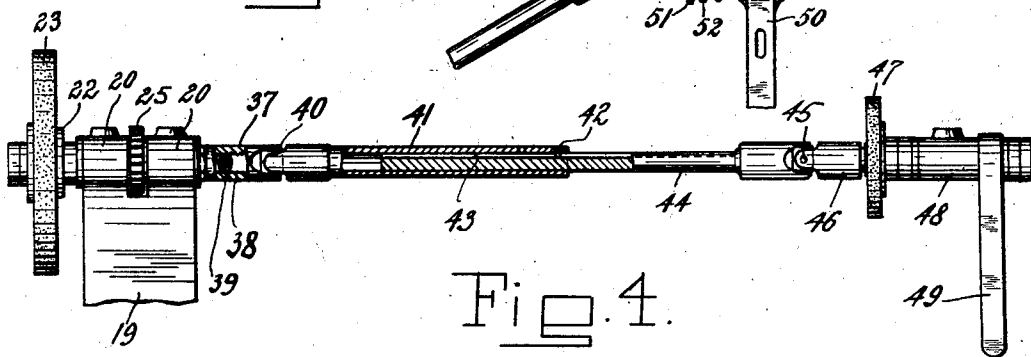
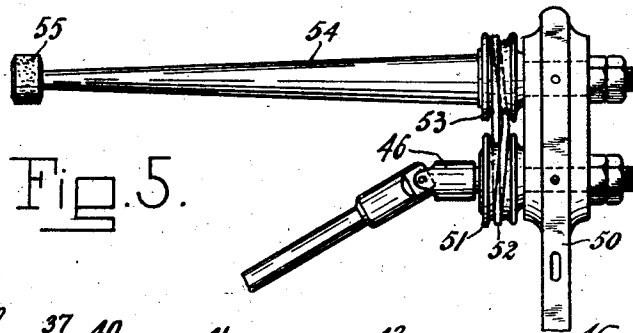
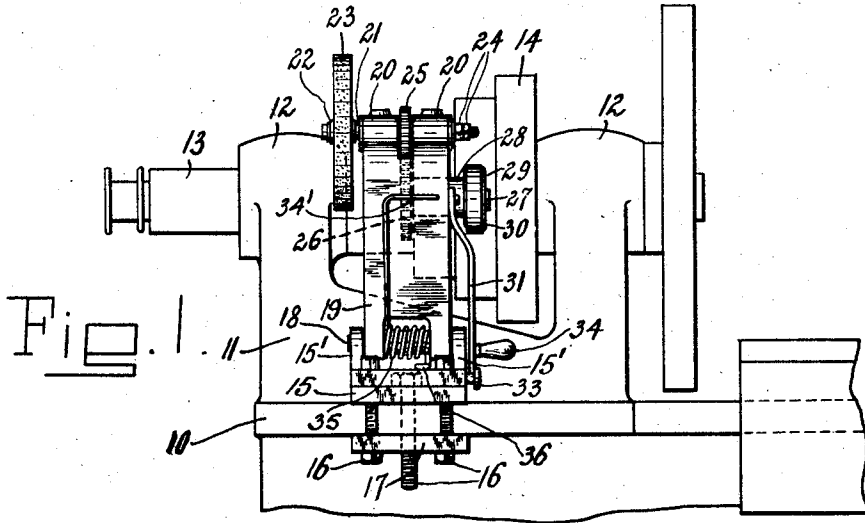


P. SPIEGEL.
GRINDING ATTACHMENT FOR LATHES.
APPLICATION FILED OCT. 15, 1912.

1,047,717.

Patented Dec. 17, 1912.

2 SHEETS—SHEET 1.



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Fig. 2.

