2 Sheets—Sheet 1.

W. J. GORDON.

Machine for Heading Cans.

No. 214,292. Patented April 15, 1879.

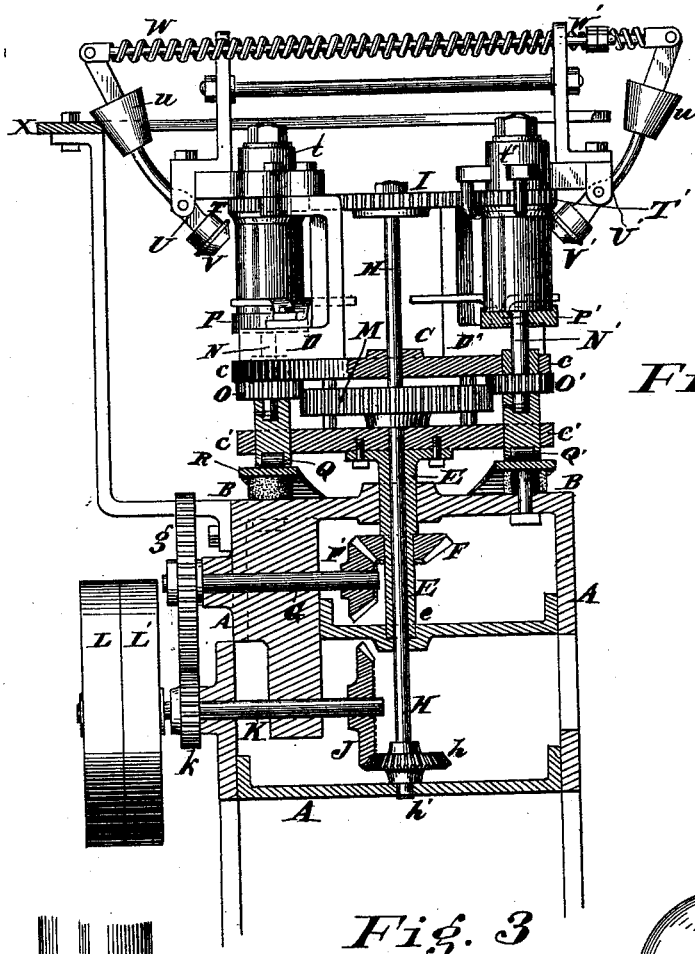
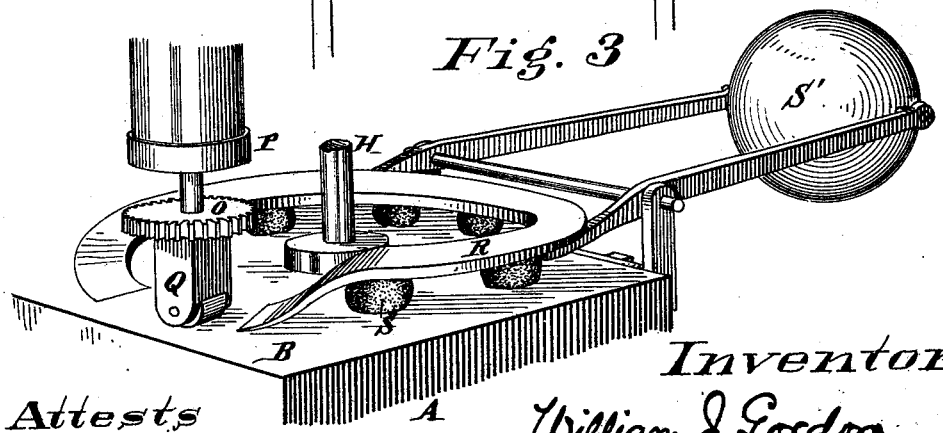


Fig. 1

Fig. 3



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2 Sheets—Sheet 2.

W. J. GORDON.

Machine for Heading Cans.

No. 214,292. Patented April 15, 1879.

