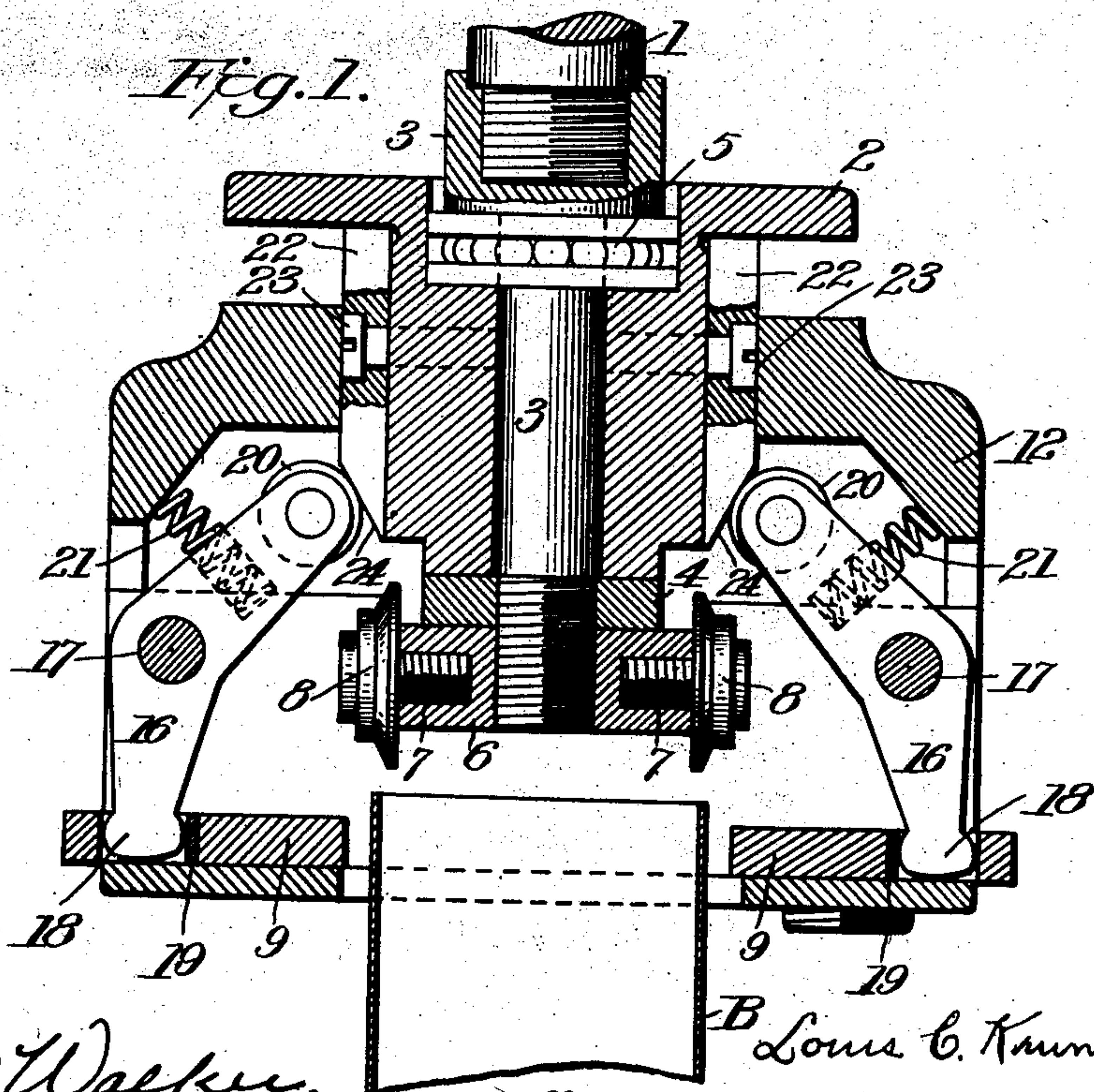
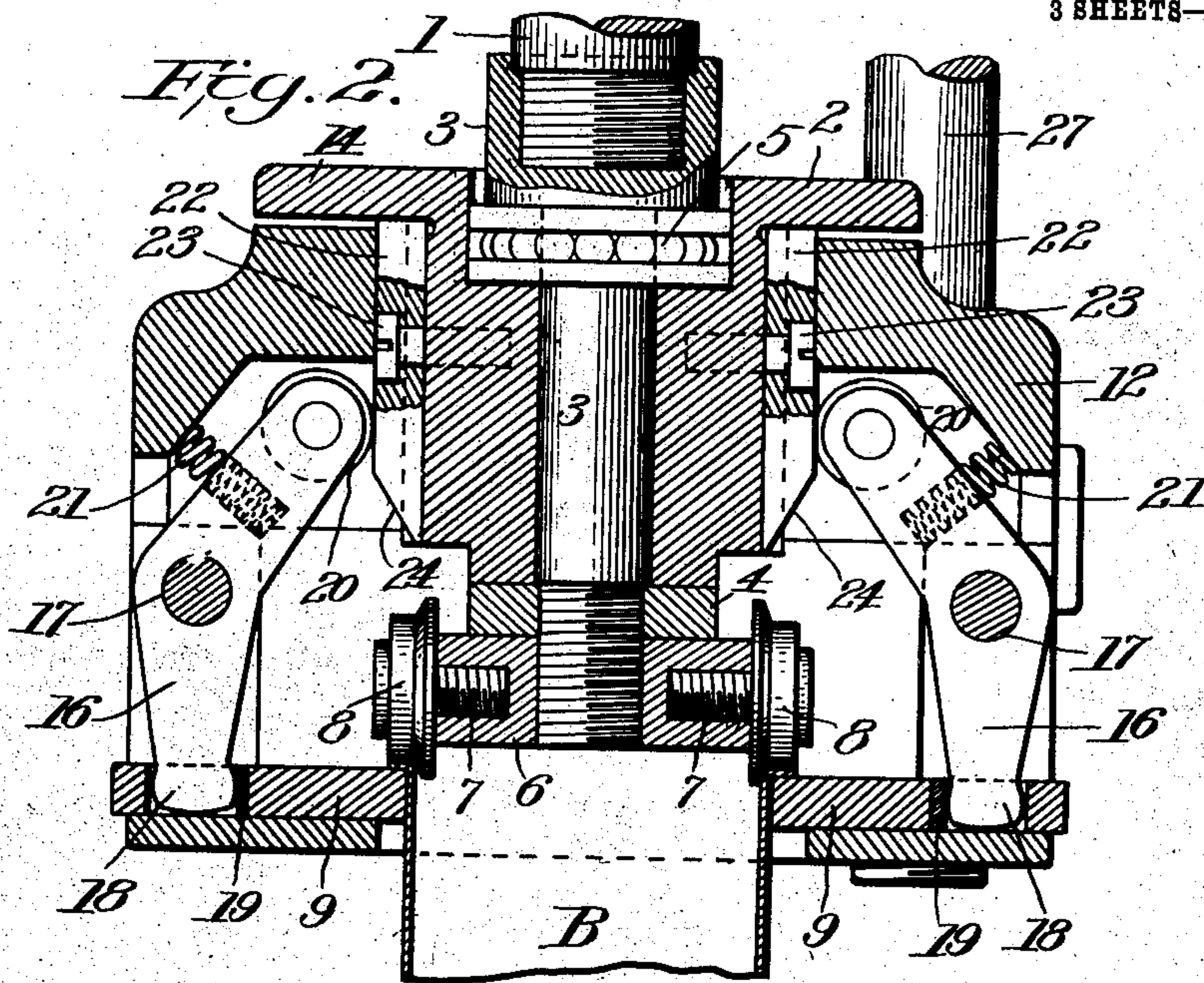


