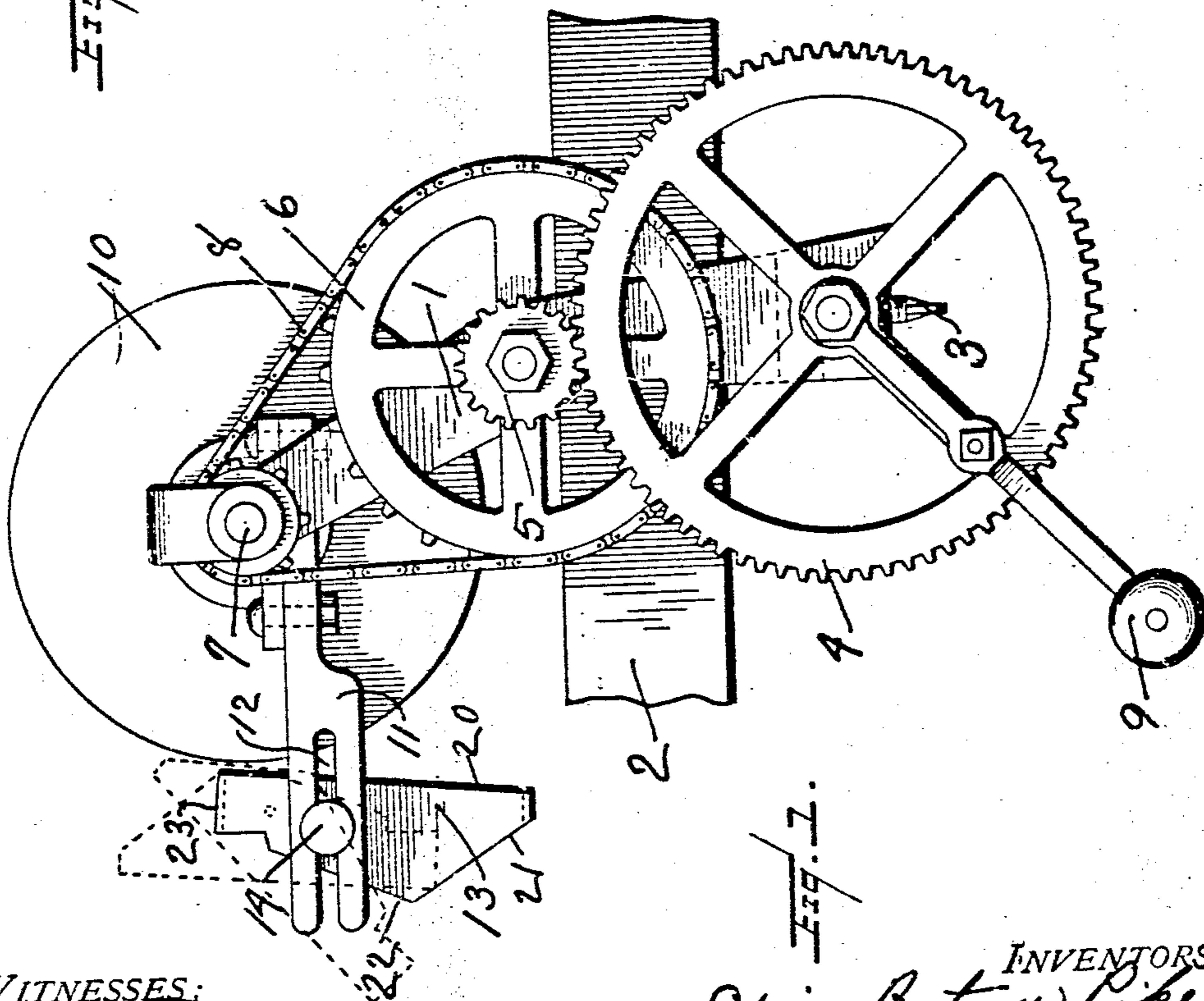


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2 SHEETS—SHEET 1.



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965,933.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## GRINDING-MACHINE.

965,933.

Specification of Letters Patent.

Patented Aug. 2, 1910.

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*To all whom it may concern:*

Be it known that we, EDWIN BERTRAM PIKE and LEVI HAYNE, citizens of the United States, residing, respectively, at  
5 Pike, in the county of Grafton, State of New Hampshire, and Newark, in the county of Essex, State of New Jersey, have invented certain new and useful Improvements in Grinding-Machines, of which the following is a description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to grinding machines having a comparatively small and  
15 rapidly running emery or carborundum or similar abrasive wheel and designed for the lighter kinds of work and to be operated by hand, and more particularly to grinding machines coming within the above description and designed for household or general use  
20 to which end they are commonly provided with various detachable guides or rests designed to be attached to the machine when a tool of specific character is to be ground, for the purpose of supporting the tool and holding it properly with reference to the grinding wheel; and the object of our invention is to provide a grinding machine  
25 of the type referred to in which the various rests or guides may be conveniently attached to and detached from the machine, and which rests will be securely held in place, than has been the case in prior machines; to provide an effective and a more convenient  
35 grinding machine and one well adapted to the uses for which it is intended; and to provide such other improvements in grinding machines as are hereinafter disclosed; all as illustrated in the accompanying drawing, described in the following specification, and particularly claimed in the clauses of the concluding claim.

