Aug. 25, 1925. 1,551,167

E. M. ORLOW

BAND KNIFE SHARPENER

Filed Nov. 15, 1924 3 Sheets-Sheet 1

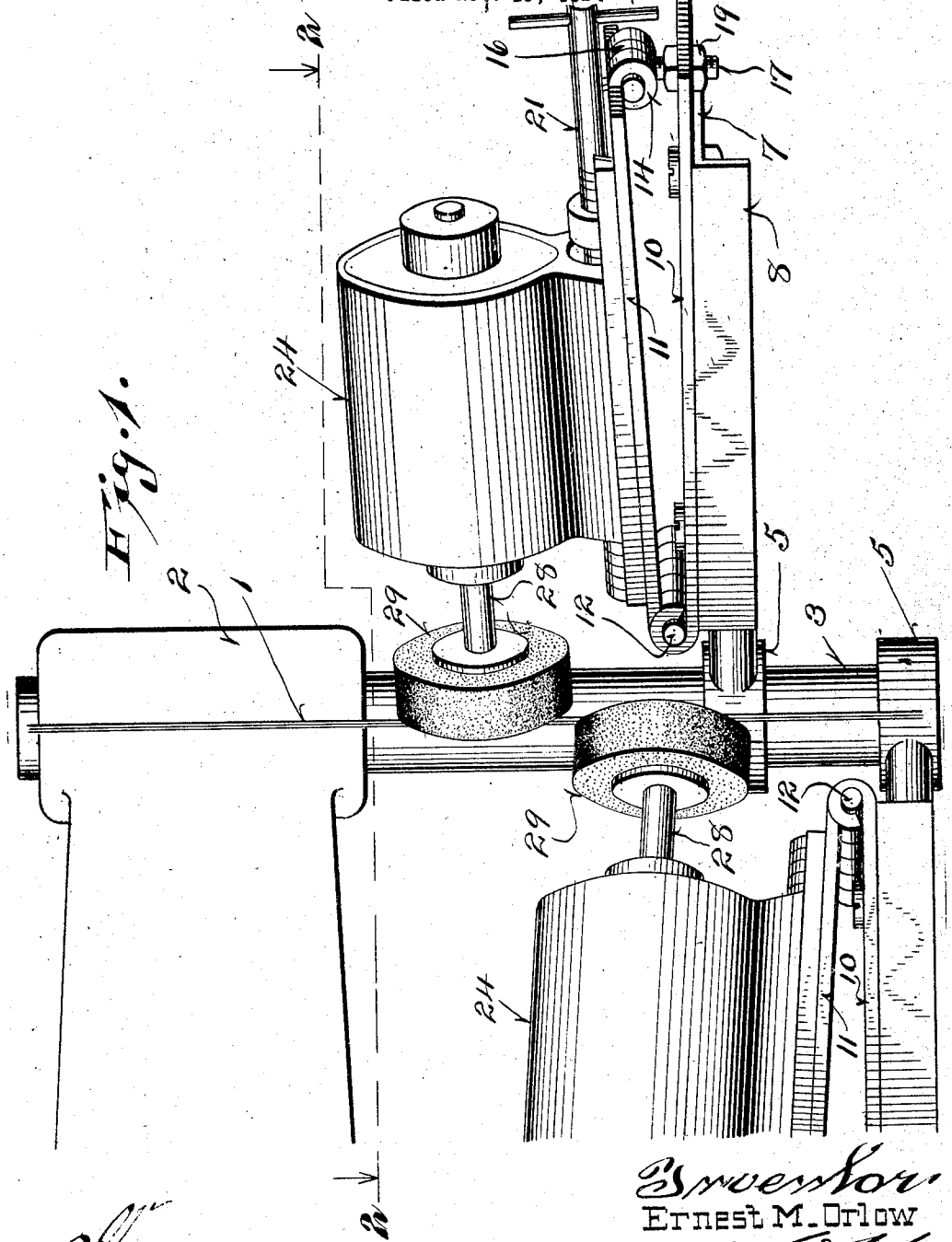


Fig. 1.

