

No. 765,155.

PATENTED JULY 12, 1904.

H. W. THURLOW.  
CAN OPENER.

APPLICATION FILED FEB. 25, 1902. RENEWED DEC. 19, 1903.

NO MODEL.

Fig. 1.

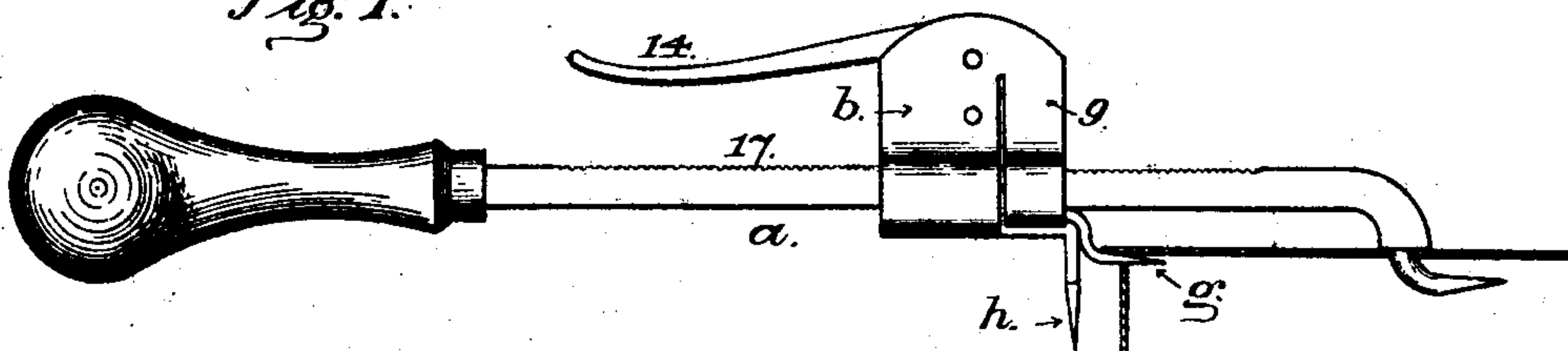


Fig. 2.

