Dec. 10, 1929. H. T. SNELL 1,739,424

REAMING MACHINE

Filed Oct. 20, 1926 2 Sheets-Sheet 1

Fig. 1.

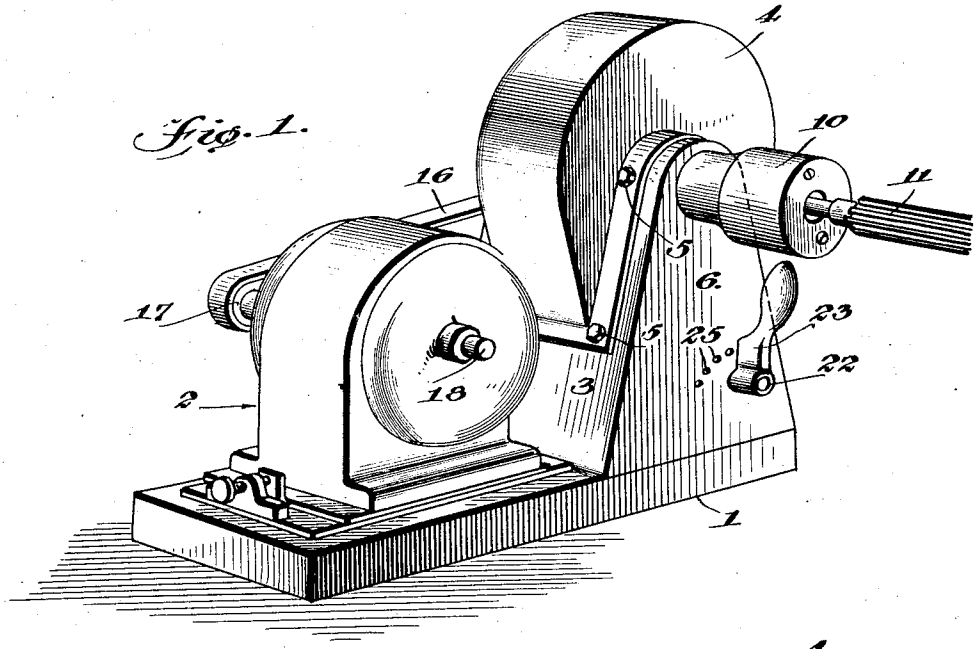
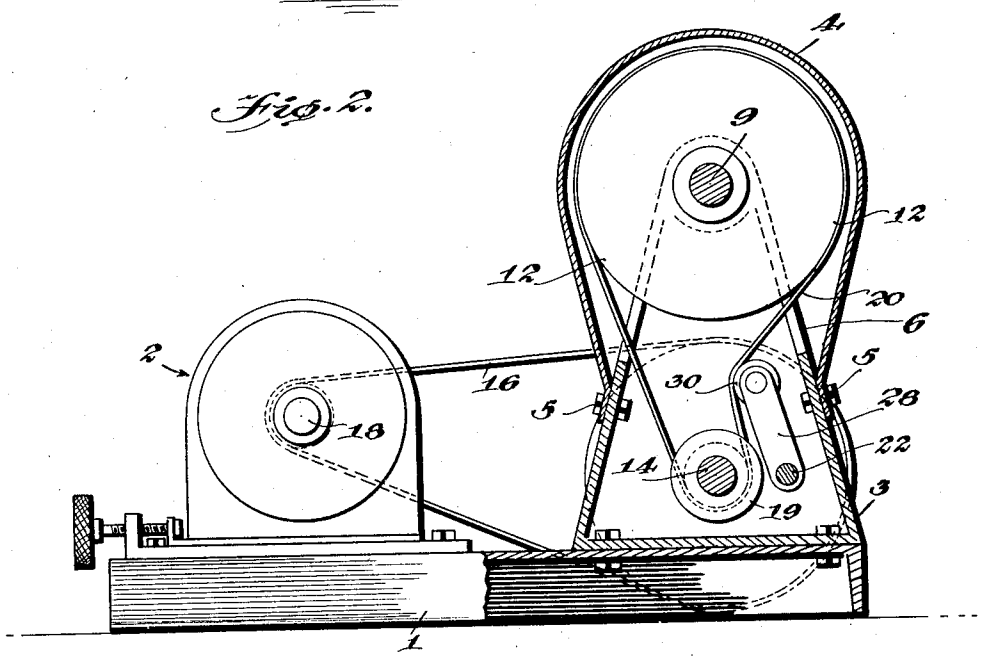


Fig. 2.



