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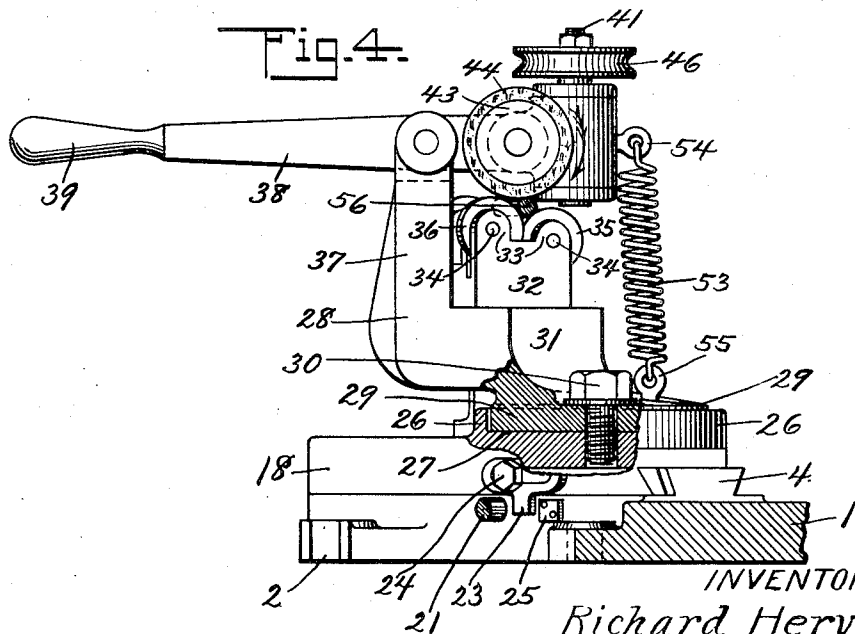
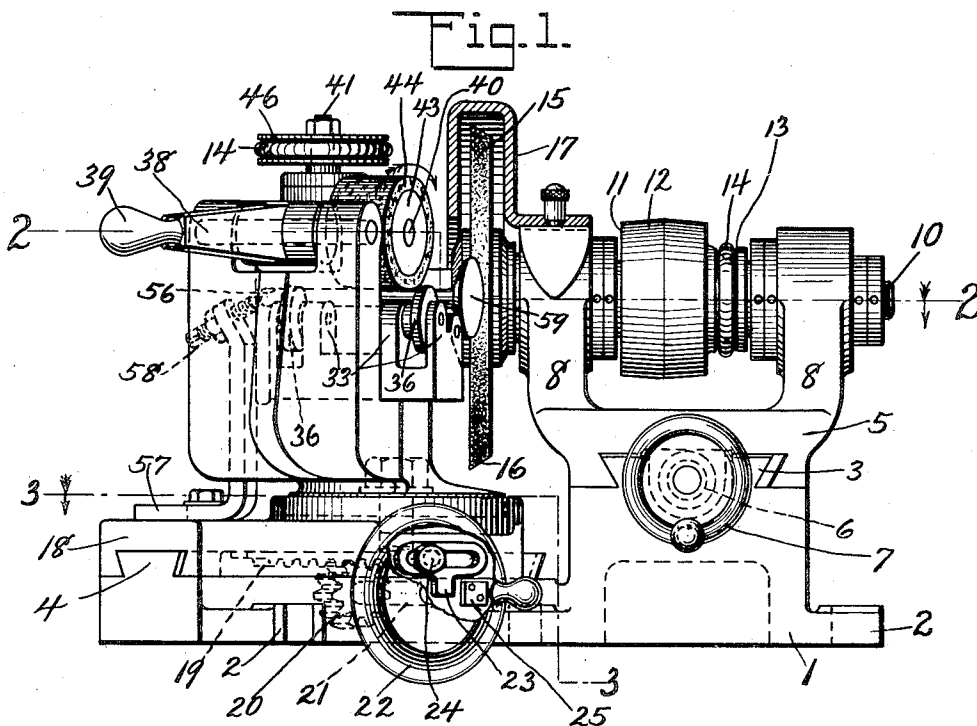
1,452,508

R. HERVIG

MACHINE FOR GRINDING VALVES

Filed Aug. 20, 1921

2 Sheets-Sheet 1



INVENTOR:
Richard Hervig
BY J. H. Gibbs

ATTORNEY.

Apr. 24, 1923.

