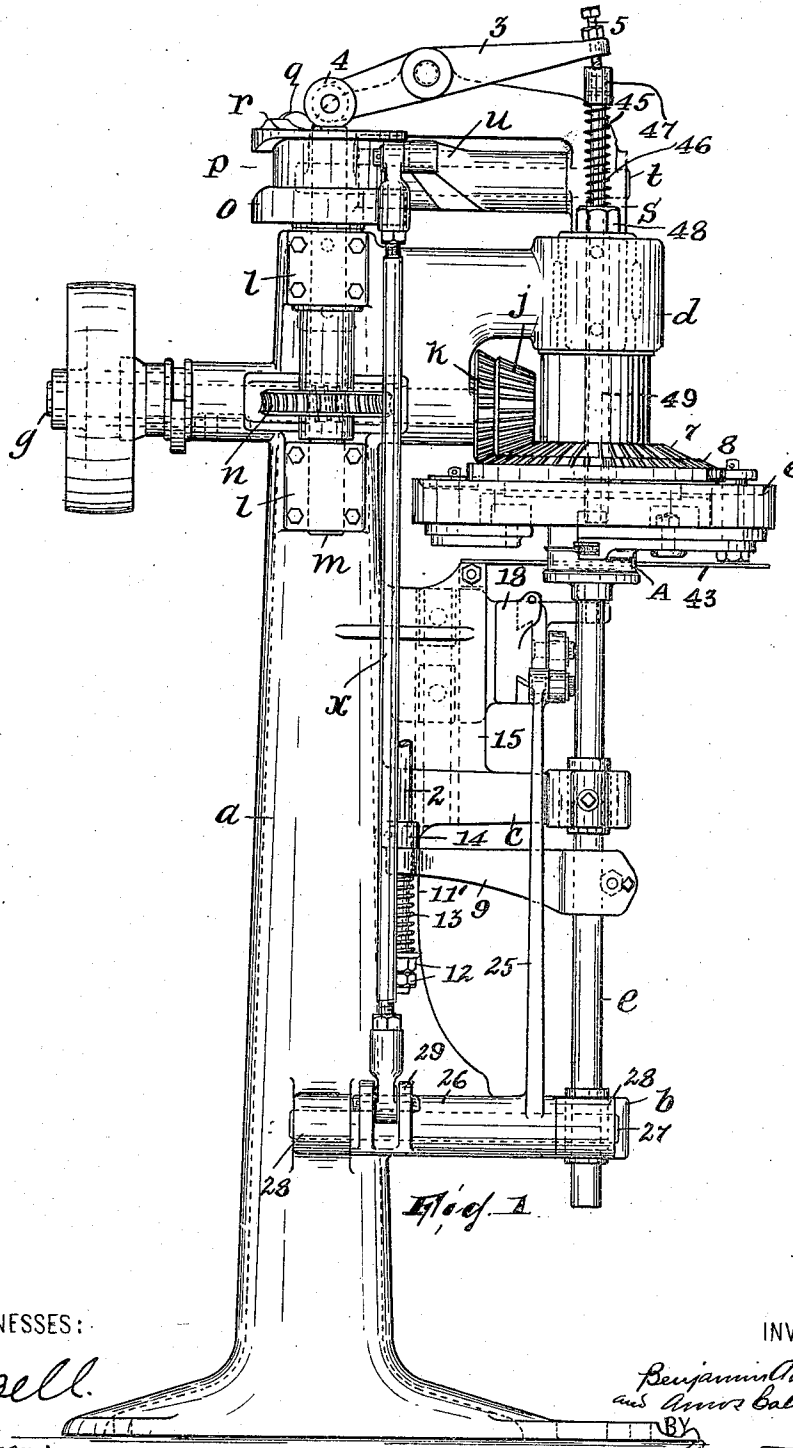


B. ADRIANCE & A. CALLESON.
SINGLE CAN HEADING MACHINE.
APPLICATION FILED JULY 22, 1907.

933,872.

Patented Sept. 14, 1909.

6 SHEETS—SHEET 1.



WITNESSES:

Wm. Drell.
Chas. Kaufmann.