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Filed Nov. 15, 1924 3 Sheets-Sheet 2

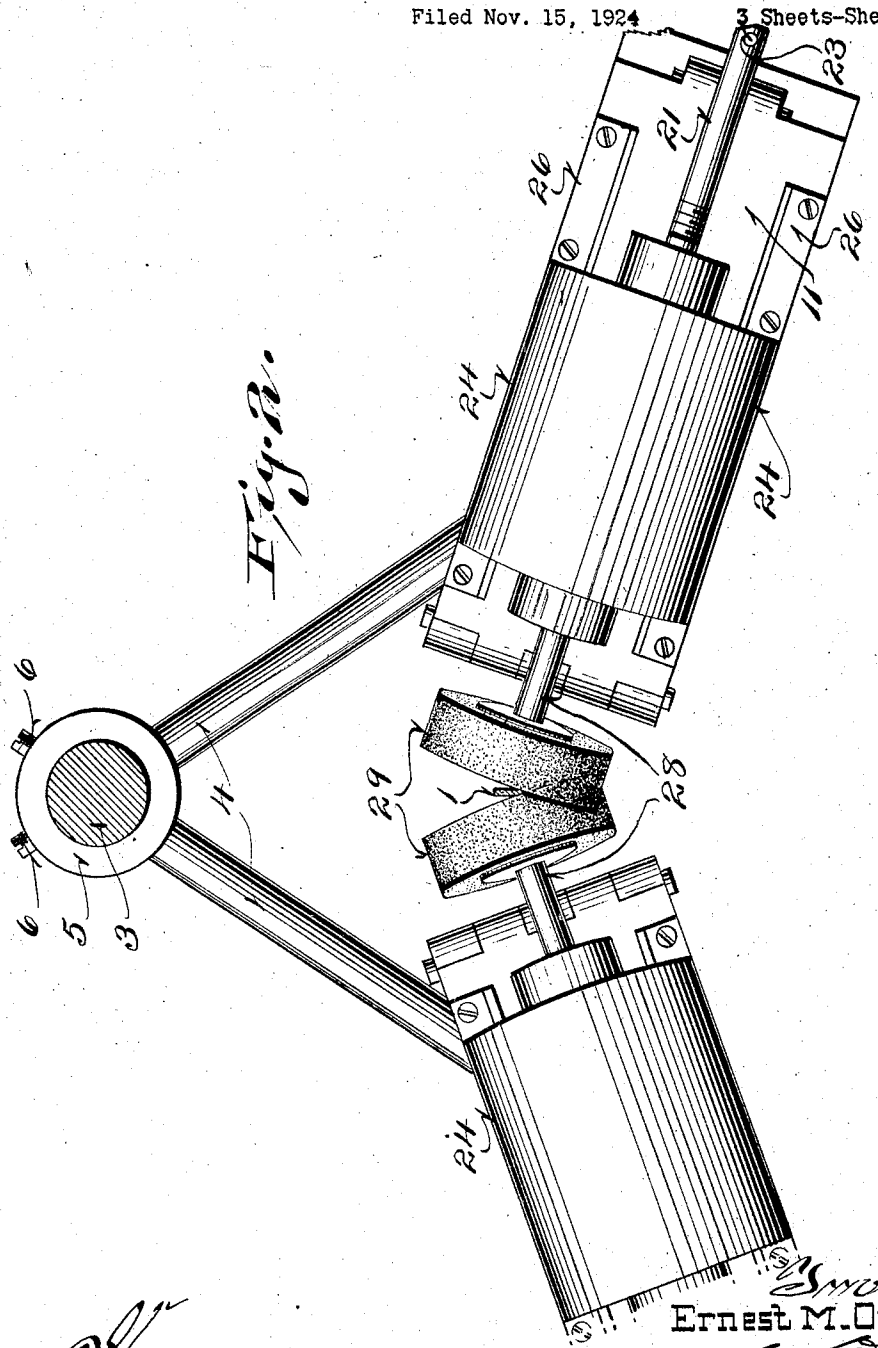


Fig. 2.