L. C. KRUMMEL.
FLANGING HEAD FOR RECEPTACLES.
APPLICATION FILED JAN. 29, 1909.

944,791.

Patented Dec. 28, 1909.

3 SHEETS—SHEET 1.



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Fig. 3.

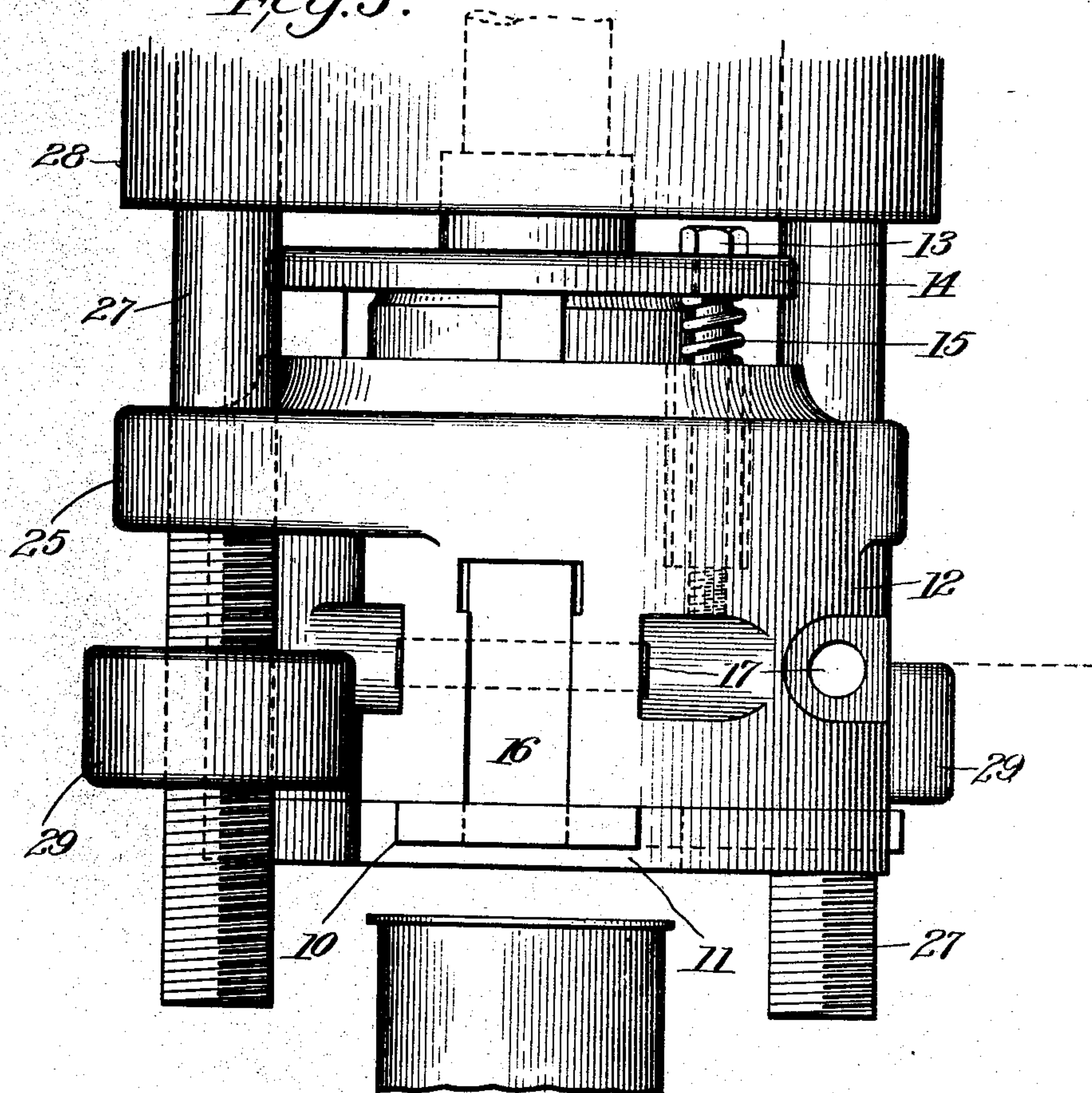
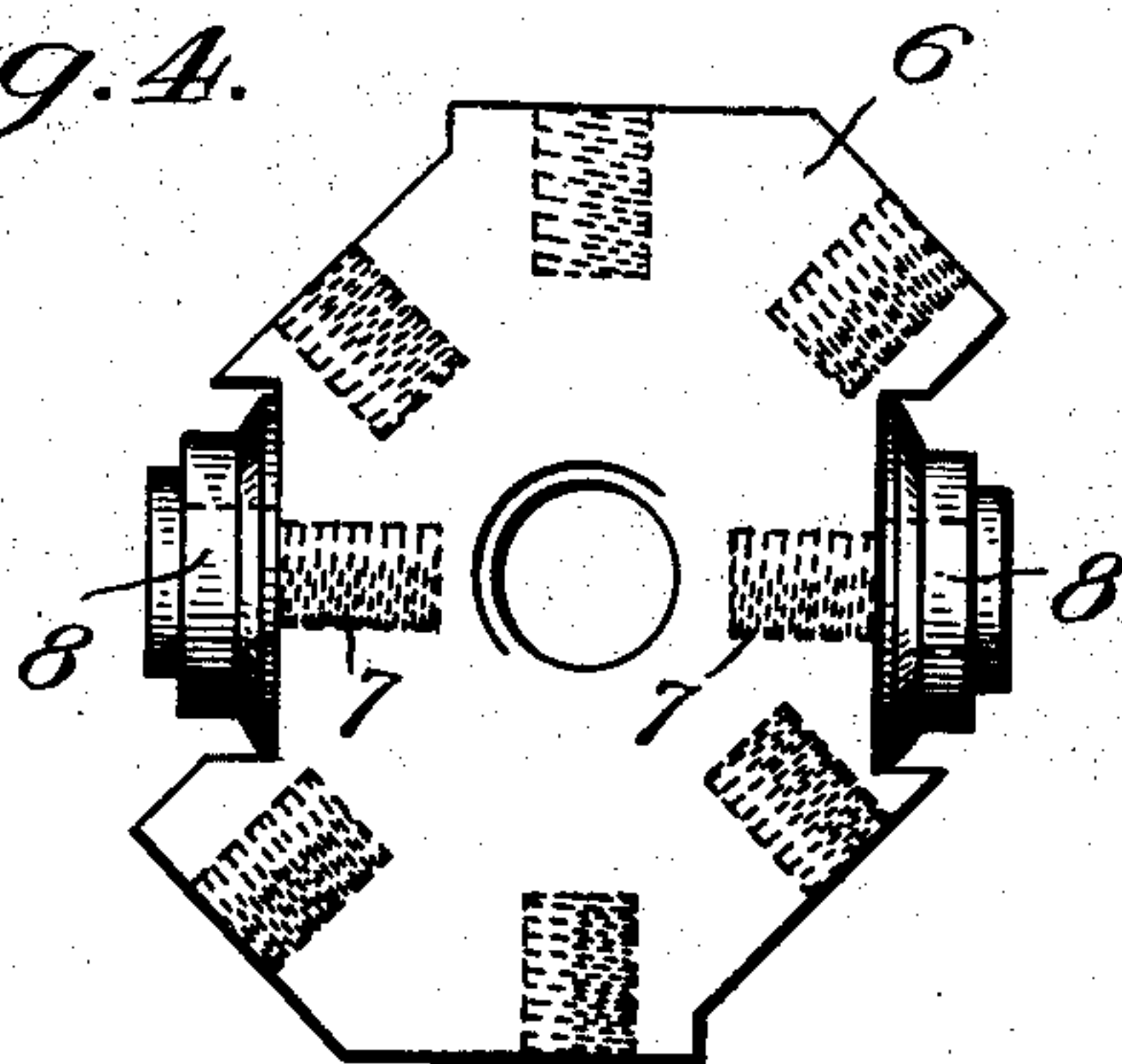


Fig. 4.



