J. D. CARVER.

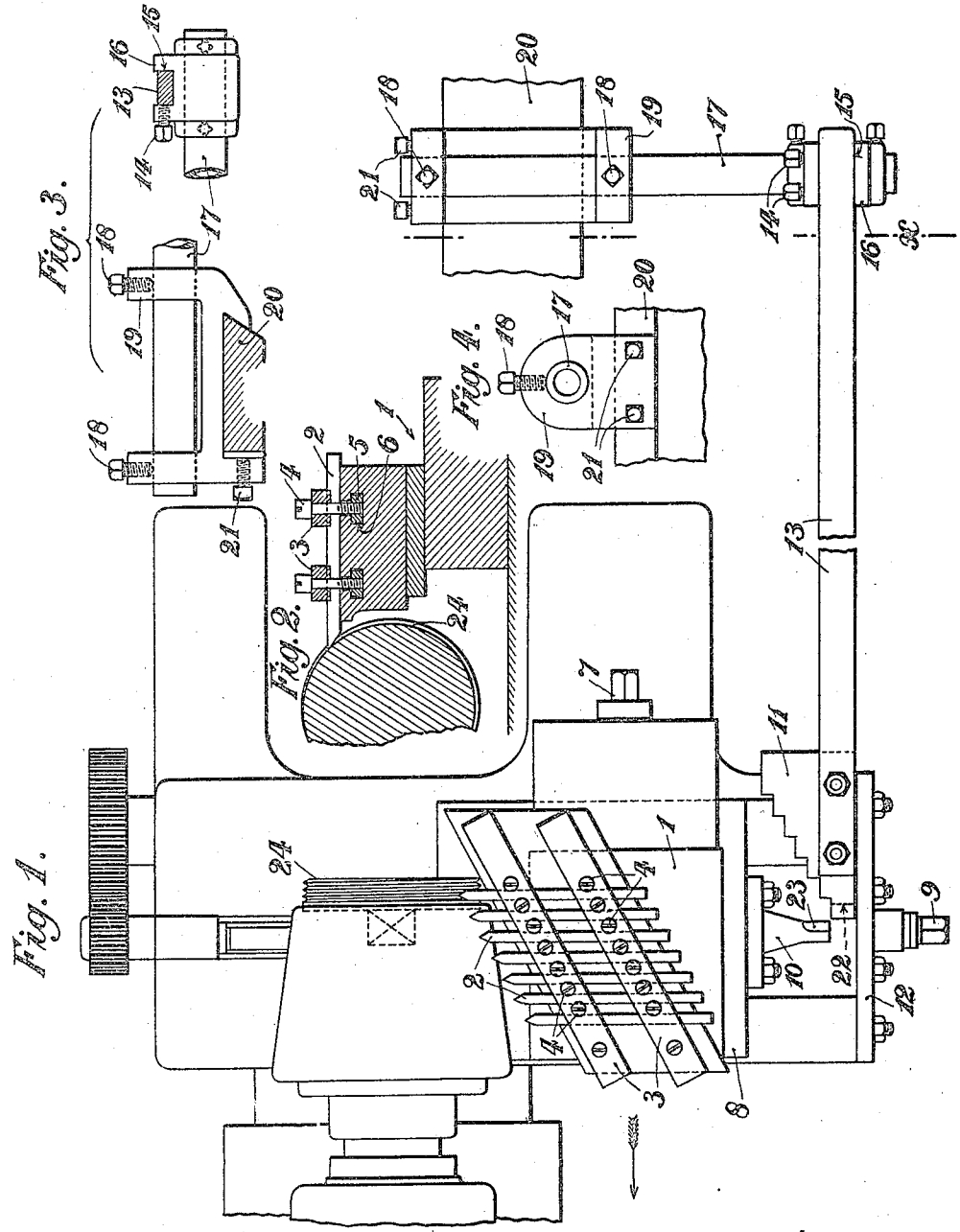
LATHE, BORING MACHINE, AND THE LIKE.

APPLICATION FILED JUNE 25, 1917.

1,257,188.

Patented Feb. 19, 1918.

2 SHEETS—SHEET 1.



WITNESSES

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LATHE, BORING MACHINE, AND THE LIKE.

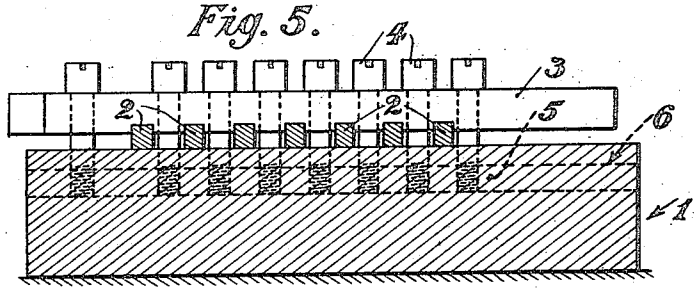
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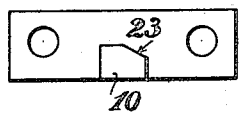
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2 SHEETS—SHEET 2.

