March 21, 1950 M. COLLIS 2,501,498

ABRASION AND GRINDING MACHINE FOR SAWS

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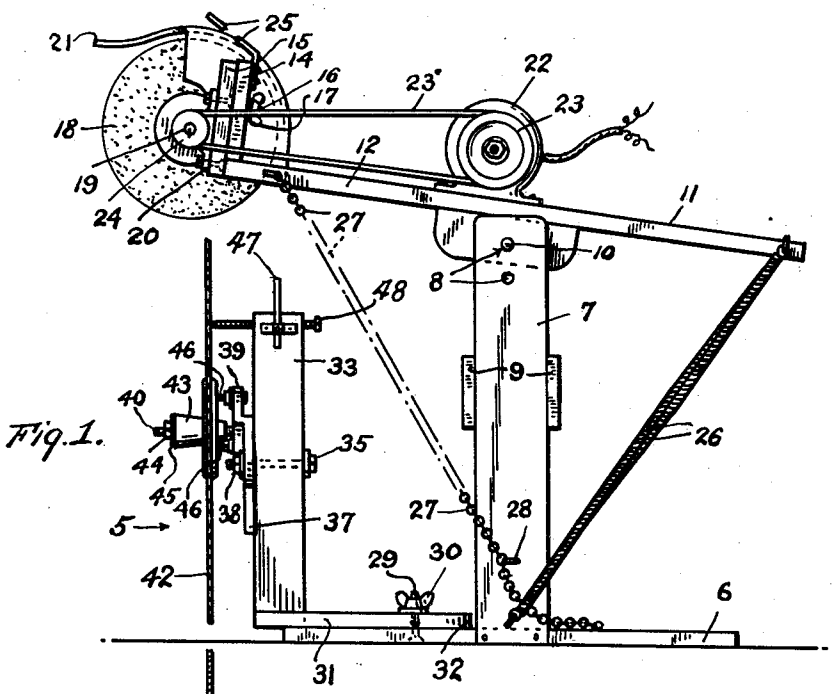


Fig. 1.

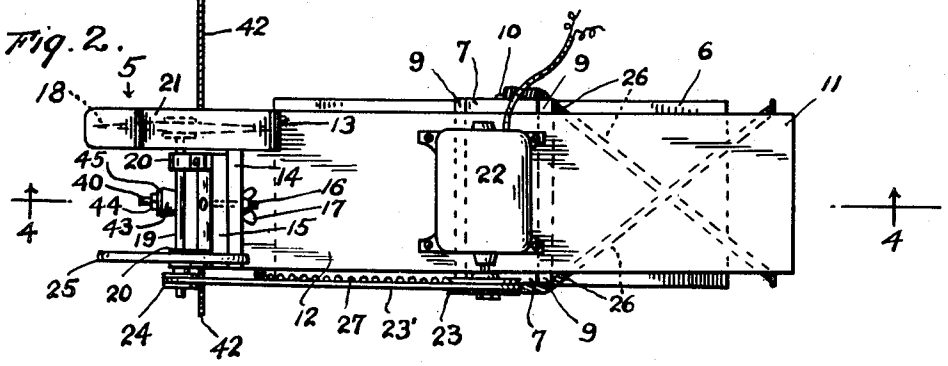


Fig. 2.

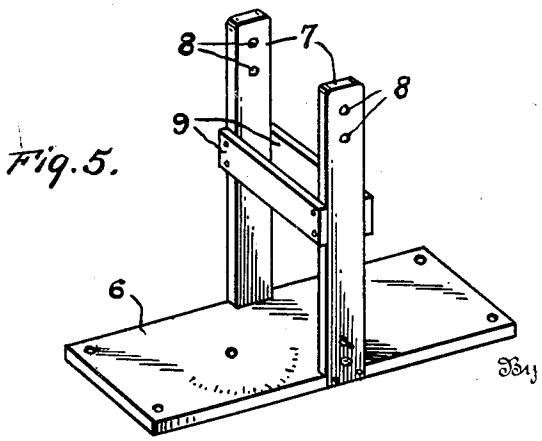


Fig. 5.

