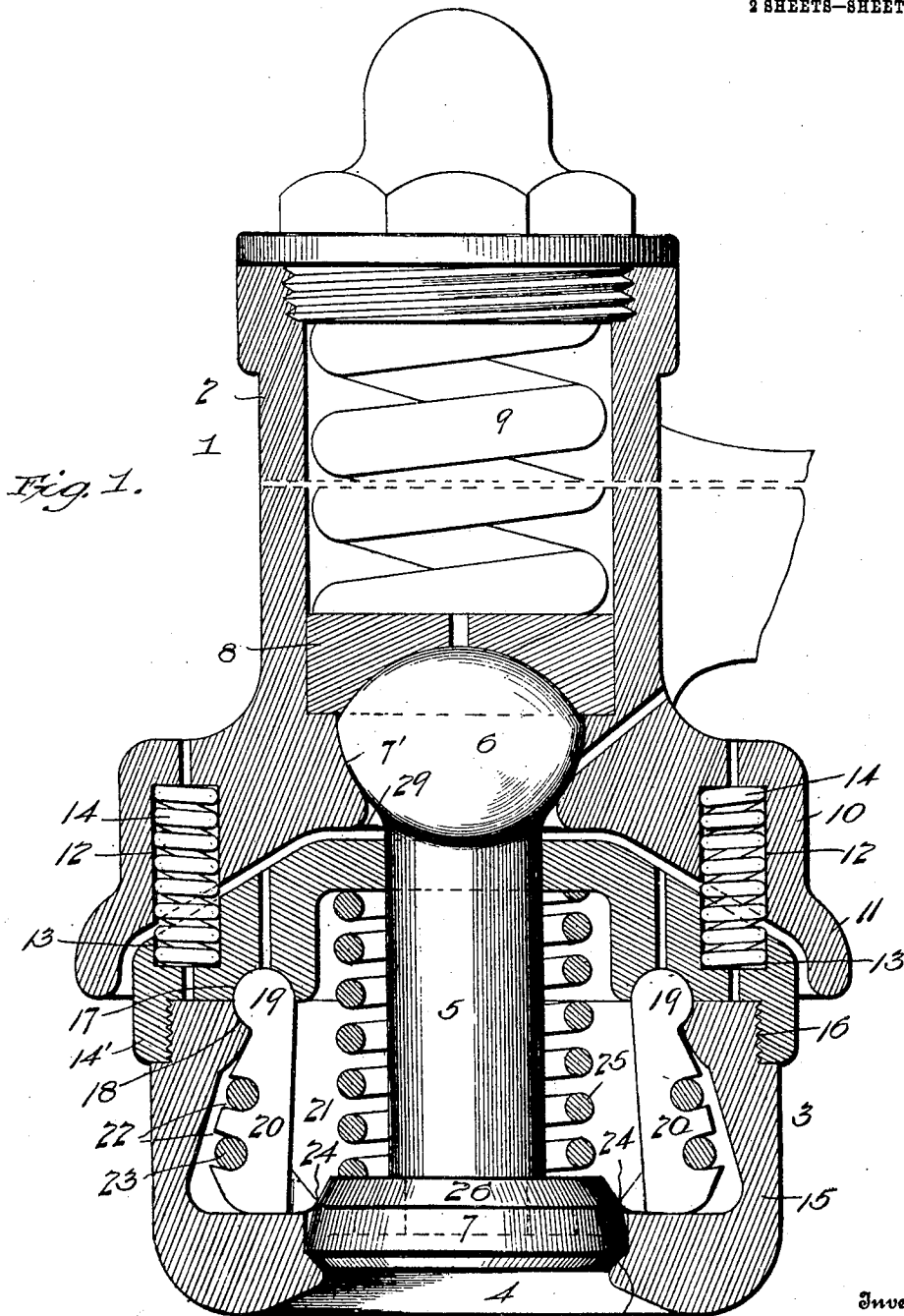


E. D. SCHMITT.
 MACHINE FOR APPLYING METAL CAPS OR CLOSURES TO JARS.
 APPLICATION FILED JAN. 23, 1908.

933,120.

