H. H. LA VERCOMBE.

MEANS FOR TESTING EMERY WHEELS.

APPLICATION FILED DEC. 28, 1918.

1,435,314.

Patented Nov. 14, 1922.

2 SHEETS—SHEET 1.

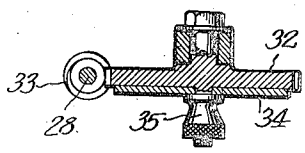


Fig. 3.

Fig. 2.

Fig. 1

Witness

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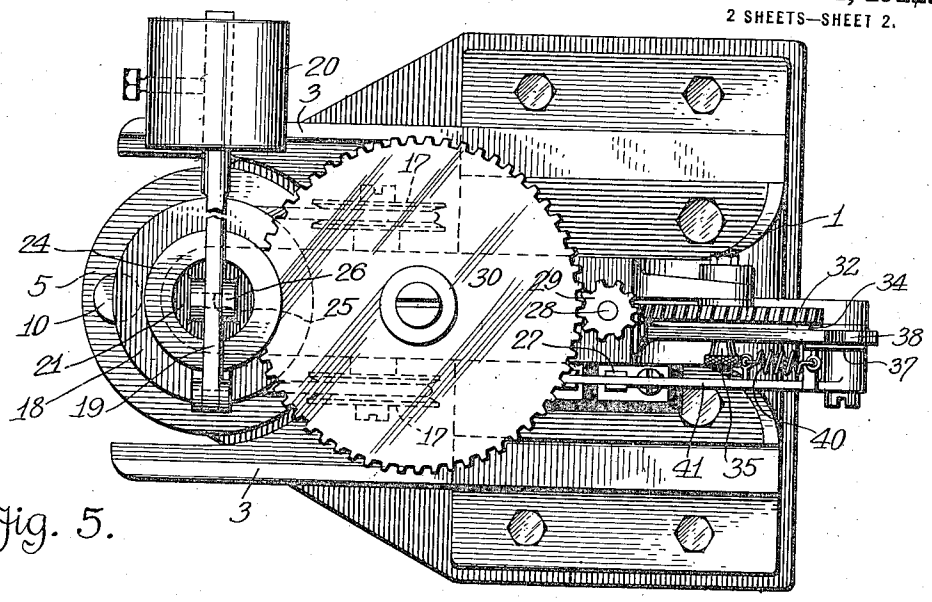


Fig. 5.

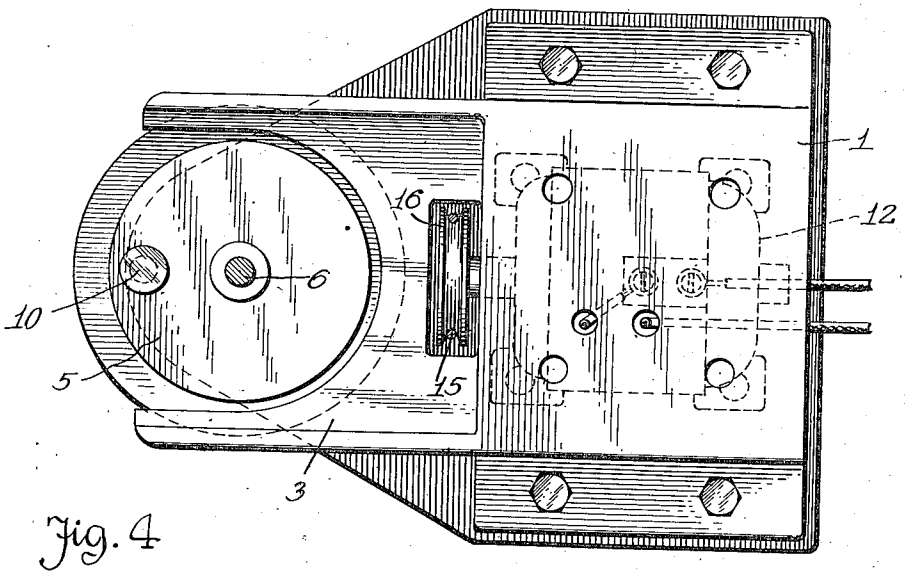


Fig. 4

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UNITED STATES PATENT OFFICE.

