W. T. LINGO.

FINISHING HEAD FOR BOLT TURNING MACHINES.

APPLICATION FILED OCT. 9, 1918.

1,406,880.

Patented Feb. 14, 1922.

2 SHEETS—SHEET 1.

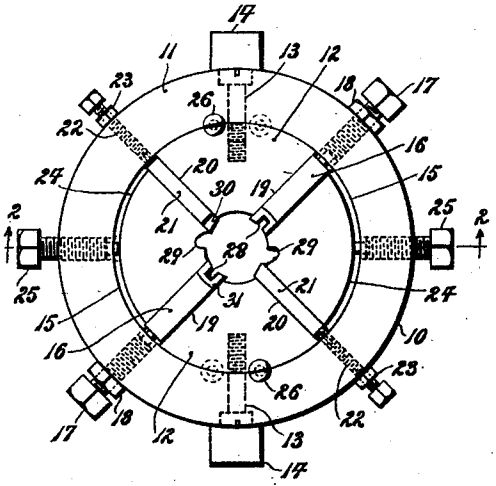


Fig. 1

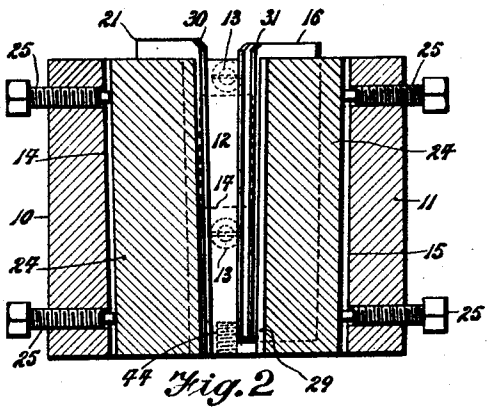


Fig. 2

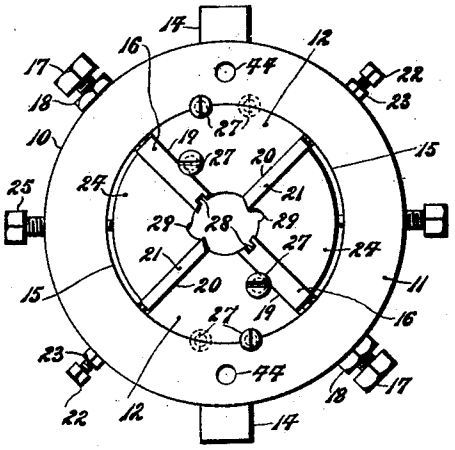


Fig. 3

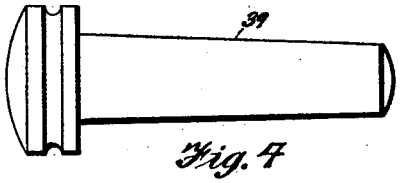


Fig. 4

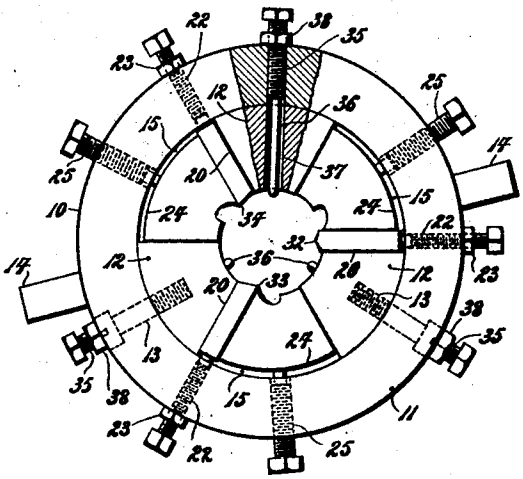


Fig. 5

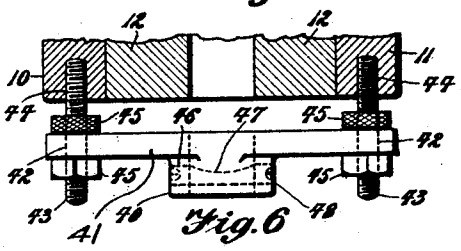


Fig. 6

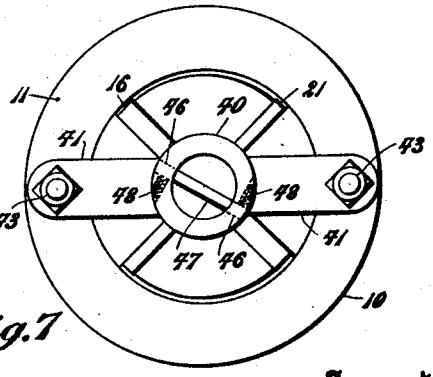


Fig. 7

Witness
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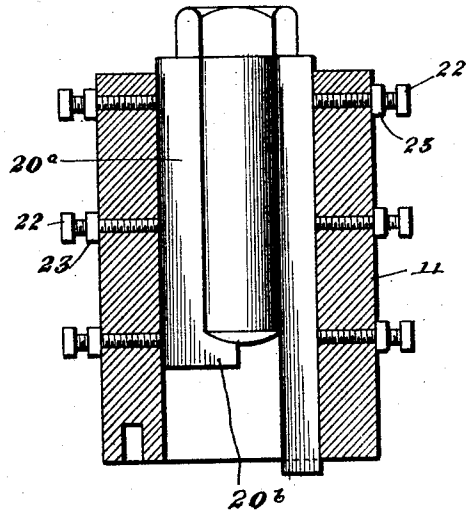
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2 SHEETS—SHEET 2.

Fig. 8.



WITNESS:

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FINISHING HEAD FOR BOLT-TURNING MACHINES.

1,406,880. Specification of Letters Patent. **Patented Feb. 14, 1922.**

Application filed October 9, 1918. Serial No. 257,529.

To all whom it may concern:

Be it known that I, WILLIAM T. LINGO, a citizen of United States, residing at 1525 Swain Street, Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Finishing Heads for Bolt-Turning Machines, of which the following is a specification.

This invention relates to finishing heads for bolt turning machines and it has more particular reference to that type or form of finishing heads which are usually employed on vertical spindle machines for turning taper bolts for locomotive building, and employment where a "driving fit" is essential.

Heretofore several forms of such heads have been devised and used for the purpose referred to, but all of them have necessitated the employment of what may be termed auxiliary or separate machinery to perform one or more of the operations in order to completely produce a finished tapered or straight bolt.

Now the main object of my invention is to provide a finishing head for turning taper or straight bolts which will perform the several operations in one "cut."

Another object of my invention is to provide a finishing head of the type referred to which will chamfer, rough, finish, square up under the head of the bolt, and round the end of the shank ready for threading, in one "cut."

A still further object of my invention is to provide a finishing head for turning taper or straight bolts whereby a substantial saving of time and labor is effected, and furthermore, the output is increased—as I have proven by actual tests—some two hundred and fifty to three hundred per cent. as compared with the present forms of finishing heads generally in use.

With these and other objects in view, the invention consists essentially in the features of construction, combination and arrangement of the several parts hereinafter fully described, illustrated by the accompanying explanatory drawings, and more specifically pointed out by the appended claims.

