Nov. 8, 1927. 1,647,989

E. F. G. GIBBS

CUTTING-OFF TOOL

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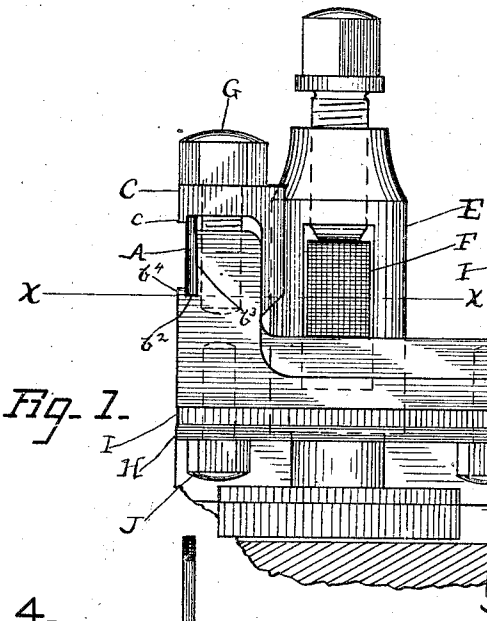


Fig. 1.

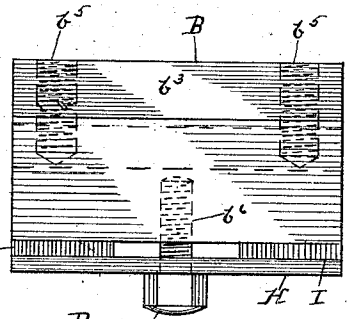


Fig. 3.

Fig. 4.

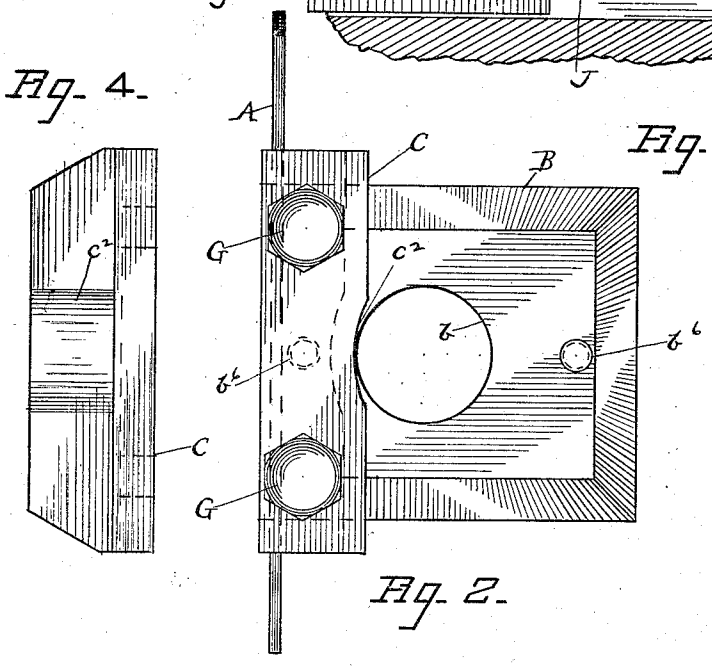
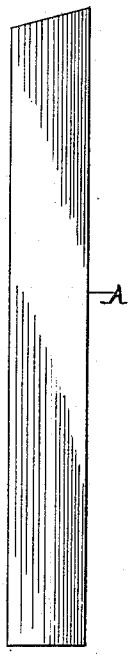


Fig. 2.

Fig. 5.



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UNITED STATES PATENT OFFICE.

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CUTTING-OFF TOOL.

Application filed November 14, 1922. Serial No. 600,875.

This invention relates to new and useful improvements in cutting-off tools, such as may be used on common engine lathes for cutting off any such substances as are held and rotated by the said lathes. I do not mean to limit myself, however, in any sense, except as required by the scope of the claims.

The invention is hereinafter fully described, shown in the accompanying drawings, which form a part of this specification, and then specifically defined in the appended claims.

The main object sought in this invention is to obtain a cutting-off tool, for engine lathe work chiefly, which will utilize on the rear (operator's) side of an engine lathe, the well known advantages employed in cutting off from the front side (as do most turret lathes).

Other objects are, to utilize the existing means of clamping the proposed tool to the tool seat; to provide means for varying its elevation; to extend the cutter support beyond the base piece; to make the tool horizontally reversible, or capable of right or left-hand work and capable of being manufactured economically.

To this end I have designed and developed what I call the back-stroke cutting-off tool; which cuts as lathe runs backwards. It is fully illustrated in the accompanying drawings, in which:—

Figure 1 is a rear end elevation of the tool complete; in working position, and fitted over the tool post, which also is shown, as are the rear end of the rectangular clamping bar and tool seat. It shows also the axial line of the lathe center.

