

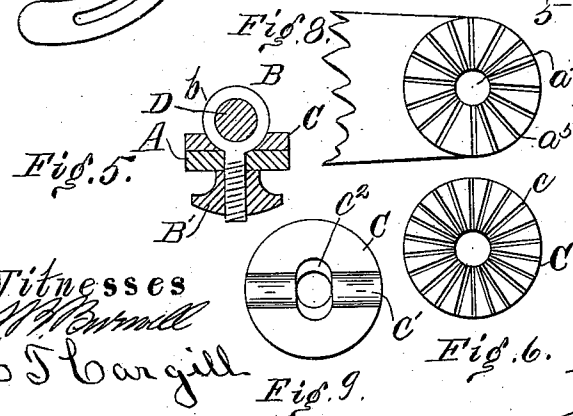
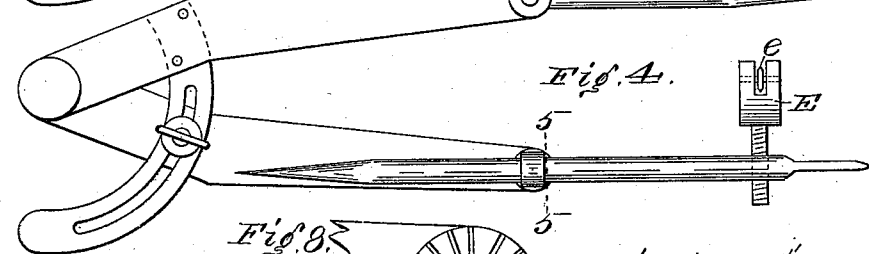
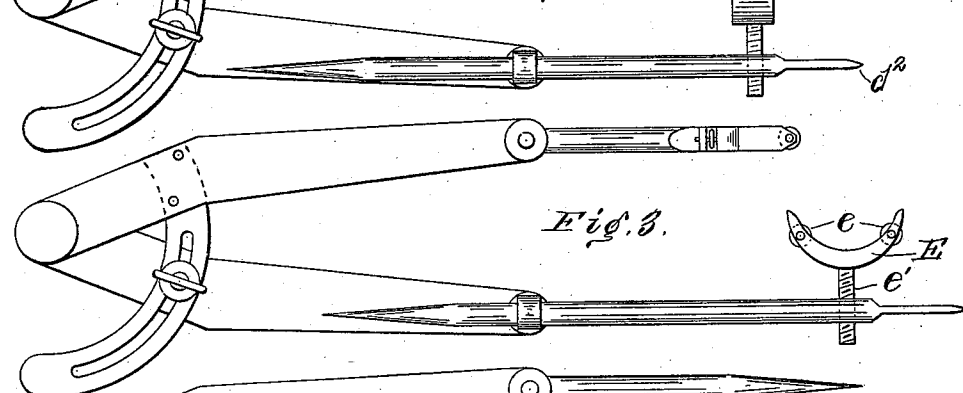
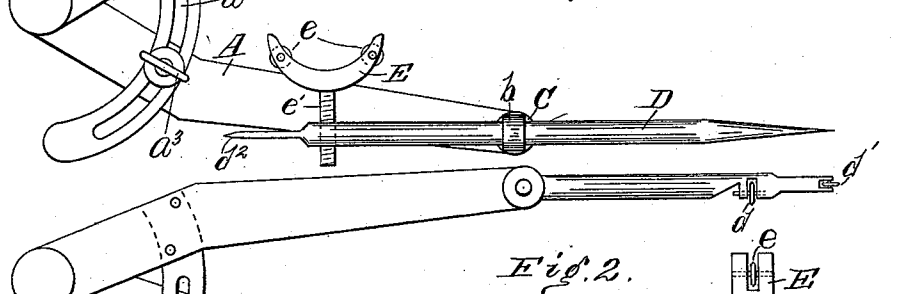
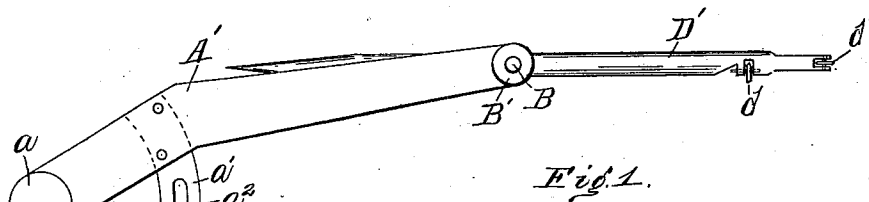
(No Model.)