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BAND KNIFE SHARPENER

Filed Nov. 15, 1924 3 Sheets-Sheet 3

Fig. 3.

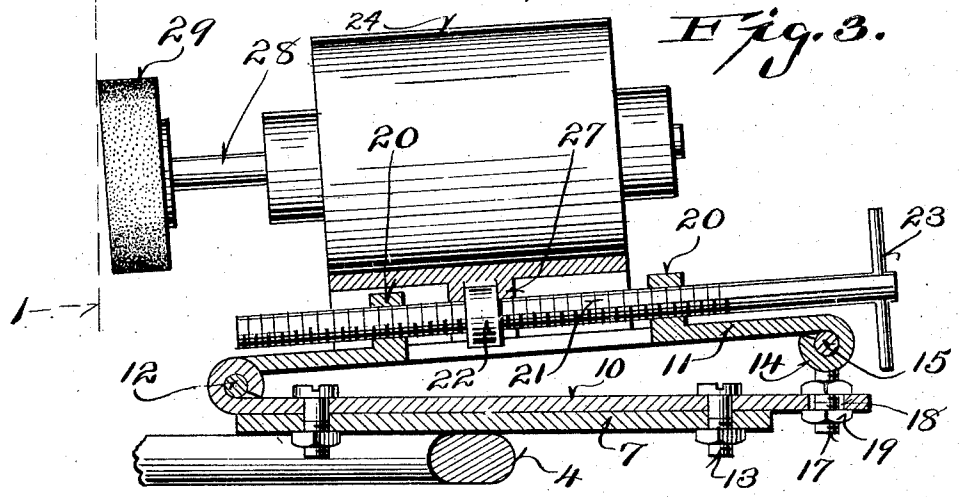


Fig. 4.

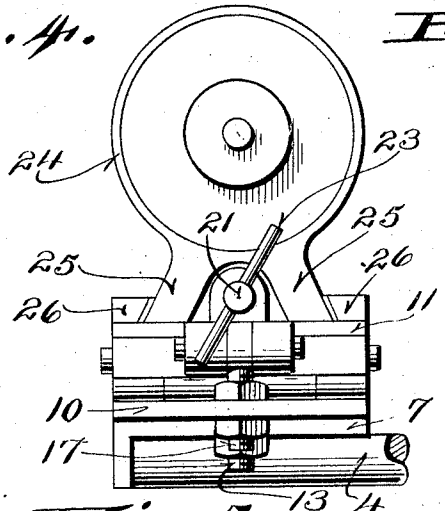


Fig. 6.

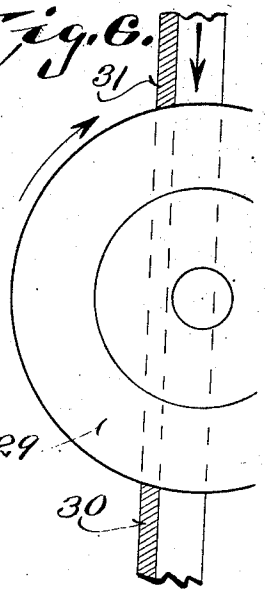
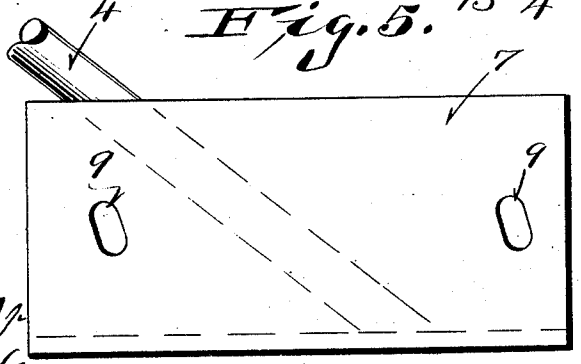


Fig. 5.



Witness:
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Patented Aug. 25, 1925. 1,551,167

UNITED STATES PATENT OFFICE.

