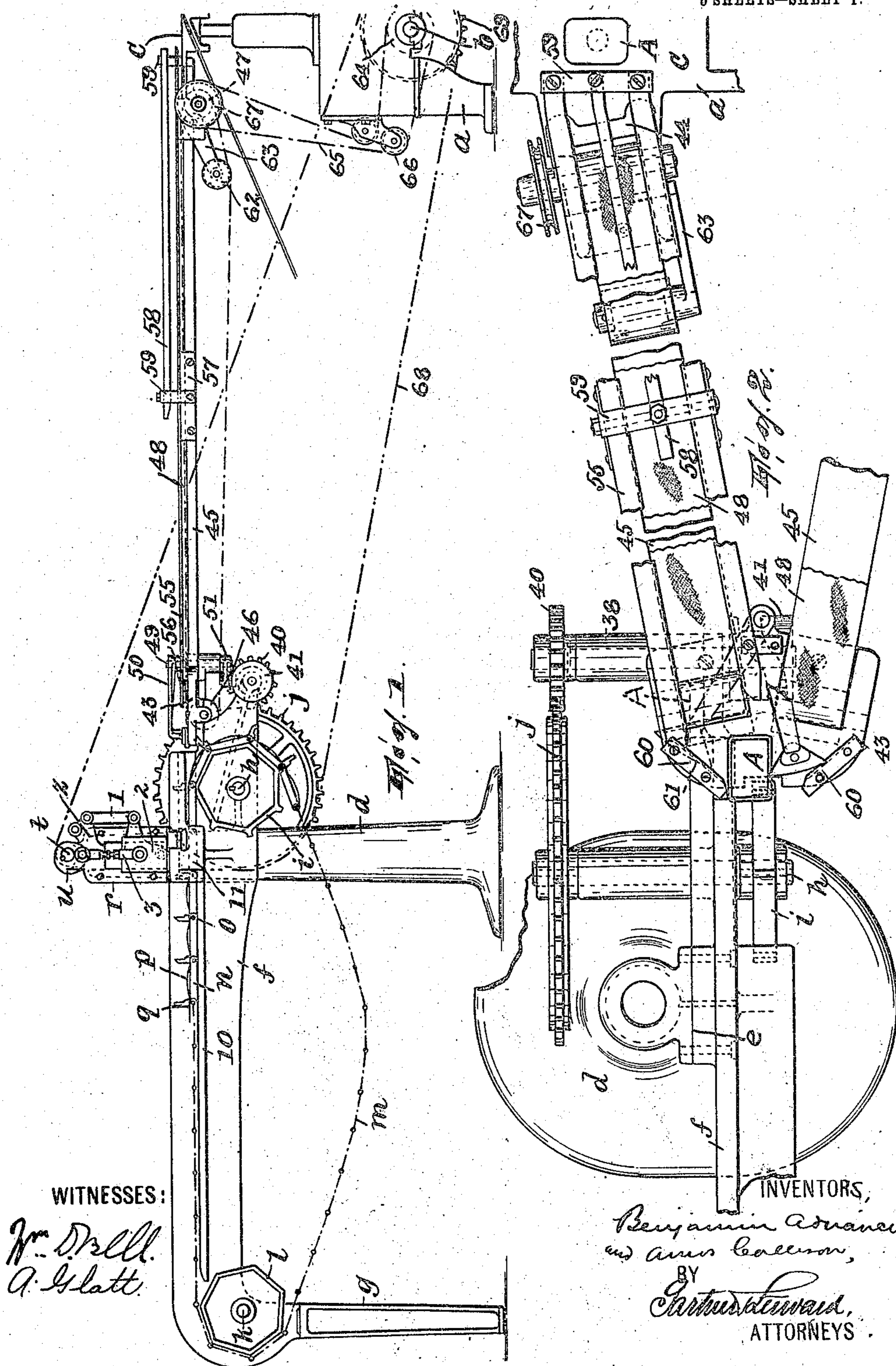


B. ADRIANCE & A. CALLESON.
 MACHINE FOR CLENCHING TOGETHER SHEET METAL CANS AND THEIR HEADS.
 APPLICATION FILED JULY 22, 1907.

931,022.

Patented Aug. 17, 1909

6 SHEETS—SHEET 1.



WITNESSES:

Wm. Drall.
 A. Glatt.

INVENTORS,

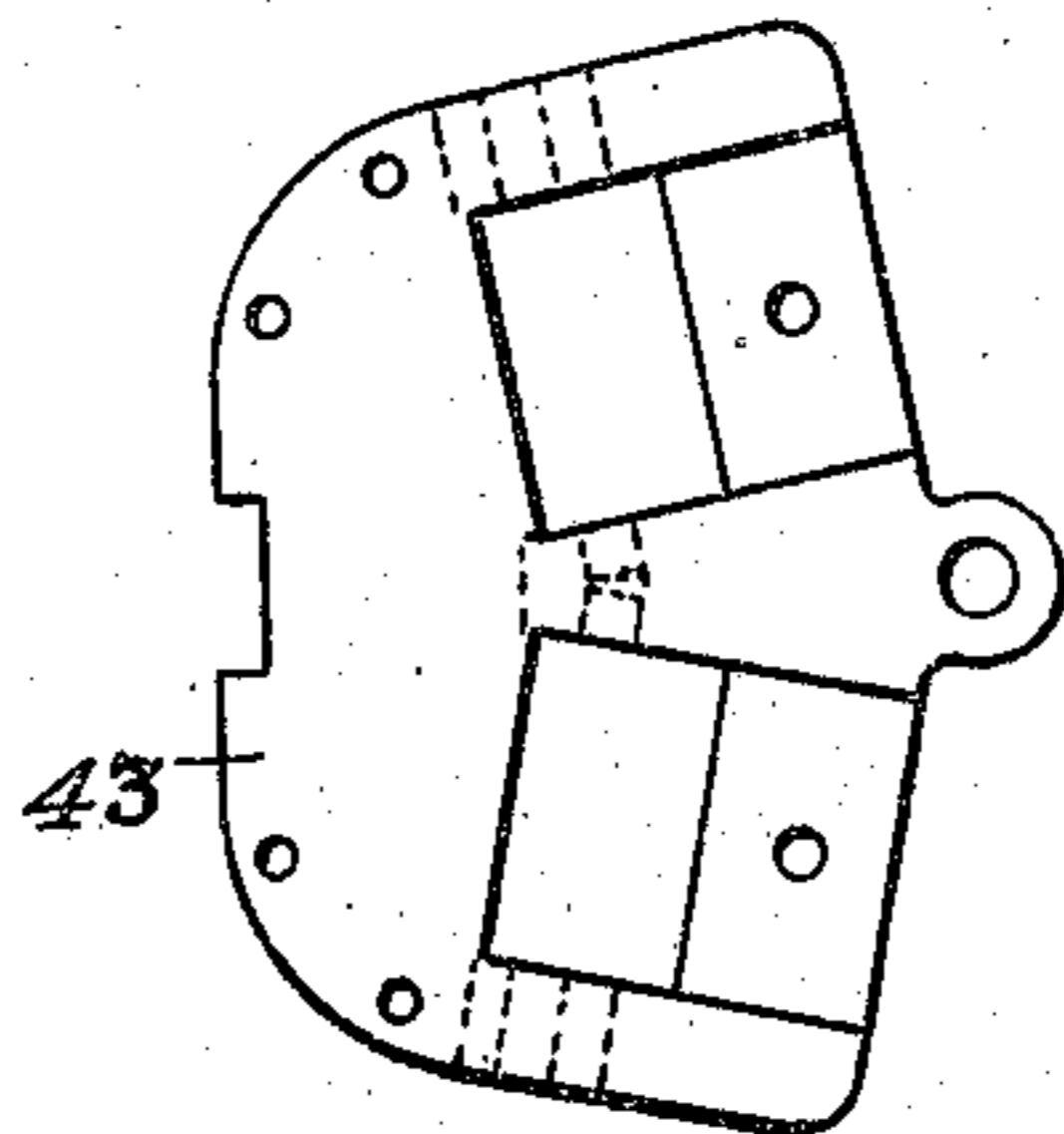
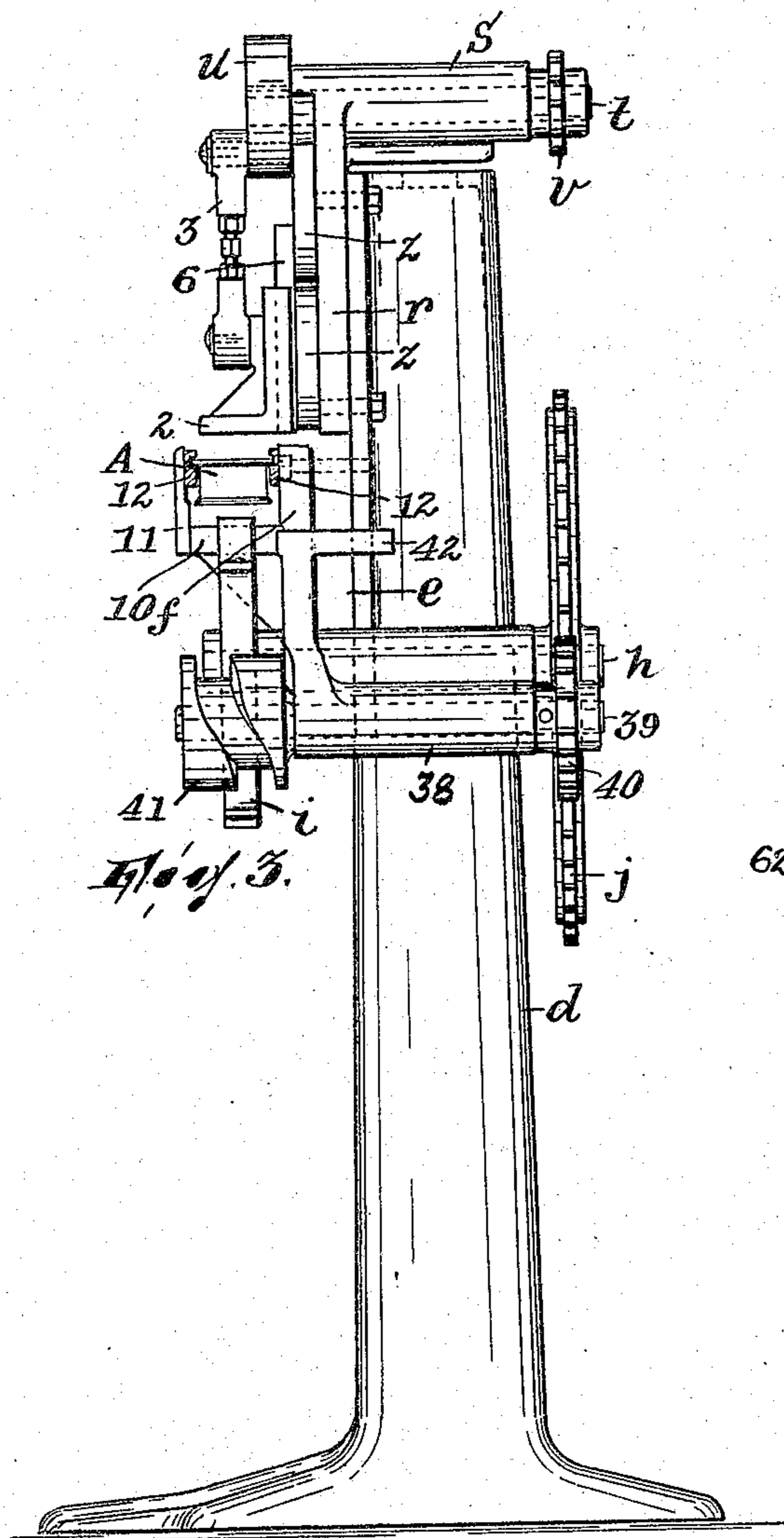
Benjamin Adriance
 and Anna Callison,
 BY
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B. ADRIANCE & A. CALLESON.
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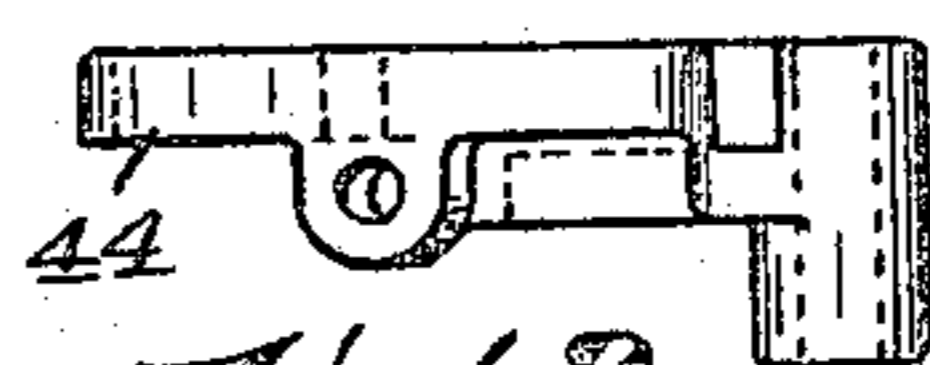
931,022.

