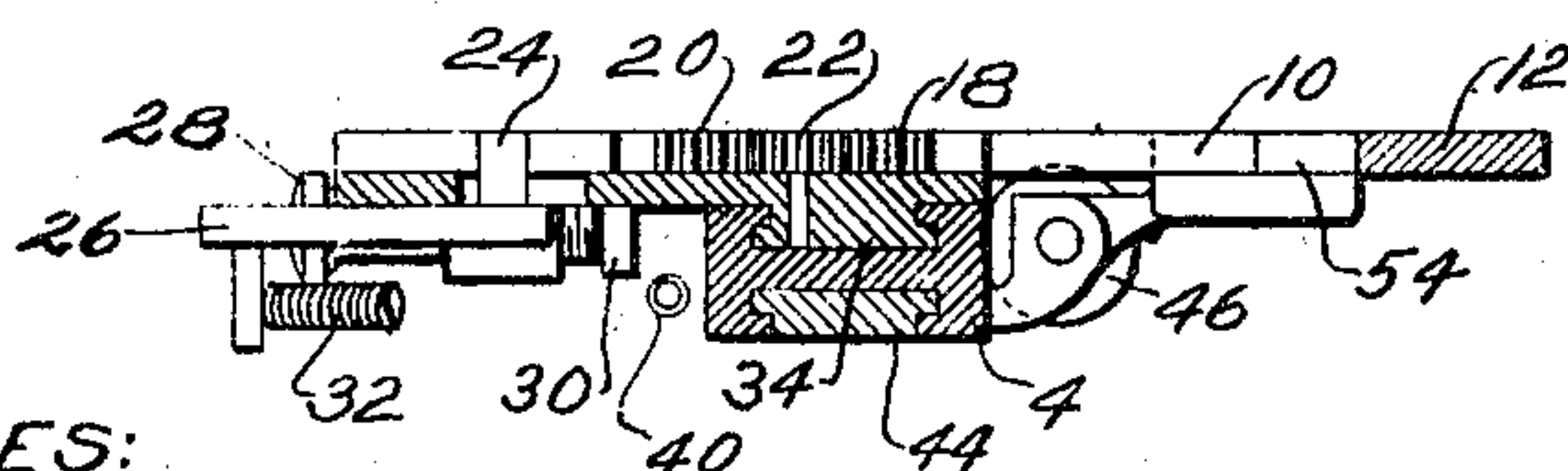
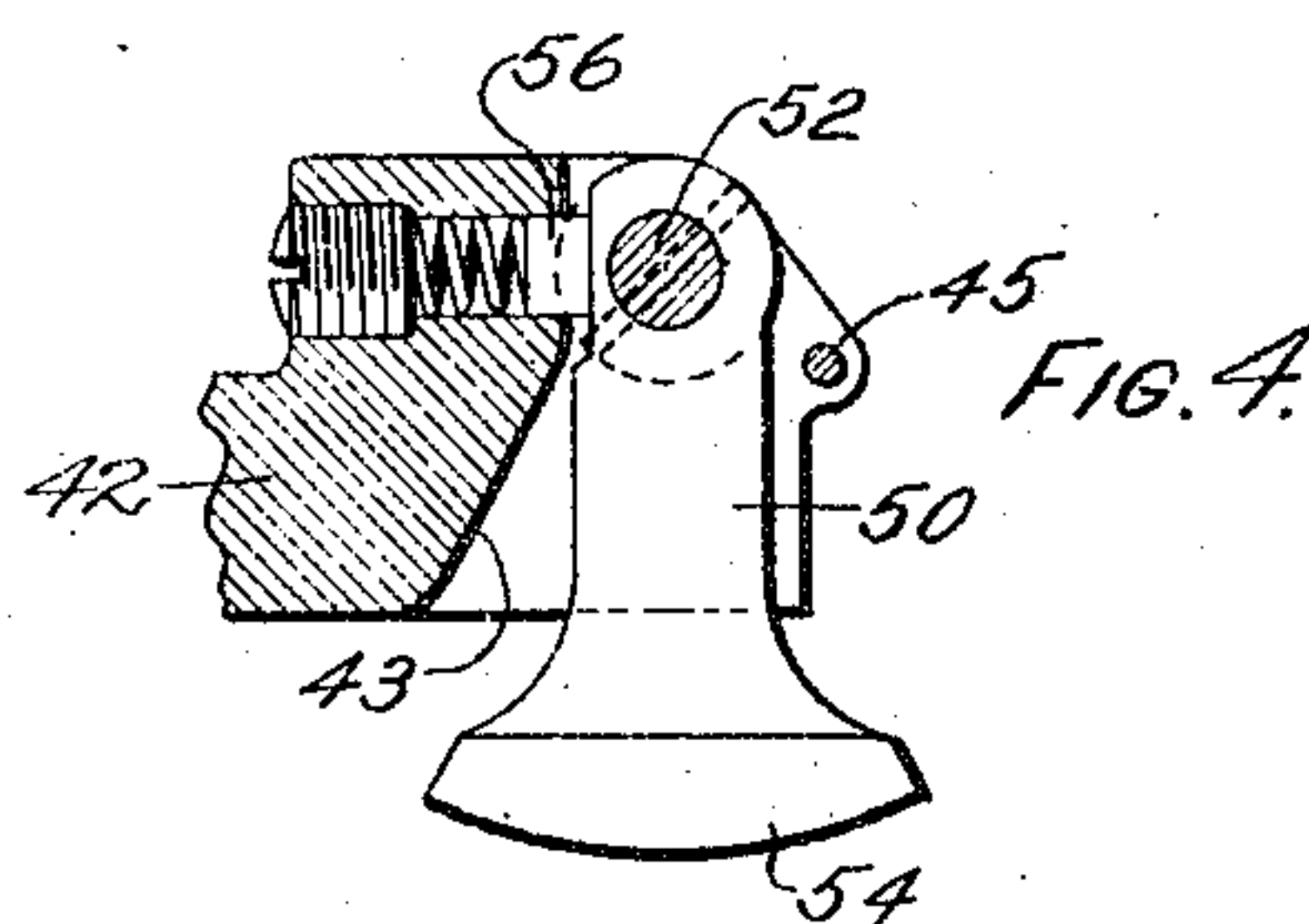
