

No. 677,129.

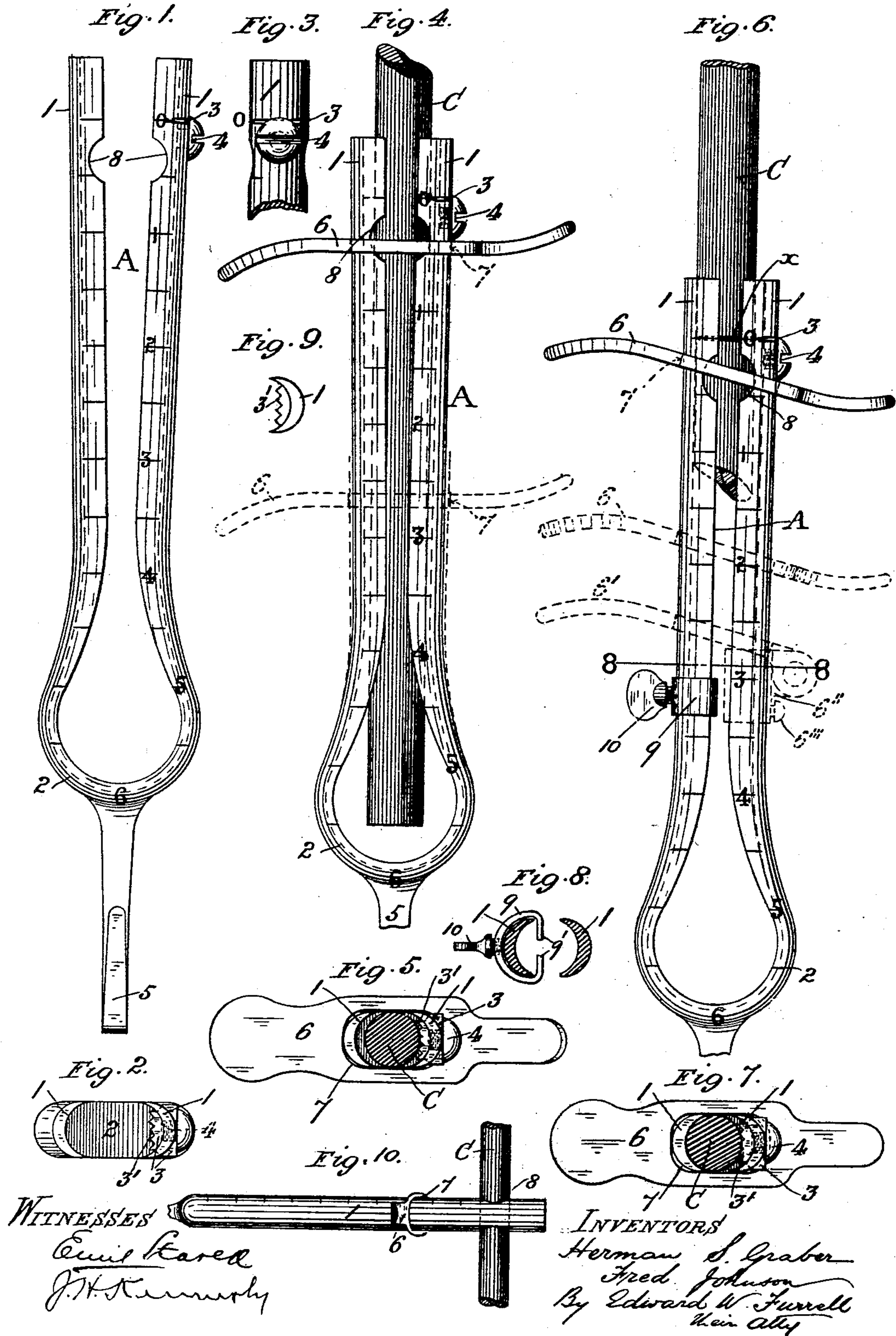
Patented June 25, 1901.

H. S. GRABER & F. JOHNSON.

CUTTING TONGS OR PLIERS.

(Application filed Nov. 5, 1900.)

(No Model.)



UNITED STATES PATENT OFFICE.

HERMAN S. GRABER AND FRED JOHNSON, OF ST. LOUIS, MISSOURI.

CUTTING TONGS OR PLIERS.

SPECIFICATION forming part of Letters Patent No. 677,129, dated June 25, 1901.

Application filed November 5, 1900. Serial No. 35,510. (No model.)

To all whom it may concern:

Be it known that we, HERMAN S. GRABER and FRED JOHNSON, citizens of the United States, and residents of St. Louis, in the State of Missouri, have invented a new and useful Improvement in Cutting Tongs or Pliers, of which the following is a specification.