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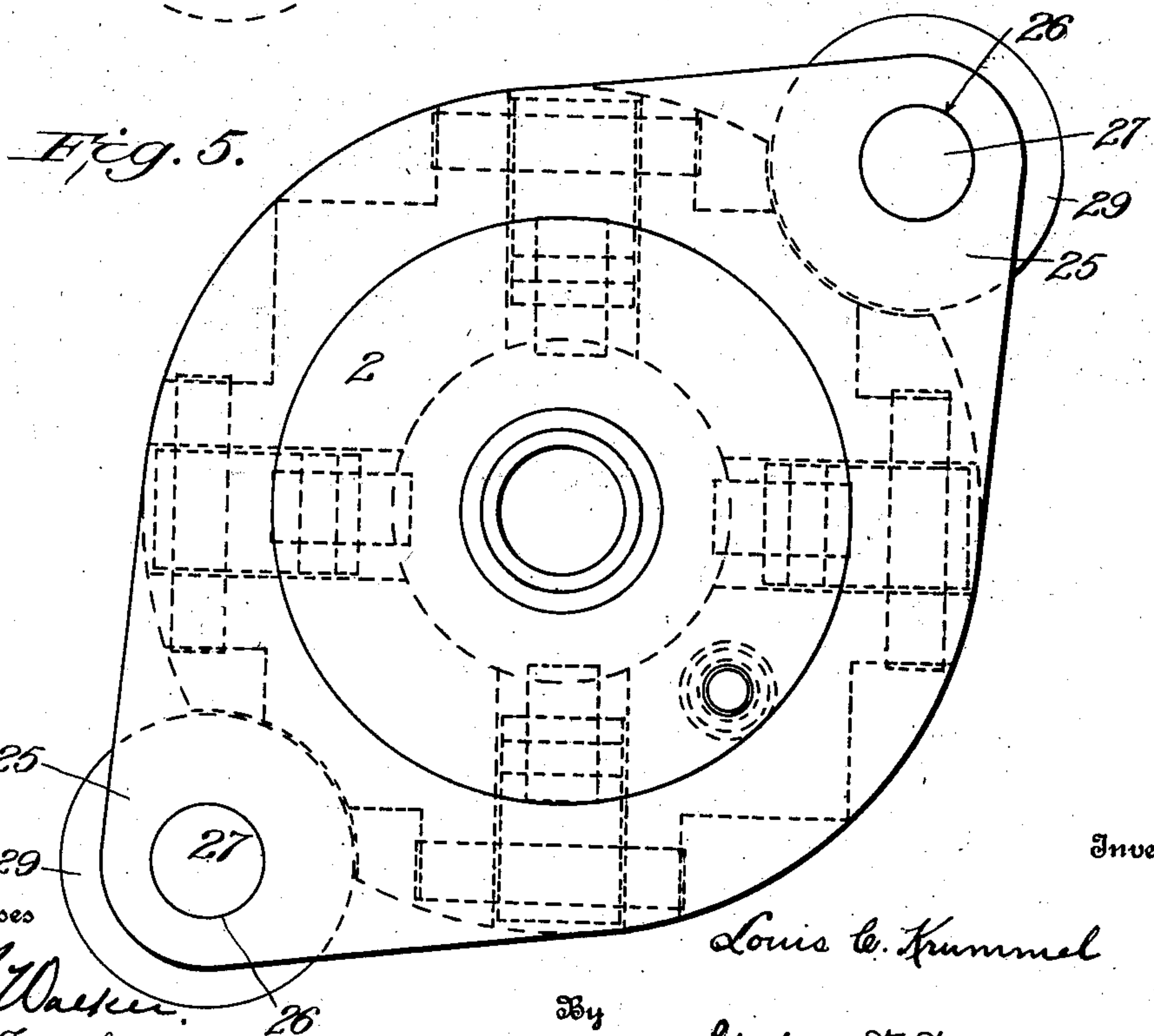
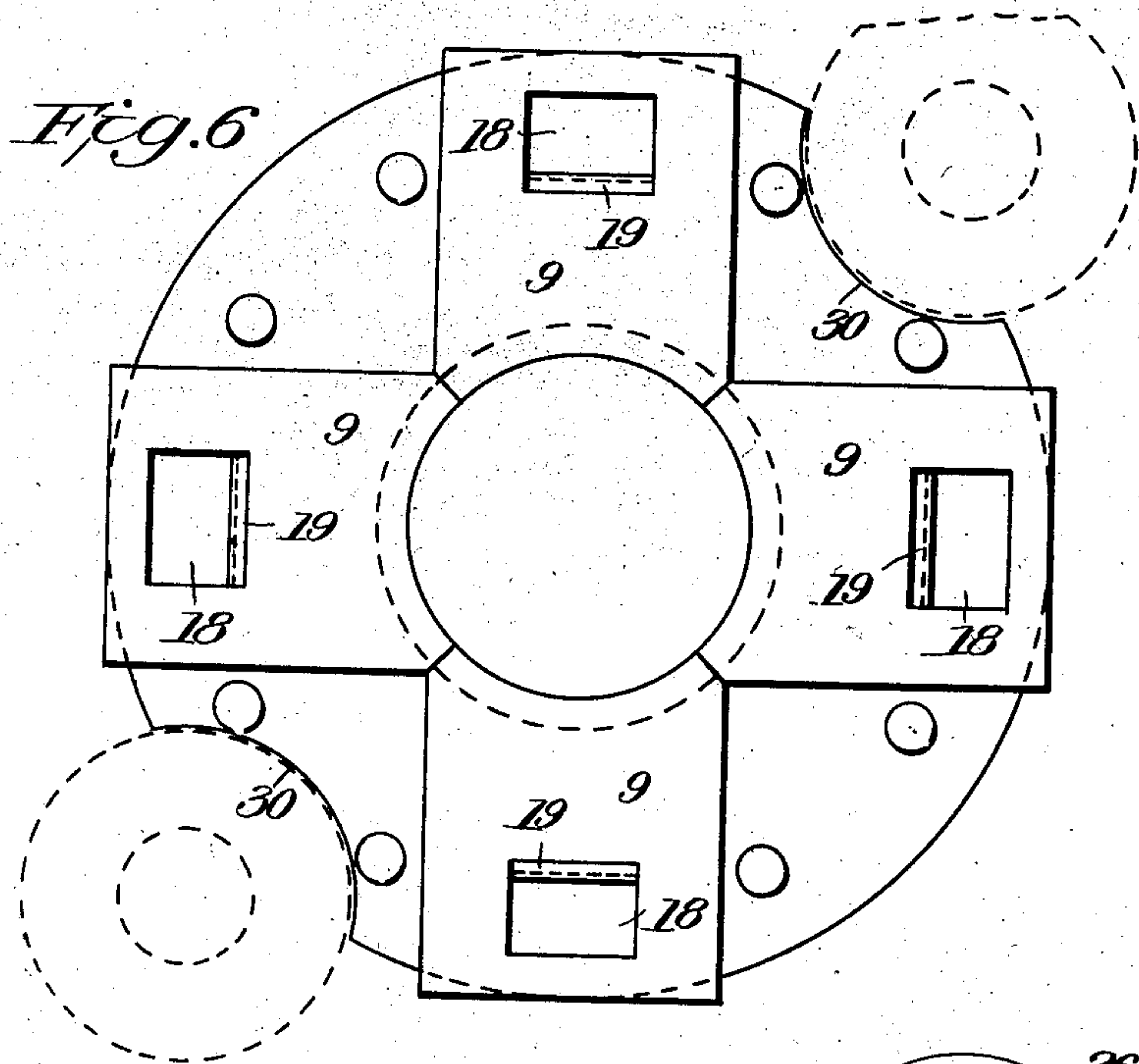
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UNITED STATES PATENT OFFICE.