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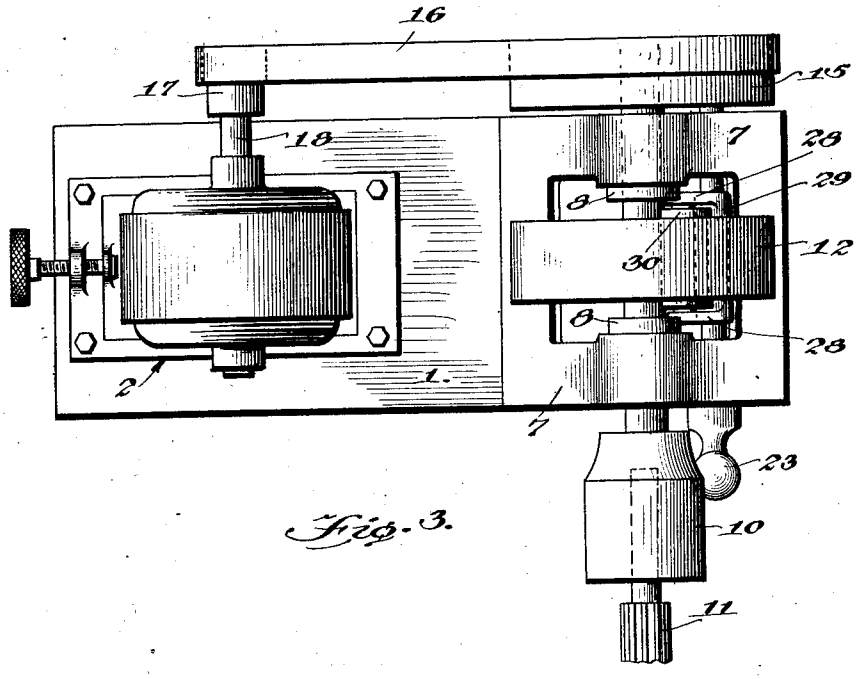
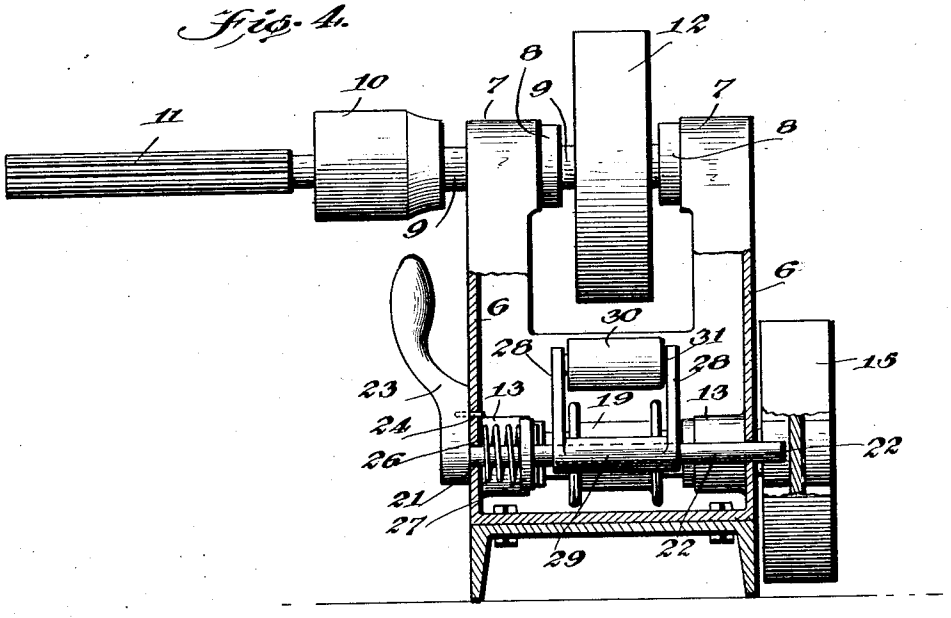


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE

HAROLD TONKIN SNELL, OF EL PASO, TEXAS

REAMING MACHINE

Application filed October 20, 1926. Serial No. 142,950.

