(No Model.)

F. A. WALSH.

MACHINE FOR HEADING, FILLING, AND SOLDERING CANS.

No. 303,473. Patented Aug. 12, 1884.

Fig. 1.

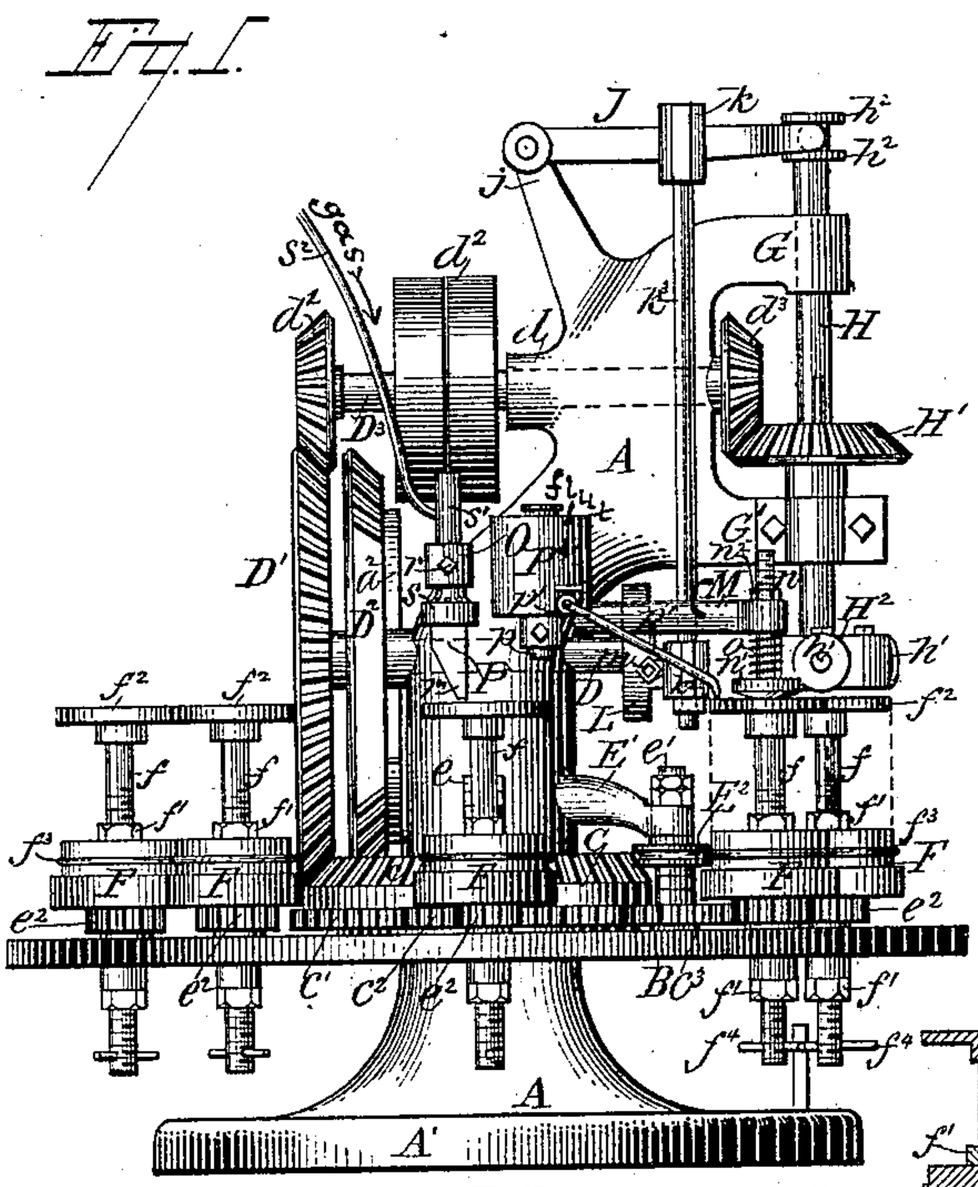


Fig. 4.