Fig. 2 is a plan view of the tool complete.

Fig. 3 is a left-side view of the base-plate mounted on the false bottom, with the intervening elevating liners clamped in position.

Fig. 4 is an inner side view of the angled cutter clamp referred to as "the clamp".

Fig. 5 is a side view of the cutter blade, referred to as "the cutter", or "blade".

Reference now being had to the details of the drawing by letter, similar letters refer to similar parts throughout the several views.

A designates the cutter blade.

B designates the right angled base piece, b the clamping aperture, b^2 the open cutter channel, b^3 the wall, b^4 the flange, b^5 the cutter clamping screw holes threaded or blank holes, b^6 the false bottom clamping screw threaded holes.

C designates the right-angled cutter clamp, c the overhanging lip, c^2 the depression in the vertical wing and c^3 the clamping screw holes of the cutter clamp.

D designates the tool seat of the lathe.

E designates the tool post of the lathe.

F designates a rectangular clamping bar.

G designates the cutter clamping screws or bolts.

H designates the false bottom.

I designates the inserted liners.

J designates the false bottom clamping screws.

XX designates the axial center line of the lathes.

The construction of the tool is thus described: It consists, in brief, of a flat, inverted and elevated cutter blade A, which is also beveled on both sides, ground flat on both edges, and clamped by screw-pressure between two interlocking angle irons; one a right-angled base piece, B, and the other a similar but inverted right-angled cutter clamp, C and both preferably steel castings. It rests on the tool seat, D, clamped by the tool post E and rectangular bar, F.

The said base piece, known in shop practice as an "angle iron", has two wings, the horizontal and the vertical, and has an aperture, b, through its horizontal wing, which adapts it to fit over or engage the tool post, or other clamping device, while an outer portion of its vertical wing not necessarily integral is cut away or recessed horizontally, from its top down to a line approximately level with the axis of the lathe, leaving an open channel, b^2, with a slightly inclined high wall, b^3, on one side with cutting edge downward leaning outwardly at top and a low flange b^4, on the other; in which the beveled cutter blade is adapted to rest, vertically true with cutting edge downward, extensible and horizontally reversible and project slightly above the said wall.

The said cutter clamp, another "angle iron", hangs entirely suspended upon the cutter blade. Its horizontal wing, drawn by two clamping screws or bolts, G, fitted in screw holes c^3 and b^5, bears upon and supports the said blade, its overhanging lip, c, engages the outer top edge of the same and simultaneously presses it against the wall b^3, while its vertical wing hangs supported be-

low only by side pressure against the vertical wing of the base piece; it is free to move up or down to accommodate the blades of various widths.

The cutter clamp has a vertical depression or curve, c^2, in its vertical wing which brings the tool post nearer the cutter blade, giving it more direct resisting power.

Cutting off on the back stroke from the rear side requires the use of an inverted cutter blade, with cutting edge turned downward, and preferably level with the axis of the lathe, as line x—x, Fig. 1. Therefore, the entire cutter must be elevated above the said axis; whereas with the front stroke tool the cutting edge is in the same plane but the entire cutter is below the axis. It requires also an extended blade support, such as a cutter clamp, extended well beyond the base piece; and clamp screws G extended as far as practical.

Provision is made for varying the elevation of this tool by introducing the false bottom H, inserting the liners, I, of any desired thickness and binding all with the clamping screws, J, fitted into the screw holes, b^6.

This tool is also reversible, as it is changed from a right hand to a left hand tool simply by swinging it around on the tool post; and the cutter reversed and extended or withdrawn as desired.

In operation this tool naturally holds the lathe spindle down in its bearings, without chatter; and when overloaded it naturally springs backward, relieving itself.

Having thus described my invention, I desire to secure what is new, and submit the following appended claims:—

1. As an article of manufacture, a base piece for a back-stroke cutting-off tool, of the character described, comprising an angle iron having a horizontal wing which is apertured to engage a clamping tool post, and provided with screw holes to engage clamping screws to bind a false bottom; having also a vertical wing provided with cutter clamping screw holes, and a horizontal, open cutter holding channel cut in its outer surface from its top edge down to a line level with the axis of a lathe to which it is adapted, leaving a high wall on one side, leaning outwardly at the top; and a low flange on the other; all substantially as set forth.

2. As an article of manufacture, a cutter clamp for a back-stroke cutting-off tool, of the character described, comprising an angle iron having a horizontal wing adapted to bear on the top edge of a cutter blade and an overhanging lip to engage the said blade, a clamp screw hole toward each end, and well extended length to bear on and support the said cutter blade beyond the base piece, to which it is adapted; having also a vertical wing which hangs suspended from above, is supported below only by side pressure against the vertical wall of the base piece, and has a vertical depression which enables the tool clamping device to come nearer the blade; all substantially as set forth.

