Oct. 25, 1966 A. J. FUCHS 3,280,513

SQUEEGEE SHARPENER

Filed July 24, 1964 3 Sheets-Sheet 1

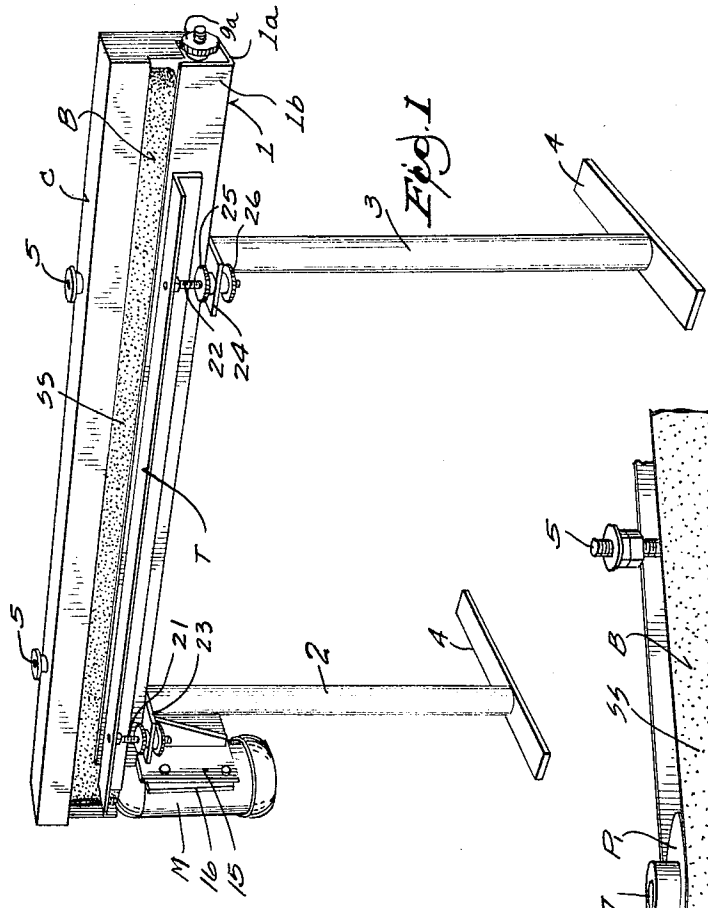

Fig. 1

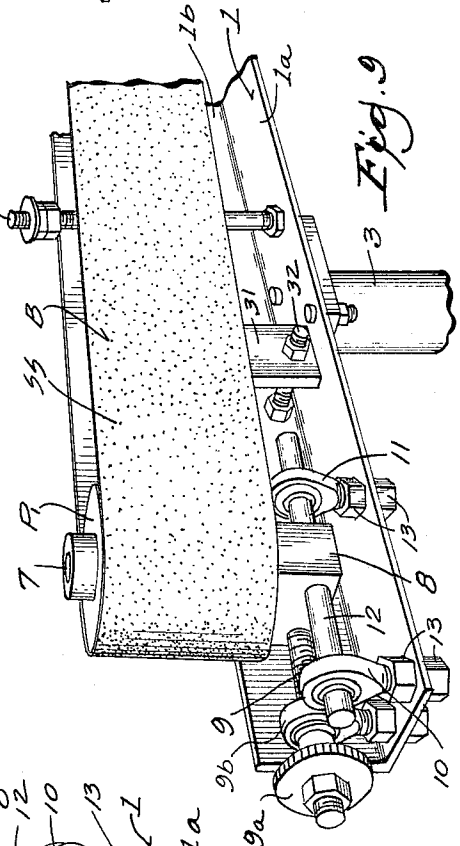

Fig. 9