INVENTORS,

Benjamin Adriance
and Amos Callison,

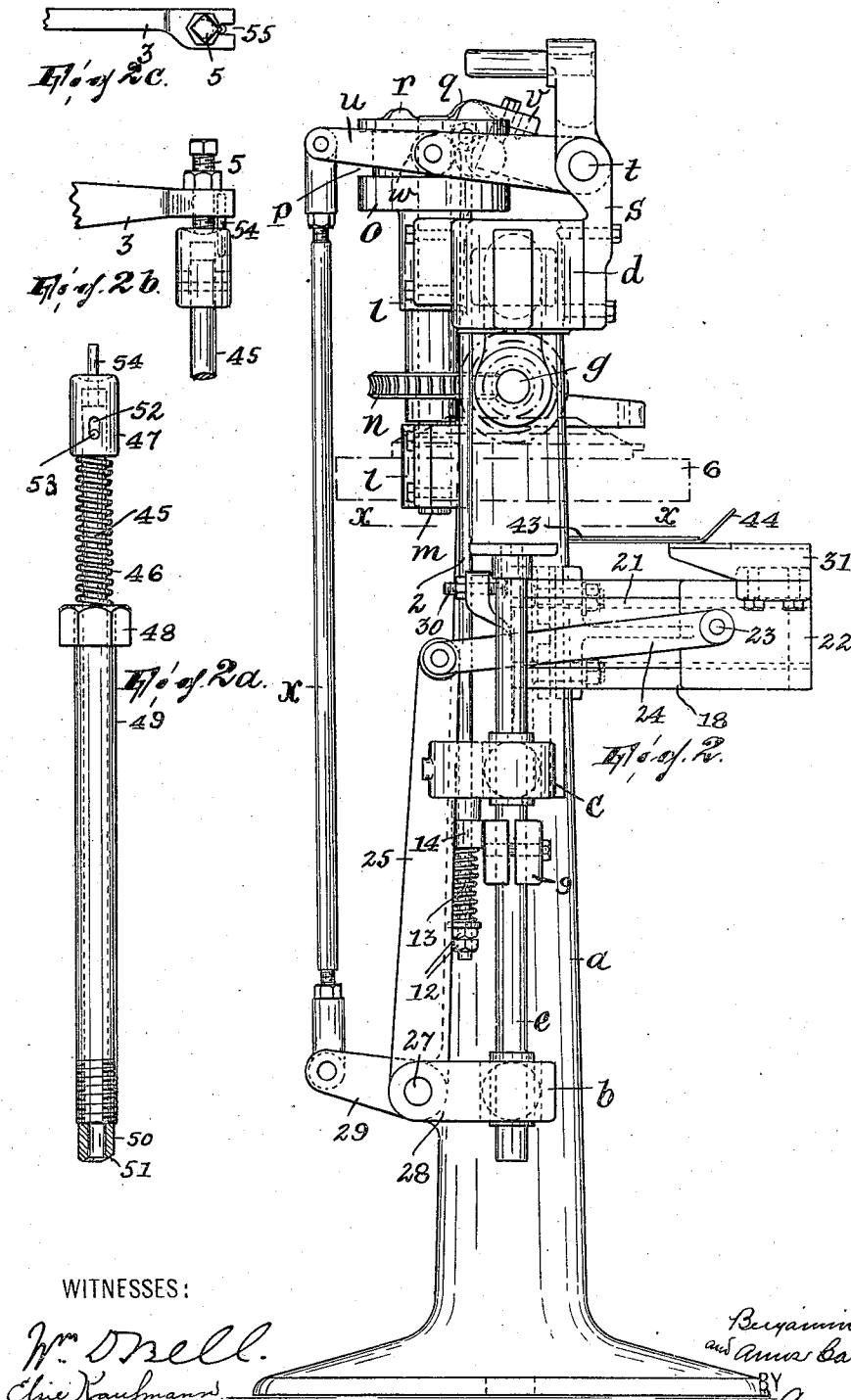
BY *Arthur L. Turner,*
ATTORNEYS.

B. ADRIANCE & A. CALLESON.
SINGLE CAN HEADING MACHINE.
APPLICATION FILED JULY 22, 1907.

933,872.

Patented Sept. 14, 1909.

6 SHEETS—SHEET 2.



WITNESSES:

Wm. Orrell.
Chas. Kaufmann.

INVENTORS,

Benjamin Adriance
and Anna Callison.

BY
Arthur L. Howard,
ATTORNEYS.

B. ADRIANCE & A. CALLESON.
SINGLE CAN HEADING MACHINE.
APPLICATION FILED JULY 22, 1907.

933,872.

Patented Sept. 14, 1909.

6 SHEETS—SHEET 3.

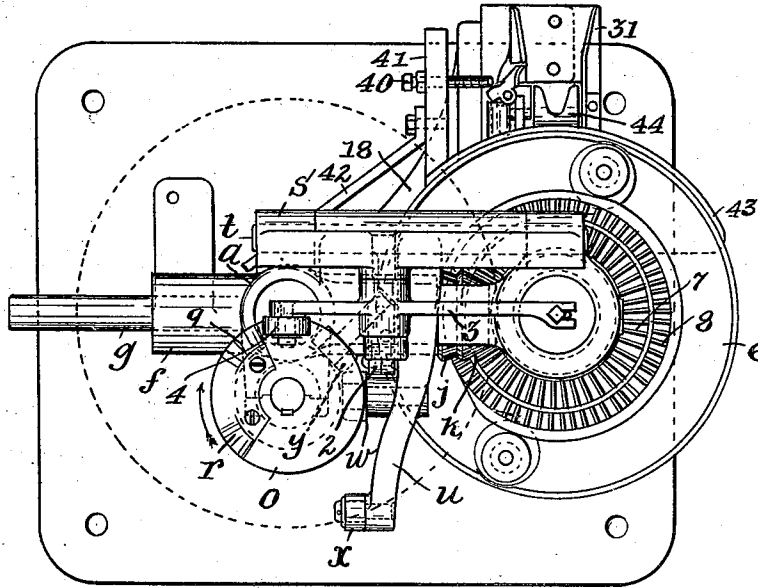


Fig. 3.

