

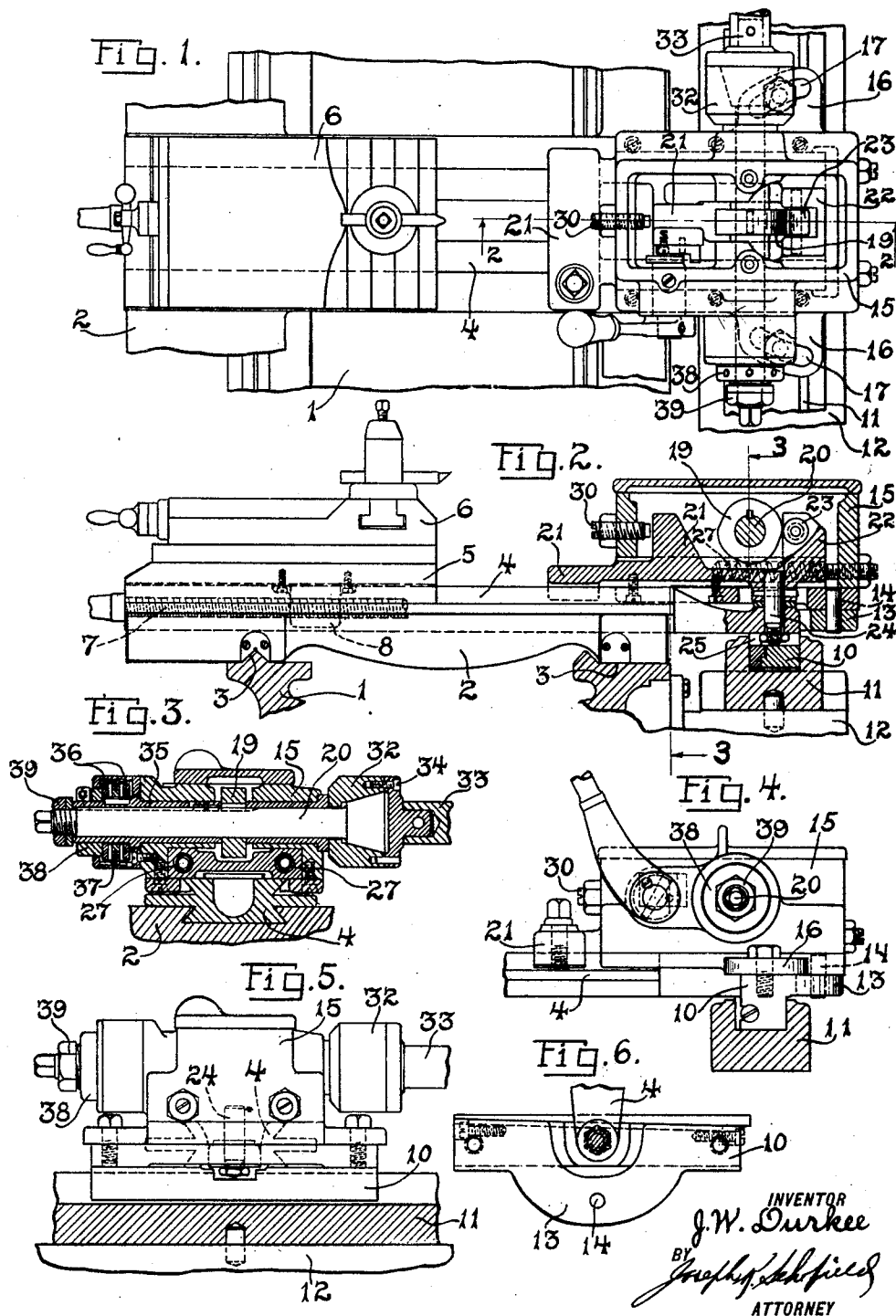
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RELIEVING ATTACHMENT

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UNITED STATES PATENT OFFICE.

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RELIEVING ATTACHMENT.

Application filed January 10, 1925. Serial No. 1,631.

This invention relates to lathes and in particular to a relieving attachment therefor.

It is a primary object of the invention to provide an improved and smoother acting relieving mechanism applicable to the ordinary engine lathe and designed, in the illustrated embodiment, for exterior relieving exclusively.

It is another object of the invention to provide a relieving attachment comprising a rotary cam adapted to move along the lathe bed together with the tool carriage and provided with a cam follower connected to the cross tool slide and operative to reciprocate the cross slide in timed relation to the rotation of the cam and the work.

It is another object of the invention to improve the form of relieving attachment, and particularly the mounting for the cam, disclosed in the patent to Lindstrom 1,516,196.

With the above and other objects in view, my invention consists in the features of construction and operation set forth in the following specification and illustrated in the accompanying drawings.

In the drawings annexed hereto and forming a part of this specification, I have shown but one embodiment of my invention applied to a tool maker's engine lathe, but it will be understood that the invention can be otherwise embodied and that the drawing is not to be construed as defining or limiting the scope of the invention, the claims appended to this specification being relied upon for that purpose.

Referring to the figures of the drawings:

Figure 1 is a plan view of the complete relieving attachment.

Fig. 2 is an end elevation thereof partly in section.

Fig. 3 is a sectional view taken upon line 3—3 of Fig. 2.

Fig. 4 is a side elevation of a portion of the relieving mechanism.

Fig. 5 is an end elevation of the mechanism, and

Fig. 6 is a detail of the means for mounting the relieving attachment upon a taper attachment.

