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CAN ENDING MACHINE.

No. 307,197. Patented Oct. 28, 1884.

Fig. 6.

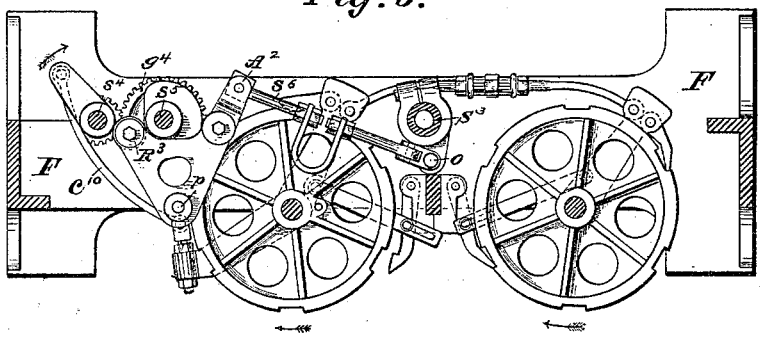
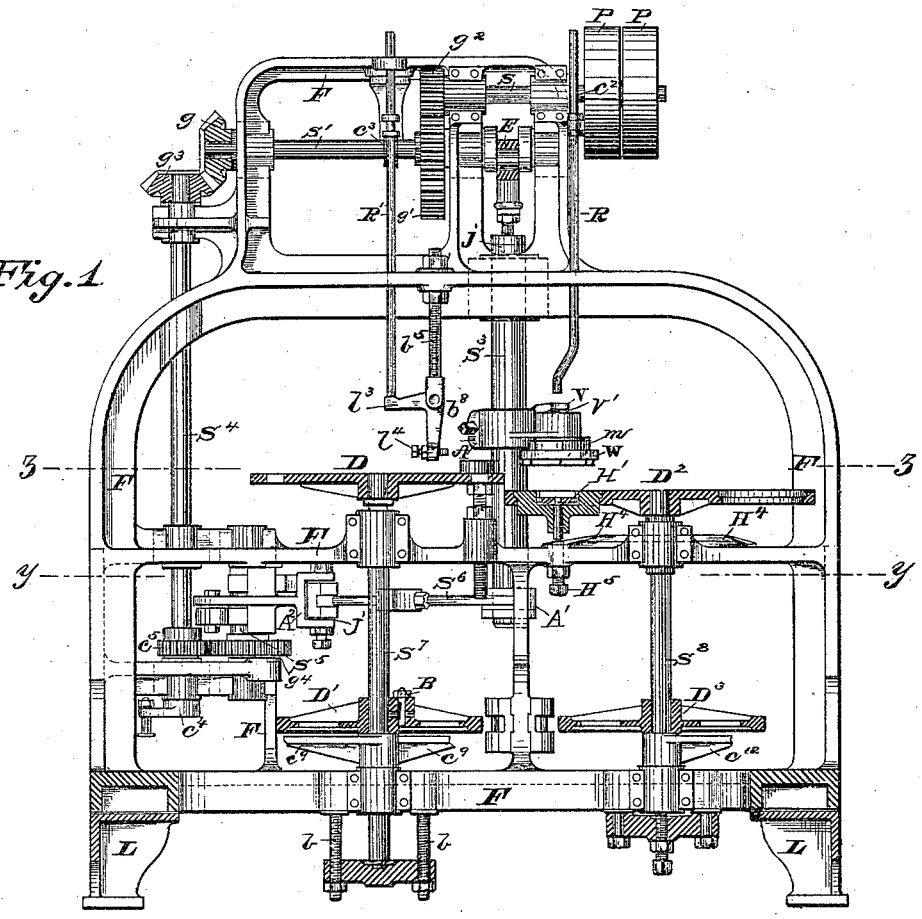


Fig. 1.



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J. H. Templin.
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Fig. 2.