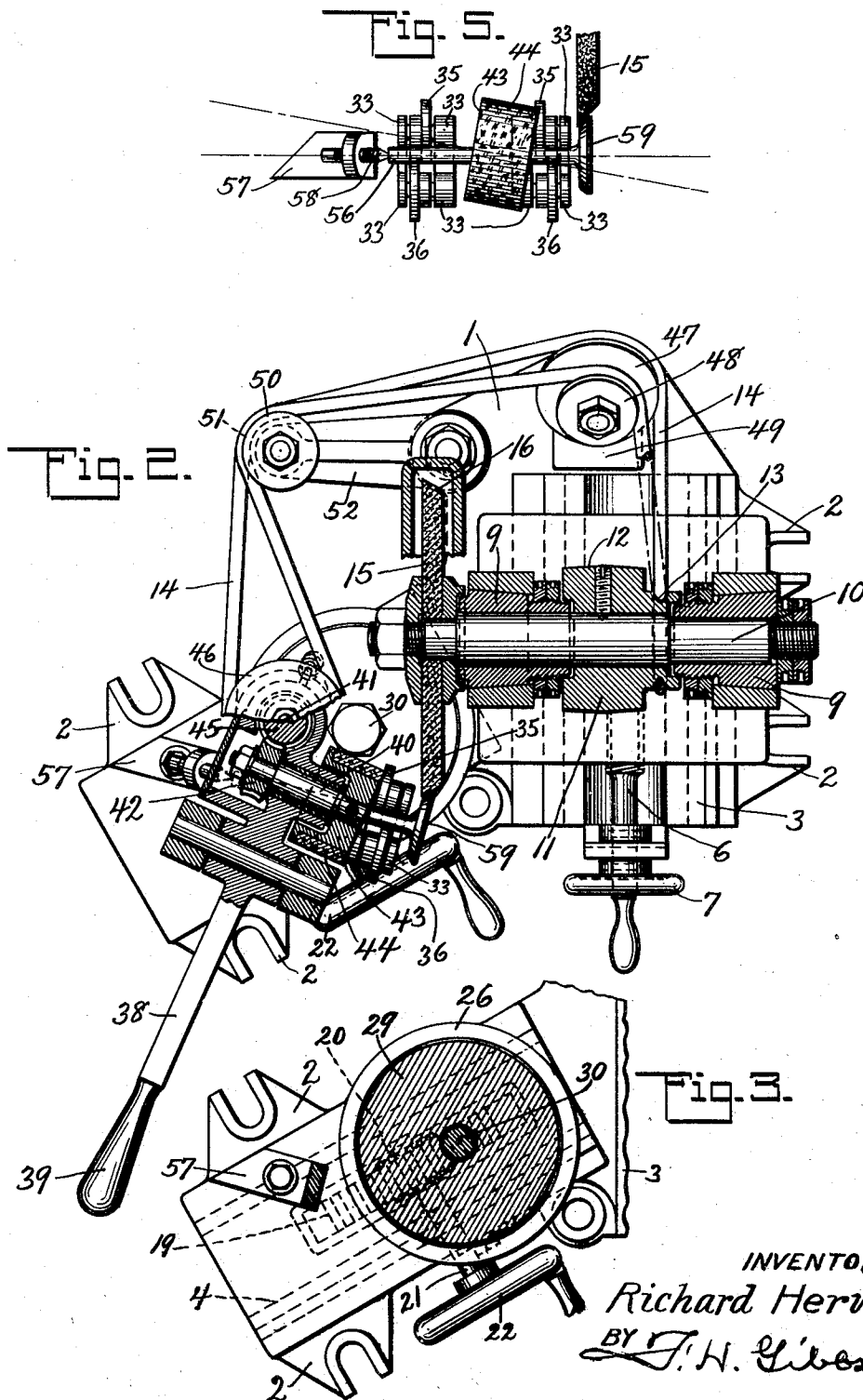
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE.

RICHARD HERVIG, OF CHICAGO, ILLINOIS, ASSIGNOR TO AMERICAN CAR AND FOUNDRY COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

MACHINE FOR GRINDING VALVES.

Application filed August 20, 1921. Serial No. 493,902.

To all whom it may concern:

Be it known that I, RICHARD HERVIG, residing at Chicago, Cook County, State of Illinois, and being a citizen of the United States, have invented certain new and useful Improvements in a Machine for Grinding Valves, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and to use the same, reference being had to the accompanying drawings, which illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof within the scope of the claims will occur to persons skilled in the art.

