April 16, 1963 R. T. PROULX 3,085,268

SANDING BELT CLEANER

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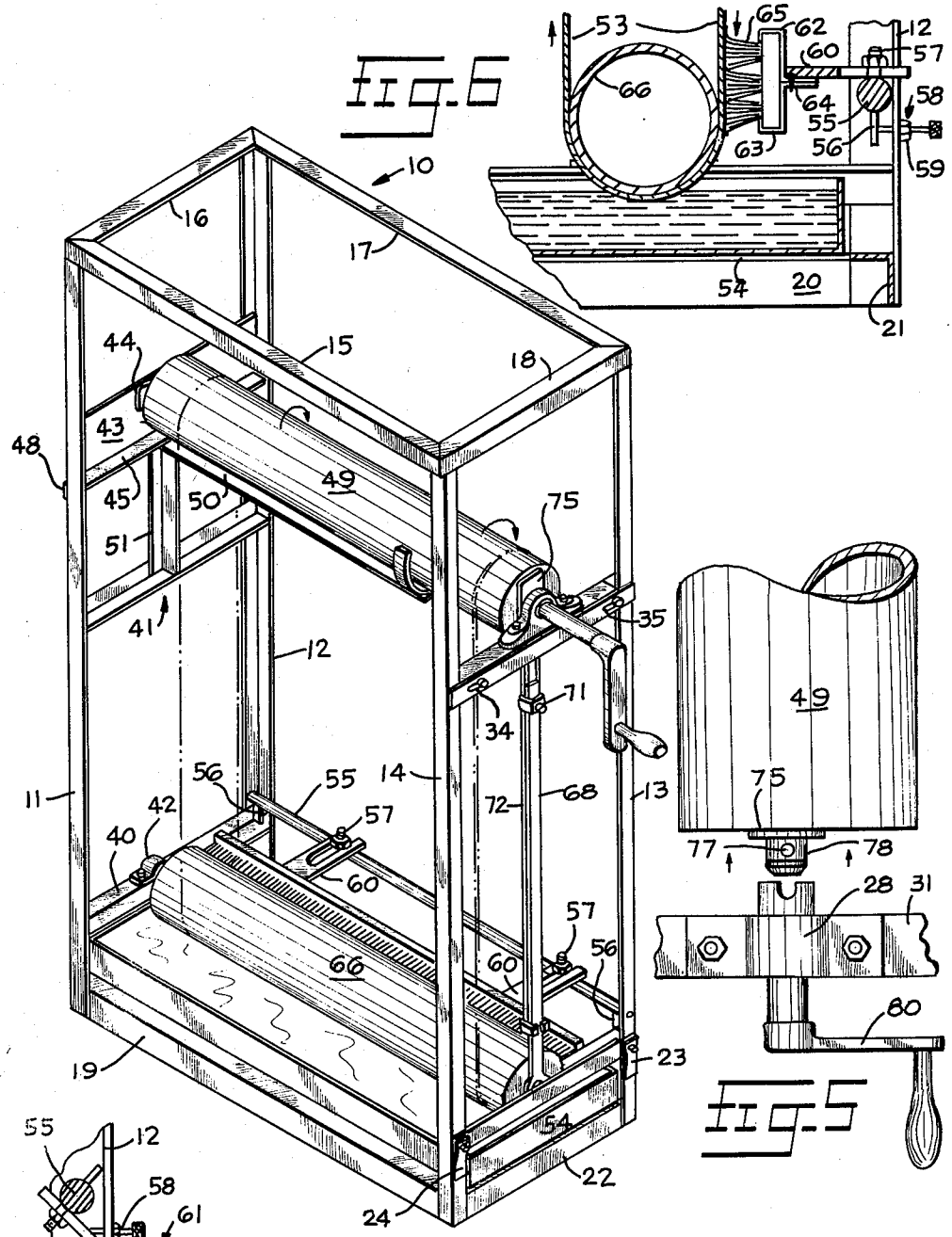



