

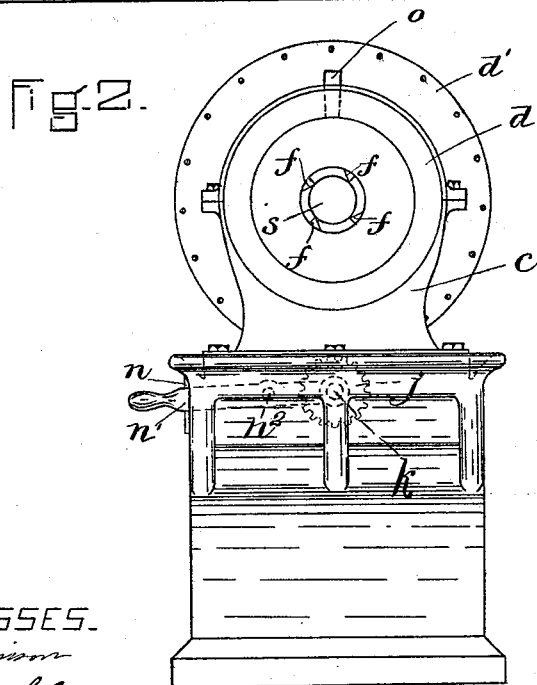
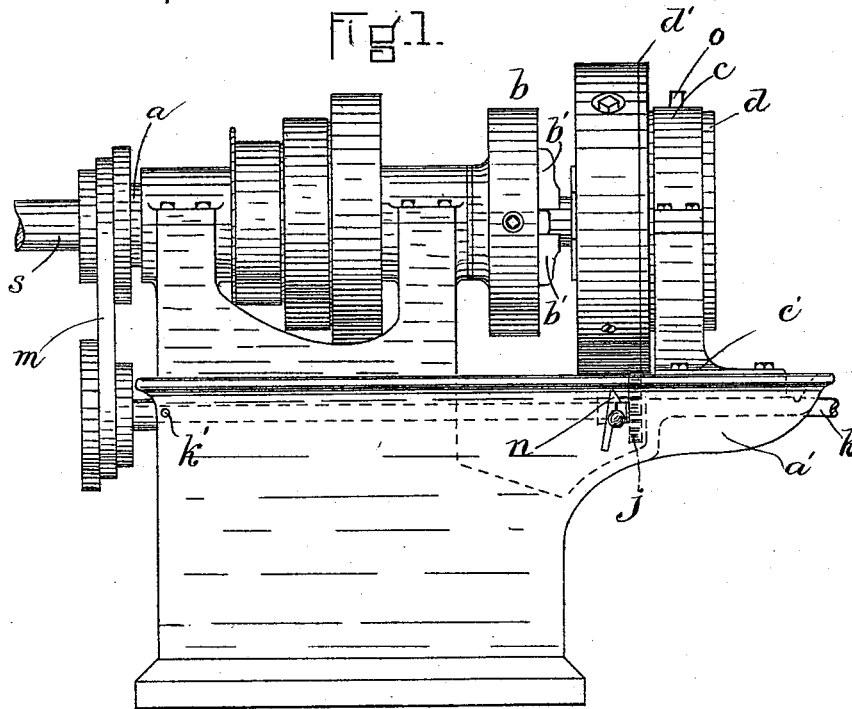
(No Model.)

2 Sheets—Sheet 1.

E. CHILDS.
CUTTING-OFF ATTACHMENT FOR LATHES.

No. 490,427.

Patented Jan. 24, 1893.



