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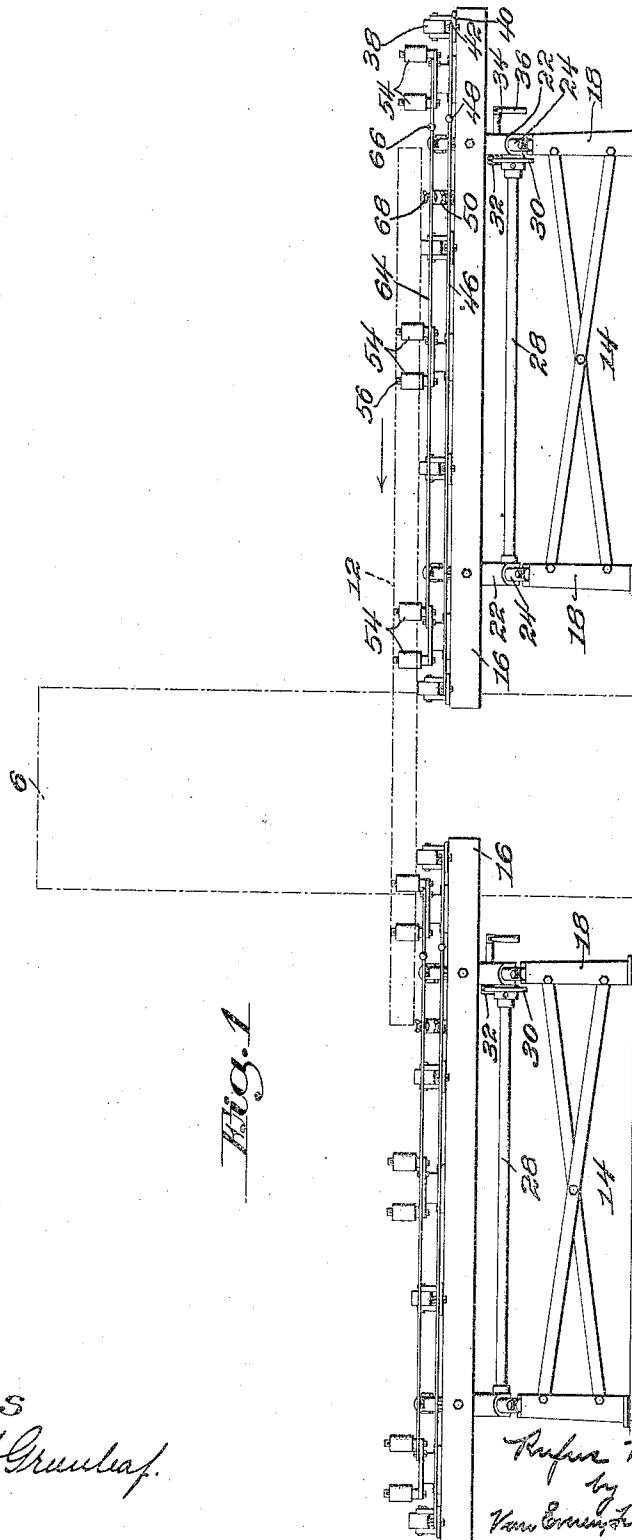
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1,900,984

