

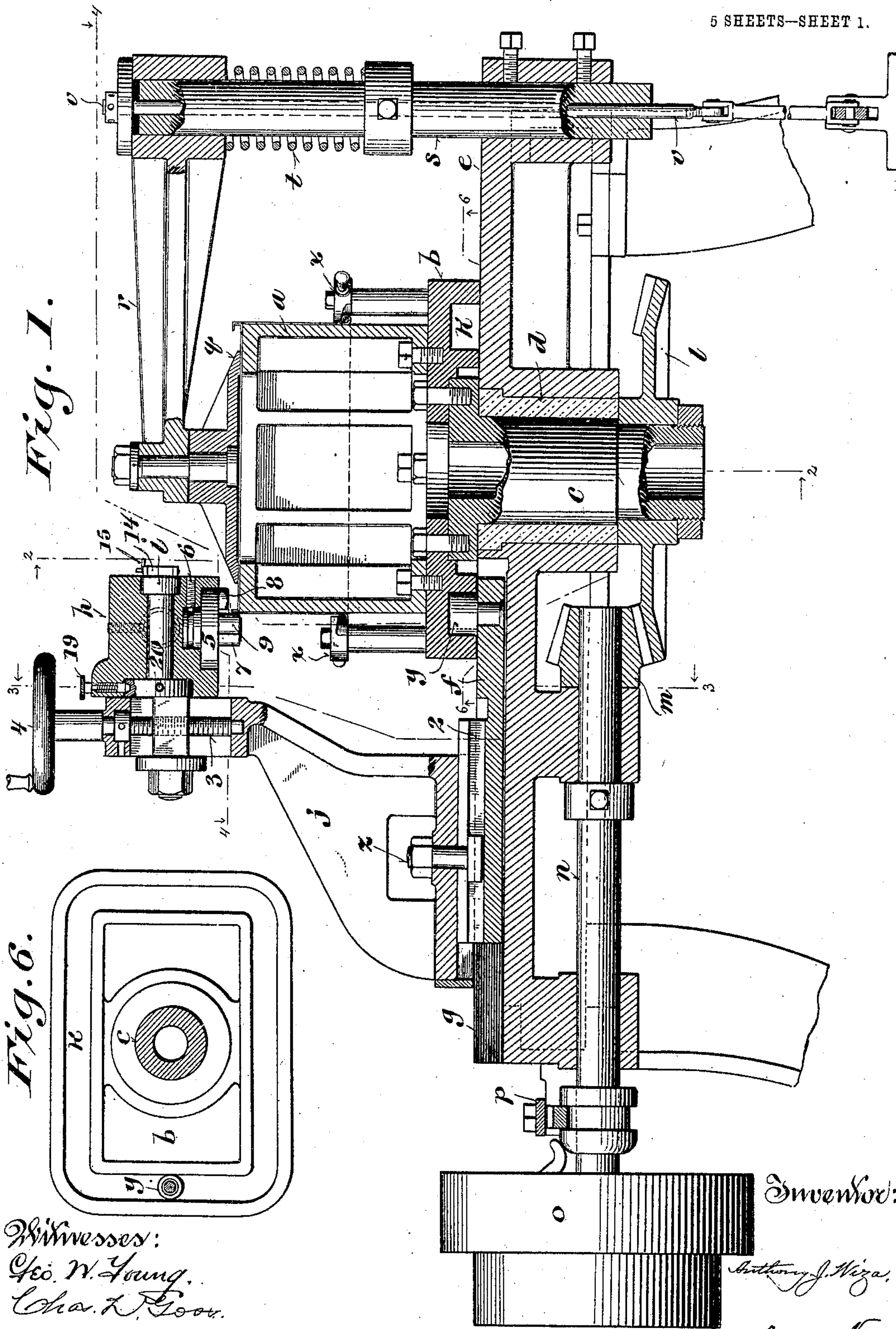
No. 819,329.

PATENTED MAY 1, 1906.

A. J. WIZA.
SEAMING MACHINE.

APPLICATION FILED JUNE 4, 1904.

5 SHEETS—SHEET 1.



Witnesses:
Geo. W. Young.
Chas. L. Poor.

Inventor:

Anthony J. Wiza.

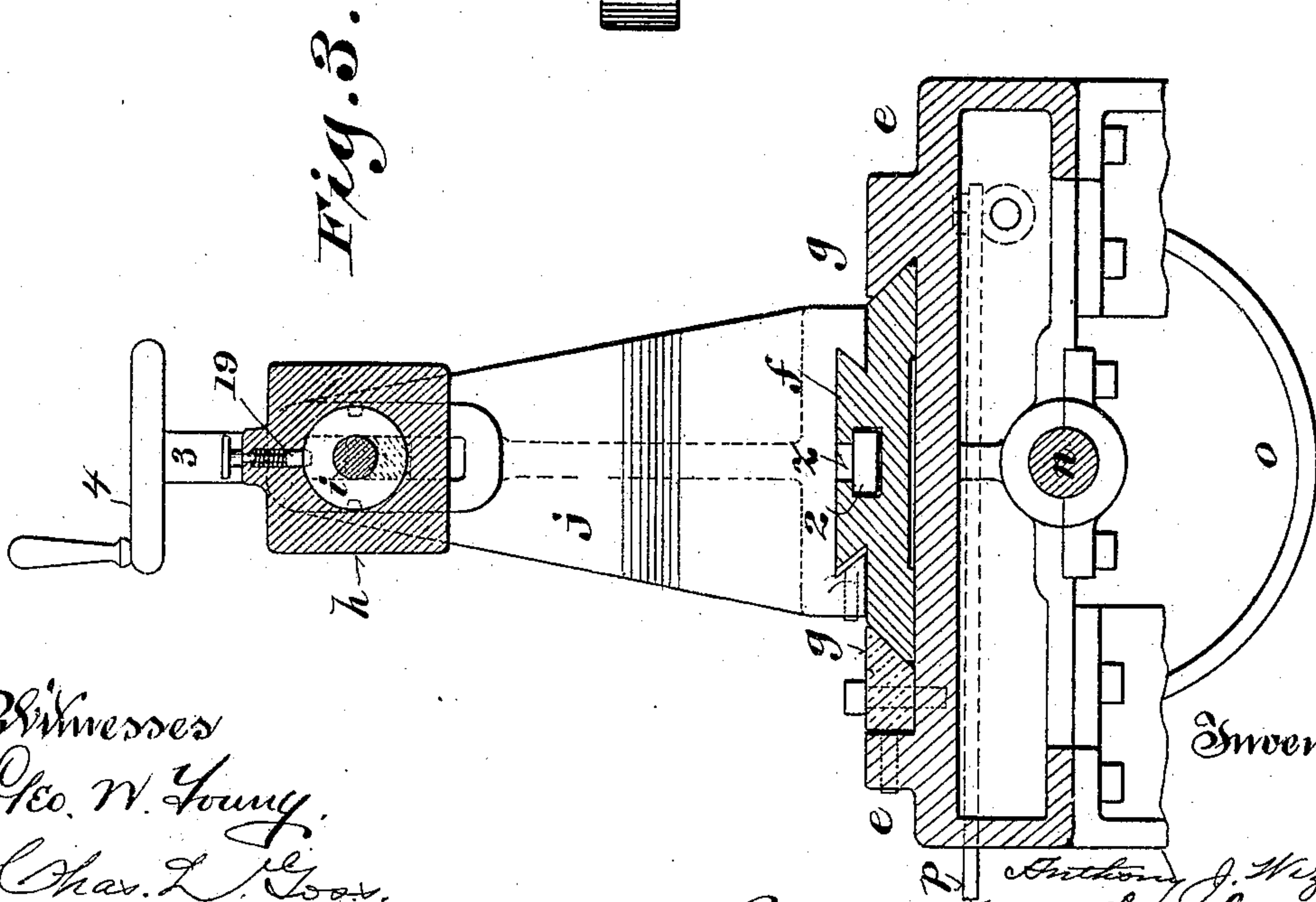
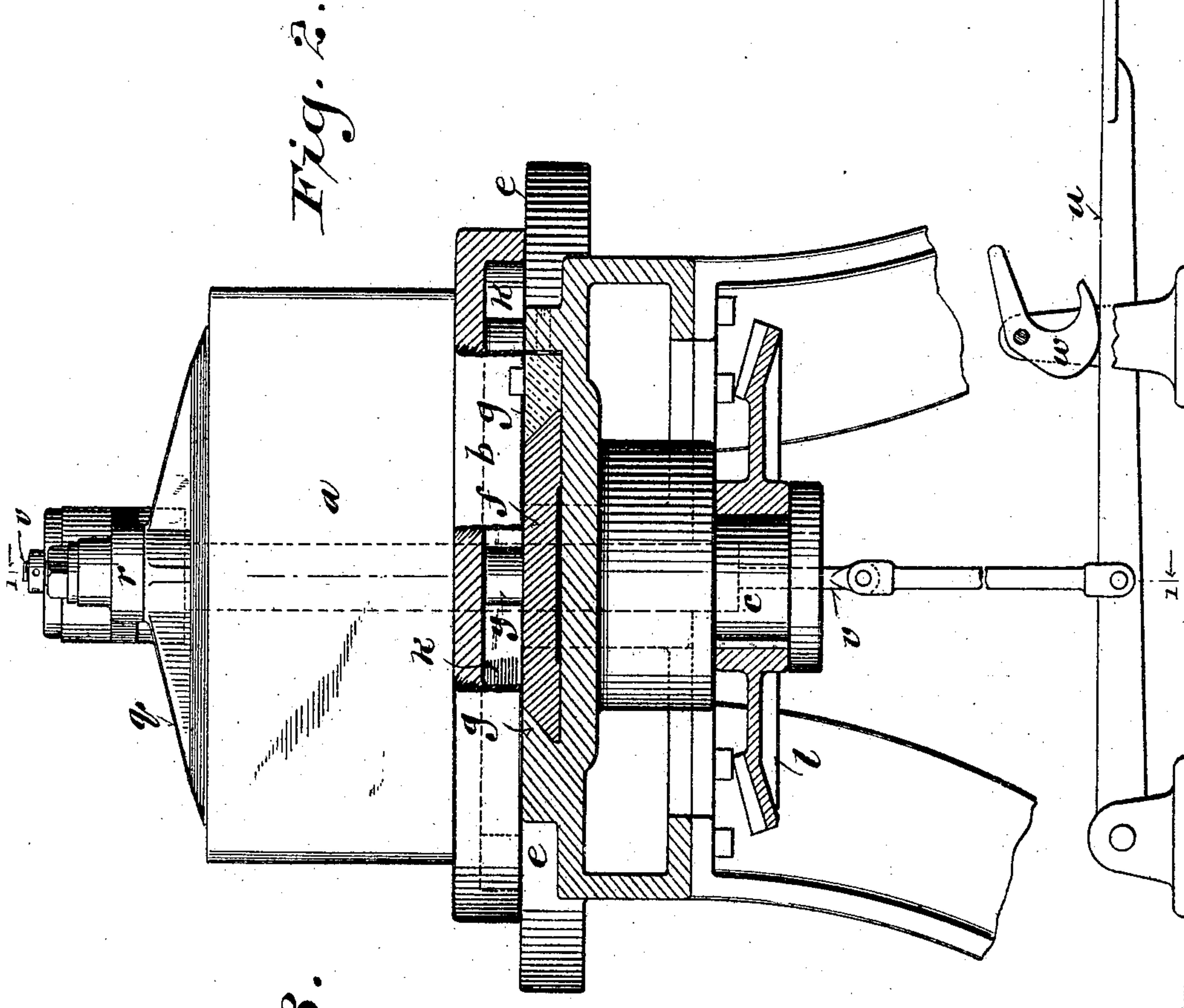
By Winkler Flanders Smith Attorney at Law,
Chicago, Ill.