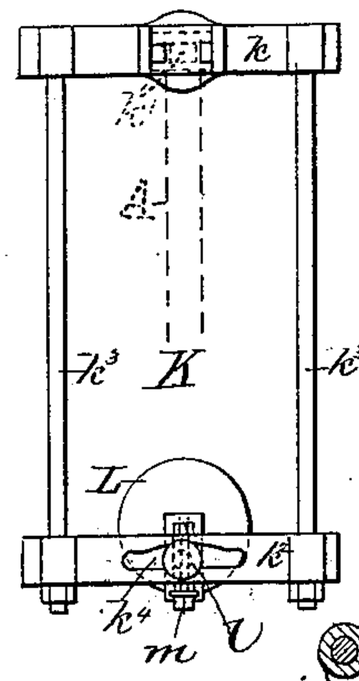


Fig. 3.

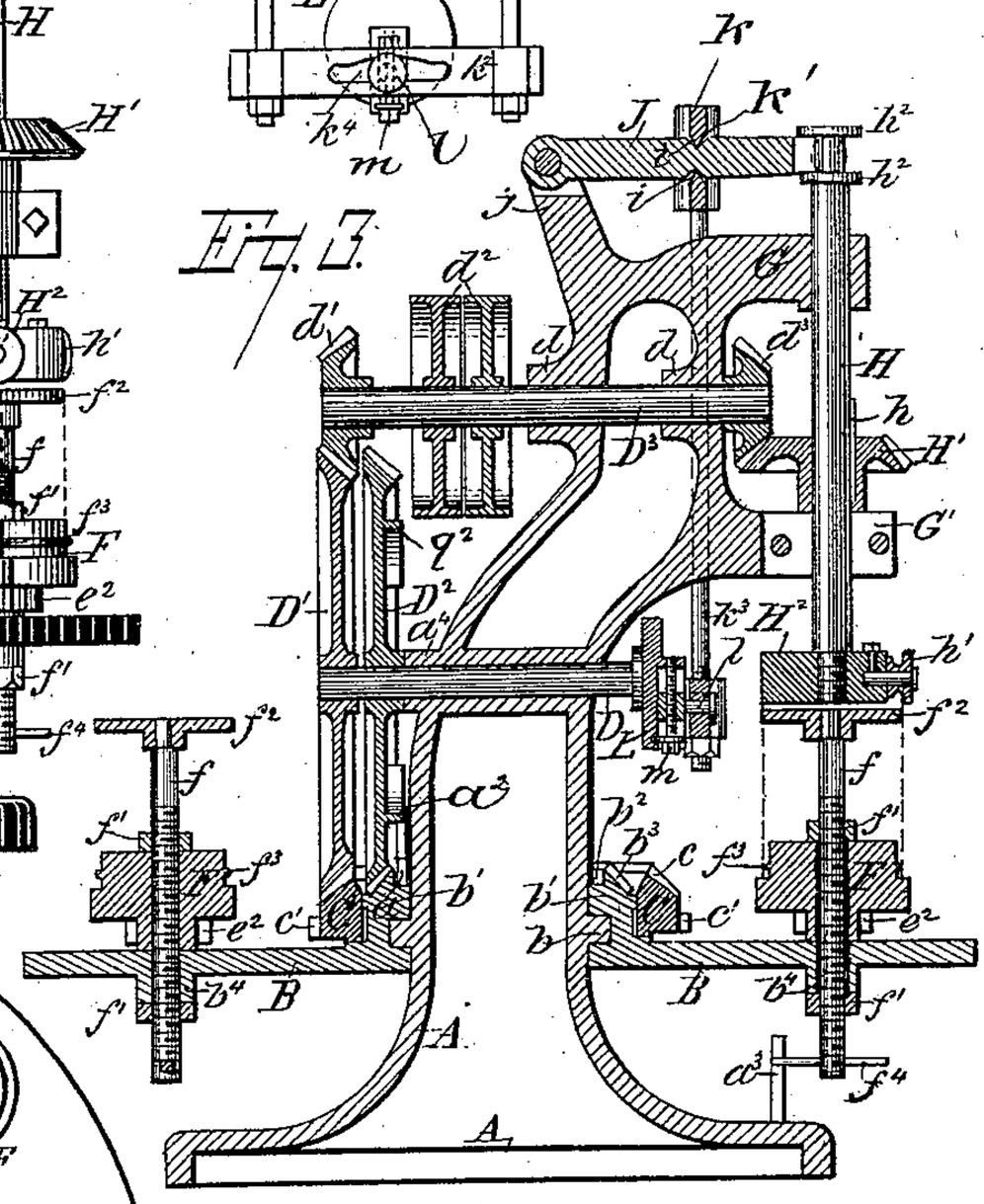


Fig. 2.

