

C. L. GOODRICH.
ATTACHMENT FOR TURRET LATHES.
APPLICATION FILED OCT. 20, 1910.

1,041,994.

Patented Oct. 22, 1912.

2 SHEETS—SHEET 1.

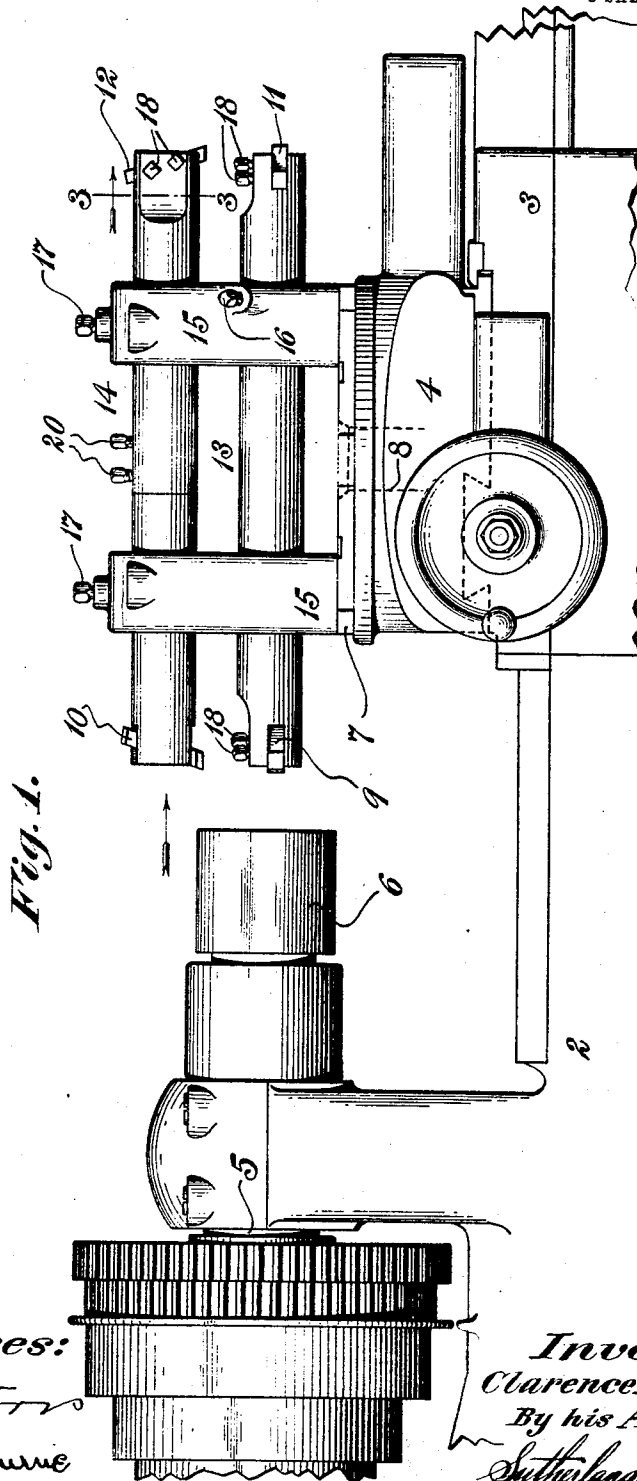


Fig. 1.

Witnesses:

W. J. Roberts
W. J. Roberts

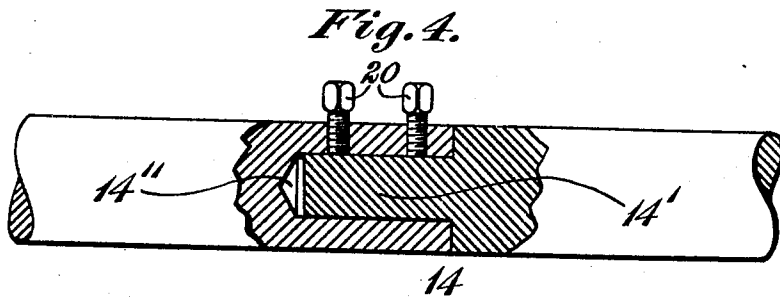
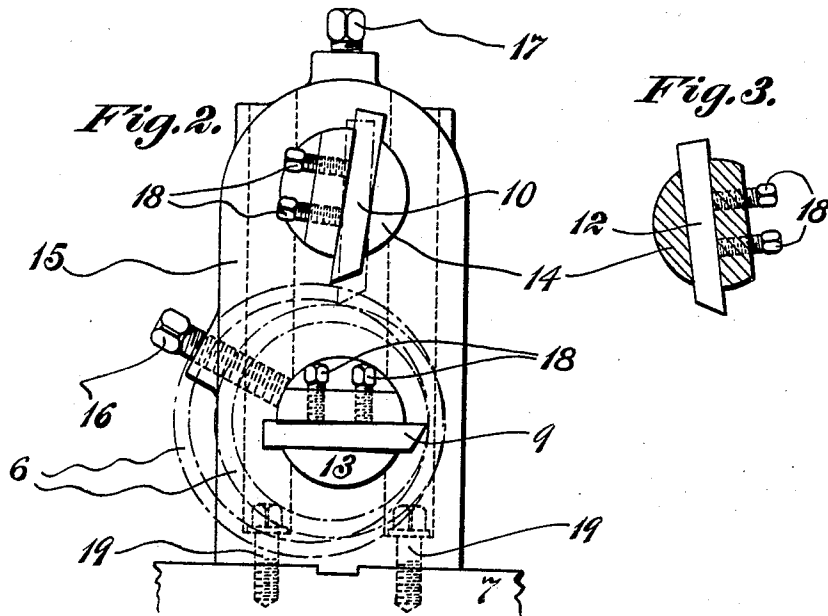
Inventor:
Clarence L. Goodrich
By his Attorneys,
Sutherland & Anderson

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Witnesses:

H. J. Harris
Wm. H. Lawrence

Inventor:

Clarence L. Goodrich
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UNITED STATES PATENT OFFICE.

CLARENCE L. GOODRICH, OF HARTFORD, CONNECTICUT, ASSIGNOR TO PRATT & WHITNEY COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF NEW JERSEY.

ATTACHMENT FOR TURRET-LATHES.

1,041,994.

Specification of Letters Patent.

Patented Oct. 22, 1912.

Application filed October 20, 1910. Serial No. 588,099.

To all whom it may concern:

Be it known that I, CLARENCE L. GOODRICH, citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Attachments for Turret-Lathes, of which the following is a specification.

This invention relates to what I shall for convenience term an attachment for turret lathes, this designation having been adopted as the attachment has been found of particular utility in the connection indicated. It is conceivable that the said attachment may be employed with equal advantage in conjunction with other types of metal working machines.

The object of the invention is to provide a device of the class described whereby tubular or hollow articles of various kinds can be turned interiorly and exteriorly with facility and accuracy.

Said device possesses several other features of advantage and improvement which with the foregoing will be set forth fully in the following description wherein I will disclose that form of embodiment of the invention illustrated in the drawings accompanying and forming part of the present specification, this showing being to enable those skilled in the art to practise the invention. From this it will be apparent that I do not restrict myself to the showing in question, as I may depart therefrom in several respects within the scope of my invention included in the claims succeeding said description. As intimated the attachment includes several different features, and it is not essential that all these be simultaneously employed or be brought into correlation, as some of them may be employed independently of the others.

Referring to the drawings: Figure 1 is a side elevation of a portion of a turret lathe equipped with an attachment embodying my invention. Fig. 2 is an elevation of the attachment itself, the elevation being in the direction of the arrow in Fig. 1, a portion of the turret being also shown. Fig. 3 is a cross section on the line 3-3 of Fig. 1 looking in the direction of the arrow, and, Fig. 4 is a part sectional view of the intermediate portion of one of the tool carriers hereinafter described.

The views are on different scales, and

throughout the same like characters refer to like parts. In Fig. 1 of the drawings I have shown portions of a turret lathe of familiar construction which I will briefly describe to indicate more clearly the purpose and advantages of the present invention. In this figure the numeral 2 denotes the bed of such a lathe and mounted for longitudinal movement on the same is the carriage 3 which supports the slide 4 movable transversely of the bed 2. The spindle which sustains the work is designated by 5, and it is shown as having a tubular blank 6 connected therewith which during the turning operation is rotated. On the slide 4 is mounted the turret 7 pivoted to said slide 4 by a pin 8. The parts to which I have briefly referred operate in the usual manner, so that it is needless to go further into detail in respect to these points. In the present instance there are two sets of tools, one a roughing set and the other a finishing set. Each set preferably comprises two tools, one of which is adapted to operate on the interior of the work, while the other operates against the exterior of the work. The primary or roughing tools are denoted by 9 and 10, while the finishing tools are denoted by 11 and 12. The tools 9 and 11 operate alternately within the work 6, while the tools 10 and 12 alternately turn the work exteriorly thereof.