3. A back-stroke cutting-off tool, comprising an angle iron base piece having a horizontal wing adapted to engage a clamping device, having also a vertical wing with a horizontal, open cutter holding channel cut in its outer surface from its top edge downward, leaving a high wall on one side and a low flange on the other; a cutter blade, adapted to bear in the said channel, whose cutting edge is turned downward, level with the axis of the lathe to which it is adapted, and projects slightly above the said high wall; an inverted angle iron cutter clamp having a screw pressed horizontal wing with an overhanging lip, adapted to engage and bear on the said cutter blade and support it beyond the said base piece; and means for clamping the said tool to the tool seat of an engine lathe to which it is adapted; all substantially as stated.

4. A back-stroke cutting-off tool, comprising an angle iron base piece having a horizontal wing apertured to engage a clamping device, having also a vertical wing with a horizontal, open cutter holding channel cut in its outer side from its top edge down, leaving a high wall on one side and a low flange on the other; a cutter blade adapted to rest in the said channel, with cutting edge downward, level with the axis of the lathe to which it is adapted, and which (blade) presses against and projects above the said high wall; an inverted angle iron cutter clamp having a screw pressed horizontal wing with an overhanging lip adapted to engage and bear on the said cutter blade and support it beyond the said base piece; and means for clamping the said tool to the tool seat of a machine to which it is adapted.

5. A back-stroke cutting-off tool, comprising an interlocking angle iron base piece, having a horizontal wing adapted to engage a clamping device, having also a vertical wing with a horizontal, open cutter holding channel cut in its outer surface from its top edge downward, leaving a high wall on one side leaning outwardly at top, and a low flange on the other; a beveled and inverted cutter blade, ground flat on both edges, adapted to rest in the said channel; an interlocking inverted angle iron cutter clamp having a screw pressed horizontal wing with an overhanging lip, which engages and bears on the said blade and simultaneously forces it down in the said channel and over against the said high wall; substantially as set forth.

6. A back-stroke cutting-off tool, comprising an angle iron base piece having a horizontal wing apertured to engage a clamping device, having also a vertical wing with a

horizontal, open cutter holding channel cut in its outer surface from its top edge down to a line level with the axis of the lathe to which it is adapted, leaving a high wall on one side, leaning outwardly at top, and a low flange on the other; a beveled and inverted cutter blade, with cutting edge downward, adapted to rest in the said channel; an inverted angle iron cutter clamp having a horizontal wing with an overhanging lip adapted to engage and bear on the top edge of the said blade and extend and support it beyond the said base piece, having also a suspended vertical wing with side pressure against the vertical wing of the same; clamping screws adapted to engage both the base piece and cutter clamp, between which the said blade is interlocked and simultaneously forced down in the channel and over against the said high wall thereof; and means for clamping the said tool to the tool seat of a machine to which it is adapted; substantially as stated.

7. A back-stroke cutting-off tool, comprising an angle iron base piece having a horizontal wing apertured to engage a clamping tool post, having also a vertical wing provided with clamping bolt holes and a cutter holding channel cut in its outer surface from its top edge downward; a cutter blade adapted to bear in the said channel; an inverted angle iron cutter clamp having a horizontal wing provided with clamping bolt holes and an overhanging lip which engages and bears on the said blade, having also a hanging vertical wing with a vertical depression which enables the clamping tool post to come nearer the said cutter blade; clamping bolts which engage both the base piece and cutter clamp to clamp the said blade; and means for clamping the said tool to the tool seat of an engine lathe; substantially as stated.

8. A back-stroke cutting-off tool of the character described, comprising an angle iron base piece having a horizontal wing apertured to engage a clamping device, and provided also with screw threaded holes for the purpose of clamping a false bottom, and having furthermore a vertical wing with a horizontal, open cutter holding channel cut in its outer surface; a cutter blade adapted to rest in the said channel with cutting edge downward; an inverted angle iron cutter clamp having a horizontal wing with an overhanging lip adapted to engage and bear on the said blade; cutter clamping screws which engage both the base piece and cutter clamp to clamp the said cutter; and means for clamping the said tool to the tool seat of a machine to which it is adapted; substantially as set forth.

9. A back-stroke cutting-off tool, of the character described, comprising an angle iron base piece having a horizontal wing adapted to engage a clamping device, and provided also with means for clamping a false bottom and inserted elevating liners, and having furthermore a vertical wing with a horizontal, open cutter holding channel cut in its outer surface; a cutter blade adapted to rest in the said channel; an inverted angle iron cutter clamp having a horizontal wing with an overhanging lip adapted to bear on and engage the said blade; cutter clamping screws which engage both the base piece and cutter clamp; and means for clamping the said tool to the tool seat of a machine to which it is adapted; substantially as set forth.

In testimony whereof I affix my signature.

EDWARD F.-G. GIBBS.