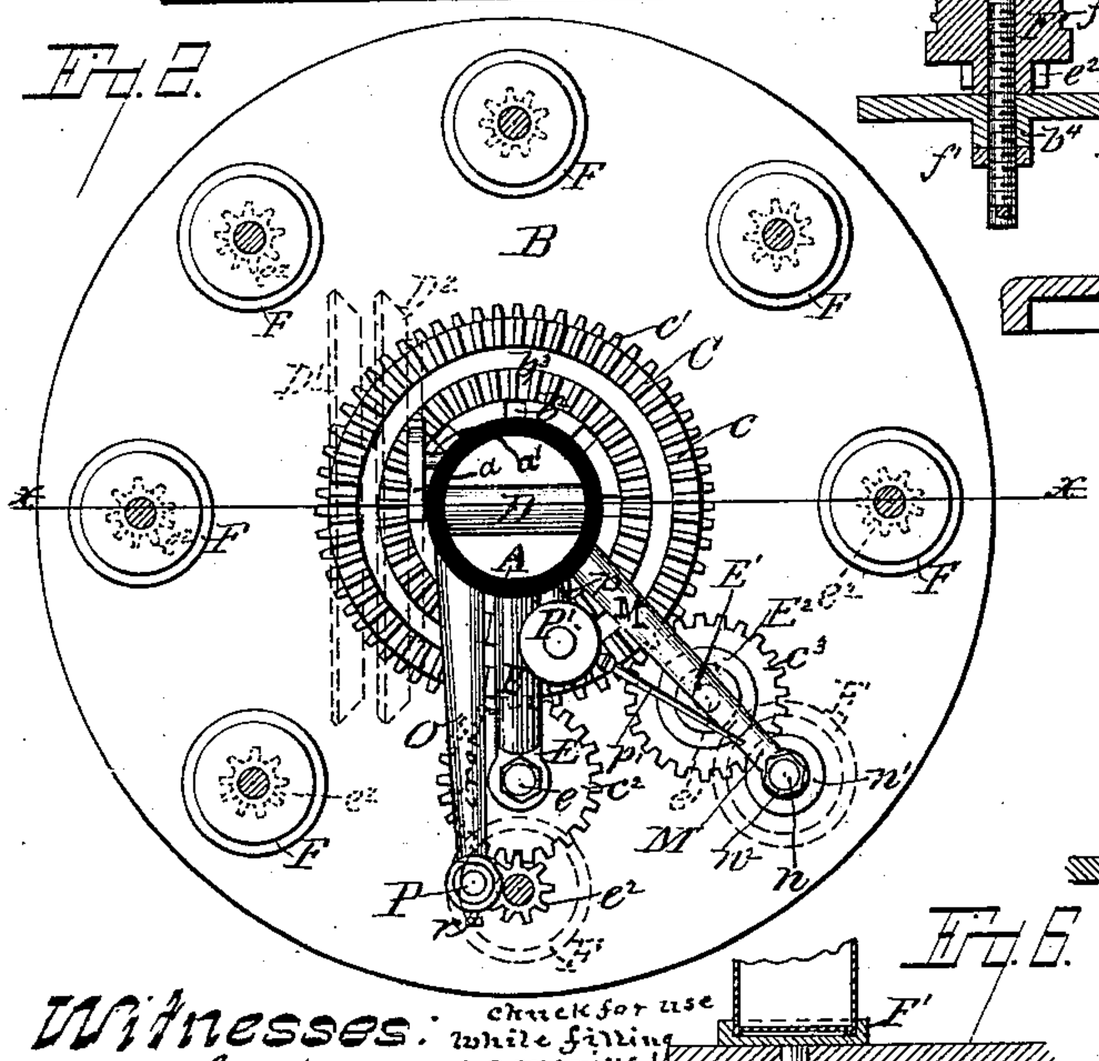


Fig. 5.

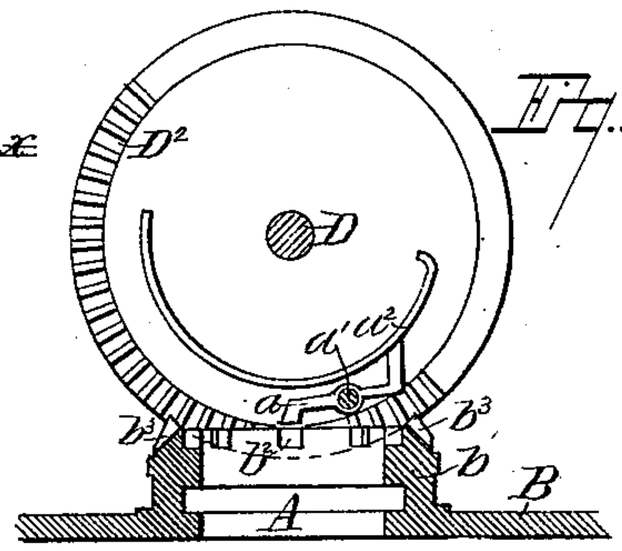
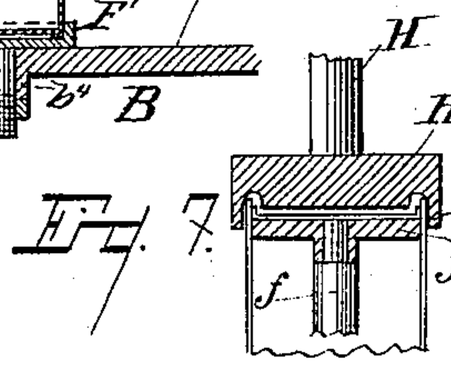


Fig. 6.

Fig. 7.



Witnesses:

check for use while filling & covering

E. G. Sanders

M. Kaumheimer

Inventor:

Francis A. Walsh

by Stout & Lindenwood

Attorneys.

UNITED STATES PATENT OFFICE.

FRANCIS A. WALSH, OF MILWAUKEE, WISCONSIN.

MACHINE FOR HEADING, FILLING, AND SOLDERING CANS.

SPECIFICATION forming part of Letters Patent No. 303,473, dated August 12, 1884.

Application filed November 12, 1883. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS A. WALSH, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Machines for Heading Cans, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to machines for forming, filling, and soldering cans, and will be fully described hereinafter.

In the drawings, Figure 1 is a front elevation of my machine. Fig. 2 is a horizontal section of the same on a broken line, showing the turn-table and its working parts. Fig. 3 is a vertical section of the machine on line *x x* of said Fig. 2, and Figs. 4, 5, 6, and 7 are details of the same.

