

A. ROBERTS & A. LIBERT.
GRINDER FOR IRREGULAR SURFACES.
APPLICATION FILED FEB. 14, 1910.

974,523.

Patented Nov. 1, 1910.

3 SHEETS—SHEET 1.

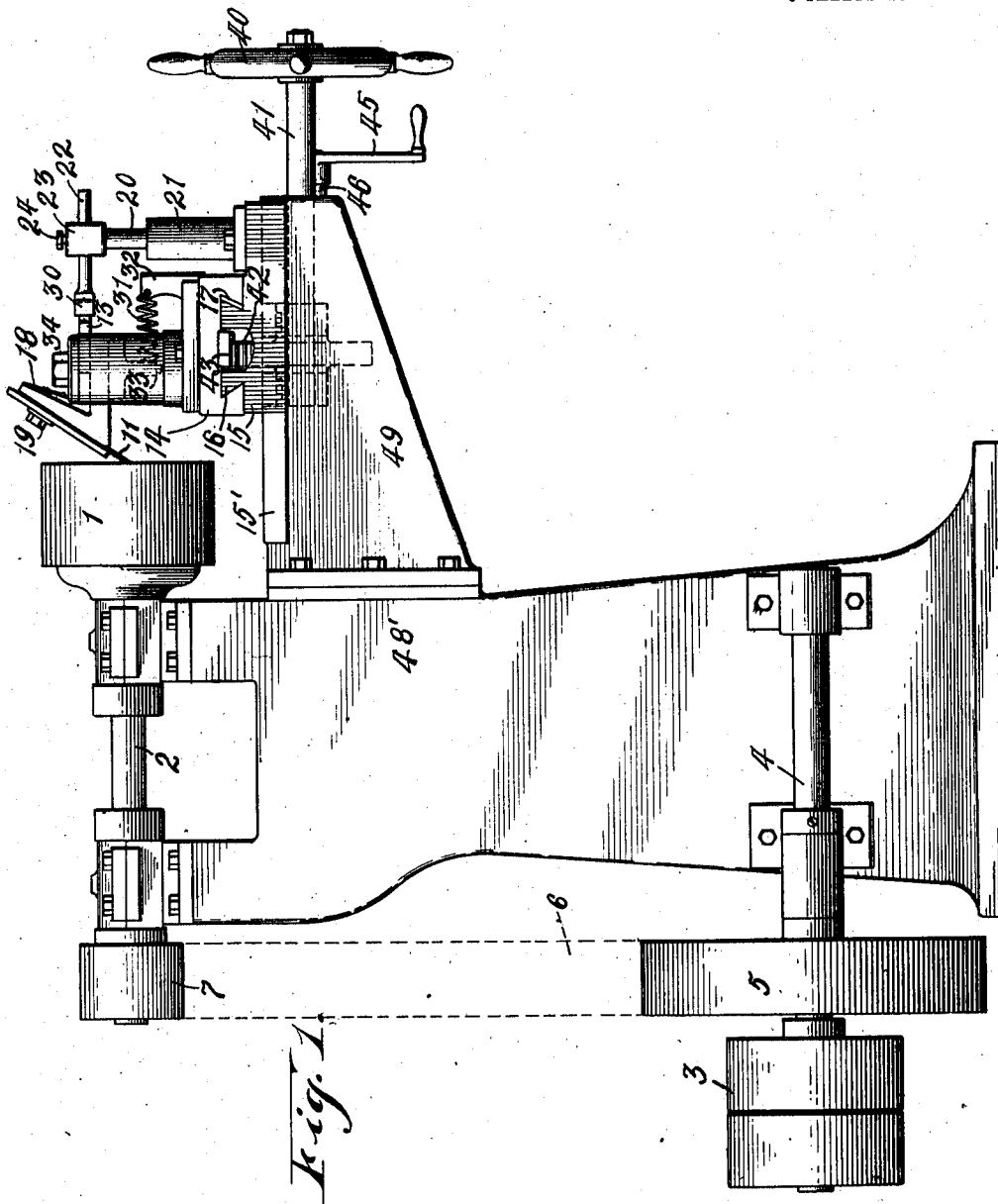


Fig. 1.

