:

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E. C. BENEDICT.