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MEANS FOR TESTING EMERY WHEELS.

Application filed December 28, 1918. Serial No. 268,670.

To all whom it may concern:

Be it known that I, HARLEY H. LA VERCOMBE, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Means for Testing Emery Wheels, of which the following is a specification, reference being had therein to the accompanying drawings.

In order to determine whether an artificially formed abrading stone or wheel commonly termed "emery wheel" has the same cutting or abrasive qualities as another stone, it is not sufficient that the grade of the stone or wheels be the same. In commercial usage, wheels are graded according to the coarseness or fineness of the particles of the abradant of which they are formed, but the working qualities of the stone or wheel depend not only on the grade but also on the hardness of the stone, and the actual abrading action, both of which vary greatly often in stones or wheels which have the same grade number commercially, that is, have the same sized particles of abradant.

This invention relates to means for determining the rapidity of cutting action of an artificial abrading stone or wheel whereby one of the factors which determines its adaptability for use for a given purpose, or its similarity to another wheel which it may replace, is readily determined.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

In the drawings,

Figure 1 is a view in side elevation, partially broken away, and in section, of a machine embodying features of the invention;

Fig. 2 is a view in detail of a spindle and test piece holder;

Fig. 3 is a view in detail of a throw-out wheel; taken in section on or about line III—III of Fig. 1;

Fig. 4 is a view in section on or about line IV—IV of Fig. 1; and

Fig. 5 is a plan view of the machine.

Referring to the drawings, a suitably designed main frame 1, has a platen 2 which is adjustable to or from a clamping yoke 3 of the frame whereby a wheel or stone, as indicated at 4, may be securely held in place beneath a test piece holder 5. The latter is a plate or disk suitably secured to the lower end portion of a spindle 6 which is rotatable and longitudinally reciprocal in a sleeve 7, a pin 8 playing in a slot 9 of the sleeve, or a feather or other like means being used to provide for the action of the spindle. A boss 10 on the holder 5, eccentric to the axis of rotation thereof, is recessed to receive a test piece 11 which is thus caused to rest on and sweep the face of the wheel 4 when the holder rotates.

An electric motor 12 or the like is mounted on the main frame and is operatively connected to the sleeve 7, which is journaled in bearing brackets 13 and 14 of the frame, by any preferred means, as by a belt 15 passing over a driving pulley 16 of the motor, guide sheaves 17 on the frame, and a follower pulley 18 on the sleeve 7.

To impose a desired pressure of the test piece 11 on the stone, a lever 19 is pivoted at one end to the frame to overlie the upper end of the spindle 6, and carries a weight 20 longitudinally adjustable on the lever arm. A circular bearing disk 21 forms part of an end thrust ball bearing, the complementary part 22 on the stem 6, interposed balls 23, and retaining collar 24 completing the bearing. A stud 25 passing through ears 26 of the disk 21, and the lever 19 which they embrace, transmits the pressure of the weighted lever through the bearing to the spindle and thus to the test piece 11. Or other suitable friction lessening connection may be used between the spindle and lever.

To provide for giving the spindle 6 a predetermined number of turns, any convenient means operated by a moving part of the machine, for throwing open a switch 27 in the motor circuit may be used. As herein shown, this may consist of a countershaft 28, driven through pinion 29, intermediate gear 30 and pinion 31 from the sleeve 7 and in turn driving a worm wheel 32 from a worm 33. A plate 34 is frictionally and adjustably secured as by thumb screw 35 to turn with the worm-wheel 32, so that a pin 36 thereon may be set to shift a lever 37 after any part of one revolution, or an entire revolution of the wheel 32 is completed. A spring finger 38 yieldingly locks the lever in closed position. When the pin 36 comes against a projection 39 of the lever the latter moves out, a spring 40 snaps the switch bar 41 into open position, thus stopping the motor and machine, the friction of the test piece against the stone or wheel preventing any overrunning.