J. KOHLER.

COMBINATION COMPASSES AND GLASS CUTTER.

No. 546,669.

Patented Sept. 24, 1895.



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COMBINATION COMPASSES AND GLASS-CUTTER.

SPECIFICATION forming part of Letters Patent No. 546,669, dated September 24, 1895.

Application filed May 31, 1895. Serial No. 551,150. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH KOHLER, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in a Combination Compasses and Tram; and I declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to novel features in combination-tools, and particularly in a compass and tram.

The object of my invention is to provide a simple, durable, convenient, and inexpensive combination-tool for the use of machinists and others; and it consists in simple and effective means of securing compass or tram points having on one end thereof cutter-wheels for cutting glass or glass or other tubing, leather, &c., to the free ends of compass-legs and locking such points securely in tram or parallelism or in any other desired position, in conveniently reversing the tram-points end for end, as desired, without removing them from the compass when it is desired to cut glass, or glass or other tubing, or leather washers or rubber gaskets, with suitable devices provided for such or other purposes upon the other ends of said points, thus making a tool which is at once capable of performing all of the usual purposes of a compass and many other purposes without detracting from its convenience or adding to its weight, and without the added or novel features on the ends not in use interfering with the ends in use.

My invention also consists in a novel arrangement for cutting the inside and outside of glass or other tubing simultaneously, thus producing a more even and regular finish than the old method of cutting on the inside alone; and it also consists in providing the tram-point with a pivotally-mounted yoke or fork, having cutting-wheels mounted therein to receive and hold the tubing and cut it from the outside only in connection with a cutting-wheel in the end of the opposite tram-point.

In the drawings, Figure 1 is a perspective view of my improved device, showing the compass or tram points parallel with each other, properly adjusted for cutting glass.

Fig. 2 is a view of the same, showing one tram-point reversed for cutting the corresponding outside and inside surfaces of glass or other tubing simultaneously by the cutting-knives mounted in the side of one of the tram-points and in the pivotally-mounted yoke-support for the tube in the other tram-point. Fig. 3 is a view of the same, showing the tram-points adjusted for cutting only on the outside of the tubing. Fig. 4 is a similar view showing the tram-points adjusted for cutting leather washers, rubber gaskets, &c. Fig. 5 is an enlarged detail view showing the locking mechanism for fastening the tram-points to the compass, the same being made in cross-section on the line 5 5 of Fig. 4. Fig. 6 is an enlarged detail view of the washer interposed between the compass-leg and the tram-point upon the loop-screw, showing corrugations upon one side adapted to mesh with similar corrugations on the inside and at or near the free end of the compass-leg for adjusting and locking the tram-point in any desired position. Fig. 7 is a detail view of the tram-points in the position shown by Fig. 3, with the tube in position for performing the cutting operation. Fig. 8 is an enlarged detail view of the inside of the free end of one of the compass-legs, showing the corrugations adapted to mesh with and lock the washer in any desired position. Fig. 9 is an enlarged detail view of the outside of the washer, showing a groove across its center to receive the tram-point and countersunk transversely to said groove to form a socket to receive the head of the loop-screw and prevent it from turning in said washer.

The compass-legs A A', which are preferably flat, are pivotally secured together at the top by rivet *a* in the usual manner. Said compass-legs are adjustably connected near their pivotal ends by a suitable quadrant *a'*, rigidly secured at one end to one of the compass-legs, and adjustably secured to the other compass-leg by a set-screw *a*³, taking into slot *a*², in which it is adapted to be moved and be fastened at any desired point in the usual manner. The inner flat side of the free end of each compass-leg has corrugations *a*⁵, meshing with corrugations *c* on the inner face of a washer C, the other face of which has a groove *c'* to receive the tram-

point and prevent it from turning, said washer being provided with a socket c^2 , countersunk transversely to said groove to receive loop b and prevent loop-screw B from turning in said washer. The tram-points D D' are each secured to the compass-leg by being inserted into loop b of loop-screw B and passing said screw through said washer and hole a' in compass-leg and fastening them together by thumb-nut B'. The washer C is interposed between the compass-leg and tram-point and provided with corrugations on one side and a groove and socket on the other side to securely lock the tram-points and prevent them from turning on the axis of the loop-screw B.