Patented Sept. 7, 1909.
 2 SHEETS—SHEET 1.



Witnesses
D. L. Mockman
Frank G. Brurton

Inventor
 27 *Edward D. Schmitt*
 By *John W. Johnson*
 Attorney

E. D. SCHMITT.
 MACHINE FOR APPLYING METAL CAPS OR CLOSURES TO JARS.
 APPLICATION FILED JAN. 23, 1908.

933,120.

Patented Sept. 7, 1909.
 2 SHEETS—SHEET 2.

Fig. 2.

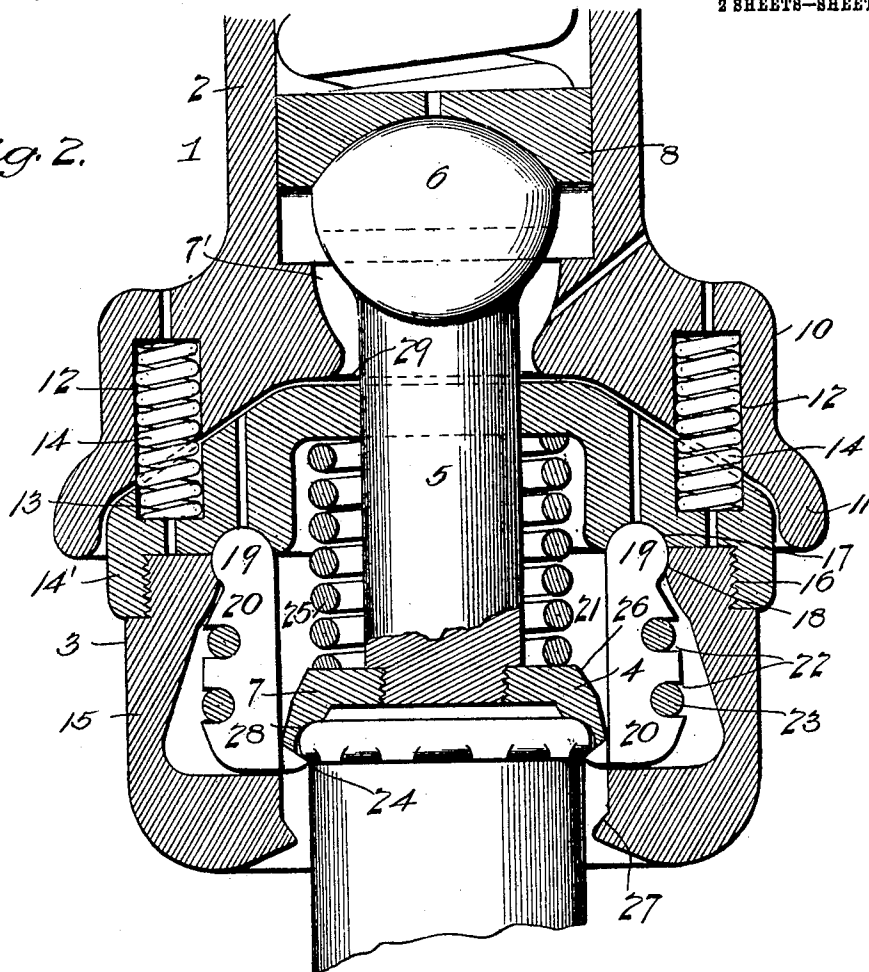
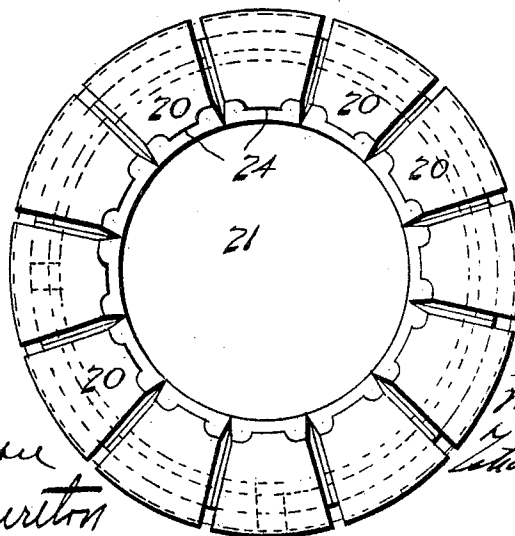


Fig. 3.