In describing my invention in detail, reference will be had to the accompanying drawings forming a part of this specification, wherein like characters denote like or corresponding parts throughout the several views, and in which—

Figure 1 is a top plan view of a two cutter head embodying my improvements.

Figure 2 is a central vertical section taken on the line 2—2 in Figure 1.

Figure 3 is a bottom plan view of the two-cutter head.

Figure 4 is a detail view of a gauge to be used in lining up the cutter-head.

Figure 5 is a top plan view of a modified form of my invention, and including three cutters.

Figure 6 is a fragmentary elevation, partly in section, of an attachment for the under side of the head, and,

Figure 7 is an under side plan of the same.

Figure 8 is a detail section showing the laterally extending cutting portion on one of the cutters.

Referring more particularly to Figures 1 to 3 of the drawings, the numeral 10 indicates the finishing head in its entirety, and said head consists of a cylindrical body or cutter-holder 11, internally whereof and diametrically opposed are firmly secured segmental spacing members 12, said segmental spacing members 12 being conveniently held in place by screws 13. It is to be here noted that I preferably arrange the segmental spacing members 12 in line with the diametrically disposed lugs 14, and by means of which the device is adapted to be held in place on a stationary table.

Arranged within the arcuate spaces or openings 15 formed between the aforesaid segmental spacing members 12, are members 16 which are known to the art as "steady rests," and which will be so termed hereafter, and said steady rests 16 are radially adjustable diametrically opposite each other by adjusting screws 17, furnished with lock nuts 18. These steady rests 16 are disposed diametrically opposite each other against one of the longitudinal and radial flat faces 19, of the segmental spacing members 12, and against the other longitudinal and radial flat faces 20 of said segmental spacing members 12, I arrange the cutters 21 which are radially adjustable by adjusting screws 22 furnished with lock nuts 23.

Between the steady rests 16 and the cutters 21, are located the segmental wedge or filler members 24, which are adapted to be forced into firm engagement with the ad-

joining steady rest 16, and cutter 21, by screws 25, so as to lock said parts in firm adjusted relation. Counterbored screws 26 are threaded into the ends of the segmental spacing members 12, and the cylindrical body portion 11, to prevent longitudinal displacement of said parts, and counterbored screws 27 (Figure 3) are threaded into the lower ends of the segmental spacing members 12, against the vertical walls 19, to support the steady rests 16 while being adjusted in place. Each of the steady rests 16 is longitudinally grooved at 28, and the wedges 24 are similarly grooved at 29, to provide free discharge for the shavings during the operation of turning a bolt.