Briefly, and in its broadest aspect, my invention comprises a relieving attachment or mechanism mounted as shown in the patent to Lindstrom above mentioned and adapted primarily for exterior relieving op-

erations, improved connections being interposed between the shaft for rotating the cam and fixed parts of the carriage so that the cam will have a smoother and more uniform action during relieving operations.

In the drawings, 1 indicates the bed of a lathe, 2 the tool carriage slidable along the base upon ways 3 thereon, 4 a taper attachment on the carriage 2. A tool slide 5 is mounted on the taper slide 4, and a tool supporting slide 6 is adjustable upon the slide 5. A screw 7 journaled in the taper slide 4 is adapted to engage a nut 8 on the tool slide 5 whereby the latter may be adjusted upon the slide 4.

A former or taper bar 10 is mounted in a guide 11 on bracket 12 secured to the bed 1. The bar 10 is provided with a yoke-shaped portion 13 on which is mounted and secured a housing 15. This housing 15 preferably is secured to the yoke 13 by means of a pin or pivot 14. The other or forward end of this housing 15 is slidably mounted on the taper slide 4, as shown clearly in Fig. 3, and the housing 15 furthermore is provided with a pair of projecting ears 16 having slots 17 therein providing means for adjustably securing the housing 15 to the taper bar 10 in any angular adjusted position.

A rotary cam 19 is keyed or splined on a shaft 20 journaled in the housing 15, this shaft 20 being driven by gearing from the lathe headstock spindle in the usual manner. For connections such as required for rotating this shaft, attention is called to copending application 609,030 in which a universal type of relieving attachment is described and its driving means from the work spindle fully disclosed. A block 21 is mounted for reciprocation transversely of the shaft 20. This block is provided with a single cam follower 22 positioned as shown upon the block 21 at the rear side of the cam 19. Preferably this follower 22 is provided with a rotatable roller 23 to contact with the periphery of the cam 19. A bolt 24 extends vertically through the block 21 and the taper slide 4 so that the slide 4 is moved directly with the block 21. The bar 10 at this point is transversely recessed as shown at 25 to permit transverse movement of these elements. Compression springs for normally keeping the follower 22 in engagement with the cam 19 are preferably mounted within the block 21 as shown.

It will be seen from the above that rotation of the cam 19 will operate to draw the cross slide 5 and its tool toward and from the work transversely of the direction of movement of carriage 2. An adjustable stop 30 is provided threaded into the forward end of the housing 15 for limiting the reciprocatory movement of the block 21, thereby limiting the relieving movements of the tool.

The shaft 20 for rotating the cam 19 is shown most clearly in Fig. 3 and is provided with a connection 32 shown in section in this figure, permitting angular adjustment of the shaft 20 relative to its driving connection 33. For this purpose there is provided a two-part clutch, one member having a tapered recess. This recess is engaged by the end of shaft 20 on which is suitably keyed or splined the relieving cam 19 above described. The members forming the connection 32 are held together by screws 34 so that the connection 33 positively drives the recessed member 32.

Surrounding the shaft 20 carrying the cam 19 is a sleeve 35 suitably splined to the shaft 20 and keyed to the sleeve 35 are plates 36 forming members of a friction clutch. The middle friction plate 37 of this clutch is attached by means of a screw to the housing 15 so that it cannot rotate. By means of a nut 38 engaging the threaded end of the cam shaft sleeve 35, pressure may be applied to the friction plates 36 and 37 of the clutch to vary the friction between them. Nuts 39 on the threaded end of the shaft 20 serve to force the sleeve 35 axially against the cam 19 and to draw the conical end of shaft 20 into frictional engagement with the recessed member 32. By loosening these nuts 39 the shaft 20 may be rotated to any angular position relative to its driving connection 33.

In operation, during the relieving action the cam follower 23 rides over alternate recessed and raised portions of the cam 19 and, during the relieving operations the chattering caused thereby may be disagreeable. In order to obviate this, a constant drag or load is placed on the cam 19 by

means of the friction clutch formed by the plates 36 and 37 so that as the follower 23 rides over the higher points of the cam 19 there will be no tendency for the cam 19 to be forced ahead and thus cause the follower to drop suddenly upon a recessed portion. The cause of chatter or other disagreeable noises is thereby obviated and the action of the relieving mechanism is made smoother and more uniform.

What I claim is:

1. A relieving attachment for lathes comprising in combination, a carriage, a tool slide thereon, a rotary cam on said carriage, a shaft for rotating the cam, a cam follower on said slide, means normally holding the follower in engagement with the cam, and a friction clutch comprising two members, one clutch member being attached to the carriage whereby it is held from rotation and the other attached to the cam rotating shaft and adapted to rotate therewith.

2. A relieving attachment for lathes comprising in combination, a carriage, a tool slide thereon, a rotary cam on said carriage, a shaft for rotating the cam, a cam follower on the tool slide, means normally holding the follower in engagement with the cam, a sleeve splined to the shaft, and a friction clutch comprising two members, one clutch member being fixedly attached to the carriage and the other attached to and adapted to rotate with the sleeve.

3. A relieving attachment for lathes comprising in combination, a carriage, a tool slide thereon, a rotary cam on said carriage, a shaft for rotating the cam, a cam follower on the tool slide, means normally holding the follower in engagement with the cam, a sleeve splined to the cam rotating shaft, a multiple disk friction clutch disposed between the carriage and the sleeve, one of said disks being fixedly attached to said carriage and another disk being attached to and adapted to rotate with said sleeve, and manual means to vary the friction between said disks.

In testimony whereof, I hereto affix my signature.

JAMES W. DURKEE.