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5 SHEETS—SHEET 2.



Witnesses
Geo. W. Young.
Chas. L. Coar.

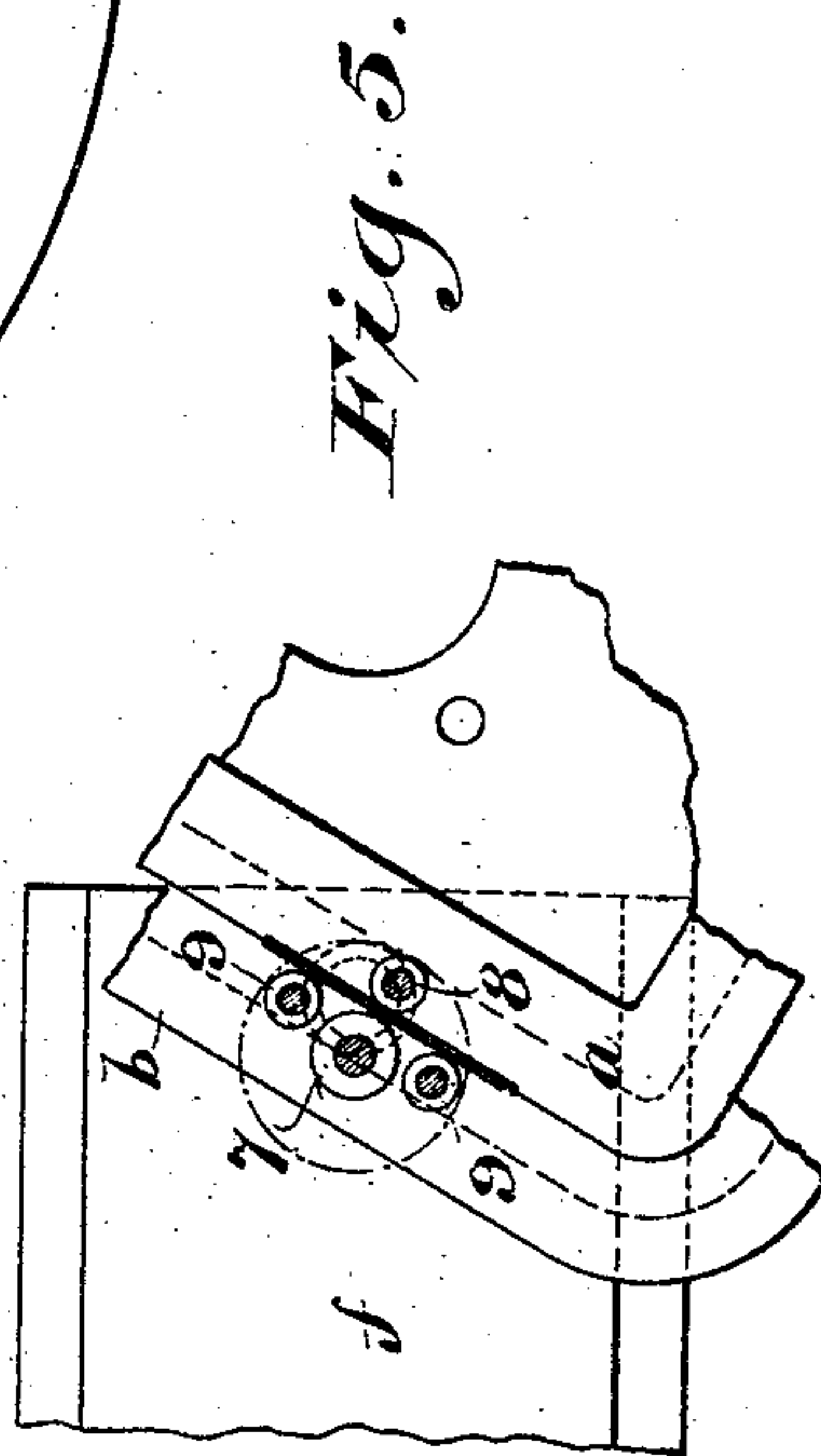
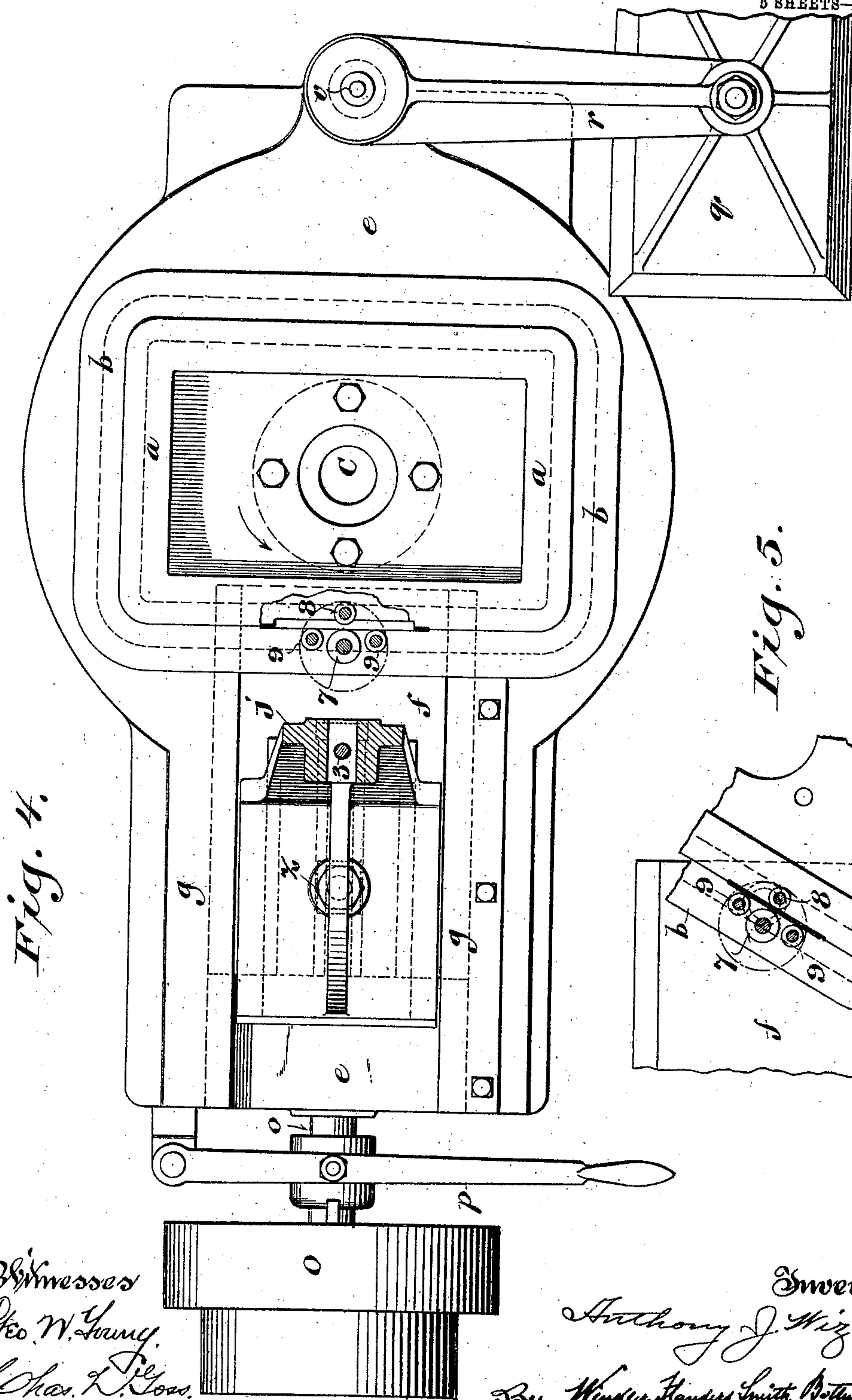
Inventor:
Anthony J. Wiza
By Winkler, Sanders & Smith, Attorneys.
Bottum & Vilas,
Correspondents.

