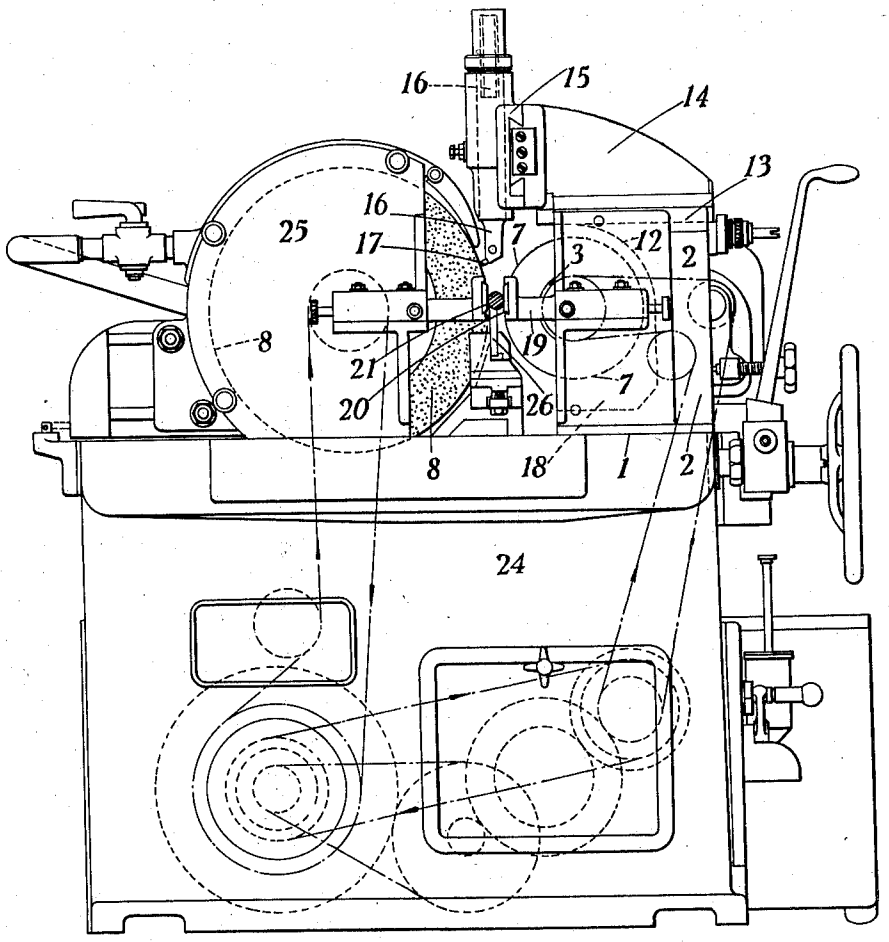
Oct. 23, 1934. W. OGILVIE 1,978,279

MACHINE FOR GRINDING CYLINDRICAL BODIES

Filed Jan. 26, 1934 3 