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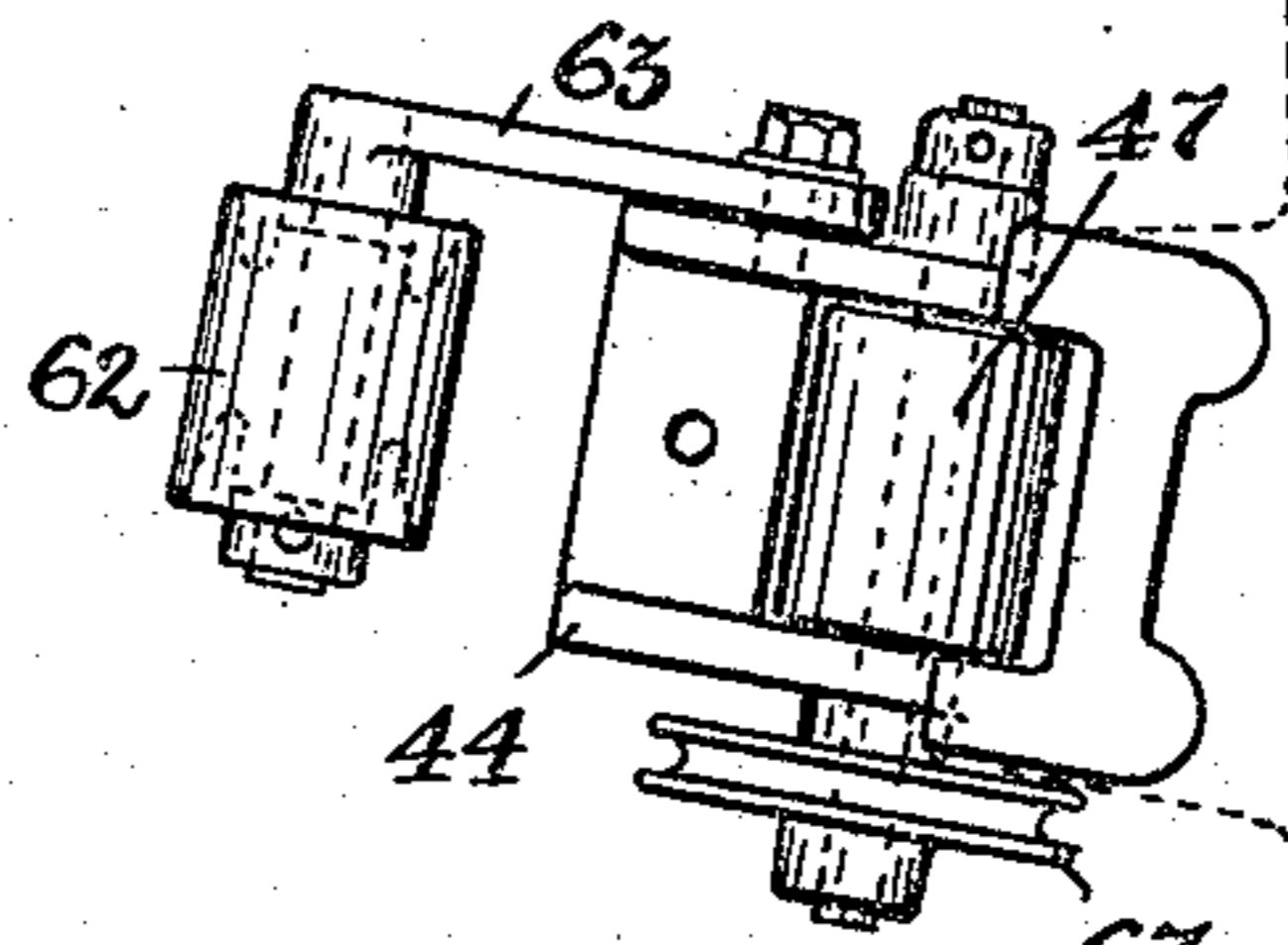
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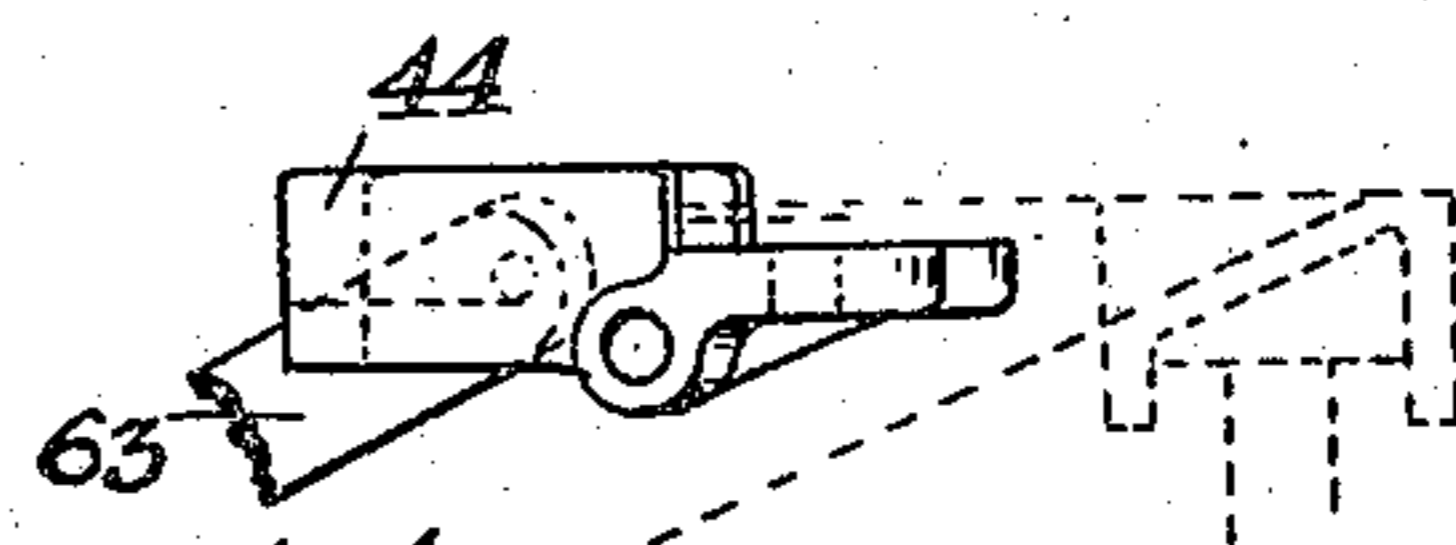
Elev. of 8.