FIG. 6

FIG. 5

FIG. 1

FIG. 7

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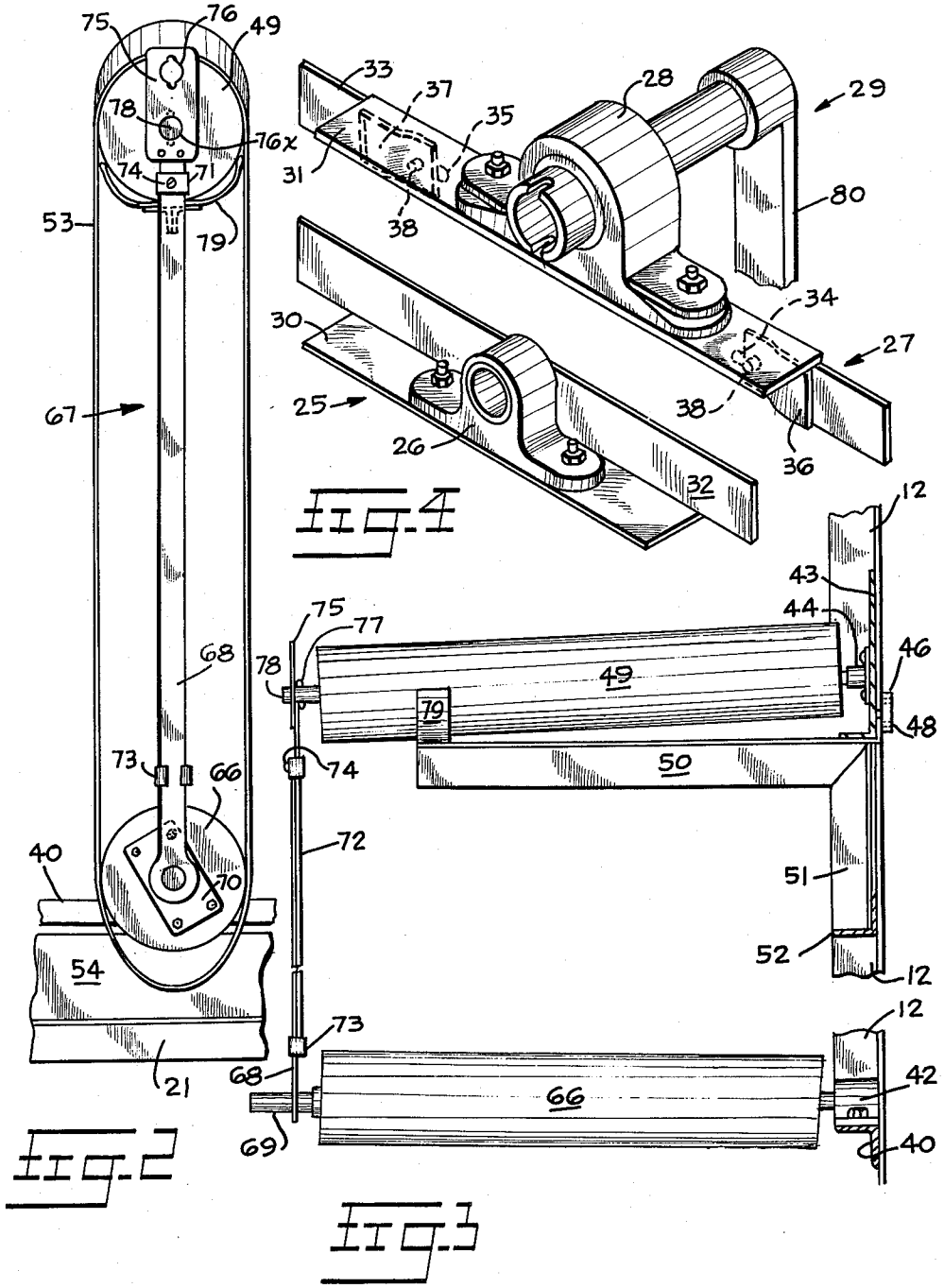



Fig. 4

Fig. 2

Fig. 3

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3,085,268

# SANDING BELT CLEANER

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This invention relates to an apparatus for cleaning endless sanding belts, and more particularly to an apparatus having means adapted to continuously scrub a moving solvent-soaked sanding belt.

The industrial sanding belt used in machine shops is a relatively expensive article of manufacture in as much as its dimensions were of relatively large size. Endless sanding belts having a peripheral length of, for example, ten feet were generally too expensive to throw away after use in grinding off greasy metal objects so that efforts to salvage the grit and grease clogged belts were made.

The conventional method used was to scrub the used clogged belts by hand using trichlorethylene as a solvent. Clearly such crude hand cleaning procedures were hazardous to the cleaner as well as expensive in that they were excessively time consuming. Nor were the results of hand cleaning satisfactory in that the belt was not cleaned uniformly throughout its entire area.