ERNEST M. ORLOW, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF ONE-HALF TO ARTHUR J. SCHMITT, OF MILWAUKEE, WISCONSIN.

BAND KNIFE SHARPENER.

Application filed November 15, 1924. Serial No. 750,141.

To all whom it may concern:

Be it known that I, ERNEST M. ORLOW, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Band Knife Sharpeners; and I do hereby declare that the following is a full, clear, and exact description thereof.

This invention relates to band knife sharpeners.

Various attempts have been made to use a band knife in the cutting of clothes where a stack of cloth is passed over a table through which the rapidly moving band passes. These attempts have not been wholly satisfactory for the reason that great difficulty was experienced in sharpening the cutting edge of the band knife to provide an edge which effectively severs the cloth without binding, tearing or wedging.

This invention is designed to overcome the above noted defects, and objects of such invention are to provide a band knife sharpener which will correctly sharpen the cutting edge of the band knife in a manner to particularly adapt it for the cutting of cloth or similar material, which is so mounted that it may be left permanently in place if desired, without interfering with the normal operation of the band knife, and which is of compact design.

Further objects are to provide a band knife sharpener in which both sides of the knife may be simultaneously sharpened in a uniform and even manner, in which provision is made for adjusting the grinding wheels in reference to the knife in any desired manner, and in which a very accurate sharpening may be readily secured.

An embodiment of the invention is shown in the accompanying drawings, in which:

Figure 1 is a front elevation of a band knife machine showing the sharpener in place.

Figure 2 is a horizontal sectional view on the line 2—2 of Figure 1.

Figure 3 is an elevation of one of the electric motors showing in section the mounting thereof.

Figure 4 is a rear view of the structure shown in Figure 3.

Figure 5 is a view of the supporting plate for the motor mounting.

Figure 6 is an enlarged diagrammatic view showing the relative position of the band knife and one of the grinding wheels.

The main machine is provided with an endless band knife 1 which is adapted to travel through a slot in a supporting table, such table, however, being of any desired type and omitted for the sake of clearness.

The machine is equipped with a projecting arm 2 which carries a vertical standard 3, as clearly shown in Figures 1 and 2.

The band knife sharpener is composed of two identical units each of which comprises an outwardly extending supporting arm 4 which is provided with an apertured collar 5 slidably mounted upon the standard 3 and equipped with set screws 6, as shown in Figure 2. This outwardly projecting arm carries a supporting plate 7 (see Figs. 1, 3, and 5) and this supporting plate is preferably provided with a downwardly extending reenforcing flange 8 to enhance its rigidity. It is also equipped with a pair of angularly arranged slots 9, as shown in Figure 5, for a purpose hereinafter to appear.

This supporting plate carries a hinge like structure consisting of a bottom plate or leaf 10 and an upper leaf 11 joined by means of a pintle pin 12 adjacent the forward end in proximity to the band knife 1, as shown in Figures 1 and 3. The bottom member 10 is secured by means of bolts 13 to the supporting plate 7, as shown in Figure 3, such bolts passing through the slanting slots 9 to provide adjustment hereinafter described in greater detail. The member 11 is provided with an eyelet portion 14 which receives a pintle pin 15, such pin passing through a centrally located eyelet portion 16 of an adjusting screw 17.

The screw 17 (see Figure 3) passes through a slot 18 in the member 10 and is held in its adjusted position by means of nuts 19 located above and below the plate 10. The member 11 is provided with upstanding threaded lugs 20 (see Figure 3)

through which an elongated threaded screw 21 passes, such screw being provided with a rigidly attached collar 22 intermediate its ends and with a manipulating crank or hand bar 23 at its outer end.

An electric motor 24 or other suitable type of motor is adjustably carried upon the plate 11. This motor is provided with outwardly flaring feet or supports 25 which slide between guides 26 carried by the plate 11 (see Figure 4). The motor is further provided with downwardly extending lugs 27 (see Figure 3) which are positioned on opposite sides of the collar 22 and by means of which the longitudinal adjustment of the motor may be made. The motor has its driving shaft 28 extended outwardly and such driving shaft carries a grinding wheel 29 at its outer end.