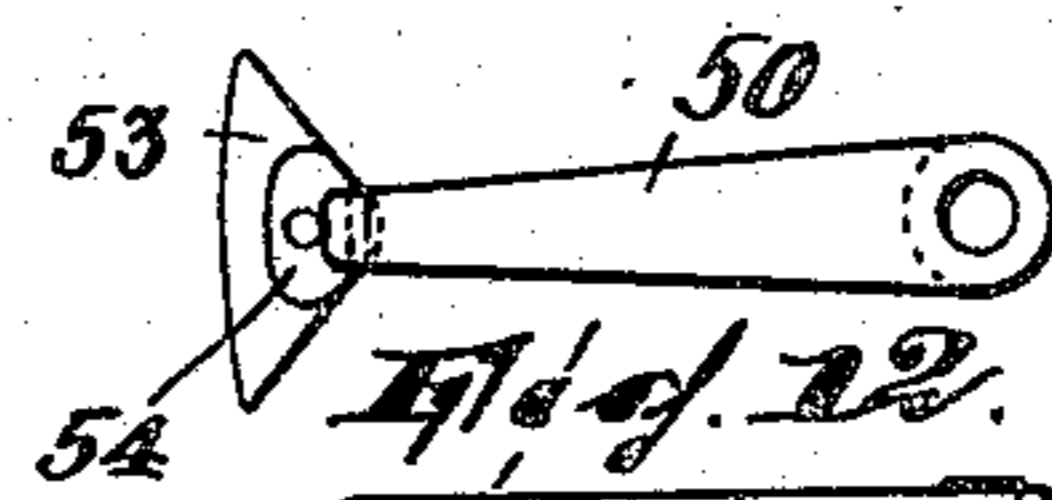
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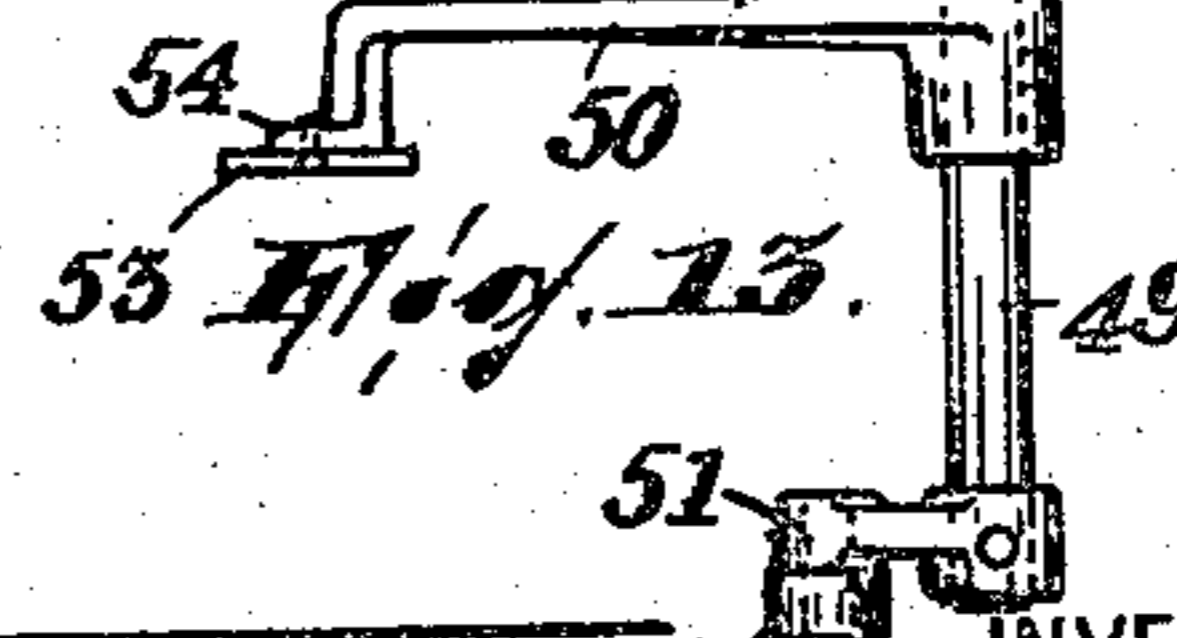
Elev. of 10.



Elev. of 11.



Elev. of 12.



Elev. of 13.

WITNESSES:

Wm. D. Bell.
A. Blatt

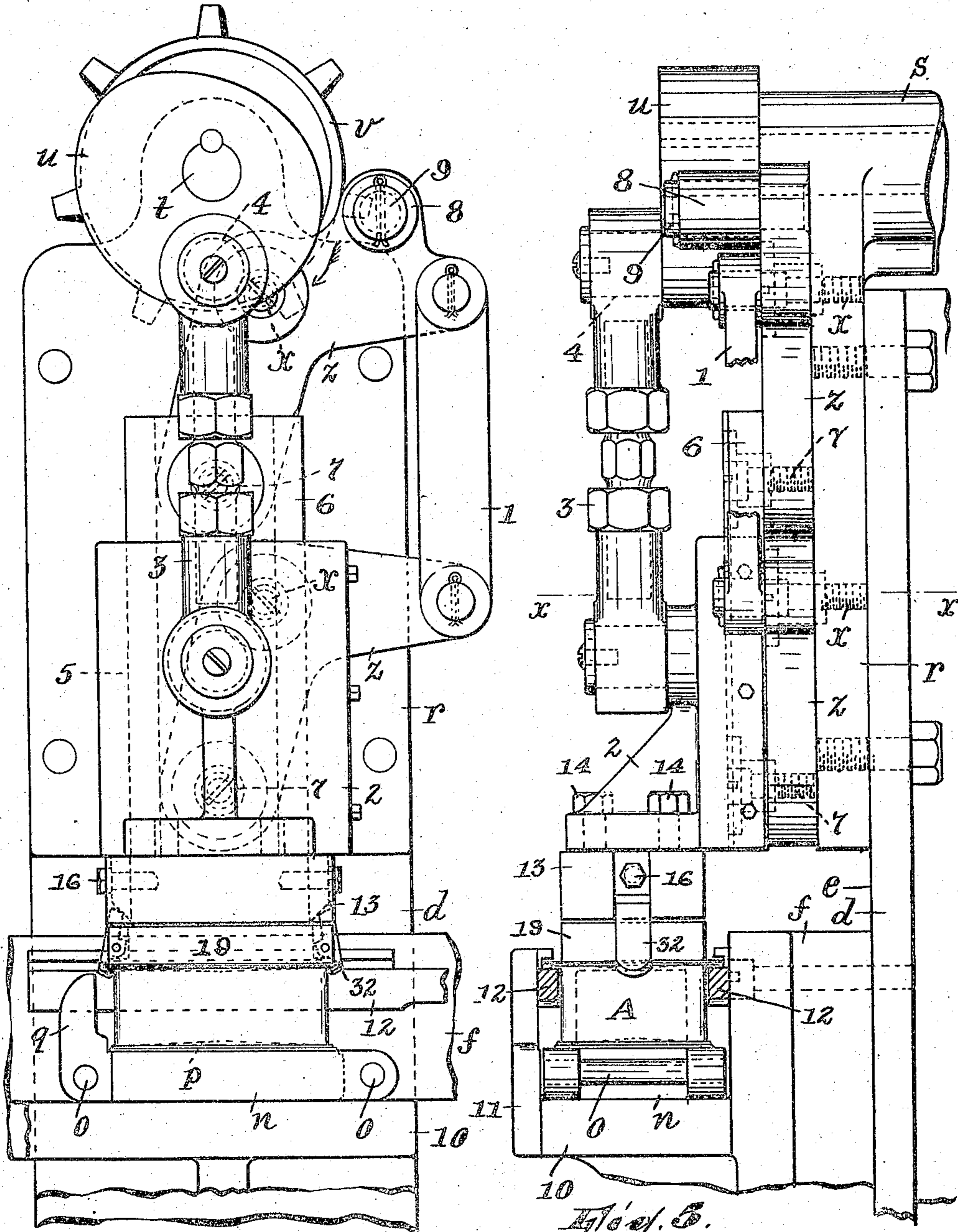
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5 SHEETS—SHEET 3.



