W. HEYN.

Steadying-Gage and Glass-Tube Cutter.

No. 207,809. Patented Sept. 10, 1878.

Fig. 2.

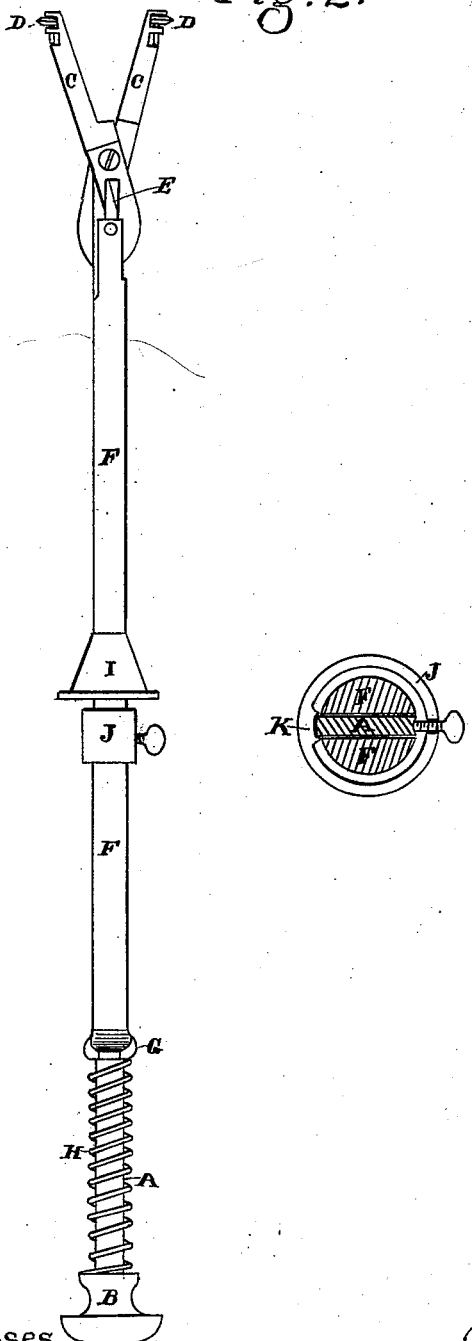
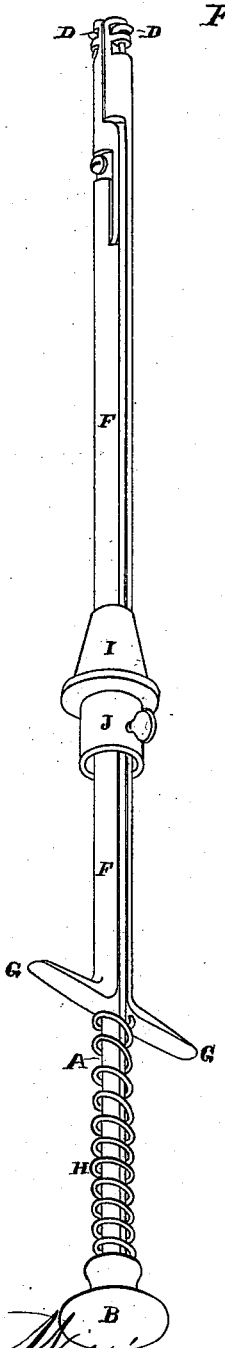


Fig. 1.



Witnesses

Ino L. Boone

Frank A. Brooks

Inventor

William Heyn

by Dewey & Co

Attys

UNITED STATES PATENT OFFICE.

WILLIAM HEYN, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN STEADYING-GAGE AND GLASS-TUBE CUTTER.

Specification forming part of Letters Patent No. **207,809**, dated September 10, 1878; application filed February 26, 1878.

To all whom it may concern:

Be it known that I, WILLIAM HEYN, of the city and county of San Francisco, and State of California, have invented a Steadying-Gage and Glass-Tube Cutter; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings.

