C. E. SKINNER.

GLASS TUBE CUTTER.

APPLICATION FILED FEB. 29, 1908.

936,674. Patented Oct. 12, 1909.

Fig. 1.

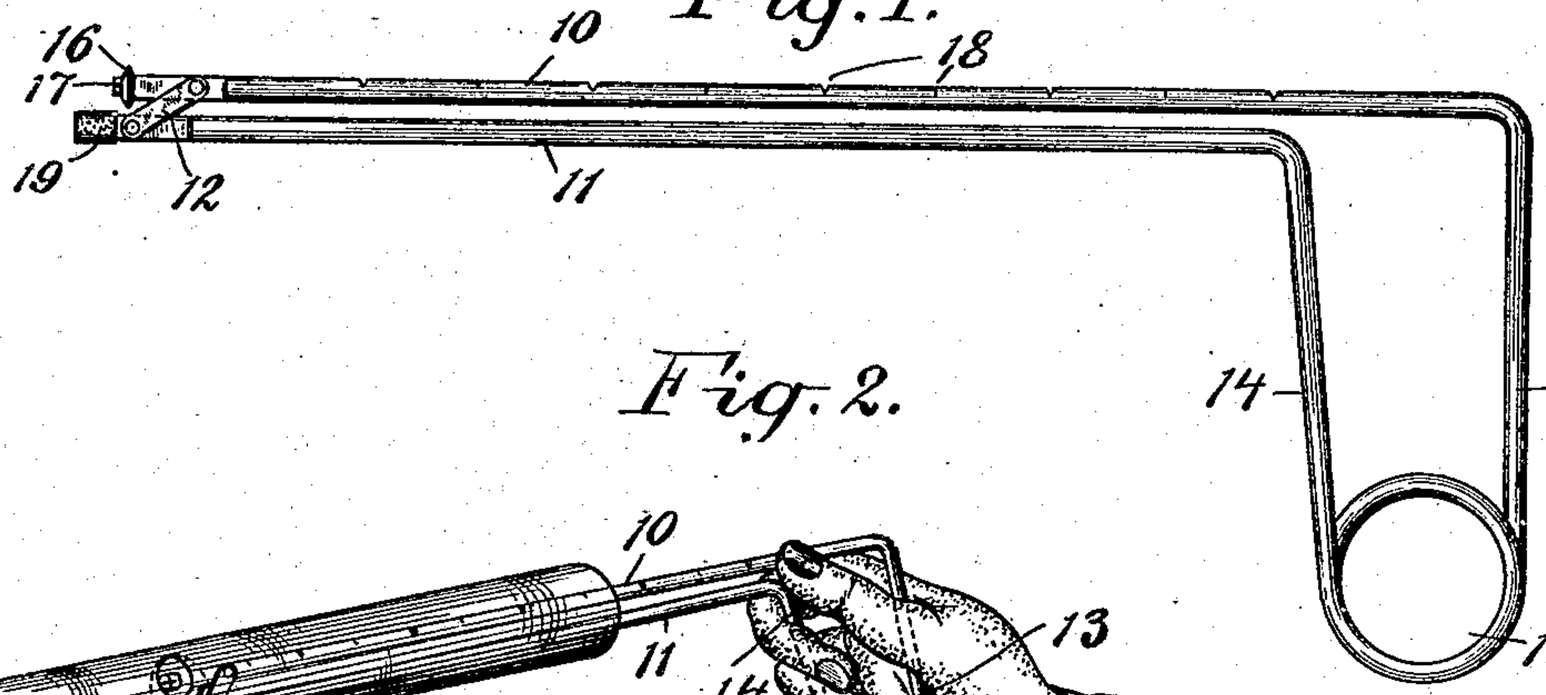


Fig. 2.