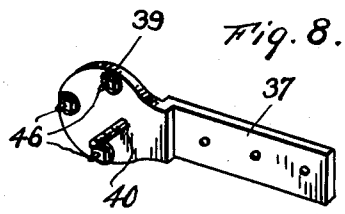


Fig. 8.

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Fig. 3.

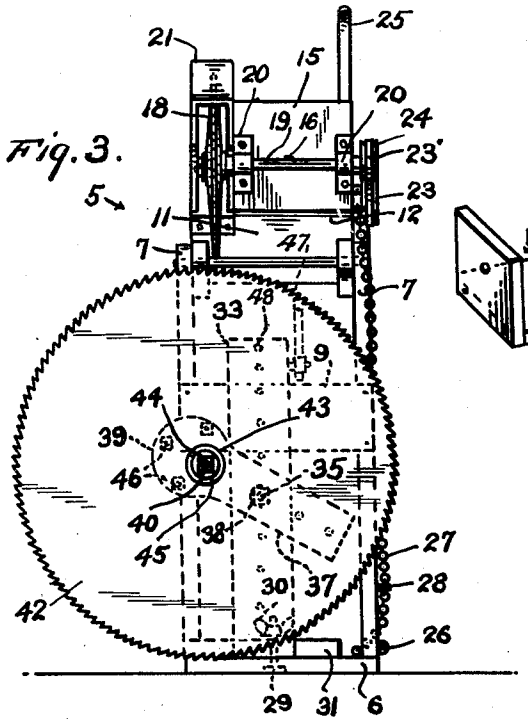


Fig. 6.

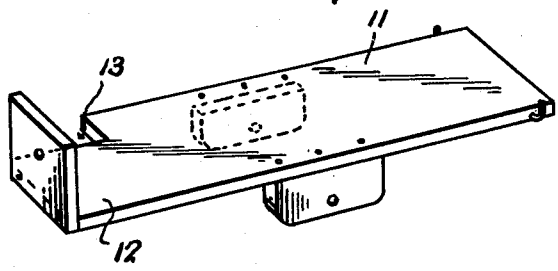


Fig. 7.

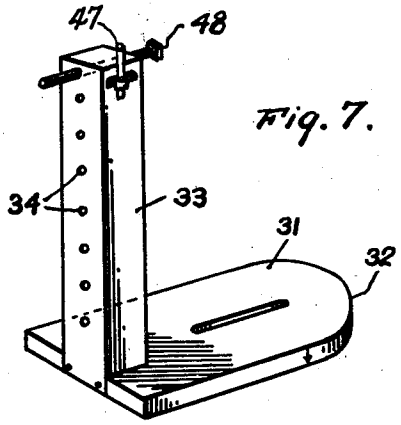
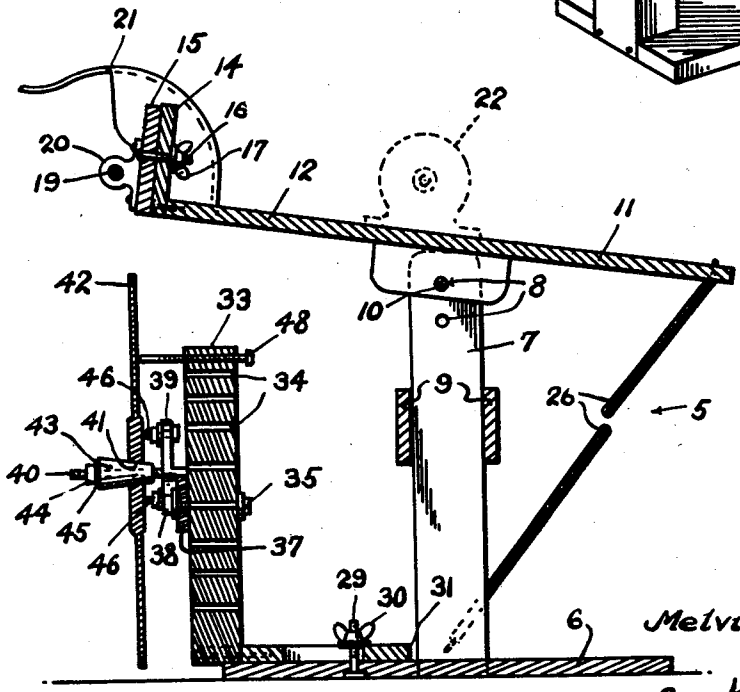