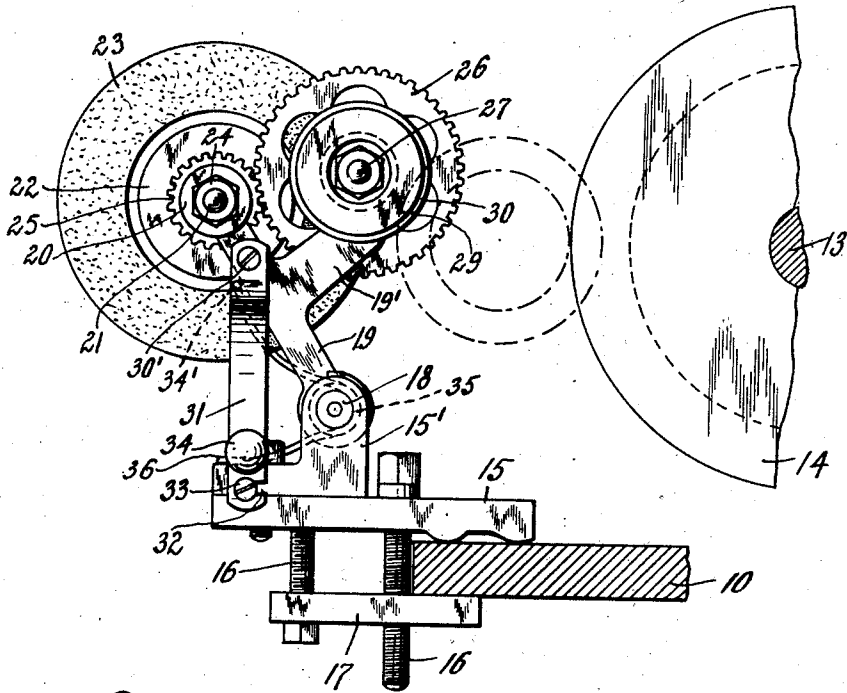
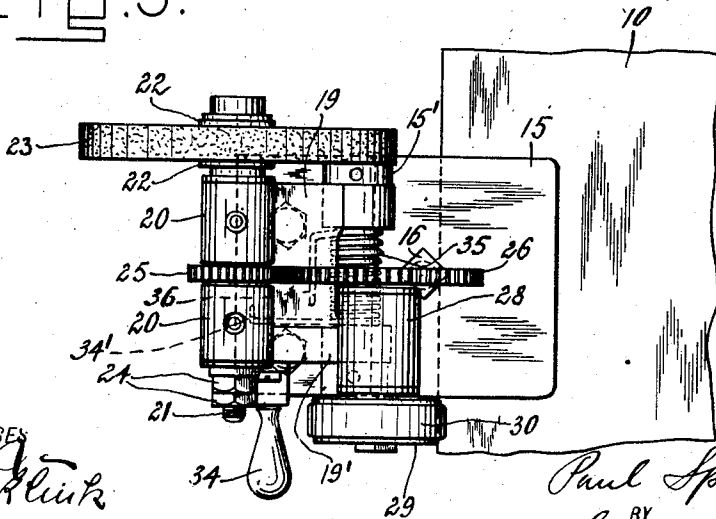


Fig. 3.



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GRINDING ATTACHMENT FOR LATHES.

1,047,717.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed October 15, 1912. Serial No. 725,852.

To all whom it may concern:

Be it known that I, PAUL SPIEGEL, a subject of the Czar of Russia, and resident of the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Grinding Attachments for Lathes, of which the following is a specification.

The present invention relates to grinding attachments for lathes, and has for one of its objects to provide a simple and efficient device of this type, by means of which tools can be ground and sharpened without interfering with the operation of the lathe proper.

Another object of the invention is to produce a device of this character which can be easily brought into an inoperative position upon the lathe without the necessity of detaching the same therefrom.

A further object of the invention is to construct a grinding attachment, by means of which the work upon the lathe can be ground speedily and accurately, permitting tools to be ground simultaneously.