My invention relates to a novel construction of an apparatus for cutting tubes; and it consists in an adjustable cutting device operating from the interior of the tube, and a steadying and centering flange, together with a gage for the length to be cut. These with other details of construction will be more fully described by referring to the accompanying drawings, in which—

Figure 1 is a view of my device. Fig. 2 shows it opened for cutting.

A is a stem or rod of sufficient length to extend into the tube and reach the point at which the cut is to be made. My apparatus, as here shown, is intended to be applied to the cutting of glass tubes such as are employed for gages and other purposes. The lower end of this stem is provided with a knob or handle, B, while the opposite end has arms C C pivoted to it, so as to open like a pair of shears, as shown. The cutters are mounted at the ends of these arms, and in the present case they consist of the steel rollers D, mounted upon axes, so that when the arms C are expanded these cutters will rotate against the sides of the tubes when the stem is turned around, thus cutting it. The axes of these cutters are placed so that when the arms C are closed the axes would meet, if prolonged a short distance beyond the end of the stem. This causes the cutters to stand at an angle when the arms are closed; but when they are opened the cutters will stand in the proper position to make a square cut.

In order to open or close the arms C, they have diagonal slots E made in their lower ends, and a pin from a sliding bar, F, enters or passes through the slots, so that when this bar is moved longitudinally along the stem A it will operate to open or close the arms and cutters.

For convenience, the moving bar F is made in two parts semi-cylindrical in shape, and the stem A is flattened, so that when these two halves are applied to each side it makes a complete rod, cylindrical or nearly so.

The two parts of the rod F are secured together by screws or rivets, which extend from one to the other through slots made through the stem A, so that the rod F is movable upon the stem, as before described.

The lower ends of the two parts of F may be bent outward to make a handle, G, by which to operate the device, and a spiral spring, H, surrounding the stem, forces the rod up and keeps the cutters closed, unless the rod be pulled downward.

In order to center the rod and apparatus in the tube to be cut, so that the cut shall be accurately and squarely made, I make use of a conical guide, I, which slides loosely upon the stem, and is held at the point for any desired length of tube by a set-screw in an independent sleeve, J. The conical guide rests against the square shoulder of the sleeve, and is thus allowed to turn loosely upon the rod or stem where the tube is being cut, and it holds all parts exactly in the center.

In order to secure the sleeve J to the stem without binding the movable rod, the interior of the sleeve is formed with a projection-rib, K, so grooved as to rest against one edge of the stem A, while the set-screw binds against the opposite edge, but leaves the outside rod, F, free to slide when desired.

The operation will then be as follows: The sleeve being set at a point to gage the length of tube to be cut, the stem is inserted into the tube until the guide I centers it in the tube. The outside rod is drawn down by means of its handle G, and this spreads the arms C until the edges of the cutters rest against the interior of the tube. A turn or two will cut the tube sufficiently to allow it to be easily separated, and the cut is squarely made.

The device is of great convenience for tube-cutting of all kinds, but is especially valuable where the exterior of the tube is not easily got at.

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

1. The arms C, carrying the cutters D and pivoted to the stem A, said arms being opened

and closed by a pin on the sliding rod F, operating in diagonal slots or grooves E in the arms C, substantially as herein described.

2. The stem A, flattened as shown, and having the semi-cylindrical halves F secured upon opposite sides, so as to form a complete rod, the parts being movable longitudinally, substantially as and for the purpose herein described.

3. The cutters D, mounted so as to stand at an angle when closed, and at right angles with the tube when opened to make a cut, substantially as herein described.

4. The conical centering-guide I, constructed to fit the tube and steady the apparatus while cutting, substantially as herein described.

5. The gage-sleeve J, having the rib K and set-screw, constructed to clasp opposite sides of the stem A, substantially as and for the purpose herein described.

In witness whereof I have hereunto set my hand and seal.

WM. HEYN. [L. S.]

Witnesses:

BERNARD DONOHUE,

HARRY WHEELER.