Fig. 4.



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Fig. 9.

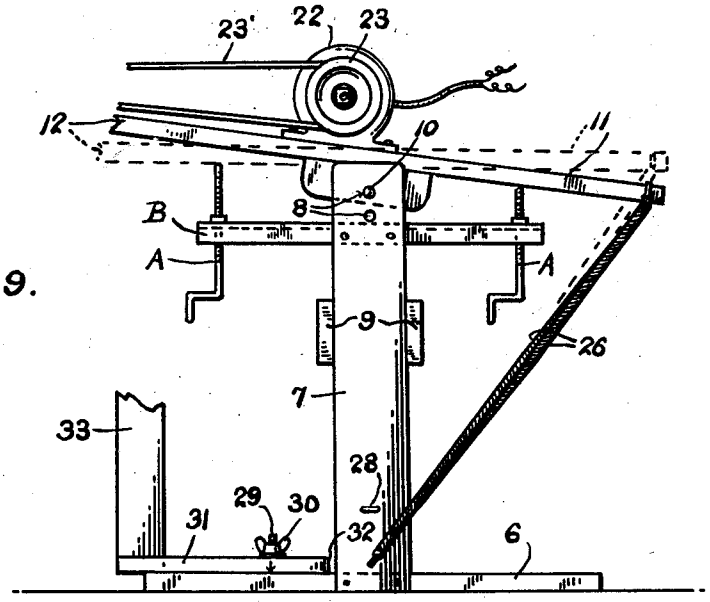


Fig. 10.

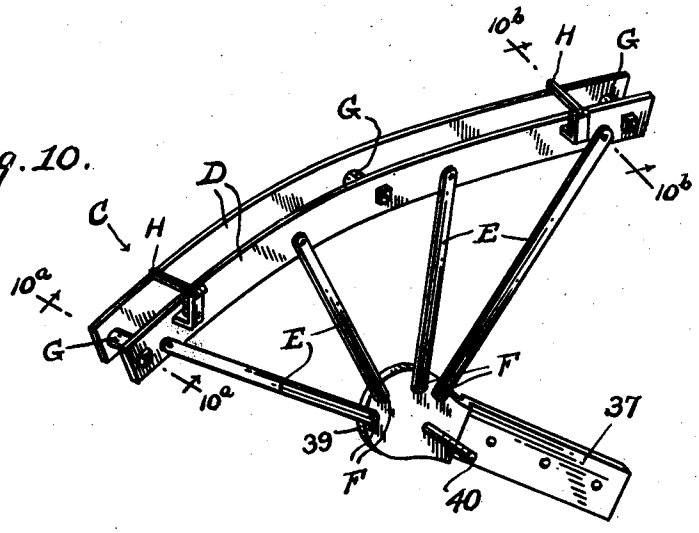


Fig. 10a

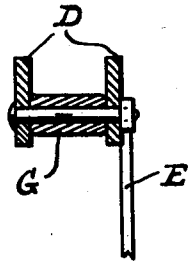
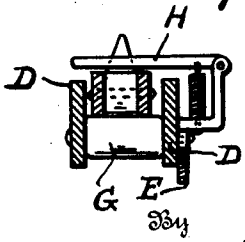


Fig. 10b



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2,501,498

UNITED STATES PATENT OFFICE

2,501,498

ABRASION AND GRINDING MACHINE FOR SAWS

Melvin Collis, Chico, Calif., assignor of seventy-five per cent to Coyle E. Bybee and twenty-five per cent to George Jeffery and Justin Jeffery, all of Chico, Calif.

