Oct. 25, 1932. C. J. FANCHER 1,884,635

GLASS CUTTER

Filed July 6, 1928

FIG. 1

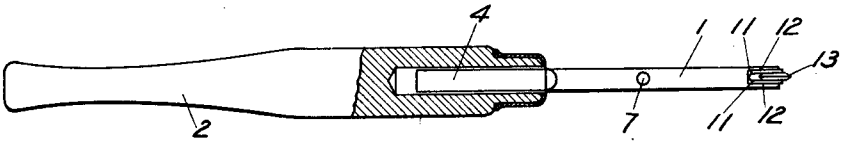

FIG. 2

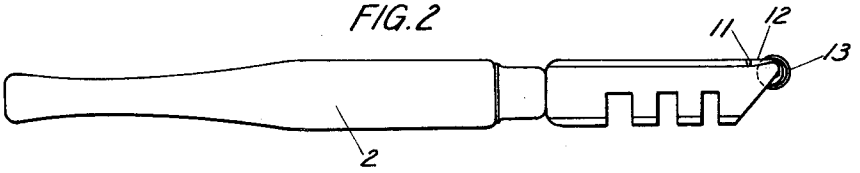

FIG. 5

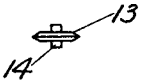

FIG. 3

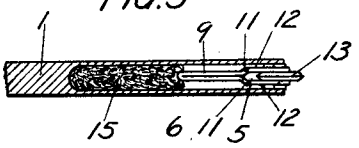

FIG. 6

FIG. 8

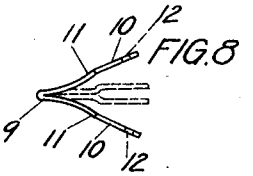

FIG. 4

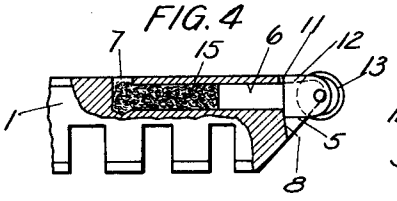

FIG. 7

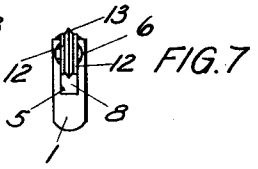

FIG. 9

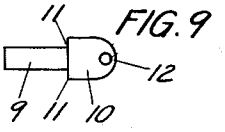

FIG. 10

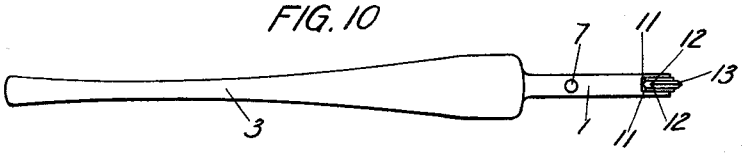

FIG. 11

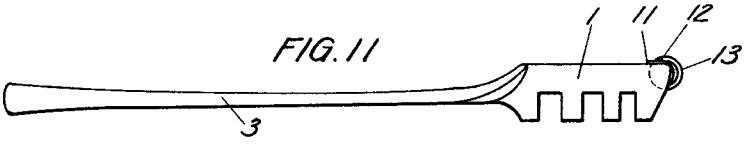

FIG. 12

FIG. 13

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Patented Oct. 25, 1932 1,884,635

UNITED STATES PATENT OFFICE

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GLASS CUTTER

Application filed July 6, 1928. Serial No. 290,746.

My invention relates to improvements in glass cutters wherein the cutting wheels are mounted to revolve in holders that are attachable to and detachable from the heads of the cutters and resides more particularly in a head and a wheel holder or retainer each of peculiar construction, and also in the special wheel which I prefer to use, as hereinafter more fully explained.

One object of my invention is to produce a comparatively simple and inexpensive glass cutter equipped with a retainer for the cutting wheel, which retainer can be easily, quickly, and conveniently removed and replaced, as is necessary whenever a new wheel is needed, and wherein or wherewith the interchange of wheels can be readily effected. A wheel of this character becomes so worn and dull in time as to render it useless, and then it is necessary to remove the old wheel and insert a new wheel in place thereof, and it is primarily to facilitate such replacements that I have invented the present glass cutter. My retainer is held against a shoulder or abutment, in the head of the cutter, by frictional engagement with said head, and is removed by introducing the thumb nail behind a projecting part or parts of said retainer and forcing the latter out of the head.

