(No Model.) 2 Sheets—Sheet 1.

H. SCHAAKE.

CAP MAKING MACHINE.

No. 493,525. Patented Mar. 14, 1893.

Fig. 1.

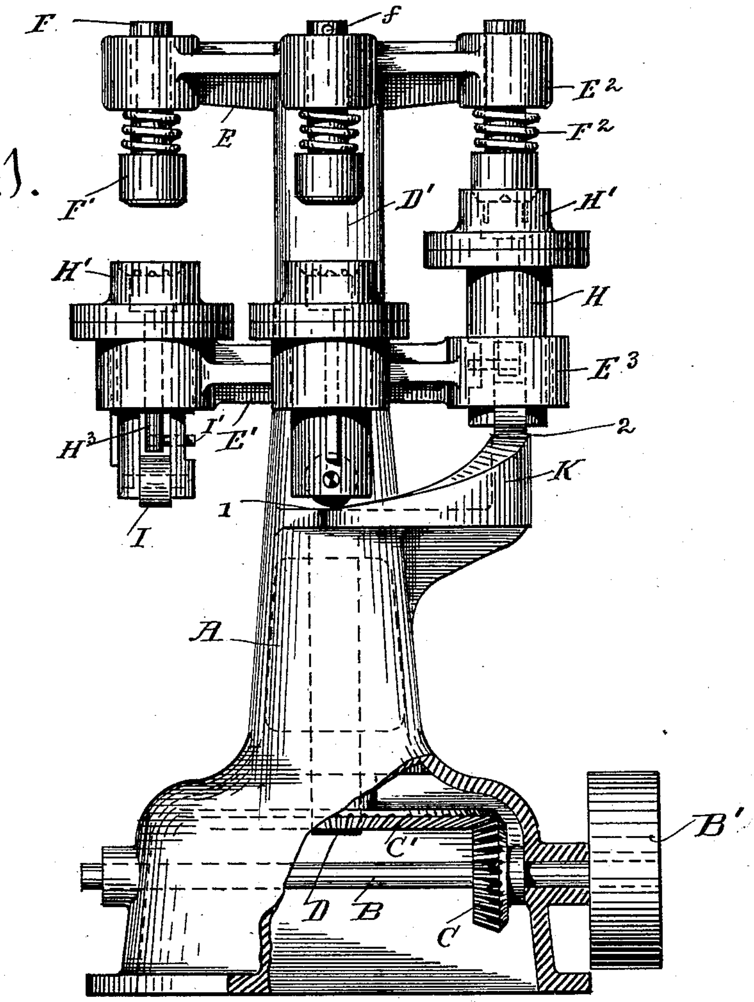
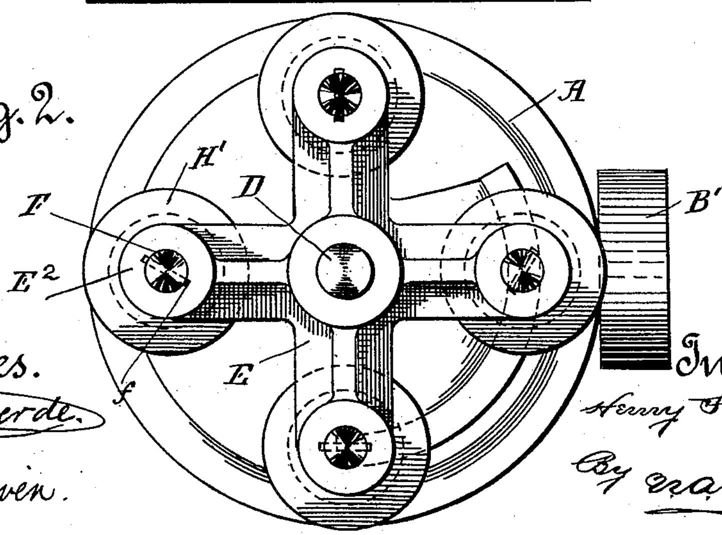


Fig. 2.



Witnesses.

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Ralph W. Bliven.

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Henry Schaake.