It is an object of this invention to provide an apparatus for cleaning grime and grit clogged continuous sanding belts uniformly, rapidly and inexpensively.

It is a further object to provide an apparatus adapted for rapid insertion of grimy belts and removal of the cleaned belt.

It is another object to provide an apparatus adapted to receive endless belts of various sizes and adapted further for taking up slack of old belts which are stretched by continued use.

It is another object to provide means for soaking the grimy clogged belt with a solvent for a suitable time interval prior to brush scrubbing the belt so that suitably soaked areas of the belt are subjected to a scrubbing action.

It is yet another object to provide means for adjusting the pressure between the scrubbing brushes and the belt.

These and other advantages and objects of this invention will become apparent upon reading the following descriptive disclosure of an illustrative embodiment of this invention shown in the accompanying drawing and in which:

FIG. 1 is an isometric view of the cleaning apparatus showing a pair of adjustably spaced-apart cylinders, the lower cylinder being disposed in a tank of cleaning solvent, and showing in dotted outline a sanding belt and its direction of travel,

FIG. 2 is a front or loading end view of the pair of spaced-apart rollers showing the rollers in a converging position brought about by the use of an adjustable hanger bar suspending the free end of the bottom roller, and showing further the manner of supporting the free end of the top roller, to permit insertion and removal of a continuous belt in relationship to said rollers,

FIG. 3 is a side view of the rollers of FIG. 2, showing the foreshortened distance between the axis of the rollers at the front end to facilitate a sliding insertion of the belt thereover,

FIG. 4 is a view of the front, top and bottom bearing supports and bearings thereon, as removed from the apparatus frame, to permit the cylinders to receive an endless belt,

FIG. 5 is a broken away side of the top cylinder and showing the manner of engaging the cylinder for rotation by the use of a hand crank,

FIG. 6 is a detail view, in section, showing the manner of engagement between the brushes and the belt and between the belt and the solvent, and

FIG. 7 is a detail view, showing the manner of locating the brushes when inserting and removing a belt from the pair of rollers.



Turning now to the drawing and particularly to FIG. 1, a rectangular frame **10** made of conventional angle iron is provided with parallel vertically disposed support bars **11**, **12**, **13** and **14**. The rear bars **11** and **12** have their angle irons facing the front bars **13** and **14** so that all the right angles of the bars face inwardly. A top bracing of angle iron bars **15**, **16**, **17** and **18** are provided. Also a bottom bracing of angle irons **19**, **20**, **21** and **22** are provided (FIGS. 1 and 7). The vertical supports **11**, **12**, **13** and **14** are preferably welded together to produce the rectangular frame **10**.

The front support bars **13** and **14** are each provided with conventional analogous suitably curved catch bars **23** and **24** disposed in equal spaced relationship to the bottom of the respective support bars **13** and **14** and welded thereto.

A bottom angle iron bearing support **25** is provided with a conventional universal bearing block **26** and a top angle iron bearing support **27** is provided with a universal bearing block **28** having a hand crank assembly **29** therein (FIG. 4). As also shown in FIG. 4, the portion **30** of the front bottom bearing support **25** and the portion **31** of front top bearing support **27** are suitably foreshortened on each end to permit insertion between the upright or vertical bars **13** and **14**.

The bottom angle iron bearing support **25** is further provided with a vertical portion **32** which slides downwardly by gravity against the exterior surface of bars **13** and **14** until caught in the conventional catch bars **23** and **24** in a horizontal relationship.

As shown in FIGS. 1 and 4 the top angle iron bearing support **27** is provided with a vertical portion **33** which also slides against the exterior surface of the respective vertically disposed frame bars **13** and **14**. The portion **33** of the top bearing support **27** is provided at each end with a horizontally disposed slot **34** and **35** of suitable length. A conventional suitably curved clip **36** and **37** is provided for each slot **34** and **35** respectively. The clips **36** and **37** are each provided with suitable screw threaded aperture adapted to mate with the respective slots in the support bar **27**. A suitably long bolt **38** is disposed through each slot and into a respective threaded aperture of a respective clip **36** and **37**.

In order to insert and lock the front top bearing support **27** to the frame vertical bars **13** and **14**, the clips **36** and **37** are retracted beneath the angle bar portion **31** and the support **27** is then pushed in between the said bars **13** and **14**. Next, the clips **36** and **37** are pushed outwardly toward the respective ends of the support portion **33** by pushing the bolts **38** in their respective slots. Accordingly the clips **36** and **37** are disposed on the inside of the exterior walls of the vertical angle iron bars **13** and **14**. Upon suitable tightening of the bolts **38** the front support bearing is rigidly secured immoveably to the upright or vertical frame bars **13** and **14** and hence locked thereto.