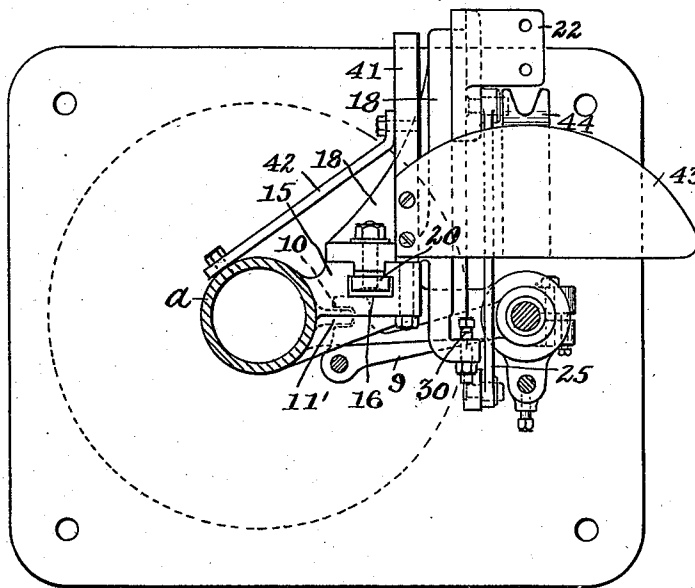


Fig. 4.

WITNESSES:

Wm. M. M. M.
Chas. Kaufmann.

INVENTORS,

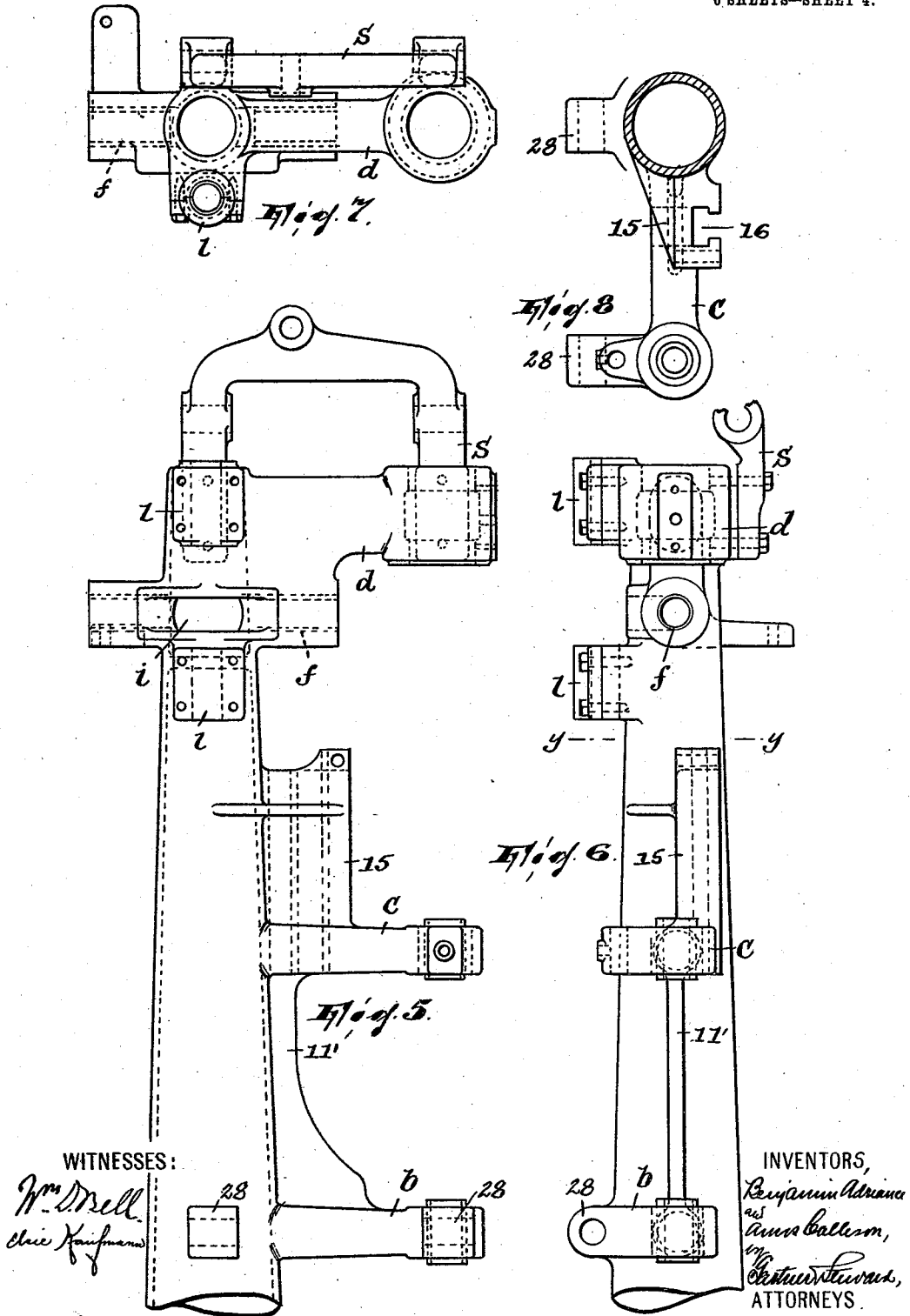
Benjamin Adriance
and Anna Callison,
BY
Garner & Leeward,
ATTORNEYS.

