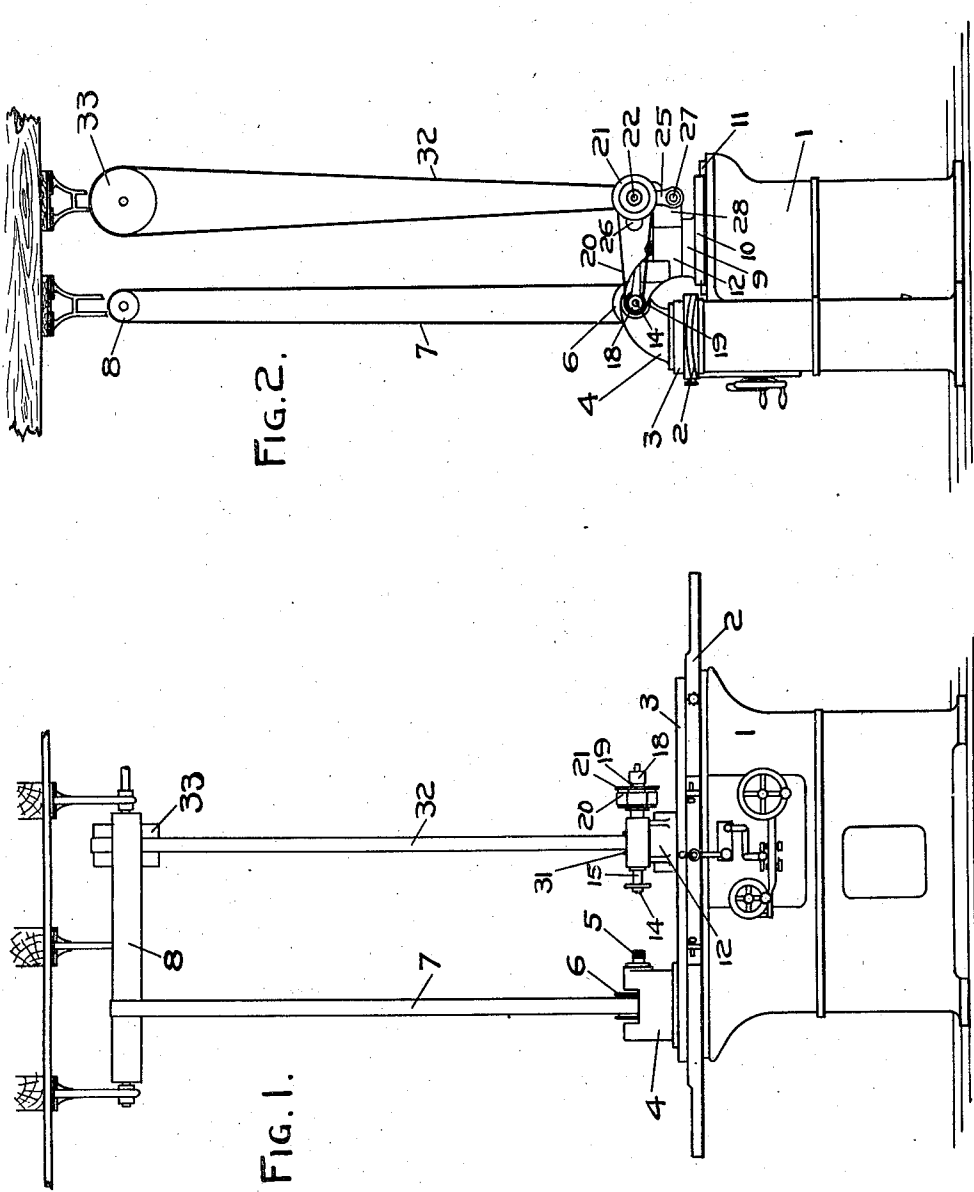


C. G. TREFETHEN.
GRINDING MACHINE.
APPLICATION FILED NOV. 5, 1910.

1,066,167.