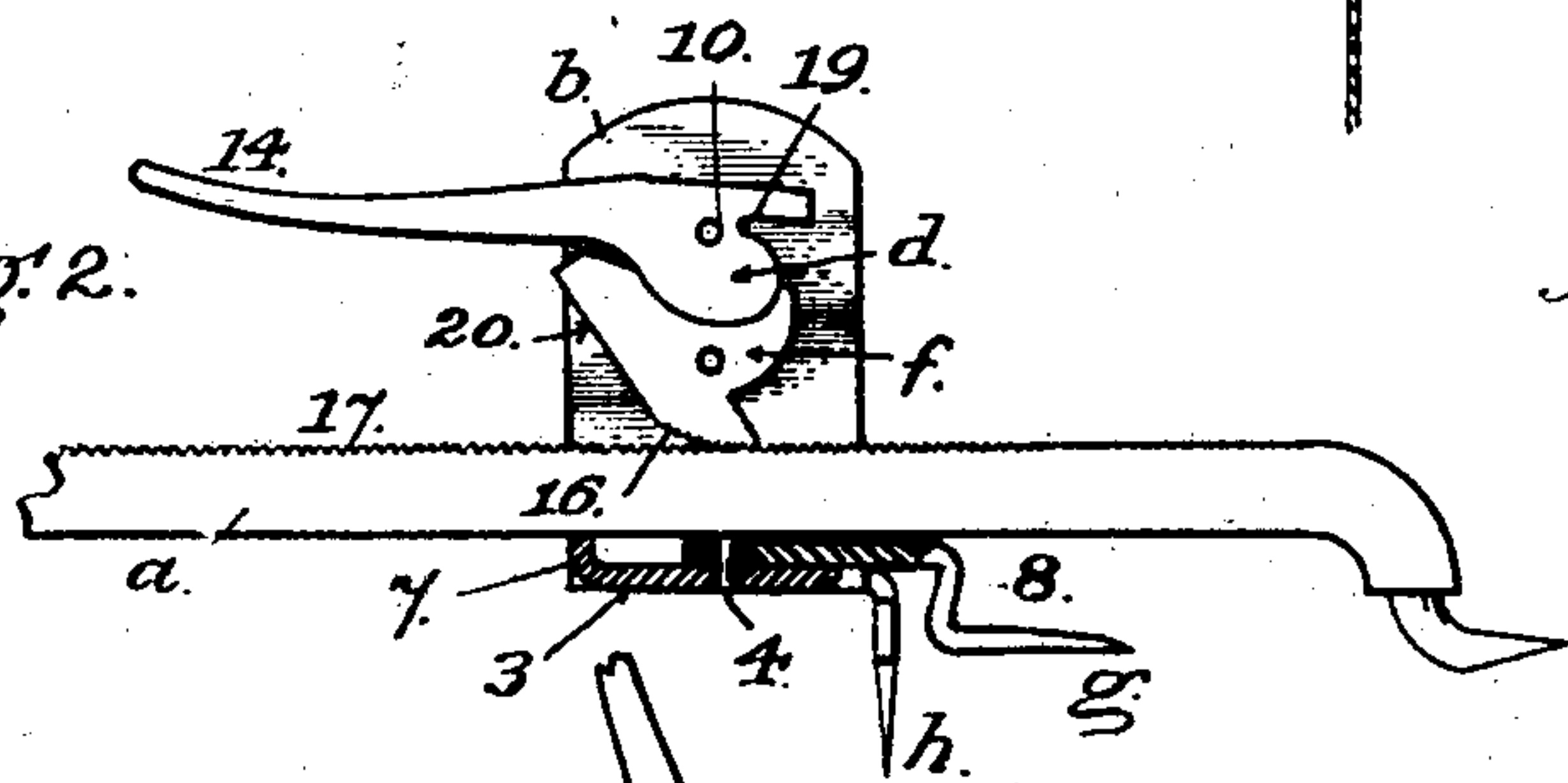


Fig. 3.

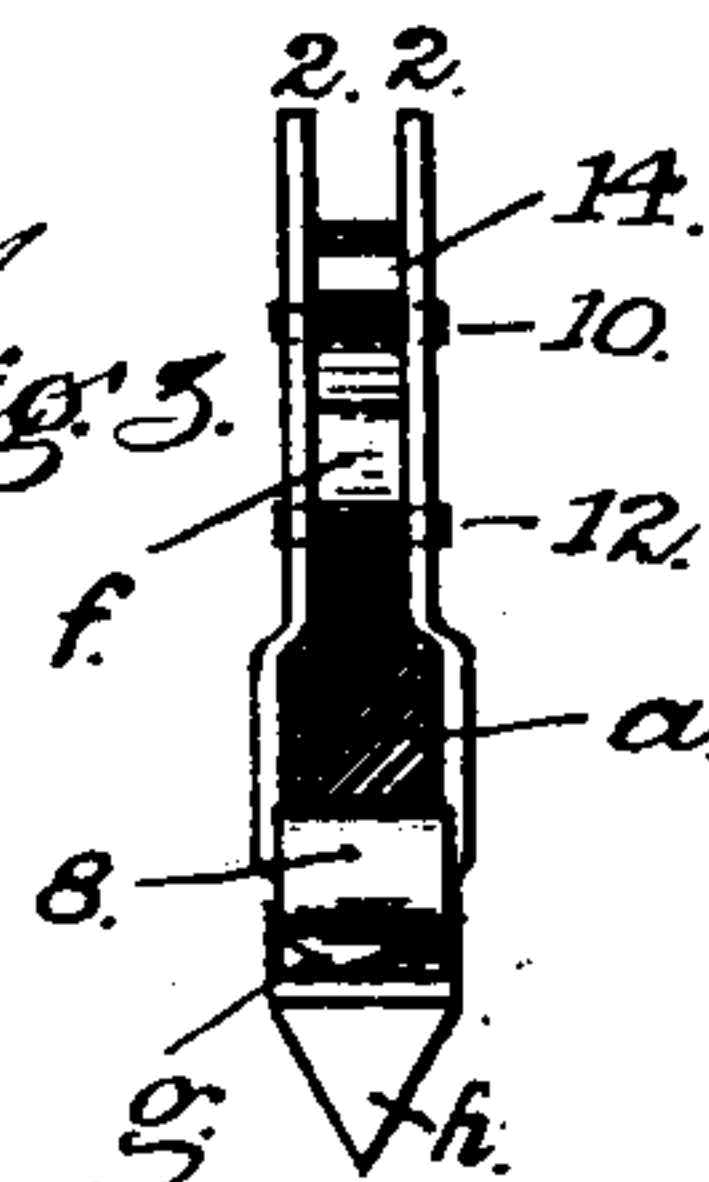


Fig. 4.