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FLANGING-HEAD FOR RECEPTACLES.

944,791.

Specification of Letters Patent.

Patented Dec. 28, 1909.

Application filed January 29, 1909. Serial No. 475,005.

To all whom it may concern:

Be it known that I, LOUIS C. KRUMMEL, a citizen of the United States, residing at Clinton, in the county of Middlesex, State of Connecticut, have invented certain new and useful Improvements in Flanging-Heads for Receptacles, of which the following is a description, reference being had to the accompanying drawing, and to the characters of reference marked thereon.

My invention relates to new and useful improvements in flanging heads for receptacles, and more especially to flanging heads adapted to turn a flange on the body of a can, preparatory to placing a cover on said can.

An object of the invention is to provide a flanging head which shall be simple in construction and durable in operation.

A further object of the invention is to provide a flanging head, in which all of the essential parts required for turning a flange on a receptacle, are supported and operated by the flanging head.

A further object of the invention is to provide a flanging head which includes a spindle carrying flanging rollers, with forming slides which are supported by the head and are operated by means contained within said head.

A further object of the invention is to provide a flanging head which may be readily adjusted to operate upon different sized cans or receptacles.

Still further objects of the invention will in part be obvious, and will in part be hereinafter more fully described.

In the drawings which show by way of illustration one embodiment of the invention,—Figure 1 is a sectional view through the flanging head, showing the parts in position for receiving the can body which has to be flanged, the forming slides having moved part way toward their inner position; Fig. 2 is a similar view, with the parts in the position for finishing the flange; Fig. 3 is a side elevation of my flanging head, and showing a portion of the supporting frame for the same; Fig. 4 is a detail view, showing the wrist plate for the flanging rollers; Fig. 5 is a top plan view of the flanging head, showing in dotted lines the levers for operating the forming slides; and Fig. 6 is a bottom plan view of the forming head with

the end cap plate removed and the forming slides in their inner position; also showing in dotted lines the limiting nuts for the outer sleeve.