Witnesses

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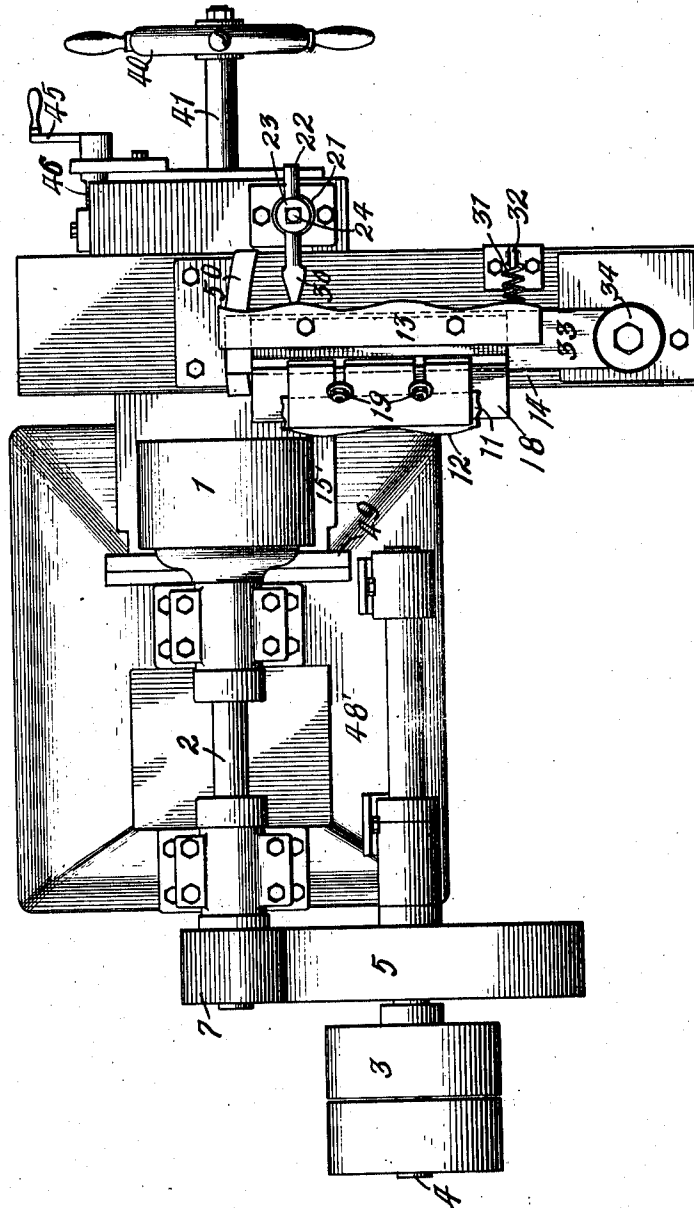
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3 SHEETS-SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 4.

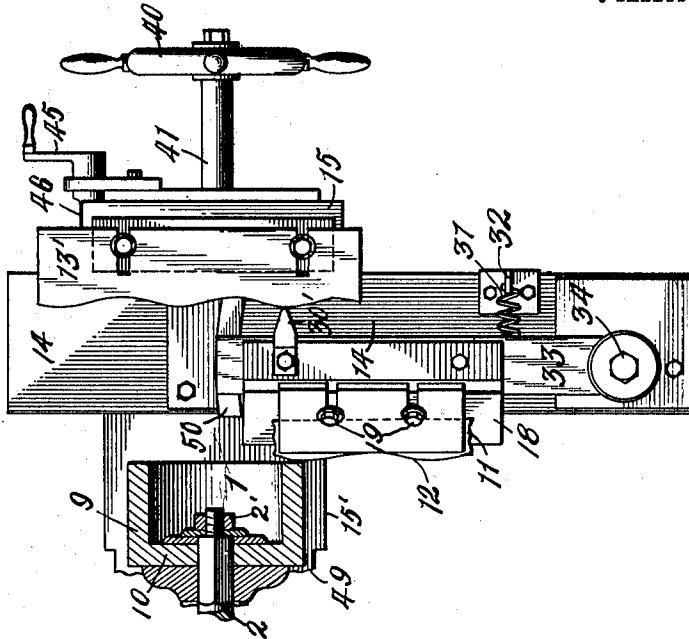
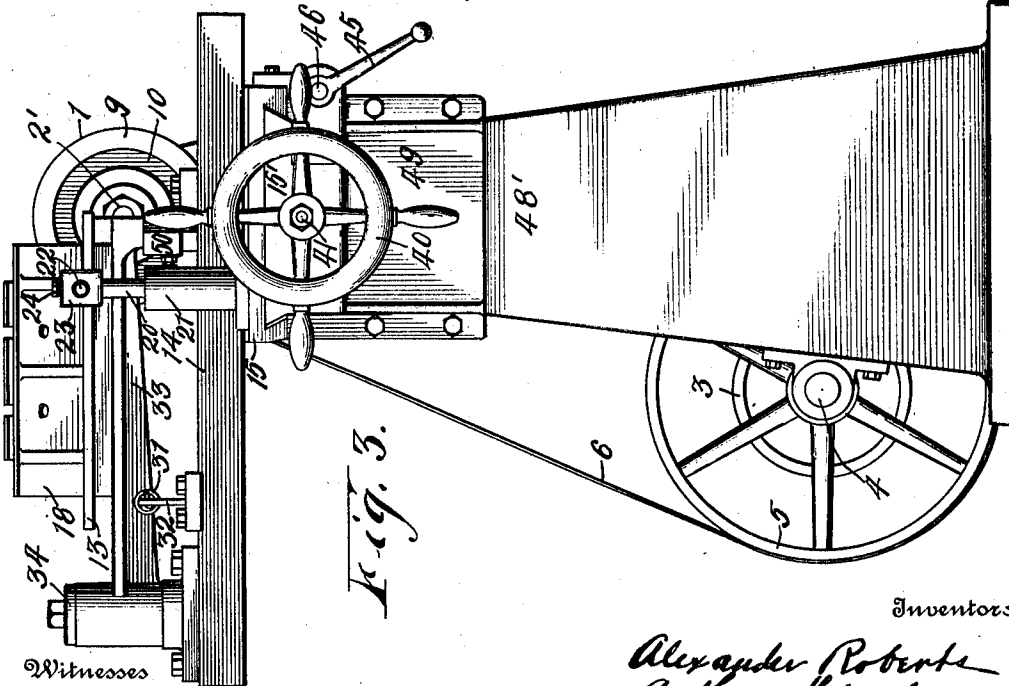


