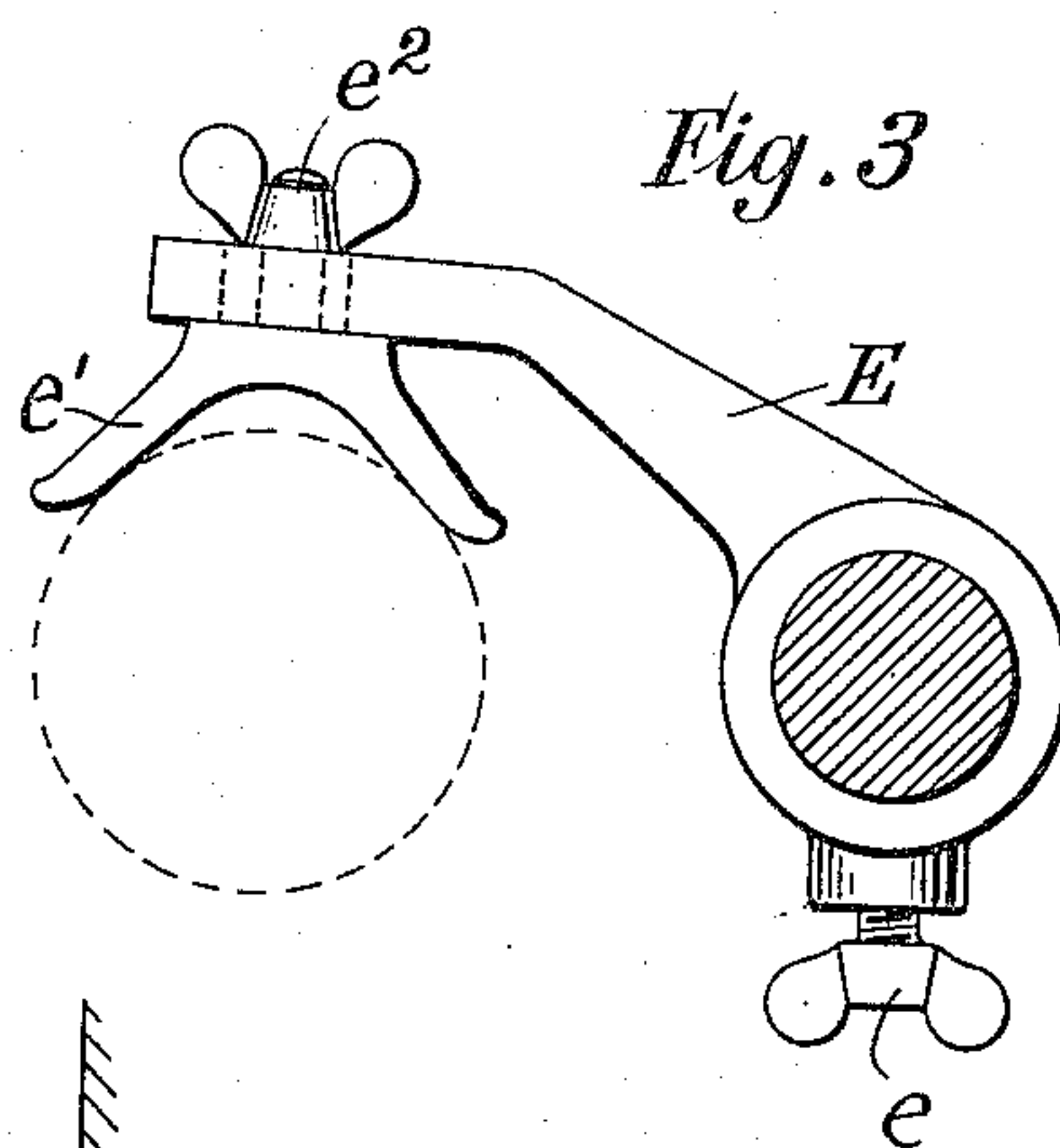
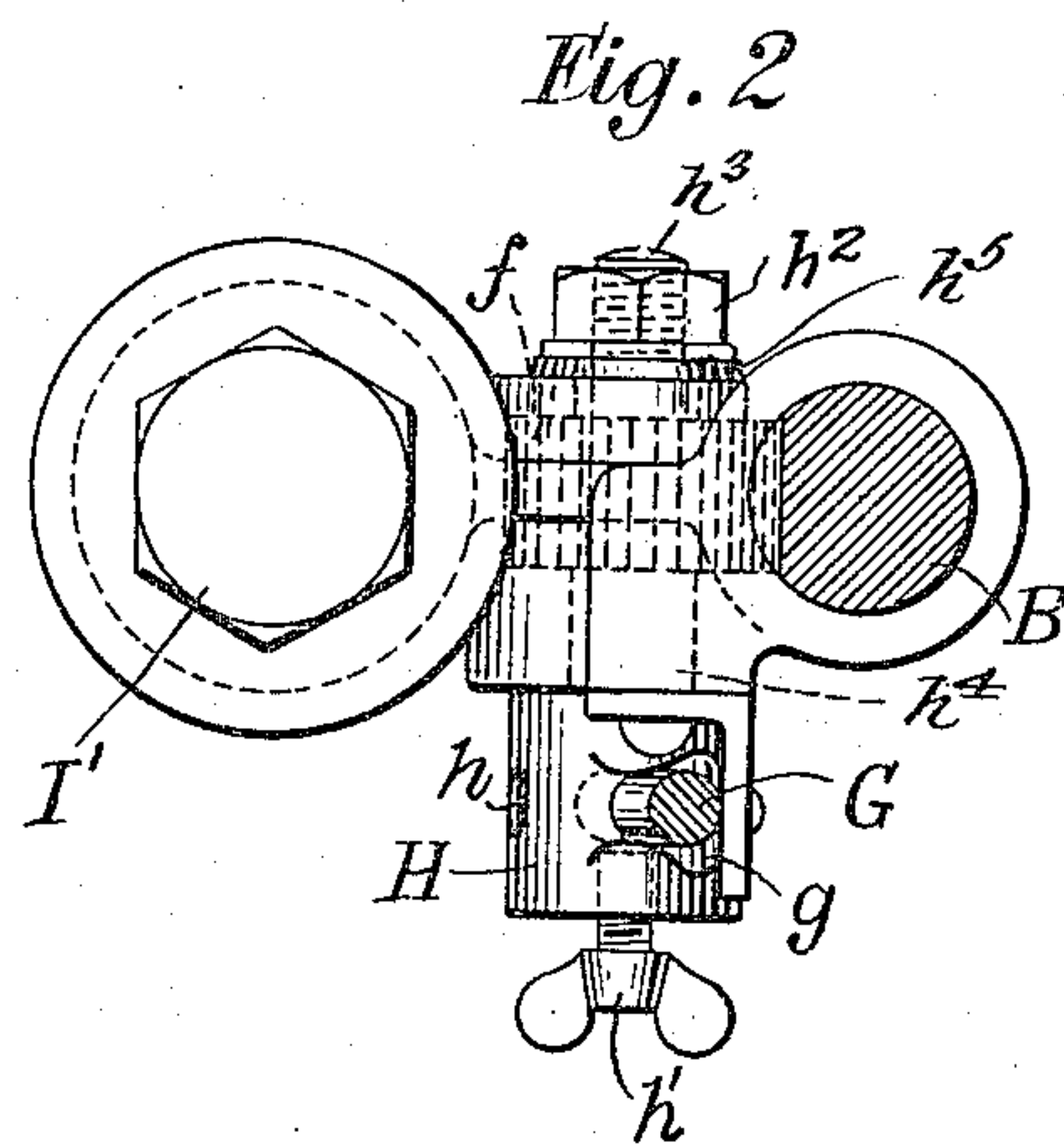