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

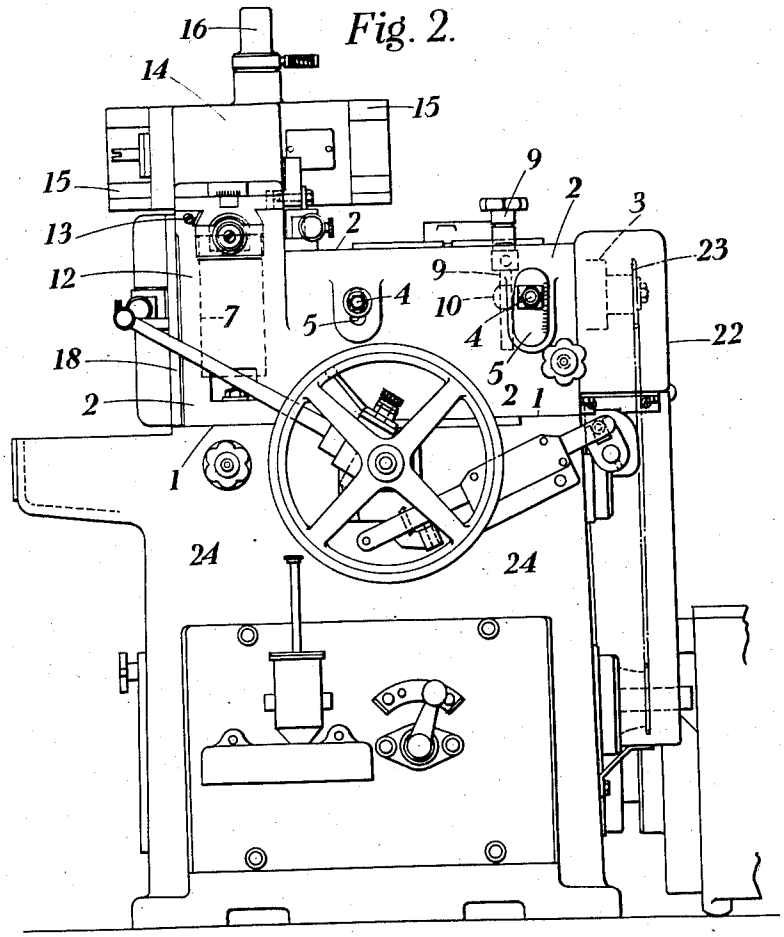
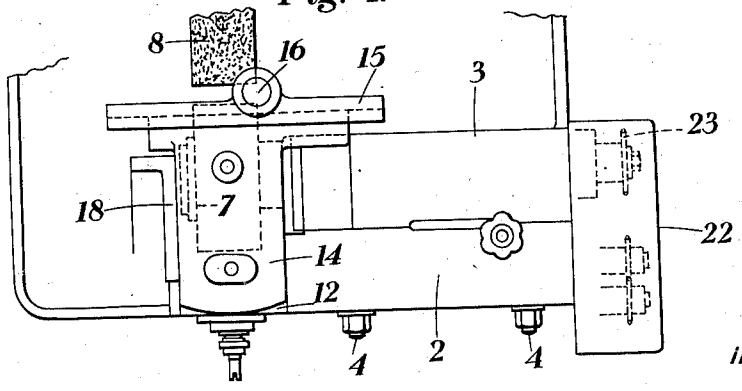


Fig. 4.