Fig. 3.



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UNITED STATES PATENT OFFICE.

ALEXANDER ROBERTS AND ARTHUR LIBERT, OF GREEN BAY, WISCONSIN.

GRINDER FOR IRREGULAR SURFACES.

974,523.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, ALEXANDER ROBERTS and ARTHUR LIBERT, citizens of the United States, residing at Green Bay, county of Brown, and State of Wisconsin, have invented new and useful Improvements in Grinders for Irregular Surfaces, of which the following is a specification.

Our invention relates to improvements in that class of grinders, which are adapted to be used for grinding irregular forms, such for example, as the curved or angular edges of cutting tools or for grinding or polishing other irregular surfaces, and it pertains, more especially, among other things, to the device for holding the cutting tool or other article, and for guiding it while being moved in contact with the grinding surface of a rapidly revolving emery wheel or other rotary grinder.

The construction of our device is further explained by reference to the accompanying drawings, in which—

Figure 1 represents a front view thereof. Fig. 2 is a plan view. Fig. 3 is an end view and Fig. 4 is a detail, part in section, showing a modified form of device for guiding the cutting tool as it is brought into moving contact with the rotary grinder.

Like parts are identified by the same reference numerals throughout the several views.

1 represents the grinder or emery wheel, which is rigidly supported from the revolvable shaft 2, and motion is communicated to said grinder from a motor not shown, through the pulley 3, shaft 4, band pulley 5, belt 6, pulley 7, and shaft 2. The grinder 1 is preferably formed with a hollow center, as shown in Fig. 4, comprising the periphery or annular grinding surface 9 and end member 10, which end member is rigidly affixed to its supporting shaft 2 by clamping nuts 2', whereby the end edges of the grinder only are preferably brought into contact with the surface to be ground.

11 represents a blade to be ground, having an irregular cutting edge 12, and the primary object of our invention is to guide the blade 11, so that it will be caused to move toward and from the grinding surface of the emery wheel or other grinder, to conform to a predetermined shape of the guide plate 13, it being understood that the guide plate 13 may be made of wood or other suitable material of any desired shape, and that

such guide plate is so located, that the blade supporting carriage 14, as it is moved forwardly and backwardly past the grinder, will be caused to move laterally whereby the surface of the blade or other article to be ground, will be ground to conform to the shape of the guide plate. The carriage 14 is slidably supported upon the base plate 15 and is retained in place by the dove tailed flange 16 operating in a dove tailed groove 17 of the carriage, and the blade 11 is rigidly secured to the supporting bracket 18 of the carriage by clamping bolts 19, while the guide plate 13, may, as shown in Fig. 4, be adjustably supported from the base 15, such guide plate 13 may, if desired, be rigidly secured to the moving carriage 14, as shown in Figs. 1, 2, and 3, and when the guide plate is thus supported from the moving carriage, its edge which is provided with the irregular form, is caused to yieldingly bear against the guide bearing 30 and such guide bearing 30 is adjustably supported from the stationary base 15, by the adjustable standard 20, standard supporting sleeve 21, arm 22, head block 2, and hand screw 24, and said guide plate 13 is yieldingly retained in contact with said guide bearing by the spiral spring 31, said spring being connected at one end with the carriage 14 by the bracket 32, and at its opposite end to the swinging arm 33. The swinging arm 33 is pivotally supported at one end from the carriage 14 by the vertical trunnion 34.