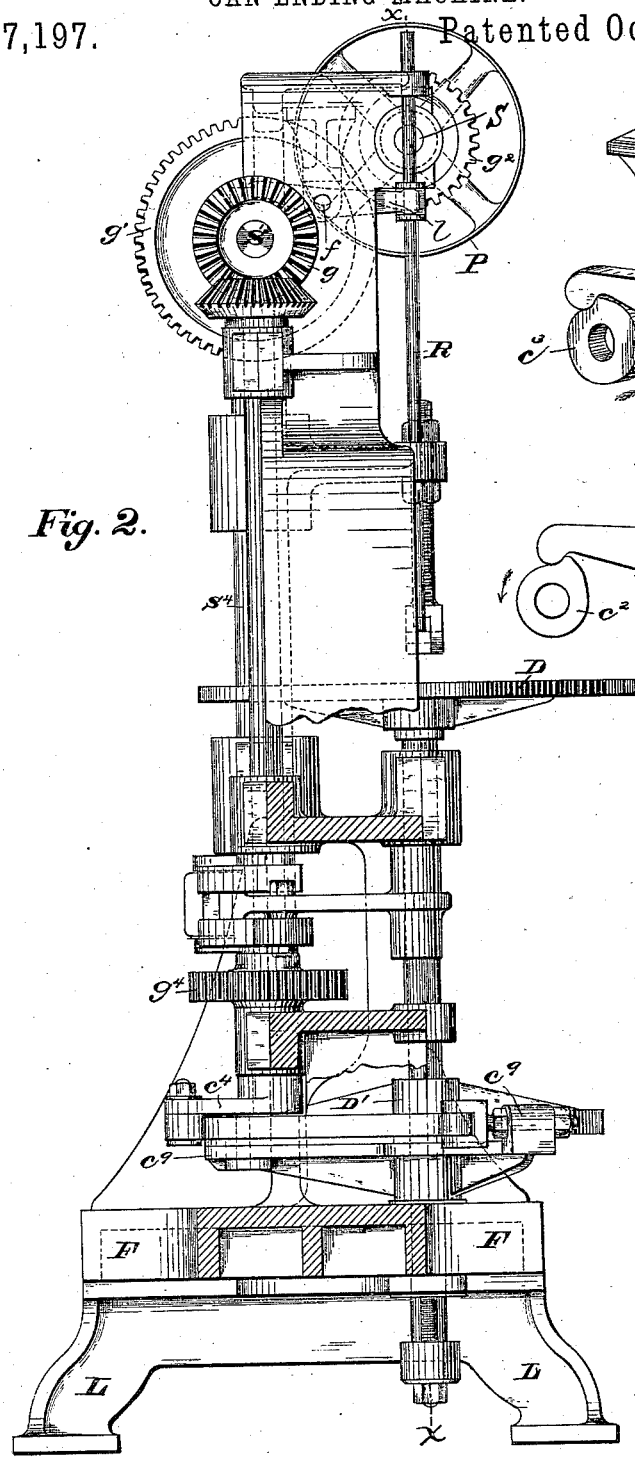


Fig. 15.

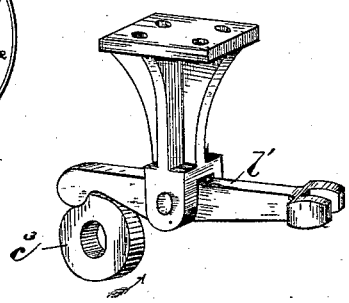
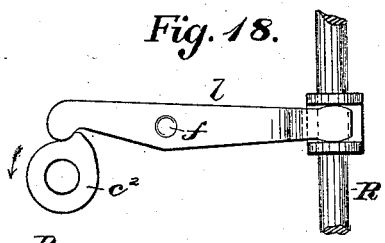


Fig. 18.



WITNESSES.

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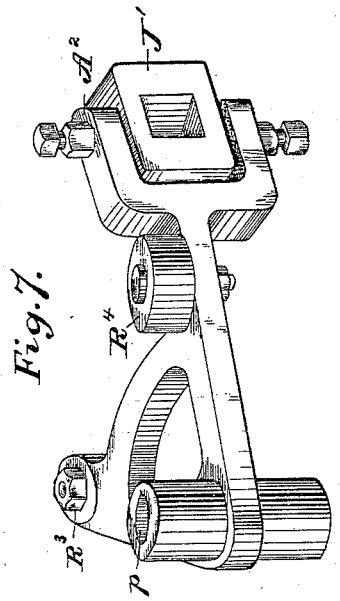

Fig. 7.

