Sept. 10, 1946. S. H. KLOSSNER 2,407,499

MEASURED TENSION CONTROL FOR ABRASIVE BELT SYSTEMS

Filed Aug. 27, 1945 3 Sheets-Sheet 1

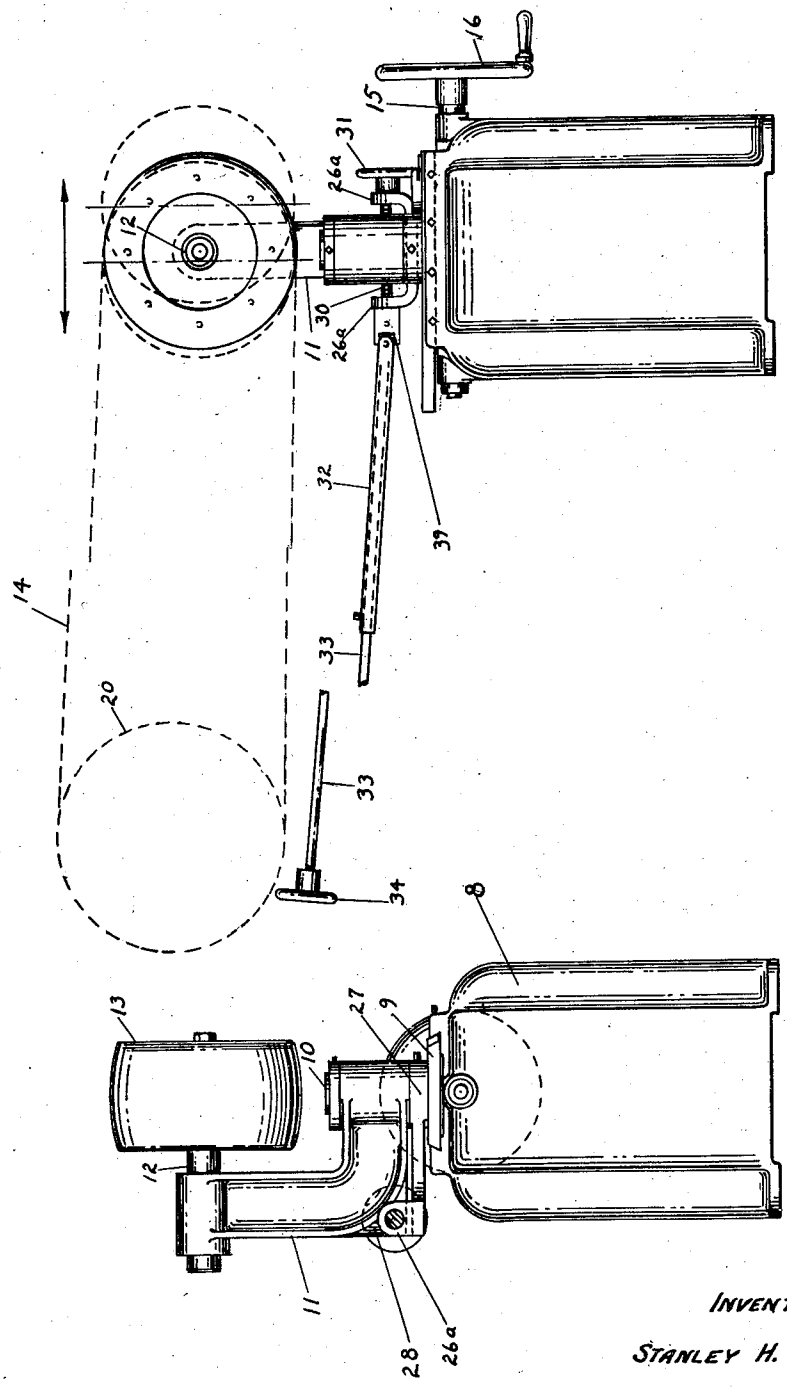


Fig. 2.

Fig. 1.