A is the stand, having a base, A′, through which suitable fastenings may be passed to fix the machine on top of a horizontal or slightly-inclined table or bench. A flange, *b*, is formed at a proper height from said base A′, around which the turn-table B is adapted to rotate, being supported thereon by means of its grooved flange *b′*. On the inner top edge of said flange *b′* is formed a ratchet, b^2, and on the outer edge of the same is a bevel-pinion, b^3. Proper bearings are fitted around said flange *b′* for the annular wheel C, on the upper face of which is formed the bevel-pinion *c*, while the lower half of its outer rim carries the straight pinion *c′*. The bevel-pinion b^3 on flange of turn-table B meshes with the cogged half of wheel D^2, keyed on shaft D, journaled in bearings a^4 in the stand A, said wheel D^2 thus imparting an intermittent motion to said turn-table B. This last is securely held in place during the intermittences by a pawl, *a*, hung on a bearing-stud, *a′*, in said stand A, and adapted to engage its lower end in the notches or teeth of the ratchet b^2 on top of flange *b* of the turn-table until the upper end of said pawl *a*, coming in contact with the cam a^2, formed on inside face of said wheel D^2, said pawl *a* is disengaged from the ratchet b^2. The bevel-pinion *c* of the annular wheel C meshes with the cogged wheel D′, keyed on rear end of said shaft D, and said cogged wheel D′ meshes with pinion *d′*, keyed on rear end of driving-shaft D^3, which runs in bearing-studs *d d* of said stand A, and carries the fast-and-loose pulley d^2. The straight pinion *c′* of the annular wheel C meshes with pinions c^2 and c^3, which run freely on lower end of stems *e* and *e′*, suitably mounted on arms E and E′ of stand A. Said pinions c^2 and c^3 alternately mesh with pinion e^2, formed on bottom of each of the chucks F F, that are mounted in any desirable number in said turn-table B, provided for that purpose on its lower face with the bearing studs or sleeves b^4 b^4. Each of said chucks F is pivoted in said turn-table B on a stem, *f*, which is threaded in its central part, whereon works the nut *f′*, by means of which the head f^2, carried on top of said stem *f*, may be held lower or higher, according to the varying height of the cans manufactured. A bead, f^3, of any desirable shape, is formed around said chuck F, and a rod, f^4, inserted in the lower end of its stem *f*, is designed to keep said chuck F from turning as it comes in contact with a finger, a^3, fixed at the proper point in the base of said stand A.

Running loose on stem E′ of arm E′ is the former e^2, which is grooved and held on a plane to correspond with each of said chucks F F. Projecting from said stand A, over the path of said chucks F F, are the bearing-arms G G′, in which are proper bearings for the vertical shaft H. This shaft H is provided with a feather, *h*, to work in the groove of pinion H′, that meshes with pinion d^3, keyed on front end of the driving-shaft D^3. On the threaded lower end of said vertical shaft H is fastened the head H^2, on the rim of which are properly mounted the formers or wheels *h′*. The upper end of said vertical shaft H is provided with the bearing-collars h^2 h^2, between which works the bifurcated end of the lifting-lever J, hinging in its rear end on the fulcrum-stud *j*. About its center said lever J is notched on its upper and lower face, and on said notches bear the beveled edges of a slot, *k′*, formed in the center of top bar, *k*, of the lifting-frame K, the bottom bar, k^2, of said lifting-frame K, which is suitably connected to the top bar, *k*, by the side rods, k^3 k^3, has in its center the slot k^4, and in said slot travels the crank-pin *l*, carried on the front face of the

wheel L, keyed on front end of shaft D. Said crank-pin *l* is adapted to be moved more or less from the center of said wheel L by means of the screw *m*, to lengthen or shorten the motion of the lifting-frame K, according to the varying height of the can. The can is held in place by the following or any other suitable device: Projecting from the stand is the arm M, in the outer end of which is journaled the stem *n*, carrying on its lower end the inverted conical head *n'*. Said stem *n* is threaded in its upper end for an adjusting-nut, n^2, and has a spring, *o*, coiled around it between the conical head *n'* and the bearing-arm M, to press said head *n'* down onto the top of the can. On stud *p* of said stand A is mounted a suitable vessel, P', with a pipe, *p'*, close to its bottom, by means of which the soldering-flux contained therein is dropped at proper points on top of the can. Projecting also from said stand A is the arm O, supporting on its outer end the stem of the soldering-iron P, held in the proper position by a set-screw, *r*. Said soldering-iron P has the usual tip, *r'*, and the heating-head *s*, which is made hollow and with vents or jets *t*, to burn gas conveyed to it through the hollow stem *s'*, connecting by pipe s^2 with a suitable gas-reservoir.