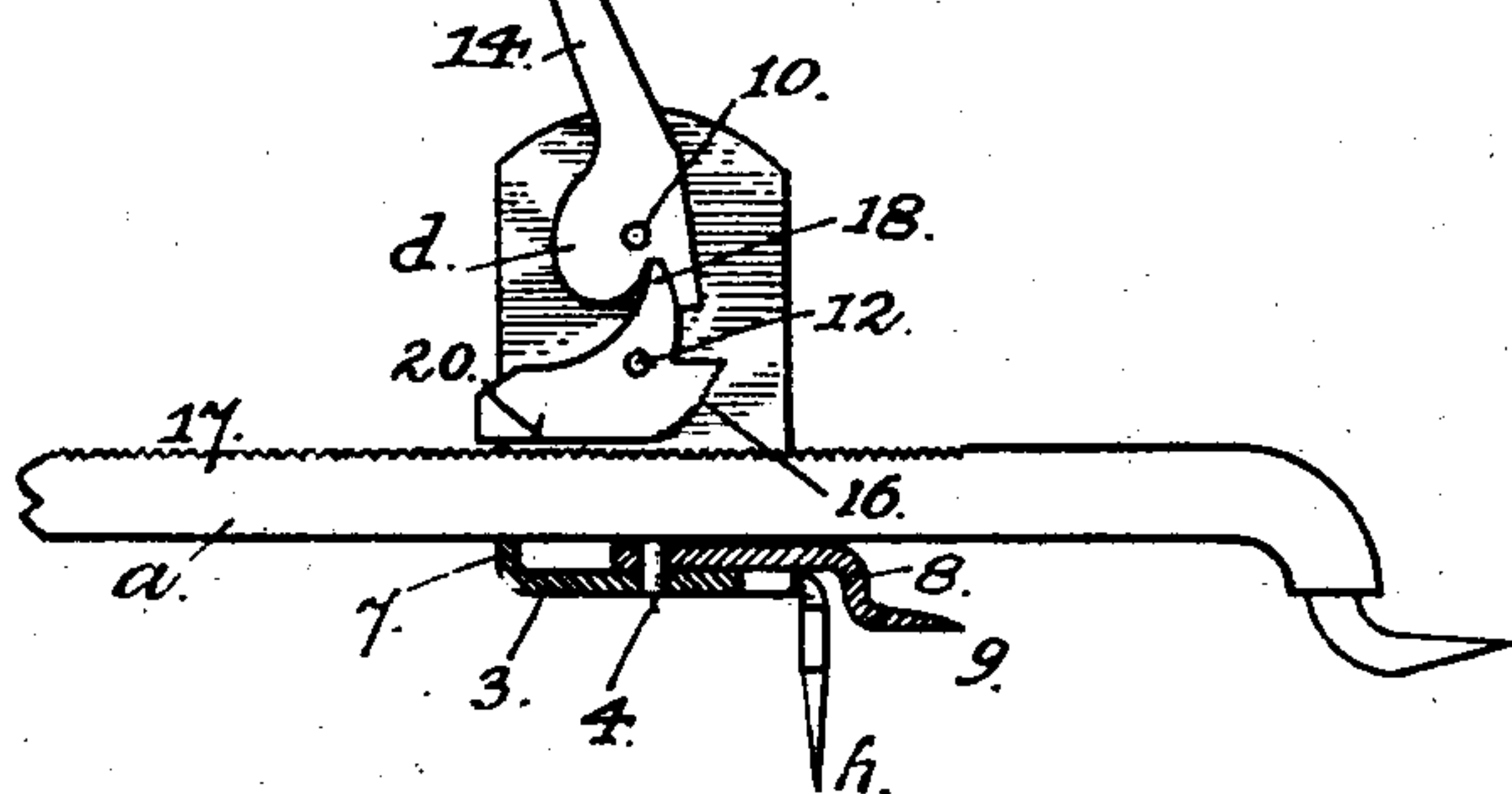


Fig. 5.