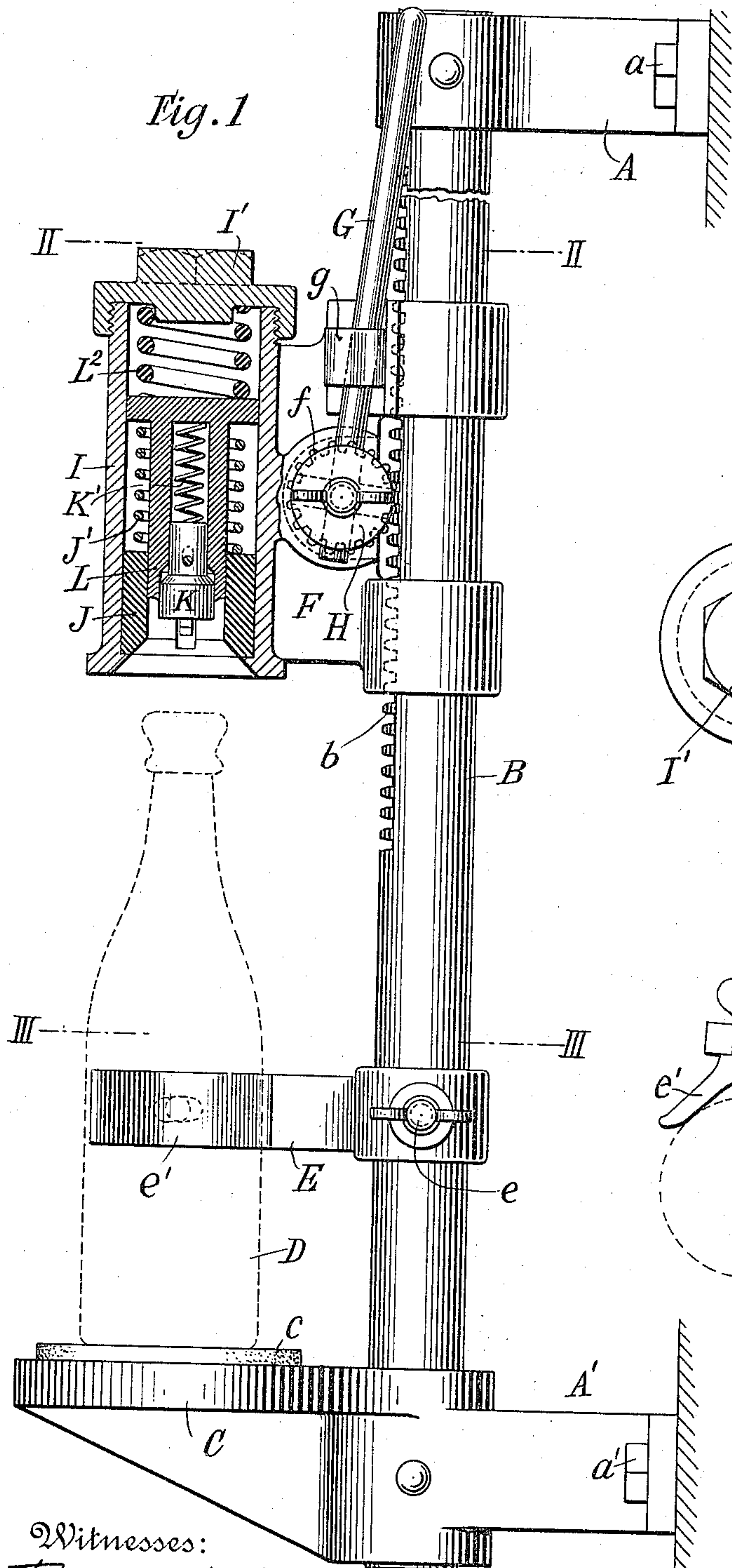