B. ADRIANCE & A. CALLESON.
SINGLE CAN HEADING MACHINE.
APPLICATION FILED JULY 22, 1907.

933,872.

Patented Sept. 14, 1909.

6 SHEETS—SHEET 4.

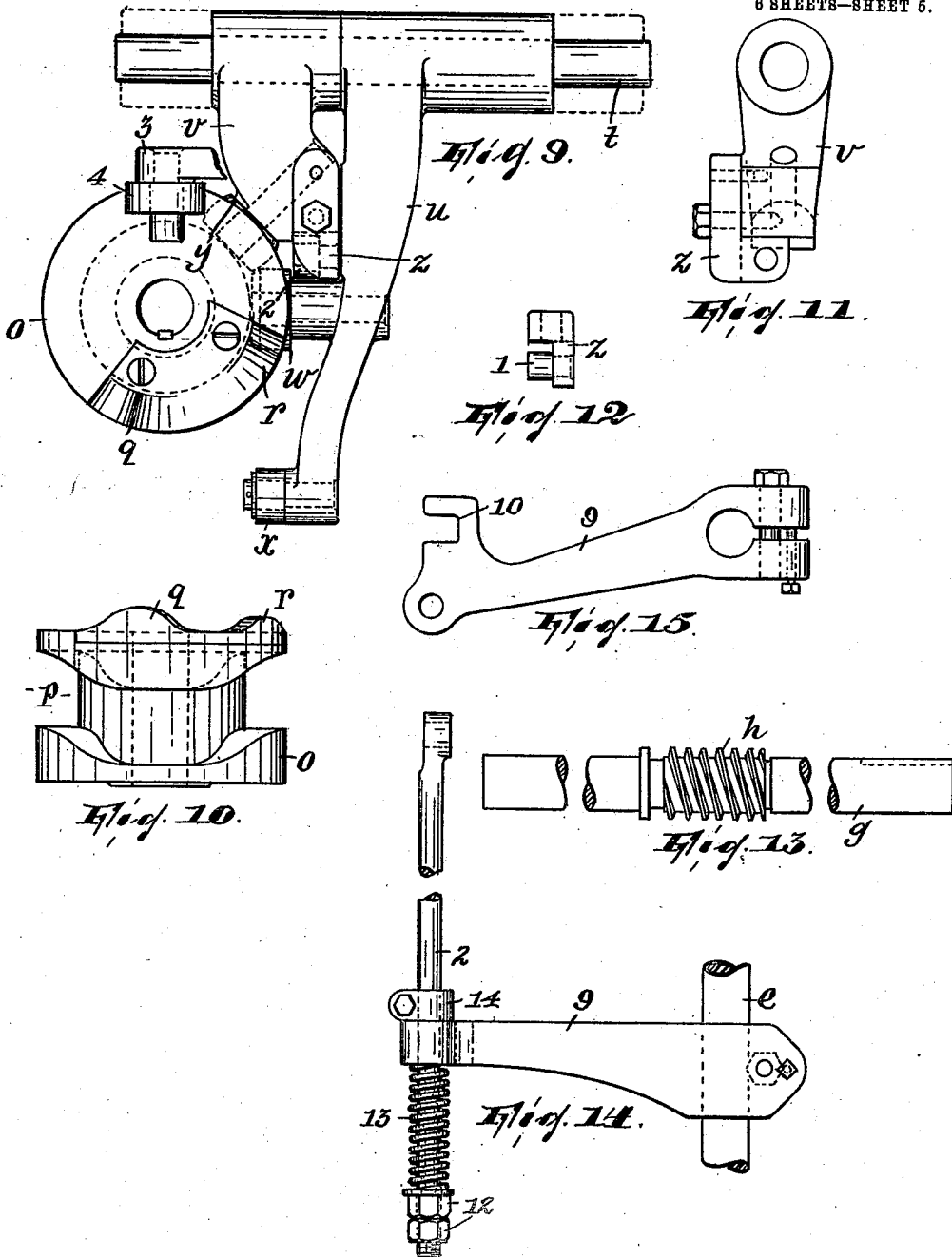


B. ADRIANCE & A. CALLESON.
SINGLE CAN HEADING MACHINE.
APPLICATION FILED JULY 22, 1907.

933,872.

Patented Sept. 14, 1909.