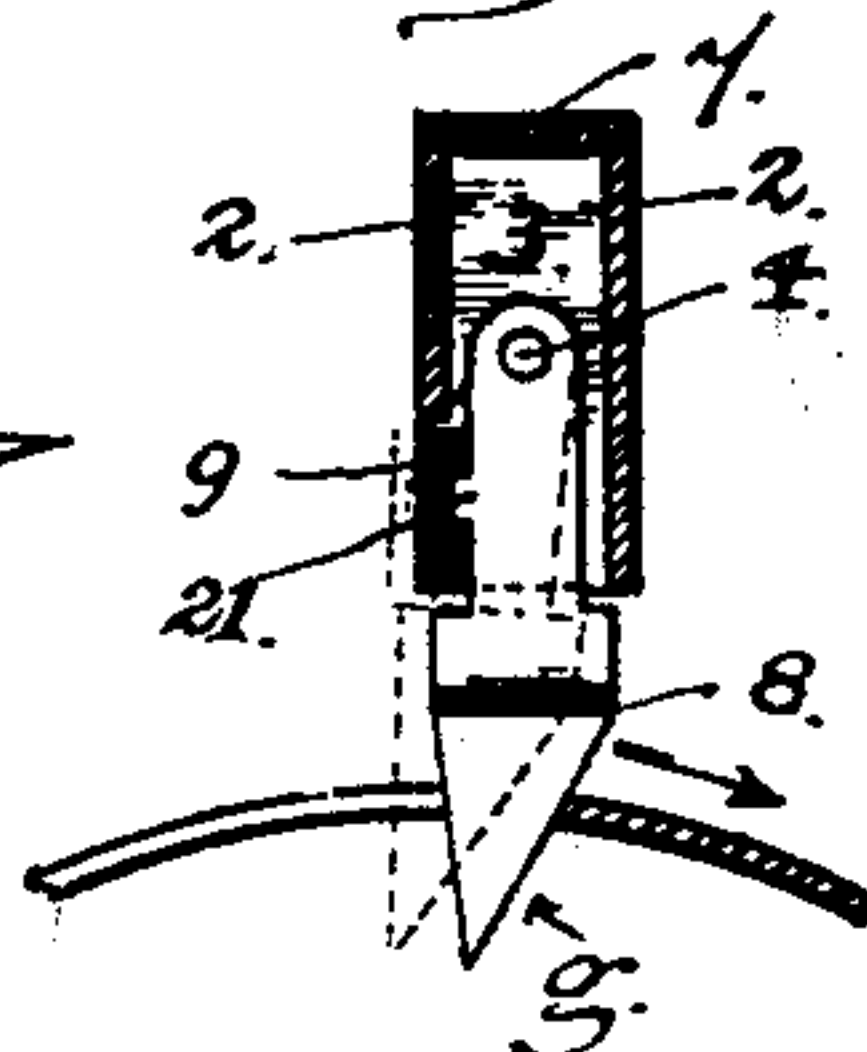


Fig. 6.