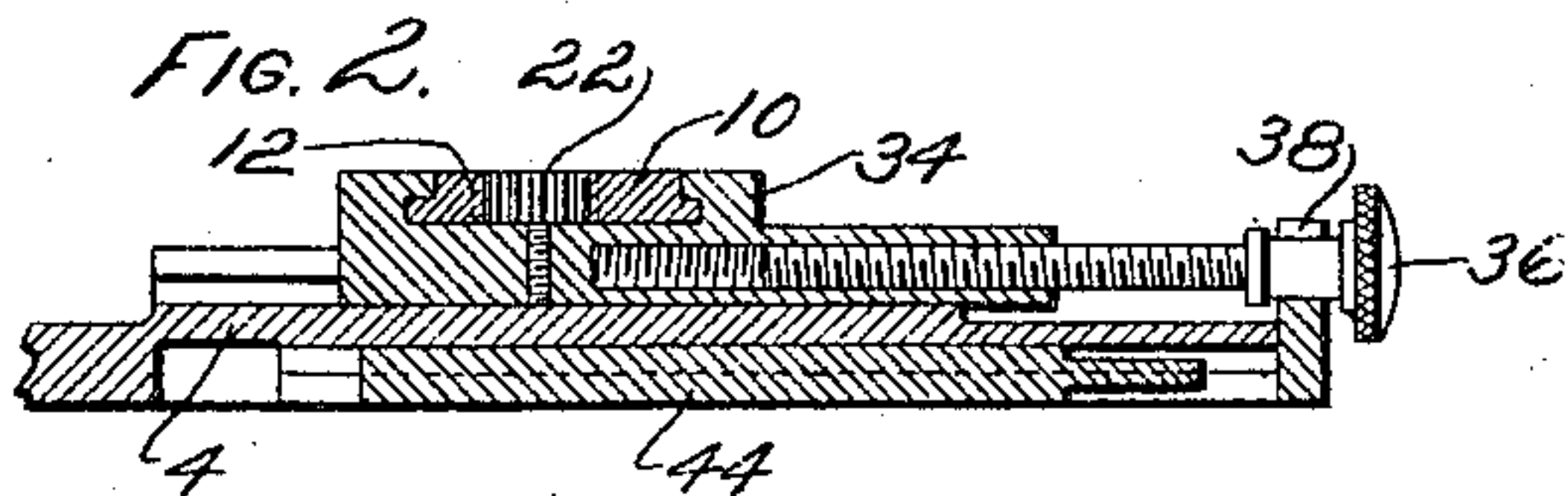
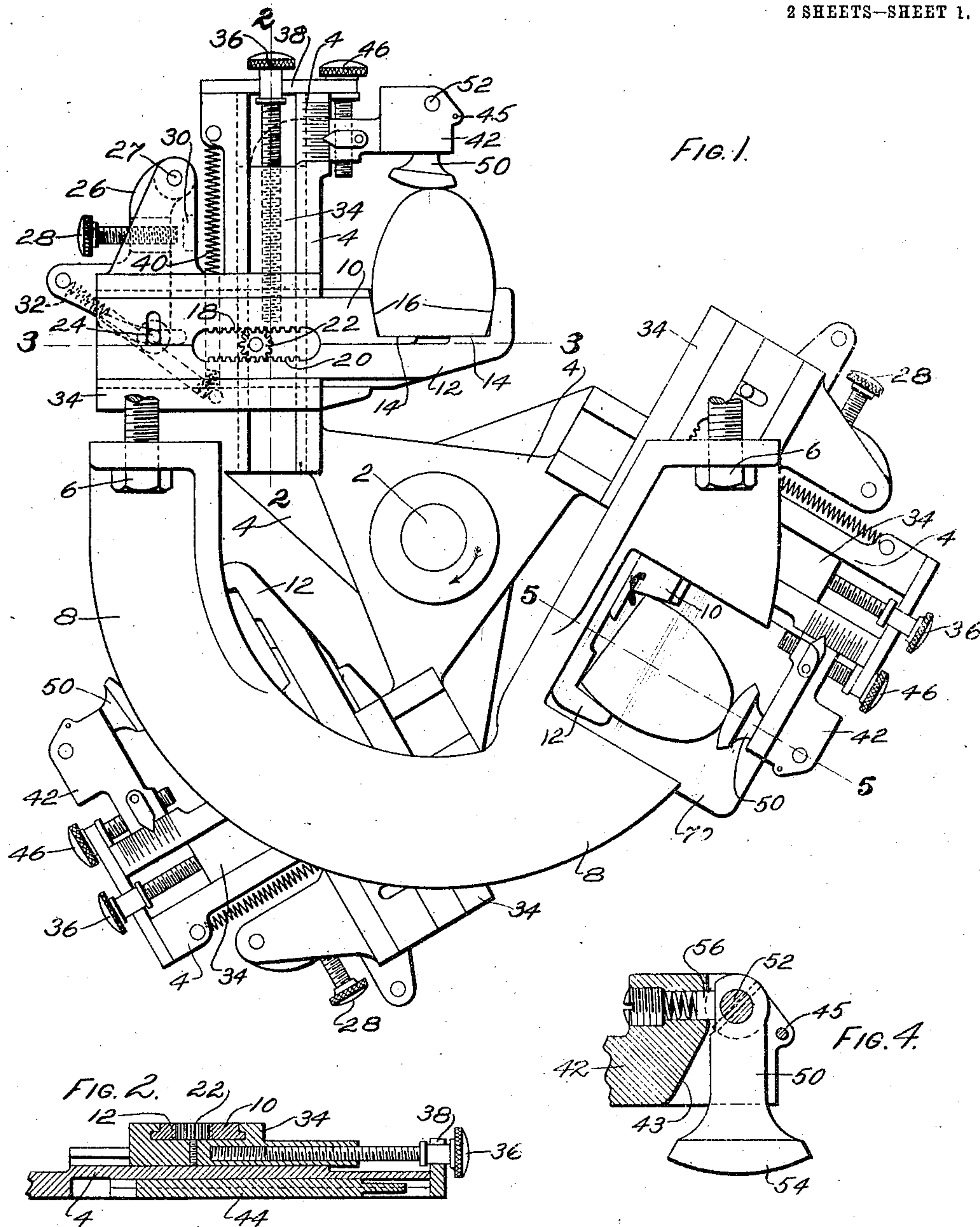