WITNESSES: *H. J. H.*
Wm. D. M.
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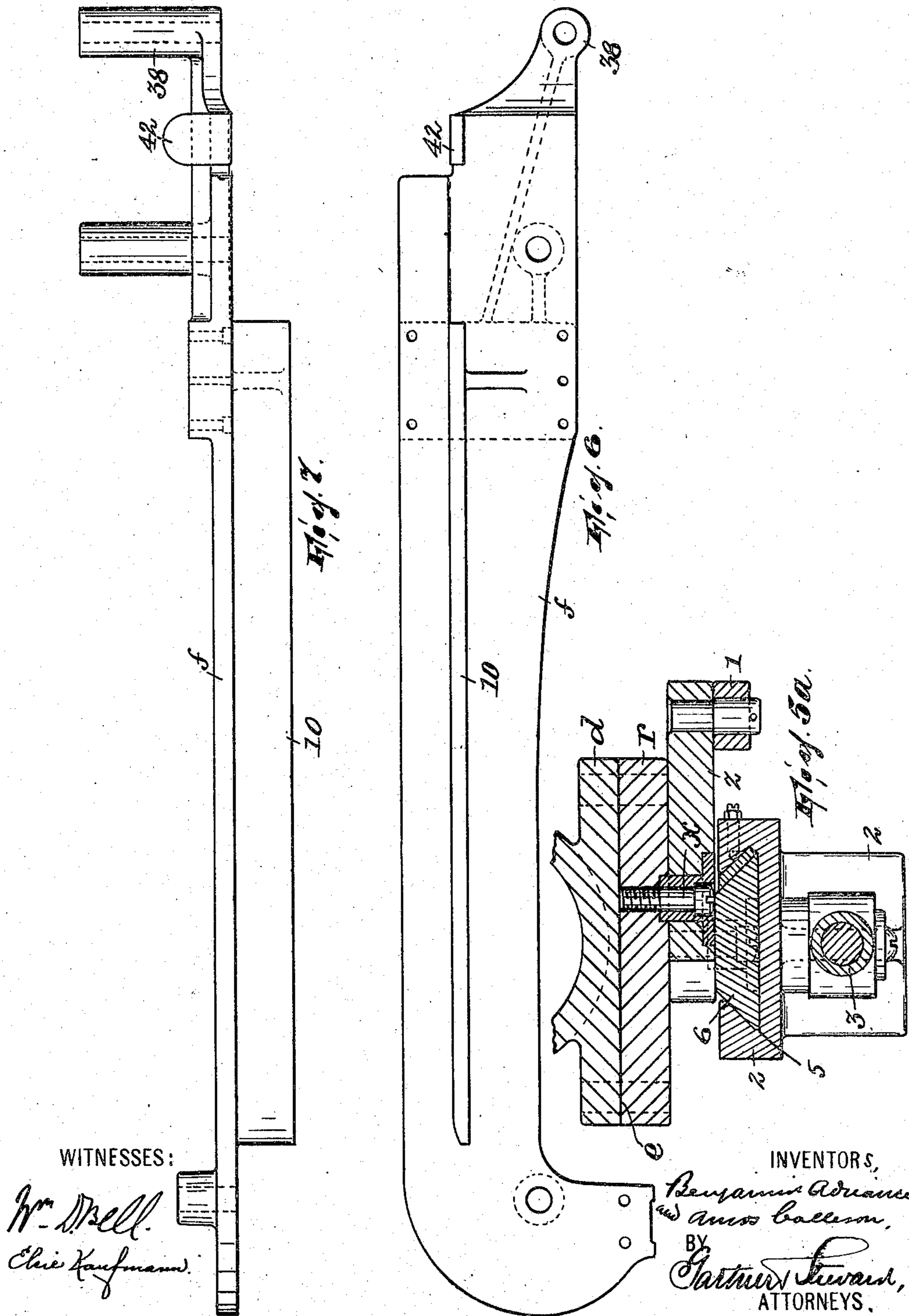
INVENTORS,
Benjamin Adriance,
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B. ADRIANCE & A. CALLESON.
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5 SHEETS—SHEET 4.



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6 SHEETS—SHEET 5.

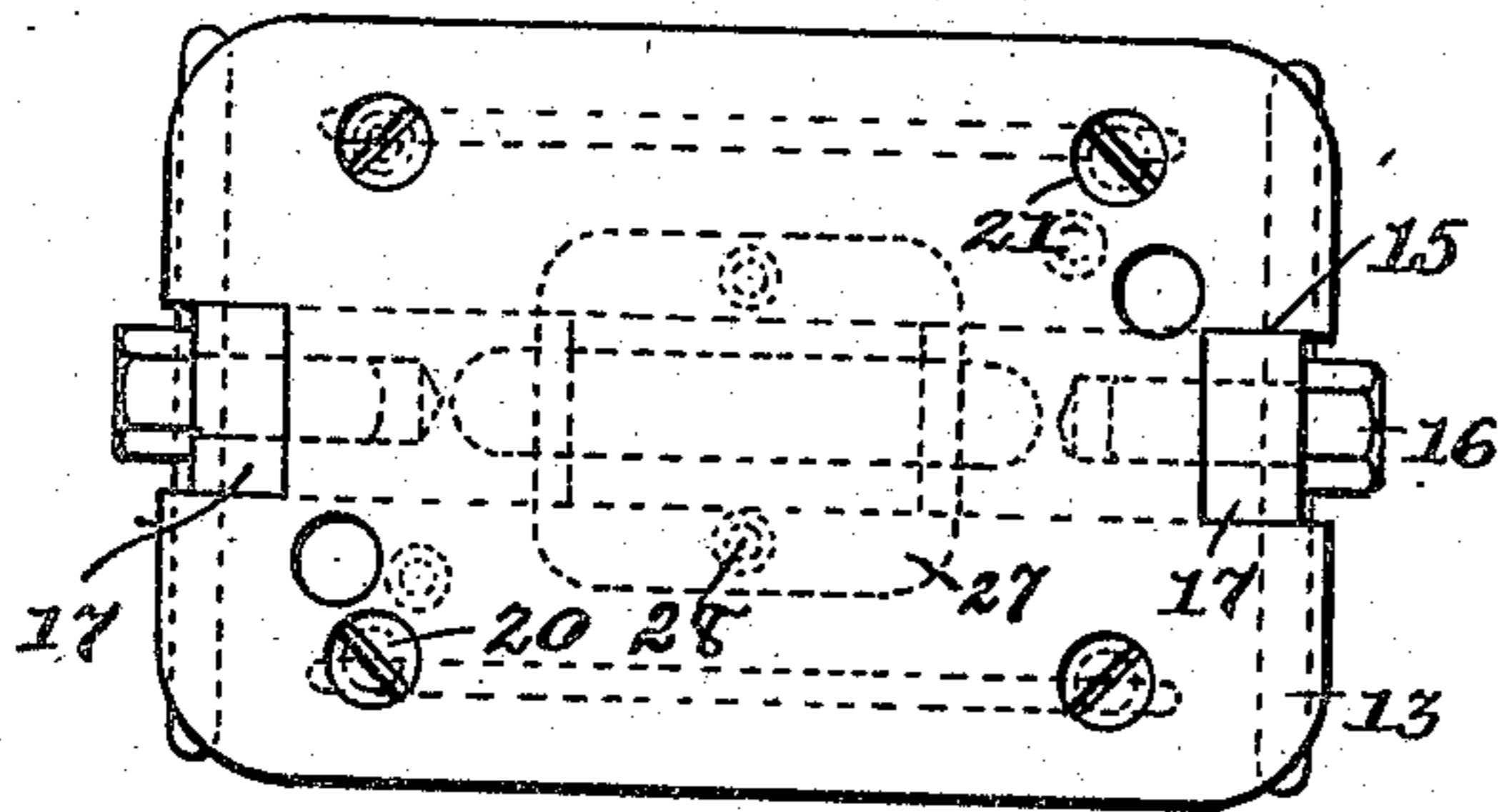


Fig. 14.

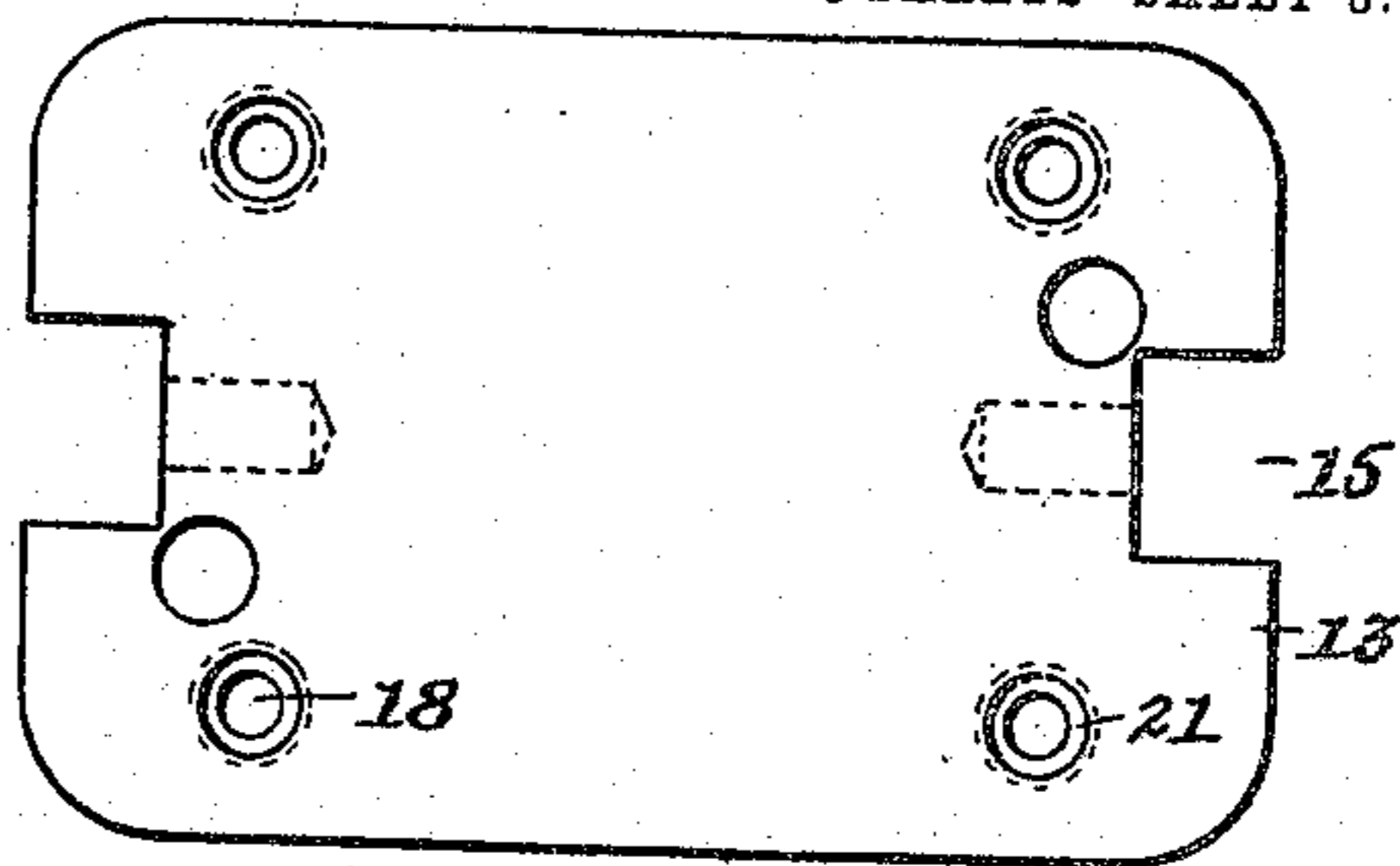


Fig. 16.