CENTERLESS GRINDING OR POLISHING MACHINE

Filed Sept. 19, 1929

3 Sheets-Sheet 1



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Fig. 2

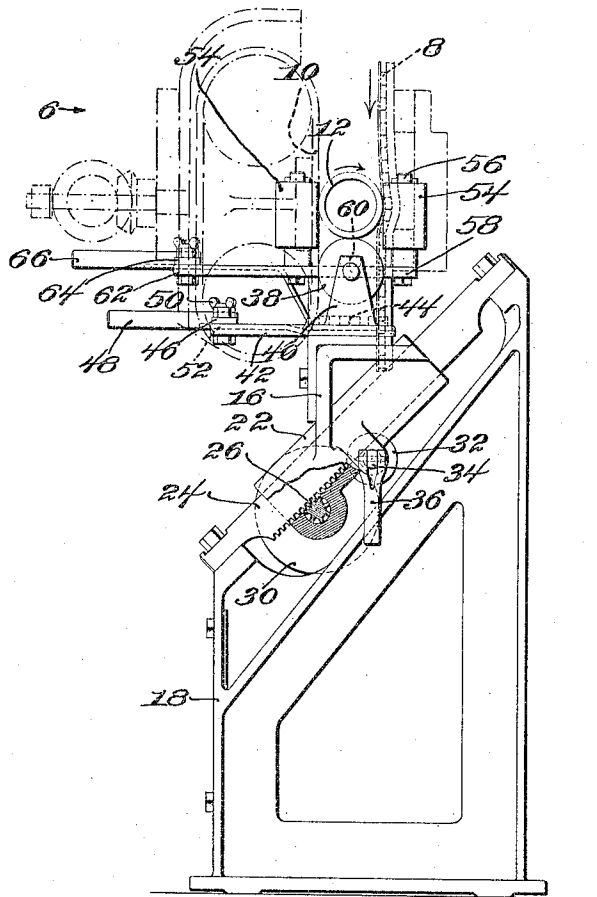
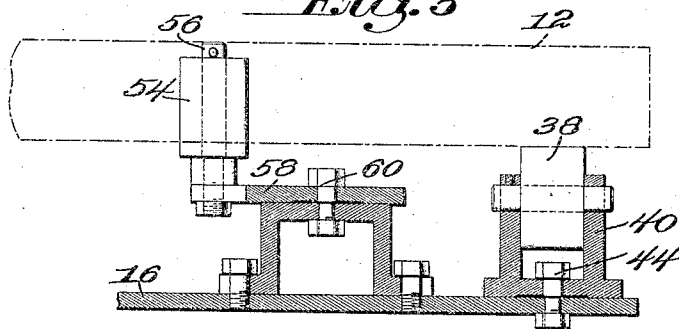


Fig. 5



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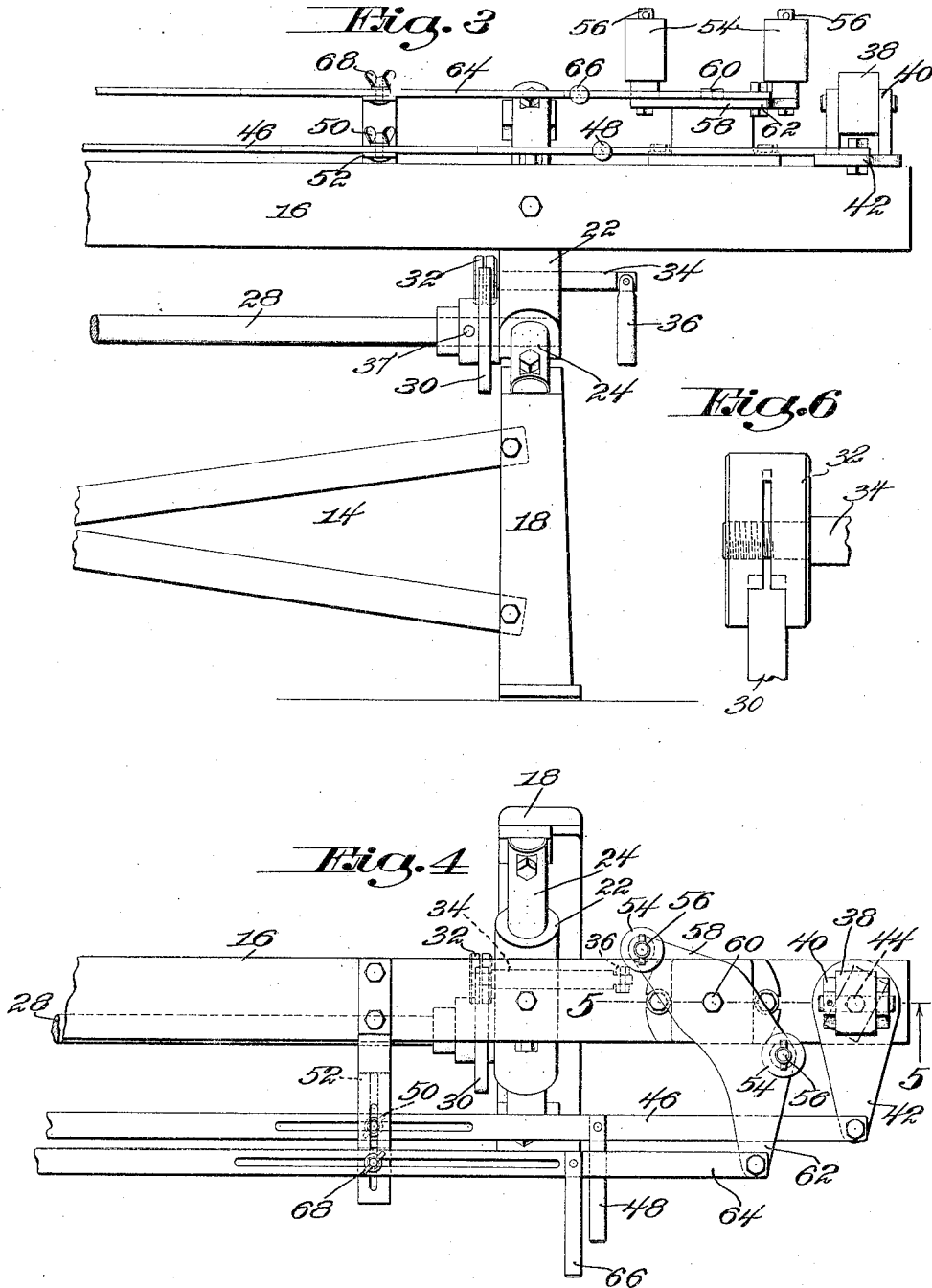
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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CENTERLESS GRINDING OR POLISHING MACHINE