Fig. 6 shows a part of the turn-table B and a countersunk chuck, F', which is inserted in place of the chuck F when the filling and covering of the can are to be done.

The operation of the machine is as follows: Power being applied to the driving-shaft D^3, a continuous motion is imparted to the pinions c^2 and c^3 through the annular wheel C and wheel D', while the turn-table B receives an intermittent motion from the wheel D^2. When the uncogged portion of said wheel D^2 passes over the bevel-pinion b^3 on flange of the turn-table B, the pawl *a* maintaining said turn-table in place, one of the chucks F F is standing under the head H^2, revolved by shaft H, and brought down by the crank-wheel L, through the traveling frame K, to bear against the can previously set on said chuck F, said head H^2 completing its work around the can-body during the intermittence of the turn-table B. The pawl *a* is disengaged from the ratchet b^2 as the cogged portion of the wheel D^2 engages with the pinion *c* of the turn-table, and the table moves around until the pawl *a* falls again in the ratchet b^2, when the first chuck F, already operated upon and now brought in contact with the former E^2, is rotated by its pinion e^2 engaging at the same moment with pinion c^2, that is constantly kept in motion by the straight cogs of pinion *c'* on annular wheel C. In the meantime a second chuck F has been brought under the heading-shaft H, and while the can inserted over said second chuck is operated upon the former E^2 takes against the lower end of the can revolved by the first chuck F, and the soldering-flux is dropped on the upper end of said can. A third move of the turn-table B will then bring the said first chuck F under the projecting arm O, where the solder is applied, the second chuck bringing its can, in the meantime, to the former E^2 and the flux-pipe, while a third chuck F presents its can-body to the action of the head H^2. After the solder has been applied in turn to each of the cans on said chucks F and their followers, if it is desired to do the filling and covering on the same machine, each or any of said chucks is removed from the turn-table, and the countersunk chuck F' is put in its place. The can is then placed on said chuck F', and, during the intermittences of the turn-table, the can is filled, the cover is inserted, and, as the can comes again under the head H^2 of vertical shaft H, said cover is secured in its place, and the can is ready for shipping.

It will be understood that the soldering may be done while the can is being beaded, thus dispensing with the intermediate pinion, *c*.

One of the features of my machine is the device by which the different parts of the work of canning may be independently carried on in one machine.

I do not mean to confine myself to the device as shown in the drawings, as it may be modified variously without departing from the spirit of my invention. For instance, the power may be applied from below; or I may raise and lower the shaft H by either hand or foot power, or connect it with the driving-wheel by pinions and a cam instead of by rods and a lever; or the chuck may be vertically reciprocated from below.

I have shown a construction in which the can is held stationary while it is being headed; but, instead, I may gear the can-chuck to the driving mechanism and disconnect the shaft H from it, so that the can will revolve under a stationary head; or both heads may be disconnected from the revolving mechanism, (when heads of certain shape are used,) and the head H^2 may be driven down by the mechanism already shown, or by any other suitable for the purpose, (see Fig. 7;) or I may impart a rotary motion to both the can chuck and head, but in opposite directions, in which case I may bead the can while it is being headed. I may also entirely dispense with the turn-table B and its driving-connections, and, in any suitable support, I may mount the head H^2, with its revolving or fixed formers *h'*, and revolve and reciprocate said head against a stationary can-chuck, F, suitably supported under said head; or I may mount said head H^2 to revolve, with its revolving or fixed formers *h'*, against a non-revolving but reciprocating chuck, F'; or, again, said head H^2 may be fixed on its support and be operated against by a revolving and reciprocating chuck, F; or, lastly, said head H^2, carrying its revolving or fixed formers *h'*, may be reciprocated without revolving against a revolving can-chuck, F, both the head H^2 and the chuck F being operated either by hand, foot, or any other suitable means.