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A. J. WIZA.
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5 SHEETS—SHEET 3.



Witnesses
Geo. W. Young.
Chas. L. Ross.

Inventor:
Anthony J. Wiza
By Wendell Sanders Smith Attorney.

No. 819,329.

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A. J. WIZA.
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5 SHEETS—SHEET 4.

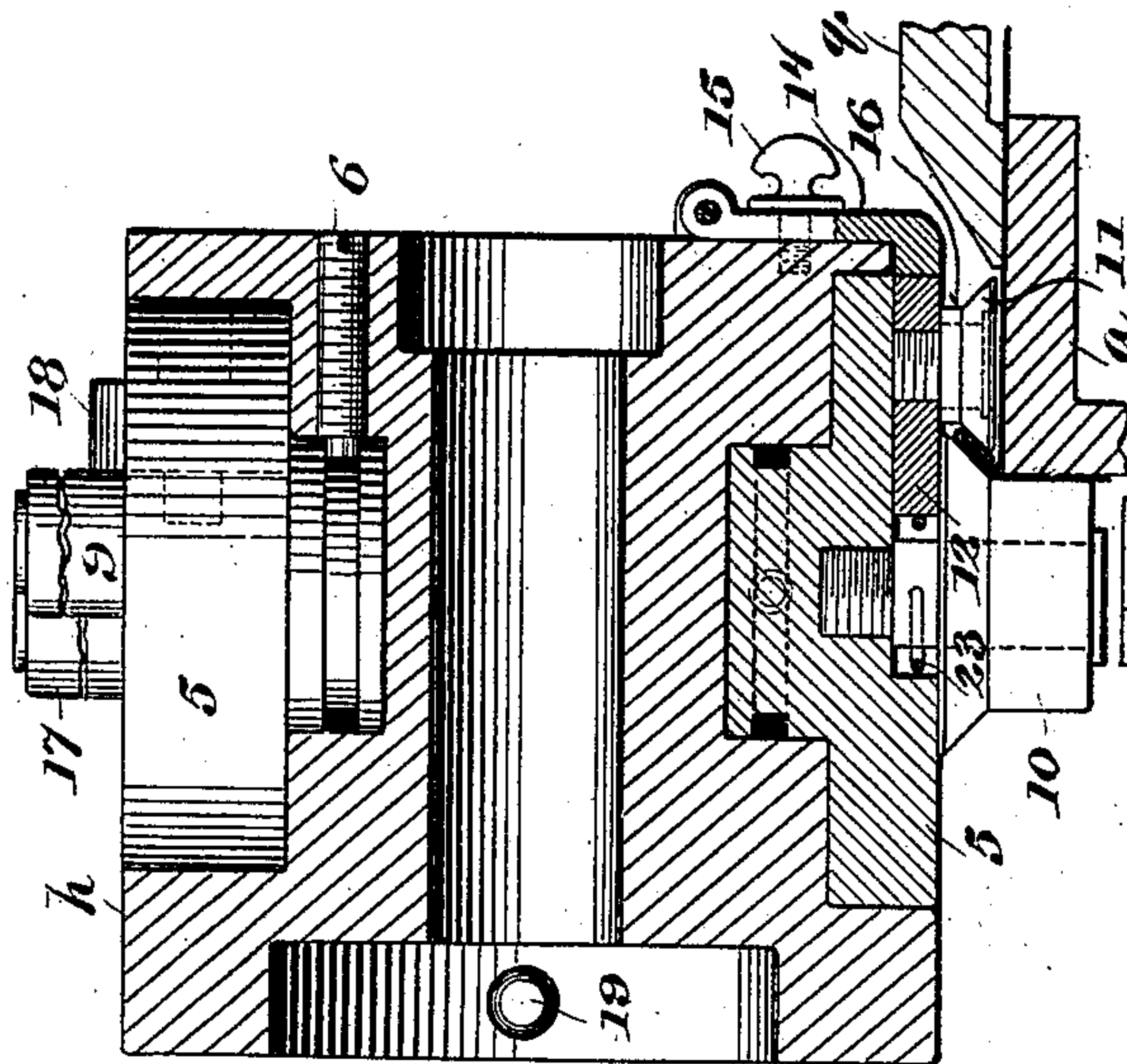


Fig. 9.