As a means for sustaining the several tools, I may provide carriers such as those designated respectively in a general way by 13 and 14, both carriers being shown approximately of cylindrical form, although their particular shape is not essential. I prefer also that the carrier 14 be in sections, and the reason of this will hereinafter appear. The turret 7 is shown provided with complemental bearings 15 rising therefrom, and these bearings constitute a convenient means for supporting the two tool carriers 13 and 14, said bearings being bored or perforated to receive the two carriers. To hold the lower carrier 13 in place, set screws as 16 on the bearings 15 may be provided, and each bearing is also equipped with a set screw 17 engaging against the sections respectively of the upper tool carrier 14. The carriers or bars 13 and 14 are slotted or notched at their outer ends to receive the respective tools 9, 10, 11 and 12, and said tools are preferably adjustable as will here-

inafter appear, and the adjustment in each case may be maintained by set screws which as a matter of convenience are all designated by 18. The bearings 15 are preferably rigidly connected with the turret 7, and for this purpose clamping screws each denoted by 19 may be provided.

It will be clear that after the roughing tools 9 and 10 have turned the work interiorly and exteriorly thereof to the requisite extent, the carriage 3 will be backed off to remove the tools from contact with the work following which the turret 7 will be turned on its pivot to bring the finishing or secondary tools 11 and 12 into position to make their cuts. The interiorly operative tools 9 and 11 can be simply moved endwise or adjusted radially of the carrier or bar 13 and practically similarly with respect to the work spindle 5 and the work 6, as the work varies in diameter without affecting the proper relation between the cutting points of said tools 9 and 11 and the inner surface to be turned. While the same adjustment of the exteriorly operative tools 10 and 12 can be accomplished to adapt them to the size of the work, such adjustments will vary their angle of presentation to the work, and to assure that the tools 10 and 12 shall be presented at the precise angle to the work, I prefer that tools 10 and 12 be angularly adjustable which can be obtained by making the carrier 14 rotatively or angularly adjustable. The dot and dash lines in Fig. 2 show two sizes of work, and it will be clear how the tool 9 (or 11) can be adjusted endwise without affecting its proper angular relation to the two sizes of work. The endwise adjustment of the upper roughing tool 10 in changing the same after the turning of the larger size work to turn the smaller size work will vary the angle of the tool 10 with respect to the work. The angle of the tool 10, however, can be corrected by turning the carrier 14. I prefer that the two axially alined tool-carrying sections of the carrier be adjustable with respect to each other so that both tools can be independently angularly adjusted, for if the bar or carrier 14 were of continuous construction,

it would be clear that if the tool 10 were thus adjusted, such adjustment would throw the tool 12 at the opposite end way off. In the present instance, the section on the right of the carrier 14 is shown provided with a reduced portion 14' adapted to turnably fit a socket 14'' in the companion section and the relative adjustment of the two parts may be maintained by set screws 20 on the socketted section of the carrier 14 aided by the screws 17. There may be cases where I may provide no connection between the sections of the bar 14, but a connection is desirable, as I obtain practically the strength of a continuous or integral bar which is a matter of prime importance, in that I practically eliminate all chattering of the tools during work.

What I claim is:

1. The combination of a work spindle, a turret, and a tool carrier comprising two axially alined connected sections, each of which is sustained by said turret for movement about its axis and while carried by said turret, and each of said sections being provided at its outer end with means for carrying a tool for adjustment transversely of the tool carrier, said tool carrier being provided with means for rigidly connecting the sections thereof to each other and the turret being turnable to bring either tool on said tool carrier into position to operate on the work carried by said spindle.

2. The combination of a tool carrier, and a support for said tool carrier, the latter having means at its opposite ends for supporting tools and also comprising two axially alined tool carrying sections each of which is carried by said support for movement about its axis and while carried by said support, said sections being jointed to each other between the tool carrying ends, and means for preventing relative movement of said sections during work.

In testimony whereof I affix my signature in presence of two witnesses.

CLARENCE L. GOODRICH.

Witnesses:

WILLIAM M. STORRS,
H. W. KILBOURNE.