Witnesses
 J. A. McNamee
 Frank G. Burton

Inventor
 Edward D. Schmitt
 By
 [Signature]
 Attorney

UNITED STATES PATENT OFFICE.

EDWARD D. SCHMITT, OF BALTIMORE, MARYLAND, ASSIGNOR TO FRANK G. TURNER, OF BALTIMORE, MARYLAND.

MACHINE FOR APPLYING METAL CAPS OR CLOSURES TO JARS.

933,120.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed January 23, 1908. Serial No. 412,284.

To all whom it may concern:

Be it known that I, EDWARD D. SCHMITT, a citizen of the United States, residing at Baltimore city, State of Maryland, have invented certain new and useful Improvements in Machines for Applying Metal Caps or Closures to Jars, of which the following is a specification.

This invention relates to a machine for applying metal caps or closures to jars, and more particularly to the sealing head for such machines.

The machine is designed to apply a hard metal flanged cap to a jar having an annular external bead or locking shoulder adjacent to its mouth, by crimping or indenting the flange of the cap at intervals into locking engagement with the bead or locking shoulder on the jar, below the medial line thereof.

A receptacle having a mouth as large as that of a fruit jar is likely to have considerable unevenness or irregularity occur in the formation of the neck and locking shoulder in manufacture, and one of the chief advantages of this invention is to provide a head whose lower end will have a yielding universal movement, which adapts it for automatic adjustment to any irregularities that may occur in the edge of the jar.

It is my object to provide a locking device for the cap wherein the parts will be independently and yieldingly movable, so that each will, in a sense, be capable of an independent movement for the purpose of conforming to any irregularities of the locking shoulder of the jar.

Another object of the invention is to provide a durable structure whereby the flange of the cap is, by the downward movement of the head or the upward movement of the jar, indented at intervals into locking engagement with the locking shoulder of the jar and to provide a simple construction comprising parts easily assembled and not likely to get out of order.

The invention resides in the construction of the head, and it is to be understood that it is immaterial to the invention whether the head is moved toward the jar support, or rest upon which the jar is held, or the support moved upward toward the head, when the latter is stationarily held, and it may be that the head and support be simultaneously moved toward each other, according to the

style or type of the machine with which the head is used.

In the drawings illustrating the invention: Figure 1 is a vertical sectional view of a head constructed in accordance with my invention, the mechanism of the head being in normal position; Fig. 2 is a similar view with the lower part of the plunger in section, showing also the top of a capped jar with the parts in about the position assumed at the moment of locking the cap on the shoulder of the jar; and Fig. 3 is a top plan view of the locking ring.

Referring to the drawings, the numeral 1 designates the head casing, formed of an upper part 2 and a lower part 3.

The numeral 4 designates the plunger, comprising a stem 5, a ball 6 and a bearing end 7.

The upper part 2 of the casing is provided with an annular seat or socket 7', in which the ball 6 rests, and bearing upon the upper rounded surface of the ball is a cross head 8 upon which bears the sealing spring 9, or the spring against which the compressible sealing member or disk contained in the cap, is compressed in the sealing operation. The part 2 of the head has a flange 10 having an apron 11 which slightly overhangs the lower part 3 of the head, and the flange 10 is provided at intervals with sockets 12 which come opposite sockets 13 in the lower part 3 and in each socket, I place a spiral spring 14, which under normal conditions are under some tension as will presently appear. In the drawings, it is only feasible in the views to show two of the springs 14, but it will be understood that they extend in circular arrangement entirely around the head, the number being such as to permit uniform lateral or yielding movement.