W. C. STEWART.  
HEEL AND TOP LIFT HOLDER.  
APPLICATION FILED JAN. 3, 1908.

944,389.

Patented Dec. 28, 1909.

2 SHEETS—SHEET 1.



WITNESSES:

Roswell F. Hatch.  
Redfield H. Allen

FIG. 3.

INVENTOR  
WILLIAM C. STEWART,  
BY Robt. P. Hains,  
ATTY.

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2 SHEETS—SHEET 2.

FIG. 5.

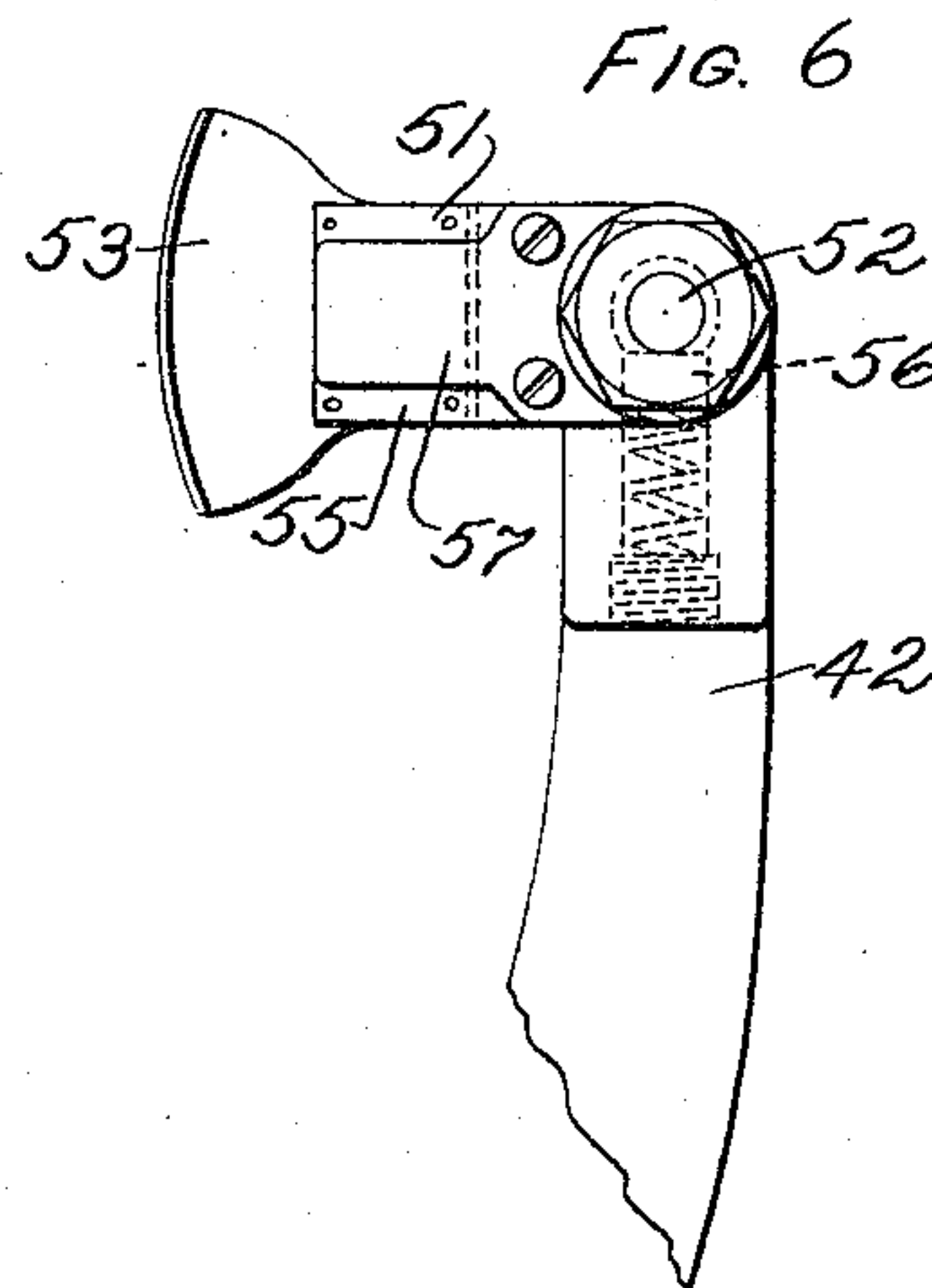
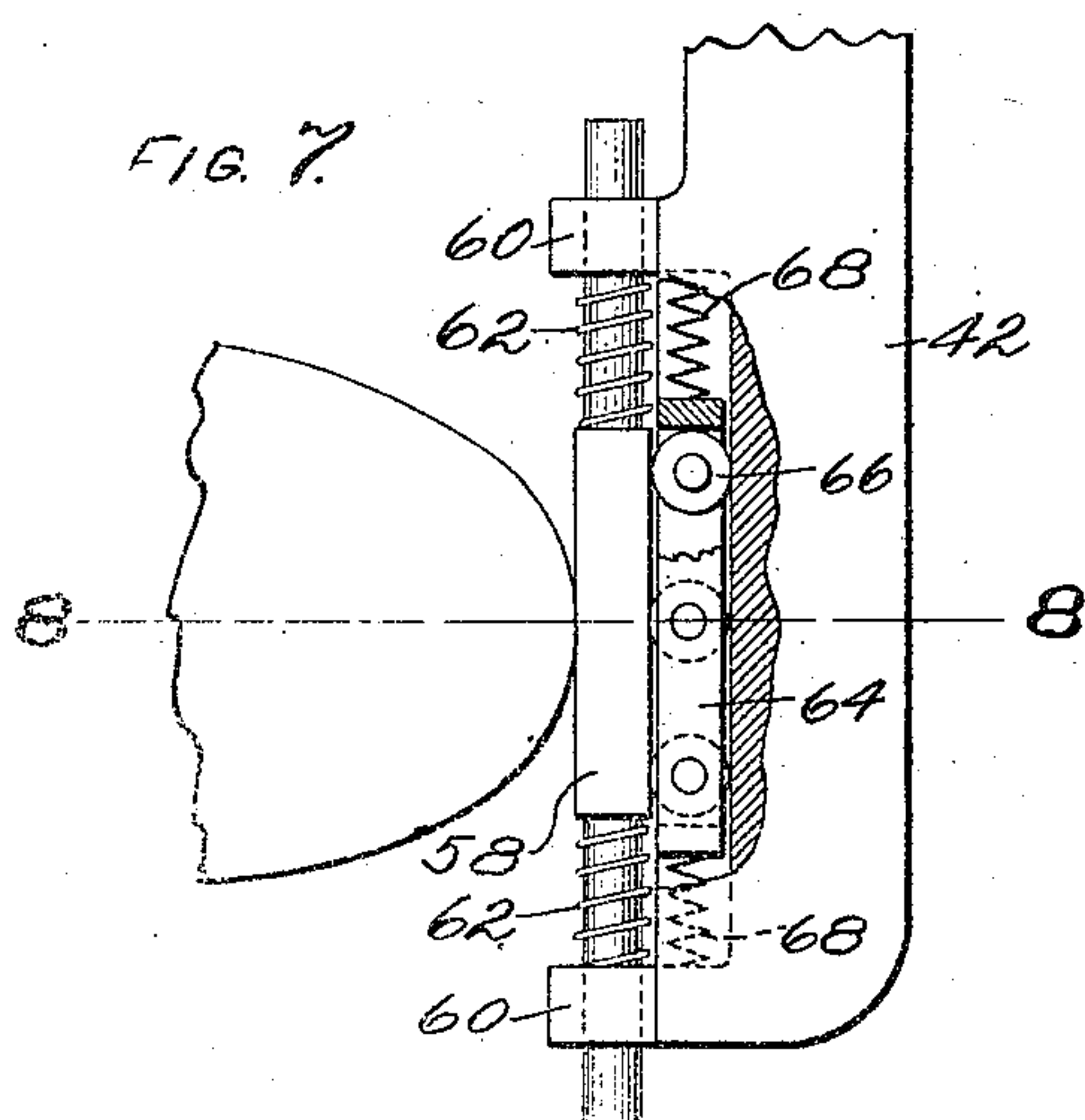
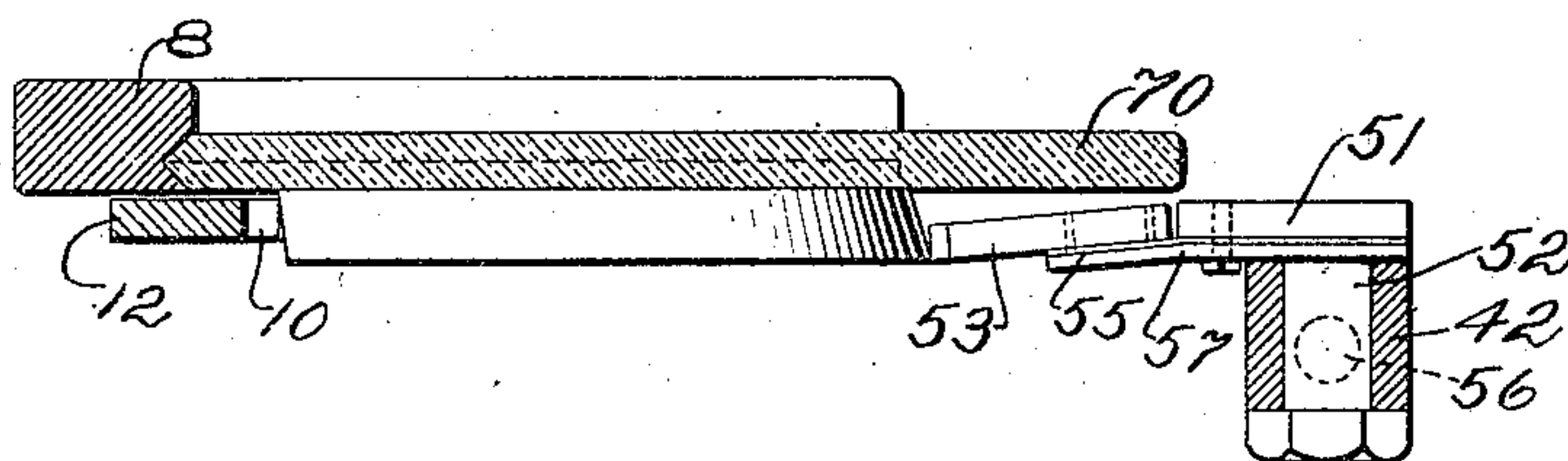
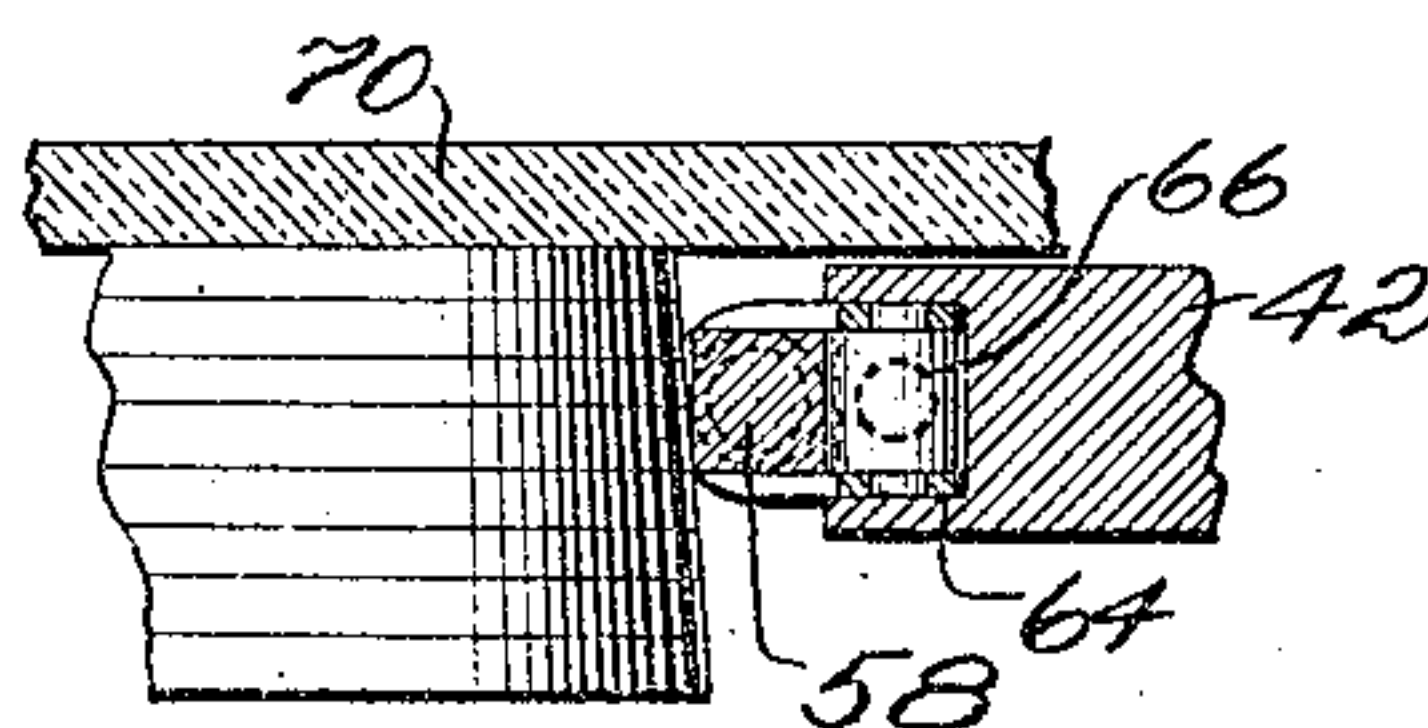