6 SHEETS—SHEET 5.



WITNESSES:

Wm. Drell.
Chas. Kaufmann.

INVENTORS,

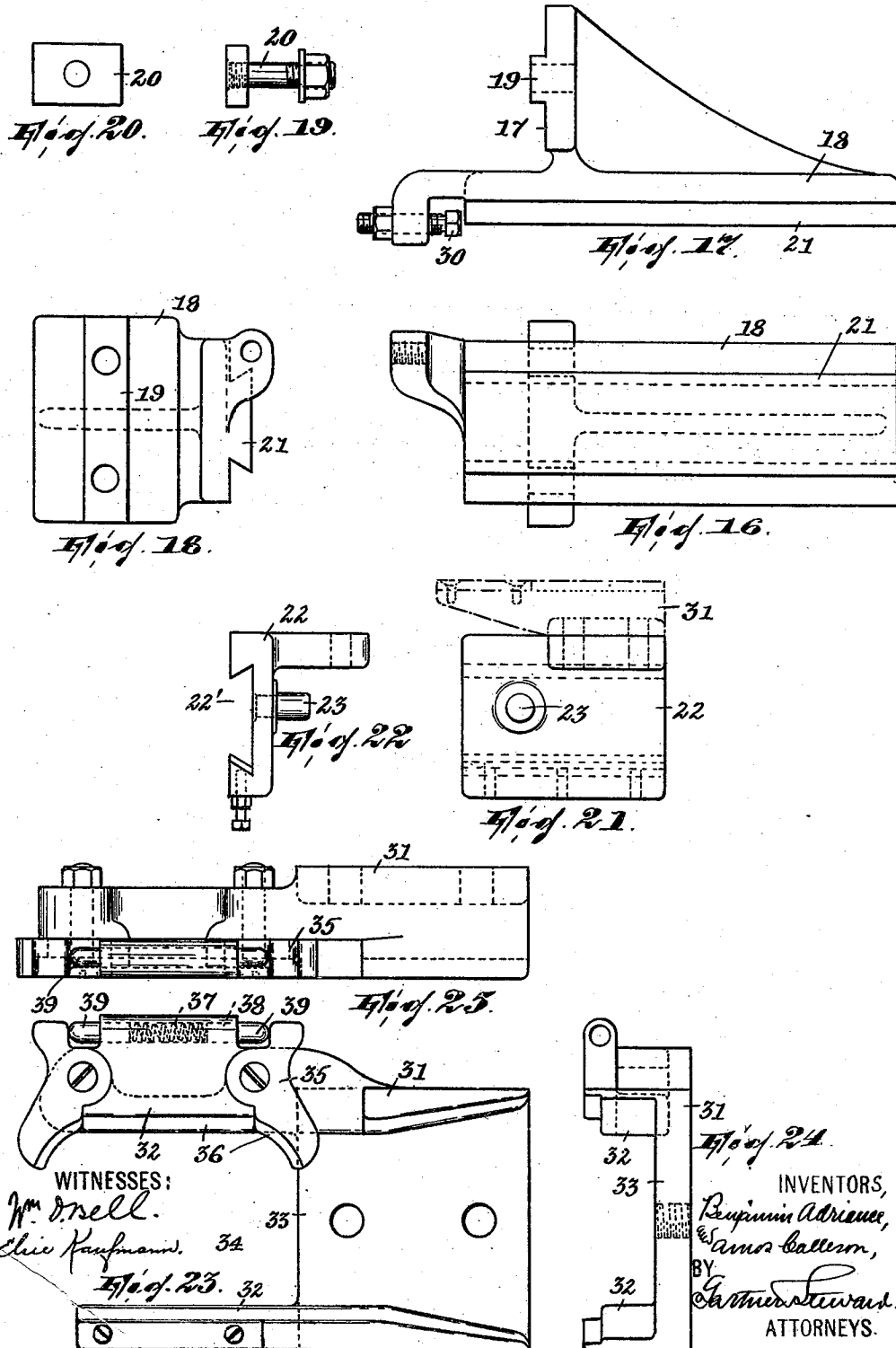
Benjamin Adriance
and Arno Calleson,
BY
Arthur L. Luard,
ATTORNEYS.

B. ADRIANCE & A. CALLESON.
SINGLE CAN HEADING MACHINE.
APPLICATION FILED JULY 22, 1907.

933,872.

Patented Sept. 14, 1909.

6 SHEETS—SHEET 6.



UNITED STATES PATENT OFFICE.

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

SINGLE-CAN-HEADING MACHINE.

933,872.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed July 22, 1907. Serial No. 384,962.

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 certain new and useful Improvements in Single-Can-Heading Machines; 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 present invention relates to machines for affixing heads to sheet metal vessels by solderless joints, and it consists in certain improvements in machines of this type having for their principal object to require less attention and skill in the operation thereof.

In the adaptation of our invention shown in the drawings, the improvements have been illustrated in connection with a seaming mechanism proper of the general type of that presented in our U. S. Letters Patent No. 810,245, to which reference is here made for a full showing of that particular phase of this art to which our invention especially relates; but it should be understood that the invention is not necessarily limited to association with any such special seaming means.