Fig. 5

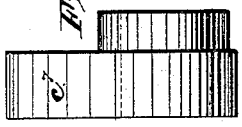

Fig. 10.

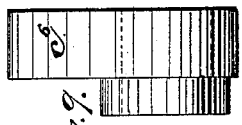

Fig. 9.

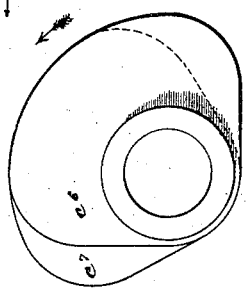

Fig. 8.

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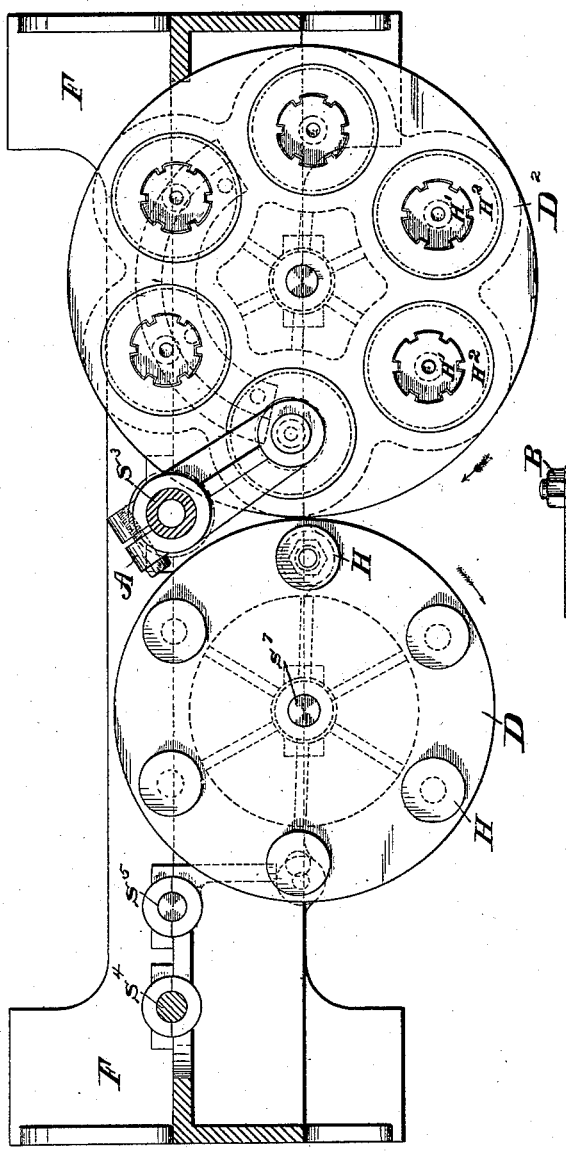

Fig. 4.

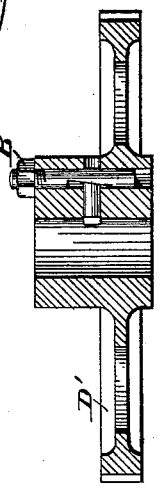

Fig. 17.

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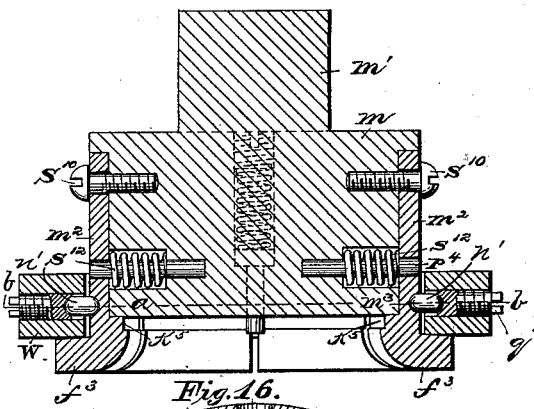

Fig. 16.