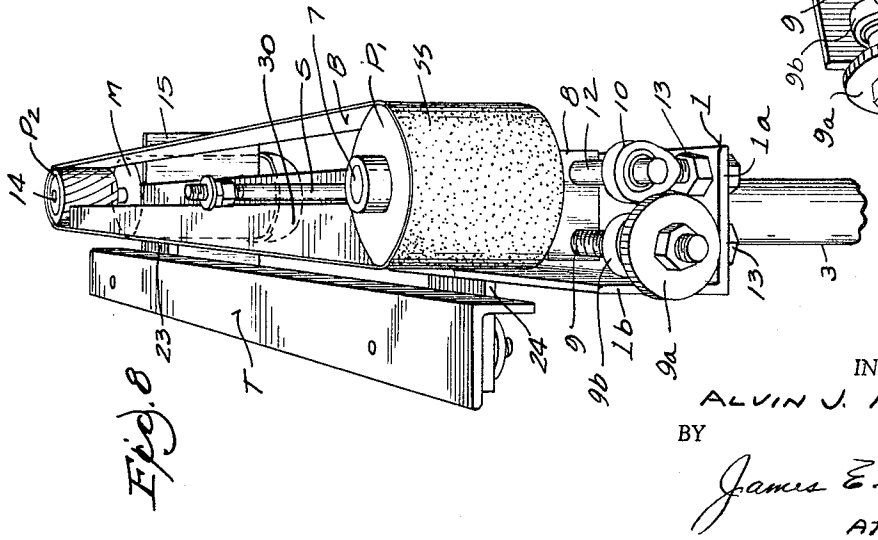

Fig. 8

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SQUEEGEE SHARPENER

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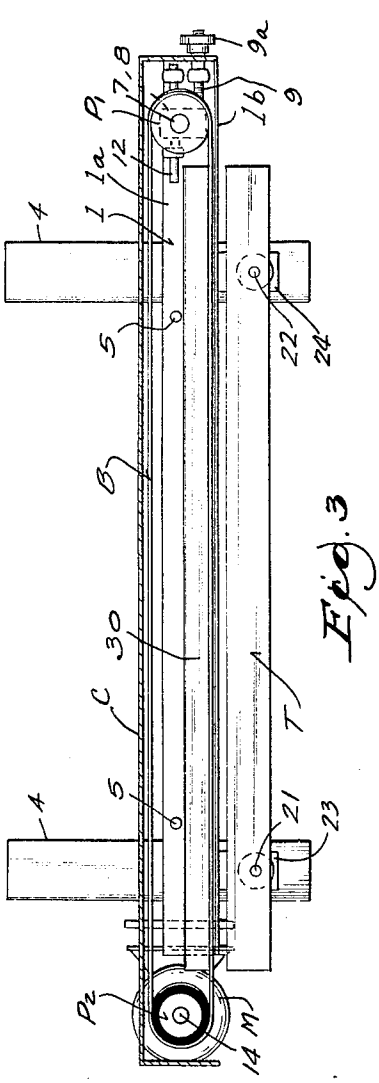