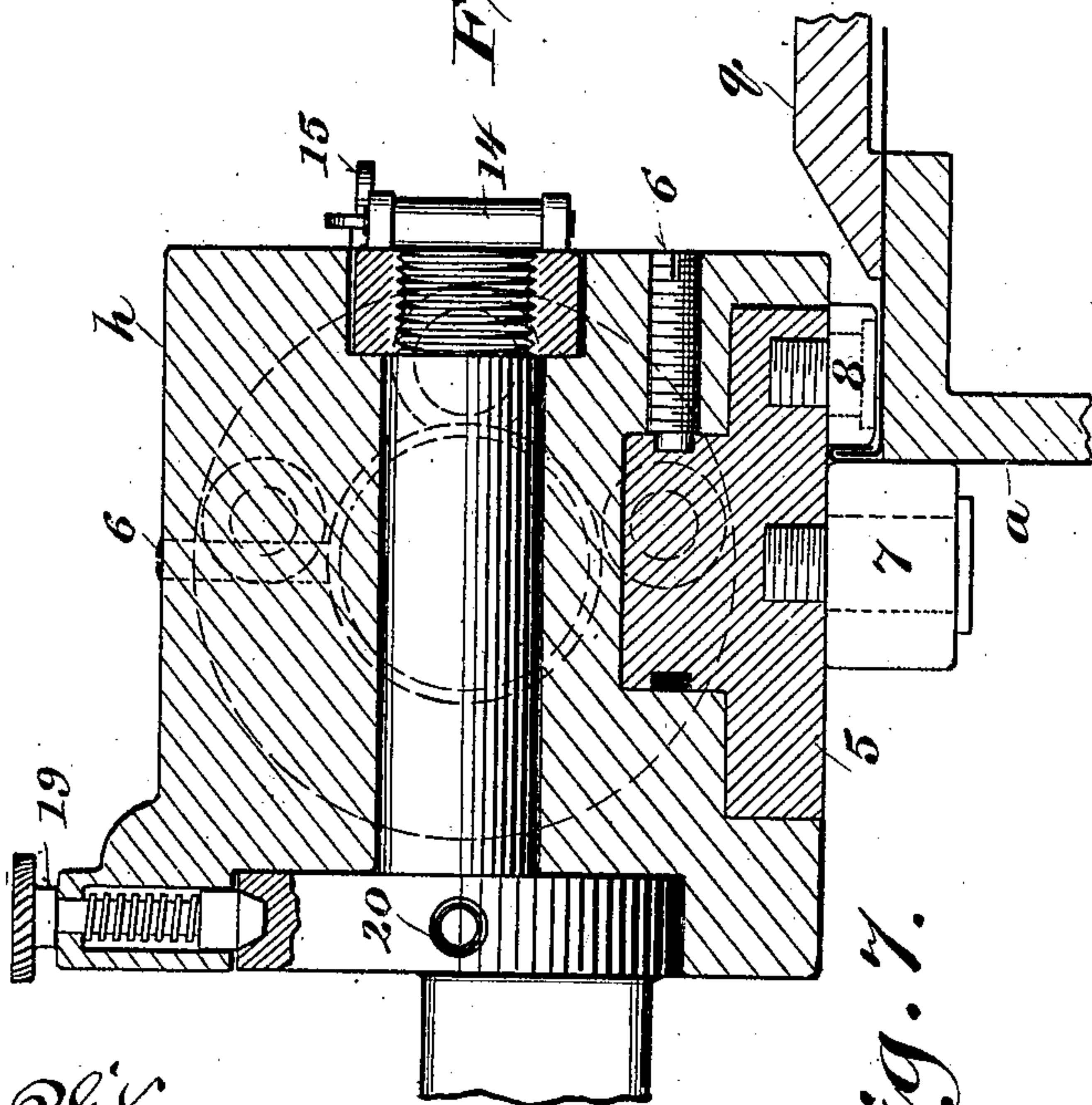


Fig. 7.

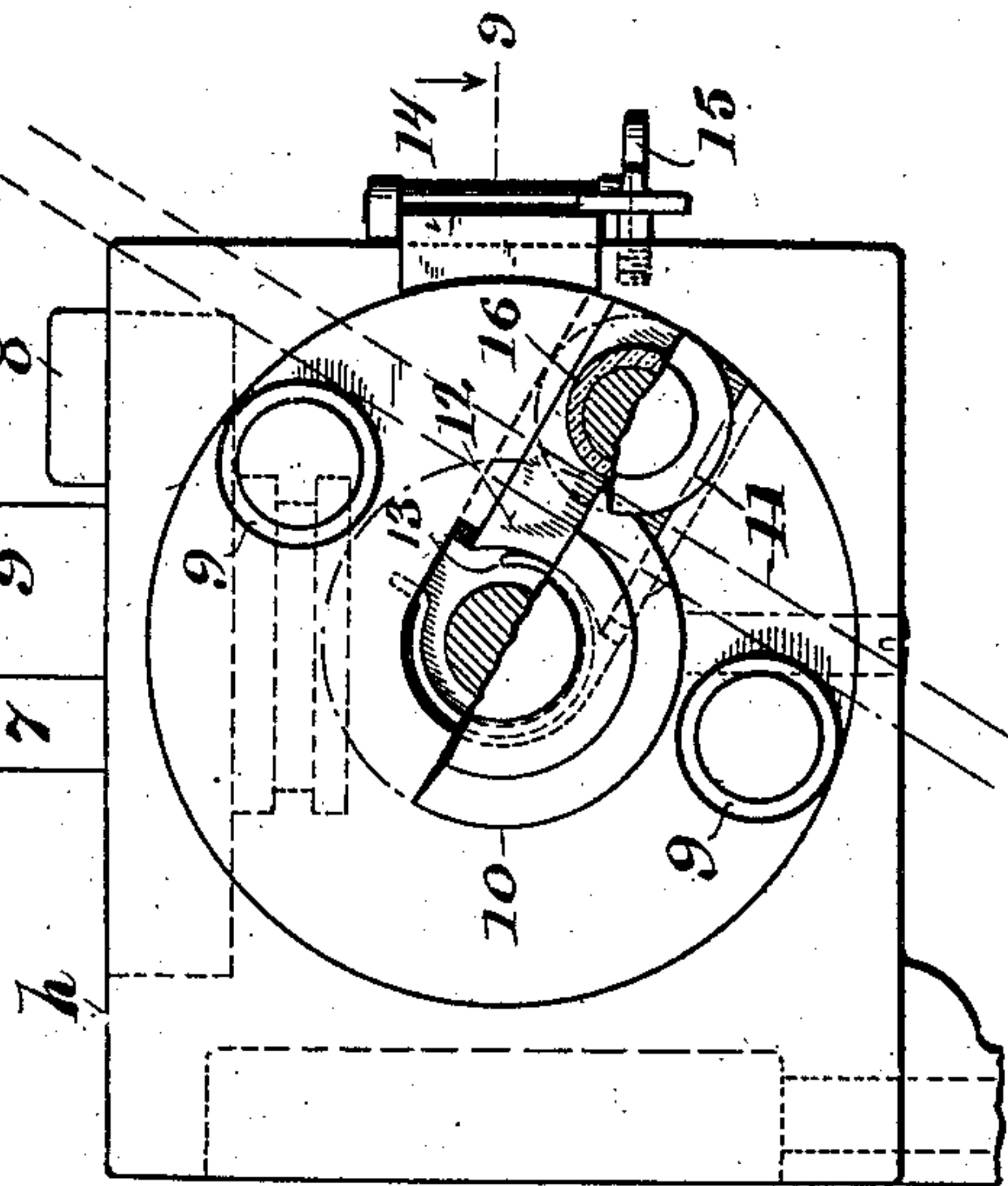


Fig. 10.