FIG. 8.



WITNESSES:  
Roswell F. Hatch.  
Redfield Allen

INVENTOR,  
WILLIAM C. STEWART,  
BY Robt. P. Hains,  
ATTY



# UNITED STATES PATENT OFFICE.

WILLIAM C. STEWART, OF LYNN, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THOMAS G. PLANT, OF BOSTON, MASSACHUSETTS.

## HEEL AND TOP-LIFT HOLDER.

944,389.

Specification of Letters Patent.

Patented Dec. 28, 1909.

Application filed January 3, 1908. Serial No. 409,142.

*To all whom it may concern:*

Be it known that I, WILLIAM C. STEWART, a subject of the King of Great Britain, residing at Lynn, in the county of Essex and State of Massachusetts, have invented an Improvement in Heel and Top-Lift Holders, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

This invention relates to a work holder for use in boot and shoe machines, and more particularly to a heel and top-lift holder for use in what are known, generally, as heeling machines.

One object of the invention is to improve the construction of such devices whereby the work may be more readily placed and more firmly held in position in the holder, and if improperly placed in the holder is caused to assume a proper position with greater ease and celerity than has been possible with the holders heretofore in use.

To the accomplishment of this object and such others as may hereinafter appear, as will be readily understood by those skilled in the art, the invention comprises the features and combinations of parts hereinafter described and particularly pointed out in the appended claims.

The various features of the invention will be best understood from a description of an embodiment thereof, such, for instance, as illustrated in the accompanying drawings, in which:

Figure 1 is a plan of a movable carriage having mounted thereon a plurality of work holders embodying the novel features of the invention; Fig. 2 is a vertical section of one of the holders on line 2—2, of Fig. 1; Fig. 3 is a vertical section of one of the holders on line 3—3 of Fig. 1; Fig. 4 is an enlarged plan, partly in section, of the improved back gage; Fig. 5 is a vertical section on line 5—5 of Fig. 1 showing, however, the back gage as it may be constructed when the holder is used for toplifts; Fig. 6 is a plan of the under side of the back gage shown in Fig. 5; Fig. 7 is a plan, partly in section, of a modified form of back gage; and Fig. 8 is a vertical section on line 8—8 of Fig. 7, showing a heel positioned against a face gage.

Although the invention now to be described may be used to hold both heels and

top lifts, for convenience in description the work will be referred to hereinafter as a "heel", merely, it being understood that such nomenclature in nowise limits the true scope of the invention.

In one embodiment of the invention selected for illustrative purposes and referring first more particularly to Figs. 1 to 3, 2 is a shaft rotatably mounted in the frame of any suitable form of heeling machine provided with nailing devices, such, for instance, as is shown in the co-pending application for United States patent of Thos. G. Plant, Serial Number 412,727, filed January 27, 1908. Mounted on the shaft 2 is a carriage 4 in the form of a spider arranged to support upon its arms a plurality of heel holders, as shown, three. The shaft 2 may be rotated, clockwise, as shown in Fig. 1, by any suitable step-by-step operating mechanism to bring successive holders from heel receiving position (at the right, Fig. 1) into nail driving position (in the center, Fig. 1).

Mounted upon the machine frame by screw 6 is a guard or guide plate 8 which preferably overlies the path traversed by heels as they are conveyed from receiving to nailing position. The guide plate 8 acts as a face gage in positioning the heel for the reason that the operator may, and preferably does, place the tread of a heel against the under surface of the plate when he puts the heel into the holder. Also the plate 8 contributes to prevent the heel from being knocked out of the holder during the travel of the latter, and to maintain the treads of the heels all in the same plane relative to the nailing devices.

The three holders shown upon the illustrative carriage are substantially alike and it will suffice to describe but one of them in detail. Each holder comprises cooperating clamping jaws or gages 10 and 12, having each a breast stop face 14 and a side gripping face 16. The gages 10 and 12 are mounted side by side in guideways and they have, respectively, racks 18, 20 which engage between them an idle pinion 22 journaled on a stationary stud, so that movement of one of the gages endwise shall be accompanied by reciprocal movement of the other. The shank of the gage 10 has a slot which is entered by a pin 24 fixed in one end of a slide adjusting lever 26 having an adjusting



screw 28 held normally against a stationary stop 30 by a spring 32. By turning the screw 28, the lever 26 may be rocked on its fulcrum 27 so as to adjust the gage 10 endwise, such adjustment being accompanied by reciprocal adjustment of the gage 12. With this arrangement, the side gripping faces 16 may be spaced apart to suit any width of heel. Ordinarily, the operator will turn the screw 28 until said faces are separated by a slightly less distance than the width of the heel. As thus adjusted it will be necessary to force the side gripping faces apart for the insertion of the heel, whereupon said faces will grip the heel yieldingly between them by the action of the spring 32. The slideways for the shanks of the gages 10 and 12 constitute a part of a supporting slide 34, mounted in ways so as to be adjustable endwise of a heel. Threading into the slide 34 is an adjusting screw 36 which has a stop collar engaging an arm 38 bracketed on the frame of the carriage 4. Said stop collar is held normally against the arm 38 by means of a spring 40 connecting a pin on the slide 34 with a pin on the carriage 4. By turning the screw 36, the slide 34 may be adjusted endwise to move the breast stop faces 14 toward and from a back stop 42 comprising a slide 44 adjustable parallel to the slide 34, positively in both directions, by an adjusting screw 46. The slide 34 is permitted a certain amount of free play so that the operator may force the breast stop faces 14 forwardly away from the back stop 42 when inserting the heel whereupon the spring 40 will hold the breast stop faces yieldingly against the breast of the heel, and hold the latter against the back stop 42.

In introducing a heel to a holder, the operator ordinarily inserts the breast corners of the heel between the side gripping faces 16 as described, and then pushes the heel forward against the breast stop faces 14 thereby moving the latter and the slide 34 forwardly until the rear of the heel may be placed in front of the engaging surface of the back stop 42. Thereupon the operator presses the tread face of the heel into engagement with the under surface of the guide plate 8 and then releases his grasp on the heel, it being then held between the positioning gages by the force of the spring 40.

The construction of heel holder thus far described is similar in principle and in its adjustments to the holders described and claimed in an application for a United States patent filed by Erastus Woodward, Serial Number 327,389, dated July 23, 1906.