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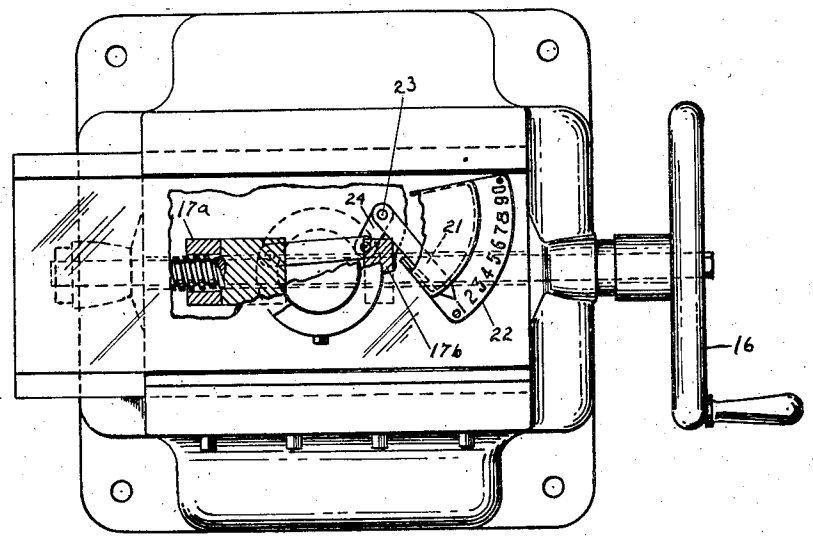


Fig. 3.

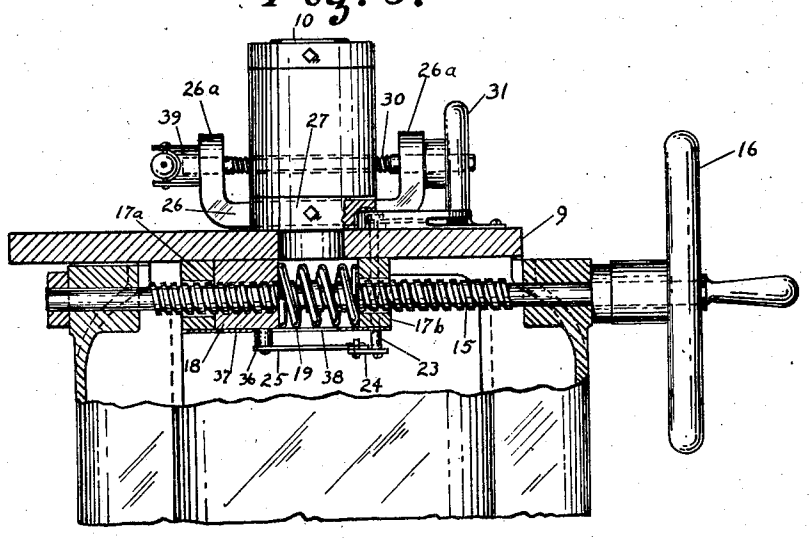


Fig. 4.

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MEASURED TENSION CONTROL FOR ABRASIVE BELT SYSTEMS

Filed Aug. 27, 1945 3 Sheets-Sheet 3

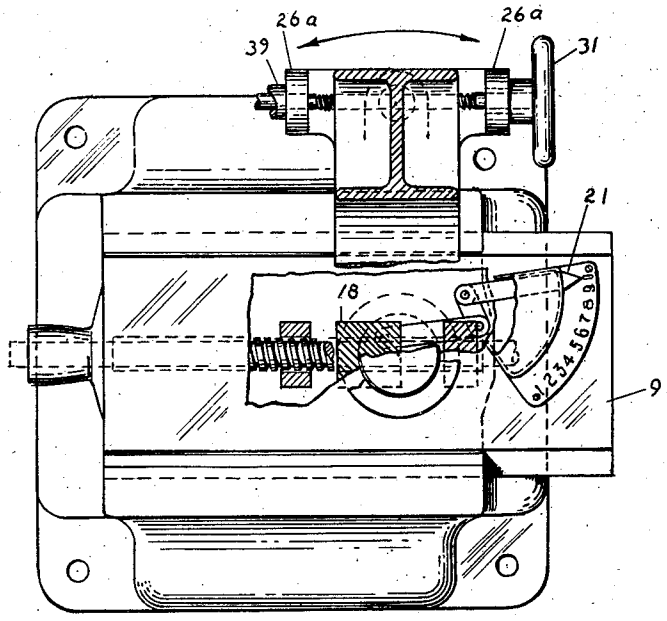


Fig. 5.