By W. A. Acker

Atty

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

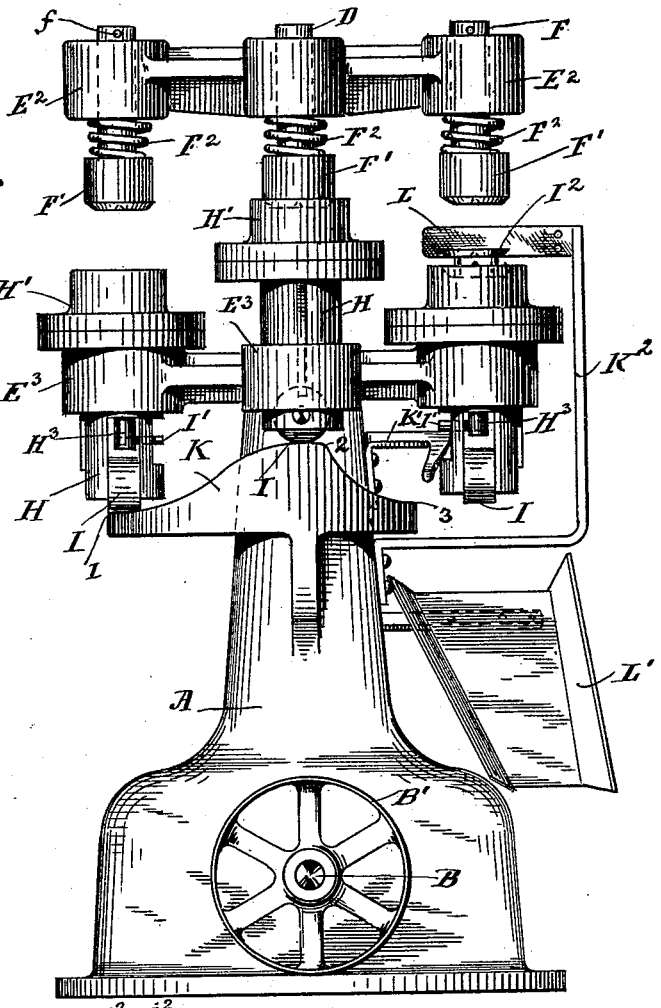


Fig. 4.

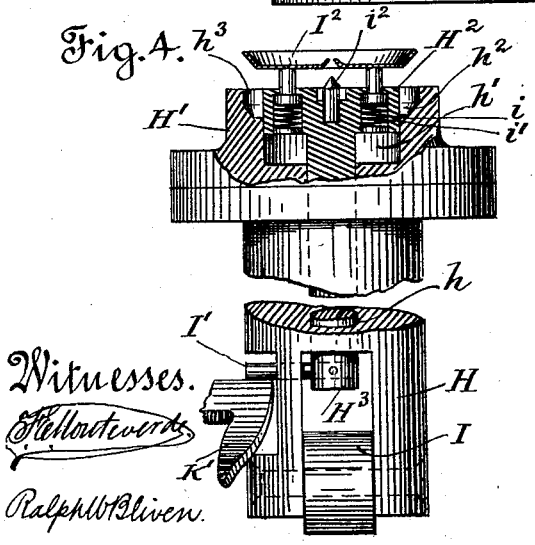
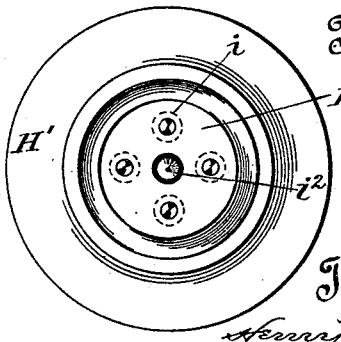


Fig. 5.



Witnesses.
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UNITED STATES PATENT OFFICE.

HENRY SCHAAKE, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO CHARLES B. KENDALL, OF SAME PLACE.

CAP-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 493,525, dated March 14, 1893.

Application filed August 3, 1892. Serial No. 442,090. (No model.)