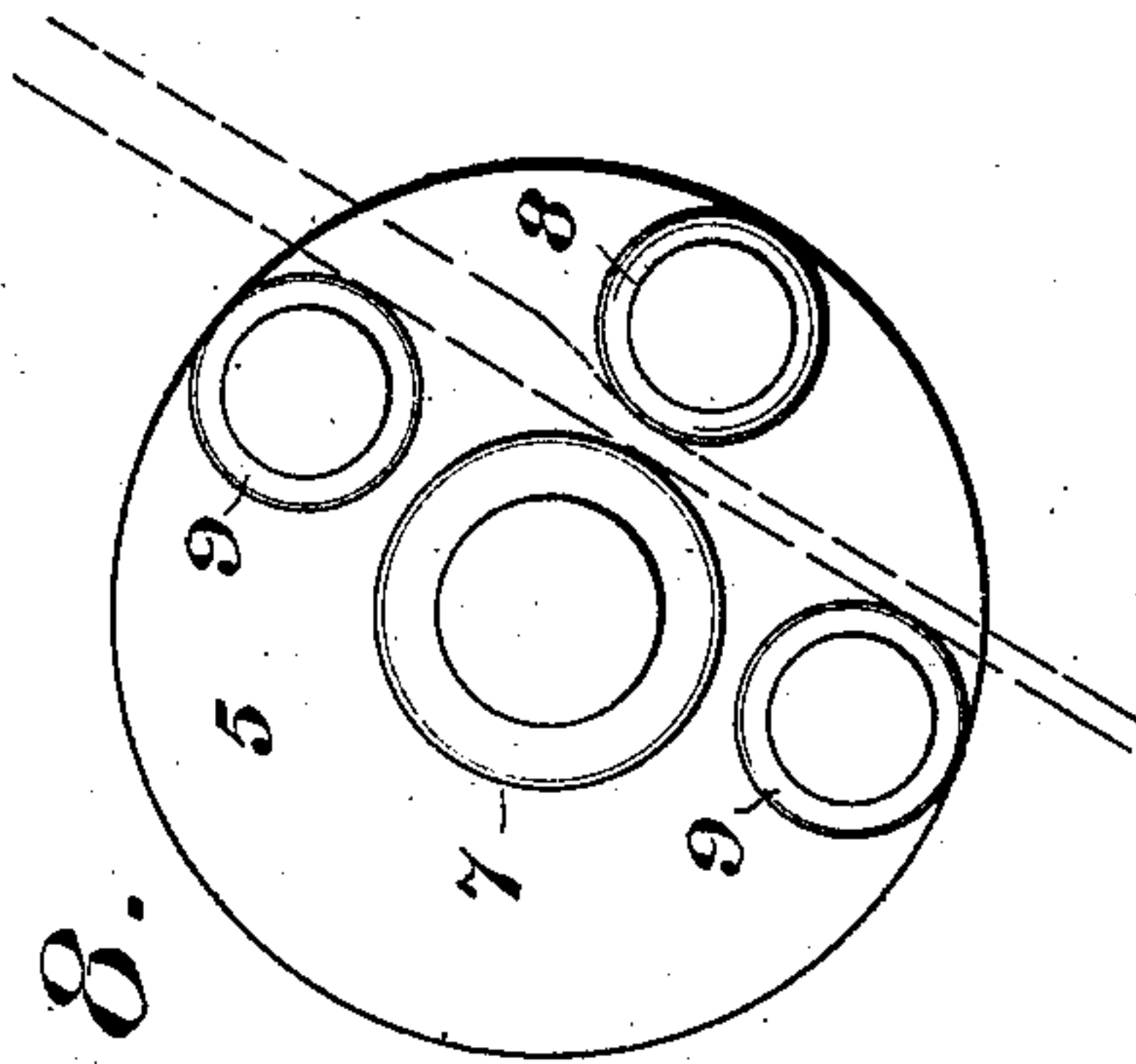


Fig. 8.

Witnesses
Geo. W. Young.
Chas. L. Cox.

Inventor:
Anthony J. Wiza,
By Winkler, Saunders, Smith & Arthur H. Co.
Attorneys.

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A. J. WIZA.
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APPLICATION FILED JUNE 4, 1904.

5 SHEETS—SHEET 5.

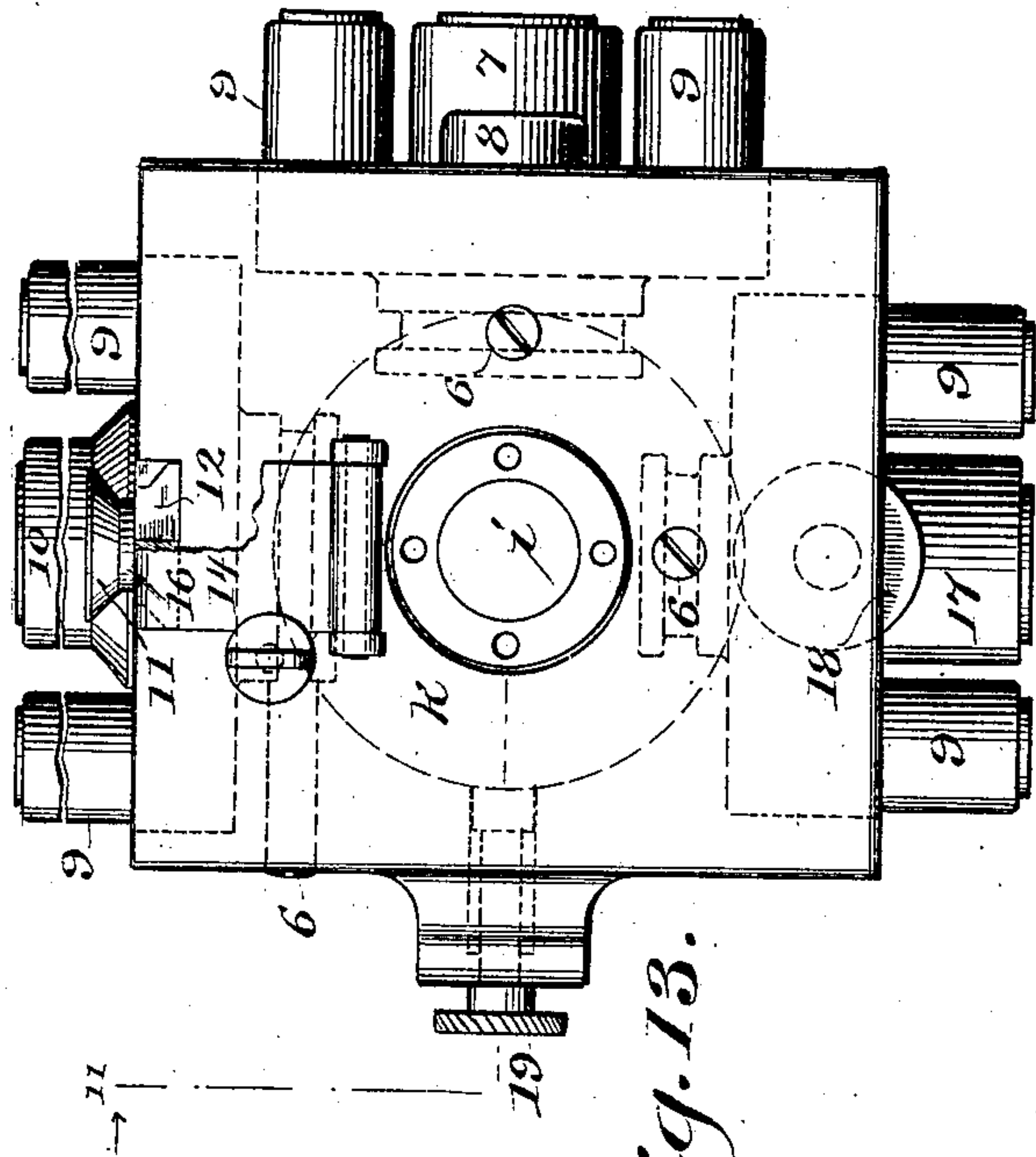


Fig. 13.

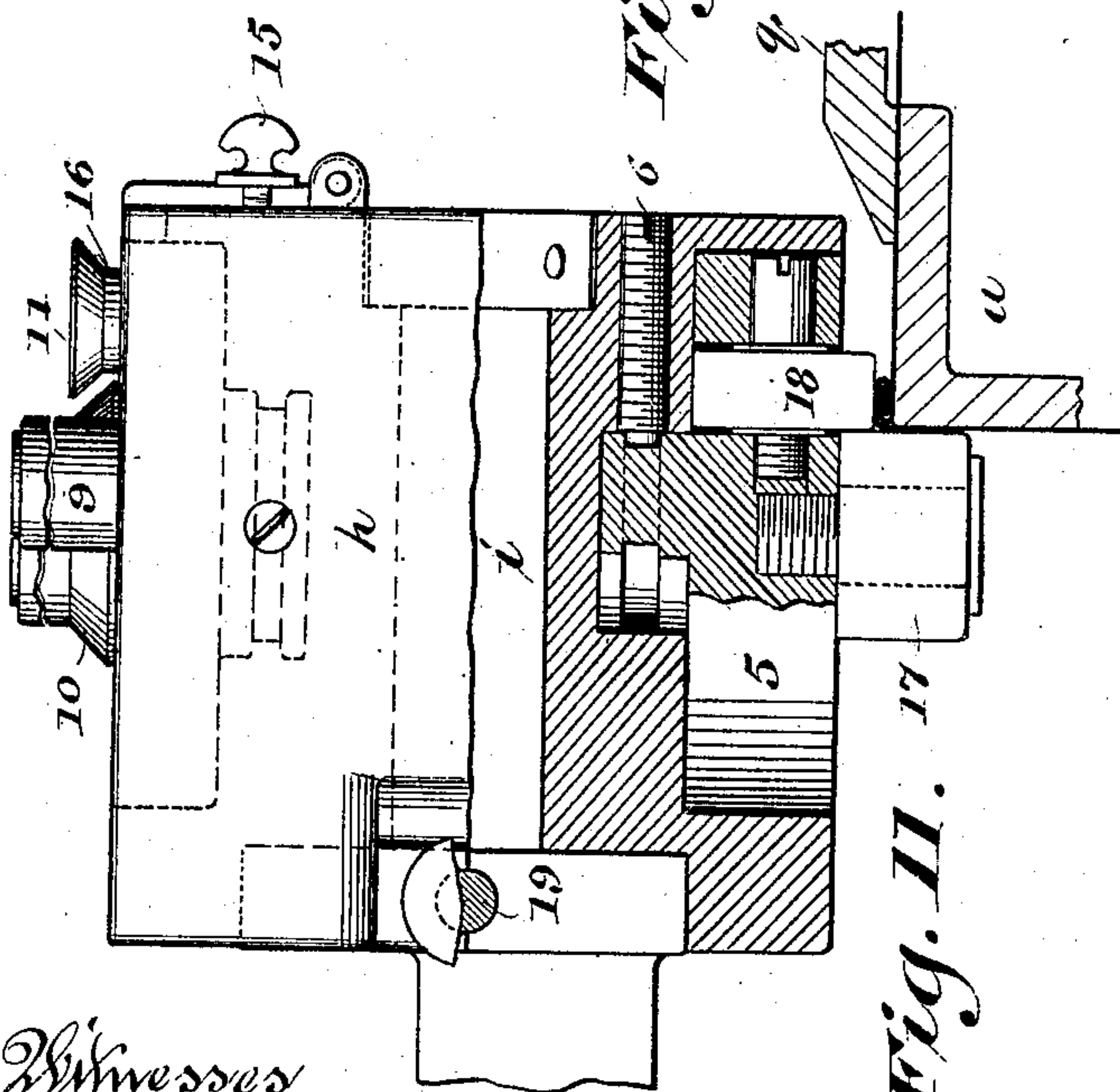


Fig. 11.