Application October 29, 1948, Serial No. 57,267

4 Claims. (Cl. 76—40)

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This invention relates to an abrasion and grinding machine for saws.

The primary object of this invention resides in the provision of an abrasion and grinding machine adapted to sharpen the teeth of all types of saws.

Another object of this invention resides in the provision of an abrasion and grinding machine adapted to removably support all types of saws, cutting blades and the like for proper engagement thereof by the grinding disc thereof.

A further object of this invention resides in the combination of the abrasion and grinding machine and attachments for supporting various types of saws, cutting blades and the like for contact by the rotating grinding disc thereof.

A still further object of this invention resides in the particular construction of the abrasion and grinding machine and the attachments therefor.

Aside from the foregoing objects, this invention resides in the particular construction of the bed-plate of the abrasion and grinding machine.

Among the many objects of this invention is the particular construction and arrangement of the attachments relative to the grinding disc.

One of the salient features of this invention resides in the provision of means whereby those elements to be operated on by the grinding disc can be adjusted relative thereto so as to grind the same in accordance with predetermined specifications.

With these and other objects in view, this invention resides in certain novel features of construction and arrangement of elements to be herein more fully set forth in the specification, illustrated in the accompanying drawings and pointed out in the appended claims and, although this disclosure depicts my present conception of the invention, the right is reserved to resort to such departures therefrom as come within the scope of the claims.

In the accompanying drawings forming a part of this application;

Fig. 1 is a side view of the abrasion and grinding machine showing a disc saw secured thereto.

Fig. 2 is a plan view thereof.

Fig. 3 is a front view of the machine.

Fig. 4 is a longitudinal sectional view taken approximately on line 4—4 of Fig. 2.

Fig. 5 is a perspective view of the base of the machine.

Fig. 6 is a perspective view of the bed-plate.

Fig. 7 is a similar view of the adjustable standard.

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Fig. 8 is a perspective view of the disc-saw supporting bracket.

Fig. 9 is a detail side view of the machine showing a modified form of stop for the bed-plate.

Fig. 10 is a perspective view of the attachment for retaining a chain saw in opposed position to the grinding disc.

In the present illustration of this invention, the numeral 5 designates, in general, an abrasion and grinding machine consisting of an elongated base 6 having laterally spaced standards 7 provided with vertically spaced bearing apertures 8 adjacent their upper ends and rigidly secured together by laterally extending braces 9.

Pivotally journalled in an elected aperture 8 of the standards, as by a laterally extending pivot 10 is an elongated bed-plate 11 having a portion of its front end 12 cut out, as indicated by the numeral 13 with the remaining portion of said front end provided with a rigid upstanding lug 14 having a head 15 adjustably secured against its outer surface by a pivotal bolt 16 which, through the instrumentality of a thumb-screw 17 thereon, secures said head in predetermined adjusted positions relative to the lug 14 so as to retain a disc grinder 18, splined to a laterally extending shaft 19 journalled on the outer surface of said head in bearings 20 at predetermined angles relative to the element to be operated on. Said disc grinder is disposed in the aforesaid cut out portion of the bed-plate and has a suitable guard 21 disposed thereover.

Secured to the bed-plate is an electric motor 22 having a pulley 23 splined to its shaft and connected to a pulley 24 splined on the shaft 19 to transmit power to the disc grinder.

Secured to the aforesaid lug 14 is a forwardly and upwardly extending handle 25 by which the bed-plate is rocked downwardly on its pivots 10 against the tension of retractile coil springs 26 to engage the disc grinder against work being operated on and upon relaxing downward pressure on the handle, said coil springs elevate the disc grinder for disengagement with the work thereunder a distance governed by a stop-chain 27 connected at one end to the front end of the bed-plate with its opposite end adjustably secured to a hook 28 secured to one of the standards.