In said drawings:

Fig. 1 is a front elevation of my improved machine for grinding valves with part broken away and with part shown in section;

Fig. 2 is a partial horizontal sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a section taken on the line 3—3 of Fig. 1;

Fig. 4 is a view, partly in elevation and partly in section, of the work supporting and driving means; and

Fig. 5 is a substantially diagrammatic plan view showing the angular relation of the axes of the driving and supporting rollers and the work piece.

It is an object of my invention to provide an improved machine for grinding valves that will permit of readily changing the work piece without necessitating the stopping of the machine and it is also an object of my invention to provide a grinding machine of the type wherein the driving roller performs the functions of driving the work piece and of holding the work piece in position on the supporting rollers with its stem bearing against the stop.

In the drawings, which show the preferred form of my invention, 1 designates a base provided with lugs 2 by which it may be secured to any suitable support and having raised guide portions 3 and 4 set at an angle to each other. Mounted on the base 1 and engaging the guide 3 is a sliding member 5 operated to travel on the guide 3 by means of the screw 6 rotated by a hand

wheel 7. Integral with the slide 5 are the pedestals 8 which support adjustable bearings 9 in which is mounted a shaft 10 having a pulley 11 secured thereto between the pedestals 8. The pulley 11 is provided with a face 12 to receive the driving belt (not shown) and with a groove 13 to receive the round belt 14. On an end of the shaft 10 there is secured an abrading wheel 15 having an abrading surface 16 that makes with the axis of the shaft 10 an angle equal to the angle between the guide portions 3 and 4. Secured to a pedestal 8 is a shield 17 for the abrading wheel 15 that may be of any usual or desired construction.

Mounted for reciprocation on the guide 4 is a slide 18 provided with a rack 19 adapted to engage a pinion 20 secured to a shaft 21 mounted in the base 1, the shaft 21 and pinion 20 being operated by a hand wheel 22 to cause reciprocation of the slide 18. To limit the movement of the slide 18 in the direction of the abrading wheel 15 there is provided an adjustable stop 23 secured to the slide 18 by a bolt 24 and adapted to engage with a fixed stop 25 attached to the base 1. Movement of the slide 18 in the opposite direction is limited by the engagement of the stop 23 with the shaft 21. The slide 18 is provided with a projecting annular rib 26 which surrounds a circular bearing face 27 upon which a substantially L-shaped standard 28 having a circular base 29 is secured by bolt 30. The standard 28 is normally secured against rotation by the bolt 30 but may be rotated on its base 29 when the bolt 30 is loosened, graduations being provided upon the rib 26 and base 29 to aid in positioning the standard. Attached to the arm 31 of the standard 28 is a bearing or supporting block 32 having a plurality of lugs 33 in which are fixed pins 34 carrying the pairs of rollers 35 and 36. The axes of the pairs of rollers 35 and 36 are horizontal and parallel but the axis of the pair of rollers 36 is slightly higher than the axis of the pair of rollers 35.

The vertical arm 37 of the standard 28 has a bifurcated end in which the lever 38 is pivotally mounted. The lever 38 is provided at one end with a handle 39 and at the other end with a plurality of angularly disposed bearings in which are mounted the shafts 40 and 41. On the shaft 40, at one

end, there is secured a worm wheel 42, while at the other end there is secured a driving roller 43 having a friction driving surface 44 of cork, rubber or other suitable material. It will be noted that the shaft 40, while horizontal, is angularly disposed with respect to the axes of the pairs of rollers 35 and 36. On the shaft 41, at one end, there is secured a worm 45 that engages with the worm wheel 42 and, at the other end, there is secured a pulley 46 adapted to receive the round belt 14 which engages in the groove 13 in the pulley 11 and passes over the pulleys 47 and 48 on the fixed bracket 49 attached to the base 1 and over pulleys 50 and 51 on the adjustable bracket 52 also attached to the base 1. A spring 53 engaging an eye 54 attached to the lever 38 and an eye 55 attached to the base 29 serves to force the roller 43 against the stem 56 of the work piece as it rests upon the pairs of rollers 35 and 36. Secured to the slide 18 is a bracket 57 in which is mounted an adjustable stop 58 adapted to engage the end of the stem 56 and keep the head 59 of the work piece in a predetermined position.