Fig. 3

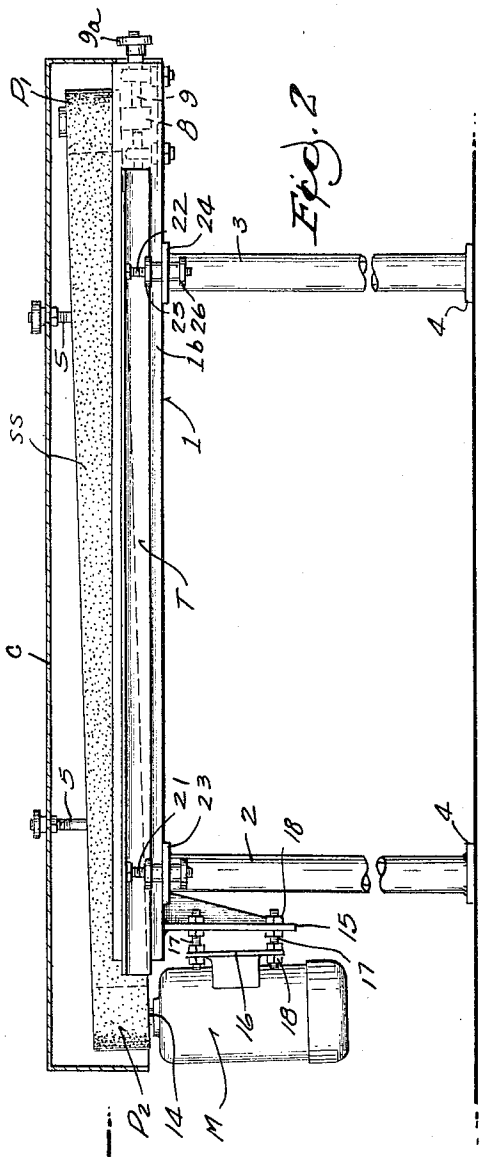

Fig. 2

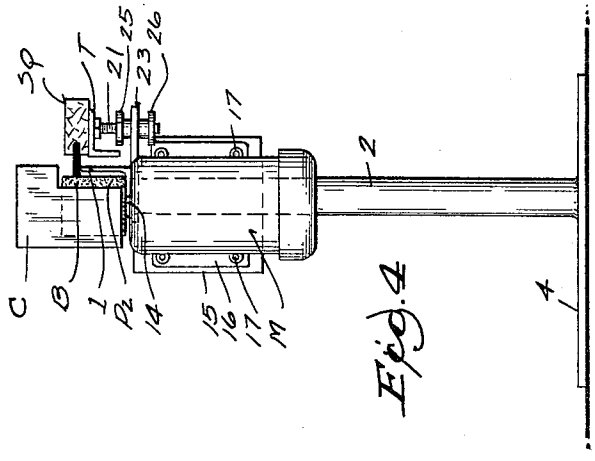

Fig. 4

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SQUEEGEE SHARPENER

Filed July 24, 1964

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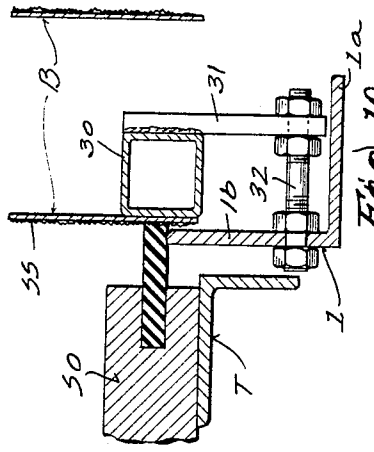