My invention relates to improvements in reaming machines, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of the invention is the provision of a reaming machine which will afford facilities for utilizing the power of a prime mover to effect turning of a reaming tool as required to ream the bores or openings of various articles, such as connecting rod bearings, pistons, and the like, quickly and accurately.

A more specific object of the invention is the provision in a reaming machine having a power actuated driving mechanism that includes a belt connection between a constantly rotating pulley and a pulley on the spindle of the machine, of a novel belt tightening device which can be adjusted manually to function in the manner of a friction clutch for disconnecting the spindle pulley from the driving mechanism instantly when desired and for varying the friction between the belt and its associated pulleys so that the driving means will be ineffective to turn the spindle against given resistances which may be varied within a considerable range by adjustment of the belt tightening means in respect to the belt.

A further object of the invention is the provision of a reaming machine which will be reliable in use, not likely to get out of order easily, and thoroughly practical commercially.

Other objects and advantages of the invention will be apparent from the following description, considered in conjunction with the accompanying drawings, in which,

Figure 1 is a perspective view of the improved reaming machine.

Figure 2 is a view partly in side elevation and partly in vertical section of the structure exhibited in Figure 1.

Figure 3 is a plan view of the improved reaming machine with the hood portion of a housing that is included in the machine omitted.

Figure 4 is an end view, partly in vertical section, of the structure exhibited in Figure 3.

The supporting structure of the improved reaming machine may comprise a base 1. One end portion of the base 1 supports a suitable prime mover, such as the electric motor generally designated by the numeral 2. The remaining portion of the base supports a housing which comprises a body or main portion 3 and a hood or cover portion 4 that is removably secured at 5 (see Figures 1 and 2) to the main or body portion of the housing. The body portion 3 of the housing has substantially vertical parallel side walls 6. The upper portion of the body of the housing is cut away intermediate the side walls 6 to provide the upstanding spaced side portions 7 which are provided with the alined bearings at 8 for a spindle 9. The spindle 9 extends laterally of one of the side walls 6 of the body of the housing and carries a chuck 10 which may be of any suitable construction and which is adapted to hold a reaming tool 11 in the usual manner.

The spindle 9 carries a pulley 12 between the upper side portions 7 of the body of the housing and this pulley 12 is housed within the hood or cover portion 4 of the housing when the latter is secured to the body of the housing in the manner hereinbefore described.

The lower portions of the side walls 6 of the body of the housing are provided with internal bearings at 13 for a second motion shaft 14 which extends laterally of the side wall 6 of the housing that is opposite to the extending end portion of the spindle 9. The extending end portion of the shaft 14 carries a pulley 15 which is connected by a belt 16 with a stepped or cone pulley 17 on the outer end of the drive shaft 18 of the motor 2. The second motion shaft 14 also carries a relatively small flanged pulley 19 that is disposed within the body of the housing in line with the pulley 12 and is connected with the pulley 12 by an endless belt 20. The endless belt 20 normally fits loosely around the peripheries of the pulleys 19 and 12 so that the pulley 19 will be ineffective to impart motion to the pulley 12 and the spindle 9 when the belt 20 is loose and therefore the motor 2 may remain in operation and the shaft 14 may be turned without causing turning of the spindle 9.

The pulley 19 is considerably smaller than the pulley 15 which in turn is considerably larger than any portion of the drive pulley 17. It, therefore, will be apparent that the hereinbefore described mechanism for connecting the spindle 9 with the drive shaft of the motor will cause rotation of the spindle 9 at a greatly reduced speed when the belt 20 is sufficiently tight to transmit motion from the pulley 19 to the pulley 12.