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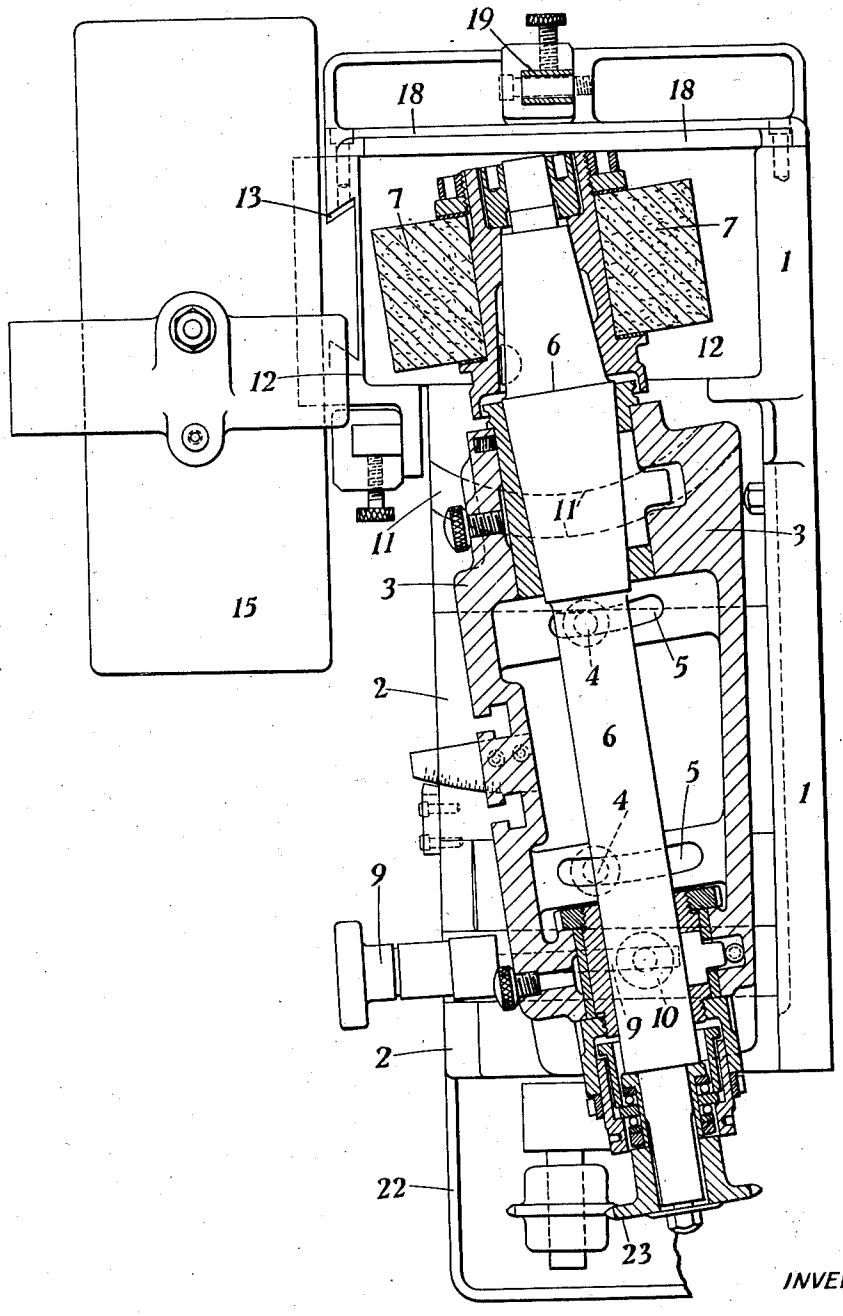
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Filed Jan. 26, 1934 3 Sheets-Sheet 3

Fig. 3.



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Patented Oct. 23, 1934

1,978,279

UNITED STATES PATENT OFFICE

1,978,279

MACHINE FOR GRINDING CYLINDRICAL BODIES

William Ogilvie, Copt Heath, Knowle, England, assignor to B. S. A. Tools Limited, Birmingham, England

Application January 26, 1934, Serial No. 708,482
In Great Britain September 14, 1932

10 Claims. (Cl. 51—103)

This invention relates to improvements in machines for grinding cylindrical bodies, and refers to the type known as centerless grinders of the kind wherein the work is supported between the co-acting faces of peripherally opposed grinding and control wheels, the grinding wheel being arranged to revolve at a greater speed than the control wheel, so that when a work piece is passed or placed between the co-acting faces of the said wheels, the said work piece is caused to revolve around its own axis during the operation of grinding, and angular adjustment of the control wheel spindle is adapted to regulate or control the rate of travel of the work piece between the co-acting faces of the said grinding and control wheels, when the machine is employed for continuous or straight through grinding of cylindrical bodies, such as rollers, rods, tubes or the like.

The object of the invention is to produce a machine of the aforesaid kind which is adapted to provide great rigidity or stability, whereby a very high degree of accuracy in the finish of the work piece is attained, and further to simplify and also cheapen the cost of production of the machine.

According to this invention the control wheel head comprises a body part on the inner face of which is angularly and adjustably mounted the control wheel spindle housing, and one end of the body part is shaped to form a hood or casing for the control wheel, the said hood further being adapted to have slidably and adjustably mounted on the upper side thereof a diamond or like wheel truing device. The aforesaid construction and arrangement constitute a complete unit which is adapted to be rigidly fixed to the bed of the machine, and used in conjunction with a grinding wheel head which is slidably mounted on the bed of the machine to permit of the periphery of the grinding wheel being moved towards or away from the periphery of the control wheel, to suit varying sizes of work pieces, or to permit of the removal of the finished work piece when the machine is used for shoulder grinding, or other than straight through grinding.