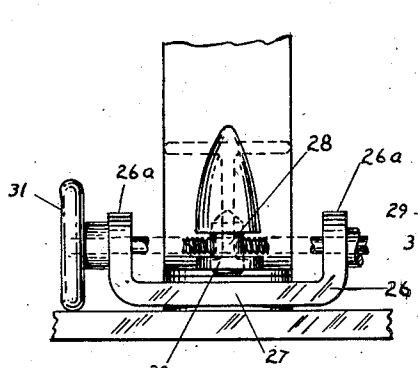


Fig. 7.

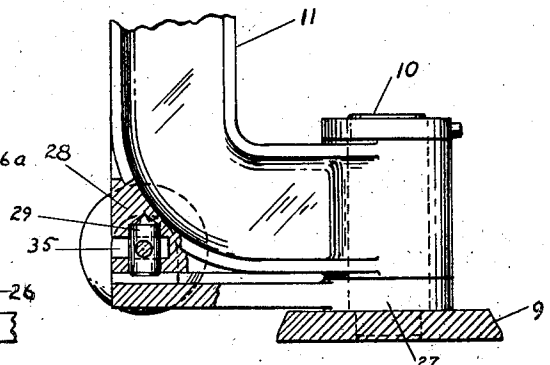


Fig. 6.

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Patented Sept. 10, 1946 2,407,499

UNITED STATES PATENT OFFICE

2,407,499

MEASURED TENSION CONTROL FOR ABRASIVE BELT SYSTEMS

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Application August 27, 1945, Serial No. 612,736

5 Claims. (Cl. 51—148)

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My present invention relates to a device for obtaining a measured pressure upon an abrasive belt in use during grinding or finishing operation.

Heretofore, it has been understood that a proper amount of pressure upon an abrasive belt was desirable, but so far as I have been informed the amount of pressure was left to experimentation. It is an accepted fact that a given abrasive belt will operate more efficiently under a proper and regulated pressure. The main purpose of this invention is to provide a machine where the pressure can be measured so that if the proper pressure for a given operation has been found satisfactory a new belt may be installed and adjusted to the same pressure.

As an illustration, in production grinding or finishing where a considerable number of parts all being the same are to be processed, it is likely that many belts will be used before the completion of the run. It will be understood that abrasive belts of fabric or paper to which have been fastened particles of abrasive grain by some adhesive, will become less and less efficient in the grinding process, as this grain is either dulled or broken from the belt, and the belt must be discarded and replaced by a new belt depending upon the type of operation. In production runs, belts may be expected to operate efficiently for periods ranging between one-half hour and two hours.

It is recognized that a proper grind or finish may vary upon different materials or materials of different hardness according to the pressure that is used upon the abrasive belt. Past experience or experimenting on each new job will determine the proper pressure for that particular operation. This pressure then when found may be recorded and kept as a permanent record having value because the pressure can again be duplicated accurately for succeeding similar operations.

This machine would permit operation to continue at the same high level of efficiency because each succeeding belt can be installed and maintained at the proper pressure to insure efficient results.

Fig. 1 is a front elevation of a backstand embodying my invention and showing in section the extended belt tracking control rod.

Fig. 2 is a side elevation of this backstand and shows in dotted line the abrasive belt running over the idler pulley and over the contact roll which may be assumed to be mounted on a power driven spindle not shown. This Fig. 2 gives an indication of the extent of the back and forth adjustment which permits the tightening or loosening of abrasive belts and provides compensation for variations in belt lengths.

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Fig. 3 is a plan view of my device with parts cut away to show a horizontal sectional view through the screw-threaded means for operating the slide.

Fig. 4 is a vertical sectional view through the slide and shows in elevation the screw-threaded means for moving this slide. This view also shows the pressure indicator linkage.

Fig. 5 is a horizontal sectional view through the pulley carrying arm and shows the belt tracking means connected therewith and also shows in horizontal section the bosses depending from the slide and moved by the screw.