Patented July 1, 1913.

2 SHEETS-SHEET 1.



Witnesses

Blanche Hartman.
M. L. Dodge.

Inventor
Charles G. Trefethen
by N. L. Lind

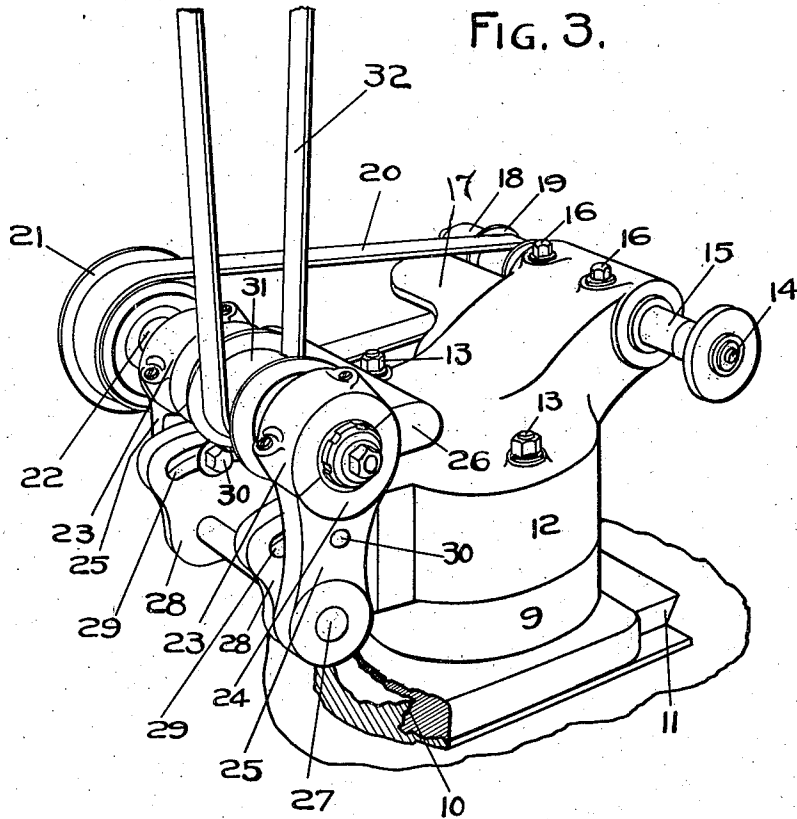
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Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES G. TREFETHEN, OF ERIE, PENNSYLVANIA, ASSIGNOR TO MODERN TOOL COMPANY, A CORPORATION OF PENNSYLVANIA.

GRINDING-MACHINE.

1,066,167.

Specification of Letters Patent.

Patented July 1, 1913.

Application filed November 5, 1910. Serial No. 590,807.

To all whom it may concern:

Be it known that I, CHARLES G. TREFETHEN, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented new and useful Improvements in Grinding-Machines, of which the following is a specification.

This invention relates to grinding machines, and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

The object of the invention is to provide efficient means for driving the different parts of the grinding machine, particularly the wheel spindle. This spindle is driven at a high rate of speed, and in order that nice work may be turned out by the machine, it is necessary that the driving means should drive the wheel spindle without jump or jar, and yet have sufficient power to compel the rapid movement of the wheel under considerable grinding strain. The means for tightening the belt for the work becomes one of great importance, and this is complicated in a machine of this type by the necessity for adjustments of the head stock and wheel stand, to adapt them to different classes of work.

The invention is illustrated in the accompanying drawings as follows:

Figure 1 shows a front elevation of the machine. Fig. 2 an end elevation Fig. 3 a perspective view of the wheel stand.

