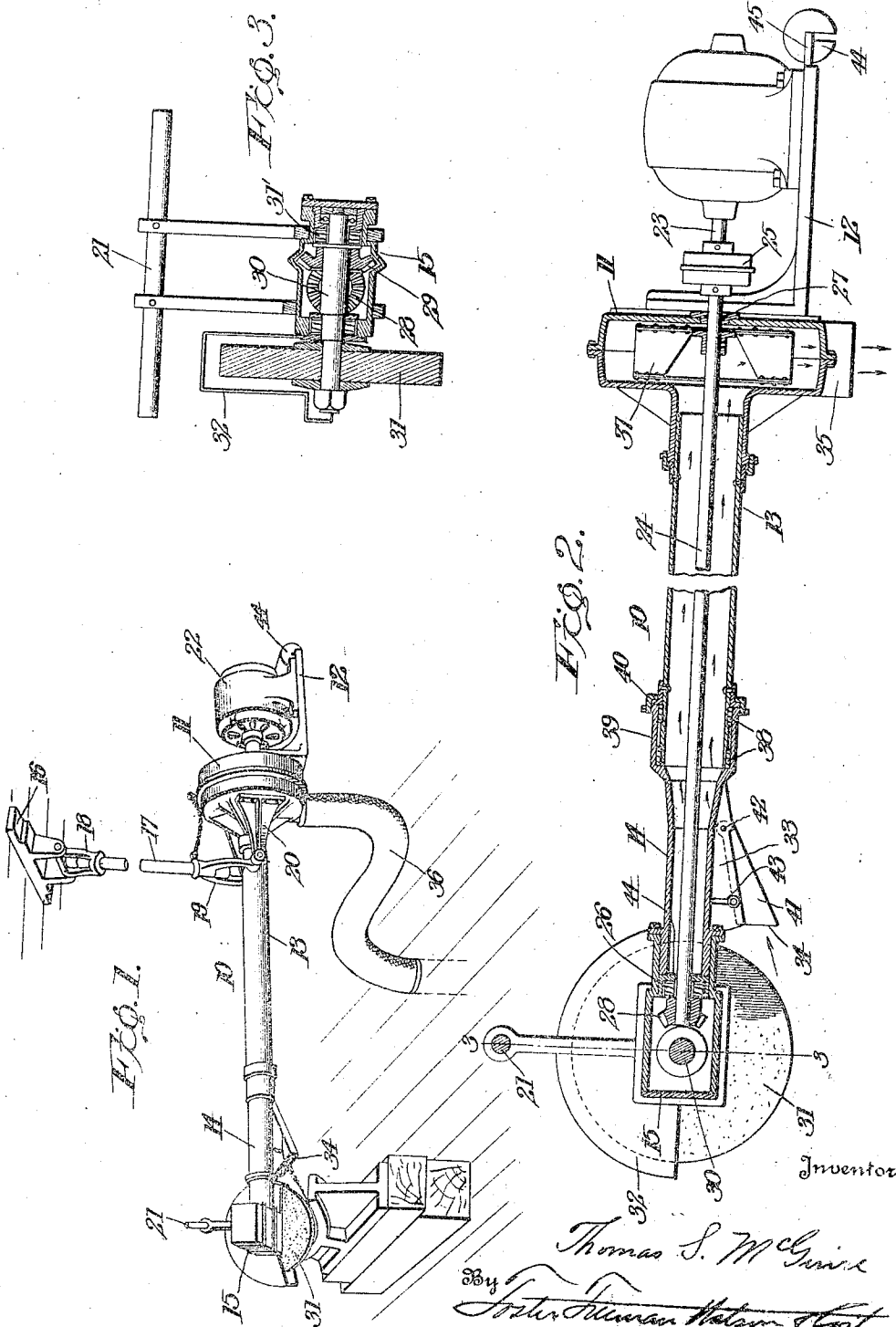


T. S. MCGUIRE.
GRINDING MACHINE.

APPLICATION FILED AUG. 30, 1917. RENEWED SEPT. 30, 1920.

1,359,718.

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THOMAS S. MCGUIRE, OF CARLISLE, PENNSYLVANIA.

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Specification of Letters Patent. Patented Nov. 23, 1920.

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To all whom it may concern:

Be it known that I, THOMAS S. MCGUIRE, a citizen of the United States, and residing at Carlisle, Cumberland county, State of Pennsylvania, have invented certain new and useful Improvements in Grinding-Machines, of which the following is a specification.

This invention relates to improvements in grinding apparatus, especially to apparatus for grinding large irregular metal surfaces such as the surfaces of castings, and has for its object to provide a device of this class which is convenient to operate, simple in design, and in which the dust from the rapidly rotating grinding wheel is conducted away without coming in contact with any of the bearings of the grinder to injure the same.

The invention will be fully disclosed in the following description taken in connection with the accompanying drawings, in which,

Figure 1 is a perspective view of the apparatus;

Fig. 2 is a longitudinal section of a portion of the same, and

Fig. 3 is a section along line 3—3 of Fig. 2.