If desired in a modification of the invention, the grinding wheel head may be fixed on the bed of the machine, and the complete unit comprising the control head slidably mounted on the bed of the machine for the purpose as before described, in connection with the grinding-wheel.

In order that the invention may be clearly understood we will now describe same with reference to the accompanying drawings, in which:—

Figures 1 and 2 show, respectively, a front and a side elevation of a centerless grinding machine constructed in accordance with and embodying the features of this invention.

Figure 3 is a vertical sectional elevation of the control wheel head, shown on an enlarged scale.

Figure 4 is a fragmentary plan view of Figure 2.

According to one practical embodiment of the invention, as illustrated in the drawings, the control wheel head comprises a base plate 1 having formed thereon a vertically disposed, rectangular frame or body part 2 on the inner face of which is adjustably carried the control wheel spindle housing 3 by means of clamping bolts 4 engaging with segmental slots 5 formed in the aforesaid frame or body part 2, such parts 4 and 5 being adapted to permit of angular adjustment of the control wheel spindle 6 to effect angular adjustment of the control wheel 7 in relation to the grinding wheel 8, which adjustment in one convenient arrangement is effected by an adjusting screw 9 rotatably mounted in the frame part 2 of the control wheel head and arranged to engage with a swivel nut 10 mounted on the spindle housing 3 at a position remote from the pivot attachment, the latter attachment preferably comprising a segmental rib formed on the spindle housing 3 and arranged to engage with a groove 11 formed in the inner face of the rectangular frame part 2, the said groove 11 being disposed in arcuate relation to the center of the control wheel 7.

At one end of the aforesaid frame part 2 is formed a part circular hood or cover 12 for the control wheel 7, and on the upper side of the said hood or cover 12 are formed longitudinal V grooves 13 to slidably receive a bracket 14 which is provided at its front end with a horizontally adjustable slide 15 carrying a vertically and rotatably adjustable bar 16 on the lower end of which is fixed a diamond or other suitable tool 17 adapted for truing the periphery of the control wheel 7 and grinding wheel 8.

On the outer end of the hood or cover part 12 of the control wheel head is mounted an end or cover plate 18 on which, as seen in Figure 1, is slidably and adjustably mounted a bar 19 which carries at its outer end a guide plate 20, which, in conjunction with a similar guide plate 21 adjustably mounted on the grinding wheel head 25 serves in known manner to facilitate the feeding of the work pieces into the throat of the machine. At the other end on the control wheel head is mounted a cover or casing 22 arranged to enclose the chain or other suitable driving

mechanism 23 for the control wheel spindle 6.

In the arrangement illustrated, the control wheel head is fixed on the bed 24 of the machine and the grinding wheel head 25 is slidably carried on the bed of the machine, in order that the periphery of the grinding wheel 8 can be moved towards and away from the periphery of the control wheel 7 to suit various diameters of work pieces, or in shoulder grinding, to open the throat formed by the opposing peripheries of the said wheels and the work supporting plate 26, to permit of removal of the finished work piece and the insertion of a fresh work piece. It is to be understood that if desired, the grinding wheel head 25 may be fixed on the bed 24 of the machine, and the control wheel head slidably mounted thereon, for the purpose as before described.

Having fully described my invention, what I desire to claim and secure by Letters Patent is:—

1. A centerless grinding machine having a rotatable grinding wheel, a control wheel coacting therewith, a body part having a perpendicular wall, a truing device for said control wheel supported on said body part, means to mount and secure said control wheel on and adjustably to said wall at different angles relatively to the truing device independently of change in the position of said body part.

2. A centerless grinding machine having a rotatable grinding wheel, a control wheel coacting therewith, a body part, a truing device for the control wheel, means mounting said truing device on said body part for sliding movement in parallelism to the axis of rotation of said grinding wheel, said control wheel being bodily movable relatively to and independently of the movement of said truing device and body part to different angular positions relative to said grinding wheel, and means to operatively mount and secure the control wheel in said different angular positions.

