

UNITED STATES PATENT OFFICE.

EGBERT ARTHUR STRATTON, OF HAMPSTEAD, LONDON, ENGLAND, ASSIGNOR TO MANSSELL, HUNT, CATTY AND COMPANY, LIMITED, OF LONDON, ENGLAND.

CONTRIVANCE FOR MAKING CAPSULES FOR BOTTLES AND THE LIKE.

1,012,026.

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To all whom it may concern:

Be it known that I, EGBERT ARTHUR STRATTON, a subject of the King of Great Britain, residing at Cressy Road, Hampstead, in the county of London, England, have invented new and useful Improvements in Contrivances for Making Capsules for Bottles and the Like, of which the following is a specification.

This invention relates to improvements in contrivances for creasing and plaiting disks of thin material into cup shaped form to serve as capsules for bottles, soufflé cups or analogous articles.

Hitherto, in contrivances for this purpose, the change from the disk to the cup formation has been effected by one pair of engaging elements which are required to undergo a considerable range of relative movement, and are of relative fragility of construction and are otherwise less perfect than the contrivance of the present invention, in which the operation commences by creasing the outward lying portion of the disk into saucer shape by engagement between one pair of surfaces, this operation being followed by the engagement of the material between a second pair of elements which plait the material and causes it to acquire a cup formation, the plaiting operation being completed by a relatively small displacement of a plurality of plaiting blades which are forced against the outer surface of the cup in a direction which has a tangential component.

The accompanying drawing shows a form of construction of apparatus adapted to effect the above described series of operations.

In this drawing:—Figure 1 is a sectional elevation. Fig. 2 is an outside elevation taken at right angles to Fig. 1. Fig. 3 is a plan view partly in section taken along the line 3—3 of Fig. 1, with portions removed, and:—Fig. 4 is an exterior plan view.

In these figures, *a b* is a two-part plunger in which the external portion *a* is adapted to be raised and lowered by an arm *c* secured to a cam-operated rod *d*. The sectional portion *a* is mounted co-axially on the rod *e* of the internal or mandrel portion *b*, which is formed with oblique ribs similar to the teeth of a milling cutter.

The rod *e* is so mounted and actuated as to be capable of downward displacement relatively to *a*.

The under surface of *a* is so indented and coned as to fit an indented and coned die *f*, secured within a fixed socket *g*, there being in the socket, beneath *f*, an annular blade carrier *h* adapted to receive the material after having been shaped between *a* and *f* and plait it from the saucer to the cup formation.

The upper half of Fig. 3 is a plan in which the portion *a* of the plunger is omitted and the mandrel portion *b* inserted, the lower half being a sectional plan taken through the line 3—3 of Fig. 1.

The principal cup shaping portion of the contrivance consists of a combination of oblique ribs on *b* with the edges of a plurality of plaiting blades *k* which are mounted in oblique slits in the carrier *h* and are so pivotally mounted on a ring *i* as to be adapted to undergo an angular displacement about the center-line of the ring in the planes of the slits formed in the carrier *h*. These slits are so situated that the plaiting blades carried therein are so guided that, when forced into the recesses in *b*, they approach it in a direction which has a tangential component, so that each plait is tucked between the two adjoining plaits.

The advancement of the plaiting blades toward *b* is effected by means of a ring *m* which on being raised, through the medium of a pair of studs *m¹ m¹* and a lever *n*, pivoted at *n¹*, engages with the outwardly sloping portion *k¹* of the backs of the blades *k*. The consequent inward movement in a tangential direction of the blades *k* completes the plaiting of the material into cup formation. The lever *n* is actuated by a cam-moved rod *o* which carries a tappet *p*.

On the release of the pressure of *p* on the lever *n* the ring *m* is drawn downward by the action of a pair of springs *q* and, on its return to its lowest position, it presses on the tail portions *k²* of the blades *k* causing the blades to retire into their normal positions within the slits in *h* and release the plaited cup.

On the return upward-movement of the mandrel portion *b* of the plunger, the plaited cup is, under the action of a spring *f*, ejected from the carrier *h* by a disk *r*, car-

ried on a guided rod r^1 , the spring having previously undergone compression on the descent of the plunger.

The disk r performs an additional useful function as follows:—After the insertion of the disk of material to be operated on within the open end of the socket g , the upper border of which at g^1 is beveled to center the disk, the descent of the two-part plunger a b causes the disk of material to be gripped between r and the lower end of the mandrel portion b , whereby it will be conveyed downward in a truly centered manner with its middle portion depressed before the portion a of the plunger enters into engagement with it and forces it to conform to the shape of the indented coned die f . After compression between the surfaces of a and f the pressure of a on f is released by the cam rod d being lifted prior to the further descent of the mandrel b , the saucer-shaped material being in the meantime retained in place by the pressure of b on the disk r .

I claim:

1. In a contrivance for creasing and plaiting thin disks into capsules for bottles or the like, a two-part plunger consisting of an inner conical portion having oblique ribs and a coaxial outer portion having a conical indented under surface, a conical indented die beneath said outer portion of said plunger, an annular blade carrier beneath said die, blades pivoted in oblique slits in said carrier and means for inwardly displacing the upper portions of said blades.

2. In a contrivance for creasing and plaiting thin disks into capsules for bottles or the like, a two-part plunger consisting of an inner conical portion having oblique ribs and a coaxial outer portion having a conical indented under-surface, a conical indented die beneath said outer portion of said plunger, an annular blade carrier beneath said die, blades pivoted in oblique slits in said carrier said blades having outwardly sloping backs and an axially displaceable ring surrounding said blades in contact with the backs thereof.

3. In a contrivance for creasing and plaiting thin disks into capsules for bottles or the like, a two-part plunger consisting of an inner conical portion having oblique ribs and a coaxial outer portion having a conical indented under-surface, a conical indented die beneath said outer portion of said plunger, an annular blade carrier beneath said die, blades pivoted in oblique slits in said

carrier said blades having outwardly sloping backs and tail portions and an axially displaceable ring surrounding said blades in contact with the backs thereof above said tail portions.

4. In a contrivance for creasing and plaiting thin disks into capsules for bottles or the like, a two-part plunger consisting of an inner conical portion having oblique ribs and a coaxial outer portion having a conical indented under surface, a socket beneath said plunger, a conical indented die in said socket beneath said outer portion of said plunger, an annular blade carrier in said socket beneath said die, blades pivoted in oblique slits in said carrier said blades having outwardly sloping backs and tail portions and a ring axially displaceable in said socket surrounding said blades in contact with the backs thereof above said tail portions.

5. In a contrivance for creasing and plaiting thin disks into capsules for bottles or the like, a two-part plunger consisting of an inner conical portion having oblique ribs and a coaxial outer portion having a conical indented under surface, a conical indented die beneath said outer portion of said plunger, an annular blade carrier beneath said die, blades mounted obliquely in said carrier and means for ejecting said capsule from said carrier.

6. In a contrivance for creasing and plaiting thin disks into capsules for bottles or the like, a two-part plunger consisting of an inner conical portion having oblique ribs and a coaxial outer portion having a conical indented under surface, a socket beneath said plunger, a conical indented die in said socket beneath said outer portion of said plunger, an annular blade carrier in said socket beneath said die, blades pivoted in oblique slits in said carrier, said blade having outwardly sloping backs and tail portions, a ring axially displaceable in said socket surrounding said blades in contact with the backs thereof above said tail portions, a longitudinally displaceable rod axially mounted in said socket and a spring beneath said rod.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EGBERT ARTHUR STRATTON.

Witnesses:

R. WESTACOTT,
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