Fig. 10

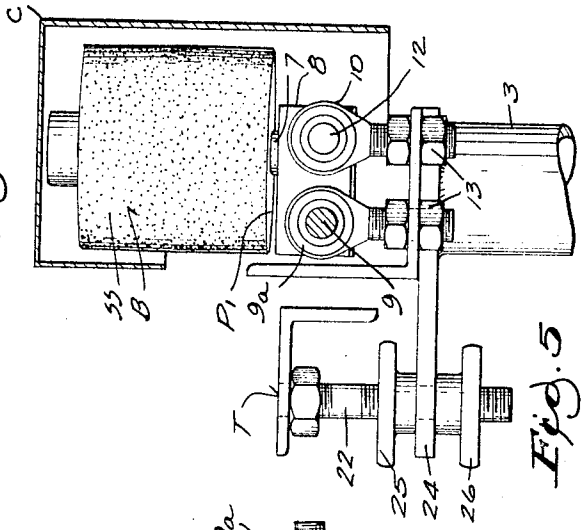

Fig. 5

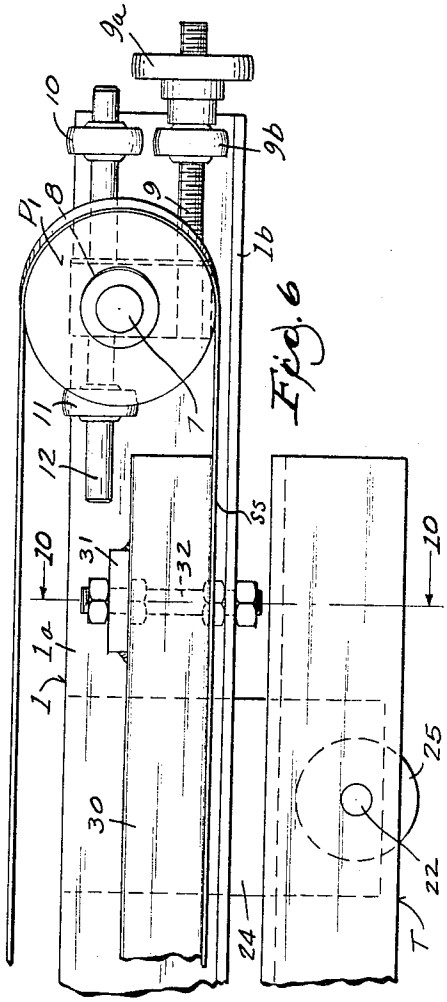

Fig. 6

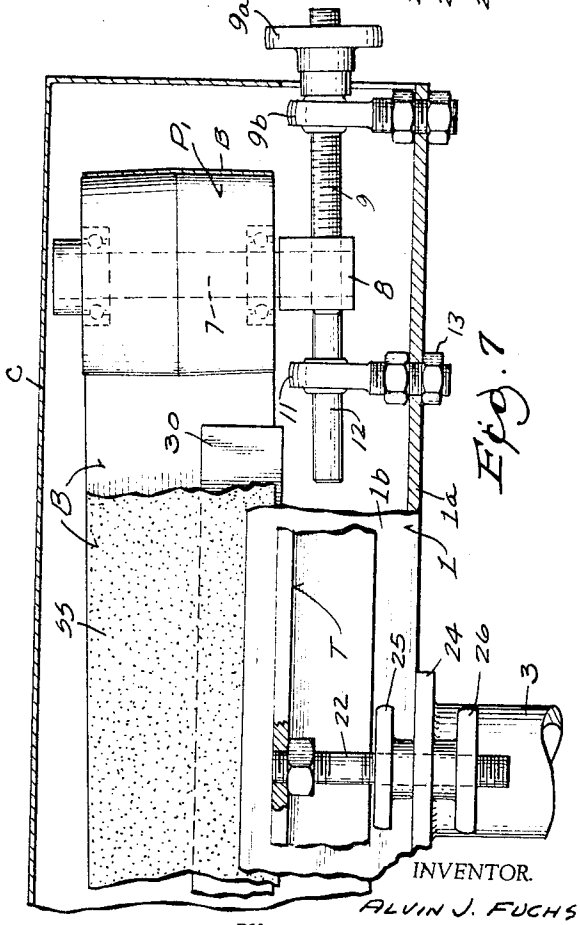

Fig. 7

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SQUEEGEE SHARPENER

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2 Claims. (Cl. 51—148)

This invention relates generally to silk screen printing equipment and more particularly to a sharpener for the squeegee of such equipment.

Squeegees of the type contemplated for use with the present invention are usually formed of rectangular cross section and hard rubber. The working side of the squeegee must be finished smoothly and as a straight and flat surface, and "square" to the rest of the squeegee. As these squeegees are of considerable length, it has heretofore been difficult to properly sharpen them, particularly without spending much time in attempting to do so.

A general object of the present invention is to provide an endless belt type sharpener for squeegees in which the belt travels at an incline to the longitudinal axis of the squeegee, thereby permitting the belt to quickly "unload" itself of squeegee particles rather than carrying these particles along the entire length of the squeegee. In addition, with such an arrangement, the squeegee is evenly sharpened along its entire length instead of being sharpened more at the beginning or starting end of the sharpening process. Furthermore, the improved arrangement utilizes the entire width of the belt and results in even wear thereof and longer belt life.

Another aspect of the invention relates to the means for adjusting the belt for proper relationship to the surface of the squeegee to be sharpened.