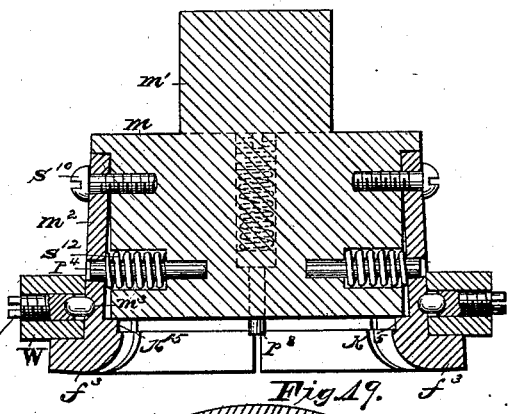

Fig. 19.

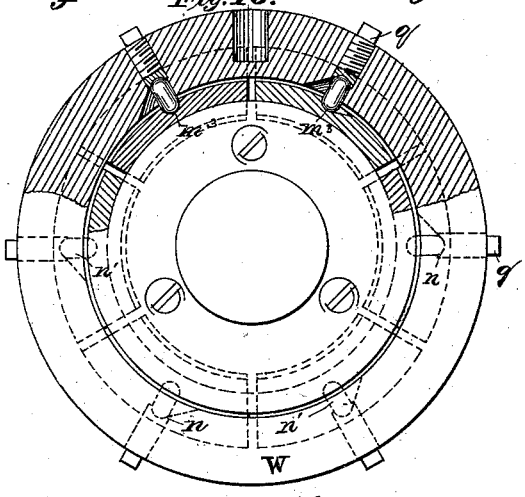

Fig. 13.

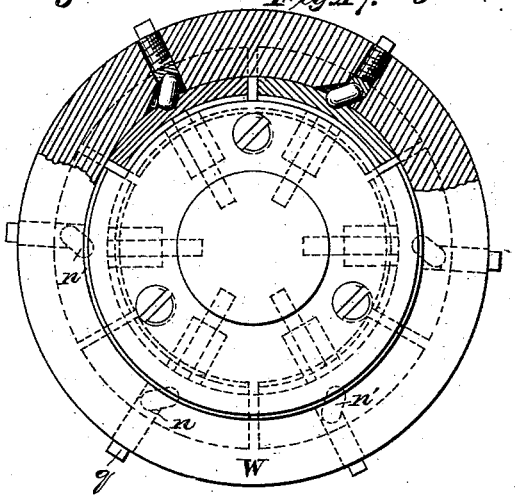

Fig. 14.

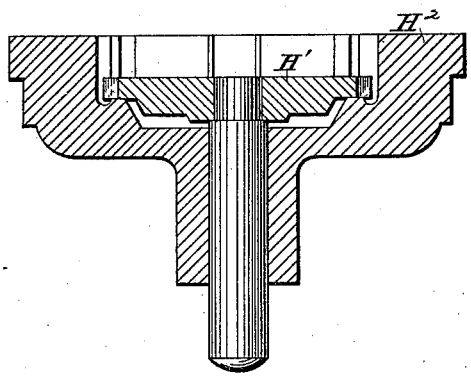

Fig. 11.

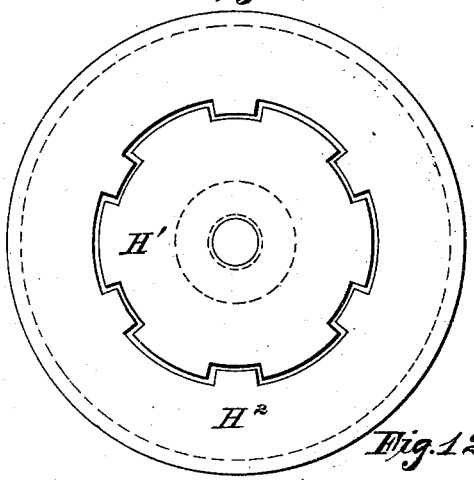

Fig. 12.

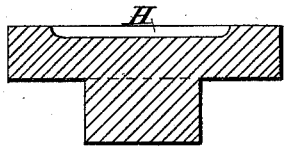

Fig. 5.