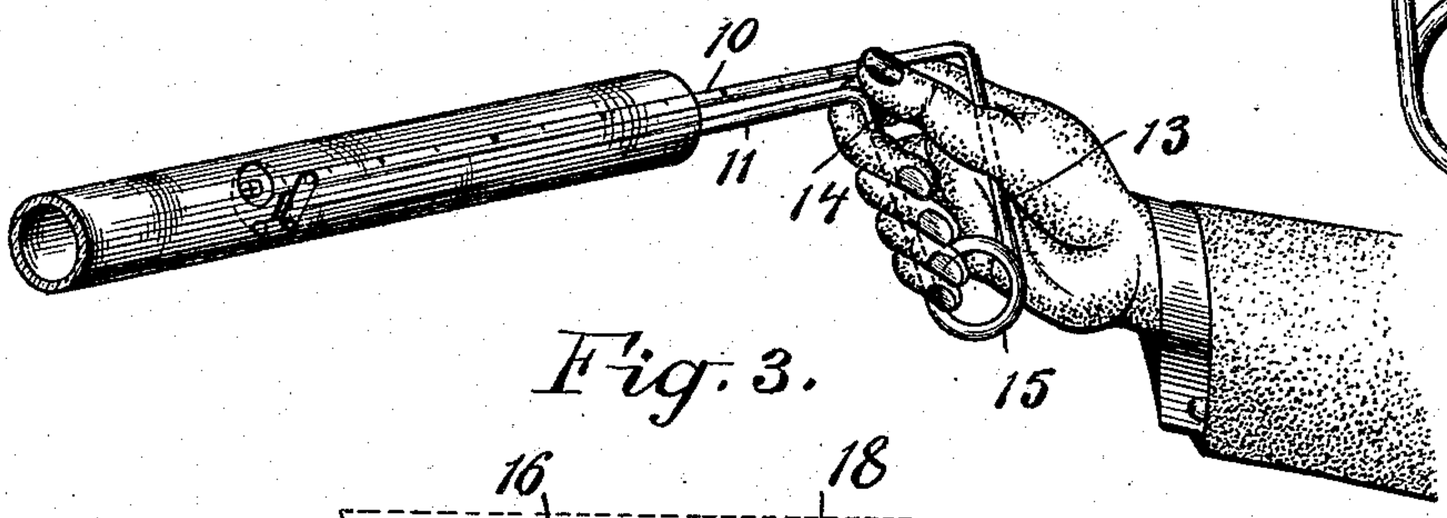


Fig. 3.

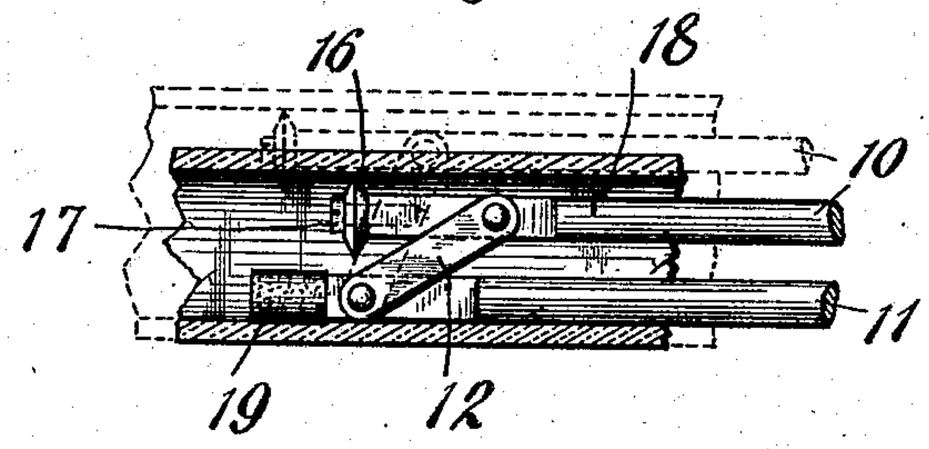


Fig. 8.

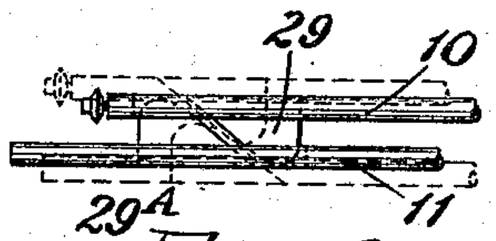


Fig. 4.

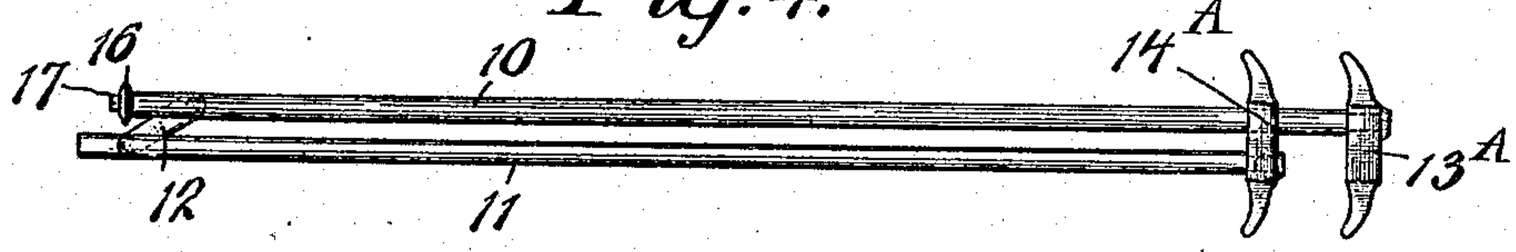


Fig. 5.

