Nov. 28, 1944. R. GRUNWALD 2,363,728

POLISHING MACHINE

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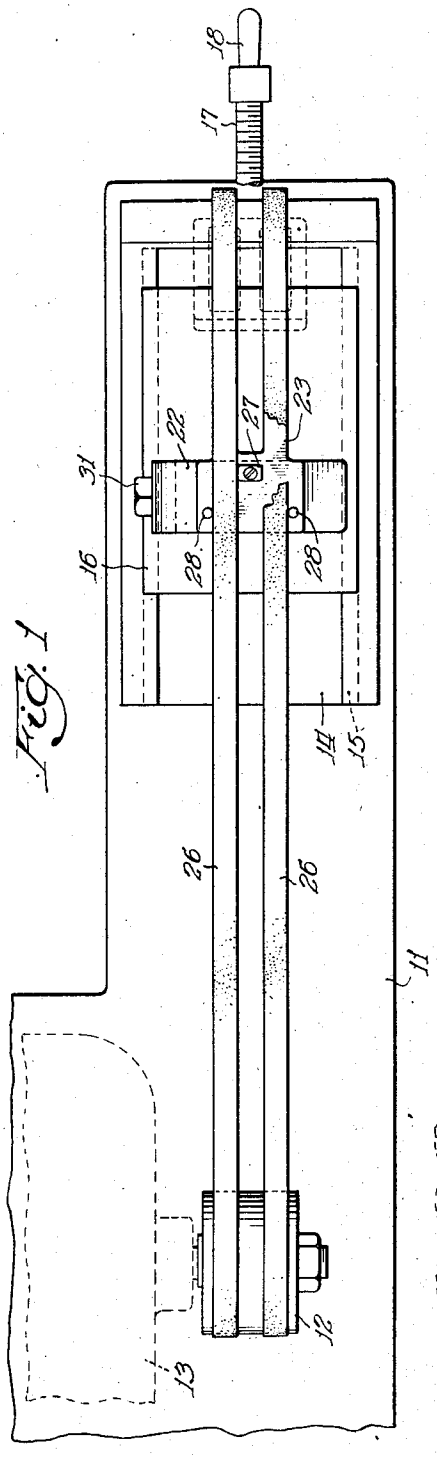