C. WINTER.
MACHINE FOR APPLYING BOTTLE SEALS.
APPLICATION FILED OCT. 20, 1908.

1,155,119.

Patented Sept. 28, 1915.
2 SHEETS—SHEET 1.



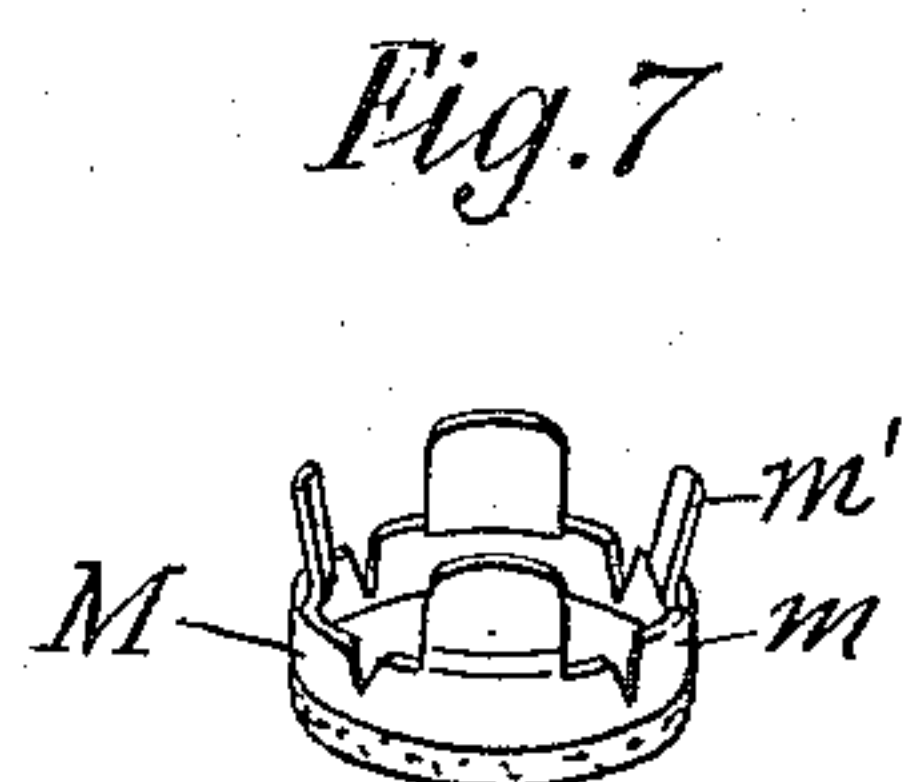
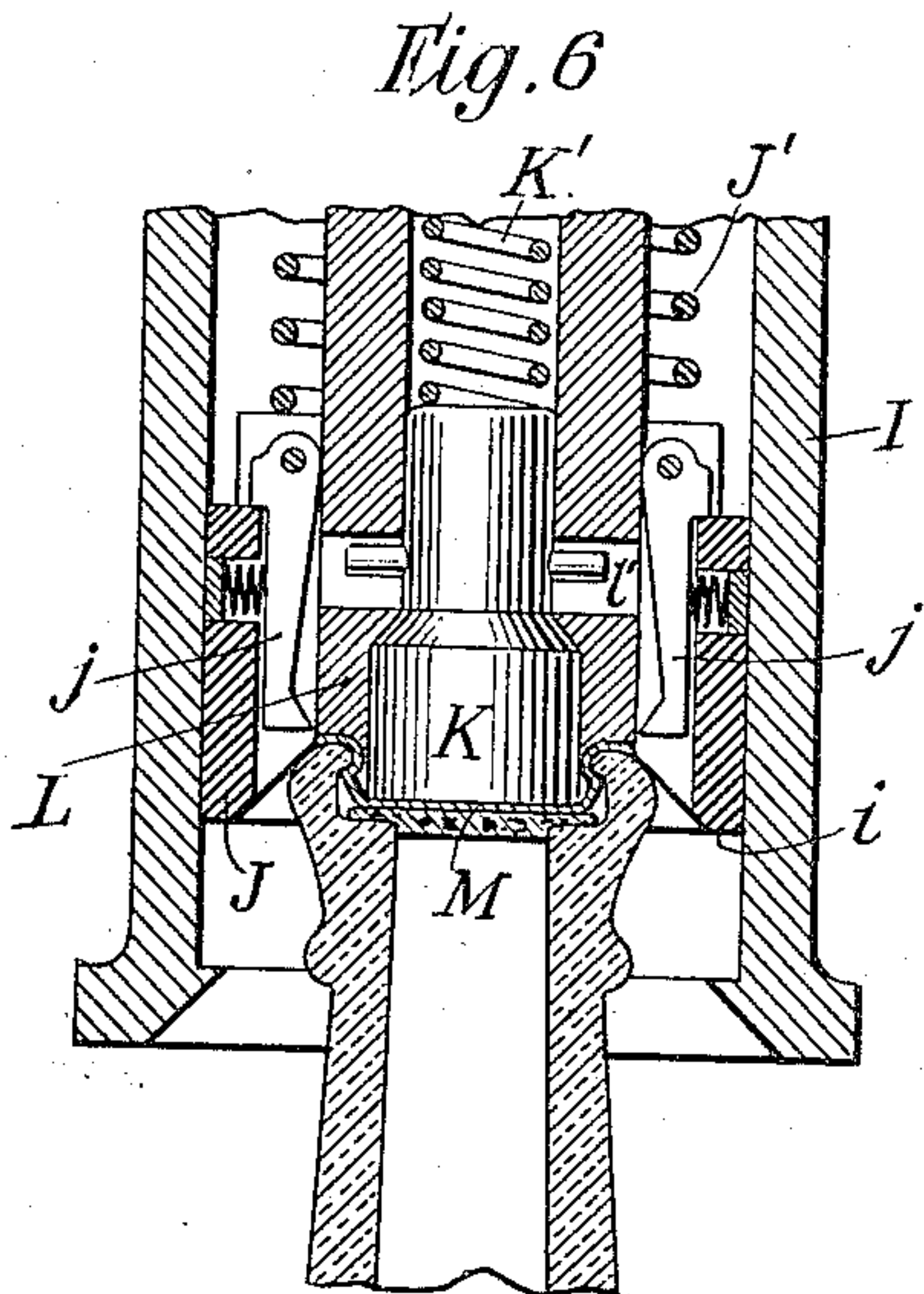