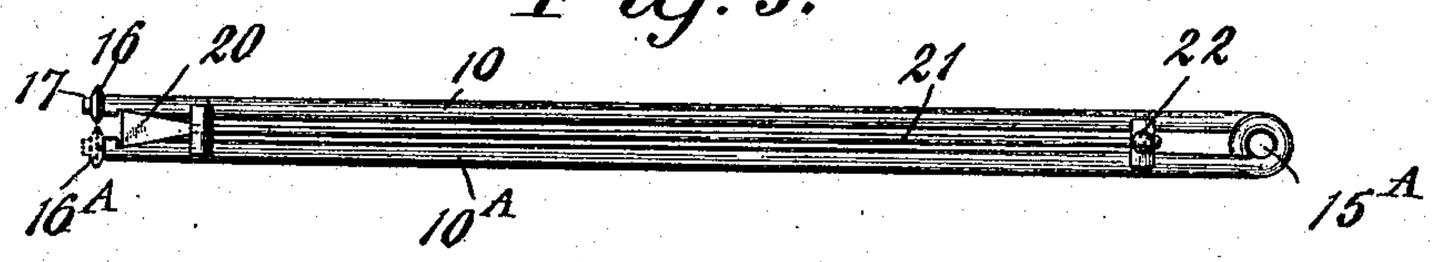
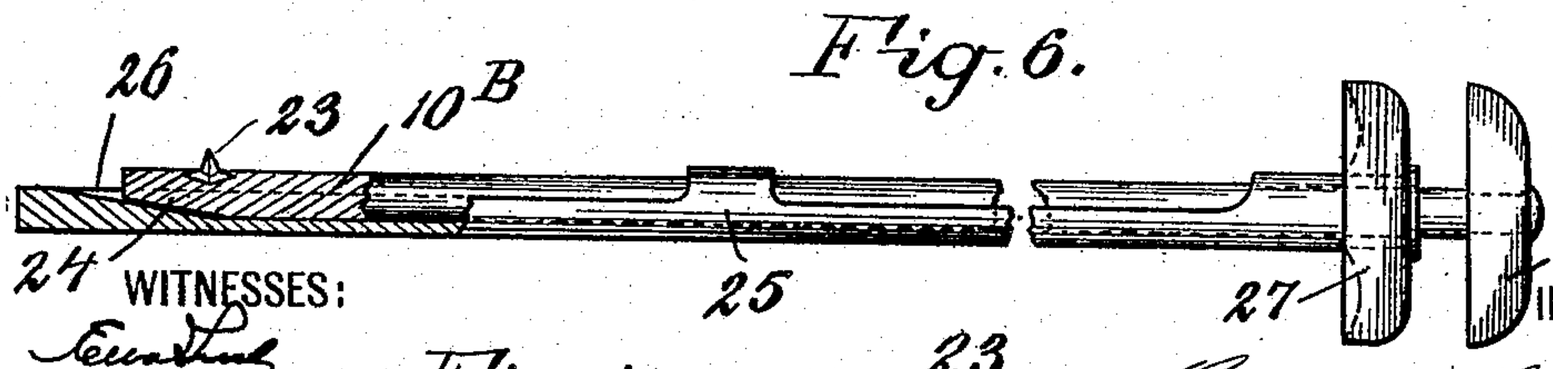


Fig. 6.

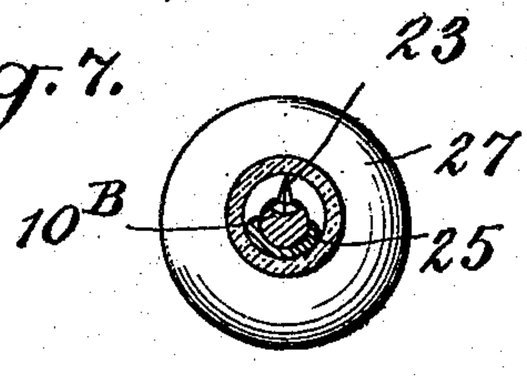


WITNESSES:

Edwin Lund

Geo L Carter.