With these and other objects in view, which will more fully appear as the nature of the invention is better understood, the same consists in the combination, arrangement and construction of parts hereinafter fully described, pointed out in the appended claims and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and minor details of construction within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a front elevation of a portion of a lathe with the attachment thereon; Fig. 2 is a side elevation thereof; Fig. 3 is a plan view thereof; Fig. 4 is a plan view of a portion of the attachment with the means thereon for grinding the work upon the lathe; and Fig. 5 is a plan view of a modification of the device shown in Fig. 4.

In the drawings only as much of the lathe is illustrated which is sufficient to show the manner of attaching and the relation of the device, comprising the invention, to the lathe.

In the drawings, the numeral 10 indicates the horizontal bed plate of the lathe, upon which is mounted in the well known manner a spindle frame 11, provided with bearings 12, 12 in which the spindle 13 is mounted to rotate. To this spindle is keyed or otherwise attached a stepped pulley 14, to which power is applied through the intermediary of a suitable belt for the purpose of driving the spindle.

The attachment comprises a base plate 15, which is clamped by means of screws 16, 16 and a clamping plate 17 to the bed plate 10 of the lathe in front of the driving pulley 14. The base plate carries fixedly attached thereto two upwardly projecting lugs 15', which carry a stationary arbor 18 substantially parallel to the lathe spindle 13. Between the two lugs is oscillatably mounted upon this arbor an upwardly extending frame 19, in the form of a plate member, which carries upon its upper free end bearings 20 for the grinding wheel shaft 21. To one end of this shaft is attached by collars 22 a grinding wheel 23 of any suitable size, which is, preferably, made of emery or similar material. To prevent the longitudinal shifting movement of the spindle, its other end is in engagement with stop nuts 24. Between the two bearings 20, 20 is fixedly attached to the shaft 21 a spur gear 25, in mesh with a similar gear 26, the latter being keyed or otherwise attached to a spindle 27, which is rotatably mounted in a bearing 28, formed upon a forward extension 19' of the plate member 19. To the spindle 27 is furthermore secured a friction pulley 29, provided upon its peripheral portion with a leather covering 30, adapted to contact, in a manner to be described, with one of the steps of the driving pulley 14. To one side of the plate member 19 is pivotally secured at 30' a locking bar 31, having in its lower end a slot 32, in which is adapted to be seated a stud 33, carried by the base plate 15. The locking bar 31 is provided with a handle 34 to facilitate the engagement and disengagement thereof with and from the stud 33. A spring 35 is wound upon the stationary arbor 18, one end of said spring bearing against the front face of the plate member 19, as clearly shown at 34', its other end, denoted by the numeral 36, bearing against the base plate 15. This spring tends to bring the pulley 29 into engagement with

one of the steps of the driving pulley 14 as soon as the stud 33 is disengaged from the locking bar 31.

The operation of this device is as follows:

5 Normally the parts are in the positions shown in Figs. 2 and 3 of the drawings, in which case the stud 33 is seated in the slot 32 in the locking bar 31. Such engagement keeps the pulley 29 disengaged from the pulley 14. When it is intended to sharpen or grind a tool, the locking bar is disengaged from the stud 33, whereby the spring 35 forces the pulley 29 into contact with one of the steps of the driving pulley 14, this position of the stepped pulley being shown in dotted lines in Fig. 2 of the drawings. Motion is thus transmitted by frictional contact to the pulley 29, and by the intermediary of the gears 26 and 25 to the grinding wheel shaft and the grinding wheel. It is obvious thus that, when the parts are in these positions, tools can be easily ground, and that such grinding operation will not interfere with the proper operation of the lathe. When the grinding operation is performed, the attachment is forced, against the action of the spring 35, away from the stepped pulley and the locking bar engaged with the stud 33.

30 The attachment is particularly useful in factories or shops where a number of lathes are operated. In such places usually only one or two tool grinding devices are kept. Around these devices sometimes a long line of mechanics forms, each intending to grind his tool, but compelled to wait until those ahead of him in the line have finished their work on the grinding devices. With the attachment herein described such difficulties are obviated, for the reason that each mechanic is able to grind his tool whenever it becomes necessary on his lathe without wasting time in waiting.