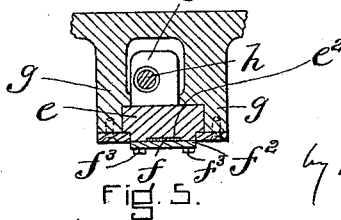
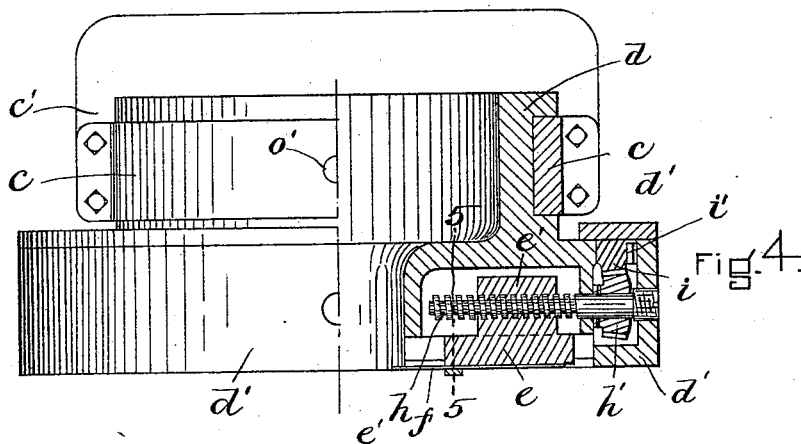
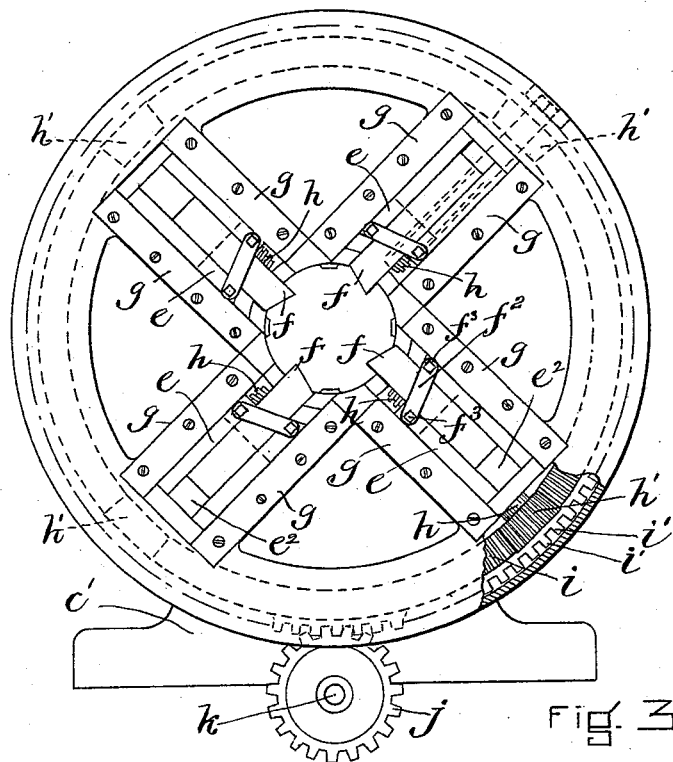
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B. A. McShane

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Eugene Childs
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UNITED STATES PATENT OFFICE.

EUGENE CHILDS, OF REVERE, ASSIGNOR OF ONE-HALF TO OSCAR L. NOBLE,
OF BOSTON, MASSACHUSETTS.

CUTTING-OFF ATTACHMENT FOR LATHES.

SPECIFICATION forming part of Letters Patent No. 490,427, dated January 24, 1893.

Application filed December 17, 1891. Serial No. 415,358. (No model.)

To all whom it may concern:

Be it known that I, EUGENE CHILDS, of Revere, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Cutting-Off Attachments for Lathes, of which the following is a specification.

This invention has for its object to provide an attachment for use with a lathe, whereby pieces of work such as cylindrical rods can be readily and quickly cut off, without undue waste of material.

The invention consists in the several improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming part of this specification: Figure 1 represents a side elevation of the head-stock of a lathe provided with my improved attachment. Fig. 2 represents an end elevation of the same. Fig. 3 represents a front elevation of the improved attachment, a portion of the front plate of the casing of the same being broken away. Fig. 4 represents a top view of the attachment, shown partly in horizontal section. Fig. 5 represents a section on line 5—5, Fig. 4.