To all whom it may concern:

Be it known that I, HENRY SCHAAKE, a citizen of the United States, residing at San Francisco, in the county of San Francisco, and State of California, have invented certain new and useful Improvements in Cap-Making Machines; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

My invention has relation to certain new and useful cap making machines for cans, which consists in the arrangement of parts and details of construction as will be hereinafter more fully set forth in the drawings, described and pointed out in the specification.

The object of my invention is to provide a continuously operating cap making machine, wherein shall be embodied or involved two sets of rotating dies, that is to say, an upper and lower set, one being male and the other female, which shall receive the sheet metal from which the cap is to be stamped, at such a point as to bring the operator's fingers or hands out of contact or probable contact with the upwardly moving die, thereby completely obviating the liability of the hand being mashed, as is the case with such machines as are now in use, and to provide for the stamping of the cap at a predetermined distance from the operator, and further, in allowing of the automatic stamping and discharge of the cap upon the continuous movement of the machine.

Referring to the drawings forming a part of this application, wherein similar letters and figures of reference are used to denote corresponding parts throughout the entire specification and several views, Figure 1 is a side elevation of the entire machine; the casing of frame thereof being partly broken away; Fig. 2, a top plan theroof; Fig. 3, a front elevation of Fig. 1; Fig. 4, an enlarged, broken, detail view, showing one of the plungers for operating the female die, and Fig. 5, a top plan of Fig. 4.

The letter A, is used to indicate the frame of my machine, which is constructed hollow, and within which works and is secured within suitable bearings, transverse shaft B, to outer projecting end of which is secured belt pulley B′, by means of which said shaft is given rotation through the medium of any suitable mechanism. Upon this shaft is rigidly secured, within hollow base of frame A, bevel gear C, which rotates therewith and meshes with larger bevel gear C′, connected or secured to the lower end of vertical shaft D, which passes through hollow upright portion of frame A, as shown in Fig. 1. This shaft projects somewhat beyond hollow frame and has secured rigidly thereto, sleeve D′, the lower end of which rests on top of hollow frame A. Inasmuch as said sleeve is rigidly secured to the vertical shaft by being keyed, or otherwise, it is obvious that the same rotates therewith. From upper and lower ends of the sleeve D′, project laterally extending arms E, E′, each of which terminates in an enlarged head, E^2, E^3, provided with a central vertical opening, through which work the plunger rods. Within upper set of heads, E^2, work plunger rods F, the lower end of each being enlarged so as to form the male or stamping die F′. These plungers, between under face of enlarged head E^2, and upper face of die F′, I surround by a heavy spring F^2, in order to make the die spring-actuated, said rods being held in position by means of pins *f*. However, if so desired, springs F^2, may be dispensed with and rods F, be rigidly secured within heads E^2, although this feature of the device is immaterial, inasmuch as it depends greatly upon the relative height to which the female dies, hereinafter set forth, are lifted during their course of rotation.

Through the central opening formed in the heads E^3, work plunger rods H, the upper ends of which rods are somewhat enlarged, as shown at H′, and said rods and heads have the central opening *h*, formed therethrough, the opening, or open portion of the head being considerably enlarged, as shown, consequently forming a space *h*′, and the inner walls of the head I further cut away so as to provide the shoulder h^2, and seat h^3, for the

cap when depressed and formed by the male die, as hereinafter set forth. Within the enlarged portion, h^2, of the head H', works what I term the die bottom H^2, secured to the rod H^3, which works through opening h, formed in the plunger rod H.

The lower end of plunger rod H, is bifurcated, and within bifurcated portion is located roll I. To lower end of rod H^3, is secured pin I', which projects laterally therefrom, and through slotted portion of plunger rod H, as fully shown in Fig. 4. The die bottom H^2, is provided with openings i, within which are located spring-actuated lugs i'. When the bottom is raised or lifted, as will be hereinafter set forth, said projections or lugs will extend above the level of the female die, in order to raise the stamped cap so as to clear pin i^2. This pin is for the purpose of making a central perforation in the cap I^2, as shown at Fig. 4, for the purpose of providing vent opening to the cap.