Fig. 1

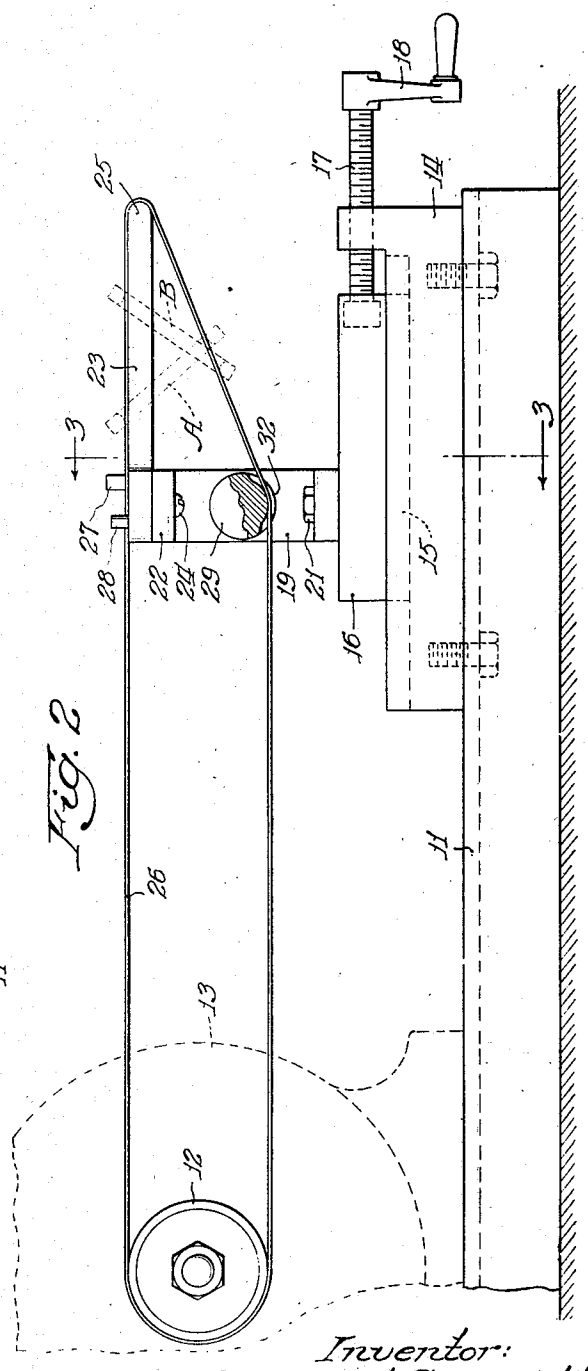


Fig. 2

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Fig. 4

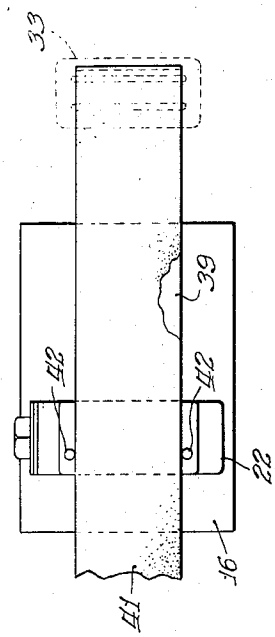


Fig. 5

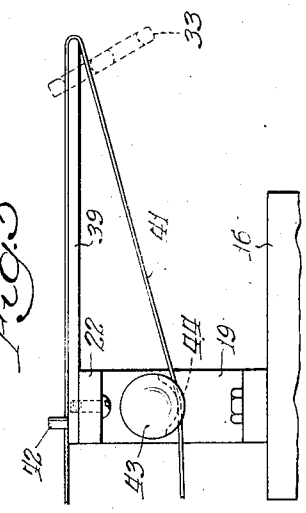


Fig. 3

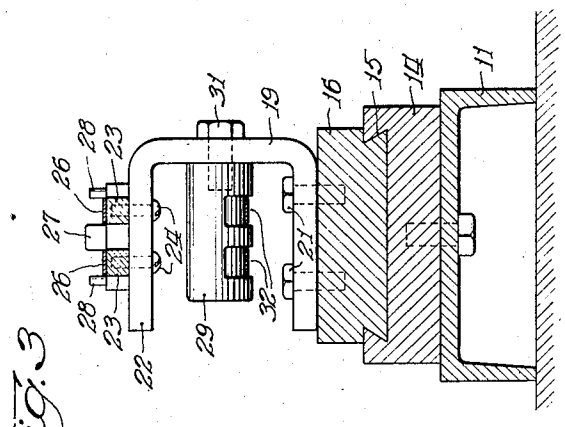
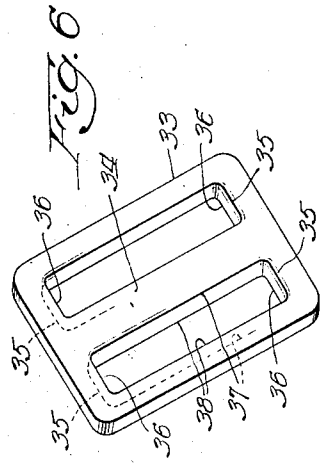


Fig. 6



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POLISHING MACHINE

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Application November 27, 1942, Serial No. 467,084

4 Claims. (Cl. 51—135)

My invention relates to polishing or buffing machines and more particularly to a machine for polishing the interior surfaces of articles having relatively small dimensions.

Heretofore buffing or polishing machines of the type having a driving pulley, a polishing head and an endless belt have been provided for buffing or polishing articles. Generally such machines have provided at the polishing head a small pulley which engaged the other loop end of the belt. For polishing in slots there has been provided in place of such pulley a polishing plate provided with a bifurcated member arranged to retain and guide the belt on the polishing plate. In polishing such articles as belt buckles it has been found that none of the devices of the prior art are particularly suited for such work since generally to use such devices would require stopping the machine, loosening the belt, threading the belt through the buckle and replacing the belt on the pulley or belt plate before any polishing operation can be started. Upon completing the polishing it is then again necessary to stop the machine and to remove the belt. This consumes a great amount of time with the result that the process is slow and expensive.

