No. 613,934. Patented Nov. 8, 1898.

C. H. NORTON.

GRINDING MACHINE.

(Application filed Apr. 2, 1898.)

(No Model.)

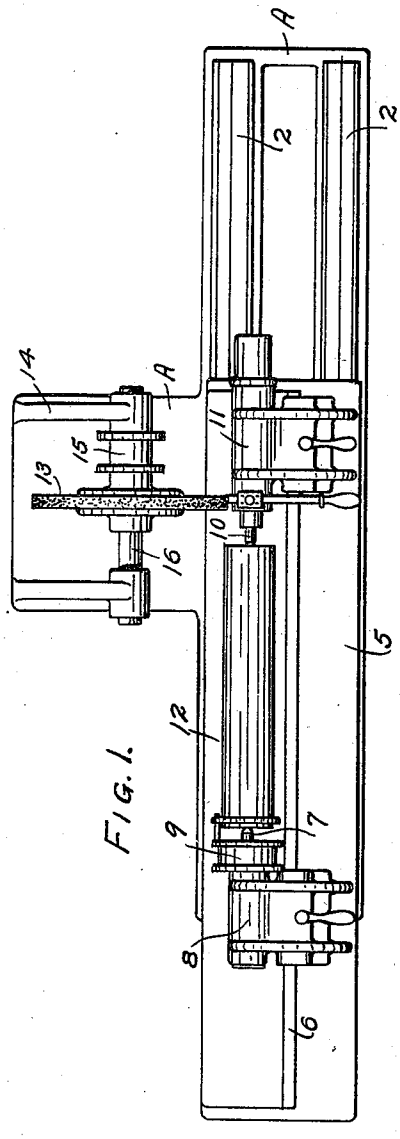


FIG. 1.

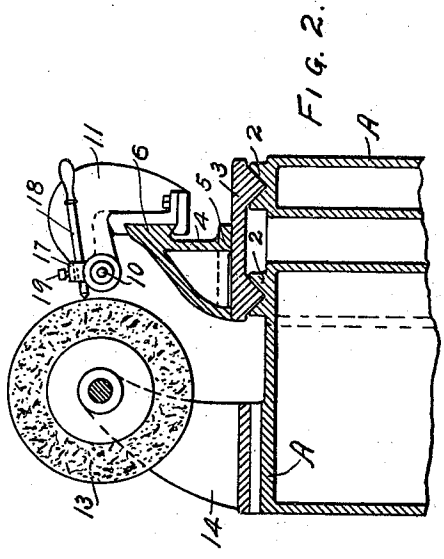


FIG. 2.

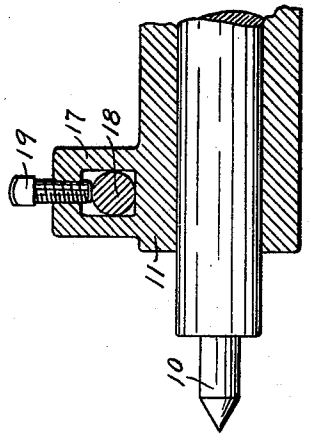


FIG. 3.

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GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 613,934, dated November 8, 1898.

Application filed April 2, 1898. Serial No. 676,173. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. NORTON, of the city and county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Grinding-Machines; and I do hereby declare the following specification, taken in connection with the accompanying drawings, forming a part of the same, to be a full, clear, and exact description thereof.

The invention relates to grinding-machines, and more especially to machines for grinding cylindrical or conical surfaces in which the work is supported upon centers and is acted upon by a grinding-wheel. In machines of this class it frequently happens that the grinding-wheel becomes glazed or dull, or becomes untrue before the piece of work being ground is finished, and in which case it is necessary to cut away the surface of the wheel by means of a diamond-point or truing-tool in order that the work may be properly finished by said wheel. In order to do this, it has heretofore been necessary to remove the work and to secure a tool rest or support upon the table of the machine, in which rest or support the truing-tool is secured. After the wheel has been acted upon by the truing-tool the tool-rest is removed and the work reinserted. This manner of truing or sharpening the wheel is inconvenient and consumes the time of the operator and is objectionable for these reasons. It is the object of the present invention to overcome these objections, and to that end the invention consists in providing one of the center supports—that is, either the head-stock or tail-stock—with means for securing a cutting-tool thereto. With this construction the surface of the grinding-wheel may be conveniently and quickly cut away without removing the work and without the use of independent tool-supports, and consequently with less loss of time and a corresponding increase in the production of the machine.

The invention may be applied to machines in which the work is fed past the grinding-wheel or to machines in which the wheel travels longitudinally of the work, and in the accompanying drawings is shown applied to one form of machine of the former character.

In the drawings, Figure 1 is a plan view showing so much of a grinding-machine as is necessary to illustrate the application of the invention thereto. Fig. 2 is a transverse sectional view, and Fig. 3 is a sectional detail.

In the drawings, A represents the frame of a grinding-machine provided with guideways 2, which support and guide the longitudinally-movable bed 3. The bed may be moved on the ways to carry the work past the grinding-wheel by any suitable and well-known mechanism. A table 5 is mounted upon the bed 4, and may be arranged to swivel in a well-known manner for the purpose of grinding tapers. The table 5 is provided with a longitudinal guideway 6, upon which the supports for the centers are adjustably mounted. The center 7 is supported in the head-stock 8, and the center 10 is supported in the tail-stock 11 in any well-known manner. The work 12 is supported on the centers 7 and 10 and may be rotated by a pin projecting from the pulley 9, mounted upon the head-stock. The grinding-wheel 13 is mounted in a carriage 14, suitably guided on the frame A and moved by any suitable and common mechanism. (Not shown.) The wheel may be rotated by a belt passing over the pulley 15, secured to the shaft 16, on which the wheel is mounted.

In order that the surface of the wheel 13 may be cut away or trued without removing the work from centers, means are provided for securing a cutting-tool to one of the center supports, preferably to the tail-stock. As shown, this means consists of a tool-socket 17, formed on the tail-stock 11, in which socket a diamond or other cutting-tool, as 18, may be inserted and secured, as by a set-screw 19. When it is found that the wheel is not cutting properly and it is desired to cut away the surface of the wheel, the bed 3 is moved to bring the wheel behind the tool 18, and the carriage 14 is moved to bring the wheel up to the cutting-tool. The bed 3 is then moved to feed the tool across the surface of the wheel and the surface of said wheel is thus cut away. The wheel is then readjusted to act

upon the work and the grinding continued. Thus the wheel may be quickly and accurately trued or sharpened without disturbing the work and without inconvenience to the operator.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a grinding-machine the combination with the grinding-wheel spindle, of head and tail stocks carrying the work-supporting centers, and devices on one of said stocks for rigidly securing a truing-tool thereto, substantially as described.

2. In a grinding-machine the combination with the grinding-wheel spindle, of head and tail stocks carrying the work-supporting centers, a fixed tool-socket on one of said stocks, and means for securing a truing-tool in said socket, substantially as described.

3. In a grinding-machine the combination with the grinding-wheel spindle, of head and tail stocks carrying the work-supporting centers, a fixed tool-socket on said tail-stock, and means for securing a truing-tool in said socket, substantially as described.

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