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No. 307,197. Patented Oct. 28, 1884.

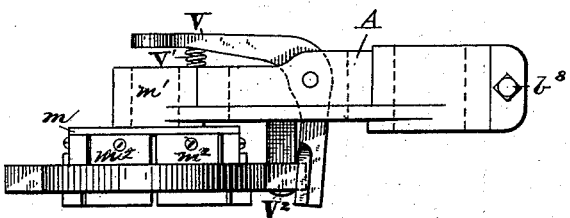


Fig. 20.

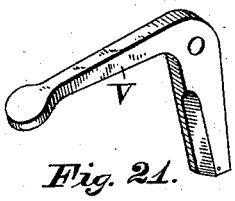


Fig. 21.

Fig. 22.

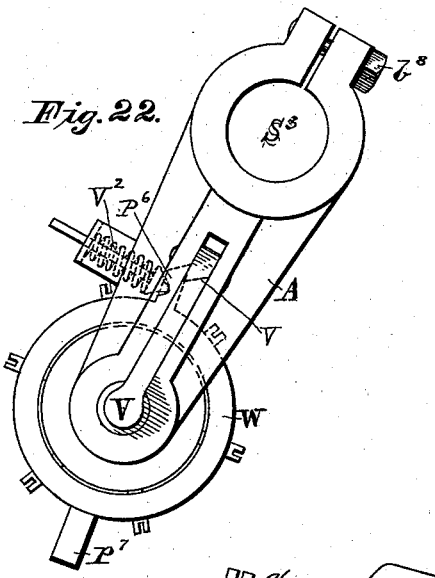
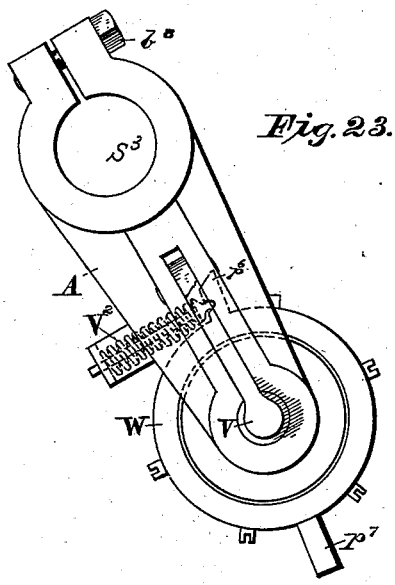


Fig. 23.



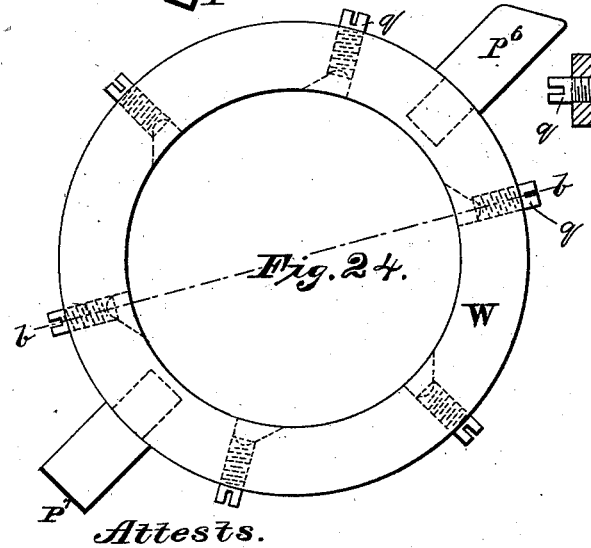


Fig. 24.

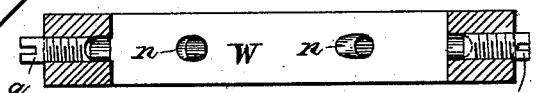


Fig. 25.

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Edmund Jordan

UNITED STATES PATENT OFFICE.

EDMUND JORDAN, OF BROOKLYN, NEW YORK.

CAN-ENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 307,197, dated October 28, 1884.

Application filed May 2, 1884. (No model.)