Application filed September 19, 1929. Serial No. 393,825.

The present invention relates to centerless grinding or polishing machines and more particularly to work supporting and guiding devices for such machines.

5 The object of the present invention is to provide a centerless grinding and polishing machine with means for supporting and guiding the work when the latter is too long to be properly controlled by the feeding means of the machine itself.

10 With this object in view, the present invention comprises the work supporting and guiding means for centerless grinding and polishing machines as hereinafter described and particularly defined in the claims.

15 In the accompanying drawings, Fig. 1 is a front elevation of the preferred form of supporting and guiding means with the grinding or polishing machine shown diagrammatically; Fig. 2 is an end elevation partly in section of the apparatus shown in Fig. 1; Fig. 3 is a detail front elevation; Fig. 4 is a detail plan view; Fig. 5 is a section on line 5—5 of Fig. 4; and Fig. 6 is a detail to be referred to.

20 The illustrated embodiment of the invention comprises a centerless grinding or polishing machine preferably of the type disclosed in my prior Patent No. 1,421,205, dated June 27, 1922. The machine which is indicated at 6 is shown only in outline in Fig. 1 and in some detail in Fig. 2. Briefly, the machine comprises a traveling abrasive belt 8 and a feed belt 10 which is adapted to be inclined in a manner both to rotate the work and to feed it longitudinally. The work to be polished is indicated as a cylindrical tube 12.

25 On each side of the machine is provided a work supporting and guiding device indicated generally in Fig. 1 at 14. Each device comprises a table or bed 16 supported on standards 18. As shown in Fig. 2, the bed 16 is angular in cross-section and is provided adjacent to each frame with an adjusting tube 22 which is received on a rack 24. Each rack is bolted at opposite ends to one of the standards. Journalled in the tube 22 is a pinion 26 meshing with the rack. The pinions 26 of the adjusting devices are con-

nected by a shaft 28 which carries a manually adjustable disk 30 adapted to be locked by a split clamping nut 32 which engages the periphery of the disk 30. The clamping nut 32 is contracted by a threaded stud 34 55 journaled in the adjusting frame 22 and provided with a hand crank 36. The adjusting disk 30 is provided with holes 37 for insertion of a tool to facilitate adjustment. Inasmuch as the position of the work rest of the machine must be adjusted vertically and horizontally for work of different diameters, the adjustment of the bed 16 as above described is provided to accommodate the bed to the different positions of the work rest. 60

The bed carries a plurality of supporting rolls 38 on which the work is supported in its passage to or from the machine. Each roll is journaled in a yoke 40 which has at the bottom a projection 42. The yoke is pivoted at 44 to the frame. The yoke projections 42 are connected together by a link 46 which is adapted to be manually adjusted by a handle 48 and locked in adjusted position by a wing nut 50 received in a slot in the link and connected with a bracket 52 projecting from the bed. By adjusting the link 46, the supporting rolls 38 are simultaneously adjusted to incline their axes with respect to the line of feed of the work. 70

A plurality of guiding members are also employed to prevent lateral displacement of the work. These guiding members comprise pairs of vertical guides which are adapted to embrace the work on opposite sides. Each guiding device as shown in Figs. 3 and 4, comprises a pair of rolls 54 freely journaled on pins 56 which are mounted in a bracket 58. The bracket is pivoted at 60 to the bed, directly below the axis of the work being fed. The bracket 58 has a projection 62. The projections 62 of all the brackets 58 are connected by a link 64 having an adjusting handle 66 and a securing nut 68. 85