My improved flanging head comprises a supporting spindle 1, which carries an inner sleeve 2. The spindle 1 is threaded into the end of a short vertical shaft 3, and by disconnecting the shaft 3 from the spindle 1 the entire head may be removed from the machine without in any way disassembling the parts of the head.

The short vertical shaft 3 extends through the sleeve 2, and said sleeve is held on the short vertical shaft by means of a nut 4. The short vertical shaft 3 is enlarged at its upper end to receive the threaded portion of the spindle, and intermediate the enlarged upper end of the shaft 3 and the sleeve 2 is a ball bearing 5, which receives the end thrust when the head is lowered on to the can body to flange the same. The sleeve 2 is recessed at its upper side to receive the ball bearing 5, as clearly shown in Figs. 1 and 2 of the drawing.

The short vertical shaft 3 carries at its lower end a wrist plate 6, into which is threaded studs 7, 7, supporting flanging rollers 8, 8. The wrist plate 6, as shown in Fig. 4, is provided with a plurality of seats for the flanging rollers, which seats are spaced at different distances from the center of the wrist plate. The purpose of this construction of wrist plate is to allow the shifting of the position of the flanging rollers, so that said rollers may be properly located for operating upon different sized cans or receptacles.

The spindle 1, which supports the flanging head may be mounted in any suitable supporting structure, and may be rotated either by hand or automatically, although, of course, it is preferable to rotate said spindle automatically. The spindle in the present illustration of my invention is reciprocated longitudinally in order to bring the flanging head into contact with the receptacle of the body to be flanged. Said reciprocation of the spindle may be caused automatically, or the spindle may be moved manually, if desired.

The essential features of the invention consist in the flanging head, and, as a means for operating the flanging head, of course it

is necessary that the spindle supporting the same be given a relative movement to the body of the receptacle being flanged, and also a longitudinal movement, in order to
 5 bring the flanging rollers into operative contact with the body of the receptacle. As a matter of fact, my improved flanging head may be used in any ordinary drill press, if desired.

10 Coöperating with the flanging rollers are the forming slides 9, 9, 9, 9. Said slides are similar in construction and operation, and, therefore, a description of one of these slides will answer for all. The slide 9 moves back
 15 and forth in a recess 10 in the cap plate 11, which is screwed to the lower end of an outer sleeve 12, (see Fig. 3). Said outer sleeve 12 is provided with a central cylindrical recess to receive the inner sleeve 2. Limiting bolts
 20 13, which may be of any desired number, are carried by said outer sleeve and extend through an opening in the outwardly extending flange 14 of the inner sleeve 2 (see Fig. 3). Said bolts 13 are each provided
 25 with a head or nut which engages the upper face of the flange 14. The outer sleeve 12 is recessed about the bolts 14, as shown in dotted lines in Fig. 3, and a spring 15 surrounds each of the bolts 13, and is located in said recess.
 30 Said springs bear against the lower face of the flange 14. The purpose of the springs 15 is to keep the inner and outer sleeves in the position shown in Fig. 3; that is, with the inner sleeve moved out of the
 35 outer sleeve until the same contacts with the head of the limiting bolts.

Each of the slides 9 is operated by a lever 16, which is carried by a pivot bolt 17. The lower end of the lever 16 is provided with a
 40 rounded portion 18, which extends into an opening in the slide 9, and rests against a wear plate 19, located in said opening. The upper end of the lever 16 carries a roller 20. A spring 21 is carried in a recess in the lever
 45 16, and engages at its outer end the inner face of the outer sleeve 12. Said springs operating in connection with the levers, tend to hold the forming slides in their extreme outer position.

50 The inner sleeve 2 is provided with a cam plate 22, which is secured to the inner sleeve by a suitable bolt 23. The lower end of the plate 22 is beveled to form a cam surface 24.

When the inner and outer sleeves are expanded, that is, separated to the extent shown in Fig. 3, the rollers 20 are at the lower ends of the cam faces 24 on the cam
 55 plates 22, and the springs 21 operate to hold the slides in their extreme outer position.

60 If, however, the inner sleeve should be moved down into the outer sleeve, or the outer sleeve should be moved up on to the inner sleeve, the cam face 24 of each of the plates 22 would engage its respective roller
 65 20, and force the forming slides inward. The

roller 20 would then pass up onto the outer face of the plate 22, and hold said forming slides at their extreme inner position.

As above noted, the entire flanging head is supported and reciprocated by the spindle 1. As a means for causing a movement of the outer sleeve relative to the inner sleeve, I have shown herein, the outer sleeve provided with projecting portions 25, 25, (see Figs. 3 and 5). Said projections 25 are
 75 provided with openings 26, through which pass bolts 27, which, as herein shown, are carried by the supporting framework 28 of the machine. Circular nuts 29 are threaded on the bolts 27, and the outer sleeve is cut
 80 away, as shown at 30 in Fig. 6, so that said outer sleeve may reciprocate freely up and down on the bolts 27.