In the accompanying drawings comprising two sheets: Figure 1 is a view showing  
45 our improved grinding machine in side elevation; Fig. 2 is a view showing an end elevation of our machine, this view showing also a drill grinding guide or rest attached to the machine; Fig. 3 is a perspective view of a  
50 combined block and tool rest forming a part of our machine; Figs. 4 and 8 are fragmentary views illustrating a rest for use when grinding a shear blade and showing its manner of attachment to the grinding machine; Figs.  
55 5 and 7 are similar views relating to a rest

for use when grinding a skate; and Fig. 6 is a similar view illustrating in plan the drill grinding rest shown as attached to the machine in Fig. 2.

Our improved grinding machine comprises a frame 1 which is so formed as to be  
60 conveniently attached to a table or shelf 2 by means of a clamping screw 3.

4 is a gear and 5 a pinion driven thereby, and 6 is a sprocket wheel driven by the pinion 5 and driving the grinding wheel shaft 7 by means of a sprocket chain 8. A suitable bearing is provided at the upper end of the frame 1 for the grinding wheel shaft 7, and  
65 suitable bearings are also provided for the gear wheel 4, and pinion 5 and sprocket wheel 6.

The train of gearing above referred to may be operated by a handle 9, whereby rotary motion is transmitted to the grinding  
75 wheel 10 upon the shaft 7 as will be understood.

11 is an arm formed with or attached to the frame 1 and extending into a position beyond the periphery of the grinding wheel  
80 10, at which point the tool grinding rests furnished with the grinding machine and designed to be used therewith are secured, and the rests referred to may be most conveniently attached to the end of the arm 11  
85 if the free end thereof is provided with a vertical plane surface disposed in a plane without but extending parallel with the sides of the wheel as will be understood from the drawings. The free end of the arm  
90 11 is preferably provided with a slot extending longitudinally thereof as shown at 12.

13 is an element in the form of a block and is referred to hereinafter as a tool rest  
95 because of the fact that it is preferably so formed as to afford supporting surfaces for various kinds of tools to be ground, thereby increasing the capacity of the machine, although it will be understood that the principal purpose of our invention is to provide  
100 for the use with the machine of rests other than the rest 13, that rest, however, forming a part of the means provided for facilitating the attachment of such other rests to the machine and for supporting them. The rest  
105 13 is secured to the free end of the arm 11, preferably by means of a bolt 14 passing through a hole in the rest and through the slot 12 as shown in the drawings, and the  
110

said rest is of such length that it extends across the face of the wheel 10 and preferably beyond the plate of the side thereof which is the more remote from the arm 11; and the tool rests the support of which is to be provided for by our invention, are secured to the free end of the rest 13, or, as otherwise stated, are secured to the end of the rest 13 which is remote from the free end of the arm 11 which arm supports the rest 13 as above explained. The rests referred to may be, as we believe, best supported by providing the end of the rest 13 with a plane surface lying in a vertical plane parallel with the plane of the wheel 10 and providing some part of said rests with openings and making the bolt 14 long enough to extend through the arm 11, rest 13 and through such opening, in which case all the parts mentioned may be secured together by means of a single bolt. 15 is a wing nut upon the end of the bolt 14.

Various forms of rests to be secured to the machine are shown in the drawings. Their form forms no part of the invention disclosed in this application, our invention having to do with the means provided whereby such or similar rests may be attached to and supported from the frame of the machine. These rests may, as will be understood from the drawings, provide for grinding upon either the face or upon the side of the wheel 10.

Figs. 2 and 6 show a rest for use when grinding a twist drill, such rest being provided with an arm 15, by means of which it may be secured to the end of the rest 13 as above disclosed; Figs. 4 and 8 show a rest for use when grinding a shear blade, such rest being provided with an arm 16 for securing it to the end of the rest 13; and Figs. 5 and 7 show a rest for use when grinding a skate, such rest being provided with an arm 17 for securing it to the end of the rest 13 and with a second arm 18 which extends into a position opposite the face of the wheel 10 and adjacent the rest 13 where a screw 19 is provided, between the end of which and a face of the rest 13 the skate blade to be ground is placed as will be understood from Fig. 5, the grinding being done upon the face of the wheel.