The lower universally movable part of the head casing is made in two parts, 14' and 15, the part 15 being threaded as indicated at 16 to receive the threads on the upper part. The part 14' is provided with an annular channel 17, which, when the parts are assembled, forms a continuation of a shallow annular shoulder 18, thus forming a continuous annular seat for the rounded upper ends of the sections 20, of the locking ring 21. These sections are preferably segmental in form, and when grouped together or assembled, as shown more clearly in Fig. 3 of the

drawings, form a continuous ring, whose individual sections are independently movable, so that in operation, should an irregularity occur in the jar mouth, it will be automatically conformed to, without danger of breaking the receptacle. Each section is provided with two transverse grooves 22 which, when the sections are assembled, register with each other, thus forming continuous annular grooves, in which I place split spring rings 23 exerting a constant tendency to keep the parts of the ring firmly bound together under normal conditions, but which will obviously permit the ring to be expanded upon the application of a force at their lower ends having this expanding tendency. Each section of the locking ring is provided with a seal indenting point 24, preferably somewhat narrower than the body of the section so as to indent the flange of the cap or seal at desired intervals.

The numeral 25 designates a spiral spring which surrounds the plunger stem 5 and bears at its upper end against the part 14' and at its lower end against the bearing end 7 of the plunger. The plunger head or bearing end is formed with an inclined or bevel lateral surface 26 which, when the plunger moves upward, rides against the ends of the indenting points of the sections of the locking ring, forcing them simultaneously outward, the individual sections swinging or turning in their bearings at their upper ends. This outward movement is obviously against the influence of the springs 23, which tend at all times to keep the lower ends of the sections rocked inward. The lower edge of the plunger head normally seats upon a shoulder 27 in the part 3. This bearing end or plunger head is so recessed or hollowed out, that an annular shoulder 28 is formed which, in the sealing operation bears upon the margin of the cap adjacent to its edge and just above the sealing member. The spring 25 acts to raise the lower casing part 3 against the combined influence of all of the springs 14 and the combined strength of these springs is such that the upper and lower casing parts will be spaced apart as indicated at 29, the space being sufficient to permit of a universal movement of the lower head part, it being suspended upon the plunger.

While I have shown and described split spring rings for holding the locking-ring sections together, it will be understood that any suitable means, possessing the required strength and elasticity, may be substituted for said rings.

In operation, when the jar with the unlocked cap thereon engages the head or bearing end of the plunger, it will be forced upward against the pressure of the spring 9. During this movement, the beveled part 26 of the plunger head will ride against the indenting ends of the sections of the locking

ring and force them laterally outward, the sections individually swinging in their seats or bearings at their upper ends. When the plunger has passed sufficiently high or when it has passed the indenting points or reached the position shown in Fig. 2, the springs 23 will force the sections simultaneously inward, where they engage the flange of the cap or seal at intervals indenting or crimping it into locking engagement with the locking shoulder of the jar. The withdrawal of the capped jar, either by the upward movement of the head or the downward movement of the jar, as the case may be, permits the strong sealing spring 9 to return the plunger to normal position and in coming to this position, the lower beveled edge 27 of the plunger or the bearing end thereof engages the bevel surface *a* of the locking sections and forces them outward to the position shown in Fig. 1.

It will be noted that the radius of the upper part of the ball 6 is different from the lower part. This presents a flatter upper surface, so that the pressure of the cross head 8 will be exerted upon the plunger and distributed over the upper part of the surface of the ball to keep it always in vertical position, or quickly bring it to vertical position when the parts resume normal position, after the sealing operation.

In the drawings, the dimensions of the head adapt it for applying a large cap to a jar, but it will be understood that the head may be smaller to adapt it for applying flanged caps to bottles or receptacles having comparatively small mouths.

Claims.

1. In a machine for applying caps to jars, etc., the combination of upper and lower sections of a sealing-head, the lower section being yieldingly connected to the upper section, a plunger connected to said upper section by a universal connection or joint, means exerting a pressure upon said plunger, and seal-locking devices carried by the lower section of the sealing-head.