Pivoted on the base forwardly of the standards and beneath the bed-plate, as by a vertical bolt 29 having a thumb-screw 30 thereon, is an elongated table 31 having a substantially semi-circular inner end 32 and rigidly supporting a standard 33 at its outer end which is provided

with a plurality of vertically aligned apertures 34 through which extends a bolt 35 having its outer end extending through an elected aperture 36 in a disc-saw supporting bracket 37 adjustably secured to said standard 33 by a nut 38, screw or bolt.

The aforesaid bracket 37 is of elongated configuration having a substantially circular head 39 provided with an elongated bolt 40 which extends through a centrally disposed aperture 41 in a disc-saw 42 and slidably supports a cone shaped plug 43 having its smaller end forced in said aperture 41 by a nut 44 screwed on the outer threaded end of said bolt against washers 45 or the like to rigidly secure the disc-saw to the bracket. Said head 39 also carries a plurality of studs 46 adapted to retain the disc-saw a sufficient distance from the same to permit the smaller end of said plug to be forced well into the aperture of the disc-saw.

In order to limit downward rocking movement of the bed-plate on its pivots, a stop rod 47 extends upwardly from said standard 33 in the path of the forward end of the same and is adjustable to govern engagement of the disc grinder with the disc saw or other work being operated on.

Subsequent to securing the bracket with the disc-saw thereon to the standard 33, a set-screw 48 or other similar element carried at the upper end of the standard is screwed against the inner surface of the disc-saw to prevent chattering of the same when engaged by the disc grinder.

In the modified form of the machine as shown in Fig. 9, rocking movement of the bed-plate is limited by crank-screws A threaded in opposite ends of an angle-iron beam B which is rigidly secured to the standards or other portions of the base so the outer ends of said crank-screws remain in opposed relation to opposite ends of said bed-plate, thus providing means to govern contact of the disc grinder with the work and also dispose it at an elected distance therefrom when in idling position above the work.

In Fig. 10 of the drawings the letter C designates an attachment for supporting a chain-saw in opposed position to the aforesaid disc grinder and consists of an arcuate channel shaped guide D having arms E connected to the circular head of the bracket 37 by bolts F or the like. Said guide has rollers G disposed therein to support the chain saw with its teeth presented toward the disc grinder and, in order to secure the chain-saw against accidental sliding movement within the channel of the guide, spring controlled stops H are disposed adjacent opposite ends of the guide for engagement with the adjacent teeth of the chain-saw and, when the operator of the machine has finished grinding those teeth beneath the disc grinder, he either manually lifts the stops from engagement with those teeth engaged thereby or slides the chain-saw along to automatically lift the same to dispose other teeth beneath the disc grinder. Said bracket with the guide thereon is attached to the standard of the table in a manner heretofore set forth.

With this invention fully set forth, it is manifest that an abrasion and grinding machine of simple construction is provided and through the instrumentality of the adjuncts thereto, all types of saws and cutting blades can be sharpened and restored to their original condition.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