The side walls 6 of the body of the housing are provided with alined openings at 21 for the reception of end portions of a rock shaft 22 which is parallel with the second motion shaft 14 and preferably is located at about the same level as the shaft 14. The rock shaft 22 is both longitudinally slidable and rotatable in the openings 21 and one end portion of the rock shaft 22 extends laterally of the same side wall of the body of the housing as the spindle 9 and carries a handle 23. A latch pin 24 extends from the inner face of the hub of the handle 23 and is engageable with a plurality of openings 25 selectively, the openings 25 being arranged in an arcuate series in the adjacent side wall 6 of the body of the housing. An expansion spring 26 encircles the rock shaft 22 between a stop collar 27 and the inner face of the side wall 6 with which the handle 23 is associated and it therefore will be manifest that the longitudinal movement of the rock shaft will be limited by the spring 26 and the handle 23 and that the spring 26 will function to yieldingly maintain the latch pin 24 in any one of the openings 25 with which such latch pin may be engaged.

The rock shaft 22 carries a pair of spaced rocker arms 28 within the body of the housing and such rocker arms may be integral with a sleeve 29 that may be secured to the rock shaft 22 in any suitable known manner. A roller 30 is rotatably supported between the outer ends of the arms 28, as by being mounted on a short shaft or rod 31 that extends between the outer end portions of the arms 28. The periphery of the roller 30 is in rolling contact with the belt 20 and it is manifest that the belt 20 may be tightened and the frictional engagement of the belt 20 with the peripheries of the pulleys 19 and 12 made more positive by actuating the handle 23 to swing the pulley 30 against the belt 20 to tighten the latter as much as possible. The handle 23 is pulled outwardly from the body of the housing preliminarily to turning the rock shaft to swing the pulley 30 toward or away from the belt 20 and the spring 26 will urge the rock shaft 22 and the handle 23 in an inward direction when the outward pull on the handle 23 is relaxed so that the latch pin 24 will enter and engage with one of the openings 25 and the roller 30 will be releasably held in a desirable position in respect to the belt 20.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. The article having the opening or bore that is to be reamed may be held stationary in the hands of the workman in engagement with the reaming tool 11. When it is desired to actuate the reaming tool, the handle 23 is manipulated to tighten the belt 20 and the spindle then will be driven when the motor 2 is placed in operation. Should it be desired to discontinue the rotation of the reaming tool, it only is necessary to swing the handle 23 as required to relieve the belt 20 of pressure from the roller 30 and the driving mechanism then will be ineffective to impart rotation to the spindle. Also, the roller 30 may be adjusted with respect to the belt to permit slipping of the belt when the reaming tool is opposed by an undue resistance or an overload and such resistance may be varied by varying the position of the roller 30 in respect to the belt 20 to tighten the latter more or less. Therefore, the driving means will be rendered ineffective to turn the reaming tool before any serious injury to the article that is being reamed could take place, should such article be inadvertently moved or so placed as to oppose an undue resistance to the turning of the reaming tool.

It therefore is thought that a reaming machine which embodies the invention is adapted to permit reaming of openings or bores of various articles more quickly, accurately and with less manual exertion than has heretofore been possible with reaming devices of the same general class.

Obviously, the invention is susceptible of embodiment in forms other than that which is illustrated in the accompanying drawings, and I therefore consider as my own all such modifications and adaptations thereof as fairly fall within the scope of the appended claim.

What I claim is:

In combination a support having a plurality of spaced openings, a shaft rotatably supported in the support and capable of longitudinal movement, a laterally extending arm carried by the shaft, a belt tightening roller carried thereby and engageable with a belt to be tightened, a handle on one end of the shaft, a laterally projecting pin carried thereby and engageable in any one of the openings to retain the shaft in selected positions about its axis, and a coil spring engaging the shaft to normally urge the latter to a position to hold the pin in one of the openings and lock the shaft in selected position, the handle being shiftable laterally against the action of the coil spring to disengage the pin from the openings when it is desired to adjust the shaft to regulate the tension in the belt.

H. T. SNELL.