For grinding the work upon the lathe, the device now described is provided with a further attachment (shown in Fig. 4 of the drawings). This attachment comprises a tubular stud 37, provided with inner screw threads 38, which are adapted to mesh with the screw threads 39 upon the grinding wheel shaft 21. The tubular stud 37 is connected by means of a universal joint 40 with a tubular shaft 41, which is provided with an inwardly extending pin 42, engaging a peripheral longitudinal recess 43 of a shaft 44, the latter being connected by a universal joint 45 with a spindle 46, to which is attached in any suitable manner a grinding wheel 47. The outer end of the spindle 46 is rotatably mounted in a bearing 48, which is carried by an operating handle 49.

The operation of this device is as follows: One of the stop nuts 24 is disengaged from the screw threaded end of the grinding wheel shaft 21, which latter is brought in

mesh with the inner screw threads of the stud 37. The friction pulley 29 is then brought into engagement in the manner above described with the stepped pulley, whereby rotation is imparted to the grinding wheel 47. There being a flexible connection between the shaft 21 and the spindle 46, it is obvious that by taking hold of the handle 49, the grinding wheel can be applied to the work upon the lathe at any desired height and angle. The shaft 44 being slidably arranged in the tubular shaft 41, the distance between the pulley 14 and the grinding wheel 47 may be varied, at will, permitting thereby of an operation of the grinding wheel 47 throughout the length of the work. It is obvious that, while the grinding wheel 47 operates upon the work, tools can be ground by means of the grinding wheel 23, or in other words both grinding wheels are adapted to operate simultaneously. Considerable time will thus be saved.

A modification of the device shown in Fig. 4 is illustrated in Fig. 5 of the drawings. This device is particularly useful for grinding interiorly cylinders or other objects. The spindle 46 is rotatably mounted in this case in a tool holder 50, which is adapted to be clamped to the tool post of the lathe. Upon the spindle 46 is mounted a pulley 51, over which runs a belt 52, engaging a pulley 53, which is attached to a shaft 54, the latter being mounted rotatably in the tool holder 50. To the free end of the shaft 54 is secured a grinding wheel 55.

The cylinder or other object to be ground interiorly is supported in the usual manner upon the lathe. The tool holder 50 with the grinding wheel 55 can be made to travel lengthwise of the lathe by the regular feed works of the latter in the same manner that the lathe tool is made to travel, thereby doing regular and effective work upon the cylinder or other object to be interiorly ground from one end to the other, or as much as it might be desired.

What I claim is:—

1. In a grinding attachment for lathes, the combination with the bed plate and the driving pulley of a lathe, of an upwardly extending frame fulcrumed in front of said driving pulley to said bed plate, a shaft rotatably mounted in said frame, a grinding wheel carried by said shaft, a friction pulley upon said frame adapted to contact with said driving pulley, a driving connection between said friction pulley and said shaft, locking means for holding said frame in a position to keep said friction pulley disengaged from said driving pulley, and a spring adapted upon the disengagement of said locking means to swing said frame around its pivot, whereby said friction pulley is brought into contact with said driving pulley.

2. In a grinding attachment for lathes, the combination with the bed plate and the driving pulley of a lathe, of an upwardly extending frame fulcrumed in front of said driving pulley to said bed plate, a shaft rotatably mounted in said frame, a friction drive between said shaft and said driving pulley, a grinding wheel, a flexible driving shaft attached to said grinding wheel and
5 said first mentioned shaft, and means for
10

holding said frame and the parts carried thereby in position to render said friction drive inoperative.

Signed at New York, in the county of New York and State of New York, this 11th 15 day of October, A. D. 1912.

PAUL SPIEGEL.

Witnesses:

SIGMUND HERZOG,
M. FRIEDLANDER.

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