The cutters 21 are preferably extended slightly beyond the upper ends of the steady rests 16, so as to form what may be termed "cutting heads" for operating on the under side of the bolt head, and it is to be noted particularly that I form one of the cutters 21 with an inclined upper cutting edge 30, which serves to chamfer the end of the shank of the bolt as it enters the head, thereby insuring the removal of any fray or projecting edges on the forging, as well as insuring the proper centering or lining up of said bolt. Similarly the steady rests 16 are likewise chamfered at 31 to further insure the proper entry and lining of the entering bolt.

In some cases, and more particularly when operating upon steel bolts, I preferably use the form of my invention shown in Figure 4, and which is substantially the same as above described, excepting that I employ three cutters 32, 33, 34 respectively, for chamfering, roughing and finishing; and further that I dispense with the steady rests 16, and in lieu thereof employ adjusting screws 35. These adjusting screws 35 are threaded into the cylindrical body or head 11, and are provided with plain reduced extensions 36, which pass easily through radial holes 37 in the segmental spacing members 12, and they are arranged in staggered relation around the head 11 and fitted with lock nuts 38.

When using this form of three-cutter head, I employ a gauge 39, such as is shown in Figure 4, for "lining up" the cutters 32, 33, 34, and adjusting screws 37, and its function and use will be apparent to those skilled in the art without further detailed explanation.

In order to provide a simple and effective means for rounding the ends of the bolt shanks ready for threading, I employ the means shown in Figures 6 and 7, and which comprises a collar 40, provided with lateral arms 41 appropriately holed at 42, for the free passage of screws 43 firmly threaded into holes 44, provided for their reception in the under side of the cylindrical body or head 11. Adjusting nuts 45 are provided for regulating the position of the collar 40, relative to the under side of the head 11, to accommodate different lengths of bolts, and diametrically across said collar 40 in appropriate slots 46, I house a rounded cutter 47 which is locked in place by screws 48.

When operating upon standard lengths of bolts I may form one of the cutters 20^a with a laterally-extending rounded-out cutting portion 20^b at its lower end for the same purpose, Figure 8.

From the foregoing description, the assembling and adjusting of my improved finishing head will be readily understood, while the advantages and novel features will be self apparent, for instance my novel finishing head has the capacity of function of completing all of the operations in one cut. In other words my novel head contains one cutter for the purpose of tapering the bolt and putting a smooth finish thereon and squaring it up under the head, while the other cutter is used for chamfering the bolt and taking a rough cut off the same and rounding the end; thus the head completes five operations at one cut, and the operator is required to handle the bolt only three times. It will be obvious that by the manipulation of the adjusting screws, cutters, steady rests 16 and adjusting screws 35, the head can be easily converted for operating upon straight or tapered bolts, and I wish it clearly understood that I do not limit myself to the precise construction shown and described, other combinations and arrangements of the several parts being possible without departing from the nature and essential features as above disclosed, such other arrangements and combinations, however, being limited by the scope of the appended claims.

I claim:

1. In a finishing head for bolt turning machines, the combination of a cylindrical casing, diametrically opposed segmental spacing members secured within said cylindrical casing, opposed steady rests disposed against one of the radial walls of said segmental spacing members, opposed cutters disposed against the other radial walls of said segmental spacing members, arcuate wedge members disposed within the arcuate spaces between the aforesaid segmental spacing members, and adapted to engage the steady rests and cutters, means for adjusting and locking said parts in position, a collar mounted beneath the finishing head and carrying a rounded cutter, and means for adjusting said collar to and from said head to accommodate bolts of different lengths.

2. In a finishing head for bolt turning machines, the combination of a casing, a series of spacing members secured within said casing, a like number of cutters disposed

against one of the walls of said spacing members, wedge members disposed within the spaces between the aforesaid spacing members and adapted to engage the cutters and the opposed walls of the spacing members, means for adjusting and locking said parts in position, and a series of staggered adjusting screws for steadying the bolt during turning.

3. In a finishing head for bolt turning machines, the combination of a cylindrical casing, a series of radially disposed segmental spacing members secured within said cylindrical casing, a like number of cutters disposed against one of the radial walls of said segmental spacing members, arcuate wedge members disposed within the arcuate spaces between the aforesaid radially disposed segmental spacing members, and adapted to engage the cutters and the opposed radial wall of the segmental spacing members, means for adjusting and locking said parts in position, and a series of radially disposed staggered adjusting screws for steadying the bolt during the operation of turning.

In testimony whereof I affix my signature.

WILLIAM T. LINGO.