3. A centerless grinding machine having a rotatable grinding wheel, means mounting said grinding wheel, a control wheel coacting with said grinding wheel, means mounting said control wheel, a truing device for the control wheel carried by one of said means, the second mentioned means including a spindle for the control wheel and a housing in which the spindle is journalled, said housing being adjustable relatively to and independently of the said truing device and remainder of the second mentioned means to various positions at an angle to the grinding wheel, and means to secure the housing rigidly in each of said positions.

4. A centerless grinding machine having a rotatable grinding wheel, a control wheel coacting therewith, a body part having a hood portion disposed adjacent the control wheel, a truing device for the control wheel, means mounting said truing device on said hood for sliding movement in parallelism to the axis of rotation of the grinding wheel, said control wheel being bodily movable relatively to and independently of the movement of said truing device and body part to different angular positions relatively to said grinding wheel, and means to operatively mount and secure the control wheel in said different angular positions.

5. A centerless grinding machine having a rotatable grinding wheel, a control wheel coacting therewith, a body part having a perpendicular wall outwardly of said control wheel, a bracket extending from said wall and overhanging the control wheel, a truing device for the control wheel depending between the wheels and slidable on said bracket in parallelism to the axis of rotation of the grinding wheel, said control wheel being bodily movable independently of and relatively to said truing device and body part to different angular positions relatively to said grinding wheel, a spindle for said control wheel, a housing for said spindle bodily movable therewith, and means to secure said housing rigidly to said wall in each position of the control wheel.

6. A centerless grinding machine having a rotatable grinding wheel, a control wheel coacting therewith, a body part, a truing device for the control wheel, means mounting said truing device on said body part for sliding movement in parallelism to the axis of rotation of said grinding wheel, said control wheel being bodily movable relatively to and independently of the movement of said truing device and body part to different angular positions relatively to said grinding wheel, and means to operatively mount and secure the control wheel in said different angular positions, said truing device also being rotatably adjustable so that it may be operated to true the grinding wheel.

7. A centerless grinding machine having a rotatable grinding wheel, a control wheel coacting therewith, a body part, a truing device for the control wheel, means mounting said truing device on said body part for sliding movement in parallelism to the axis of rotation of said grinding wheel, a spindle for the control wheel and a housing part in which the spindle is journaled, said parts having a pivotal connection permitting bodily movement of the housing part and accordingly of the control wheel relatively to and independently of movement of said truing device and body part to different angular positions relatively to said grinding wheel, and means to secure the said parts rigidly together in the said different positions.

8. A centerless grinding machine having a rotatable grinding wheel, means mounting said wheel, a control wheel coacting with the grinding wheel, a body part having a perpendicular wall adjacent the control wheel, a bracket on said wall overhanging the control wheel, a truing device for said control wheel depending between the wheels and mounted on said bracket to slide in parallelism to the axis of rotation of the grinding wheel, a spindle for the control wheel and a housing in which the spindle is journaled, means pivotally connecting said housing and wall for bodily movement of the housing and accordingly the control wheel relatively to and independently of bodily movement of said truing device and body part to different angular positions relatively to said grinding wheel, and means to secure the housing rigidly to said wall in the said different positions.

9. A centerless grinding machine having a rotatable grinding wheel, means mounting said wheel, a control wheel coacting with the grinding wheel, a body part having a perpendicular wall adjacent the control wheel, a bracket on said wall overhanging the control wheel, a truing device for said control wheel depending between the wheels and mounted on said bracket to slide in parallelism to the axis of rotation of the grinding wheel, a spindle for the control wheel and a housing in which the spindle is journaled, means pivotally connecting said housing and wall for bodily movement of the housing and accordingly the control wheel relatively to and independently of bodily movement of said truing device and body part to different angular positions relatively to

said grinding wheel, said body part including a housing for said control wheel, an end wall on said body part, means to support the wheel-engaged work and guide means for such work mounted by said end wall and by the first mentioned means.

10. A centerless gringing machine having a grinding wheel and a control wheel coacting therewith, a truing device for the control wheel, means mounting said truing device for sliding movement in parallelism to the axis of rotation of the grinding wheel, and means mounting said control wheel for bodily movement relatively to and independently of bodily movement of said truing device.

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