Another object is to provide the glass cutter with lubricating means for the cutting wheel.

A further object is to facilitate the replacement operations by employing a cutting wheel which has a fixed, integral, or extended axle.

Other objects and advantages will appear in the course of the following description.

I attain the objects and secure the advantages of my invention by the means illustrated in the accompanying drawing, in which

Figure 1 is a top plan of a glass cutter which embodies a practical form of my invention, portions of the handle being in section; Fig. 2, a side elevation of said cutter; Fig. 3, an enlarged, transverse, longitudinal section through the head of said cutter with the retainer and cutting wheel in top plan; Fig. 4, an enlarged, side elevation of the parts shown in Fig. 3, with portions of the head in section; Fig. 5, an enlarged, top plan of the preferred cutting wheel; Fig. 6, an enlarged, side elevation of said wheel; Fig. 7, a front end elevation of so much of the cutter as appears in Fig. 3; Fig. 8, an enlarged, top plan of the retainer, showing the same expanded in full lines and contracted in broken lines; Fig. 9, a side elevation of said retainer; Fig. 10, a top plan of a glass cutter the head and handle of which are integral; Fig. 11, a side elevation of said last-named cutter; Fig. 12, an enlarged, side elevation of a cutting wheel without the integral axle, and, Fig. 13, an enlarged, side elevation of an axle for said last-named wheel.

Similar reference characters designate similar parts throughout the several views.

My glass cutter includes a head 1, and either an attached wooden handle 2, or an integral metal handle 3, the head in Figs. 10 and 11 being generally similar to the head in the Figs. 1, 2, 3, 4, and 7, and each having a recessed edge, as is usual and for the usual purpose. Inasmuch as the two heads with their equipments illustrated in connection herewith are practically the same, a detailed description of one is all that is necessary for a clear understanding of my invention which is embodied in each. I will, therefore, accordingly, proceed applying the description more particularly to the head and parts shown in the first nine views. When the wooden handle 2 is present, the head 1 has a shank 4 that is received and secured in said handle. The present invention being related to the head 1, no further description of or explanation in regard to the handle is needed. The head 1 at the front end is preferably and as usual beveled or inclined from above downwardly and rearwardly.

The head 1 at the forward terminal has therein a slot 5 which opens through the foremost part and through the top and bottom or inclined edge of said head. The head 1 is bored back of the slot 5 to form a horizontal passage 6 and said head is further bored from above to form an opening 7 into said passage at right-angles thereto. Thus the passage 6 opens at the front end into the

rear end of the slot 5, and at the rear terminal into the opening 7, and through said opening to the top of the head 1. The inner end of the slot 5 forms a shoulder or abutment 8. The diameter of the passage 6 is somewhat longer than the width of the slot 5, but said slot at the place where said passage opens into the same is longer than said diameter.

A holder or retainer 9 consists of a piece of resilient metal shaped and bent in the transverse center to form two arms with enlarged front terminals which form bearings 10. The bearings 10 are offset laterally and in opposite directions from the arms of the retainer 9, and each bearing extends above and below its arm to form a shoulder 11—11, and has therein near the front edge an opening 12. The retainer arms form a double or two-piece shank which, after passing through the slot 5, is adapted to be received in the passage 6 and engage the top and bottom of said passage, and the bearings 10 are adapted to be received in said slot, with the bottom shoulders 11 against the abutment 8 below the front end of said passage, and the upper shoulders 11 slightly in advance of the inner end of said slot above said front end of the passage, provided the two main sections or portions of said retainer be pressed together. Normally, when the retainer 9 is out of the head 1, the main sections thereof spring apart or open out, substantially as shown in full lines in Fig. 8, consequently, in order to insert said retainer in said head, it is necessary to close said retainer and thereby bring its arms into contiguity with each other and its bearings into parallel relationship with each other, substantially as shown by broken lines in Fig. 8, and as appears in Figs. 1, 3, 7, and 10.