Fig. 7.



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UNITED STATES PATENT OFFICE.

CHARLES E. SKINNER, OF YONKERS, NEW YORK.

GLASS-TUBE CUTTER.

936,674. Specification of Letters Patent. Patented Oct. 12, 1909.

Application filed February 29, 1908. Serial No. 418,426.

To all whom it may concern:

Be it known that I, CHARLES E. SKINNER, a citizen of the United States, and a resident of the city of Yonkers, in the county of Westchester and State of New York, United States of America, have invented certain new and useful Improvements in Glass-Tube Cutters, of which the following is a specification.

My invention relates to glass tube cutters and its object is to provide a simple tool for this purpose which shall be an improvement over those hitherto known in the art.

I will describe my invention in the following specification and point out the novel features thereof in claims.

Referring to the drawings, Figure 1 is a side elevation of a tool embodying my invention in a preferred form. Fig. 2 is a perspective view illustrating the manner in which this device is used. Fig. 3 is a side elevation on an enlarged scale of a portion of this tool showing the parts in different relative positions and also illustrating its operation. Figs. 4 and 5 are side elevations of two modifications of my invention. Fig. 6 is a side elevation, partly in section, of another form of this invention, and Fig. 7 is a cross section of the device as shown in Fig. 6, showing the parts as they appear within the section of a tube. The latter two figures are on a somewhat larger scale. Fig. 8 is a side elevation of one end of a tool made according to a still further modification of my invention, showing the parts in two different positions.

Like characters of reference designate corresponding parts in all of the figures.

10 and 11 designate parallel rods, the forward ends of which are connected together by an obliquely disposed link 12. This link is pivoted in both of the rods 10 and 11 which are preferably flattened at the points or junction as shown but which may, if desired, be provided with slots into which the link is inserted. The latter construction is shown in Fig. 4. The other ends of these rods may be bent down as at 13 and 14 and joined together through a loop or coil as at 15 to form a handle. The simple and preferred method of construction is to form these parts of a single piece of wire bent into the desired shape. At 16 a glass cutter is shown fastened onto the forward end of the rod 10 by means of a screw or pin 17. An ordinary hardened rotary disk is shown, but a diamond point or any other desired cutter may be used if desired. The top of rod 10 may be marked off as shown at 18 at regular intervals or distances, such as inches or fractions thereof, from the cutter 16. At 19 a collar of soft material such as a piece of rubber tubing is shown. This I sometimes place upon the forward end of the rod 11 to prevent it from scratching the tube. Before proceeding with the description of the forms of my invention shown in the other figures of the drawings, I will point out the operation of this arrangement.

The rods are thrust into a tube a desired distance which may be gaged by the graduations on the rod 10. The portion of the wire which forms the handle is then grasped in the hand and the pressure of the grip will move the two rods 10 and 11 by each other a certain amount, and this movement will cause the link 12 to push their ends apart. Thus the cutter will be pushed against the inner surface of the tube which may now be rotated. The result is a clean even cut, and the tube drops apart at the desired space. This simple manner of cutting a tube may be accomplished in a few seconds. It is to be noted that the desired pressure of the cutter against the inner surface of the tube is obtained as easily when the cutter is thrust as far as possible into the tube as it is when the cutter is used near the end of the tube. It is also evident that owing to the leverage of the link 12, the pressure under which the ends of the two rods are pushed apart increases as the distance between the ends increased.

The tube cutter shown in Fig. 4 is similar to that above described, except in this case the link 12 is set into slots in the rods 10 and 11 as has been mentioned, and the handle 13^A and 14^A, which are to be squeezed together to press the cutter against the tube, are of a different construction which will be readily understood from the drawings.

In Fig. 5 I have shown the inclined plane or wedge principle applied to this tool for

obtaining the required expansion at the cutting end. In this case a wedge 20 is placed between the two rods 10 and 10^A, which are joined together at 15^A, and the forward ends of these rods are cut away to fit against the sides of the wedge. A sliding member 21 is affixed to this wedge and on its other end is a handle 22 by means of which the wedge may be drawn back to expand the inner ends of the rods. The cutter 16 is shown on the rod 10 as in the former cases, and another cutter 16^A is indicated in dotted lines at the end of rod 10^A to show that if desired more than one cutter may be employed.