In operation a test piece of suitable material is inserted in the holder, the weight on the lever adjusted and the piece revolved on the face of the wheel, the desired number of times, then the piece, previously measured is remeasured, the amount removed, showing the abrading quality of the wheel. Thus wheels may be readily compared as to this feature.

Obviously, changes in the details of construction may be made without departing from the spirit of my invention and I do not care to limit myself to any particular form or arrangement of parts.

What I claim is:—

1. A machine for determining the abrasive quality of an abrasive stone or wheel comprising a platen, means for securing a stone or wheel on the platen, a rotatable spindle, longitudinally reciprocable to and from the platen, a test piece disk secured to the spindle adjacent the platen and provided with a test piece holding socket eccentric to the spindle axis, means for forcing the spindle to the platen by a constant predetermined pressure, and means for rotating the spindle a predetermined number of turns.

2. A machine for determining the abrasive quality of an abrasive stone or wheel comprising a platen, means for securing a stone or wheel on the platen, a rotatable spindle, longitudinally reciprocable to and from the platen, a test piece disk secured to the spindle adjacent the platen and provided with a test piece holding socket eccentric to the spindle axis, means for forcing the spindle to the platen by a constant predetermined pressure, an adjustably weighted lever resting against the outer end of the spindle and forcing it toward the platen, and means for rotating the spindle a predetermined number of turns.

3. A machine for determining the abrasive quality of an abrasive stone or wheel comprising a platen, means for securing a stone or wheel on the platen, a rotatable spindle, longitudinally reciprocable to and from the platen, a test piece disk secured to the spindle adjacent the platen and provided with a test piece holding socket eccentric to the spindle axis, an adjustably weighted lever resting against the outer end of the spindle and forcing it toward the platen, a thrust bearing interposed between the lever and spindle, and means for rotating the spindle a predetermined number of turns.

4. A machine for determining the abrasive quality of an abrading stone or wheel comprising a main frame, a platen adjustably mounted thereon, a clamp cooperating with the platen to secure a wheel on the latter, a rotatable sleeve journaled in the frame over the platen, a reciprocable spindle non-rotatably mounted in the sleeve, a test piece holder secured on the spindle adjacent the platen, means for imposing a predetermined pressure on the spindle to force it toward the platen, means for rotating the sleeve, and means controlled by the sleeve rotating means for predetermining the number of turns made by the sleeve.

5. A machine for determining the abrasive quality of an abrading stone or wheel comprising a main frame, a platen adjustably mounted thereon, a clamp cooperating with the platen to secure a wheel on the latter, a rotatable sleeve journaled in the frame over the platen, a reciprocable spindle non-rotatably mounted in the sleeve, a test piece holder secured on the spindle adjacent the platen, means for imposing a predetermined pressure on the spindle to force it toward the platen, an electric motor on the frame, driving connections between the motor and the sleeve, a switch for opening the motor energizing circuit, a lever adapted to throw the switch open and an adjustable stud wheel rotated by the sleeve and adapted to shift the lever to open position.

6. A machine for determining the abrasive quality of an abrading stone or wheel comprising a main frame, a platen adjustably mounted thereon, a clamp cooperating with the platen to secure a wheel on the latter, a rotatable sleeve journaled in the frame over the platen, a reciprocable spindle non-rotatably mounted in the sleeve, a test piece holder secured on the spindle adjacent the platen, an adjustably weighted lever bearing against the outer end of the spindle for forcing it toward the platen, a thrust bearing interposed between the lever and spindle, an electric motor on the frame, driving connections between the motor and sleeve, a switch for opening the motor energizing circuit, a lever adapted to throw the switch open and an adjustable stud wheel rotated by the sleeve and adapted to shift the lever to open position.

7. A machine for determining the grade of abrasive bodies having, in combination, means for supporting a body, a tool, power actuated means for rotating the tool, a counting mechanism operatively connected with the tool and means for disconnecting the power from the tool in accordance with the setting of the counting mechanism.

In testimony whereof I affix my signature in the presence of two witnesses.

HARLEY H. LA VERCOMBE.

Witnesses:

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CLEMENT R. STICKNEY.