While as above explained the purpose of our invention is to facilitate the attachment to the machine of rests other than the rests 13, our invention contemplates also a form of the rest 13 whereby the capacity and availability of the machine for grinding various kinds of tools is increased. To this end the periphery of the rest 13 is formed with a plurality of plane surfaces such as 20, 21, 22, 23, as many as may be desired, which surfaces are arranged at varying angles to one another; so that the rest 13, being as shown and as will be understood adjustable

about an axis parallel with the axis of the grinding wheel 10, may be secured to the arm 11 in various angular positions so as to support a given tool to be ground, such for instance as a chisel, plane blade, scraper, ax, etc., upon some one of the peripheral surfaces aforesaid at a definite and predetermined angle to the face of the wheel 10, and therefore in such a way that its cutting edge will be ground at the proper angle for the tool in question; and in order to still further increase the capacity of the machine for grinding various kinds of tools we prefer to provide certain of the surfaces above referred to of the rest 13 with grooves such as 24 for supporting a tool such as a knife so that it may be ground upon the sides of the wheel as shown in Fig. 2.

In the various figures of the drawings, 25 represents a twist drill, 26 a shear blade, 27 a skate blade or runner, and 28 a knife blade.

Having thus described our invention and explained the mode of operation thereof, we claim and desire to secure by Letters Patent:

1. In a tool grinding machine, a frame; a rotary grinding wheel supported thereby; means for rotating said wheel; an arm extending from said frame and into a position beyond the periphery of said wheel and provided at its end with a plane surface extending parallel with the side of said wheel and which surface is located in a plane without and to one side of the plane of the side of said wheel; a tool rest extending across the face of said wheel and of greater length than the width of said face and provided with two parallel plane surfaces one designed to engage the plane surface of the end of said arm and to the other surface of which tool rest a second tool rest may be secured; and means for securing said first mentioned tool rest to said arm.

2. In a tool grinding machine, a frame; a rotary grinding wheel supported thereby; means for rotating said wheel; an arm extending from said frame and into a position beyond the periphery of said wheel and provided at its end with a plane surface extending parallel with the side of said wheel and which surface is located in a plane without and to one side of the plane of the side of said wheel; a tool rest extending across the face of said wheel and of greater length than the width of said face and provided with two parallel plane surfaces one designed to engage the plane surface of the end of said arm and to the other surface of which tool rest a second tool rest may be secured; means for securing said first mentioned tool rest to said arm; said arm being provided with an opening and said first mentioned tool rest being provided with a hole extending longitudinally thereof; and a bolt extending through said opening and

hole and adapted to secure said rest to said arm.

3. In a tool grinding machine, a frame; a rotary grinding wheel supported thereby; means for rotating said wheel; an arm extending from said frame and into a position beyond the periphery of said wheel and provided at its end with a plane surface extending parallel with the side of said wheel and which surface is located in a plane without and to one side of the plane of the side of said wheel; a tool rest extending across the face of said wheel and of greater length than the width of said face and provided with two parallel plane surfaces one designed to engage the plane surface of the end of said arm and to the other surface of which tool rest a second tool rest may be secured; and means whereby a second tool rest may be secured to the surface of said first mentioned tool rest which is opposite the surface thereof in contact with said arm.

4. In a tool grinding machine, a frame; a rotary grinding wheel supported thereby; means for rotating said wheel; an arm extending from said frame and into a position beyond the periphery of said wheel; a tool rest secured to the end of said arm and extending across the face of said wheel and terminating in a surface parallel with and beyond that side of the wheel which is opposite said arm; and means whereby a second tool rest may be secured to the above mentioned surface of said first mentioned tool rest.

5. In a tool grinding machine, a frame; a rotary grinding wheel supported thereby; means for rotating said wheel; an arm extending from said frame and into a position beyond the periphery of said wheel and provided at its end with a plane surface extending parallel with the side of said wheel and which surface is located in a plane without and to one side of the plane of the side of said wheel; a tool rest extending across the face of said wheel and of greater length than the width of said face and provided with a plane surface designed to engage the

plane surface at the end of said arm; and means for securing said tool rest to the end of said arm and for permitting an adjustment of said rest about an axis parallel with the axis of the grinding wheel, the periphery of said rest comprising a plurality of plane surfaces whereby a tool supported thereby may be held at a definite angle to the grinding wheel.

6. In a tool grinding machine, a frame; a rotary grinding wheel supported thereby; means for rotating said wheel; an arm extending from said frame and into a position beyond the periphery of said wheel; a tool rest secured to the end of said arm and extending across the face of said wheel and into a position beyond that side of the wheel which is opposite said arm; and means for securing said tool rest to the end of said arm and for permitting an adjustment of said rest about an axis parallel with the axis of the grinding wheel, the periphery of said rest comprising a plurality of plane surfaces whereby a tool supported thereby may be held at a definite angle to the grinding wheel.

7. In a tool grinding machine, a frame; a rotary grinding wheel supported thereby; means for rotating said wheel; an arm extending from said frame and into a position beyond the periphery of said wheel; a tool rest secured to the end of said arm and extending across the face of said wheel; and means for securing said tool rest to the end of said arm and for permitting an adjustment of said rest about an axis parallel with the axis of the grinding wheel, the periphery of said rest comprising a plurality of plane surfaces whereby a tool supported thereby may be held at a definite angle to the grinding wheel.

This specification signed in the presence of two witnesses.

EDWIN BERTRAM PIKE.

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Witnesses:

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