2. In a machine for applying caps to jars, etc., the combination of upper and lower sections of a sealing-head, the lower section being so connected to the upper section that it will have a universally-yielding movement, a plunger connected to the upper section by a universal connection or joint, a sealing-spring arranged to exert a pressure upon the plunger and devices carried by the lower section for effecting the sealing of the cap.

3. In a machine for applying caps to jars, etc., the combination of upper and lower sections of a sealing-head, the lower section being yieldingly-connected to the upper section, a plunger connected to said upper section by a universal-joint, a sealing spring arranged to exert a pressure upon the plunger,

a sectionally-formed locking-ring carried by the lower section, and means for exerting a constant pressure upon said locking-ring.

4. In a machine for applying caps to jars, etc., the combination of upper and lower sections of a sealing-head, the lower section being so connected to the upper section that it will have a universally-yielding movement, a spring-pressed plunger connected to the upper section by a universal joint, a locking-ring composed of a plurality of sections rockably-mounted in the lower section, said sections being provided with indenting-points and means normally holding the ring-sections with an inward pressure, said means being adapted to yield upon the forced entry of the jar or bottle-head into the sectional ring.

5. In a machine for applying caps to jars, etc., the combination of a two-part sealing-head, a plunger connected to the upper part by a universal-joint, a locking-ring composed of a plurality of sections rockably-mounted in the lower part and provided with indenting-points, means carried by the plunger for forcing the lower ends of said sections outwardly, when said plunger is forced upwardly within the locking-ring sections, and means for forcing said sections yieldingly inward after the plunger has passed the indenting-points, whereby said points are caused to engage and indent the flange of a seal or cap upon the locking-shoulder of a jar or other vessel.

6. In a machine for applying jar closures, in combination, a head having a sealing spring therein, a plunger working against the sealing spring and having a bearing end adapted to seat a seal upon the top of a jar or like receptacle, said head having a lower portion suspended upon the plunger and capable of universal movement with relation to the upper part of the head, yielding means interposed between the upper and lower parts of the head, whereby the universal movement of the lower part of the head is made yielding, and seal locking devices carried in the lower head part adapted to operate upon the flange of a cap to force it into locking engagement with the locking shoulder of a receptacle upon the upward movement of the plunger.

7. In a machine for applying closures to jars or like receptacles, in combination, a sealing head having an upper part containing a sealing spring, a plunger whose upward movement is against the resistance of said spring, said plunger having a ball at its upper end and a socket in the upper head

part in which the ball rests, whereby the plunger is capable of universal lateral movement, a lower head part suspended from the upper head part, said lower part being also capable of a universal movement, springs interposed between the upper and lower head parts, whereby the universal movement of the lower plunger part is made yielding, seal locking devices within the lower head part and adapted upon the upward movement of the plunger to lock the flange of a cap into locking engagement with the locking shoulder on the jar or like receptacle, a spring within the lower head part exerting a tendency to raise said part against the interposed springs between the upper and lower parts.

8. In a machine of the character described, in combination, a sealing head, comprising an upper part having a sealing spring and a universally movable lower part suspended from the upper part, and seal locking devices carried by the lower part.

9. In a machine of the character described, in combination, a sealing head comprising an upper part containing a sealing spring, a universally movable lower part suspended from the upper part, seal locking devices carried by the lower part and a plunger having a bearing end adapted to seat the cap upon the jar in the sealing operation.

10. In a machine of the character described, in combination, a sealing head comprising an upper part having a sealing spring therein, a universally movable lower part suspended from the upper part, seal locking devices carried by the lower part, springs interposed between the upper and lower parts, whereby the universal movement of the lower part is made yielding.

11. In a machine of the character described, in combination, a sealing head comprising an upper part having a sealing spring therein, a plunger having a bearing in said upper part, a universally movable lower part surrounding the lower part of the plunger, locking devices carried by the lower portion of the head and a spring whereby the lower portion of said head is yieldingly suspended from the upper portion, and yielding means interposed between the upper and lower portions of the head, whereby the universal movement of the lower part is made yielding in the sealing operation.

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

EDWARD D. SCHMITT.

Witnesses:

TITIAN W. JOHNSON,
HOWARD D. ADAMS.