Fig. 6 is a detail showing the lower part of the pulley carrying arm and the attachment thereto of the belt tracking device.

Fig. 7 is a detail showing the operation of the belt tracking means for operating the pulley carrying arm.

Referring to the drawings in a more particular description, it will be seen that the backstand of my device comprises a strong rigid pedestal 8 carrying at a convenient distance above the floor a slide 9 dove-tailed into the top of the pedestal 8 with appropriate mechanical means for adjusting the same to close movement in the top of the pedestal.

Mounted upon the slide 9 is a short rigid vertical shaft 10 upon which is swivelingly mounted the base of the strong angle-shaped idler pulley arm 11 in the upper part of which is mounted a horizontally extending idler spindle 12 on which spindle is mounted the idler pulley 13.

This pulley carries the rear or back loop of the abrasive belt 14. Just below the upper surface of the pedestal 8 there is mounted in said pedestal a strong screw 15 having at its rear end a hand wheel 16. This screw engages the threading in the non-rotatable nut 18 located between the two bosses projecting downward from the slide 9, so that manipulation of the handwheel 16 moves the slide 9 backward, by applying pressure through the nut 18 and the compression spring 19 to the rear boss 17b or forward by applying pressure directly through the nut to the front boss 17a. Bosses 17a and 17b have enlarged aligned apertures that align with the threaded aperture in nut 18 for the free projection of screw 15.

When the slide is moving backward obviously the slack in the belt 14 is taken up; then pressure is exerted on the belt. It can be seen that when the slack is taken up in the belt 14 and

2. In a measured tension control for an abrasive belt system, the combination of a backstand pedestal, a slide adapted to be moved back and forth in the upper part of the pedestal, a pulley arm upstanding from said slide, an idler spindle extending from said arm, an idler pulley mounted on said spindle and adapted to carry one loop of the abrasive belt, said slide having depending therefrom two rigid, spaced, apertured bosses, a screw mounted in said pedestal and held from longitudinal movement therein, and freely piercing said bosses, a hand wheel fixed on said screw, a non-rotatable nut located between said bosses and fitting said screw, a compression spring interposed between said nut and one of the bosses, whereby rotation of the screw in the proper direction presses said spring against its engaged boss and moves said slide rearward against the tension of the belt, tension-indicating means on said slide and linkage means operatively connecting said nut and said pressure indicating means and indicating the tension on the belt.

3. In a measured tension control for an abrasive belt system, the combination of a backstand pedestal, a slide adapted to be moved back and forth in the upper part of the pedestal, a pulley arm upstanding from said slide, an idler spindle extending from said arm, an idler pulley mounted on said spindle and adapted to carry one loop of the abrasive belt, said slide having depending therefrom two rigid, spaced, apertured bosses, a screw mounted in said pedestal and held from longitudinal movement therein, and freely piercing said bosses, a hand wheel fixed on said screw, a non-rotatable nut located between said bosses and fitting said screw, a compression spring interposed between said nut and one of the bosses, whereby rotation of the screw in the proper direction presses said spring against its engaged boss and moves said slide rearwardly against the tension of the belt, and rotation of the screw in the other direction moves said nut against the other boss and moves the slide forwardly, tension-indicating means on said slide and linkage means operatively connecting said nut and said pressure indicating means and indicating the tension on the belt.

4. In a measured tension control for an abrasive belt system, the combination of a backstand pedestal, a slide adapted to be moved back and forth in the upper part of the pedestal, a pulley arm swivellingly upstanding from said slide, an

idler spindle extending from said arm, an idler pulley mounted on said spindle and adapted to carry one loop of the abrasive belt, said slide having depending therefrom two rigid, spaced, apertured bosses, a screw mounted in said pedestal and held from longitudinal movement therein, and freely piercing said bosses, a hand wheel fixed on said screw, a non-rotatable nut located between said bosses and fitting said screw, a compression spring interposed between said nut and one of the bosses, whereby rotation of the screw in the proper direction presses said spring against its engaged boss and moves said slide rearwardly against the tension of the belt, and rotation of the screw in the other direction moves said nut against the other boss and moves the slide forwardly, tension-indicating means on said slide and linkage means operatively connecting said nut and said pressure indicating means and indicating the tension on the belt and means on said slide for swivelling said pulley arm, whereby the abrasive belt may be tracked on said pulley.