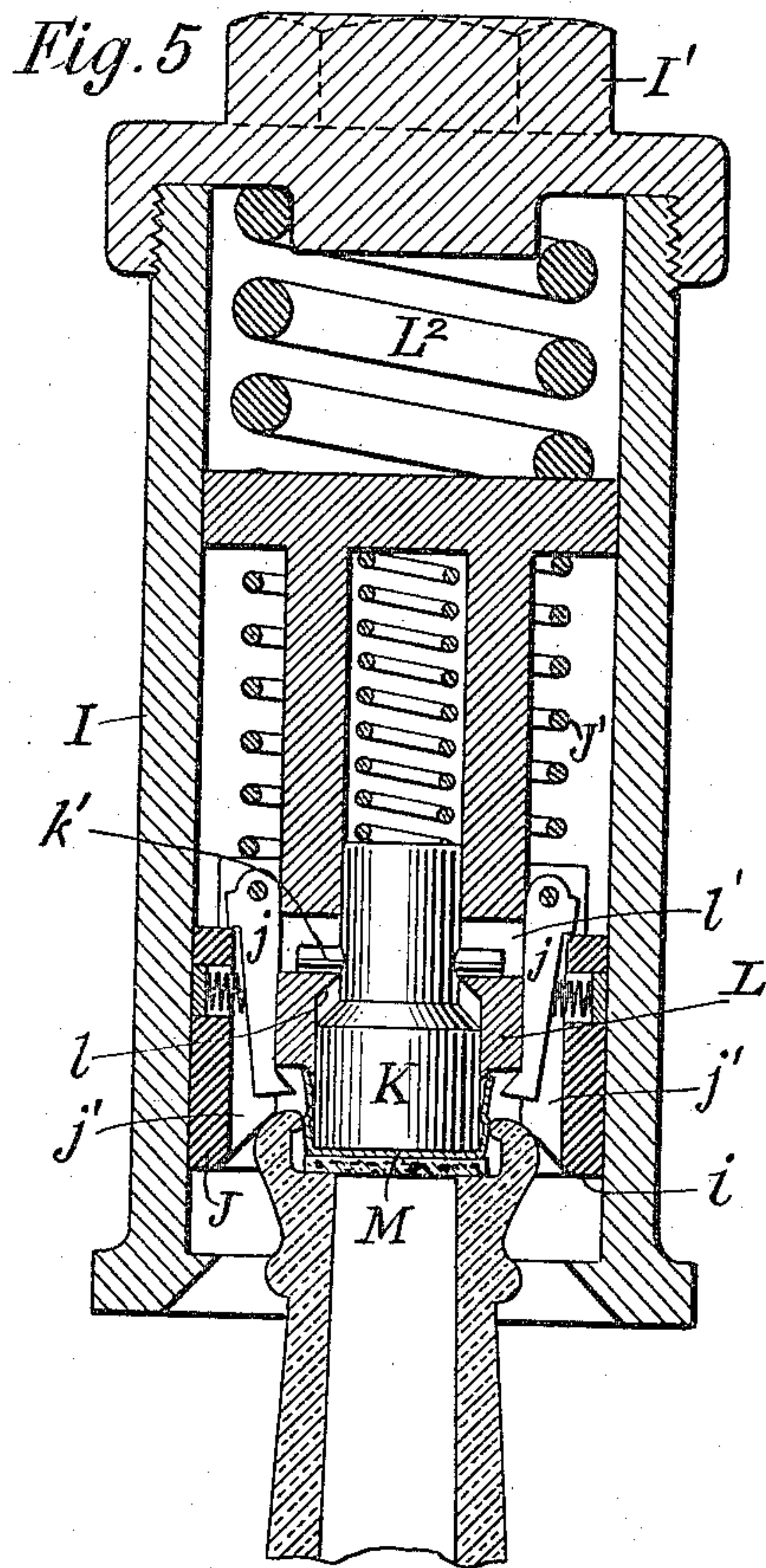
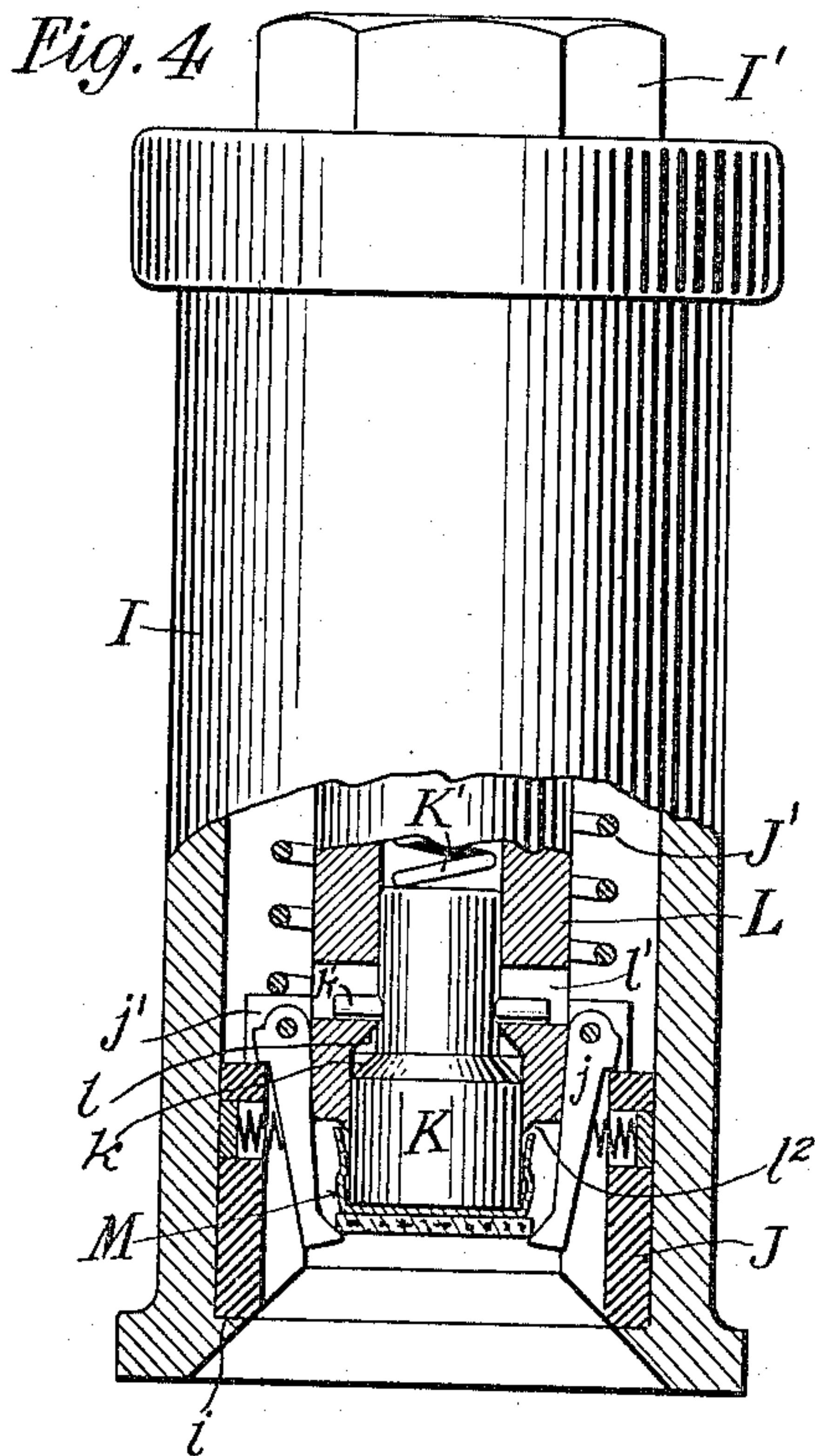
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