Our invention relates to tongs or pliers specially adapted for gripping and cutting or trimming the carbons of an electric-arc lamp. Usually the carbons are gripped and removed from an electric-arc lamp by hand or with ordinary pliers and the unburned portion of the upper carbon utilized and measured for a new lower carbon by a measuring-scale and marked or partially cut circumferentially at the desired distance from its unburned end by a saw-blade and then broken thereat; but owing to the irregular line of cut produced in manipulating the saw-blade the carbon where broken has a jagged or uneven end, which when the carbons are inserted in the lamp and subjected to the electric current cause an imperfect light and wasteful combustion. Also by using the separate tools named considerable time is lost in trimming the lamp.

Our invention has for its object to effect the removal and trimming of the carbons with a single tool in a simple, expeditious, and practical manner and so that a true end is insured to the carbon where broken and a uniform light thereby obtained.

The invention consists in features of novelty, as hereinafter described and claimed, reference being had to the accompanying drawings, forming part of this specification, whereon—

Figure 1 is a side view of our improved cutting tongs or pliers; Fig. 2, a top plan of the same, and Fig. 3 an outer view taken at right angles to Fig. 1 of one of the arms of the tongs broken away, showing a corresponding view of the cutter combined therewith. Fig. 4 is a side view of the tongs and their closing device in position for engaging a carbon, and Fig. 5 a top plan of the same. Fig. 6 is a similar view to Fig. 4, showing the tongs closed by the closing device so as to grip the carbon, and Fig. 7 a top plan view thereof. Fig. 8 is a cross-section through the arms of the tongs on line 88 in Fig. 6, showing the stop-gage combined therewith; Fig. 9, a top plan of

one of the arms of the tongs, showing a cutter integral therewith; and Fig. 10, an outer view of the tongs and closing device to reduced scale and taken at right angles to Fig. 6, showing the carbon gripped thereby at right angles instead of longitudinally.

Like letters and numerals of reference denote like parts in all the figures.

A represents our improved cutting tongs or pliers, which consist of two opposite arms 1, connected to each other at one end in any suitable manner, whereby the arms 1 may be closed together or separated, but preferably, as shown, by a springy bent portion 2, or the arms 1 may be connected together hingewise and provided thereat with an intermediate spring in any ordinary and well-known manner. The inner or opposite gripping-faces of the arms 1 are preferably concave, respectively, in cross-section, whereby the arms 1 are adapted to embrace or close around and grip the carbon of an electric-arc lamp, screw-head, or other circular object to which the tongs A may be applied.

Through the wall of one of the arms 1, near its outer free end, at right angles and transversely to the said arm 1, is inserted from the outside of the arm 1 a cutter blade or plate 3, which projects partly into the concavity of the arm 1 and is formed thereat on its inner edge with cutting-teeth 3'. The blade 3 is held in place preferably by a screw 4, which is threaded into the wall of the arm 1 immediately below the blade 3, the head of the screw 4 overlapping and bearing against the outer exposed edge of the blade 3, as shown, or the blade 3 may be fixed to the arm 1 in any other suitable manner, or it may be formed integrally with the wall of the arm 1, as shown in Fig. 9.

Along the outside of one (or both) of the arms 1 is marked a scale of inches, the zero-mark whereof corresponds to the plane of the cutting-teeth 3' of the blade 3.

From the connecting portion 2 of the arms 1 preferably projects a screw-driver 5, which may either be formed integrally with the tongs A, as shown, or fixed thereto in any suitable manner.

The arms 1 of the tongs A may be closed together for gripping a carbon or other object by hand, if desired, and separated on re-

leasing the hand by the resilience of the bent connecting portion 2; but we prefer to use for the purpose of closing the arms 1 the closing device shown in Figs. 4 and 5, which consists of a suitably-shaped flat bar 6, having therethrough, at the middle or thereabout, a hole or slot 7, whereby the bar 6 is slipped over the arms 1 of the tongs A to any convenient part along the same, the arms 1, owing to their resilience, being normally held by the ends of the slot 7 at a suitable distance apart ready for use, or, if preferred, the bar 6' (indicated by broken lines in Fig. 6) may be hinged at one end to a bracket 6'', which is adapted to be moved along the arm 1 and held thereto at any desired point by a set-screw 6''', or any other suitable mechanical means may be used in combination with the tongs A for closing the arms 1.

In operation, for removing a carbon from its lamp the tongs A may be passed longitudinally over and along the burned end portion of the carbon C, as seen in Fig. 6, or so that the carbon C is between but clear of the concave surfaces of the arms 1, with the closing device 6 7 in its initial or normal position on the arms 1, as seen in Fig. 4, or in any corresponding position along the arms 1, as indicated by broken lines. The bar 6 of the closing device is then thrown and held by the hand into the inclined position seen in Fig. 6, or so that the ends of its slot 7 will constrain and close the arms 1 toward each other, and thereby grip the carbon C, which can then be removed from the lamp by the tongs A, or in case through want of space the carbon C cannot be gripped by the tongs A longitudinally therewith it may be gripped from the side, for which purpose opposite concave notches 8 are formed in the closing edges of the arms 1, transversely thereto, so that on closing the arms 1 the notches 8 will embrace and grip the carbon C at any part of its length and at right angles to the tongs A, as seen in Fig. 10.