The carriage supporting base plate 15 is slidably supported on the guide ways 15' and said ways 15' are rigidly connected with the main frame 48' of the machine by the bracket 49. The carriage and blade are moved forwardly and backwardly by the manual act of the operator, such motion being communicated to the carriage through the hand wheel 40, shaft 41, pinion 42, and toothed bar 43, said carriage 14 being rigidly affixed to and carried by said toothed bar, while said carriage supporting base plate 15 and the parts supported therefrom, are adjusted nearer to or farther from the grinding wheel according to the width of the blade or other article to be ground, by the manual act of the operator, a lateral movement being communicated to said base plate through the crank 45 and threaded shaft 46, it being understood that the shaft 46 is revolutely supported in stationary bearings of the bracket 49, while its threaded end op-

erates in a threaded sleeve carried by the base plate 15, whereby as said crank is turned in one direction, the platform 15 and the parts supported therefrom are moved nearer to the grinding wheel, while by a reverse movement of said crank, 45, such parts are moved in the opposite direction, whereby blades or other objects to be ground or polished, may be adjusted in yielding contact with the grinder, while the spring 31 yields sufficiently to permit the object as it is being ground, to move toward and from the grinder to conform to the irregular shape of the guide plate.

While the guide plate is preferably supported from the reciprocating carriage, as shown in Figs. 1, 2 and 3, and the guide bearing 30 is supported from the stationary platform, the relative position of said guide plate and bearing may be reversed and the guide plate may be supported from the stationary platform and the bearing supported from the reciprocating carriage, as shown in Fig. 4, it being quite immaterial as to which of the two ways shown and described, such cooperating parts are located.

50 is a supporting bearing, upon which the free end of the swinging lever 33 is adapted to bear as it is swung backwardly and forwardly with the blade to be ground.

The guide plate 13 and guide bearing 30 in Figs. 1, 2 and 3 are referred to in the modified form shown in Fig. 4 as the guide plate 13' and the guide bearing 30', all the other parts shown in Fig. 4 being constructed and arranged substantially as shown in the other three figures of the application.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a device of the described class, the combination of a revoluble grinder, a carriage adapted to be alternately moved in opposite directions past and in close proximity to said grinder, a swinging arm pivotally supported at one end from said carriage, means for securing the object to be ground to said swinging arm, a guide plate, and a guide bearing, said guide plate and bearing being connected one with said swinging arm and the other with a stationary base plate, and means for yieldingly retaining said guide plate and guide bearing in contact with each other as the object to be ground is moved in contact with the surface of the grinder.

2. In a device of the described class, the

combination of a revoluble grinder, a reciprocating carriage, a swinging arm pivotally supported at one end from said carriage, means for securing the object to be ground to said swinging arm, a guide plate and guide bearing, said guide plate and bearing being connected one with said swinging arm and the other with a stationary base plate, a spring connected at one end with said swinging arm and at its opposite end to said carriage, and means for communicating a reciprocating movement to said carriage and the cooperating parts mounted thereon.

3. In a device of the described class, the combination of a revoluble grinder, a reciprocating carriage supported in close proximity to said grinder, a swinging arm pivotally supported at one end from said carriage, means for adjustably securing the object to be ground to said swinging arm, a guide plate secured to said movable carriage, a guide bearing supported from a stationary base plate, means for yieldingly retaining said guide plate and guide bearing in contact with each other, and means for communicating a reciprocating movement to said carriage and the cooperating parts supported therefrom.

4. In a device of the described class, the combination of a grinder, means for communicating a revoluble movement to said grinder, a carriage adapted to be alternately moved in opposite directions past and in close proximity to said grinder, a swinging arm pivotally supported at one end from said carriage, means for securing the object to be ground to said swinging arm, a guide plate and a guide bearing, said guide plate and bearing being connected one with said swinging arm and the other with a stationary base plate, means for yieldingly retaining said guide plate and guide bearing in contact with each other as the object to be ground is moved in contact with the surface of said grinder, and means for manually communicating a reciprocating movement to said carriage and the parts supported therefrom, all substantially as and for the purpose specified.

In testimony whereof we affix our signatures in the presence of two witnesses.

ALEXANDER ROBERTS.
ARTHUR LIBERT.

Witnesses:

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WM. CLEEREMAN.