In operation, the shaft 10 and abrading wheel 15 are driven by a belt engaging the face 12 of the pulley 11, it being understood that an electric motor may be substituted for the belt and pulley 11 and the shaft 10 be the shaft of the motor as well. The belt 14, driven from the pulley 11, drives the pulley 46 and through the shaft 41, worm 45, worm wheel 42 and shaft 40 drives the driving roller 43. The driving roller 43 being held against the work piece by the spring 53 causes the work piece to revolve on the pairs of rollers 35 and 36. The work piece when in position on the rollers 35 and 36 has its axis parallel to the axes of the rollers 35 and 36 and at an angle to the axis of the driving roller 43 so that the driving roller 43, when driving the work piece, forces the stem 56 against the adjustable stop 58 and holds it there against the action of the abrading wheel 15 on the head 59 of the work piece which tends to force the work piece away from the stop 58. The driving roller 43 may be raised from the work piece to permit withdrawal of the finished piece and the insertion of a new piece by operating the lever 38 by means of the handle 39.

Making the angle that the face 16 of the abrading wheel 15 makes with the axis of the shaft 10 the same as the angle made by the two guides 3 and 4 permits of the slide 18 being moved on the guide 4 so that the work piece may be brought into contact with all parts of the face 16 of the abrading wheel 15 thus keeping the face 16 true. The standard 28 may be rotated on the bearing face 27 upon loosening the bolt 30 thus varying the angle of the surface ground upon the head 59 of the work piece and the slide 5

may be moved upon the guide 3 by operating the hand wheel 7 so as to move the abrading wheel 15 to compensate for wear or to accommodate work pieces having heads of different diameters.

What I claim is:

1. In a machine of the class described, a plurality of work supporting rollers, a work engaging stop and a work driving roller adapted to force the work against the stop.

2. In a machine of the class described, a plurality of work supporting rollers, a work engaging stop and a work driving roller having its axis at an angle to the axes of said work supporting rollers and adapted to force the work against the stop.

3. In a machine of the class described, a plurality of work supporting rollers, a work engaging stop, a work driving roller adapted to force the work against the stop and yielding means to hold the work driving roller against the work.

4. In a machine of the class described, a plurality of work supporting rollers, a work engaging stop, a work engaging tool tending to move said work and a work driving roller adapted to hold said work in engagement with said stop against the action of said tool.

5. In a machine of the class described, a plurality of work supporting rollers, a support for said rollers, a lever pivotally mounted on said support and a roller adapted to rotate the work carried by said lever.

6. In a machine of the class described, a plurality of work supporting rollers, a rotatably mounted support for said rollers, a roller adapted to rotate the work, means carrying said roller pivotally mounted on said support and yielding means holding said work driving roller in engagement with the work.

7. In a machine of the class described, a plurality of work supporting rollers, a rotatably mounted support for said rollers, a roller adapted to rotate the work, means carrying said roller pivotally mounted on said support, a slide carrying said support and a base on which said slide travels.

8. In a machine of the class described, a plurality of work supporting rollers, an adjustable stop for the work, a work engaging tool adapted to move the work from said stop and a work driving roller adapted to force the work against said stop.

9. In a machine of the class described, a plurality of work supporting rollers, a work engaging stop, a work driving roller adapted to hold the work against the stop, driving means for said work driving roller, supporting means for said rollers, an abrading wheel, a shaft for said abrading wheel mounted on said supporting means and a driving connection between said shaft and driving means.

10. In a machine of the class described, a

plurality of work supporting rollers, supporting means for said rollers, a lever carried by said supporting means, a work driving roller carried by said lever, driving
5 means for said work driving roller, an abrading wheel carried by said support and a driving connection between said wheel and said driving means.

11. In a machine of the class described, a
10 plurality of work supporting rollers mounted in pairs having parallel axes lying in different horizontal planes, a pivotally mounted lever and a work driving roller carried by said lever to cooperate with said work sup-
15 porting rollers and having its axis horizon-

tal and at an angle to the axes of the work supporting rollers.

12. In a machine of the class described, a plurality of work supportig rollers having parallel axes lying in different planes, a
20 yieldingly held work driving roller having its axis lying at an angle to the axes of the supporting rollers and means for driving said work driving roller to rotate the work.

In witness whereof I have hereunto set my
25 hand in the presence of two witnesses.

RICHARD HERVIG.

Witnesses:

ERNEST W. REDDERSON,
GAELFREY AMUNDSEN.