The same letters of reference indicate the same parts in all the figures.

In the drawings: *a* represents the spindle of a lathe, provided with a chuck *b* of any suitable construction, said chuck having jaws *b'* formed to grasp a rod *s* or other piece of work to be treated by the lathe. The construction of the head-stock and of the chuck forms no part of my invention, and the same may be of any suitable construction.

In carrying out my invention, I attach to the bed *a'* a bracket or support *c*, having a base *c'* and a bearing above said base in which is fitted a hub *d*, on which is formed a circular casing *d'*. Said casing contains a plurality of ways or guides, radiating from the center of the casing or substantially so, and formed to support and guide a series of slides *e e e e*, preferably four in number, to which slides are affixed the cutting-off tools *f f f f*, each guide being composed of two traps or side-pieces *g g*.

On the backs of the tool-carrying slides *e*, are formed projections *e'*, containing threaded sockets, which receive adjusting screws *h*,

there being one screw for each slide. Said screws radiate from the center of the casing, and are provided at their outer ends with pinions *h'*, which are engaged with a face-gear *i*, which is fitted to rotate independently of the casing, on a bearing formed therein.

The periphery of the gear *i* is provided with cog-teeth *i'*, arranged to mesh with a pinion *j* affixed to the usual feed-shaft *k* of the lathe. The feed-shaft *k* is mounted in a bearing, which is pivoted at *k'* to the lathe-bed, so that the portion of the shaft carrying the pinion *j* can rise and fall freely. The feed-shaft may be raised to engage the pinion *j* with the teeth *i'*, by means of a lever *n'*, pivoted at *n* and engaged at its inner end with the feed-shaft, the outer end of said lever being engaged with the latch *n* when it is desired to hold the pinion *j* in engagement with the teeth *i'*. It will be seen that, when the pinion *j* is engaged with the teeth *i'*, the rotation of the feed-shaft caused by its connection with the spindle *a* through the belt *m* will cause the rotation of the face-gear *i*, so that the pinions *h'* and the screws *h* will be simultaneously rotated, the screws being thus caused to feed the slides *e* and cutting tools *f* simultaneously toward the center of the casing, thus causing the cutting tools to gradually enter and cut off the piece of work *c*, it being understood that said piece is grasped and rotated by the chuck *b*, the center of the chuck being in line with the center of the casing *d'*. The four tools *f*, pressing inwardly from four points upon the work, are adapted to sever the latter very rapidly, and without cutting away an excess of the metal of the rod or piece being cut or severed, each tool being a comparatively thin blade, the outer end of which is beveled, to form an acute cutting angle. The shape of the cutting ends of the tools *f* may be according to preference. Obviously, they may be pointed or square and the different shaped tools may alternate with each other. I do not illustrate the particular form or forms as the same are well known. The V-shaped cutters alternate with the square cutters.

When the cutting-off attachment is in operation, the casing *d'* and hub *d* are locked and prevented from rotating by means of a pin *o*, which is inserted in an orifice *o'* formed in the bracket *c* and enters a coinciding ori-

face in the hub d , so that the cutters f do not revolve during the cutting-off operation, but have only a radial inward movement.

The object of mounting the casing d so that it can be rotated, is to enable the tools or cutters f to be adjusted to a uniform distance from the center or axial line of the work, preparatory to the cutting-off operation; and, to enable this to be done, I withdraw the pin o , thus permitting the hub d and casing d' to be rotated freely, the feed-shaft pinion j being at this time disengaged from the teeth i' , the feed-shaft being mounted so that it can be raised and lowered, as usually in lathes, so that when it is desired to discontinue the rotation of the face-gear i by the feed-shaft k , said shaft is released from the operative position in which it is held by the latch n and allowed to fall, thus separating its pinion j from the teeth i' .