In operation, the bed is adjusted to a position such that the work is supported in proper relation to the abrasive belt, and the work rest of the machine is then adjusted to engage the under side of the work. The 90 100

rate of feed of the work is determined by the amount of inclination of the feed belt 10 of the machine. The rolls 38 are inclined by adjustment of the link 46 to such an angle
 5 with respect to the axis of the work that at the rate of feed employed there is no appreciable rubbing friction between the work and the rolls. Thus, for work being fed from right to left and rotating in a clockwise
 10 direction, as viewed from the right-hand end of the machine, the rolls will be adjusted as shown in dot-and-dash lines in Fig. 4. The rolls then rotate with maximum freedom and offer minimum resistance to the feed or ro-
 15 tation of the work.

For supporting and guiding the work against lateral displacement, the guiding roll bracket is adjusted on the pivot 60 so that the rolls 54 lightly engage the work on
 20 opposite sides. The pivotal support for the rolls minimizes retardation of the feed by friction.

Having thus described the invention, what is claimed is:

25 1. A centerless grinding or polishing machine for cylindrical work having, in combination, feeding and abrasive means, and means for supporting the work at the side of the abrasive means comprising support-
 30 ing rolls, guide members comprising pairs of freely rotatable rolls having axes perpendicular to the axis of the work, and means for simultaneously adjusting the different pairs of rolls to accommodate work
 35 of different diameters.

2. A side work support for a grinding or polishing machine having, in combination, supporting rolls, means for simultaneously
 40 inclining the axes of all of the rolls with respect to the direction of feed, guiding means comprising a plurality of pairs of rolls, means for mounting the rolls to cause engagement of each pair with opposite sides
 45 of the work, and means for adjusting the rolls to accommodate work of different diameters.

3. A side work support for grinding or polishing machine having, in combination, supporting rolls, means for simultaneously
 50 inclining the axes of all of the rolls with respect to the direction of feed, guiding means comprising a plurality of pairs of rolls, means for mounting the rolls to cause engagement of each pair with opposite sides
 55 of the work, means for adjusting the rolls to accommodate work of different diameters, a frame, a bed on the frame, the work supporting and guiding means being carried by the bed, an inclined support for the bed,
 60 and means for adjusting the bed on the support to vary the horizontal and vertical positions of the work supporting and guiding means.

4. A side work support for a grinding or
 65 polishing machine having, in combination,

supporting rolls, means for simultaneously inclining the axes of all of the rolls with respect to the direction of feed, guiding means comprising a plurality of pairs of rolls, means for mounting the rolls to cause en-
 70 gagement of each pair with opposite sides of the work, means for adjusting the rolls to accommodate work of different diameters, a frame, a bed on the frame, the work supporting and guiding means being carried by
 75 the bed, a plurality of fixed inclined racks carried by the frame, pinions journaled in the bed and engaging the racks, and means for simultaneously rotating the pinions to adjust the bed horizontally and vertically.

5. A side work support for a grinding or polishing machine having, in combination, means for supporting the work, guiding means comprising a plurality of pairs of
 80 rolls, a bracket for each pair of rolls, a pivotal mounting for each bracket, and means for adjusting the brackets to permit the rolls to engage the opposite sides of work of different diameters.

6. A side work support for a grinding or
 90 polishing machine having, in combination, supporting means below the work, guiding means embracing the work, a bed on which the supporting and guiding means are carried, and means for simultaneously
 95 adjusting the bed both vertically and horizontally.

7. A side work support for a grinding or polishing machine having, in combination, supporting means below the work, guiding
 100 means embracing the work, a bed on which the supporting and guiding means are carried, an inclined frame on which the bed is supported, and means for adjusting the bed with respect to the frame to vary the hori-
 105 zontal and vertical positions of the supporting and guiding means simultaneously.

8. A side work support for a grinding or polishing machine having, in combination, supporting means below the work, guiding
 110 means embracing the work, a bed on which the supporting and guiding means are carried, an inclined frame on which the bed is supported, a plurality of fixed inclined racks carried by the frame, pinions journaled in
 115 the bed and engaging the racks, and means for simultaneously rotating the pinions to adjust the bed horizontally and vertically.

In testimony whereof I have signed my
 120 name to this specification.

RUFUS W. FULLER.