A more specific aspect of the invention relates to a sharpener of the above type in which that surface of the belt which is used for the sharpening process is arranged to travel in a vertical plane so the squeegee can be presented to it in a convenient and accurate manner. In addition, a back up support is provided behind the sharpening surface of the belt which co-operates with an adjustable feed table for supporting the squeegee and accurately guiding it during the sharpening operation.

Generally, the present invention provides an endless belt sharpener by means of which squeegees can be accurately sharpened in considerably less time than by conventional sharpeners.

These and other objects and advantages of the present invention will appear later as this disclosure progresses, reference being had to the accompanying drawings, in which:

FIGURE 1 is a perspective view of a sharpener embodying the present invention, the view being taken generally from the front or operator's side of the sharpener;

FIGURE 2 is a front elevational view of the sharpener, certain parts being shown as broken away, or shown in section for clarity;

FIGURE 3 is a plan view of the sharpener as shown in FIGURE 2, but with parts in section or removed for clarity;

FIGURE 4 is an end elevational view of the FIGURE 2 sharpener, and showing a squeegee in position to be sharpened;

FIGURE 5 is an enlarged, fragmentary, right end elevational view of the sharpener, partially in section;

FIGURE 6 is an enlarged, fragmentary plan view of the sharpener, certain parts being removed for clarity;

FIGURE 7 is an enlarged fragmentary, front elevational view of the sharpener, as shown generally in FIGURE 6 with certain parts in section or broken away;

FIG. 8 is a fragmentary perspective view of the sharpener with the cover removed, the view being taken from the right end and from slightly above the sharpener;

FIGURE 9 is a fragmentary perspective view taken from the right rear side of the sharpener, certain parts being removed, and

FIGURE 10 is a sectional view taken along line **10—10** in FIGURE 6.

Referring in greater detail to the drawings, a main support frame is provided which comprises a longitudinally extending angle iron backbone member **1** having a horizontal flange **1***a* and a vertical flange **1***b*. Vertical legs **2** and **3** extend downwardly from member **1** for support thereof at a convenient height from the ground. These legs are bolted at their upper ends to the horizontal flange and have wide ground engaging feet **4** at their lower ends.

A pair of bolt means **5** are secured to and extend upwardly from the horizontal flange **1***a* for detachably holding a sheet metal cover C that encloses the majority of the apparatus to be described. This cover is cut away (FIGURE 1) along the length of its front side so as to expose the sharpening surface SS of an endless belt B to be described.

The endless, flexible belt B is flat in cross section and has an abrasive outside surface. The abrasive coating may be of various materials, such as silicon carbide of various grit, for example, 40 to 60 grit.

Rotatable means are provided for the belt and around which the belt is trained for rotational support. This means takes the form of a pair of generally cylindrical pulleys P1 and P2 which are mounted for rotation about generally vertical axes.

Pulley P1 is an idler pulley and is located adjacent one end of the main frame and is adjustable toward and away from pulley P2 so as to adjust the tension of the belt, as follows: A shaft **7** rotationally supports the pulley P1 and is mounted in a block **8**. A threaded rod **9** is threadably engaged in and extends through this block and rotation of the rod by the handwheel **9***a* causes the block to move along the rod in one direction or the other to thereby vary the distance between the pulleys and the tautness of the belt. The rod is axially fixed by the swivel jointed eyebolt **9***b* which is bolted to the horizontal flange **1***a*.

Thus, the tension of the belt can be adjusted; too much tension will cause the belt to track too high and too little tension causes the belt to track too low.

Pulley P1 has a central crown to facilitate keeping the belt centered thereon.

The pulley P1 is also mounted for angular adjustment of its generally vertical axis, that is shaft **7**, to thereby adjust the belt tracking on the pulley. For this purpose a rod **12** extends through block **8** and swivel jointed eyebolts **10** and **11** support the ends thereof. The eyebolts are bolted to the horizontal flange **1***a* and are adjustable as to their height by their adjusting nuts **13**. For example, if the belt is too low on the idler pulley, eyebolt **11** would be lowered with respect to flange **1***a*. If the belt is too high on the pulley, eyebolt **11** would be raised. In other words, the angle of shaft **7** with respect to the vertical is increased if the belt is tracking too low on the pulley; this angle is decreased if the belt is tracking too high.