Fig. 2

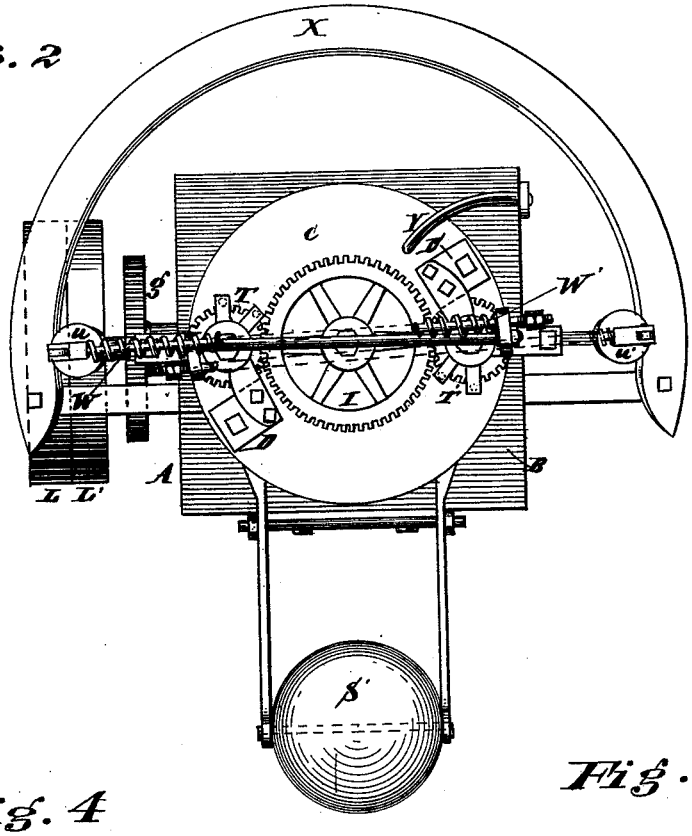


Fig. 4

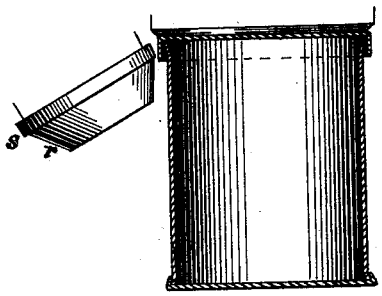
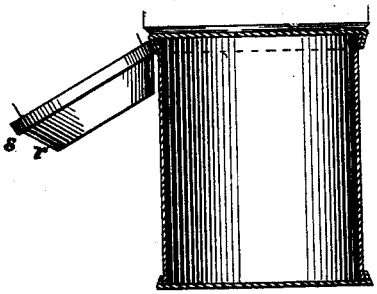


Fig. 5



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UNITED STATES PATENT OFFICE.

WILLIAM J. GORDON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR HEADING CANS.

Specification forming part of Letters Patent No. **214,292**, dated April 15, 1879; application filed July 12, 1878.

To all whom it may concern:

Be it known that I, WILLIAM J. GORDON, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and useful Machine for Heading Cans, of which the following is a full, clear, and precise specification, reference being had to the accompanying drawings, forming part of the same.

My invention relates to the class of mechanisms employed for crimping the heads upon the bodies of metallic cans, and has for its object the provision of an automatic device to accomplish the same without damage to the bodies; to which end it consists substantially as hereinafter set forth.

Figure 1 of the drawings is an elevation of my machine, the lower half in central section; Fig. 2, a top-plan view; Fig. 3, a perspective of the camway, exhibiting the spring-adjustment thereof; and Figs. 4 and 5, detailed views of the action of the crimping-rolls, the cans upon which the rolls are operating being represented in section.

Similar letters of reference indicate corresponding parts wherever used.

A is a supporting stationary frame-work of any desired construction, represented as rectangular in outline. B is the top surface of the stationary frame-work.

C is the rotating frame-work, composed of two circular tables, *c c'*, upon the upper of which rest the brackets D D', supporting the crimping mechanism proper. This rotating frame-work is supported upon a hollow vertical stem, E, journaled in the stationary frame-work at *e*. This stem is provided with a bevel crown-wheel, F, meshing with a bevel-pinion, F', attached to the inner extremity of a horizontal shaft, G, journaled in the stationary frame-work, and provided at its outer extremity with a large toothed wheel, *g*, by the revolution of which the rotating frame-work through the bevel-gear F F' is caused to rotate.

H is a vertical spindle journaled through the hollow stem E, extending above the tables *c c'* to a level with the top of the brackets D D', where it is provided with a top driver cog-wheel, I. It extends down below and through the bearing *e* of the stem E, is journaled at *h'* in the stationary frame-work, and is provided at its bottom with a bevel crown-wheel, *h*, meshing with a bevel-pinion, J, attached to the inner extremity of a horizontal shaft, K, journaled in the stationary frame-work, below and in line with the shaft G, and provided at its outer extremity with a small toothed wheel, *k*, gearing into the large toothed wheel *g*, which drives the shaft G. The extreme outer end of the shaft G is provided with the driving-pulleys L L'. The relative dimensions of the wheels *g* and *k* and of the bevel-gears F F' and *h* J are such as to secure different rates of speed in rotation to the stem and spindle.

In the free space between the tables *c c'* the bottom driver cog-wheel, M, is keyed to the spindle. It is the mate to the upper cog-wheel, I.

Upon opposite sides of the rotary frame-work, journaled through the upper table, *c*, are two vertical shafts, N N', free to play up and down to a certain extent. Upon them, between the tables, are keyed small cog-wheels O O', meshing with the bottom driver-cog, and driven by it, but sufficiently loose in their play to slide up and down through its leaves. To the tops of these shafts are attached bed-disks P P', adapted to hold the bottoms of the cans. The shafts project loosely through the lower table, *c'*, and terminate in rollers Q, running upon the top surface, B, of the stationary frame-work in part, and in part upon a circular camway, R, supported upon elastic cushions S, springs or the like resting on said surface. A counter-balance wheel, S', arranged to act beneath the camway, aids the action of the cushions.