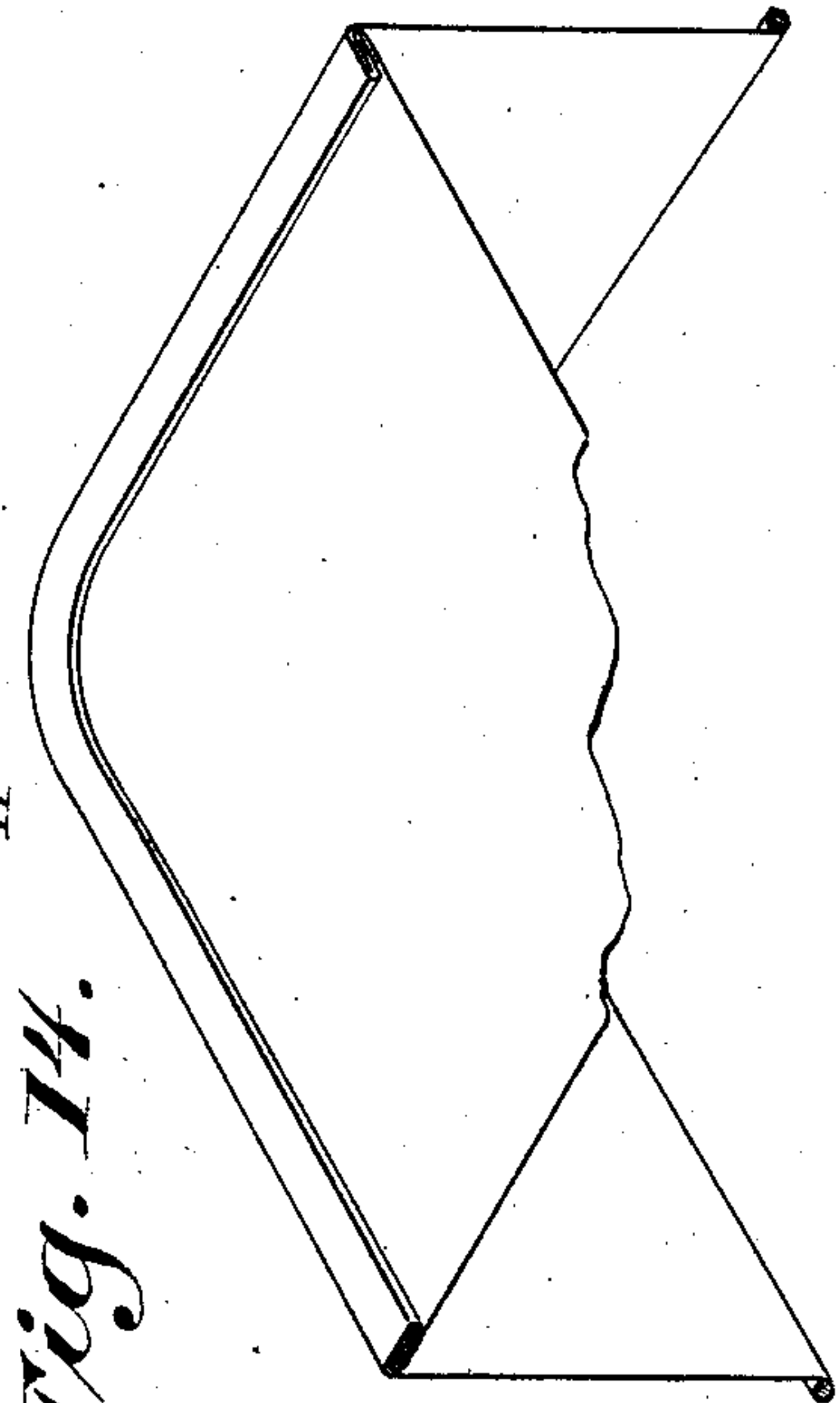


Fig. 14.

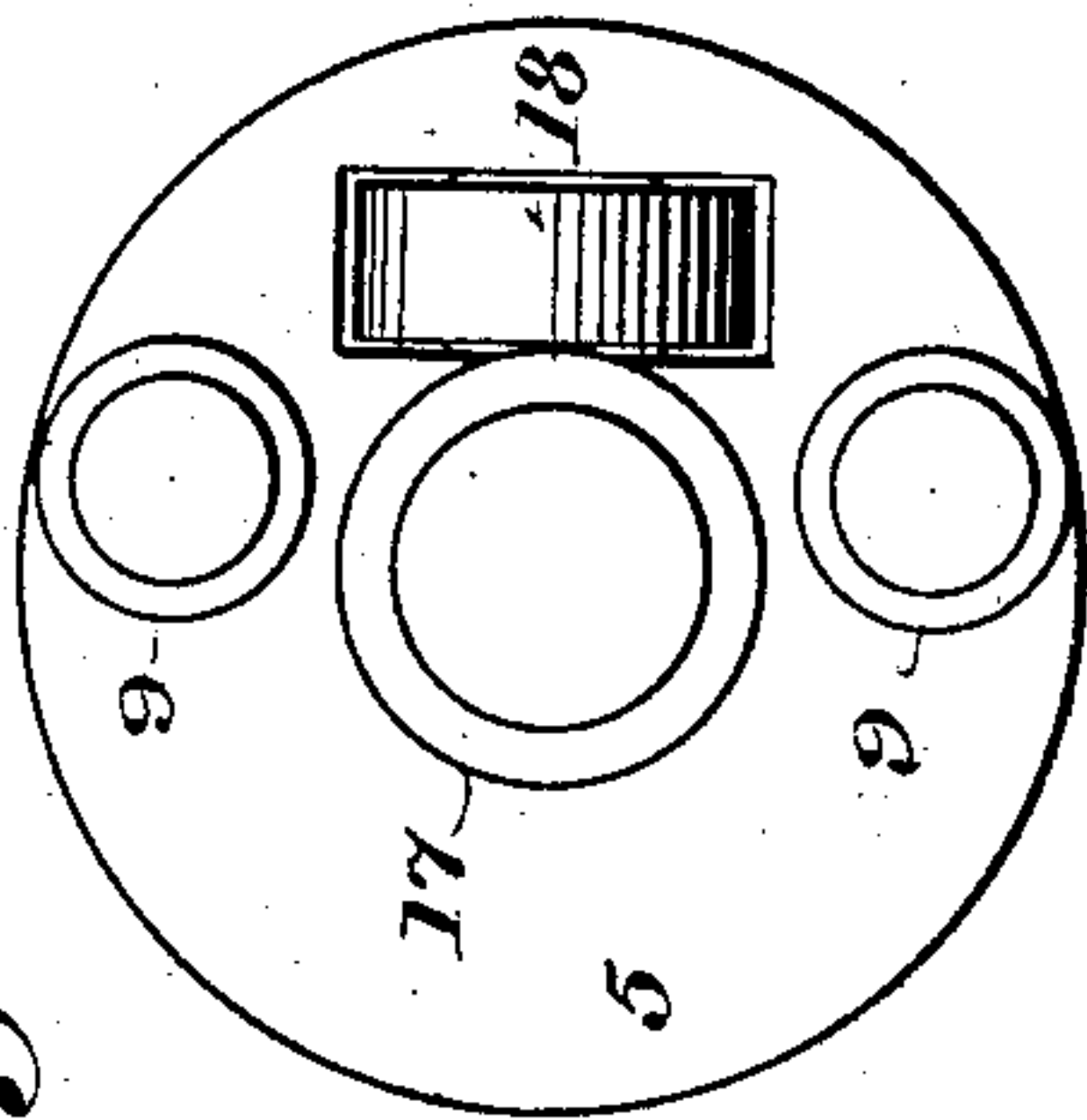


Fig. 12.