The outer sleeve, as shown in Fig. 2, is notched to receive the cam plates 22, and
 85 said cam plates will, therefore, prevent the inner sleeve or the outer sleeve from rotating relative to each other, and at the same time allow the outer sleeve to reciprocate relative to the inner sleeve.

The bolts 27 passing through the projections on the outer sleeve, will prevent the outer sleeve from rotating, although allowing said outer sleeve to reciprocate until
 95 said projections 25 engage the limiting nuts 29 carried by said bolts 27.

The forming slides 9, as shown in Fig. 6, are curved at their inner ends, and are so proportioned that when said slides are in their innermost position, said slides meet,
 100 forming a continuous circular opening. The opening in the slides should, of course, be of substantially the same diameter as the outer diameter of the body of the receptacle on which it is desired to turn a flange, so
 105 that said forming slides will serve as an anvil onto which the flange of the can body may be turned by the forming rollers.

In the operation of my device, the can bodies are placed underneath the flanging head on any suitable support. The flanging head, as herein shown and described, is lowered on to the can body indicated at B in Fig. 1. As soon as the projections 25 on the outer sleeve engage the limiting nuts
 110 29, the downward movement of the outer sleeve and the forming slides will cease. A further downward movement of the spindle 1 carries the inner sleeve down into the outer sleeve. The cam surfaces 24 engage
 115 the rollers on the operating levers, and move the forming slides inward against the can body. After the forming slides have been brought into contact with the can body, the rolls 20 will pass on to the parallel outer
 120 surface of the cam plates 22, and hold the forming slides against the can body. A further downward movement of the spindle 1 causes the flanging rollers to contact with the upper edge of the receptacle to be
 125 130

flanged, and to turn the edge by reason of the rotating of the spindle over on to the forming slides, as shown in Fig. 2. After the flanging operation has been completed, the spindle 1 rises, carrying with it the inner sleeve and the springs 15 will serve to hold the outer sleeve down in contact with the limiting nuts 29 until after the rollers 20 have passed down off the cam surfaces, thus allowing the springs 21 to withdraw the forming slides from underneath the flange formed on the body of the receptacle. The flange carried by the inner sleeve then engages the heads of the bolts 13, and raises the outer sleeve off from the nuts 29, and the entire head then moves up away from the can body to give sufficient room for the removal of the can body and the insertion of another.

The can bodies may, of course, be placed by hand underneath the flanging head, or may be fed underneath the flanging head automatically. If, however, the can bodies are fed automatically to the flanging head, it will be necessary to time the operation of the feeding device so as to place the can underneath the flanging head, while the same is raised.

It will readily be seen that by my improved flanging head, wherein the forming slides are moved down over the body of the receptacle to be flanged, that I may use four forming slides, and that the distance required to move the forming slides from their inner to their outer position, may be comparatively small.

When it is desired to change the flanging head so that the same may operate upon a different sized receptacle, the flanging rollers are removed and secured to the face of the wrist plate, giving the desired position of the rollers and the end cap of the flanging head is removed, so that a different cap with properly shaped slides to fit the size of the receptacles desired to operate upon, may be substituted for the one removed.

The width of the flange on the can body, may be readily varied by varying the position of the limiting nuts 29, and, of course, varying the stroke of the spindle, so that the flanging rollers will be brought into proper coöperative relation with the forming slides. Supposing the can to rest on a stationary table, it will readily be seen that if the limiting nuts 29 are lowered, the outer sleeve will move down farther on the can body before it is brought to rest by contact with the nuts 29, and, therefore, a greater portion of the can body will extend above the forming slides. If now the flanging rollers are brought down on to the can body, all of the can body extending above the forming slides will be turned over to form the flange.

Of course, it will be understood that the width of the flange could be adjusted by ad-

justing the height of the table supporting the can, relative to the position of the limiting nuts 29, which determine the position of the forming slides at the time of turning the flange.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A flanging head including in combination, flange-turning devices and forming slides on to which the flange may be turned supported by and movable with said head.

2. A flanging head including in combination, flanging rollers, means for rotating said rollers relative to the can body to be flanged, forming slides supported by and movable with the head, and means carried by the head for reciprocating said slides.

3. A flanging head including in combination, a rotatable spindle, flanging rollers carried thereby, forming slides supported by and movable with said head, means for preventing said slides from rotating with said spindle, and means for reciprocating said slides.

4. A flanging head including in combination, a rotatable spindle, flanging rollers carried thereby and rotating therewith, forming slides supported by and movable with the head, means for preventing said forming slides from rotating with the spindle, and means carried by said head for reciprocating said slides.

5. A flanging head including in combination, a rotatable spindle, flanging rollers carried thereby and rotating therewith, forming slides supported by and movable with said head, means for preventing said forming slides from rotating with the spindle, and means for reciprocating said slides.

6. A flanging head including in combination, a rotatable spindle, flanging rollers carried thereby and rotating therewith, forming slides supported by and movable with said head, means for reciprocating said forming slides, and means whereby said flanging rollers may be moved toward and from said forming slides.