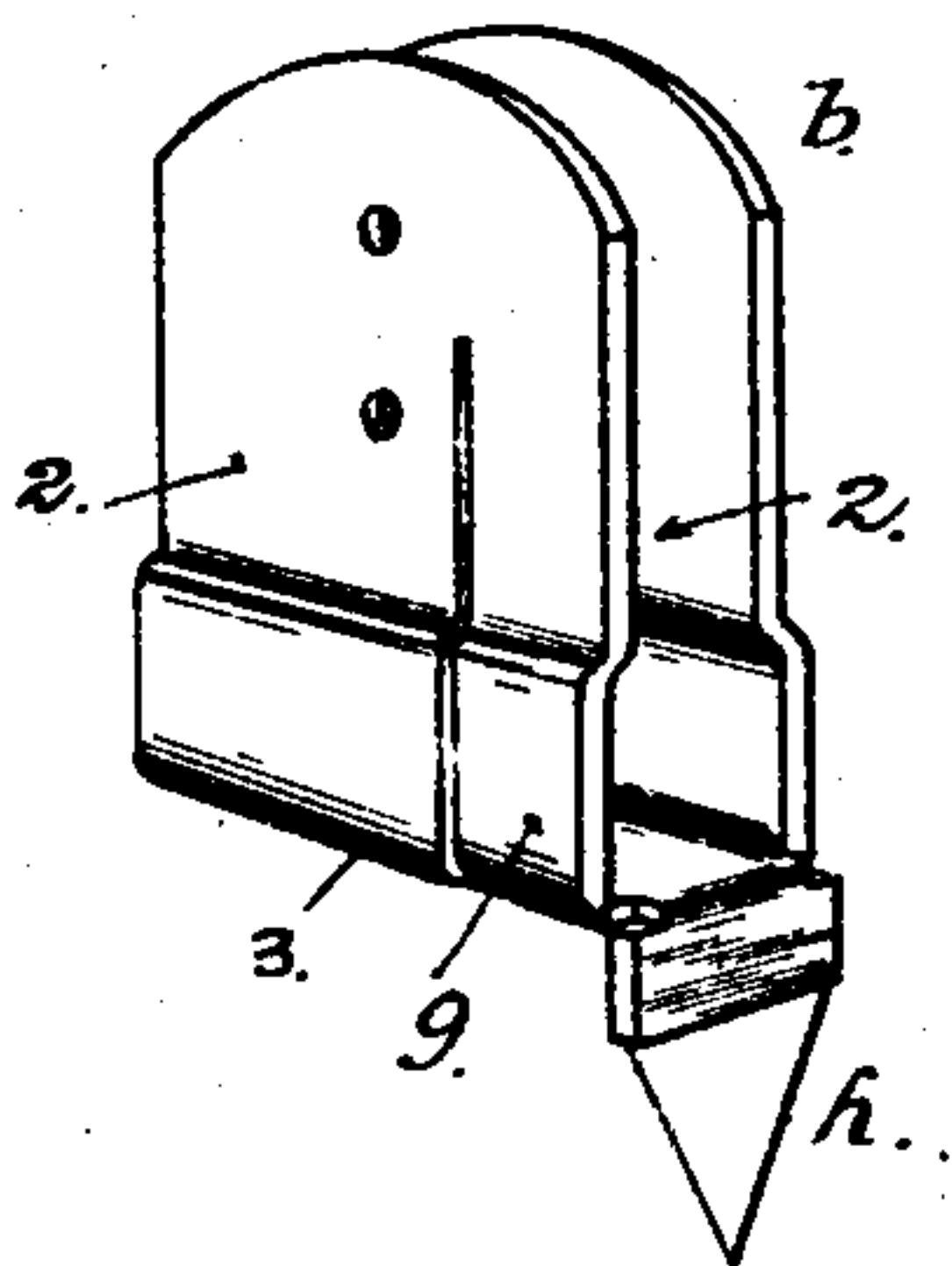
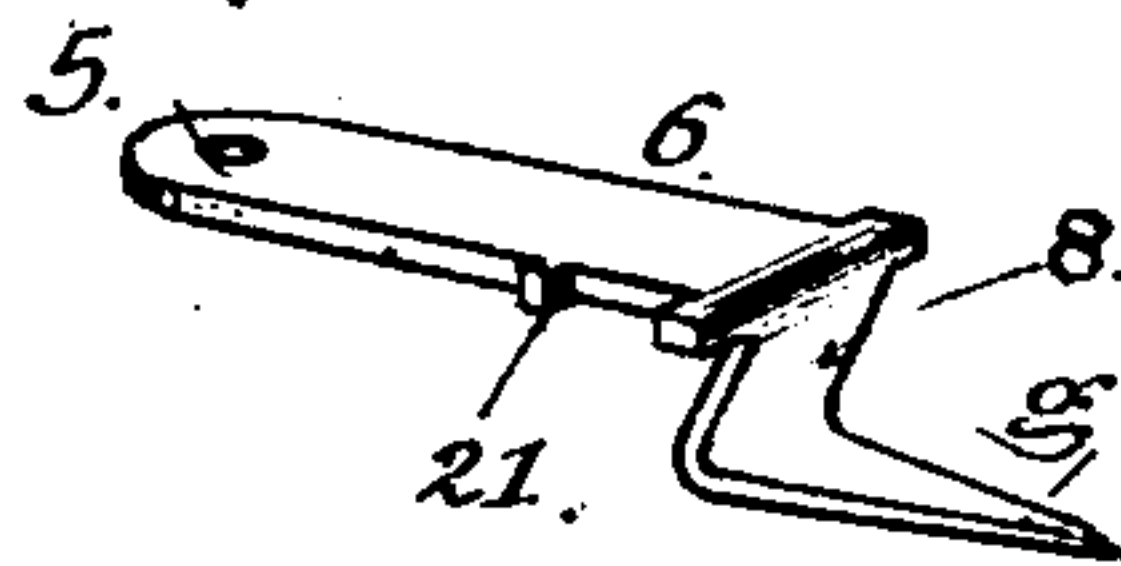


Fig. 7.