Witnesses
Geo. W. Young.
Chas. L. Good.

Inventor:
Anthony J. Wiza,
By Winkler Flanders Smith Bottomley
Attorneys

UNITED STATES PATENT OFFICE.

ANTHONY J. WIZA, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF ONE-FOURTH TO MATHEW REGENFUSS AND ONE-FOURTH TO MELCHIOR STEINER, OF MILWAUKEE, WISCONSIN.

SEAMING-MACHINE.

No. 819,329.

Specification of Letters Patent.

Patented May 1, 1906.

Application filed June 4, 1904. Serial No. 211,082.

To all whom it may concern:

Be it known that I, ANTHONY J. WIZA, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Seaming-Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The main object of this invention is to facilitate closing and folding down double-lock seams against the bottoms or ends of sheet-metal vessels.

It consists in certain novel features of construction and in the peculiar arrangement and combinations of parts, as hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings like characters designate the same parts in the several figures.

Figure 1 is a central longitudinal section on the line 1 1, Fig. 2, of a machine embodying the invention. Fig. 2 is an elevation of the rotary form and a cross-section on the line 2 2, Fig. 1. Fig. 3 is a similar section on the line 3 3, Fig. 1, looking in the opposite direction. Fig. 4 is a plan view, parts being broken away and shown in horizontal section on the line 4 4, Fig. 1. Fig. 5 is a plan view and horizontal section on the line 4 4, Fig. 1, of parts of the machine, showing the rotary form in a position oblique to the slide. Fig. 6 is an inverted plan and horizontal section on the line 6 6, Fig. 1, of the cam and trunnion at the base of the rotary form. Fig. 7 is a central longitudinal section, on an enlarged scale, of the rotary head carrying the seaming-rollers, the rollers for the first operation being shown in working position. Fig. 8 is an inverted plan view of the seaming and guiding rollers for the first operation as turned to correspond with an oblique position assumed by the form, the work or seam being indicated by dotted lines. Fig. 9 is a section on the line 9 9, Fig. 10, showing the seaming-rollers for the second operation in working position. Fig. 10 is an inverted plan view of the seaming-roller head and the second set of rollers in an oblique position, certain parts being broken away and shown in section. Fig. 11 is a partial side elevation and longitudinal section on the line 11 11,

Fig. 13, showing the third set of rollers in working position. Fig. 12 is an inverted plan view of the third set of rollers. Fig. 13 is an end elevation of the seaming-roller head, showing the three sets of seaming and guiding rollers as seen from the right with relation to Figs. 7, 9, 10, and 11; and Fig. 14 is a perspective sectional view of a sheet-metal vessel, showing a finished double-lock seam as made on this machine.

The machine comprises generally a rotary form *a*, provided at its base with a cam *b* and detachably bolted or otherwise secured to a journal *c*, which is fitted and adapted to turn in a bearing *d* in a bed or frame *e*, a slide or carriage *f*, movable in ways *g g* on said bed radially toward and from said journal, and a head *h*, provided with several sets of seaming-rollers and mounted to turn on a stem *i*, which is adjustably attached to a bracket or standard *j* on said carriage perpendicular or transverse to the axis of the rotary form *a*.

The form *a* may be made of any shape, round, oval, or oblong, with rounded corners, the latter form being shown for the purpose of illustration. For convenience in construction it is made separate from and bolted or otherwise attached to the cam *b*, the groove *k* in which is made to correspond with the shape of the form in cross-section. The form with the cam are detachably bolted or otherwise secured to the flanged upper end of the journal *c*, so that they may be readily removed and replaced by forms and cams of other shapes and sizes.

To the lower end of the journal *c* is fixed a bevel-gear *l*, which meshes, as shown in Fig. 1, with a bevel-pinion *m* on a horizontal driving-shaft *n*. A cone-pulley *o* is loosely mounted on the outer end of this shaft and is made fast thereto at will by means of a suitable clutch, which is operated by an ordinary grooved collar and a hand-lever *p*.

A rotary clamp *q*, adapted to hold the bottom or end section of a sheet-metal vessel in place on the form *a*, is swiveled in one end of a swinging arm *r*, mounted and movable endwise upon a post *s*, which is adjustably secured in the bed or frame *e* parallel with the axis of said form. The hub of the arm *r* rests upon the upper end of a spiral spring *t*, surrounding the post *s* and bearing at its lower end against a collar adjustably secured

thereon. The clamp is pressed and held downward against the form by means of a foot-lever *u*, connected by a rod *v*, passing through the post *s*, with a plate at its upper end bearing upon the hub of the arm *r*, as shown in Figs. 1, 2, and 4. The foot-lever is locked in its lower position and the clamp *q* is held down against the tension of the spring *t* by means of a pivoted dog or detent *w*, as shown in Fig. 2. The post *s* may be set up or down in the bed *e* to adjust the clamp *q* and its supporting-arm *r* for use with forms *a* of different dimensions. To hold the body-section of a vessel in place on the form, hand clamps or cams *x x*, as shown in Fig. 1, may be provided.

The slide or carriage *f* is provided at its inner end with an upwardly-projecting crank-pin and roller *y*, which engages with the groove *k* of the cam *b*, as seen in Figs. 1 and 2.

The bracket or standard *j* is adjustably secured upon said slide by a bolt *z*, the head of which is engaged with a longitudinal undercut groove 2, formed in said slide or carriage, as shown in Figs. 1 and 3. The squared shank of the stem *i*, carrying the rotary head *h*, is fitted and movable up and down in a vertical slot or opening in the upper end of said bracket or standard and is adjusted therein by means of a vertical screw 3, provided with a hand wheel or crank 4 at its upper end.

The head *h* is provided on its sides with three sets of seaming-rollers mounted on circular disks or blocks 5, which are fitted to turn in corresponding recesses in said head and are held therein, as shown in Figs. 7 and 9, by screws 6, threaded in said head and engaging at their ends with grooves in the cylindrical shanks of said disks. On one of these disks are mounted the seaming-rollers 7 and 8 for the first operation. These rollers have plain cylindrical peripheries or faces and are set with their axes parallel with each other and perpendicular to the stem *i*. The roller 7, which is of greater diameter and has a wider face than the roller 8, is pivoted centrally on the disk 5, and on each side thereof in a line at right angles to a line passing through the centers of the rollers 7 and 8 a guiding-roller 9 is mounted on said disk, as shown in Fig. 8. The rollers 10 and 11 for the second operation are mounted in a similar manner on another disk or block 5 in another face of the head *h* and have opposing conical or beveled peripheries or faces. The smaller roller 11 is pivoted, as shown in Figs. 9 and 10, to a slide 12, fitted in a radial recess in the disk 5 and bearing at its inner end against a spring 13, which tends to thrust it outward. This slide bears at its outer end against and is held in place in the disk by the wall of the recess of the head *h*, in which said disk is fitted. Through the end of the head an opening is made with which the recess in

said disk registers in one position, as shown in Fig. 9, and through which said slide may be thrust outward by the spring 13. This opening is normally closed by a keeper 14, hinged to the outer end of the head *h* and held in place by a thumb-screw 15. Between the roller 11 and the slide 12 is interposed a ring 16, which determines the space or distance between the opposing beveled faces of said roller and of the roller 10. A guiding-roller 9 is mounted on the same disk, with the rollers 10 and 11 on each side of the central roller 10, as shown in Fig. 10. The rollers 17 and 18 for the last operation are mounted on still another disk or block 5 in another face of the head *h*. The smaller roller 18 is in this case let into a recess in said disk and its axis is at right angles to the centrally-arranged roller 17 and radial with respect to the axis of the disk 5, as shown in Figs. 11 and 12. The guiding-rollers 9, as in the other cases, are mounted on the same disk on both sides of the central seaming-roller 17, as shown in Fig. 12.

The several sets of seaming and guiding rollers may be arranged in any convenient or desired order on the lateral faces of the rotary head *h*, and each set is held in place when turned into working position with relation to the rotary form *a* by a spring-actuated locking pin or bolt 19, fitted in a radial socket in the head *h* and engaging at its inner end with sockets 20 in the periphery of a collar on the stem *i*.

The several seaming and guiding rollers are pivotally secured to the swivel disks or blocks 5 by means of shoulder-bolts, so that they can be unscrewed therefrom and replaced.