The tram-points D', Figs. 1, 2, 3, and 7, are provided at and near the end with suitable cutter-wheels d and d' . The tram-points D, Figs. 1, 2, 3, 4, and 7, are provided with pivotally-mounted yoke-support E, having cutter-wheels e mounted therein, said yoke being secured to the tram-points by screw e' . The compass or tram points D of Figs. 1, 2, 3, 4, and 7 are each provided with a gasket-cutter d^2 upon one end.

The operation of my device is substantially as follows: Insert the tram-points into the loop-screw B and secure to compass-legs, as above described. Adjust by means of quadrant and set-screw a^3 the compass-legs any desired distance apart and secure in that position. Then bring the compass-points into parallelism or tram, locking them securely in that position by thumb-nut B'. When cutting plates of glass, use the needle-point of one tram-point and the glass-cutter in the other, as shown in Fig. 1. Having placed the point D in the center of the portion of glass to be cut, press the cutter to the glass, turning it around tram-point D until it describes a circle, when the work is accomplished. To cut leather washers or rubber gaskets, adjust the points as shown by Fig. 4 and proceed in the same manner as above described for cutting plates of glass into circular pieces.

To cut glass or other tubing on the inside and outside simultaneously, adjust the tram-points, as shown in Fig. 2. Place the tube over tram-point D' and press yoke-support E against the tubing, at the same time turning the tube until the entire outer and inner circumferences thereof have been cut by the cutter-wheels. This being done the work is accomplished. If the tubing should be too small to permit the insertion of tram-point D', the cutting may be done from the outside by arranging the tram-points and cutters, as shown in Figs. 3 and 7, placing the tube in position, as shown in Fig. 7, and turning the tube as before, when the operation is easily and quickly performed.

The advantages of this device will be apparent. Adjusting and locking compass-points in tram in any desired position or distance

apart and adding other novel and useful devices to the tram-points, which may be retained upon the compass without interfering with its operation while it is being used in the ordinary way, and facility of using such novel features by reversing the tram-points end for end and adjusting, as desired, are of great value and advantage. Many more purposes can be accomplished by the same tool, while it is just as light, convenient, and cheap as the ordinary compass. The advantage of adjusting the compass-points to tram is to bring the cutting-wheel perpendicularly down on the object to be cut and thus perform a finer and more successful operation.

While I prefer to apply my glass-tube cutters for cutting the outside and inside simultaneously to the style of compass and tram here shown and described, and can secure better results by so doing, it is evident that they may be applied to other forms of compasses.

What I claim as new and useful, and desire to secure by Letters Patent, is—

1. In a combination compass and tram, a tram point having glass cutters mounted at and near its outer end in combination with the other tram point having a pivotally mounted yoke provided with one or more glass cutters, substantially as described and for the purposes specified.

2. In a combination compass and tram, a tram point provided with a pivotally mounted yoke, in combination with the opposite tram point provided with suitable cutters, substantially as described and for the purposes specified.

3. In a combination compass and tram, tram points adjustably secured to the free ends of the compass legs and adapted to be locked in parallelism, or otherwise, one of said points having a cutter mounted upon its side and adapted to cut the inner circumference of a tube simultaneously with cutters for cutting the corresponding outer circumference thereof, said cutters being mounted in a yoke pivotally secured to the other tram point, substantially as described.

4. In a combination compass and tram, the tram points pivotally adjustable and adapted to be locked in parallelism to each other at any desired distance apart, the outer end of one tram having a suitable cutter and the outer end of the other tram having the needle point, substantially as described and for the purposes specified.

5. A pivotally mounted yoke E provided with one or more cutters e in combination with a compass point substantially as described and for the purposes specified.

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