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

Figure 1 is a view in side elevation of a machine embodying our present invention; Fig. 2 is a view in front elevation of the machine, certain parts being removed and the seaming mechanism proper being shown in dot-and-dash outline in order to avoid confusion; Figs. 2^a, 2^b and 2^c are details of the ejecting mechanism; Fig. 3 is a top plan view of the machine; Fig. 4 is a horizontal sectional view on the line *x-x* in Fig. 2; Fig. 5 is a view similar to Fig. 1 of the frame of the machine; Fig. 6 is a view similar to Fig. 2 of the frame of the machine; Fig. 7 is a plan view of what is shown in Fig. 5; Fig. 8 is a horizontal sectional view on the line *y-y* in Fig. 6; Fig. 9 is a plan view of certain parts shown in Fig. 3 and on a slightly larger scale, the parts involved

being more or less in an altered position; Fig. 10 is a view in side elevation of a cam shown in Fig. 9; Fig. 11 is a view of a certain crank on a shaft *t* and looking from the front end of said shaft; Fig. 12 is an end view of said crank; Fig. 13 shows the main drive-shaft; Fig. 14 illustrates a part of the means for reciprocating the can-supporting plunger or shaft; Fig. 15 is a top plan view of an arm shown in Fig. 14; Fig. 16 is a front view, Fig. 17 a plan view, and Fig. 18 an end or side view of the guide on which moves the can-feeding slide or carriage; Figs. 19 and 20 are detail views illustrating the bolt whereby said guide is adjustably secured in the frame of the machine; Figs. 21 and 22 are front and side or end views, respectively, of the body part of the slide or carriage which moves on said guide; and, Figs. 23, 24 and 25 are, respectively, top plan, end or side, and rear (inverted) views of the can-holder portion of said slide or carriage.

In said drawings, *a* is a pedestal from which project laterally superposed arms *b* and *c* and a head *d*, said arms being provided with bearings for a vertically reciprocating shaft *e*; *f* is a bearing formed horizontally in the pedestal *a* for the main drive shaft *g* provided with a worm *h* disposed opposite an opening *i* in the frame and carrying at its inner end two bevel pinions *j* and *k*.

l designates vertical bearings arranged on one side of the pedestal *a* and in which is journaled a shaft *m* carrying a worm wheel *n* which projects through the opening *i* and engages the worm *h*, so that shaft *m* is driven from shaft *g*.

At its upper end shaft *m* carries a cam *o* formed with a peripheral cam-way *p* and, on its top surface, with two humps or rises *q-r*. A bracket *s* is bolted to the pedestal on the side thereof opposite the shaft *m*, and in this bracket is arranged a shaft *t* which forms a fulcrum for cranks *u* and *v*. The crank *u* carries a roller *w* which runs in the groove *p*; to its free end is pivotally connected a pitman *x*. The crank *v* also carries a roller *y* which runs in the groove *p*, and to it is bolted a block *z* on a pin 1 on which as a pivot is suspended another pitman 2. In the bracket *s* is also fulcrumed a lever 3 one end of which carries a roller 4 which bears on

the top of the cam *o* and is adapted to be actuated by the humps or rises *q* and *r* and which at the other end carries a set-screw 5 the function of which will be hereinafter set forth.

The head *d* carries a seaming mechanism shown in the drawings and marked 6, the details and operation of which are substantially the same throughout as the seaming mechanism fully described and shown in our Letters Patent #810,245 above referred to, so that particular description thereof is unnecessary herein, it being merely stated that the bevel pinions *k* and *j* mesh with certain bevel gears 7 and 8 comprised in said seaming mechanism whereby to transmit power to the latter from the shaft *g*.

The shaft *e* has clamped thereto an arm 9 (see Figs. 14 and 15) which arm, by virtue of a recess 10 in its free end which engages a web 11' serving as a brace between the pedestal and arm *b*, keeps the shaft *e* against rotary movement in its bearings. The free end of said arm is furthermore penetrated by the pitman 2 which supports said arm and shaft *e*; this is accomplished in a manner calculated to cushion the arm on the pitman during a certain part of the operation by means of nuts 12 secured on the pitman below the arm and a spiral spring 13 interposed between said arm and the nuts.

14 is a collar on the pitman against which the arm is pressed by the spring.

Above the arm *c* and integral therewith and with the pedestal is a projection 15 formed on one side with a vertical cross-sectionally T-shaped slot 16, and against this projection bears the face 17 of a guide 18 (see Figs. 16, 17 and 18) having a tongue 19 which projects into said slot; this guide is adjustably secured in place by means of bolts 20 whose heads occupy the widened portion of the slot 16, as best shown in Fig. 4. The front of this guide is formed with a dove-tailed tongue 21, extending horizontally.