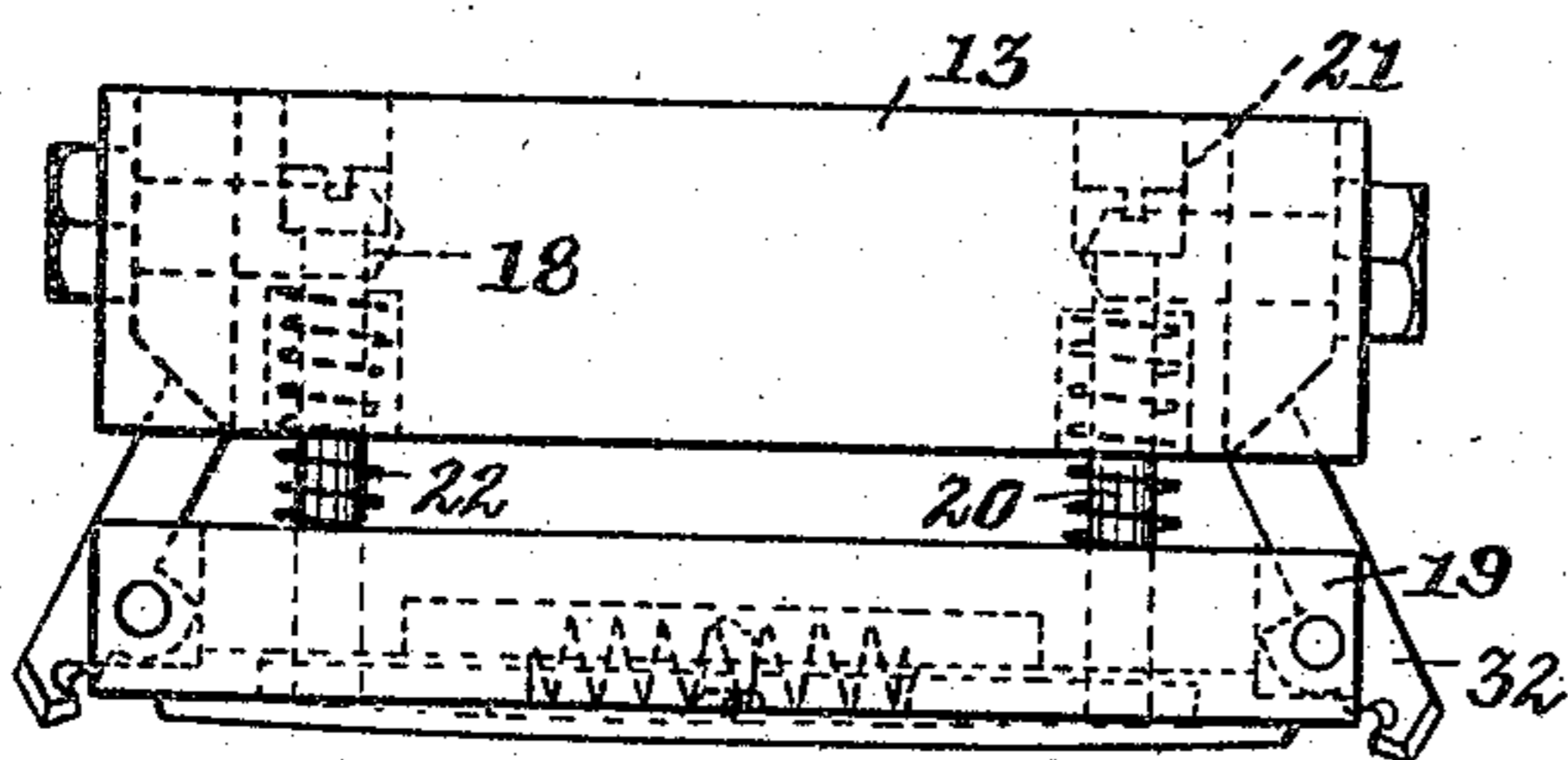


Fig. 15.

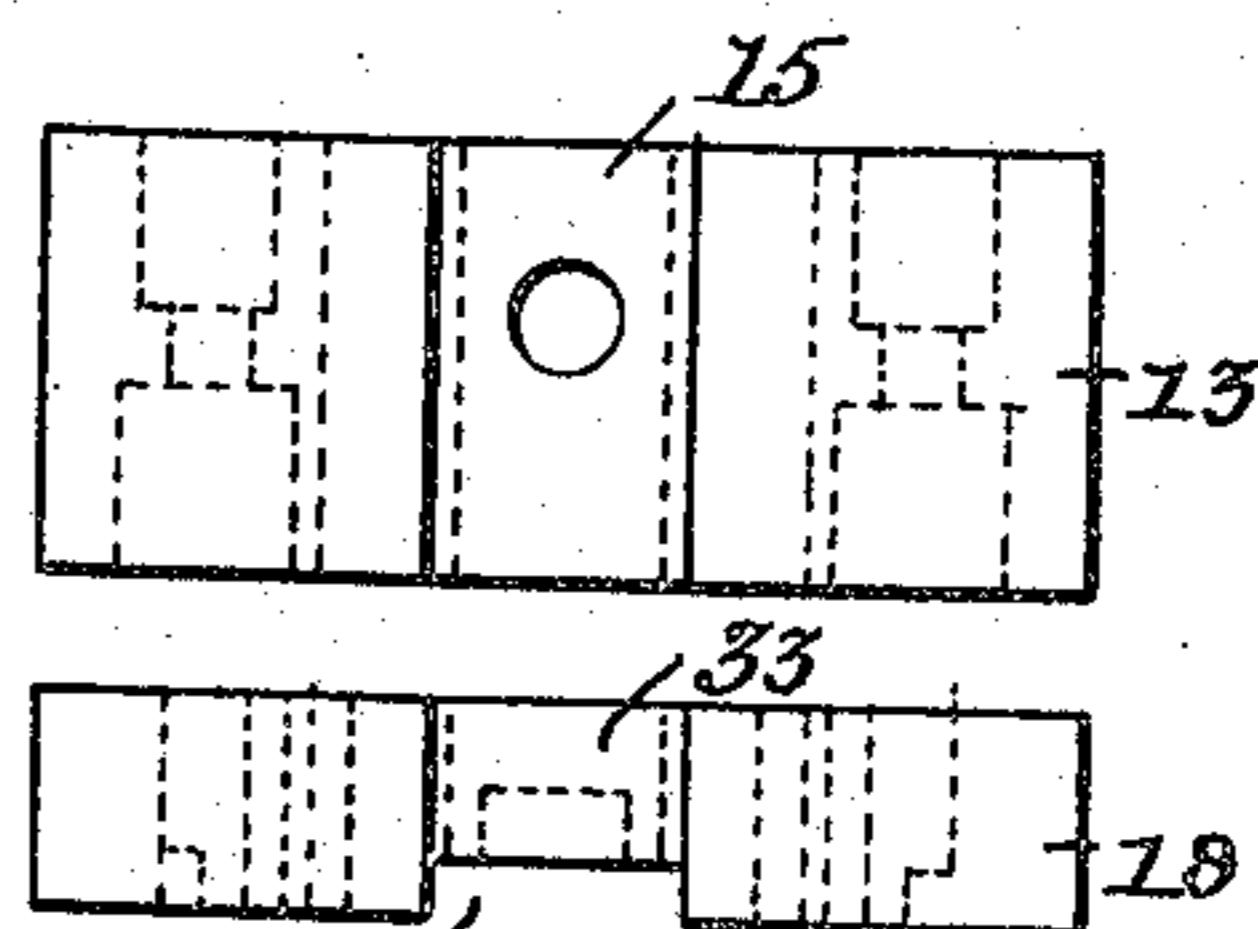


Fig. 18.