To all whom it may concern:

Be it known that I, EDMUND JORDAN, of Brooklyn, in the State of New York, have invented an Improvement in Can-Ending Machines for Automatically Putting the Ends of Sheet-Metal Cans onto the Bodies, of which the following is a specification.

My invention relates generally to the class of mechanism adapted for putting the ends of sheet-metal cans on the bodies, and more specifically to the subdivision of such class which employs a method of grasping and holding the body of a can in position while the end is forced on.

At present my invention relates to and is employed in a machine the features of which are fully shown in the accompanying drawings and described in this specification, but is adapted to and can be operated in a press or machine of any suitable construction.

Describing my invention more fully, it consists in an appliance devised to perform the following operations: first, to pick up and retain a can end; second, to grasp and hold the body of a can in a proper position; third, to force the end on the body; fourth, to release the end and body when these operations are completed.

The mechanism employed in the machine herein described and shown consists, generally speaking, in a vertically-moving and horizontally-swinging arm carrying a segmental spring clamp-chuck adapted to pick up and carry a can end to a body, then center and hold the body firmly and force the end on the body, afterward releasing both end and body of the can, in combination with two intermittently-rotating disks provided with chucks, on one of which disks the can ends and on the other the bodies of the cans are placed to be operated upon by the segmental spring clamp-chuck.

In the accompanying drawings, Figure 1 represents a vertical section of my improved machine, taken at line *x x*, Fig. 2. Fig. 2 represents an end elevation of my machine, and the broken lines a section of the frame removed. Fig. 3 represents a top view of a cross-section taken at line *y y*, Fig. 1. Fig. 4 represents a top view of a cross-section taken at line *z z*, Fig. 1. Fig. 5 represents a vertical section of a chuck on which the can ends are placed. Fig. 6 represents a top view of a cross-section of my machine taken at *y y*, Fig. 1. Fig. 7 represents a perspective view of the triangular lever A^2, showing swivel-joint *j'*, rollers R^3 and R^4, and pivot *p*. Fig. 8 represents a top view of cams c^6 and c^7, showing their relative positions on shaft S^5. Figs. 9 and 10 are side views of these two cams. Fig. 11 represents a vertical cross-section of a movable notched chuck on which the body of the can rests when the head is being forced on. Fig. 12 represents a top view of the same. Fig. 13 represents a cross-section of the segmental spring clamp-chuck *m*, taken at line *a b*, Fig. 16 showing the segmental spring-clamps closed. Fig. 14 represents the same with the segmental clamps expanded. Fig. 15 represents a perspective view of cam c^3 and lever *l'*, with supporting-bracket. Fig. 16 represents a vertical section of the segmental spring clamp-chuck *m*, with the segmental clamps closed. Fig. 17 represents a vertical longitudinal section of ratchet-wheel D', taken through the center, showing device which secures it on the shaft S^7. Fig. 18 represents a side view of cam c^2, lever *l*, and section of vertical rod R, actuated by the same. Fig. 19 represents a vertical section of the segmental spring clamp-chuck, showing the segmental clamps expanded. Fig. 20 represents a side elevation of the vertically-moving and horizontally-swinging arm A, which carries the segmental spring clamp-chuck. Fig. 21 represents latch V, pivoted in arm A to operate the segmental spring clamp-chuck. Fig. 22 represents a top view of arm A, and dotted lines represent the position of the metallic ring W when the latch V is in place. Fig. 23 represents the same when the latch V is moved. Fig. 24 represents a top view of the metallic ring W, encircling the segmental spring clamp-chuck *m*. Fig. 25 represents a vertical section of the same, taken at line *b b*, Fig. 24.

Similar letters of reference indicate corresponding parts throughout the several views.

F represents the frame of the machine with suitable legs, L.