Journaled in bearings *t t'* in the upper overhanging arms of the brackets D D' are two disk-cogs, T T', meshing with the top driver-cog, I, and mates to the cogs O O'. Their under faces are countersunk to adapt them to hold the tops of the cans.

U U' are crimpers pivoted to the brackets D D' in such manner as to overhang the disk-cogs T T'. Above the pivots they are provided with friction-rollers *u u'*, and at their lower ends with crimping-rolls V V', adapted to crimp down the rims of the cans. W W' are counteracting springs, each secured to the rotary frame-work at one end and to the upper

extremity of the crimpers at the other, and each acting outward to press the crimping-rolls in against the can-tops.

X is a semicircular compressor-track supported from the stationary frame-work, being a camway adapted to compress the crimpers, the friction-rollers of which travel against it during part of the time of rotation of the rotary frame-work.

The operating end of the crimping-rolls is of the form of a truncated cone, *r*, and at the base it terminates in a bead, *s*, or other circular projection, the object of which form is to prevent injury or indentation of the body of the can. The incline of the roll, lying parallel with the body of the can and against it, forms a guide while the bead is crimping down the rim of the cover. Combined the bead and incline form a composite gage, each insuring the perfect action of the other.

Y is a knock-off secured to the supports of the compressor-track, to throw the finished can off the bed-disk.

Such being the construction of my apparatus, it is obvious, from the relative proportions of the gear-trains employed, that the rotary frame-work has the slowest rate of rotation, that of the spindle and upper and lower driver-cogs being much more rapid, while that of the bed-disks and disk-cogs is much more rapid than that of the spindle and drivers.

The bed-disks and disk-cogs have the same speed of rotation, being respectively of the same size and driven by match-cogs—viz., the upper and lower drivers.

It will be observed that the camway R and compressor-track X face in opposite directions, and that upon the rotation of the rotary frame-work, at the time when one of the rollers supporting one of the bed-disks is traveling upon the camway, the other roller supporting the other bed-disk is traveling upon the top surface of the stationary frame-work, and also that while one of the crimpers is traveling upon the compressor-track, so that its crimping-roll is deflected away from the disk-cog which it faces, the opposite crimper, not being upon the track, is, by the action of its expanding-spring, deflected in and against the under face of the bed-disk which it faces.

In the operation of the machine, the cans are fed by hand or by feeding mechanism upon that bed-disk which is traveling upon the top surface of the stationary frame-work, and over which, at the time of feeding, the crimper is deflected away by the compressor-track, so that there is not only room to place the can in position, but also there is no crimping action at such time upon the can so placed in position. As, however, the rotating frame-work rotates, the roller of the bed-disk upon which the can is rested encounters the camway, and, rising upon it, raises the bed-disk with the can up against the disk-cog until the can and its head are clamped firmly together between the disks and with them are rotated. As the rotation of the rotary frame-work further continues, the crimper above the can in position runs off the compressor-track, and is, by the action of its spring, deflected against the can-top, so as to crimp the head upon the can as the can rotates upon the disks. Further on, in the rotation of the frame-work, the compressor referred to encounters the opposite end of the compressor-track, and is deflected away from the can, shortly after which the roller of the bed-disk runs off the opposite end of the camway and down upon the top surface of the stationary frame-work, thus relieving the cam from compression between the disks and leaving it loose upon the bed-disk, so that when it encounters the knock-off it is free to be thrown off the machine into any suitable receiver. The action of the opposite sides of the machine throughout its operation is opposite.

I have represented and described a machine adapted for two cans; but it is obvious that the parts may be multiplied, so as to adapt it for use with a larger number of cans.

The object of resting the camway upon springs or cushions is to secure effectual compression between the disks of varying sizes of cans.

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

1. The bed-disks P P′, adapted to be not only rotated, but alternately and automatically lifted and dropped, for the purposes set forth.

2. In an organized machine for heading cans, the combination, with continuously-rotated cans, of crimpers U U′, adapted to be alternately brought into contact with the heads of the cans and alternately forced out of contact therewith, substantially as shown and described.

3. As a device for alternately throwing the crimping-rolls into and out of contact with the can-heads, the counteracting springs W W′, and compressor track X, substantially as shown and described.

4. As a device for alternately lifting and dropping the bed-disks P P′, the circular camway R, substantially as shown and described.

5. The rotary frame-work C, constructed and arranged as described, and actuated to rotation by the bevel-gear F F′, in combination with the stem E and shaft T, substantially as described.

In testimony whereof I have hereunto set my hand this 9th day of July, A. D. 1878.

W. J. GORDON.

In presence of—

W. C. STRAWBRIDGE,

J. BONSALL TAYLOR.