Witnesses.

Arthur S. Lee.  
M. Regner.

Inventor.

Harry W. Thurlow,  
By G. C. Brown, Atty.

# UNITED STATES PATENT OFFICE.

HARRY WORTHINGTON THURLOW, OF SAN FRANCISCO, CALIFORNIA.

## CAN-OPENER.

SPECIFICATION forming part of Letters Patent No. 765,155, dated July 12, 1904.

Application filed February 25, 1902. Renewed December 19, 1903. Serial No. 185,898. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY WORTHINGTON THURLOW, a citizen of the United States, and a resident of the city and county of San Francisco and State of California, have invented a new and useful Improvement in Can-Openers, of which the following is a specification.

This invention relates to tools or devices specially constructed for cutting open sheet-metal cans containing canned goods, paints, and other articles and substances.

The invention comprises several novel features of improvement in that class or description of can-opening tools having a shank composed of a bar adapted to be temporarily attached by one end to the top of the can to furnish a pivotal point for the tool to swing in a circle and in a plane with the top of the can and carrying a cutting-blade that by adjustment on the bar is capable of being set and fixed in operative position at varying distances from the pivotal point and so adjusted to cut in a circle of larger or smaller diameter.

The present improvements include a novel construction and combination of cutting-blade and means of adjusting and fixing the cutting-blade on the bar, in which construction provision is made for imparting a forward movement or thrust to the cutting-blade at the beginning of the operation when the tool is used to cut off the top of a can. They include also a novel construction of self-adjusting cutting-blade having a lateral movement, whereby the angle of the leading cutting edge is varied according to the degree of resistance offered by the metal, and means for setting and fixing the blade on the bar without restricting its lateral movement.

The improvements include, further, the production of an improved can-opener having novel features of adjustment and operation that adapt it for cutting the top, to remove the head entirely, or for cutting into the top within the edge to make an opening of smaller diameter than the head itself.

The nature of these improvements and the manner in which I proceed to construct and carry out the same are explained at length in

the following description, reference being had to the accompanying drawings, forming part thereof—

Figure 1 is a side view of a can-opener embodying my invention. Fig. 2 is a sectional view, on an enlarged scale, the section being taken through the slide in a vertical plane parallel with the bar. Fig. 3 is a vertical section taken transversely through the bar in front of the cutters. Fig. 4 is a sectional view similar to Fig. 2, showing the slide loosened and ready to be moved in either direction on the bar to set the cutters. Fig. 5 is a horizontal section taken through the slide in a plane parallel with the horizontal cutter and just above that part. Fig. 6 is a perspective view of the slide. Fig. 7 is a perspective view of the laterally-yielding horizontal cutter.

The principal parts of this tool are described and referred to hereinafter as the shank *a*, slide *b*, eccentric *d*, shoe *f*, horizontal cutter *g*, and vertical cutter *h*.

The complete tool is generally furnished with the two cutters *g h* that it may be used either to cut off the entire head of a can or to make an opening in the top within the circumferential edge of the can. A can-opener specially designed to perform one operation without the other would be limited in its construction to a single cutter, either formed in one piece with the slide *b* or constituting a separate piece attached to the slide, but detachable from it, so as to be replaced in case of accident.

In some kinds or varieties of can-openers of this description adapted to cut the body of the can the cutter is made an integral part of the slide or the piece by which it is clamped to the shank of the tool, and in others the cutter is separable from but is rigidly held on the shank in working position by the slide; but in both forms or varieties of body-cutting tools the operator after entering the pointed end of the shank in the center of the head of the can to furnish the necessary pivotal point for the tool must apply sufficient pressure against the back of the cutter in order to en-



ter the point of the shank to a proper depth before fixing the cutter in working position on the shank.

In my improved construction the horizontal cutter is forced mechanically into the body of the can by the same movement of the clamping-lever that fixes the slide on the shank, so that no special exertion of strength to force the point of the horizontal cutter into the metal is called for. A simple movement of the locking-lever performs that preliminary operation at the same time that it secures the cutter in working position.