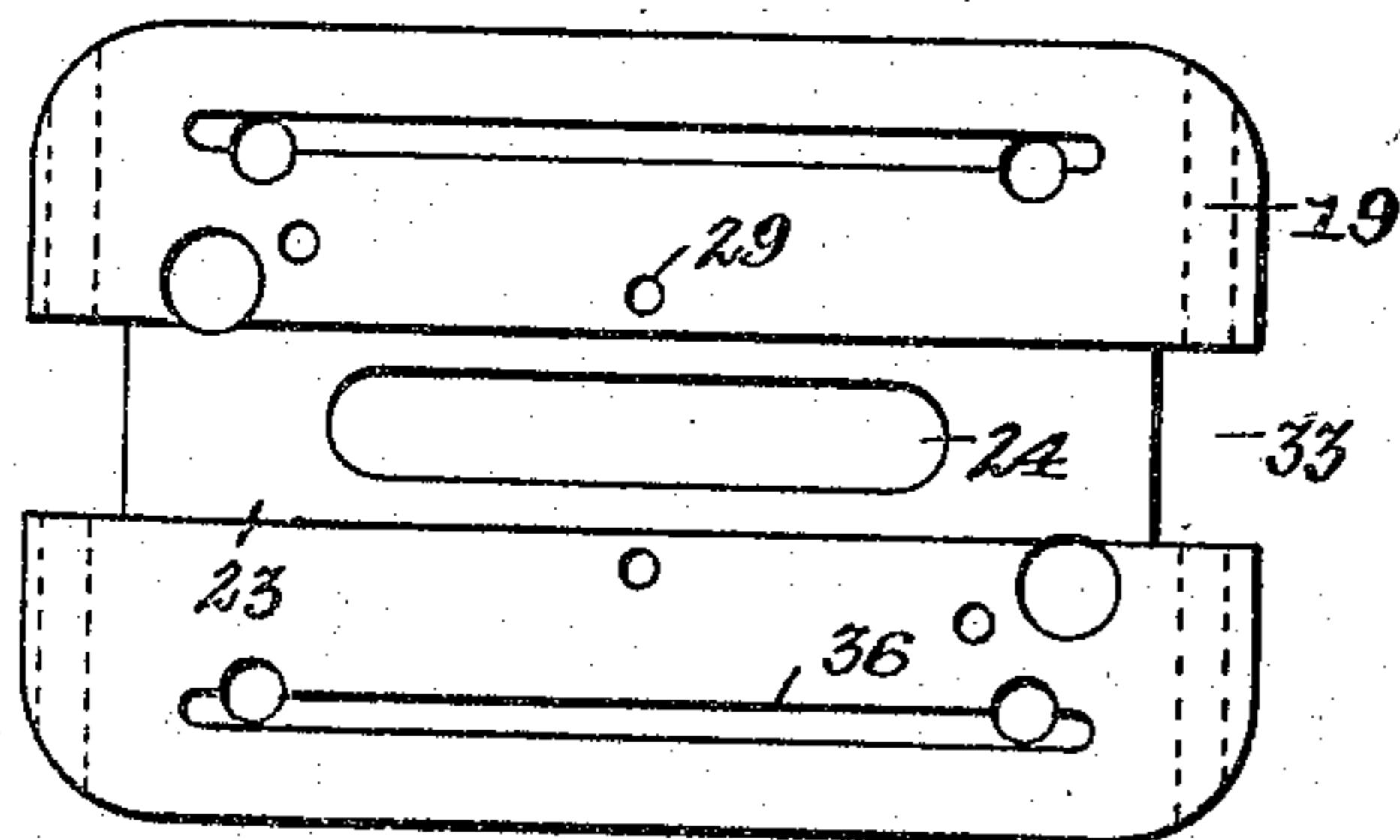


Fig. 17.

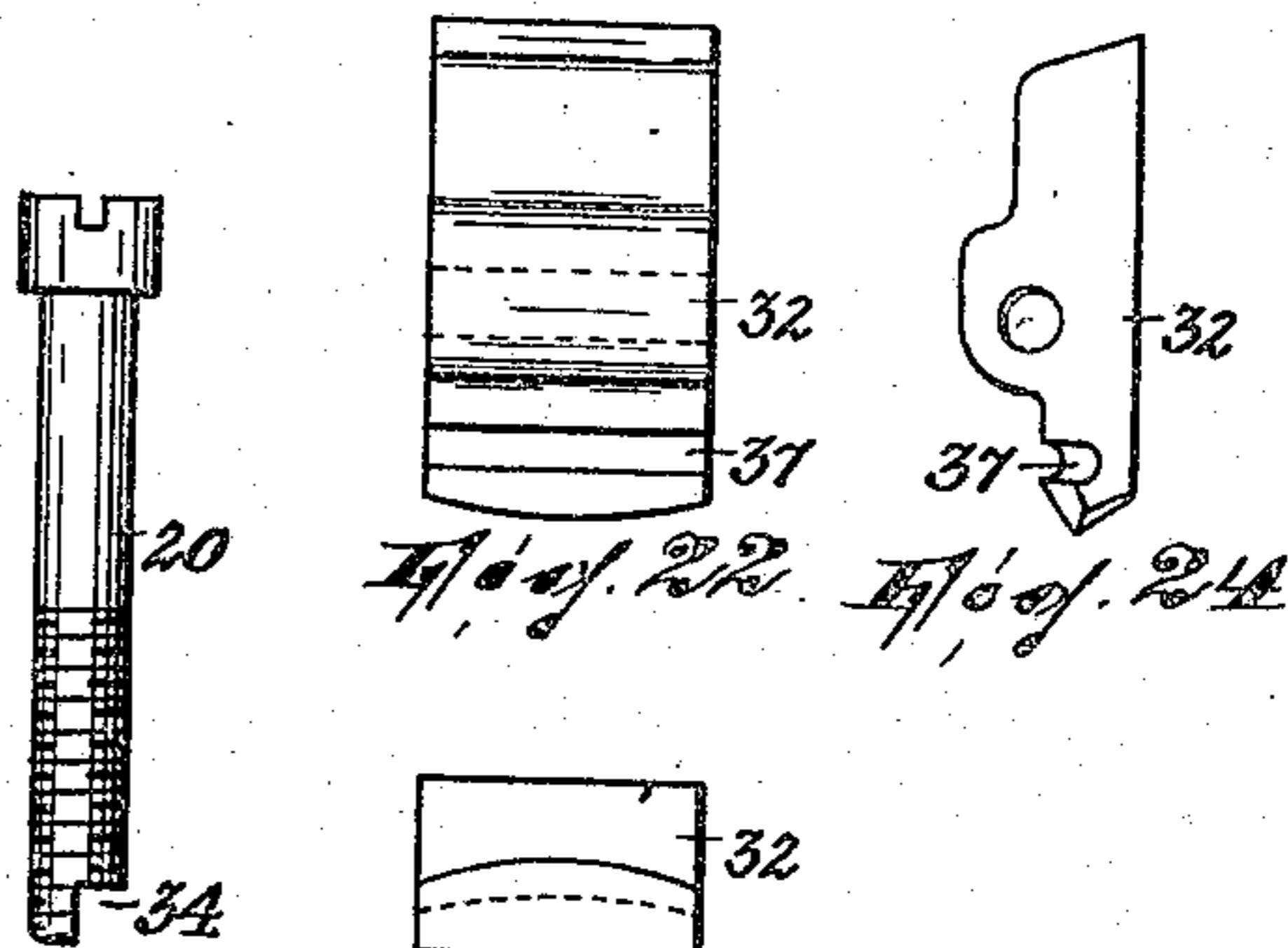


Fig. 20.

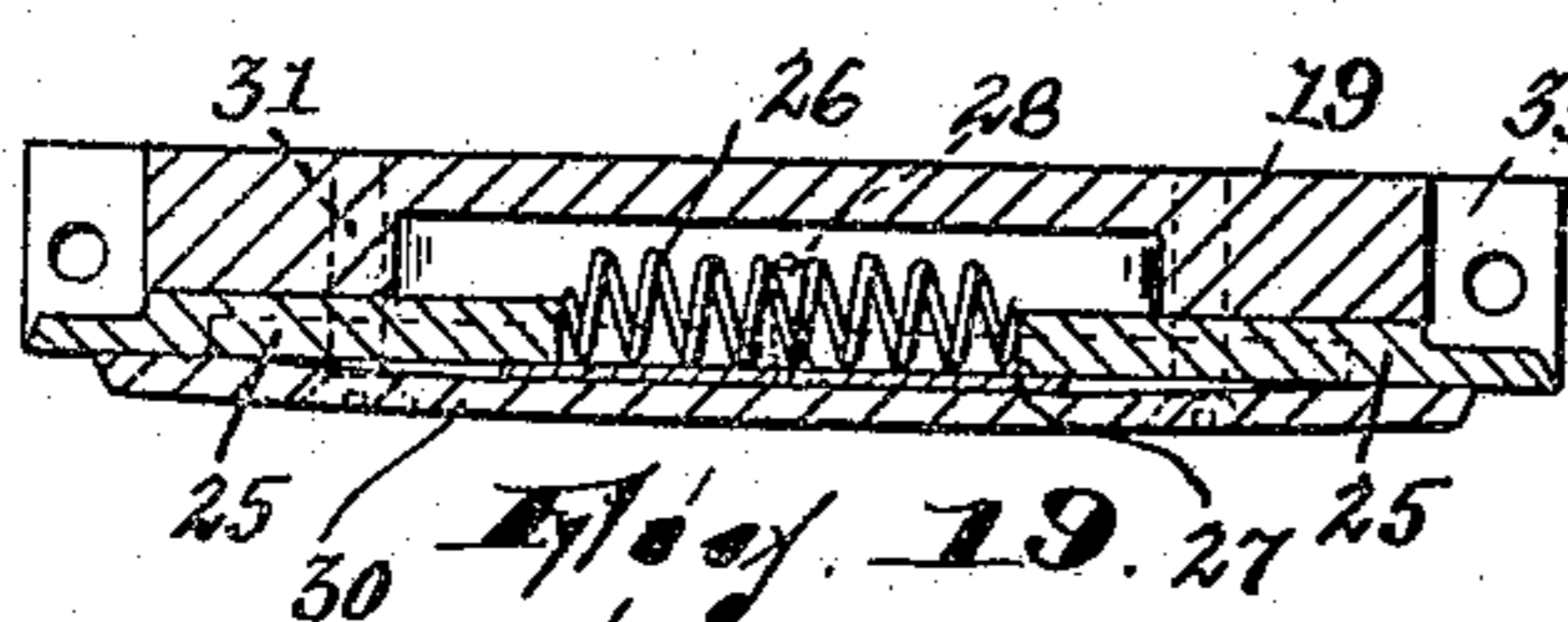


Fig. 19.