Sufficient space is left between the upper shoulders 11 and the adjacent end portion of the slot 5 in the head 1, when the retainer 9 is in place in said head, for the introduction of the thumb nail behind said shoulders. By introducing the thumb nail behind the upper shoulders 11, the retainer 9 can be forced out of the slot 5 and the passage 6 and entirely removed from the head 1. When the retainer 9 is in position in the head 1, with the under shoulders 11 against the abutment 8, said retainer is held in said head by the frictional engagement between the two members, and more especially or particularly between the bearings 10 and the sides of the slot 5.

The parts and members may be so proportioned that the upper shoulders 11 extend slightly above the top of the head 1, as clearly shown in Fig. 11.

The retainer 9 being symmetrical, it is immaterial which longitudinal edge portion thereof is uppermost when said retainer is placed in the head 1.

A cutting wheel 13, provided with an integral or extruded axle 14, is receivable between the retainer bearings 10, with each end of said axle in one of the openings 12, when said retainer is closed or when its main sections are pressed toward each other until the shank arms are in contact. While holding the retainer closed, with the axle 14 in the bearings 10 and the wheel 13 between said bearings, said retainer is inserted in place in the head 1, and when in place the ends of said axle are between the sides of the slot 5. The wheel 13 is now securely held in place, but is free to rotate. The wheel 13 in part extends beyond the extreme forward end of the head 1, and is thus supported in operative position.

It is now seen that the retainer bearings 10, with the cutting wheel 13 therebetween, and the axle 14 in the openings 12, are held securely between the sides of the slot 5, with the bottom shoulders 11 against the abutment 8, the retainer shank is held securely in the passage 6, but prevented from turning therein by said bearings in said slot, while said shank is held against any movement in a vertical plane by the top and bottom of said passage, and the frictional engagement between the bearings and the sides of said slot prevent the retainer from becoming accidently displaced. Being thus securely and rigidly held in the head 1, the retainer 9 enables the wheel 13 to be revolved and the cutter as a whole to be operated in the usual manner and to produce the usual results, it being understood that the axle 14 is free to revolve in and said wheel to revolve between the bearings 10.

When the wheel 13 becomes so worn and dull as to be of little or no further use, the thumb nail is inserted behind the upper shoulders 11, the retainer 9 is thereby forced out of and removed from the head 1, and permitted to spring open to release said wheel and its axle, a new wheel is placed between the bearings 10 and they are pressed toward each other until the axle of the new wheel is received in the openings 12 and the bearings embrace the new wheel, and the retainer with the latter wheel is reinserted in said head. In this manner, and from time to time as may be necessary, old wheels are replaced by new ones.

For the purpose of lubricating the wheel 13 and the axle 14, a length of wicking, or other suitable absorbent material, is introduced into the passage 6 between the inner end of said passage and the inner end of the retainer 9, (said wicking material being indicated by the numeral 15,) and oil is introduced through the opening 7 until said material is saturated. The oil as needed for the lubrication of the axle 14 and its bearings, and for the wheel 13, passes from the wicking 15 forward alongside of the retainer

shank and out between and into the bearings 10 to the aforesaid parts and members which it is desired to lubricate. From time to time, as required, additional oil is supplied through the opening 7 to the wicking 15. The introduction and removal of the retainer 9 are not interfered with by the wicking 15. The wicking 15 can be removed and another piece inserted in the place thereof, should occasion require, through the front end of the passage 6, when the retainer 9 is out of the way.

Heretofore separate and independent cutting wheels and axles, of the type shown respectively in Figs. 12 and 13, have been used in glass cutters, but these are more expensive to manufacture than are wheels having extruding axles, whether the separate and independent axles be loose in the wheels or secured therein by a driving fit or other means. The separate and independent wheel and axle can, of course, be used in my retainer and head, like the wheel 13 with its extruded axle 14, but, if the axle and wheel be loose relatively, it is much more difficult to mount the wheel in place, as will be readily understood.

More or less change in the shape, size, construction, and arrangement of some or all of the parts of this glass cutter, in addition to those hereinbefore specifically pointed out, may be made without departing from the spirit of my invention, or exceeding the scope of what is claimed.