The horizontal cutter *g* is detachably secured to the slide *b*, first, to provide for conveniently replacing it when worn or broken, and, secondly, to give the cutter a limited extent of yielding movement laterally for effecting by the change in the position of the cutting edge under such movement a greater or less increase in the angle made by the inclined cutting edge. The cutter is so attached and held in place on the slide that when the cutting edge meets with any increased resistance, such as would be offered by a joint or seam in the body of the can or other variation in the thickness of the metal, the cutting-blade, moving on its point of attachment on the slide in a horizontal arc, will set the cutting edge at a greater angle to the plane of the metal being cut. The effect of this change in the angle of the blade is to give it more of a shear cut on the metal, and thus facilitate the progress of the cutter through thicker portions.

The vertically-set cutter *h* is preferably made integral with the slide *b*, the form of which readily adapts itself to that end. Such construction of the cutter in one piece with the clamp to fix it on the shank of the tool is not in itself a novel feature of my invention.

The slide *b* is a U-shaped piece having side pieces 2 2, between which the bar *a* is loosely fitted to slide, and a flat bottom portion 3, between which and the bar the cutting-blade *g* is placed. The last-named member of the tool is attached at the heel or inner end to the bottom of the slide by a stud 4 and an eye 5 in the shank of the cutter near the heel.

The cutter-shank is kept from direct contact with the bar *a* above it by an upturned flange or projection 7, provided on the bottom of the slide *b*, and also by the end of stud 4, standing above the upper face of the cutter-shank, these two parts being so arranged as to take the pressure off the cutter-shank 6 when the slide is drawn up against the bar *a* by the clamp. This allows the cutter to yield laterally in the slide, while the latter part holds it rigidly against movement in any other direction.

The shank 6 of the horizontal cutter is made with a bend or offset 8, that brings the cutting-blade *g* at the required distance below

the bar to enter the side of the can-body and cut off the head below the bead or joint between the can-top and the body, as well as to cut in a plane substantially parallel with the bar. The angular member 8 is bent to make a greater angle than ninety degrees with the shank, as seen in Figs. 2 and 7, in order to throw the upper angle ahead of the bend where the blade *g* joins the shank, and thereby prevent the bent member of the shank from bearing against the can-body while this horizontal cutter is in use. At such time the upper angle of this bend 8 acts as a stop to prevent the blade from working forward and jamming in the slit, which it is liable to do if the blade is not prevented from penetrating the can-body up to the angle where the blade springs from the bent member. If the offset in the shank is allowed to bear against the side of the can, it tends to increase the resistance to the movement of the implement considerably beyond that which is produced by and due to the character and thickness of the metal to be cut, and the work requires the application of more power than is actually necessary to cut the metal.

The form of shank shown in Figs. 2 and 7 by materially reducing the frictional resistance between the can-body and the cutter makes the tool more easy to operate, particularly on the larger and heavier cans.

A spring-tongue 9 on the slide bearing against the back of the cutter-shank, or that side farthest from the leading edge of the blade, allows the latter to yield laterally and change the angle of the cutting-blade as often as the resistance offered by the material being cut becomes greater than that of the spring. This yielding movement has the twofold effect of relieving the parts when the resistance to the progress of the cutter becomes too great and of causing the edge of the blade to assume an increased angular position as soon as it meets a thicker portion of the metal.

In the means employed for securing the slide *b* in position after it is set, the construction of which is clearly shown in Figs. 2 and 4, the eccentric *d* acts through the medium of the shoe *f* to clamp the slide to the bar and also to produce a limited forward movement or travel of the slide before the slide is finally clamped.

The eccentric *d* and shoe *f* rock on cross-pins 10 12 in the slide, and the eccentric is part of a lever 14, having a throw from an upright to a horizontal position, the extent of which is sufficient to bring a quadrant-shaped toothed portion 16 on the shoe into or out of engagement with a toothed, notched, or milled surface 17 on the top face of the bar, according to the direction of such movement of the lever.

On that side of the center 12 opposite to the toothed quadrant the shoe is shaped to fit



5 closely against the acting face of the eccentric, and this concaved edge terminates forward of the center 12 in a spur or projection 18, that lies in and always engages a notch or recess 19 in the lever above.

10 Rearwardly of the toothed quadrant the lower face of the shoe extends in a straight portion 20, with a smooth face which in the upright portion of the lever lies parallel with and will slide over the toothed face of the bar. Moving the lever out of that position toward the bar, on the other hand, causes the eccentric to raise the smooth face of the shoe and bring the toothed quadrant into engagement 15 with the teeth on the bar, and for the remainder of the movement after biting on the top face of the bar the quadrant acts to feed or move the slide forward on the bar. The effect of this is to impart a forward thrust to the horizontal cutter *g* and force its point and cutting edge into the metal. In addition to this action the shoe operates to draw up the bottom of the slide against the lower face of the bar and tightly fix or clamp the whole part 25 on the bar.