The cutters f are composed of straight strips of steel, of uniform width from end to end, and are inserted in recessed seats e^2 formed to receive them in the slides e , the strips being somewhat thicker than the depth of said seats, so that the outer sides of the strips or cutters project slightly outside of the outer faces of the slides e . The cutters are secured by means of clamping-plates f^2 extending across them and secured by bolts f^3 to the slides e , said plates being enabled by the slight projection of the outer sides of the cutters from the outer faces of the slides, to bear firmly against the outer sides of the cutters, and thereby securely hold the cutters and at the same time permit their longitudinal adjustment, to compensate for wear of their cutting ends, it being necessary only to loosen the bolts f^3 to permit the adjustment of the cutters.

Preparatory to adjusting the cutters, I remove the locking pin o , so that the casing d' and its hub d are free to rotate in the bearing in the bracket c . The casing d' is then rotated by hand. The object of releasing the casing d' and permitting it to be rotated loosely, is to make the operation of adjusting the cutters more convenient, each cutter being brought to its highest position before being adjusted, so that the operator can readily and conveniently adjust it to any suitable gage. After the cutters have been adjusted, the casing d' is locked by the insertion of the pin o in the orifices in the bracket c and hub d , and the adjusting devices removed, and the piece of work to be cut is inserted in place of the adjusting device. The feed-shaft is raised to position to engage its pinion j with the teeth i' on the annular feeding gear i . The spindle a is then rotated, and imparts rotary motion to the piece of work and to the feed-shaft, so that the rotation of the work is accompanied by an inward feeding movement of the cutting-off tools, the same being presented simultaneously to the work and caused to rapidly sever the same.

The cutting-off mechanism above described

may be detachably secured to an ordinary lathe as an attachment therefor; or a head-stock and bed, provided with the cutting-off mechanism, as shown in Fig. 1, may be sold as an independent machine.

I claim:

1. In a lathe, the combination with the head-stock, chuck and feed-shaft, of the cutting-off attachment, composed of a bracket adapted to be attached to the bed; a casing secured to said bracket; a series of tool-carrying slides, movable on guides or ways in said casing toward and from the center thereof; slide-adjusting screws, arranged radially in the casing, and provided with pinions at their outer ends; an annular face-gear, mounted to rotate on a bearing in the casing, and engaged with said pinions, said gear having peripheral teeth, a movable pinion on the feed shaft meshing with the peripheral teeth of said face gear, whereby the slides may be simultaneously moved by the rotation of the feed shaft, and means for moving said pinion to engage it with or disengage it from said peripheral teeth.

2. In a lathe, the combination with the head-stock, chuck and feed shaft, of the cutting off attachment, composed of a bracket adapted to be attached to the bed; a casing secured to said bracket; a series of tool-carrying slides, movable in guides or ways in said casing toward and from the center thereof; slide-adjusting screws, arranged radially in the casing, and provided with pinions at their outer ends; an annular face-gear mounted to rotate in a bearing in the casing and engaged with said pinions, said gear having peripheral teeth, and a pinion on the feed shaft meshing with the peripheral teeth of said face-gear, whereby the slides may be simultaneously moved by the rotation of the feed-shaft; the said feed-shaft being vertically movable to engage its pinion with said face gear or disengage it therefrom; and means for holding the said feed-shaft and pinion in raised position, as set forth.

3. In a cutting-off attachment for lathes, the combination of the bracket formed to be attached to the lathe-head, the casing having a hub mounted to rotate in a bearing in said bracket, a series of tool-carrying slides radially movable in said casing, means for simultaneously feeding said slides, and a locking device whereby the casing may be locked to the bracket and prevented from rotating during the cutting off operation, and released and permitted to rotate when the cutting tools are being adjusted, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 7th day of December, A. D. 1891.

EUGENE CHILDS.

Witnesses:

C. F. BROWN,
A. D. HARRISON.