To one side of the frame A, is secured track way K, which inclines upwardly from the points 1 to 2, and descends from 2 to 3, as fully set forth in Fig. 3. As the heads E^3, are carried or rotated by means of the vertical shaft D, the roll I, of plunger rod H, travels upon the trackway K, and inasmuch as said trackway gradually inclines upwardly, it is obvious that plunger rod H, and the enlarged head thereof are gradually raised until contact is made with the male die, and inasmuch as the sheet of metal rests upon the enlarged head of the plunger, which enlarged head, as before stated, forms the female die, it is obvious that the metal is forced within the female die until the cap is given its proper shape. As the heads continue their rotary travel, the roll I runs upon the gradually descending portion of the trackway, consequently lowering the plunger rods until the female die has been brought to its normal position. It will thus be seen that the female die is raised and lowered automatically with the continuous rotary travel of the heads E^3. Inasmuch as the male dies are carried by the heads E^2, simultaneously with the female dies, it is obvious that as the female die rises, it of necessity must contact with the male die. I also secure to the frame A, the cam K', and upon this cam, the pin I', of rod H^3, travels, and as the same is inclined, it is obvious that travel thereon gradually lifts said rod and forces the bottom of female die upwardly to the distance shown in Fig. 4. As the bottom rises, the spring-actuated lugs are carried above the level of the female die, and serve to lift the stamped cap from within the seat thereof, and above the air vent projection or pin i^2. From the frame A projects the right-angled bracket K^2, to which is secured at the upper end thereof, the inwardly projecting, flexible strip L. This strip may be formed of thin metal, canvas, or any other material suitable for the purpose, and is adapted to move the stamped cap from off the spring-actuated projection of the female die during the line of rotation of said die. As caps are moved from off said projection, they fall into the chute L', secured in any suitable manner to the frame A, as shown in Fig. 3. As the pin I', moves from off cam K', rod H^3, drops to its normal position, consequently lowers the end of female die, and as said die is carried beyond the flexible strip L, it is in position to receive another sheet of metal, which is likewise carried around with the female die and stamped to its proper shape during the rotation of the machine.

I provide a number of male dies in order to obviate undue wear, which would result by use of only one male die; consequently in my device, I provide a male die for each female die, and inasmuch as the male dies rotate with the female dies, it is obvious that only such wear results thereto as is caused by the movement of the female die corresponding thereto.

Inasmuch as the sheet metal is fed to my device at a point considerably beyond the stamping point, it is obvious that no danger whatever is run by the operator of having his hands hurt by feeding directly between the upwardly moving dies, which does result in the use of the present machines, which are not continuous in their movement, but intermittent, and are operated through the medium of the foot.

Having thus described my invention, what I claim as new, and desire to secure protection in by Letters Patent of the United States, is—

1. In a cap making machine for cans, the combination with a set of vertically movable male dies of a set of female dies, located thereunder, mechanism for synchronously rotating the male and female dies, and, during the operation thereof, raising the female dies, and of the flexible wiping strip for moving the stamped cap into discharge chute, as and for the purpose set forth.

2. In a cap making machine for cans, the combination with the female die thereof, of the movable bottom located therein, and of the spring-actuated lugs secured within the movable bottom, and of the mechanism for raising and lowering the movable bottom during the rotation of the female die, as and for the purpose set forth.

3. In a cap making machine, the combination with the male dies, of the female dies, mechanism for rotating said dies and during rotation thereof, raising and lowering the female dies, of the movable bottom located within the female dies, of the spring-actuated lugs secured therein, and of cam for raising said bottom during travel of the dies.

4. In a cap machine, the combination with the female dies, of the movable bottoms,

spring-actuated lugs secured therein, and of the cam adapted to raise said bottom and lugs during travel of female die.

5. In a cap making machine, the combination with the female die provided with a movable bottom, cam for raising said bottom, spring-actuated lugs secured within the movable bottom, said lugs adapted to project beyond level of female die when the bottom is raised, and of the flexible rod or strip for moving the cap from off the female die during the travel thereof.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY SCHAAKE.

Witnesses:
RALPH W. BLIVEN,
N. A. ACKER,