In accordance with my invention I have provided an arrangement for simultaneously polishing two spaced apart surfaces in an article such as a belt buckle without necessitating any removal of the polishing belt or any complicated adjustment procedure. This has been accomplished by providing a polishing head which is adjustable in position so as to readily tension the belt and to provide a belt plate about which the belt is passed which is relatively thin and narrow so that the article to be polished may be slipped directly over in place thus greatly reducing the time required for polishing each article.

It is, therefore, an object of my invention to provide a new and improved polishing or buffing machine particularly suited for polishing the inside surfaces of a relatively small article.

Other and further objects of my invention will become more readily apparent by reference to the following description taken in connection with the accompanying drawings, wherein—

Figure 1 is a top view of a polishing machine constructed in accordance with my invention;

Fig. 2 is a side view of the machine shown in Fig. 1;

Fig. 3 is a cross section taken along the lines 3—3 of Fig. 2;

Figs. 4 and 5 are top and side views respectively of a modified form of my invention; and

Fig. 6 is a full size perspective view of an article of a type to be polished by my machine.

Referring more particularly to Figs. 1, 2, and 3 there is shown a polishing machine having a base 11 which adjacent one end supports a flat driving pulley 12 which is operated from a suitable source of power which may comprise an electric motor 13. Adjacent the other end of the base 11 there is provided a polishing head comprising a bed plate 14 provided with slideways 15 which in turn support a movable sliding carriage 16. The bed plate 14 is interconnected with the sliding carriage 16 by means of an adjusting screw 17 which is provided with a manual actuating device or handle 18 in the proximity of the front of the polishing head. Preferably the adjusting screw 17 and the operating handle 18 are similar to the type of screw utilized in the construction of a bench vise.

The slidable carriage 16 is provided with an upright post or supporting member 19 which may be secured thereto by suitable fastening means such as bolts 21. The post 19 supports adjacent the top thereof a transverse arm or bracket 22 which in turn supports a plurality of longitudinally extending plates 23 which may be secured by suitable fastening means such as screws or bolts 24. The longitudinally extending belt plates 23 are each relatively long and narrow and have a rounded edge 25 which is arranged to engage one loop of a polishing belt 26. In the arrangement shown there is provided a pair of belt-supporting plates 23 which are spaced apart and each is provided with one of a pair of belts 26 which are driven by the flat pulley 12. The pair of belts 26 are retained in position on the longitudinally extending belt plates 23 by a plurality of belt spacers such as the replaceable block 27 and the replaceable pins 28. These belt guiding means are made replaceable since it has been found that the edges of the belt which is coated with an abrasive rapidly wear the spacing means. Supported from an intermediate point on the supporting post 19 there is a belt spacer and guide 29 which may be secured in position by a bolt 31. The belt spacer and guide 29 is provided with suitable grooves 32 for guiding the under side of the belts 26.

The belt buckle such as shown in Fig. 6 having an outer frame 33 and an intermediate cross member 34 is supported in a suitable jig and then placed upon the belt plates 23 somewhat

as indicated by the dotted lines in Fig. 1. The belt buckle is then moved to a position such as shown by the dotted lines A in Fig. 2, whereupon opposed edges **35** of the belt buckle **33** are polished by a sort of oscillating rotating movement. The belt buckle is moved to the dotted line position B of Fig. 2, whereupon two other opposed surfaces such as the surfaces **36** of the buckle **33** are polished. Since the belt guide and spacing member **29** spaces the under side of the belt **26** away from the belt plate **23** there is provided an arrangement whereby two spaced apart and opposed surfaces may be polished at the same time. The belt **26** has sufficient resiliency so as to permit some latitude in the pressure exerted oscillating it or rotating it between positions A and B of Fig. 2.

When it is desired to polish such surfaces as the edges **37** and **38** of the buckle **33** the polishing head is provided with a wider flat plate **39** shown in Figs. 4 and 5, which supports a single belt **41**. The central guide **27** is removed and where necessary new side guides **42** serve in place of the guides **28** of Fig. 1. The lower belt spreading and guide means **29** is replaced by another spreading means **43** which has a single slot or groove **44** to accommodate the new belt **41**. The belt buckle **33** is thereupon placed over the end of the belt plate **39** in the manner shown by the dotted lines of Figs. 4 and 5, whereupon the buckle is rotated or oscillated between two limits much in the manner as that described in connection with Fig. 2. From the above description it is believed and it will become apparent that the present arrangement has many advantages over the arrangement of the prior art and that the time required for polishing small objects such as parachute buckles is greatly reduced.