22 is the body portion of a slide or carriage supported by the guide 18 and formed with a dove-tailed groove 22' which receives the tongue 21. The body 22 carries a pin 23 to which is connected a link 24 which is also pivotally connected to one arm 25 of a crank 26 on a shaft 27 mounted in bearings 28, the pitman *x* being connected to the other arm 29 of said crank. When the crank 26 is oscillated from pitman *x* the carriage is reciprocated, and as the can-holding portion thereof (to be described) is designed to deliver each can squarely over the can-supporting plunger *e*, the thrust of the slide or carriage in the direction of the plunger is adapted to be accurately set (notwithstanding possible lost motion through wear or otherwise) by means of a set-screw 30 on the guide 18, which set-screw the body portion 22 of the slide or carriage directly engages.

On the top of the body-portion 22 of the slide or carriage is arranged the can-holder 31. This comprises two side walls 32 and a bottom wall 33 which extends considerably short of the side walls in the direction of the plunger so as to leave an opening 34 (see Fig 23); when the carriage or slide brings a can over the plunger in the manner hereinafter described, said opening permits the plunger to rise without interfering with said carriage or slide. In one of the side walls 32 of said holder is pivoted a pair of fingers 35. These fingers and the side walls are rabbeted, as at 36, to receive the upper flanges of the can and head, and the can with the head thereon is adapted to be held in the holder against movement parallel with the side walls thereof by the fingers 35 which engage two corners thereof. The fingers are held in position to maintain the can in the holder by a spiral spring 37, which, being coiled in a bore 38 formed in one side wall 32 between two pins 39 which engage the fingers, presses said pins apart and causes them to hold the fingers in the position shown in Fig. 23. The right hand finger 35 in Fig. 23, which is the one nearer the mouth of the holder, is adapted to be automatically turned on its pivot against the tension of the spring 37 by a stud 40 (see Fig. 3), when the carriage or slide is moved outwardly into the can-receiving position; the finger being thus caused to be retracted, the holder is "open" for receiving a can and its head.

41 is a bracket bolted to the projection 15 and connected with the standard *a* by a brace 42. To this is attached a horizontal segmental plate 43 which extends under the seaming mechanism 6 on the supply side thereof to form a guard keeping the workman's hand from being caught in the seaming mechanism. This guard carries a plate 44 which extends over the holder of the slide or carriage and close to the same, serving to keep the cans and heads in proper position in the holder as the slide or carriage is moved inwardly toward the plunger *e*.

45 is an ejector stem vertically aligned with shaft *e* and normally pressed upwardly by a spiral spring 46 interposed between a cap 47 on said stem and a nut 48 on a hollow spindle 49 which the stem penetrates and which forms a part of the seaming mechanism (see the patent aforesaid); the lower end of the stem carries a head 50, which abuts against the spindle 49 and limits the upward movement of the stem, said head being chamfered, as at 51. The cap, once it has been pushed downwardly far enough so that the head sufficiently clears spindle 49, allows the stem some free vertical movement on account of a slot 52 in the cap and a pin 53 on the stem. Said cap receives the impact of set-screw 5 in its hollow top portion, thereby keeping roller 4 continuously against

cam *o*. The chamfer is maintained in a permanent position by a pin 54 which projects into a slit 55 in the end of lever 3.

Operation: With the parts in the position shown in the first four figures, a can and head A are illustrated as passing through the seaming operation, while the holder of the carriage or slide is empty, ready to receive the can, with the head resting thereon, which is to succeed the can A. At this time, the roller *y* of crank *v* is running in the high part of the groove *p* of cam *o*, so that the crank *v*, through pitman 2, spring 13 and arm 9, presses the plunger *e* upwardly, holding the can head squarely against the chuck of the seaming mechanism 6 in the plane of action of the seaming nurls of said mechanism. The roller *w* of crank *u* is likewise running in the high part of the groove *p*, so that the carriage or slide, through pitman *x* and crank 26, is held in its outermost position. Furthermore, the roller 4 is clear of the humps *q* and *r*, so that the ejector stem 45 is held elevated to its fullest extent by the spring 46. The parts being in motion, the seaming mechanism continues to operate on the can and head A until, approximately, the low part of the groove *p* of cam *o* reaches roller *y* on crank *v*, whereupon, crank *v* descending, the plunger *e* likewise moves downwardly to permit the can and head to withdraw from the seaming plane. About this time, the roller 4 runs up on the rise or hump *q*, actuating lever 3, which in turn actuates the stem 45, so that the latter follows the plunger *e* downwardly and operates to loosen the can from the chuck of the seaming mechanism should it tend to adhere thereto; subsequently, the roller 4 runs down between the humps *q* and *r* and permits the ejector stem to rise somewhat, so that its lower end will not stand in the path of the can and head which are now to be advanced by the carriage to take the place of the can and head A. The roller *w* has now run down into the low part of groove *p* of cam *o*, causing lever *u* to descend and carry with it pitman *x*, which latter throws the crank 26 to the left in Fig. 2 and thus moves the carriage in the same direction. The advancing carriage pushes the finished can A off the plunger *e* and finally establishes the can and head which it contains directly over said plunger, the slot 52 and pin 53 allowing some slight upward movement of the stem in its cap 47 (according to variations in the cans) as the raised can margins take against the chamfer 51 of the head 50. By this time, the roller *y* begins to run up on the high part of the groove *p* of the cam *o* so as to raise the plunger *e* up through the opening 34 of the holder of the slide or carriage against the bottom of the can contained therein; approximately at the same time, the roller 4 rides up on the hump