Fig. 5.





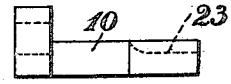


Fig. 6.

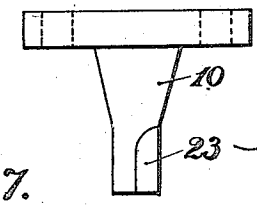


Fig. 7.

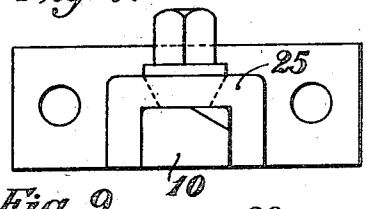


Fig. 8.

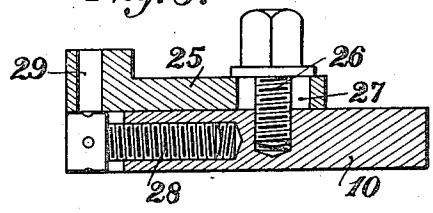
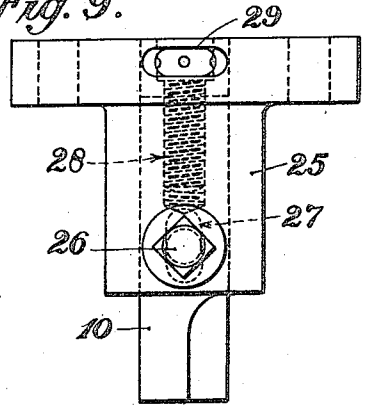


Fig. 9.



WITNESSES

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UNITED STATES PATENT OFFICE.

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LATHE, BORING-MACHINE, AND THE LIKE.

1,257,188. Specification of Letters Patent. Patented Feb. 19, 1918.

Application filed June 25, 1917. Serial No. 176,839.

To all whom it may concern:

Be it known that I, JOHN DAVID CARVER, subject of the King of Great Britain, residing at Walsall, county of Stafford, England, have invented certain new and useful Improvements in Lathes, Boring-Machines, and the like, of which the following is a specification.

This invention relates principally to screw-cutting lathes for both external and internal screw-threads, although the invention is also applicable to plain-turning lathes, boring machines and the like.

The object of the present invention is to provide improved means which will enable the thread to be cut, or the work turned or bored, up to a shoulder or collar in one traverse of the slide rest or tool holder.

According to the invention the transverse slide of a compound slide-rest carries a plurality of laterally separated tools adapted to be brought into operation successively by the feed imparted to the said transverse slide, the amount of feed or transverse movement of the tool which is to be brought into operation being controlled by a series of stops arranged in stepped formation and corresponding to the different tools in use, said stops successively coöperating with the transverse slide as the respective tools are brought into use, thus allowing of a deeper cut being given by each succeeding tool.

Figure 1 of the accompanying drawings represents a plan of a portion of a screw-cutting lathe according to the present invention.

Fig. 2 is a transverse section taken through the work and tool-holder.

Fig. 3 represents a section on line *x*, Fig. 1.

Fig. 4 is an end view of the spindle bracket fixed to the bed.

Fig. 5 is a longitudinal section through the tool-holder, showing how the tools are held in position.

Fig. 6 represents the stop on the transverse slide in side elevation, end view, and plan.

Fig. 7 is an end view.

Fig. 8 a section, and

Fig. 9 a plan of a modified form of stop which is adjustable in length.

Referring to Figs. 1 to 6, an ordinary compound slide rest is employed, but the top tool-holder or slide 1 is fixed or mounted at an angle to the axis or center line of the lathe, and the said tool-holder 1 carries a plurality of laterally separated but parallel tools 2 each set in a plane at right-angles to the lathe axis. From the leading end of the slide each succeeding tool is nearer the axis of the lathe, and the distance between adjacent tools is made equal to or slightly greater than the axial length of the portion of the work to be operated upon. The tools are preferably held in position upon the tool-holder by means of two clamping bars 3, 3, having transverse grooves upon their undersides to receive the tools and adapted to be pressed down upon the latter by means of screws or bolts 4 which engage tapped holes in bars 5, 5, located in T-sectioned slots 6, 6, in the tool-holder 1.

The said tool-holder 1 is adapted to be independently traversed in a longitudinal direction by an ordinary traversing screw whose head is indicated at 7, and the transverse slide 8 which carries the tool-holder 1 is adapted to be moved across the bed of the lathe by a feed-screw indicated at 9.