CHARLES WINTER, OF WOODBURY, NEW JERSEY, ASSIGNOR TO STAR SEAL COMPANY,
A CORPORATION OF NEW YORK.

MACHINE FOR APPLYING BOTTLE-SEALS.

1,155,119.

Specification of Letters Patent. Patented Sept. 28, 1915.

Application filed October 20, 1908. Serial No. 458,633.

To all whom it may concern:

Be it known that I, CHARLES WINTER, a citizen of the United States, residing in Woodbury, county of Gloucester, State of New Jersey, have invented certain new and useful Improvements in Machines for Applying Bottle-Seals, of which the following is a specification.

My invention relates to machines for applying bottle seals to bottles, and more particularly to the sealing head, the portion of the machine which performs the sealing operation. This sealing head may be used in a hand, foot or mechanically operated machine, and while I show and describe a hand machine only I do not wish to be understood as limiting myself to the use of my improved sealing head in such a machine.

My improved sealing head is especially adapted for use in connection with the seal described and claimed in my co-pending application, Serial No. 428,831, but I do not limit myself to such use. This seal in its preferred form consists of a cup shaped metal disk, the flange of which is divided into sections and each section extending into a relatively narrow tongue. This metal cup usually has a cork sealing disk on its bottom. The bottle with which this seal is used has a groove in the inside of its neck, the lower portion of which forms a sealing seat and the upper portion a locking shoulder. The extension tongues are bent over the mouth of the bottle so as to be out of danger yet easily reached and used to force or bend a sufficient number of the sections of the flange out of locking engagement with the groove so that the seal may be removed.

Now I have discovered that with my improved form of head the operation of bending over the tongues also bends the sections of the flange into locking engagement with the locking shoulder of the groove in the bottle, and that therefore no mechanism is required to exert lateral pressure on the flange to bend it into the groove, thus greatly simplifying the construction. Furthermore, the construction of my improved sealing head is such that extra pressure is taken care of in the head itself, and therefore no compensating devices are required in the base of the machine on which the bottle is placed during the sealing operation.

A further object of my invention, relat-

ing more specially to the hand machine using my improved head, is to so construct the machine that no special adjustment is required to use the machine for quart, pint or half pint bottles.

Referring to the drawings, Figure 1 is a side elevation partly in section of a hand operated machine embodying my invention. Fig. 2 is a cross section through the line II—II of Fig. 1. Fig. 3 is a cross section through the line III—III of Fig. 1. Fig. 4 is an enlarged view of the sealing head, partly broken away to show the interior construction, and the parts being in the position they assume after the seal has been inserted into the sealing head but before the bottle has entered. Fig. 5 is a central vertical cross section of the sealing head with the parts in their position after the first stage of the sealing operation. Fig. 6 is a similar view of the lower portion of the sealing head with the parts in their position after the sealing operation is completed. Fig. 7 is a perspective view of the preferred form of seal for which this machine is adapted.

A, A' are upper and lower supports which may be fastened to the wall or other convenient surface, as by screws *a*, *a'*. Between these supports and firmly fastened to them is a standard B. At the bottom of the standard B, and preferably a part of the lower support A', is a platform or base C surmounted by a rubber mat *c* on which is placed the bottle D which is to be sealed. Above the base is a guide or stop E movably mounted on the standard B and adapted to be fixed in any desired position by means of the set screw *e*. At the forward end of the guide E is movably mounted a forked piece *e'* adapted to be fixed in the desired position by means of a wing nut *e*².

On the upper portion of the standard B is mounted a carriage F slidable up and down on the standard by means of a rack *b* on the standard and a pinion *f* on the carriage. The pinion fits within a chamber in the carriage. It is mounted on the smaller end *h*³ of a pin *h*⁴ and is seated against the shoulder thus formed. It is held in locking engagement against the shoulder by a nut *h*² screwed tight against a collar *h*⁵ which passes through a hole in the carriage and seats against the side of the pinion. On the opposite end of the pin is a hub H. The pinion may be rotated within certain

limits by means of the lever G fastened to the hub H by means of the holes *h* therein and the set screw *h'*. By providing two or more holes *h* in the hub H into which the lever G may be inserted and fastened, I am able to adjust to a certain extent the limits within which the carriage can move. If a more accurate adjustment of these limits is required, I can secure the same by loosening the nut *h*² which binds the hub H to the pinion *f* and moves the carriage up or down a short distance without rotating the hub. In this way the machine is adapted for use with bottles of different sizes such as pints and quarts. To hold the carriage at the upper end of its stroke while a bottle is being placed in position, I mount on the carriage F a small spring catch *g* in which the lever may be detachably held.

The carriage F carries the sealing head I, which is the principal part of my invention. This sealing head consists of a casing I provided with a removable top I' and inclosing the working parts consisting of the seal holder J, the seating plunger K, and the bending plunger L.