S is a driving-shaft journaled horizontally in the frame, and having on it two pulley-wheels, P P, through one of which the machine receives motion, a cam, c^2, Fig. 18, operating lever l on fulcrum f, and thereby moving rod R vertically, and also a spur-pinion, g^2, meshed with and rotating spur-wheel g', causing shaft S′, in which is eccentric E, to rotate, and also cam c^3 on the same, operating lever l', and thus giving an intermittent movement to lever l^3, which is held by bolt b^5 through connecting-rod R′.

g is a bevel-gear on the outer part of shaft S′, meshed with a similar gear, g^3, rotating vertical shaft S^4, and thus giving motion to the mechanism therewith connected, which is described fully hereinafter. The eccentric E on the shaft S′ is connected, by an eccentric-strap and a ball-and-socket joint, j, to the cylindrical slide S^3, which thus receives a vertical action.

A is an arm rigidly but adjustably fitted on the cylindrical slide S^3 by bolt b^8, Figs. 22, 23, holding and carrying a segmental spring clamp-chuck, m, Figs. 13, 14, 16, 19, which takes a vertical movement with the slide. The functions of this chuck m, and the means used to impart a partially rotative movement in the slide S^3, and thus give a horizontally-swinging motion to the arm A and chuck m, will be fully shown and explained at a further point in this specification.

On the vertical shaft S^4 is a small spur-wheel, c^5, meshed with a spur-wheel, g^4, on a short vertical shaft, S^5, (journaled in the frame,) which also carries two cams, c^6 and c^7, Figs. 8, 9, 10, provided to operate lever A^2, Fig. 7, pivoted to the frame at p by bearing against two small rollers, R^3 and R^4, on the lever A^2, which is connected to spring connecting-rod S^6 by a swivel-joint, j', thus operating an arm, A′, rigidly fixed on the lower part of the cylindrical slide S^3, and thereby communicating to the same a partially rotative movement, and in consequence a horizontally-swinging movement to the arm A and segmental clamp-chuck m.

c^4 is an arm rigidly fixed on and revolving with the vertical shaft S^4, giving action to pawl-arm c^9, which has its fulcrum in vertical shaft S^7, through a spring-lever, c^{10}. (Shown in Fig. 3.)

I shall now describe the action of the pawl-arm c^9, and the mechanism connected therewith, and then proceed to the vertical shafts S^7 and S^8, journaled in frame-bearings, and the attachments thereto. The pawl-arm c^9 carries and operates, first, a pawl, K′, working on the periphery of and giving an intermittent rotary movement to the ratchet-wheel D′; second, a slotted lever, c^{11}, operating another pawl, K^4, which serves to check the movement of the ratchet-wheel; and, third, the connection c^{14}, giving movement to a pawl-arm, c^{12}, which carries, first, a pawl, K^2, working on the periphery of and giving an intermittent rotary movement to the ratchet-wheel D^3, and, second, a slotted lever, c^{13}, operating another pawl, K^3, serving to check the motion of the ratchet-wheel D^2. The ratchet-wheels D′ and D^3 are rigidly but adjustably fixed on the vertical shafts S^7 and S^8, respectively, and give an intermittent rotary action to the same.

D is a disk keyed on the upper end of shaft S^7, and D^2 a similar disk keyed on the upper end of shaft S^8, and are provided as a feed to supply ends and bodies of cans for the operation of the segmental clamp-chuck m. The can ends are placed upon chucks H, Figs. 4 and 5, fitted on the upper surface of disk D, and the can-bodies into sockets H^2 and upon the notched chucks H′, carried in the disk D^2.

Figs. 11 and 12 plainly show the construction of the sockets H^2 and upon the notched chucks H′. When the disk D^2 revolves, the stems of the notched chucks H′ strike and move over a circular inclined track, H^4 H^4, Fig. 1, thereby raising the chucks in the sockets so that the bodies of the cans are lifted out of the sockets and above the surface of the disk D^2, and are therefore easily removed. The adjustable stud H^5 is provided to support the chucks H′ at a proper height while the ends of the cans are forced on the bodies.