The transverse slide 8 carries at its rear end a stop member 10 adapted to coöperate with a stepped member 11 each step constituting a stop for controlling the amount of feed imparted to the respective tools, each succeeding stop in the direction of traverse of the tools being farther away from the axis of the lathe. The stop or step which is nearest the said axis is arranged to coöperate with the stop member 10 to bring the leading tool into operation, but on the said stop member moving off the first step by the action of the leader screw the slide 8 is moved away from the lathe axis by the feed-screw 9 so that the stop member 10 engages with the

second step in order to bring the next tool into operation. The width of each stop or step of the stepped member 11 is equal to the distance between adjacent tools, and the depth of the step from one stop to the next is slightly less than the difference between the distances of adjacent tools from the axis of the lathe; that is to say, slightly less than the distance each tool projects beyond the one behind. Each succeeding tool is thus advanced slightly farther than was the preceding one when in engagement with the work, thus giving the desired feed.

The stepped member 11 engages with a thrust plate 12 and is carried by one end of a bar 13 whose opposite end is adjustably fixed by screws 14 within a recess 15 in a rocking sleeve or boss 16 adapted to turn about a spindle 17 adjustably fixed by screws 18 in a bracket 19 clamped upon the bed 20 of the lathe by a screw 21.

The end of the stepped member 11 is beveled upon its underside, at 22, and adapted to coöperate with this bevel is a bevel 23 upon the stop member 10. On the return of the saddle of the lathe to operate upon a new piece of work the bevel 23 of this stop member 10 engages with the bevel 22 and lifts the member 11, so that the member 10 can wipe under it.

The complete operation is as follows:— The saddle is moved toward the fixed headstock of the lathe and the transverse slide 8 is adjusted so that the stop 10 engages with the first step of the member 11. The saddle is connected to the leader screw and moves forward to take the leading tool into engagement with the work (indicated at 24). As the said tool approaches the shoulder on the work the stop member 10 clears the first step, when the transverse slide is moved away from the lathe axis to cause the said stop member 10 to engage with the next step, thus bringing the next tool into operation. This tool is moved forward by the operation of the saddle and gives a slightly deeper cut. As it approaches the shoulder on the work the stop 11 moves clear of the step and the transverse slide is moved to take it into engagement with the next step to bring another tool into operation, this being repeated until the whole of the tools have operated upon the work each giving a deeper cut. The stop member 10 then leaves the stepped member 11, and the transverse member 8 is withdrawn to bring the bevel 23 on the stop 10 opposite to the bevel 22 on the member 11. The saddle is then returned so that by the coöperation of the two bevels the member 11 is raised, the carrier bar turning about the spindle, and the stop 10 wiping under the said member 11. The transverse slide 8 is then fed forward for operating upon a new piece of work.

The drawings show the parts arranged for cutting a right-hand thread. For cutting a left-hand thread the slide-rest would be traversed in the opposite direction and the stepped stop-plate 11 arranged upon the opposite side of the lathe axis; or the disposition of both tools and stop-plate reversed.

If desired, as shown in Figs. 7 to 9, the stop 10 upon the transverse slide may be adjustable in length. The part 10 slides in a housing 25 and is fixed by a screw 26 passing through a slot 27 in the said housing and engaging a tapped hole in the part 10. The adjustment of the latter may be effected by a screw 28 operated by a rod through a slot 29 in the housing, and whose head lies against the end face of the transverse slide 8.

Having fully described my invention, what I desired to claim and secure by Letters Patent is:—

1. In a lathe boring-machine, or the like; the combination of a longitudinally movable carriage, a transversely movable slide thereon, of a plurality of laterally separated tools carried by the slide and adapted to be brought into action successively, and a series of feed-controlling stops arranged in stepped formation and successively coöperating with the slide as the respective tools are brought into use so as to allow of a deeper cut being given by each succeeding tool.

2. In a lathe, boring-machine or the like; the combination of a longitudinally movable carriage, a transversely movable slide thereon, a series of laterally separated tools carried by said slide and adapted to be brought into operation successively, a stop member carried by the slide, and a stepped feed-controlling member adapted to coöperate with the stop member upon the slide as the respective tools are brought into use so as to allow of a deeper cut being given by each succeeding tool.

3. In a lathe, boring-machine or the like; the combination of a longitudinally movable carriage, a transversely movable slide thereon, a series of laterally separated tools carried by said slide arranged in succession one in advance of another and adapted for successive operation, a stop member carried by the slide, and a stepped feed-controlling member adapted to coöperate with the stop member upon the slide as the respective tools are brought into use so as to allow of a deeper cut being given by each succeeding tool, the width of the steps of the feed-controlling member being equal to the distance apart of the tools.

4. In a lathe, boring machine or the like; the combination of a longitudinally movable carriage, a transversely movable slide thereon, a series of laterally separated tools carried by said slide and adapted to be brought into operation successively, a stop member carried by the slide, a stepped feed-controlling member adapted to coöperate with the stop member upon the slide, and a member carrying the stepped member hinged to allow of the stop member upon the slide wiping under and lifting the said stepped member on the return of the saddle, the said stop and stepped members being chamfered.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN DAVID CARVER.

Witnesses:
HENRY NORTON SKERRETT,
RICHARD GITTINGS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."