The seal holder J consists of a sleeve which fits nicely within the casing and is retained therein by a lip *i* on the casing. A coil spring J' keeps the sleeve normally resting upon the lip *i*. Pivoted near the top of the sleeve are a number of depending spring pressed fingers *j* in recesses *j'* inside the sleeve. These fingers are normally pressed out of their recesses by their springs. The opening in the lower end of the casing I is tapered, and this taper is continued on the inside of the sleeve for the purpose hereinafter explained.

Fitting nicely inside the seal holder J is the compound plunger consisting of the seating plunger K and the bending plunger L, the former slidable within the latter. The seating plunger K is cylindrical and has a flat bearing surface which contacts with the bottom of the cup in the seal. Somewhat above the bearing surface the seating plunger is reduced in diameter so as to form the stop *k* which registers with the seat *l* in the bending plunger and limits the upward motion of the seating plunger with respect to the bending plunger. A pin *k'* passing through the seating plunger and projecting through holes *l'* in the bending plunger, prevents the former from falling out, but the holes *l'* are large enough so that on the upward motion of the seating plunger in the bending plunger the stop *k* will come in contact with the seat *l* before the pin *k'* reaches the upper surface of the hole *l'*. A spring K' keeps the seating plunger normally at the lower limit of its movement within the bending plunger, so that it extends somewhat below the latter but slightly above the points of the spring fingers *j*.

The bending plunger is in the form of a hollow cylinder, with its upper end enlarged to fill the entire bore of the casing and form a bearing or guide. The hollow cylindrical portion just fills the space between the seal holder J and the seating plunger K. The working or bending surface of the plunger is flat except for a lip, flange or tapered extension *l*² around the inside edge. Between the top of the bending plunger and the cover of the casing is a spring L² normally exerting little if any pressure on the plunger, but resisting any upward movement of the plunger. The spring L² is made sufficiently strong to withstand the desired amount of compression of the springs J' and K'.

The seal M with which this machine is primarily designed to operate (see Fig. 7) consists of a sealing disk of compressible material such as cork, and a metal holding disk having an upturned flange divided into sections *m*, each one of which is extended to form a relatively narrow tongue or tab *m'*.

The operation of my invention is as follows: The parts of the sealing head are in the position shown in Fig. 1, so that a seal may be pushed up by hand into the seal holder J until it is grasped and held by the spring fingers *j*, as shown in Fig. 4. A bottle D is then placed on the rubber mat *c* of the base C, and by means of the guide E it is centered under the sealing head. The lever G is then pulled out of the spring catch *g* and on down, so as to revolve the pinion *f* and lower the carriage. As the sealing head I comes down over the bottle the tapered opening in the casing and seal holder will accurately center the mouth of the bottle in the seal holder so that as the carriage moves farther down the top of the bottle will push the seal holder up into the casing outside of the compound plunger and against the spring J'. This movement forces the spring fingers *j* outward and into their recesses *j'* in the seal holder, freeing the seal M and permitting it to enter the mouth of the bottle, the construction of which bottle is shown in Figs. 5 and 6. The seating plunger K now forces the seal down on the sealing seat inside the neck of the bottle, the force being due to the spring K', until the stop *k* abuts against the seat *l* when the force of the strong spring L² is encountered. This last spring is sufficiently strong to compress the cork disk down upon and slightly into the sealing seat in the bottle so as to insure perfect sealing contact. At the same time the bending plunger L has come down upon the tongues *m'* of the seal and the tapered extension *l*² passes inside of them and tends to start them moving out so that further downward movement of the bending plunger backed by its strong spring L² bends the tongues over the top of the bottle

and at the same time bends or buckles the sections of the upturned flange into perfect locking engagement with the locking shoulder in the neck of the bottle. The sealing operation is now completed, and any excess pressure which is applied is taken up in the spring L². The sealing head is now raised and the handle locked in its spring catch ready for another operation.

10 It will be observed that the extent of movement of the sealing head required for a bottle sealing operation is from that in which the lever is locked in the spring catch down to the point where the sealing operation is completed, and it is desirable that the lever shall be nearly horizontal so that the pressure may be applied with the least effort. Since this point differs with bottles of different size, it is necessary to adjust the position of the sealing head with respect to the rack on the standard. To accomplish this, let us suppose that the machine is set for use with pint bottles. To change it for quart bottles the lever is taken out of the hub H by first releasing the set screw h', and the carriage is then raised to the position it would be in when the bending starts, after which the lever is inserted into the hole nearest to the horizontal and set in that position. 20 The lever may then be brought exactly horizontal by loosening the nut h² and revolving the hub without disturbing the pinion, after which the nut is again tightened.

It will be observed that I have done away with all lateral expanding mechanisms in the sealing head, and that the bending of the flange under the locking shoulder of the bottle is accomplished entirely by vertical pressure on the flange. Furthermore, as a result of this construction, I am able to further simplify the machine by dispensing with the usual compensating devices in the base on which the bottle rests to prevent excess pressure from breaking the bottle, for in my machine so little pressure is required that I am able to take care of any reasonable excess thereof directly in the sealing head by the spring arrangement I have shown.