The description and action of the segmental clamp-chuck m, Figs. 1, 13, 14, 16, 19, 20, are as follows:

m' represents the stem of the same held in arm A.

p^4 are retaining-pins in the coiled springs S^{12}, back of each of the segmental clamps m^2, to force the clamps outward. The segmental clamps m^2, held by set-screws S^{10}, surround the chuck m and present internally a funnel-shaped flange, f^3, beveled up to the shoulder of the offset K^5. The metallic ring W encircles the segmental clamps m^2, and has in its inner surface small circular indentations n, cut away at one edge to receive and allow an oscillation of the toggles n'. Similar indentations on the outer surfaces of the segmental clamps m^2 are marked m^3, and q q represent adjustment-screws over the toggles n'.

p^6 and p^7 are stops projecting on the outer surface of the metallic ring W.

V is an angle-latch, pivoted in arm A, as plainly shown in Fig. 20.

V′ is a coiled spring provided to raise the upper angle of the latch, and V^2 is a spring bearing against the stop p^6 on the surface of the ring W, in such a manner as to cause a partial rotation of the ring when released from the latch V, and thereby allow the segmental clamps to expand. A reverse movement of the ring W is caused through the action of the lever l^3, which is provided with an adjusting screw-bolt, l^4, in the lower end of the lever, for regulating its motion. The head of this screw-bolt strikes on the stop p^7, causing a contraction of the segmental clamps through the bearing of the toggles n' against the outer surfaces of the same.

p^8 is a small plug, operated by a coiled spring

in the head of the clamp-chuck *m*, to force the can ends out of the segmental clamps when expanded.

The operation of the machine may be simply described by the following: The spring clamp-chuck *m* swings over a can end on one of the chucks H on the disk D and descends, when, the lever l^3 carrying an adjusting screw-bolt, l^4, in the lower end of the lever, the head of which bolt strikes the stop p^7, contracting the segmental clamps, which grasp and retain the can end, until, swinging over the body of a can in one of the sockets H^2 in the disk D^2 and descending, the clamps grasp the same, holding it rigidly in proper position for their continuous descent to force the end on the body. The rod R strikes the lever V, releasing the catch p^6, and the coiled spring V^2 throws the ring around sufficiently to release and allow the expansion of the segmental clamps, and the consequent release of both end and body of the can. The chuck *m* and arm A then ascend, and again swing over the disk D, which has partially revolved, so as to provide a can end on the next chuck H on the disk D, when the operation is repeated, the disk D^2 making a partial revolution meanwhile. The movements of both disks D and D^2 and of the segmental clamp-chuck *m* are so timed and arranged as to coincide and repeat these operations as may be required.

The machine herein described can also be used for different sizes and lengths of cans by the adjustment of a suitable segmental clamp-chuck and suitable chucks, H, on the disk D, and also of suitable chucks and sockets, H′ and H^2, in the disk D^2, and a vertical adjustment of the disk D and shaft S^7 by means of the bolts *b b*, Fig. 1.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a machine for automatically putting the ends of sheet-metal cans on the bodies, a segmental clamp-chuck and mounted to be capable of performing the following operations: first, to receive and retain a can end; second, to grasp and hold the body of the can in a proper position; third, to force the end of the can on the body of the same; fourth, to release the end and body of the can when these operations are completed, combined with suitable means for actuating the same to effect these operations.

2. In a machine for automatically putting the ends of sheet-metal cans on the bodies of the same, a vertically-moving and horizontally-swinging arm, in combination with a segmental spring clamp-chuck mounted to be capable of performing the following operations: first, to receive and retain a can end; second, to grasp and hold the body of the can in a proper position; third, to force the end of the can on the body; fourth, to release the end and body of the can when these operations are completed, and suitable means for actuating the same to effect these operations.

3. In a can-ending machine, the following combination: first, a vertically-moving and horizontally-swinging arm; second, a segmental spring clamp-chuck adapted to automatically receive and retain a can end, to center and rigidly hold the body of a can, to force the end of the can on the body of the can, and then release the same; third, mechanism suitable to actuate the same; fourth, one or more intermittently-rotating disks to act as a feed for the articles operated on by the segmental spring clamp-chuck, combined and arranged substantially as described, as and for the purposes stated.

4. In a can-ending machine, arm A, segmental clamp-chuck *m*, and disks D and D^2, with suitable means for actuating the same, combined and arranged substantially as described, as and for the purposes stated.

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Witnesses:
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WM. G. WILLS.