For cutting and trimming the carbon C (presumably a top carbon, for example) after its removal from the lamp the carbon C is inserted between the arms 1 of the tongs A, as seen in Fig. 4, until its unburned end is at a distance from the zero-mark (and cutter 3 3') on the scale of inches corresponding to the desired length of the lower carbon, the arms 1 being then closed by the bar 6 until the cutting-teeth 3' are in contact with the carbon C or in the position seen in Fig. 6, when the carbon C is gripped and marked thereat by the teeth 3'. The carbon C is then withdrawn from the tongs A, reversed, and reinserted at its burned end between the arms 1 until the mark previously made thereon is opposite to the cutting-teeth 3', when the arms 1 are closed upon the carbon C, the longest portion of which now projects beyond the tongs A. The carbon C is then held firmly by one hand and the tongs A rotated by the other hand, thereby causing the cut-

ting-teeth 3' to make a circular indentation or cut x in the circumference of the carbon C, as seen in Fig. 6. The carbon C is then released from the tongs A and broken at the cut x , which being a regular line throughout produces an even square end to the carbon C.

When a considerable number of carbons are to be cut to the same length, we may use a stop-gage, Figs. 6 and 8, which consists of a clamp 9, embracing and adapted to slide along one of the arms 1, to which it is fixed at any desired distance from the zero-mark of the scale of inches by a set-screw 10, the parts 9' of the clamp 9 projecting across the concavity of the arm 1, and thereby operating as a stop to the carbon C when inserted between the arms 1.

By making the gripping-surfaces of the arms 1 concave in cross-section, conformably more or less to the circumferential surface of the carbon C, the latter is gripped uniformly, and thereby preserved from abrasion or fracture.

By the use of the screw-driver 5, projecting from the connecting portion 2 of the arms 1, the top carbon-holder can be held thereby firmly in position while inserting the carbon into the holder, besides being also applicable for the tightening of screws used in the construction of the lamp.

If desired, the concave edges of the notches 8 in the arms 1 may be serrated or fluted as in ordinary pincers.

By combining the measuring-scale and cutting-blade with the tongs in a single tool which can be carried in the pocket the removal, trimming, and replacing of the carbons are effected more expeditiously and accurately than with separate tools, as at present, which are awkward to handle and cumbersome, do the work imperfectly, and are liable to be mislaid or lost when needed.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a pair of tongs or pliers, the combination with the arms having their opposite or gripping faces concave in cross-section, of a blade located within and across the concavity of one of the arms, at right angles to the said arm, the said blade having a cutting edge adapted to engage the circumference of the object gripped by the tongs between the said faces, substantially as described.

2. In a pair of tongs or pliers, the combination with the arms having their opposite or gripping faces concave in cross-section, of a blade inserted through the wall of one of the arms and across the concavity thereof at right angles to the said arm, the said blade having a cutting edge adapted to engage the circumference of the object gripped by the tongs between the said faces, and means for fixing the blade to the said arm, substantially as described.

3. In a pair of tongs or pliers, the combination with the arms having their opposite or gripping faces concave in cross-section, of a

blade inserted through the wall of one of the arms and across the concavity thereof at right angles to the said arm, the said blade having a cutting edge adapted to engage the circumference of the object gripped by the tongs between the said faces, and a screw, threaded into the said arm and having its head overlapping the outer exposed edge of the said blade, substantially as described.

4. In a pair of tongs or pliers, the combination with the arms having their opposite or gripping faces concave in cross-section, of a blade fixed in the concavity of one of the arms at right angles to the said arm, the said blade having a cutting edge adapted to engage the circumference of the object gripped by the tongs between the said faces, and means for closing the arms toward each other, substantially as described.

5. In a pair of tongs or pliers, the combination with the arms having their opposite or gripping faces concave in cross-section, of a blade fixed in the concavity of one of the arms at right angles to the said arm, the said blade having a cutting edge adapted to engage the circumference of the object gripped by the tongs between the said faces and a bar having a hole therethrough encircling the

arms and adapted at its edge to engage the arms for closing them together, substantially as described.

6. In a pair of tongs or pliers, the combination with the arms having their opposite or gripping faces concave in cross-section, of a blade fixed within the concavity of one of the arms at right angles to the said arm, the said blade having a cutting edge adapted to engage the circumference of an electric-light carbon, and a scale of inches marked along one of the arms, substantially as described.

7. In a pair of tongs or pliers, the combination with the arms having their opposite or gripping faces concave in cross-section, of a blade fixed in the concavity of one of the arms at right angles to the said arm, the said blade having a cutting edge adapted to engage the circumference of an electric-light carbon, a scale of inches marked along one of the arms, and a stop-gage adjustable along one of the arms for determining the length of the carbon, substantially as described.

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