The swivel joints of the eyebolts **9***b*, **10** and **11** permit angular adjustment of the block **8** or longitudinal adjustment as above mentioned, without any binding of any of the parts.

Pulley P2 is the driven pulley and is mounted on shaft **14** of the electric motor M. Motor M is adjustably bolted to a vertical plate **15** of the main frame. More specifically, the base plate **16** of the motor is secured to plate **15** by the adjustable bolts **17** and lock nuts **18**. Thus the

angle of the motor shaft 7 and its pulley P2 can be adjusted. An angle of about 2 degrees from the vertical for shafts 14 and 7 has proven to be satisfactory for purposes now to be described.

As shown clearly in FIGURE 2, the exposed belt sharpening surface SS travels at an angle in respect to the longitudinal axis for the squeegee SQ (FIGURES 2 and 4) which rests on table T and extends along its length. In this manner, substantially the entire width of the belt is used in the sharpening operation, and localized wear areas do not occur on the belt.

Means are provided for supporting and guiding the squeegee up to and against the sharpening surface of the belt. This means takes the form of the generally horizontal table T fabricated from an angle iron which is secured to the upper threaded end of two vertical posts 21 and 22. These rods extend through braces 23 and 24, respectively, which are fixed to the main frame. Adjusting knobs 25, 26 are threaded on posts 21, 22 one on each side of the braces 23, 24. The table T is thereby adjustable as to its height relative to the belt.

A track or back-up bar 30 is provided within the endless belt and the front flight of the belt bears against this bar and is supported by it when the squeegee is pressed against the opposite side of this front flight. The bar is rigid and straight and insures a flat and straight finished surface on the squeegee. Track 30 is adjustably held rigidly in place by braces 31 (FIGURES 6, 9 and 10) which are secured to the main frame by bolt means 32.

RECAPITULATION

By arranging the sharpening surface of the belt to travel in a vertical plane, and presenting the squeegee to it with a horizontal movement, good control over the movement of the squeegee is obtained and good visual observation of the sharpening process is possible.

The inclined belt quickly unloads itself of the particles of the squeegee which it has picked up. In other words, any given spot on the belt crosses the squeegee and separates from it in about twelve inches of travel, rather than travelling along the entire length of the squeegee. Thus the rubber or other particles from which the squeegee may be made, quickly drop from the grit surface of the belt.

With the present arrangement the squeegee is sharpened evenly along its length, rather than more at its beginning end, because the grit of the belt is not loaded up for the entire length of its travel along the entire length of the squeegee.

Also the operator does not have a tendency to press the squeegee against the belt harder at the finishing or latter end of the squeegee to be sharpened, which excessive pressing heretofore resulted in overheating and a burnished or burned squeegee and/or belt.

An accurately finished squeegee is conveniently and quickly obtained with the sharpener provided by the present invention.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention:

I claim:

1. A squeegee sharpener comprising, an endless flat belt having an abrasive outside surface, a generally cylindrical pulley rotatable about a generally vertical axis at each end of the belt and around which the latter is trained for rotational support thereby, whereby said belt provides a straight and generally vertical sharpening surface for a squeegee to be sharpened, a generally horizontal table for supporting and guiding a squeegee relative to and for engagement with said sharpening surface, said pulleys and belt being mounted and arranged so that the belt sharpening surface travels at an angle in respect to the table and consequently the longitudinal axis of the squeegee being sharpened an electric motor having a generally vertical drive shaft, and one of said pulleys is mounted on said shaft and driven thereby, and means for vertically adjusting said motor and consequently its associated pulley to thereby vary the angle of travel of said surface relative to said table.

2. A sharpener as defined in claim 1 including, means for adjusting one of said pulleys to vary the angle of its generally vertical axis to thereby adjust the vertical position of the belt thereon.

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