1. An abrasion and grinding machine comprising a base, spaced standards secured to the base and having vertically disposed bearing apertures at their upper ends, a rockable bed-plate disposed between the upper ends of the standards and having a portion of its front end cut out, a pivot rod extending through the aforesaid bearing apertures in the standards supporting said rockable bed-plate, an upstanding lug rigidly secured to the forward end of the bed-plate, braces connecting the standards above the base, a head disposed against the outer surface of said lug, a bolt extending through the head and lug, a thumb-nut screwed on the bolt and bearing against the lug, laterally aligned bearings secured to the outer surface of the head, a shaft journalled in said bearings, a disc grinder secured to one end of the shaft and disposed in the cut out area of the bed-plate, an electric motor secured to the bed-plate, pulleys splined to the shafts of the motor and disc grinder, a belt trained over said pulleys, a guard secured to the forward cut out portion of the bed-plate and extending over the disc grinder, a handle secured to said lug and extending forwardly of the bed-plate, retractile coil springs connecting the rear end of the bed-plate to the standards, a chain adjustably connecting the forward end of the bed-plate to the standards, a table disposed on the forward portion of the base, a pivotal bolt extending vertically through the base and table, a thumb-nut screwed on the upper end of said bolt and bearing against the table to secure it in elected positions around the bolt, a standard rigidly secured to the forward end of the table and having a plurality of vertically aligned apertures therethrough, an elongated bracket disposed against the outer surface of the standard and having a plurality of apertures through its outer end and enlarged substantially circular inner end, a bolt connecting the bracket to the standard in adjusted positions relative thereto, an elongated bolt having its outer threaded end secured to the circular inner end of the bracket, studs secured to the circular inner end of the bracket, with their outer ends bearing against the inner surfaces of a disc saw mounted on said elongated bolt, a conical plug slidably mounted on the outer portion of said elongated bolt with its smaller end extending into a centrally disposed aperture in the disc saw, a washer disposed on the outer portion of the elongated bolt, a nut secured on the outer end of the elongated bolt and tightened against said washer to force the conical plug into the aperture of the disc saw and secure it to the bracket, a stop secured to the upper end of the table standard in the path of the forward end of the bed-plate, and a set-screw threaded through said table standard adjacent its upper end with its outer end bearing against the inner surface of the disc saw to prevent chattering thereof when operated on by the disc grinder.

2. In an abrasion and grinding machine comprising a base, standards rigidly secured to the base, a rockable bed-plate pivoted to the standards, a table adjustably mounted on the forward end of the base, a standard rigidly secured to the table, a bed-plate rockably secured to the standards of the base, a power driven disc grinder adjustably secured to the front end of said bed-plate, a bracket adjustably secured to the standard of the table, saw supporting means carried by said bracket, retractile coil springs connecting the rear end of the bed-plate to the standards

of the base, an elongated beam secured to one of the standards beneath the bed-plate, a handle secured to the forward end of the bed-plate, and crank-screws threaded in opposite ends of said beam with their upper ends disposed in the path of opposite ends of the bed-plate to limit its rocking movement toward and from a saw mounted on the bracket.

3. An abrasion and grinding machine comprising, a base, spaced standards rigidly secured to the base, an elongated bed-plate rockably secured between the standards, a lug rigidly secured to the forward end of the bed-plate, a head pivotally and adjustably secured to said lug, a shaft journalled on said head, a disc grinder secured to one end of the shaft, an electric motor secured to the bed-plate forwardly of its pivoted connections to the standards, power transmitting means connecting the motor to the aforesaid shaft, crossed retractile coil springs connecting opposite sides of the rear end of the bed-plate to opposite standards, stop means on a standard limiting upward rocking movement of the forward end of the bed-plate by the coil springs, a table pivotally and slidably rested on the forward portion of the base, means securing said table in adjusted positions on the base, a standard rigidly secured to the table adjacent the forward end of the bed-plate, cutting element supporting means adjustably secured to the standard of the aforesaid table and retaining a cutting element thereon in the path of the grinder for sharpening the same, and a handle on the bed-plate.

4. An abrasion and grinding machine, the combination of, a base, a bed-plate rockably mounted on the base and biased in one direction by crossed coil springs; a shaft pivotally supported on the forward end of the bed-plate, a grinding wheel secured to the shaft, an electric motor secured to the bed-plate, power transmitting means connecting the motor to the grinding wheel shaft, a standard pivotally and slidably mounted on the forward portion of the base beneath the forward end of the bed-plate, means securing the standard to the base in elected positions thereon, cutting element supporting means adjustably secured to the standard for disposing a cutting element carried thereby in the path of the grinding wheel, and stop means supported by the base limiting both upward and downward rocking movement of the bed-plate.

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