I claim:

1. In a glass cutter, a recessed head, a resilient retainer for a rotatable cutter-wheel comprising resilient bearing sections that normally spring apart for journaling a rotatable cutter wheel between the sections and when pressed towards each other serve to yieldingly support the rotatable cutter wheel with its opposite faces parallel to and in rolling contact with the resilient bearing sections.

2. In a glass cutter, a recessed head having an abutment, a resilient retainer for a rotatable cutter-wheel comprising sections that normally spring apart for receiving the cutter-wheel and when closed are receivable in and adapted frictionally to engage said head and also the cutter-wheel for securing said cutter-wheel in rotatable position, said retainer having a part to engage said abutment and thus limit the inward movement of the retainer, the cutter-wheel being rotatably mounted in the resilient retainer.

3. In a glass cutter, a recessed head having an abutment, a resilient retainer for a rotatable cutter-wheel comprising sections that normally spring apart for receiving the cutter-wheel and when closed are receivable in and adapted frictionally to engage said head and cutter-wheel for securing the cutter-wheel in rotatable position, said retainer having a part positioned to engage said abutment and thus limit the inward movement of the retainer, and also having a part to be engaged by the thumb nail for the removal of said retainer, the cutter-wheel being rotatably mounted in the resilient retainer.

4. The combination, in a glass cutter, having a slotted and bored head, of a resilient retainer for a rotatable cutter-wheel comprising arms and cutter-wheel bearings which spread apart when unrestrained, for reception and removal of said cutter-wheel and adapted to be compressed and thrust into the slotted and bored portions of said head, to secure said arms and bearings under compression and in embracing relationship with the rotatable cutter-wheel and in frictional engagement with the sides of said slot, and a rotatable cutter-wheel disposed between and having an axle journaled in said bearings.

5. The combination, in a glass cutter, having a slotted and bored head, of a resilient retainer for a rotatable cutter-wheel comprising a shank receivable in the bore and bearings receivable in the slot in said head, and adapted to receive a rotatable cutter-wheel and having an axle of said rotatable cutter-wheel journaled in said bearings.

6. The combination, in a glass cutter, having a slotted and bored head, of a resilient retainer for a rotatable cutter-wheel comprising a shank receivable in the bore and bearings receivable in the slot in said head, and formed with a shoulder adapted to bear against the head at the inner end of said slot, and a rotatable cutter-wheel receivable between and having an axle adapted to be journaled in said bearings.

7. The combination, in glass cutter, having a slotted and bored head, of a resilient retainer for a rotatable cutter-wheel comprising a shank receivable in the bore and bearings receivable in the slot in said head, the bearings having upper and under shoulders respectively adapted to bear against the head at the inner end of said slot and one of said shoulders constituting engaging means for a thumb nail for removal of the shank and bearings, and a rotatable cutter-wheel receivable between and having an axle adapted to be journaled in said bearings.

8. The combination, in a glass cutter, having a slotted and bored head, and a lubricating element in the bore in said head, of a resilient retainer comprising a shank receivable in said bore in front of said lubricating element, and bearings receivable in the slot in said head, and a cutting wheel receivable between and having an axle journaled in said bearings the shank of the retainer serving to position the lubricating element in the bore of the head and spaced from the side walls of the bore for feed of the lubricant to the cutting wheel.

9. The combination, in a glass cutter, having a head formed with a slot at the forward

end, a passage extending rearwardly from said slot; of a resilient retainer for a rotatable cutting wheel comprising a shank receivable in said passage of the head, and bearings receivable in said slot, and extending above and below the front end of said passage respectively to engage the inner end of said slot and thus limit the inward movement and to afford engaging means for a thumb nail for the removal of said retainer, and a cutting wheel receivable between and having an axle journaled in said bearings.

10. The combination, in a glass cutter, having a head formed with a slot at the forward end, and a passage behind said slot, of a resilient retainer for a rotatable cutter-wheel comprising a shank receivable in said passage, and bearings receivable in said slot, and extending above and below the front end of said passage respectively to engage the head at the inner end of said slot to limit the inward movement and to afford engaging means for a thumb nail for the removal of said retainer, and a rotatable cutter-wheel having an axle journaled in said bearings, the latter being offset to accommodate when compressed against said wheel.

CHARLES J. FANCHER.