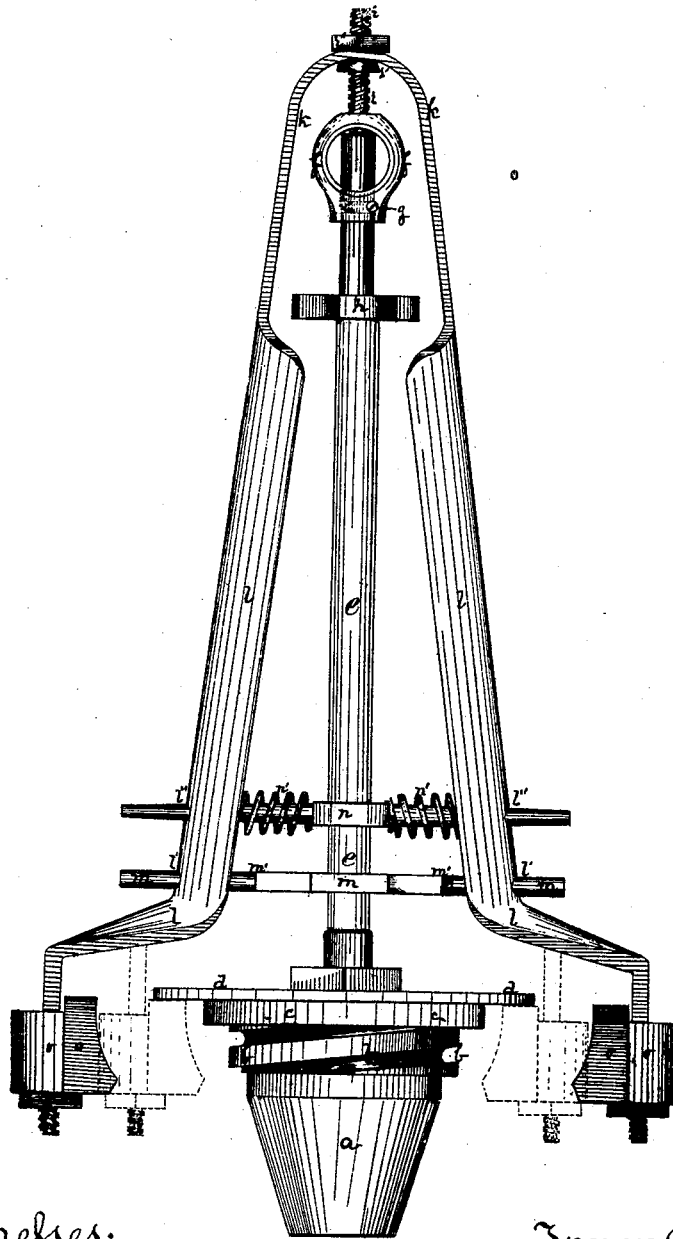


*G. M. Keefer,*  
*Tool for Forming Mouths of Glass Jars.*  
*No. 110243. Patented Dec. 20, 1870.*



Witnesses:  
*R. C. Dranshall*  
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# United States Patent Office.

GOVENEUR M. KEEFFER, OF EAST BIRMINGHAM, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND WILLIAM H. BARRY, OF SAME PLACE.

Letters Patent No. 110,243, dated December 20, 1870.

## IMPROVEMENT IN TOOLS FOR FORMING MOUTHS OF GLASS JARS.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, GOVENEUR M. KEEFFER, of the borough of East Birmingham, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Tool for Forming Mouths of Glass Jars; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, and which is a side view of my improved tool for manufacturing glass jars and other mouthed articles of glass-ware.

Like letters of reference indicate like parts in each.

To enable others skilled in the art to make and use my invention, I will describe its construction and use.

In the drawing—

*a* represents the plug of a tool for forming the mouths for glass jars.

Around the base of this plug *a* is a screw-thread, *b*, for forming a thread on the inside of the neck of the jar to be made.

Back of the thread, and rigidly attached to the plug *a*, is a shoulder, *c*, for forming a seat for the gasket in the mouth of the jar.

Rigidly attached to the back of shoulder *c* is a plate, *d*, against which is formed the upper edge or end of the mouth of the jar.

The forming-plug or head thus described is rigidly fastened to a rod, *e*, the end of which screws into or is otherwise secured to the back face of the plate *d*.

The other end of the rod *e*, running back, enters a swivel-head, *f*.

Around this end of the rod *e* is a groove, *s*, such that, when the end of the rod *e* is inserted into the swivel-head *f*, a key, *g*, may be passed through the swivel-head and lie in the groove *s*.