Having thus described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

1. In a machine for heading cans, the stand A, having flange *b*, bearings a^4 and *d*, arms G and G′, and stud *j*, in combination with a turn-table, B, having grooved flange *b*′, ratchet b^2, and bevel-pinion b^3, with partially-cogged wheel D^2, keyed on shaft D, and having a cam, a^2, for pawl *a*, with wheel D′, keyed on said shaft D, and driven by pinion d^2 of driving-shaft D^3, and with chucks F F, having stem *f*, head f^2, bead f^3 for former E^2, and pinion e^2, alternately driven by pinions c^2 and c^3, meshing with annular wheel C, running with said wheel D′, substantially as shown and described, and for the purpose set forth.

2. In a machine for heading cans, the turn-table B and driving-connections, in combination with the crank-wheel L, having an adjustable crank, *l*, with the lifting-frame K, having beveled-edge slot *k*′ in top bar, *k*, for notched lever J, and a sliding slot, k^4, in its bottom bar, k^2, connected to bar *k* by side rods, k^3 k^3, with heading-shaft H, having bearing-collars h^2 h^2, feather *h*, pinion H′, meshing with pinion d^3 of said driving-shaft D^3, and forming-head H^2, carrying former or wheel *h*′, and with the chucks F F and F′ F′, all substantially as shown and described, and for the purpose set forth.

3. In a machine for heading cans, the header-shaft adapted for vertical reciprocation, in combination with the driving-shaft and intermediate mechanism, as set forth.

4. In a machine for heading cans, a revolving head, H^2, carrying one or more revolving formers, *h*′, as set forth.

5. In a machine for heading cans, a table carrying can-chucks, in combination with mechanism, substantially as described, for imparting an intermittent circular motion to it, and for locking it, as and for the purpose set forth.

6. A revolving can-chuck having a bearing in any suitable support, in combination with a revolving former, and gearing connecting them with the driving mechanism, as set forth.

7. A revolving can-chuck having a bearing in a revolving table, in combination with a revolving former, all connected with each other and the driving-wheel by suitable gear, as set forth.

8. The combination, in a machine for heading cans, &c., of a revolving table carrying can-chucks, with mechanism for heading, beading, and soldering, substantially as described, all connected with each other and a suitable source of power, as set forth.

9. A non-revolving can-chuck operated in any suitable support, and by any suitable means, to reciprocate against a revolving heading device carrying one or more revolving or fixed formers, as set forth.

10. A non-revolving can-chuck having a suitable support, and against which is reciprocated a revolving heading device that carries one or more revolving or fixed formers, and is operated by any suitable means, in any suitable support, as set forth.

11. A non-revolving heading device carrying one or more revolving or fixed formers, and reciprocated in any suitable support, and by suitable means, against a can-chuck having a bearing in any suitable support, whereon it is revolved by any suitable means, as set forth.

12. A non-revolving heading device suitably supported and carrying one or more revolving or fixed formers, against which is reciprocated a can-chuck having a bearing in any suitable support, whereon it is revolved by any suitable means, as set forth.

13. A suitably-supported non-revolving heading device having a groove around its lower face, in combination with a suitably-supported non-revolving can-chuck that is reciprocated against said heading device, or against which said heading device is reciprocated, as set forth.

14. In a machine for heading cans, a head, H^2, carrying one or more revolving formers, *h*′, as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

FRANCIS A. WALSH.

Witnesses:

STANLEY S. STOUT,

H. G. UNDERWOOD.