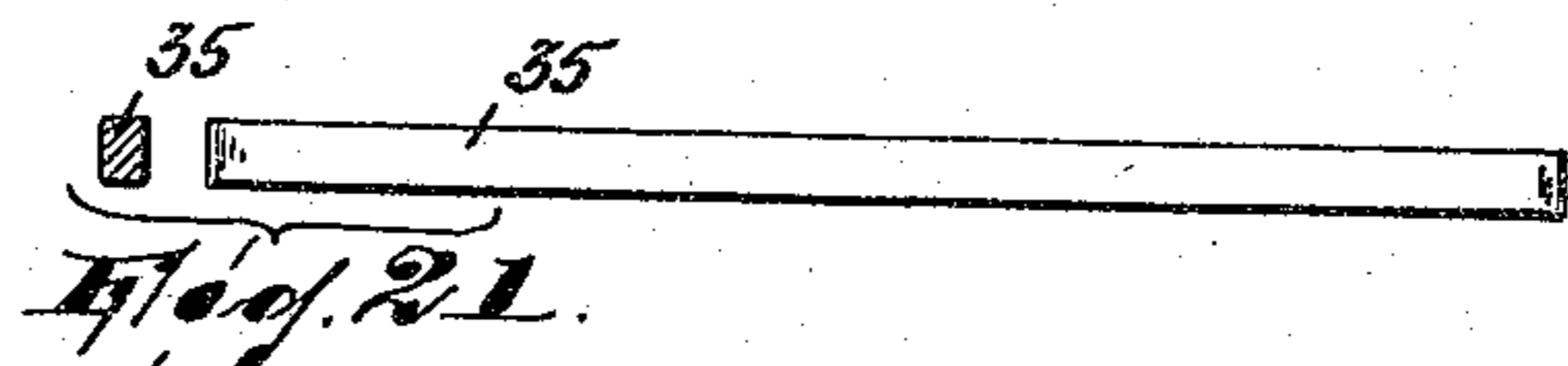


Fig. 21.

WITNESSES:

Wm. D. Bell.
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UNITED STATES PATENT OFFICE.

BENJAMIN ADRIANCE AND AMOS CALLESON, OF BROOKLYN, NEW YORK; SAID CALLESON
ASSIGNOR TO SAID ADRIANCE.

MACHINE FOR CLENCHING TOGETHER SHEET-METAL CANS AND THEIR HEADS.

No. 931,022.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed July 22, 1907. Serial No. 384,961.

To all whom it may concern:

Be it known that we, BENJAMIN ADRIANCE and AMOS CALLESON, citizens of the United States, residing in Brooklyn, county of Kings, State of New York, have invented a certain new and useful Machine for Clenching Together Sheet-Metal Cans and Their Heads; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

Our invention relates to can heading machinery, and it consists in certain improvements in such machinery having for their object to provide means for automatically feeding the cans and heads to a heading machine of, say, the type illustrated in the application for U. S. Letters Patent filed February 28, 1905, #247,766 and which it is unnecessary to describe herein more particularly than by stating that it comprises four heading units between each two of which, at two points in the machine, the cans are fed to be alternately distributed to said units for heading. In the application referred to it was proposed that the cans be introduced into the machine by means of inclined planes or chutes down which the cans moved by their own weight; this construction required, however, an incline of such a pitch that cans filled or partially filled with liquid would lose considerable of their contents before they reached the heading means. By the present invention it is proposed to not only feed the cans along a substantially horizontal plane but to also provide for preliminarily and temporarily clenching the heads thereon so as to prevent loss of their contents during the feeding operation, it being remarked that the type of can which is particularly in mind is that in which the cover operates as a sort of a wedge on the can body when the two are assembled and thus forms with the latter an adequate seal for the time being.

The invention will be found fully illustrated in the accompanying drawings, wherein,

Figure 1 is a view in side elevation of the machine assembled with a multiple heading machine of the type illustrated in the appli-

cation aforesaid; Fig. 2 is a slightly enlarged top plan view of certain parts shown in Fig. 1, others being removed; Fig. 3 is a side view of the main part of the machine, looking from the right in Fig. 1, certain parts being removed; Fig. 4 is an enlarged front view of the upper portion of the main part of the machine; Fig. 5 is a side view, looking from the right in Fig. 4, of what is seen in Fig. 4; Fig. 5^a is a horizontal sectional view on the line *x—x* of Fig. 5; Figs. 6 and 7 are a front view and a top plan view of a certain plate *f*; and, Figs. 8 to 24, inclusive, illustrate details, Figs. 8 and 9 being plan and front views of a bracket for sustaining certain belt supporting plates; Figs. 10 and 11 being top plan and front views of other brackets for said belt supporting plates; Figs. 12 and 13 being top plan and front views of a certain switch; Figs. 14 and 15 being top plan and front views of the can head plunger and clencher; Figs. 16, 17 and 18 being, respectively, a top plan, underneath, and end view of the plunger and clencher with all accessories removed; Fig. 19 being a longitudinal sectional view of the lower member of said plunger and clencher; Figs. 20 and 21 being views of certain accessories of said plunger and clencher; and, Figs. 22, 23 and 24 being views of the bending devices of said plunger and clencher.

In the drawings, *a* designates a can heading machine of the multiple type above described, *b* is its main shaft journaled horizontally therein and *c* its distributing platform where the cans received are directed by suitable means to the several heading units.

d is a pedestal arranged back of the machine *a* and formed on one side with a flat face *e* against which is bolted a plate *f* partly supported by the pedestal and by a leg *g*. The plate *f* affords bearings for a shaft *h* carrying a sprocket wheel *i* and a gear wheel *j*; said plate stands at right angles to the machine *a* and at its farther end it carries another shaft *k* on which is journaled a drum *l*. Over the drum and sprocket wheel extends a chain conveyer *m* each of whose links is a block *n* having one end bifurcated and receiving the unbifurcated end of the next link, the two being joined together by a pin *o*; the top of the block *n* is not flat, but is convex, as at *p*, Fig. 4; the reason for this grows out of the fact that since the can has a depending lower flange its lower wall would

be otherwise unsupported during the head applying operation so that the pressure of the can head applying device would cause the bottom to bulge and thus produce an unmarketable can. The unbifurcated end of each link is formed as an upwardly projecting finger *q*. The cans are placed on this conveyer with the head loosely resting on each, each between two fingers *q* and disposed lengthwise on the conveyer.

Above the plate *f* there is bolted to the flat face *e* of the pedestal *d* another plate *r* formed with a bearing *s*. In this bearing is journaled a shaft *t* carrying at one end a cam *u* and at the other end a sprocket wheel *v*. In the plate *r* is fulcrumed, on studs *x*, a pair of levers *z* acting as parallel levers by virtue of being pivotally connected by a link *1*.

2 is a plunger block having a rear flat face bearing squarely against the levers *z*, the same being carried by an adjustable pitman 3 suspended from a crank pin 4 on the cam *u*. In the back of the plunger block 2 is a dovetailed groove 5 in which works, vertically, a slide 6 which is pivotally connected, by studs 7, to the free arms of the levers *z*.

8 is a roller journaled on the stud 9 on the upper lever *z* in position to be engaged by the periphery of the cam *u*.

The mechanism above partially described and best shown in Figs. 4 and 5 operates substantially as follows: In the rotation of shaft *t* cam *u* is brought against roller 8 while the rotation of the crank-pin is causing the plunger-block 2 to ascend; since the cam and upper lever *z* have different centers of movement, the action of the cam on the parallel levers *z* is to cause them to swing on their pivots. This operation affects the slide 6 which is caused to move upwardly and to the left in the arc of a circle, thus displacing the ascending plunger-block to the left. This action continues until the highest part of the cam is in contact with roller 8, whereupon, owing to the shape of the cam, the slide 6 is held stationary while the plunger descends and until part 19 comes within the path of a finger *q*, when cam *u* recedes from roller 8 as the cam continues to turn. During the latter part of this operation, the plunger block, while still descending, is being allowed to move by gravity to the right, thus following the movement of the can, which is being correspondingly moved by finger *q*, and the plunger block continues this movement until the stud 4 reaches its lowest limit of movement, whereupon it begins to rise. In its rise, after it clears finger *q*, it of course has a vertical movement, as well as, again, to the left. It will thus be seen that the plunger block accommodates itself to the advance of the conveyer *m* as it descends, moving to the right and thus with the conveyer while the head applying operation is proceeding.

Thus it is unnecessary to stop the conveyer

every time a head is applied, so that the operation is not only quickened but the jarring of the cans, from alternately starting and stopping, prevented.

The plate *f* is formed with a shelf 10 on which the upper stretch of the conveyer *m* rests. The plate itself forms the back wall of said shelf against which the cans rest when they are placed on the conveyer; when they are ready for the head applying operation, *i. e.*, about opposite the pedestal *d*, they pass in behind a front wall 11 secured to the shelf 10. Said front wall and the opposed portion of the plate *f* have opposed grooved guides 12 which receive the flanges of the head and body, (see Figs. 3 and 5) when the can and head are passing the pedestal.

The plunger comprises, together with the block 2 above described, a means for pressing the can heads against the cans and for clenching the head and can edges, *i. e.*, bending the same over together in relatively limited portions so that the can and head are sufficiently interlocked for the time being so that the head will not become dislodged during the subsequent treatment. Said means is illustrated in detail in Figs. 14 to 24. 13 is a block attached to the under side of the plunger block 2 by bolts 14. At opposite points it is provided with vertical grooves 15 in which are secured, by screws 16, wedge pieces 17. 18 designates four vertical holes in said block. 19 is a block disposed below block 13 and movable vertically relatively thereto, the same carrying upwardly extending screws 20 which penetrate the holes 18 in block 13 (having their heads in countersinks 21 of the latter) whereby they guide the block 19 in its movements; springs 22 interposed between the two blocks and coiled about the screws press the block 19 downwardly to the limit afforded by the heads of the screws. The block 19 is formed on its under side with a groove 23 and a groove 24 countersunk therein; in the groove 23 is arranged a pair of slides 25 pressed apart by a spiral spring 26 in the groove 24. A plate 27, secured to the under side of the block 19 by screws 28 arranged in the holes 29, keeps the spring 26 in place even though a plate 30, which is secured by screws 31 to the block, may be removed for any purpose. The plate 30 has a convex under surface and acts the same as the top faces *p* of the fingers *n* to prevent bulging of the head of the can. 32 designates bending devices pivoted in recesses 33 of block 19 and bearing at their upper ends against the wedges 17 and near their lower ends against the ends of the spring slides 25, the purpose of which is to return the bending devices to their normal or open positions. In order to prevent the screws 20 from turning, their lower ends are recessed, as at 34, to receive keys 35 set in grooves 36 in the

under side of the block and held in place by the plate 30. When the plunger block descends and the block 19 bears against the head of the can the pressure effects a relatively upward movement of said block in the plunger, whereupon the bending devices, by wiping against the wedges 17, move on their pivots to clench or bend the edges of the can and head downwardly together. The edge engaging portion of each bending device is shown as a groove 37 in Figs. 15, 22 and 24.