7. A flanging head including in combination, a rotatable spindle, flanging rollers carried thereby and rotating therewith, forming slides supported by and movable with said head, means for preventing said slides from rotating with said spindle, means carried by said head for reciprocating said slides, and means whereby said flanging rollers may be moved toward and from said forming slides.

8. A flanging head including in combination, an inner sleeve, flange-turning devices movable with said inner sleeve, an outer sleeve, forming slides carried by said outer sleeve, and means carried by said inner sleeve for reciprocating said forming slides.

9. A flanging head including in combina-

tion, an inner sleeve, an outer sleeve, means whereby said inner and outer sleeves may be given a movement relative to each other, flanging rollers movable with the inner sleeve, means whereby said flanging rollers may be rotated, forming slides carried by said outer sleeve, and means carried by said inner sleeve for reciprocating said forming slides.

10 10. A flanging head including in combination, an inner sleeve, an outer sleeve, means whereby said inner and outer sleeves may be given a movement relative to each other, flanging rollers movable with said inner sleeve and rotatable independently thereof, forming slides carried by said outer sleeve, cams carried by said inner sleeve for operating said forming slides.

20 11. A flanging head including in combination, an inner sleeve, an outer sleeve, means whereby said inner and outer sleeves may be given a movement relative to each other, flanging rollers movable with said inner sleeve, and rotatable independently thereof, forming slides carried by said outer sleeve, levers carried by said outer sleeve for operating said forming slides, and cams carried by said inner sleeve and cooperating with said levers for moving said forming slides into contact with a can body, and springs for returning said forming slides when released by said cams.

30 12. A flanging head including in combination, a supporting spindle adapted to be rotated and reciprocated longitudinally, an inner sleeve mounted on said spindle, an outer sleeve, means for slidably connecting said outer sleeve to said inner sleeve, flanging rollers carried by said spindle, forming slides carried by said outer sleeve, means carried by the inner sleeve for reciprocating said forming slides when said inner sleeve is moved relative to said outer sleeve, and means for limiting the movement of said outer sleeve.

45 13. A flanging head including in combination, a supporting spindle adapted to be rotated and reciprocated longitudinally, an inner sleeve carried by said spindle, means for preventing said inner sleeve from rotating with said spindle, flanging rollers carried by said spindle, an outer sleeve slidably connected to said inner sleeve, springs for separating said inner and outer sleeves, means for limiting the movement of the outer sleeve relative to the inner sleeve, adjustable means for limiting the movement of the outer sleeve when the inner sleeve is reciprocated by said spindle, forming slides carried by said outer sleeve, and means for reciprocating the same.

60 14. A flanging head including in combination, a supporting spindle adapted to be rotated and reciprocated longitudinally, an

inner sleeve carried by said spindle, means for preventing said inner sleeve from rotating with said spindle, flanging rollers carried by said spindle, an outer sleeve slidably connected to said inner sleeve, springs for separating said inner and outer sleeves, means for limiting the movement of the outer sleeve relative to the inner sleeve, bolts having adjustable nuts carried thereby for engaging the outer sleeve, and limiting the movement thereof when the inner sleeve is reciprocated by said spindle, forming slides carried by said outer sleeve, and cams carried by said inner sleeve for reciprocating said forming slides.

15. A flanging head including in combination, an inner sleeve, an outer sleeve, means for separating said inner and outer sleeves, perforated projections carried by said outer sleeve, bolts passing through said perforated projections, and carrying adjustable nuts for engaging said outer sleeve and limiting the downward movement thereof, forming slides carried by said outer sleeve, cams carried by said inner sleeve for operating said forming slides and means cooperating with the forming slide for turning the flange.

16. A flanging head including in combination, an inner sleeve, an outer sleeve, means for separating said inner and outer sleeves, perforated projections carried by said outer sleeve, bolts passing through said perforated projections and carrying adjustable nuts for engaging said outer sleeve and limiting the downward movement thereof, forming slides carried by said outer sleeve, levers pivoted to said outer sleeve and having one end thereof in engagement with said slides, rollers carried by said levers, cams carried by the inner sleeve for engaging said rollers to operate said slides and means cooperating with the forming slides for turning the flange.

17. A flanging head including in combination, an outer sleeve, forming slides on which the flange may be turned carried thereby, levers pivoted to said outer sleeve, said forming slides having an opening therein to receive one end of said levers, rollers carried by said levers, springs moving said levers so as to hold said slides in their outermost position and means cooperating with said forming slides for turning the flange.

18. In a flanging head, the combination of an outer sleeve, a detachable cap secured at the lower end of said sleeve, forming slides on which the flange may be turned located in recesses formed in said cap and supported thereby, whereby said forming slides may readily be removed and others substituted therefor by detaching said cap.

19. In a flanging head, the combination of a rotatable spindle, a wrist plate carried

thereby, flanging rollers carried by said wrist plate, said wrist plate having a plurality of differently spaced seats for supporting said flanging rollers, whereby the
5 distance between said flanging rollers may be readily adjusted by moving the flanging rollers from one seat to another.

In testimony whereof I affix my signature,
in presence of two witnesses.

LOUIS C. KRUMMEL.

Witnesses:

EUGENE G. MASON,
C. L. STURTEVANT.