One only of the grinding units has been described in detail, but inasmuch as they are identical, as shown in Figures 1 and 2, such description will be sufficient. It is to be noted, however, that they are mounted upon opposite sides of the band knife 1 and are mounted one above the other, as clearly shown in Figure 1.

In adjusting the device, the arms 4 are rocked about the standard 3 until the desired angle required for the bevel on the front edge of the knife 1 is secured. Thereafter, the angular relation between the plates 10 and 11 is secured by suitably adjusting the nuts 19 (see Figures 1 and 3) to thus adjust the angle between the face of the grinding wheels and the blade or knife.

Thereafter the correct adjustment axially of the motors is secured by means of the elongated screws 21. Preferably, however, the band knife is run in the usual manner, the portion illustrated in Figure 1 being the descending portion. Thereafter, the grinding wheels are moved into contact with the band knife and sharpening takes place.

It is to be noted particularly from Figure 6, that the band knife is preferably set at a right angle to a vertical line. It is, therefore, apparent that when the arms 4 are elevated or lowered along the standard 3 that a further adjustment is required to maintain the relative relation between the grinding wheels and the bevel faces 30 of the band knife 1. This is secured by means of the slanting slots 9 which permit a bodily shifting motion to be given to the support for the motors, the bolts 13 being loosened during this operation. Thereafter, the bolts are tightened and the motors, together with their grinding wheels have their correct relative position to the knife 1.

It is to be noted particularly from reference to Figure 6 that the portion of the grinding wheels 29 which contact with the bevel faces 30 of the knife are traveling upwardly and rearwardly. Also it is to be noted that the band knife 1 is traveling downwardly at this point. It is, therefore, apparent that a multitude of angularly set microscopic teeth will be formed at the extreme outer edge of the bevel faces 30 of the knife. As shown in Figure 6, the path traced out on the bevel faces by any point on the grinding wheel will extend upwardly and rearwardly along a slanting line, such as indicated roughly by the lines 31 in Figure 6. However, it is to be distinctly understood that the teeth formed on the beveled edge are microscopic teeth and the lines 31 are shown for illustrative purposes only to more clearly bring out this feature. It has been found in actual practice that this mode of sharpening the knife produces these slanting microscopic teeth which will saw through the fiber of the cloth in a highly effective manner, and which will permit the use of the band knife in cutting large stacks of cloth without any danger of binding, tearing or wedging.

It is to be understood that when the grinding wheels are not actively employed they may be shifted out of contact with the knife by adjusting the elongated screws 21. In other words the sharpening device may be permanently left in position on the machine without interfering with the normal operation.

Although the invention has been described in considerable detail, it is to be understood that the invention may be variously embodied and is, therefore, to be limited only as claimed.

I claim:

1. The combination of a band knife, a standard located adjacent said knife, a pair of arms adjustably carried by said standard, a pair of motors adjustably carried by said arms, and grinding wheels operated by said motors and located upon opposite sides of said band knife on the descending side thereof, the upwardly and rearwardly traveling portions of said grinding wheels contacting with said knife, said grinding wheels being set one above the other.

2. The combination of a band knife, a standard located adjacent the downwardly traveling portion of said knife, a pair of arms carried by said standards and having rocking and vertical adjustment upon said standard, a pair of electric motors pivotally related to said arms and adapted to rock about horizontal axes, means for adjusting the angular setting of motors relatively to said arms, means for moving said motors towards and from said band knife, said motors having driving shafts, and a pair of grinding wheels carried by said driving shafts and located upon opposite sides of the forward edge of said band knife.

3. The combination of a band knife, a

standard located adjacent said knife, a pair of arms carried by said standard, a pair of motors adjustably carried by said arms, and grinding wheels operated by said motors and located upon opposite sides of said band knife on the descending side thereof, the upwardly and rearwardly traveling portions of said grinding wheels contacting with said knife, said grinding wheels being set one above the other.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee and State of Wisconsin.

ERNEST M. ORLOW.