The machine hereinbefore described operates as follows: Bottom or end and body sections of a sheet-metal vessel having marginal flanges previously formed thereon being placed and clamped on the form *a*, as shown in Fig. 1, the first pair of seaming-rollers 7 and 8 is turned into and locked in working position, as shown in Figs. 1 and 7. The bracket or standard *j* is then adjusted on the slide or carriage *f* to bring the space between said seaming-rollers directly above the marginal flanges of the vessel-sections on form *a*, as shown in Fig. 1. The head *h* is then moved down, by means of the screw 3, till the rollers 7 and 8 assume the positions in which they are shown in Fig. 7 with relation to the work, the inturned flange on the body-section of the vessel bending or yielding as the seaming-rollers are brought into working position. The form *a* is now set in motion through its driving connections, and as it turns the rollers 7 and 8 close the inturned flange on the body-section against the flange on the bottom or end section, as shown in Fig. 7, the disk 5 turning in the head *h* and assuming different positions therein, accord-

ing to the position of the rotary form *a* and the direction of the seam, as indicated in Fig. 8. The slide *f* with the head *h* are moved back and forth by the cam *b* as the form *a* turns, so as to keep the seaming-rollers in their proper operating relation to the work whatever the shape of the form may be. After the completion of the first operation the head *h* is raised and turned to bring the next set of rollers into operative position. The form *a* being stopped, the head *h* is lowered to bring the rollers 10 and 11 into working position with relation thereto, as shown in Fig. 9, the folded seam as left by the first set of rollers being turned inward between the opposing beveled faces of the rollers 10 and 11. The form *a* is now set in motion again, and as it turns the folded flanges of the vessel are turned inward toward the axis of the vessel, as shown in Fig. 9. When this operation is completed, the form is stopped, and the keeper 14 may be unfastened by removing the screw 15 to release the slide 12 and permit the roller 11 to be moved by the spring 13 away from the roller 10. The head *h* can now be raised to carry the seaming-rollers away from the work. Usually the metal will spring or yield enough to permit the withdrawal of the rollers 10 and 11 from the intumed seam without separating them, so that it is not always necessary to unfasten the keeper 14 and release the slide 12 and roller 11. The next and last pair of rollers 17 and 18 is now turned and moved down with the head *h* into working position, as shown in Fig. 11. The form *a* is started, and as it turns past said rollers the seam is pressed from the position in which it is left by the rollers 10 and 11 down against the bottom or end of the vessel, as shown in Figs. 11 and 14. The seam being completed by this last operation, the nut or bolt *z* is loosened, the bracket *j*, with the head *h*, is drawn back to clear the vessel on the work-supporting form, the clamp *q* is released and swung to one side out of the way, the clamps *x* are disengaged from the rim of the vessel, and the vessel is then removed from the form and replaced by flanged sections to be joined together by repeating the series of operation, as above explained.

Various changes in the details of construction and in the arrangement of parts of the machine may be made without materially affecting its principle and mode of operation and without departing from the spirit and intended scope of the invention.

I claim—

1. In a seaming-machine the combination of a rotary form for holding the work and a head mounted and adapted to turn upon a suitable support and provided with a number of pairs of seaming-rollers, one pair having parallel cylindrical peripheries, another pair having opposing conical or beveled periph-

eries and parallel axes, and another pair having cylindrical peripheries at right angles to each other, substantially as described.

2. In a seaming-machine the combination of a rotary form or work-support; a head mounted and adapted to turn on a stem and provided on its sides with a number of pairs of seaming-rollers, one pair having opposing cylindrical peripheries and parallel axes, another pair having opposing beveled peripheries and parallel axes, and another pair having cylindrical peripheries and axes at right angles to each other, substantially as described.

3. In a seaming-machine the combination of a rotary form or work-support, and a rotary head movable toward and from said form and provided with several sets of seaming-rollers, one set being adapted to fold an intumed marginal flange on the body-section of a sheet-metal vessel against, a marginal flange turned up on the bottom or end section and fitted into the body-section of the vessel, another set adapted to turn the two flanges thus folded obliquely inward over the bottom or end section and another set adapted to fold said flanges together against the bottom or end section of the vessel, substantially as described.

4. In a seaming-machine the combination of a rotary form or work-support, and an adjustable head provided with a number of sets of seaming and guiding rollers, each set having a swivel connection therewith, substantially as described.

5. In a seaming-machine the combination of a rotary work-supporting form, a cam of corresponding shape attached thereto, a carriage movable toward and from said form and connected with said cam, a rotary head mounted upon said carriage, swivel disks or blocks mounted on said head and seaming and guiding rollers mounted on said swivel disks or blocks, substantially as described.

6. In a seaming-machine the combination of a rotary work-supporting form, a carriage movable toward and from said form, a head movably mounted upon said carriage, swivel disks or blocks mounted on said head and each provided with a set of seaming and guiding rollers, means for locking said head with either set of rollers in operative position relative to said form and a connection between said carriage and form adapted to maintain the proper working relation between the form as it turns and one set of seaming-rollers, substantially as described.

7. In a seaming-machine the combination of a rotary work-supporting form, means for holding the bottom or end and body sections of a sheet-metal vessel in place thereon, and an adjustable head provided with a number of sets of seaming-rollers constructed and arranged to successively and progressively fold the adjoining flanged edges of said sec-

tions together and turn them inwardly against the bottom or end section, substantially as described.

8. In a seaming-machine the combination of a rotary work-supporting form, a rotary clamp carried by a swinging arm and movable therewith into and out of line with said form, and a rotary head provided with seaming-rollers movable therewith into and out of working relation to said form, substantially as described.

9. In a seaming-machine the combination with a suitable frame, of a rotary work-supporting form mounted thereon, a post adjustable endwise in said frame parallel with the axis of said form, an arm adapted to turn on said post and movable endwise thereof, a clamp swiveled in the free end of said arm parallel with said post and adapted to be swung thereon into and out of line with said form, and a rotary head provided with seaming-rollers, substantially as described.

10. In a seaming-machine the combination with a suitable frame, of a rotary work-supporting form mounted thereon, a longitudinally-adjustable post secured in said frame parallel with the axis of said form, an arm adapted to turn upon said post and movable endwise thereof, a clamp swiveled in said arm parallel with said post and adapted to be swung into and out of line with said form, a lever connected with said arm by a rod passing axially through said post for pressing and holding the clamp with the work against the form, a spring tending to move said arm and clamp away from the form, and a rotary head provided with seaming-rollers, substantially as described.

11. In a seaming-machine the combination with a suitable frame, of a journal having a bearing in said frame, a work-supporting form detachably secured to said journal and provided in its base with a cam-groove corresponding with the contour of the form, a carriage movable radially toward and from said journal and having a projection engaging with said cam-groove, a rotary head mounted upon said carriage and adjustable lengthwise of and toward and from the same, and seaming-rollers mounted on said head, substantially as described.

12. In a seaming-machine the combination with a suitable frame, a journal having a bearing in said frame, a work-supporting form detachably secured to said journal, means for turning said form, a carriage movable on said frame toward and from said form, a bracket mounted upon and adjust-

able lengthwise of said carriage, a stem carried by said bracket, a screw for adjusting said stem laterally toward and from the carriage, and a head mounted and adapted to turn upon said stem and provided with a number of sets of seaming-rollers and with means for locking it in different positions on said stem, substantially as described.

13. In a seaming-machine the combination of a rotary work-supporting form, a head adjustable transversely to and parallel with the axis of said form, a disk swiveled in said head, a pair of seaming-rollers mounted on said disk, one of them being centrally arranged thereon and coaxial therewith, and guiding-rollers also mounted on said disk, one on each side of the central seaming-roller, substantially as described.

14. In a seaming-machine the combination of a rotary work-supporting form, a rotary head adjustable toward and from said form and provided with disks swiveled therein, and seaming and guiding rollers mounted on said disks and adapted to progressively fold and turn the flanged edges of vessel-sections held on said form together against the bottom or end section, one pair of seaming-rollers having beveled peripheries and one of said rollers being releasable and movable when released away from the other, substantially as described.

15. In a seaming-machine the combination with a suitable frame or bed, of a journal having a bearing in said bed, a work-supporting form detachably secured to said journal and having a cam-groove in its base corresponding in shape with the cross-section of the form, a carriage movable in ways on said frame or bed toward and from said form, a bracket mounted upon and adjustable lengthwise of said carriage, a stem adjustably connected with said bracket, a screw for adjusting said stem toward and from the carriage, a head mounted and adapted to turn on said stem, means for locking said head in different positions on said stem, disks swiveled in said head, and seaming and guiding rollers mounted on said disks, one seaming-roller of each set being centrally and coaxially arranged with relation to the disk on which it is mounted, substantially as described.

In witness whereof I hereto affix my signature in presence of two witnesses.

ANTHONY J. WIZA,

Witnesses:

CHAS. L. GOSS,

EUGENE WM. TOPPING.