r to cause the lever 3 to force the ejector stem 45 down again against the can contained in the carriage or slide, and when the roller runs down off said hump *r*, so that said stem may now rise, the plunger follows the stem upwardly until the seaming plane is reached, the two acting in the meantime to securely hold the can and head between them. During this time, the roller *w* has begun to assume the high part of the groove *p* of cam *o* and operate, through the mechanism already described, to run the carriage or slide to its initial position, at which time the left hand finger 35 in Fig. 23 is pressed back by the can, snapping again into the position shown as soon as it has passed the can; at the outward limit of movement of the holder the right hand finger 35 engages screw 40 and is thereby turned into the open position. The holder of the slide or carriage is now ready to receive a fresh can and head.

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

1. The combination, with the frame and a seaming mechanism, of parts coöperative with each other to hold the work during the seaming operation, a reciprocating work-feeding carriage movable to interpose the work between said parts, and comprising work-holding fingers adapted to yield to the work in substantially the direction of the line of movement of said carriage, and means for effecting coöperation as between said parts and the carriage, substantially as described.

2. The combination, with the frame and a seaming mechanism, of parts coöperative with each other to hold the work during the seaming operation, means for feeding the work to a position between said parts, said means being adapted to yield to the work in substantially the direction of its line of movement, and mechanisms for effecting coöperation between said parts and said means, substantially as described.

3. A work-feeding carriage for a can heading machine or the like having a work holding portion open at both ends and yielding work holding means adapted to resist the removal of the work from said carriage toward said ends, substantially as described.

4. In a work-feeding carriage for a can heading machine or the like, the combination, of a channeled work holder, and coöperative yielding devices projecting into the channel of said holder and adapted to resist movement of the work through the channel of said holder in both directions, substantially as described.

5. In a can heading machine or the like, the combination, with the seaming mechanism and means for holding the work during the seaming operation, of the frame, a car-

riage movable to and from the work holding means and comprising other work-holding means yieldable toward said first-named work-holding means, and means for reciprocating said carriage, substantially as described.

6. In a can heading machine or the like, the combination, with the seaming mechanism and means for holding the work during the seaming operation, of the frame, a carriage movable to and from the work holding means and comprising work holding fingers one of which is yielding toward said work holding means and the other of which is retractive to temporarily cease to cooperate with the first-named finger, means for causing the last-named finger to temporarily retract, and means for reciprocating said carriage, substantially as described.

7. In combination, with the frame and a seaming mechanism, opposed parts cooperative to grip the work, and means for causing said parts to have a movement together to and from a position in the seaming plane, substantially as described.

8. In combination, with the frame and a seaming mechanism, a chuck, opposed parts cooperative to grip the work, and means for first causing one of said parts to move toward the other to coact therewith to grip the work and then causing said parts to move together to bring the work against the chuck, substantially as described.

9. In combination, with the frame and a seaming mechanism, a chuck, a plunger cooperative therewith to hold the work and movable toward and from the same, a stem penetrating the chuck, and means for causing the stem and plunger to have first a relative movement the one toward the other to grip the work and then a movement together to bring the work against the chuck, substantially as described.

10. In combination, with the frame and a seaming mechanism, a chuck, a plunger cooperative therewith to hold the work and movable toward and from the same, a stem penetrating the chuck, means for causing the

stem and plunger to have first a relative movement the one toward the other to grip the work and then a movement together to bring the work against the chuck, and means for interposing the work between the plunger and stem, substantially as described.

11. In combination, with the frame and a seaming mechanism, a chuck, a plunger cooperative therewith to hold the work and movable toward and from the same, a stem opposed to and movable toward and from the plunger and cooperative therewith to also hold the work, a work-feeding carriage, and means for effecting in each cycle of operation two movements of the stem toward and from the plunger and for causing the carriage to interpose the work between the stem and plunger between said movements, substantially as described.

12. In combination, with the frame and a seaming mechanism, opposed parts cooperative to grip the work, means for causing said parts to have a movement together to and from a position in the seaming plane, and means cooperative with said first-named means for interposing the work between said parts, substantially as described.

13. In combination, with the frame and a seaming mechanism, a chuck, a work sustaining plunger cooperative with the chuck and movable toward and from the same, a reciprocating work-feeding carriage, a crank operatively connected with said carriage, and means for oscillating said crank and reciprocating said plunger, whereby to deliver the work between the plunger and chuck and then cause the plunger to force the work against the chuck, substantially as described.

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

BENJAMIN ADRIANCE.
AMOS CALLESON.

Witnesses:

JOHN W. STEWARD,
WM. D. BELL.