While for the purposes of description and illustration a particular embodiment of my invention has been set forth, it is to be understood that I do not wish to be limited thereto since obviously such modifications may be made in the construction and in the instrumentalities employed as may be commensurate with the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. The combination in a polishing machine comprising a base, a flat driving pulley positioned adjacent one end of said base, a polishing head positioned adjacent the other end of said base, a relatively narrow endless polishing belt interconnecting said pulley and said polishing head, said polishing head comprising a bed plate provided with slideways arranged parallel to the direction of said belt, a sliding carriage supported in said slideways, an adjusting screw interconnecting said carriage and said bed plate, means adjacent the front of said polishing head for manually actuating said screw, a supporting post positioned adjacent one side of said carriage, a transverse bracket extending therefrom, a relatively long narrow polishing belt supporting plate supported by said bracket, said polishing belt supporting plate having a rounded edge for engagement with one loop end of said belt, replaceable belt guide means supported by said bracket, and a belt spacer supported from an intermediate point on said supporting post; said belt guide means acting to guide the upper run of said one loop end of said belt over said belt supporting plate, and said belt spacer acting to space the lower run of said one loop end of said belt from the upper run thereof, whereby the upper and lower runs of said one loop end of said belt may be simultaneously employed for the purposes described.

2. The combination in a polishing machine comprising a flat driving pulley, a polishing head spaced away from said driving pulley, a pair of relatively narrow endless polishing belts interconnecting said pulley and said polishing head, said polishing head comprising a bed plate provided with slideways arranged parallel to the direction of said belts, a carriage movably mounted in said slideways, and a manually actuated screw operable adjacent the front of said polishing head for adjusting the position of said carriage relative to said bed plate, upright supporting means positioned adjacent one side of said carriage, a transverse bracket extending therefrom, a pair of spaced apart relatively long narrow polishing belt supporting plates mounted on said bracket, said polishing belt plates each projecting forwardly from said bracket beneath the upper run of one of said polishing belts and each having a rounded edge for engagement with the forward loop end of an associated polishing belt, and a belt spacer supported from an intermediate point on said upright supporting means above the lower run of both of said pair of polishing belts acting to space the lower runs of said belts from said polishing belt plates, whereby the upper and lower runs of the forward loop ends of both of said polishing belts may be simultaneously employed for the purposes described.

3. The combination in a buffing machine comprising a driving pulley for a buffing belt, a buffing head for said belt spaced from said pulley and positioned in alignment therewith, an endless buffing belt mounted on said pulley and said polishing head, said polishing head comprising a member provided with slideways longitudinally arranged with respect to said belt, a carriage mounted in said slideways, an adjusting screw interconnecting said member and said carriage, means for manually operating said screw, an upright post mounted upon and adjacent one side of said carriage, an arm extending transversely from the vicinity of the top of said post, a longitudinally extending plate projecting forwardly from said arm beneath the upper forward run of said belt and having a rounded end over which said belt is returned, the top and the end of said plate being arranged to engage the inside of said belt, belt guiding means supported by said arm, and a belt spacer and guide transversely positioned and supported from an intermediate part of said post, also engaging the inside of said belt and acting to space and guide the lower forward run of said belt a predetermined distance from the upper forward run thereof, whereby the upper and lower forward runs of said polishing belt may be simultaneously employed for the purposes described.

4. The combination in a polishing machine comprising a driving pulley, an adjustably positioned polishing head aligned with and spaced from said driving pulley and comprising a bed plate provided with slideways, a carriage supported on said slideways, a belt supporting plate having a rounded edge arranged to engage one loop end of an endless polishing belt, said plate extending longitudinally within said belt and being spaced from said carriage, support means on said carriage supporting said belt plate at one side thereof, means supported by said support

means in spaced relation to said carriage and to said plate for spreading and guiding an endless polishing belt, manually adjustable screw means interconnecting said carriage and said bed plate whereby the tension of a polishing belt may be readily adjusted, an endless polishing belt supported by said pulley, said belt plate and said spreading and guiding means, said belt being mounted to have a relatively small loop end to permit slipping of work thereover to be polished, whereby an upper and a lower surface of the work may be polished simultaneously.

RAYMOND GRUNWALD.