Having described my invention, what I claim is:

1. A bottle sealing machine for a bottle having a neck with an interior groove and for a seal having an upturned flange adapted to be formed partly within said groove to make an air tight joint of said seal with the lower wall of said groove, comprising a tool having a working face having a fixed configuration for co-acting with the end of said flange, a face for co-acting with the inner face of said flange, and a flaring face for forcing said flange slightly outward, a receptacle for holding said tool, and means for reciprocating the said receptacle for bringing the end of the said flange and tool together with sufficient pressure to collapse the

flange to form the joint within the bottle and to turn the flange over the top of the bottle.

2. A bottle sealing machine for a bottle having a neck with an interior groove and for a seal having an upturned flange adapted to be formed partly within said groove to make an air tight joint of said seal with the lower wall of said groove, comprising a hollow receptacle, a sleeve mounted to slide within the receptacle having an interior lower face converging upwardly for co-acting with the bottle neck to centralize the bottle, a spring within the receptacle backing the sleeve, a tool slidably mounted within the sleeve having a working face at its lower end for co-acting with the end of said flange, resilient means within the receptacle backing the tool, a plunger mounted to slide within the tool and having a lower side face for engaging the inner face of said flange and a bottom face to seat upon the seal, a spring within the tool backing the plunger, and means for reciprocating the receptacle operable when a bottle is in sealing position and a seal is seated therein for compressing the springs and resilient means to hold the bottle by the sleeve and to cause the plunger and tool to press the seal to form the joint within the bottle.

3. A bottle sealing machine for a bottle having a neck with an interior groove and for a seal having an upturned flange adapted to be formed partly within said groove to make an air tight joint of said seal with the lower wall of said groove, comprising a hollow receptacle, a cap for the upper end of the receptacle, an interior rim formed on the lower end of the receptacle having an upwardly converging interior face for centralizing the bottle, a sleeve slidably mounted within the receptacle to seat upon the interior rim and having a lower interior upwardly converging face for further centralizing the bottle and for holding it in position, a tool having a head part mounted to slide within the receptacle and a body part mounted to slide within the sleeve and having a lower working face flaring upwardly from its inner end for co-acting with the edge of the seal flange to force it outwardly and downwardly, a spring between the said head and sleeve, a spring between the said head and the said cap to the receptacle, a plunger mounted to slide within the said tool having a protruding cylindrical side face for engaging the inner face of said seal flange and a lower face to seat upon the seal, a spring within said tool backing said plunger, a shoulder formed within the tool, a shoulder formed on the plunger to co-act with said first shoulder to restrict the movement of said plunger upwardly within said tool, means for restricting the relative movement of the plunger downward from said tool, spring-pressed means

for holding said seal in engagement upon the said plunger, and means for reciprocating the said receptacle operable when a bottle is in sealing position and a seal is seated therein for compressing said springs to hold the bottle by said centralizing sleeve and to press the plunger and tool upon the seal to form the joint within the bottle.

4. A machine for applying flanged seals to interior grooved bottles, comprising a tool, for conforming the seal flange to the groove, having a working face adapted to engage the edge of the flange to confine its circumference, an end below said face having a face for supporting the flange from the inner side thereof, and means for pressing the flange and said first face together to form the joint within the groove.

5. A machine for applying flanged seals to interior grooved bottles, comprising a tool, for conforming a seal flange to the groove, having a working face adapted to engage the edge of the flange to confine its circumference, an end below said face having a face for supporting the flange from the inner side thereof, means for holding the seal on said lower end, and means for pressing the flange and said first face together to form the joint within the groove.

6. A machine for applying flanged seals to interior grooved bottles, comprising a tool, for conforming the seal flange to the groove, comprising a seal flange conforming plunger having means for confining the circumference of the flange, a seal flange spreading plunger mounted to slide within said conforming plunger having an upwardly diverging lower end for spreading the said seal flange, a plunger mounted to

slide within said spreading plunger having a protruding side face for engaging the inner face of said seal flange and a bottom face to seat upon said seal, means for holding the seal on said side face, and means for pressing the plungers and seal together to form the joint within the groove.

7. A machine for applying flanged seals to interior grooved bottles, comprising a tool, for conforming the seal flange to the groove, having a working face adapted to engage the edge of the flange to confine its circumference, a plunger mounted to move within said tool and having a protruding side face for supporting the flange from the inner side thereof and a bottom face to seat upon said seal, means for holding said seal on said plunger, and means for pressing said tool and plunger to said seal to form the joint within the groove.

8. A machine for applying flanged seals to interior grooved bottles and for conforming the seal flanges to the grooves, comprising a tool having a working face adapted to engage the edge of the flange to confine its circumference, a plunger mounted to move within said tool and having a protruding side face for supporting the flange from the inner side thereof and a bottom face to seat upon said seal, means for holding said seal on said plunger, and means for pressing said tool and plunger to said seal to form the joint within the groove.

In witness whereof I have hereunto set my hand, this 15th day of October, 1908.

CHARLES WINTER.

Witnesses:

HALLACK A. PENROSE,
GEORGE E. PIERSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."