In the holder of such application, the engaging portion of the back stop is a flat surface and is fixedly mounted transversely relative to the heel. Although excellent results have been obtained with the holder of the Woodward application, if a heel is pre-

sented to such holder improperly, for instance, in the position as herein shown on the right of Fig. 1, in centering itself by reason of the pressure on its breast from the spring 40 there will be some rubbing of the curved back of the heel on the back stop which will retard somewhat the centering operation and in some instances prevents it entirely, resulting at times in the delivery of heels to the nailing devices improperly positioned with relation thereto to correctly receive the nails.

The present invention aims to improve the positioning means of the holder by providing a back stop so constructed and arranged as to eliminate frictional rubbing, between the heel and back stop, as improperly presented heels are being centered and thus permit the centering operation to proceed rapidly to completion in all cases. A preferred form of back stop to gain this end is shown in detail plan in Fig. 4. As there shown, it consists of a lever 50 fulcrumed at 52 on the back stop 42 and having its engaging surface 54 on the arc of a circle centered upon the axis of the fulcrum 52. The back stop lever 50 thus forms the back gage proper, and is normally held in a given alinement by a spring-pressed block 56, which engages a flattened portion on the hub of the lever. The strength of the spring bearing on the block 56, however, is not sufficient to prevent easy rocking of the lever on its pivot transversely of the heel. A beveled face 43 on the back stop arm 42 prevents excessive movement in one direction and a stop pin 45 performs a similar office for movement in the opposite direction.

With the described arrangement of the back gage, it is obvious that an improperly presented heel will be centered to place the lateral extremes of its breast against the stop faces 14 without frictional rubbing, that is, the gage forms an anti-friction bearing for the back of the heel. If the operator introduces a heel improperly to a holder having a back gage as above described, for instance, in the position indicated on the right of Fig. 1, as soon as the heel is released by the operator the spring 40, in forcing the breast stop faces toward the back gage will, as before, move the heel into proper alinement, but as the heel moves it will carry the back gage with it into the position indicated on the center holder in Fig. 1. This centering operation does not materially affect the bodily endwise adjustment of the heel determined by the location of the back gage face 54, since all parts of the latter are preferably equidistant from its axis of rotation and swinging of the back stop gage lever will not change the distance of the rear of the heel from the back stop slide 44. When a heel is finally withdrawn from its holder, the spring block 56 returns the back stop



gage lever 50 to its normal position. Owing to the bearing surface between the hub of the lever 50 and the block 56, the back gage is self-centering when moved in either direction.

As is well known to those skilled in the art, the top lift is used, generally, as a guide in trimming the lateral surface of the heel and for this reason it is properly shaped, including the formation of a correct bevel of its lateral surface with relation to its tread face, before it is secured to the tread face of the heel. This bevel is the most pronounced at the back of the top-lift. In the holder hereinbefore described the back gage 50 is preferably constructed so that it rests close against the under surface of the guide plate 8 which forms the face gage. In holding top-lifts, although very good results have been obtained with such a construction, owing to the above mentioned bevel on the lateral surface of the top lift, it is expedient to construct the back gage in such a manner that its bearing surface may engage the lateral surface of the top-lift at a point near the flesh side. Thus the two surfaces are brought into such contact that a firmer hold is secured when using a relatively thin back gage. To accomplish this result, in the embodiment of the invention selected for illustration and referring to Figs. 5 and 6, the back gage lever 50 is formed in two parts 51 and 53, such parts being hinged together by a bent leaf spring 55 so that the part 53, having the engaging face, projects forwardly in a plane at an angle to the plane of the face gage 8. The lower position of the part 53 is determined by a stop shown as a stiff plate 57. The hinge is made yielding for the reason that in attaching the top-lift it is compressed and the portion of the tread face of the heel extending beyond the top-lift will, when the gage is so near the flesh side of the top-lift, bear with considerable pressure upon the gage in the attaching operation. The spring hinge 55 allows the gage to yield before this pressure but returns the gage promptly into its operative position determined by the stop plate.

A modified form of back gage is shown by Figs. 7 and 8. The back stop arm 42 in this case is provided with a bearing block 58 mounted to slide through lugs 60 on the arm and made self centering by the action of springs 62. Between the bearing block 58 and the back stop arm is a cage 64 having rollers 66. The cage is centered by means of springs 68. The construction is such that the cage and its rollers form an anti-friction bearing for the bearing block 58 as it moves transversely with the heel as the heel is being centered in the breast gages. The path of movement of the block 58 may obviously be other than in a right line, as may be desirable.

With the described construction and operation of the mechanism, in presenting heels to the holders it is necessary to place them while the holders are beneath the guide plate or face gage 8. Ordinarily the eye of the operator is above the plate 8 and, therefore, the heels, and for many sizes the positioning devices of the holders, are obscured from view, rendering the proper presentation of heels somewhat difficult. In order to permit presentation of heels to the holders to proceed with greater ease and accuracy, the face gage 8 is preferably constructed so as to permit a view of the heel therethrough as it is brought by the operator against the positioning devices. In the embodiment of the invention hereon selected for illustrative purposes, the guide plate 8 is provided with a portion of transparent material, preferably glass, adjacent the heel receiving position of the holders. Thus, a complete view of the heel and of all the working parts is obtained for all sizes.

In construing the following claims the term "heel" is to be understood as including within its meaning either a heel or a top-lift, or both of these articles, and the term "face gage" is to be understood as including any device for engaging either face of a heel or a top-lift.