1 marks the base of the machine, 2 the sliding table, 3 the swivel table, 4 the head stock, 5 the head stock spindle, 6 the head stock pulley. These parts are of ordinary construction. The head stock pulley is driven by a belt 7, and the belt 7 is driven by the drum 8, the drum 8 being of sufficient length to allow the adjustment of the head stock in any position desired. The head stock 4 is ordinarily swiveled and for this reason it is necessary to place a drum 8 vertically above the pulley 6 so that as the head stock is swung it will not interfere with the proper free driving of the head stock by the belt. A wheel stand base 9 has the groove 10 which is arranged to operate upon the slide 11, upon the base of the machine. A wheel stand 12 is swiveled on the base 9, and is locked in place thereon by the bolts 13.

A wheel spindle 14 is carried by the sleeve 15, and the sleeve 15 is locked in the wheel stand by means of the screws 16. An arm 17 extends outwardly from the wheel stand forming a bearing 18 for the wheel spindle. A pulley 19 is mounted on the wheel spindle. A belt 20 connects the pulley 19 with the pulley 21. The pulley 20 is mounted on the wheel stand driving shaft 22. The shaft 22 is journaled in bearings 23 carried by a swinging frame 24. The swinging frame is made up of the downwardly extending arms 25, and the connecting arm or yoke 26. The arms 25 are mounted on the shaft 27 and the shaft 27 is carried by the projecting arms 28 on the wheel stand 12. The arms 28 have the segmental slots 29, the slots being formed with the axis of the shaft 27 as a center. Bolts 30 extend through the slots into the arms 25 by means of which the swinging frame 24 may be locked in any position to which it may be adjusted.

A pulley 31 is fixed on the shaft 22. A belt 32 extends from the pulley 31 to the pulley 33, the pulley 33 being arranged vertically above the pulley 31 for the same reasons that the drum 8 is directly above the head stock pulley 6.

In order to have the drum of sufficient length to give all the desired adjustments of the head stock, and to take care of the travel of the sliding table 2, it is of such length as to lap past the pulley 33. This requires the wheel stand driving shaft to be offset horizontally from the wheel spindle so as to bring this drive pulley under the pulley 33. This pulley being arranged vertically above the wheel stand, allows the wheel stand to be swung without throwing the pulley out of operative alinement.

The adjustment of the belt 20 is of very great importance in the operation of these machines. These belts run at a very high speed. If too tight they spring the wheel spindle. If too loose, do not drive it. By means of the swinging support for the wheel stand drive shaft, this adjustment can be very readily obtained, and the adjusting means being practically free from frictional resistance, the tension of the belt can be readily adjusted by the operator through the sense of touch. By making the axis of the swinging frame in a vertical direction from the wheel stand drive shaft, the ad-

justment of the swinging frame does not vary the tightness or tension on the drive belt 32. On the other hand, the variation in the tightness in the belt 32 is so slight that it does not interfere with a nice adjustment of the belt 20 as above stated.

What I claim as new is:

1. In a grinding machine, the combination of a wheel spindle; a wheel stand in which the spindle is mounted; a swivel mounting for the wheel stand; a drive shaft off-set horizontally from the wheel spindle; a belt connection between the shaft and spindle; a swinging mounting for the shaft for adjusting the belt tension; the pivot of the mounting being in a vertical direction from the shaft, means for locking the swinging mounting in adjustment, and a vertically extending belt connection with the drive shaft.

2. In a grinding machine, the combination of a base; a wheel stand swiveled on

the base; a wheel spindle mounted in a wheel stand; a drive shaft offset horizontally from the wheel spindle; lugs extending to the rear of the wheel spindle; a belt connection between the drive shaft and spindle; a mounting for the drive shaft, comprising ears overlapping the ears on the wheel stand; a pivotal connection between said ears; a slot and bolt locking device on the said ears for locking the mounting in adjustment; and a belt drive extending from the stand drive shaft vertically and operating on the drive shaft between the said ears.

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

CHARLES G. TREFETHEN.

Witnesses:

M. L. DODGE,

BLANCHE HARTMAN.