In grinding castings or other articles having large irregular surfaces, it is necessary that the grinding disk be so held by the apparatus upon which it is mounted that it may be raised and lowered and moved from side to side in order that the various surfaces of the casting may be reached thereby.

It is very desirable also that the dust and grit caused by the act of grinding be caught and conducted away from the machine to some point where it may be liberated without damage to either the health of the operator or the bearings of the apparatus.

My invention combines in a novel manner such an apparatus suspended from above so as to have great freedom of movement, with a suction attachment which conducts the dust and grit away whatever the position of the grinding apparatus.

The frame 10 of the grinder comprises a fan housing 11, having secured to one side the motor supporting bracket 12 and to the other side the tubular casing 13, which has a swivel connection to a short tubular casing 14 rigidly secured to the gear casing 15. This frame, which supports the mechanism of the grinder, is supported from a fixed member 16 above, such as a beam, by a long

rod 17 having swivel connection at its ends with yokes 18 and 19 which are pivoted respectively to the member 16 and to brackets 20 projecting from the fan housing 11.

This connection allows the frame to be swung in a circle, tipped up and down or moved backward and forward as desired.

The yoke 19 is pivoted to the frame at such a point that the portions on either side thereof balance each other so that the same normally remains in a horizontal position, but may be moved when slight pressure of the hands is exerted upon the handle 21, secured to the gear casing 15.

The electric driving motor 22 is secured to the motor bracket 12 in any suitable way as by bolts and has its shaft 23 alined with the tubular casing 13. The power shaft 24 is connected to the motor shaft 23 by any desirable form of flexible coupling 25 which takes care of any defective alinement. This shaft 24 extends through the wall of the fan housing 11 and through the casing 13 and 14 into the gear casing 15 where it is journaled upon roller bearings 26. The shaft 24 is not journaled where it passes through the fan housing, but packing 27 surrounds the shaft at that point to provide a tight joint.

Upon the end of shaft 24 opposite the motor and within the gear casing is mounted a bevel gear 28 which meshes with a bevel gear 29 mounted upon a short shaft 30 upon which the grinding disk 31 is secured. This disk shaft 30 is at right angles to the power shaft 24 and is journaled upon roller bearings 31' within casing 15.

The grinding disk which is parallel to the power shaft is always rotated so that the dust and grit which fly tangentially from its surface at the point of contact with the casting, will fly toward the body of the apparatus, as indicated by the arrows in the drawings, instead of toward the operator who stands on the other side. A sheet metal hood 32, secured to the gear casing protects the operator from particles which fly upwardly.

To collect and dispose of the grit and dust I provide the casing 14 with a branch 33 having an opening 34 in its end, which is close to the grinding disk and is an intake funnel for the suction conduit to which it is connected.

This suction conduit comprises the casing 13 and the fan housing 11 with its down-

ward tangential extension 35 to which the flexible connecting pipe 36 is connected. The suction is created by rotation of the sheet metal fan 37, mounted on shaft 24 which produces a strong suction at the intake 34.

The flexible pipe 36 opens at its other end into any suitable chamber adapted to receive the dust.

10 The swivel connection between sections 13 and 14 of the frame comprises the telescoping ends of these two sections and a series of roller bearings 38 therebetween, the interlocking flanges of sleeve 39 and collar 15 40 preventing the sections from coming apart longitudinally. This joint permits the disk to be rotated in a plane perpendicular to the shaft 24.

It is to be noted that the dust is removed 20 from the grinding disk without coming in contact with the bearings of the apparatus and this is important, as the grit will injure and destroy the bearings if it comes in contact with them.

25 As grinding disks of different sizes are used, and as they also decrease in size by wear, it is desirable that the lower part of the mouth of the suction funnel be adjustable so that the opening may be varied and 30 the work not interfered with. I make the portion 41 of the funnel adjustable by hinging it at 42, the slot and thumb screw 43 being provided for holding the hinged portion in any desired position.

To balance the apparatus when grinding 35 wheels of different sizes and weights are used, iron weights 44 may be placed on or removed from the horizontal bar 45 in rear of the motor. So long as the motor operates to drive the grinding wheel the fan 40 will operate to remove the dust, and the suction action of the dust removing apparatus will not be interfered with whatever the position of the grinder.

Adjacent and within the bearing 26 is a 45 disk 44 through which the shaft passes and which prevents dust from passing into the gear box. It will be noted that the casing is thus closed at both ends and that the shaft bearings are outside the casing and 50 unaffected by the dust and grit from the wheel, which is an important feature of the invention.

What I claim is:

In a balanced grinding apparatus, a cas- 55 ing having a fan compartment and a tubular exhaust duct extending forwardly therefrom, a motor support and motor in rear of the casing, a grinding disk at the forward end of the exhaust duct, a shaft ex- 60 tending from the motor through said fan casing and duct to the grinding disk, a fan on said shaft, said duct having dust inlet openings adjacent the grinding disk and delivering the dust to said fan, and means for 65 varying the area of said dust inlet.

In testimony whereof I affix my signature.
THOMAS S. McGUIRE.