While the particulars of construction herein set forth are well suited to one form of the invention, it is not to be understood that these particulars are essential since they may be variously modified within the skill of the artisan without departing from the true scope of the actual invention as defined by the following claims.

What is claimed as new, is:—

1. A heel holder for boot and shoe machines comprising automatically operating heel centering means, and heel positioning means including a back gage mounted for movement transversely with the heel during the centering operation.

2. A heel holder for boot and shoe machines comprising a breast gage, a transversely movable, self-centering back gage and means acting to relatively move said gages toward each other, the back gage acting during such relative movement to automatically center the heel.

3. A heel holder for boot and shoe machines comprising a breast gage, and a back gage constructed and arranged to permit centering of the heel relative to the breast gage and movable transversely with the heel, in its centering movement, and means to yieldingly press the breast gage and back gage toward each other.

4. A heel holder for boot and shoe machines comprising a breast gage spring pressed toward the heel, and an anti-friction device arranged to gage the back of the heel



and permit centering of improperly placed heels against the breast gage.

5. In a heel holder, breast and back gages for positioning the heel, one of said gages having an anti-frictionally-mounted bearing surface and means for maintaining one of said gages yieldingly pressed toward the other.

6. In a heel holder, heel positioning means including a pivotally mounted back gage, centrally arranged relatively to the back of the heel, having a bearing surface on an arc of the circle of which said pivot is the center.

7. A heel holder for boot and shoe machines comprising a breast gage, a back gage pivotally mounted for transverse movement relative to said breast gage, and means to normally maintain said back gage in substantially central position.

8. In a heel holder, heel positioning means comprising a breast gage and a separate back gage relatively movable to embrace the edges of a heel, said separate back gage having a main portion and an engaging portion mounted for movement relative to the main portion in a path of direction at substantial right angles to the plane of the tread face of the heel.

9. In a heel holder, heel positioning means including a back gage formed in two parts, said parts being hinged together, said hinged connection comprising a spring for holding said gage in work engaging position, while permitting said gage to yield from said position.

10. Heel positioning means for boot and shoe machines comprising a breast gage, a back gage, and a relatively stationary face gage, said back gage being constructed and arranged with its engaging portion in a plane extending at an obtuse angle to the plane of the engaging surface of the face gage and away from said face gage to permit said engaging portion to flatly engage the beveled lateral surface of the work to hold it against the face gage as the work is moved relatively thereto.

11. A heel holder for boot and shoe machines comprising positioning means for engaging the lateral surface of the heel and a face gage above said positioning means, said face gage being constructed and arranged to permit a view of the perimeter of the heel face as the heel is placed in engagement with said positioning means.

12. In a heel holder, heel positioning means including a face gage of transparent material.

13. A mechanism of the character described comprising a heel holder mounted for movement from heel receiving to nail driving position, a guide plate above the path of movement of said holder to gage the face of the heel and insure its movement in

a single plane, said guide plate having a transparent portion adjacent the heel receiving position of the holder.

14. A heel holder for boot and shoe machines comprising a breast gage, a carrier therefor, a back gage, a carrier therefor, and means to yieldingly press one of said carriers toward the other to center the heel, one of said gages being mounted to move transversely with the heel in the centering operation.

15. In a heel holder, two oppositely arranged gages, and automatically acting means to force said gages toward each other to center a heel held therebetween, one of said gages being mounted for rolling contact with the heel during the centering operation.

16. A heel holder for boot and shoe machines, comprising gages at the breast and back of the heel, and means tending to force one of said gages toward the other and operating to turn an improperly placed heel into central position, said other gage being mounted for responsive movement to the turning movement of the heel.

17. A heel holding and positioning device for boot and shoe machines comprising a face gage, and a plurality of gages for the lateral surface of the heel, one of said lateral surface gages being mounted for movement toward and from the face gage, means for normally holding said gage with its work contacting edge directed away from the face gage, and said plurality of gages for the lateral surface of the heel being movable together and relatively to the face gage in putting the work in position.

18. In a heel holder, heel positioning means comprising a back gage and a breast gage movable toward and from said back gage to embrace the edges of a heel, a relatively stationary face plate, yielding means for normally holding one of said gages with its work engaging portion directed at an angle away from the face plate, said yielding gage having its heel engaging edge movable in a path of direction at substantial right angles to the plane of the tread face of the heel.

19. A heel holder for boot and shoe machines comprising a breast gage and a back gage mounted for bodily transverse movement relative to said breast gage and for movement in a path of direction at substantial right angles to the plane of the tread face of the heel.

20. In a machine of the character described, a work holder including a breast gage and a back gage, means for yieldingly supporting one of said gages for movement in a path of direction at substantially right angles to the plane of the tread face of the heel, and means for supporting the other of said gages unyieldingly with reference to



movement in a direction at right angles to the tread surface of the heel.

21. A work holder for boot and shoe machines comprising a breast gage and a back gage, means for moving said gages toward each other to clamp the work between them, means for supporting the breast gage unyieldingly with reference to movement in a direction transverse of the tread surface of the heel and means for supporting the back gage yieldingly with reference to movement in the same direction.

22. A top lift holder for boot and shoe machines comprising automatically oper-

ating top lift, centering means, top lift positioning means including a back gage mounted for movement transversely with the top lift during the centering operation, and a stop to limit the transverse movement of the back gage.

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

WILLIAM C. STEWART.

Witnesses:

WILLIAM J. BRENNAN,  
REDFIELD H. ALLEN.