The construction shown in Figs. 6 and 7 is for use in conjunction with tubes of small diameter. In this case I have shown at 23 a diamond point cutter which may, of course, be used with the other forms of the invention if desired. This cutter is mounted near the end of a rod 10^B, the under end of which is cut away on a bevel as shown at 24. 25 is a split sleeve partly surrounding the rod 10^B. The outer end of this sleeve is enlarged in the form of a wedge 26 corresponding with the bevel 24. 27 is a button or handle affixed to the end of the sleeve 25, and 28 is a similar button or handle affixed to the end of rod 10^B. This tool may be inserted in a tube of very small diameter and it is evident that the cutter may be expanded against the inner surface of the tube by drawing the buttons 27 and 28 together.

A double wedge arrangement is illustrated in Fig. 8. One of the wedges 29 is affixed to the rod 10, and the other wedge 29^A is affixed to the rod 11. When a parallel movement, previously pointed out, is given to the rods 10 and 11, they will be pushed apart by the wedges into the position shown by the dotted lines in this figure.

What I claim is:—

1. A tool for cutting glass tubes comprising a pair of parallel rods, a cutter on one of said rods, the other rod forming a support for the first rod near its outer end, and means for separating said rods within a tube.

2. A tool for cutting glass tubes comprising a pair of parallel rods, a cutter on one of said rods, the other rod forming a support for the first rod near its outer end, and means for separating the ends of said rods within a tube from the end of the tube.

3. A tool for cutting glass tubes comprising a pair of parallel rods, a cutter on one of said rods, the other rod forming a support for the first rod near its outer end, and means for separating the ends of said rods within a tube from the end of the tube by moving one of said rods longitudinally in relation to the other.

4. In a tool for cutting glass tubes, a cutter, a support therefor comprising a pair of parallel rods relatively movable longitudinally to each other, said cutter being mounted upon one of said rods near its outer end, and means acting directly upon the outer ends of the rods for forcing said ends apart by said relative movement.

5. In a tool for cutting glass tubes, a pair of members relatively movable longitudinally to each other, said members being adapted to be thrust within a tube, a cutter rotatably mounted upon the outer end of one of the members, and means acting directly upon said outer ends for moving said ends of the members transversely apart when one of the members is moved longitudinally in relation to the other member.

6. In a tool for cutting glass tubes, a pair of parallel rods, a cutting disk rotatably mounted upon the end of one of the rods, a mechanical connection between the ends of said rods arranged to force the ends of said rods apart upon a longitudinal movement of one of the rods relative to the other.

7. In a tool for cutting glass tubes, a single piece of spring metal constructed to form a pair of straight parallel rods and a handle at substantially right-angles thereto, a cutting disk rotatably mounted upon the end of one of the rods, a link pivotally connected near the ends of the rods to each of said rods, and arranged to force the ends of said rods apart upon a longitudinal movement of one of the rods relative to the other.

8. In a tool for cutting glass tubes, a single piece of spring wire constructed to form a pair of straight parallel rods and a loop at substantially right-angles thereto, said loop forming a handle, a cutting disk rotatably mounted upon the end of one of the rods, a link pivotally connected near the ends of the rods to each of said rods and arranged to force the ends of said rods apart upon a longitudinal movement of one of the rods relative to the other.

9. In a tool for cutting glass tubes, a single piece of spring wire constructed to form a pair of straight parallel rods and a loop at substantially right-angles thereto, said loop forming a handle and being arranged to impart a longitudinal movement of the rods relative to each other, a cutting disk rotatably mounted upon the end of one of the rods, a link pivotally connected near the ends of the rods to each of said rods and arranged to force the ends of said rods apart upon said relative longitudinal movement of the rods.

10. In a tool for cutting glass tubes, a single piece of spring wire constructed to form a pair of straight parallel rods and a loop at substantially right-angles thereto, said loop forming a handle and being arranged to impart a longitudinal movement of the rods

relative to each other, a cutting disk rotatably mounted upon the end of one of the rods, a collar of soft material upon the end of the other rod, a link pivotally connected near the ends of the rods to each of said rods, and arranged to force the ends of said rods apart upon said relative longitudinal movement of the rods.

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

CHARLES E. SKINNER.

Witnesses:
FRANK H. CONNOLLY,
WILLIAM H. DUNSTONE.