5. In a measured tension ocntrol for an abrasive belt system, the combination of a backstand pedestal, a slide adapted to be moved back and forth in the upper part of the pedestal, a pulley arm swivellingly upstanding from said slide, an idler spindle extending from said arm, an idler pulley mounted on said spindle and adapted to carry one loop of the abrasive belt, said slide having depending therefrom two rigid, spaced, apertured bosses, a screw mounted in said pedestal and held from longitudinal movement therein, and freely piercing said bosses, a hand wheel fixed on said screw, a non-rotatable nut located between said bosses and fitting said screw, a compression spring interposed between said nut and one of the bosses, whereby rotation of the screw in the proper direction presses said spring against its engaged boss and moves said slide rearwardly against the tension of the belt, and rotation of the screw in the other direction moves said nut against the other boss and moves the slide forwardly, tension-indicating means on said slide and linkage means operatively connecting said nut and said pressure indicating means and indicating the tension on the belt and means on said slide for swivelling said pulley arm on the vertical axis of the pulley arm, whereby the abrasive belt may be tracked on said pulley without interfering with the said measured tension control.

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Sept. 10, 1946. H. E. KRASNER ET AL 2,407,500

CONTAINER FOR EXPLOSIVE SHELLS

Filed Feb. 3, 1945

Fig. 1

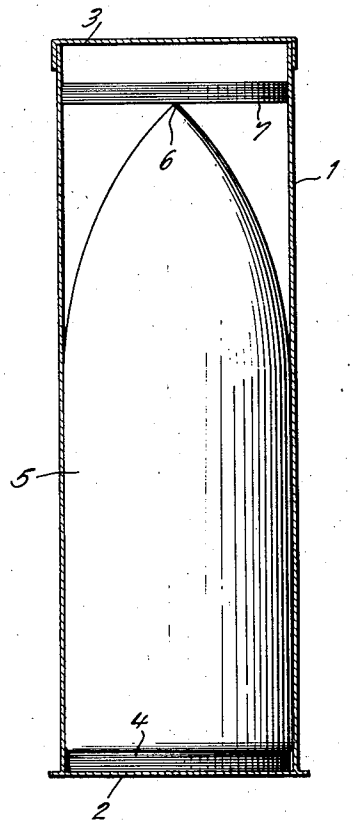


Fig. 3

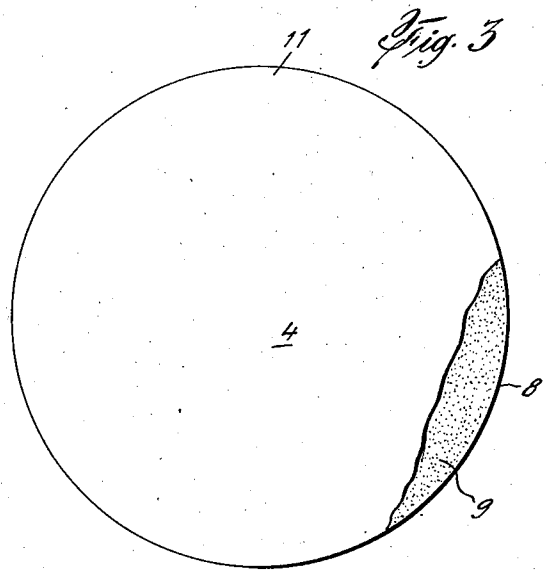
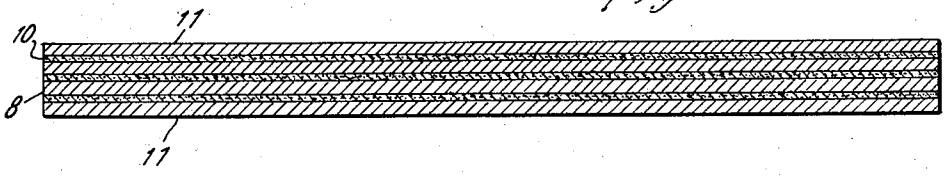


Fig. 2



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