30 In the above-described construction, by which the throw of the lever from the upright to the horizontal position in the operation of locking the slide acts to set the slide forward, it will be noticed that the use of the intermediate piece *f* is necessary in order to produce the required forward movement by which the cutting-blade is forced into the metal before the slide is locked, because the eccentric lever 35 is situated behind the slide and toward the operator. It will be obvious, however, that the eccentric can be arranged to act directly against the bar and feed the slide forward before locking it by reversing the eccentric, so as to change the working position of the lever 40 from the rear to the front of the slide; but such change in the position of the lever is objectionable, for the reason that being situated between the slide and the pivotal point of the tool the lever would have a movement away from instead of toward the operator, and it would not only be difficult to operate, but in being pressed down toward the bar the application of the force required to bring the lever 45 to the horizontal position would have a tendency to lift the front of the cutting-blade at the moment of its entrance in the metal and break it off. These objections and difficulties are overcome by the combination and arrangement of the toothed quadrant and the eccentric, as before described. 55

Having thus fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

60 1. In a can-opener, a bar having a handle on one end and a toothed surface on one side between the shank and the opposite end; a slide embracing and fitted to move longitudinally on the bar; a cutting-blade forming a

rigid member of the slide and extending there- 65 from perpendicularly to the bar; a second blade projecting from the slide in a plane parallel with the bar; a lever pivotally attached to the slide, and means on the slide situated between the lever and the bar, and adapted 70 under the movement of the lever in one direction on its pivot to engage the toothed surface of the bar and move the slide longitudinally forward, and at the end of such movement to lock the slide on the bar. 75

2. In a can-opener the combination, with a bar provided with a handle on one end; of a slide movable longitudinally on the bar, means on the slide adapted by engaging the bar to move the slide forward a limited distance and at the end of such movement to lock the slide 80 on the bar, and a cutter attached to the slide having a shank provided with a Z-shaped bend standing in the plane of the bar and extending downwardly therefrom, and a cutting-blade 85 of triangular shape on the Z-shaped portion of said shank, extending forwardly in a plane substantially parallel with the bar, the said blade having an acute cutting-point, and a cutting edge back of said point standing ob- 90 liquely to the plane in which the slide moves forward on the bar.

3. In a can-opener, the combination of a shank comprising a straight bar provided with a handle portion and having a toothed surface 95 on one side; a slide embracing and fitted to move longitudinally on the bar; a lever pivotally mounted on the slide; means positively connecting the lever with the toothed surface of the bar and operating under the movement 100 of the lever in one direction to move the slide forward a given distance and lock it on the bar, and by a reverse movement of the lever operating to disconnect the slide from the toothed surface; and a cutting-blade on the 105 slide projecting at right angles to the bar and constituting a rigid member of the slide, and a second cutting-blade having a shank provided with an angular offset and a cutting portion extending forwardly of the offset. 110

4. In a can-opener, a shank formed of a bar provided with a handle, a slide longitudinally adjustable thereon, means for locking the slide on the bar, and a laterally-yielding cutting-blade on the slide extending forwardly thereof 115 in a plane parallel with the bar.

5. In a can-opener, a shank comprising a bar provided with a handle, a slide adjustable longitudinally on the bar, a laterally-yielding cutting-blade on the shank, a spring-tongue 120 operating to control such lateral movement, and means for locking the slide on the bar.

6. A can-opener, comprising a shank composed of a bar having a toothed portion on one side and provided with a prong on one end 125 and a handle on the opposite end; a slide adjustable longitudinally on the bar; means connecting the slide with the bar and adapted by

engaging the toothed portion thereof to impart a limited forward movement to the slide, and at the end of such movement operating to hold the slide rigidly on the bar; a cutting-  
5 blade formed as a rigid member of the slide and projecting therefrom perpendicularly to the toothed bar, and a second cutting-blade detachably secured to the slide and having a shank provided with an angular bend and a  
10 cutting-blade on the end of such bend extend-

ing forwardly thereof and parallel with the toothed bar.

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

HARRY WORTHINGTON THURLOW.

Witnesses:

EDWARD E. OSBORN,  
M. REGNER.