The end of the plate *f* adjacent the machine *a* is formed as a bearing 38 in which is journaled a shaft 39 carrying at one end a spur wheel 40 meshing with the sprocket wheel *j* and at the other end a peripherally grooved cam 41. Above this bearing the plate *f* is extended and formed with a small table 42 on which is secured a bracket 43. On this bracket and two brackets 44 (see Figs. 2 and 10), which latter are secured to the platform *c* of the machine *a*, rest the ends of belt supports 45, the same being countersunk in the tops of the brackets. In the bracket 43 are journaled two rollers 46 set with their axes at right angles to the belt supports 45, which occupy a position in the form of the letter *V* as seen in Fig. 2; correspondingly, in each bracket 44 is journaled a roller 47. Over each roller 46 and the corresponding roller 47 extends an endless belt 48, the upper stretch of which rests on the belt support 45.

49 is a vertical shaft journaled in the bracket 43 between the belt supports and limited against vertical movement therein by a switch 50 on its upper end and a crank 51 on its lower end, a roller 52 on the crank being engaged in the groove of cam 41. As hereinafter explained, the cam 41 oscillates shaft 49 through the crank 51 and thus vibrates the switch in such manner that the cans are fed on to the belts 48 alternately as they come from the clenching operation. When the cans finally reach the machine *a* they are intended to do so side on, a can marked *A* being so shown in Fig. 2; when the cans leave the clenching operation they move endwise, and in order to effect their change of position so as to stand side on on the belts 48, the switch 50 has its free end formed as a blade 53 having converging side edges 54. A more particular description of the manner in which the cans change their position will follow later on.

In order to guide the cans as they are conveyed by the belts 48 to the machine *a*, flat side strips 55 are provided, the same being supported by spacers 56 on the belt supports 45 and blocks 57 secured to the sides of said belt supports. These strips stand high enough from the belts 48, which they overlap, so that the lower can edges just about fit between the belt and said strips, allowing for slight variations in the thickness

of the edges of the cans. Jamming of the cans is effectually prevented as they are about to move on to the platform *c* of the machine *a* by a guide 58 which extends longitudinally over each belt 48 and close enough to the same so as to keep each can squarely against its belt, said guide being carried by arches 59.

60 are entrance guides grooved on their insides, as at 61, to accommodate the lower flanges of the cans and arranged on the bracket 43.

In order to keep the belts 48 taut, a weighted roller 62 journaled in a lever 63 fulcrumed in each bracket 44 is arranged to rest on the lower stretch of the belt. Each belt is driven from a pulley 64 on the shaft *b* of the machine *a* by a belt 65 extending around guide rollers 66 and then around a pulley 67 on the shaft of the roller 47.

68 is a chain passing around the sprocket wheels *j* and *v* and also around a sprocket wheel 69 on shaft *b*, the same acting, through mechanism already described, to drive the conveyer *m*, reciprocate the plunger, and vibrate the switch 50.

When the cans and heads have been operated upon by the clenching means the conveyer *m* advances them successively on to the bracket 43. The switch 45 vibrates as fast as each can approaches, first to one side and then to the other. The center of movement of the switch, *i. e.*, shaft 49, is aligned with the centers of the approaching cans so that, according as the extremity of the switch is at one limit or the other, so the blade 53 is opposite the one or the other of the further corners of the nearest approaching can. As this can is advanced by the conveyer *m* causing the cans behind it to feed it forward, one of the farther corners thereof is engaged by the blade 53, which now moves and, since it has contact therewith in its rear part, displaces the can laterally in such manner that it simultaneously turns it until the adjoining edge 53 of the blade rests squarely against the side of the can, whereupon the switch directs it into its proper position, side on, on the belt 48. Once on the belt, it is carried forward there- by to the machine *a*, the same operation then occurring with respect to the can behind it.

Having thus fully described our invention, what we claim and desire to secure by Letters Patent is:

1. The combination of a suitable support, and a compressing mechanism comprising a movable carrier for the parts to be operated upon, and a plunger movable in said support relatively, and at an angle, to the carrier and also movable, during its operating thrust, with the carrier, substantially as described.

2. The combination of a suitable support, and a compressing mechanism comprising a

movable carrier for the parts to be operated upon, and a plunger movable in said support toward and from, and at an angle to, the carrier and also movable, during its movement toward the carrier, first reversely to the movement of, and then with, the carrier, substantially as described.

3. The combination of a suitable support, a movable carrier for the parts to be operated upon, a plunger movable in said support toward and from, and at an angle to, the carrier, and means, carried by the plunger and operative during said movement thereof, for bending over the edges of said parts, said plunger being also movable with the carrier during its movement toward and from the carrier, substantially as described.

4. The combination of a suitable support, a movable carrier for the parts to be operated upon, a plunger movable in said support toward and from, and at an angle to, the carrier, and means, carried by the plunger and operative during said movement of the plunger toward the carrier, for bending over the edges of said parts, said plunger being also movable with the carrier during its movement toward the same, substantially as described.

5. The combination of a suitable support, a movable carrier, a plunger movable in said support toward and from, and at an angle to, the carrier, and means, carried by the plunger and operative during said movement thereof, for bending the edges of the cans and heads into interlocking engagement with each other, said plunger being also movable with the carrier during its movement toward and from the carrier, substantially as described.

6. The combination of a suitable support, a movable can carrier and a plunger movable in said support toward and from, and at an angle to, the carrier, said plunger comprising parts movable relatively to each other upon engagement with the work and can and head edge-bending devices actuate upon the movement between said parts, said plunger being also movable with the carrier during its movement toward the same, substantially as described.

7. The combination of a suitable support, a movable can carrier, a plunger movable toward and from the carrier and at an angle thereto, means for moving the plunger, and means for causing the plunger to move with the carrier during its movement toward and from the same, substantially as described.

8. The combination of a suitable support, a movable can carrier, a plunger movable toward and from the carrier and at an angle thereto, means for moving the plunger, and means, comprising a cam and lever mechanism, for causing said plunger to move with the carrier during its movement toward and from the same, substantially as described.

9. The combination of a suitable support, a movable can carrier, a plunger movable toward and from the carrier and at an angle thereto, a shaft journaled in said support, said plunger being eccentrically connected with said shaft, and means, comprising a cam on said shaft and a lever structure fulcrumed in the support and engageable by the cam, for causing said plunger to move with the carrier during its movement toward and from the same, substantially as described.

10. The combination of a suitable support, a movable can carrier, a plunger movable toward and from the carrier and at an angle thereto, a shaft journaled in said support, said plunger being eccentrically connected with said shaft, and means, comprising a cam on the shaft, a lever structure fulcrumed in the support and engageable with the cam, and a slide engaged with the plunger and controlled by said lever structure, for causing said plunger to move with the carrier during its movement toward and from the same, substantially as described.

11. The combination of a forked runway for the cans, means for advancing the cans along said runway and the members of the forked portion thereof, a switch pivoted substantially midway between the members of the forked portion of said runway and having its free end projecting toward the undivided portion of the runway, and means for vibrating said switch the length of the acting portion of the switch being substantially coincident with the distance between the outer margin of each runway and the pivot of the switch, substantially as described.

12. The combination of a forked runway for the cans, means for advancing the cans along said runway and the members of the forked portion thereof, and a switch pivoted substantially between the members of the forked portion of said runway and having its free end projecting toward the undivided portion of the runway, the acting end of said switch having its sides converging relatively toward the pivot of the switch, substantially as described.

13. In a runway for cans, the combination of a suitable elongated support having a flat top surface, a continuous can carrying belt having one stretch thereof extending over said support, and parallel strips spaced from and arranged in a plane relatively close to and above that of the edges of the belt, said strips being adapted to overlap the lower flanges of the cans whereby to maintain the latter flat against the belt, substantially as described.

14. In a runway for cans, the combination of a suitable elongated support having a flat top surface, a continuous can carrying belt having one stretch thereof extending longitudinally over and resting on said support,

and a guide for the cans extending longitudinally over and spaced from said belt, said guide being adapted to engage the tops of the cans to maintain them flat against the belt, substantially as described.

15. The combination of a suitable support, a movable work carrier, a plunger movable in said support toward and from, and at an angle to, the carrier and means, carried by the plunger and operative during the movement thereof, for shaping the work, said plunger being also movable with the carrier during its movement toward and from the carrier, substantially as described.

16. The combination of a suitable support, a movable can carrier, a plunger movable toward and from the carrier and at an angle thereto, means for moving the plunger and means, comprising a cam, for causing said plunger to move with the carrier during

its movement toward and from the same, substantially as described.

17. The combination of a forked runway for the cans, means for advancing the cans along said runway, a switch pivoted at the juncture of the members of the forked portion of said runway and having its free end projecting toward the undivided portion of the runway, said free end portion of the switch being relatively narrower than the runway, and means for vibrating the switch, substantially as described.

In testimony that we claim the foregoing, and have hereunto set our hands this 2nd day of July 1907.

BENJAMIN ADRIANCE.
AMOS CALLESON.

Witnesses:

JOHN W. STEWARD,
JAMES VAN WICKLEN.