The end of the rod *e* is then secured in the swivel-head *f* in such a manner that, although it cannot be withdrawn without removing the key, yet it can turn freely therein.

The swivel-head *f* is, by means of a threaded rod, *i*, and two clamp-screws *j j*, connected with the back end of a bow, *k*, which is made of any suitable spring metal.

The bow *k* has two arms, *l l*, extending forward, one along each side of the rod *e*, straight or bent, as may be necessary, until their outer ends come opposite to screw-thread *b* and shoulder *c* of the plug *a*.

To each of these outer ends of the arms *l* is fastened a jaw, *o*, of such shape as may be desired in forming and finishing the outer edge and surface of the mouth of the jar, as hereafter is described.

The arms *l l* are made of some resilient metal, usually wrought-iron, so that they may be pressed in any required distance toward the forming-head, and will, when the pressure is removed, immediately spring out to their former position.

At any desired point in the arms *l l* are two holes,

*l' l'* and *l'' l''*, in each of the arms directly opposite each other.

Through the first two of these holes *l' l'* project the ends of a rod, *m*, which acts as a stop to limit the inward motion of the jaws *o*.

The rod *m* is wide at its middle point, where there is a hole through which passes the rod *e*.

At any desired point, and at relatively equal distances from the main rod *e*, one on each side, are two shoulders *m' m'*.

These shoulders *m' m'* are to limit the inward motion of the arms *l l*, for when the arms are pressed in they come against the shoulders *m' m'* and cannot advance farther.

Thus any size of jar may be made by changing the forming-head and the regulating-rod *m* to the size required.

Below the regulating-rod *m* is another rod, *n*, whose ends project through the holes *l'' l''*.

Through a hole in the center of this rod *n* the rod *e* passes.

At each side of the center, on the rod *n*, are two spiral springs, *n' n'*, the outer ends of which press against the arms *l l*, and the inner ends against the shoulder, which is formed on the rod *n*, by the widening of the rod, to allow the passage of the rod *e* through it.

Then, when the jar is finished, and the pressure of the operator's hand removed from the arms *l l*, the springs *n' n'* carry the formers *o* back from contact with the neck of the jar.

In making the mouth of a jar (the latter being first heated to a pliable condition) the plug *a* is inserted into the jar until the end of the jar-mouth comes against the plate *d*.

The operator grasps the arms *l* and presses the formers *o o* lightly against the outer face of the rim of the jar-mouth.

The jar, and with it the plug *a* and devices connected therewith, is then caused to revolve rapidly.

The formers *o o* not only press the outer face of the glass to the shape required, but also press it well in against the screw-thread *b* and shoulders *c*, so as to give, as if between two dies, the desired seat in the mouth of the jar for the gasket, and a screw-thread below for screwing in the lower end of a cup.

It will be noticed that the plate *d* is rigidly attached to and revolves with the forming-head.

This is a very useful feature of my invention, since in the tools heretofore in use for this purpose this plate does not turn but is stationary, and the end of the jar revolving against it produces a great deal of friction, the effect of which upon the warm glass is to make a great number of very small fractures and imperfections in the edge of the mouth, often rendering the jar too defective for use.

After the mouth of the jar is formed and it is ne-

necessary to remove it from the tool, the revolving is stopped by the thumb of the operator catching the stop-wheel *h*, when the rotation of either the jar or the plug may be reversed, the other remaining stationary.

In place of a screw-thread, *b*, extending around the plug *a*, two or more short inclines may be substituted, which will make corresponding inclines on the inside of the jar-neck.

The use of the tool described I claim not only as applied to fruit-jars, but also bottles, and open-mouthed articles of glass generally.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The plug *a*, having a screw-thread or inclines, *b*, for forming a like thread or inclines in the mouth of

the jar, and a shoulder, *c*, for making a seat in the mouth of the jar for the reception of a gasket, substantially as described.

2. The threaded plug *a*, with its shoulder *c*, in combination with a plate, *d*, rigidly attached to such plug, and revolving therewith, substantially as described.

3. The threaded plug *a*, with its shoulder *c* and plate *d* rigidly attached thereto and revolving therewith, in combination with the rod *e* and swivel *f*, substantially as set forth.

In testimony whereof, I, the said GOVENEUR M. KEEFFER, have hereunto set my hand.

GOVENEUR M. KEEFFER.

Witnesses:

JOHN GLENN,  
G. H. CHRISTY.