Turning now to FIGS. 1 and 3 there is shown the manner of securing the top rear bearing support and the bottom rear bearing support to the rear upright frame bars **12** and **11**.

Whereas the front bearing supports **25** and **27** are removeable for each insertion or removal of a belt, the bottom rear bearing support **40** and the top rear bearing support **41** are not removeable from the frame **10**.

The bottom bearing support **40** is made from conventional angle iron and is disposed suitably between the rear bars **11** and **12**, and secured thereto by any suitable con-

ventional means as, for example, by welding or by a pair of threaded bolts disposed in suitable threaded apertures located suitably in the vertical bars **11** and **12** and in the bottom rear angle iron bearing support **40**. A conventional universal bearing **42** is secured to the angle iron support **40**.

The top rear bearing support **41** is of unique construction and consists of a relatively high plate **43** disposed slidingly on the interior vertical wall surface of the vertical bars **11** and **12** and in suitable close relationship to the co-acting wall of the vertical bars **11** and **12**. Such a tall or high plate **43** provides a suitable surface area for securing a conventional flange type universal bearing **44** thereto.

As shown in FIG. 3 plate **43** is in effect an angle iron having an integral lip **45** disposed inwardly into the frame **10**. A bar **46** is disposed horizontally on the exterior surface of the vertical bars **11** and **12** and is secured rigidly to plate **43** in suitable spaced apart relationship by a plurality of spacers (not shown) welded to plate **43** and bar **46** and located between the frame bars **11** and **12**. A set screw **48** is disposed in a threaded aperture at each end of bar **46** and adapted to engage a respective frame bar **11** or **12**. To further provide a suitable sliding carriage for supporting the weight of an aluminum top roller **49**, a T-shaped support bar **50** is welded to the horizontally disposed plate **45** integral with the bearing support plate **43**. The T-bar **50** extends suitably into the space of the frame **10** toward the front bars **13** and **14** so as to support the weight of the roller **49** adjacent its front end.

The carriage carrying the roller **49** is also provided with a depending T-shaped bar **51** and an angle-iron bar **52** is welded to the bottom of bar **51** in such a manner as to have its vertical wall engage slidingly the vertical wall of the frame members **11** and **12**. Accordingly the weight of the front top roller **49** when disengaged from its front support bearing and any material secured thereto is transmitted through T-bars **50** and **51** to the horizontal angle-iron bar **52** (FIG. 3).

Turning now to FIG. 6, there is shown the manner of wetting and scrubbing the solvent soaked belt **53**. The tank **54** used to hold the solvent is a rectangular pan adapted to be disposed upon the horizontally disposed lips of the front and rear bars **22** and **20** (FIG. 7) respectively.

The solvent used is preferably kerosene, but an aqueous detergent solution is operable. The vertical bars **12** and **13** (FIG. 1) are provided with a rotatable cylindrical rod **55** journaled in suitable apertures located in said vertical bars. A pair of stop lugs **56** are welded to each end of the rod **55**. A pair of threaded bolts **57** are welded on rod **55** in suitable spaced-apart relationship and in diametrically opposed relationship to lugs **56**. A conventional threaded bolt **58** is threaded into the threaded apertures disposed in each of the vertical bars **12** and **13** and adapted to engage a respective lug **56**. A locking nut **59** is disposed onto each of the threaded bolts **58** to provide for adjustment to said contacting lug **56** and therefore of the brushes to the belt surface.

A pair of bifurcated claws **60** are welded to a brush holder **61**. The brush holder **61** is made from a pair of sheet metal holder elements **62** and **63** each provided with an extending ledge **64** to which the claws **60** are welded. The brush holder elements **62** and **63** are held together by conventional removeable securing means for example, metal screws.

In use the holder **61** is secured to the rod **55** by inserting a respective bolt **57** into a respective channel of a claw **60**. The holder **61** is moveable relative to the bolts **57** so that a suitable pressure of the scrub brushes **65** disposed therein is obtained against the belt **53**. Adjustment of bolt **58** adjusts the angle of contact between the brushes **65** and the belt **53**. As shown in FIG. 6, the belt **53** is rotated in the solvent in tank **54** upwardly around the



bottom roller **66**, over the top roller **49** (FIG. 1) and down against the brushes **65**. The time interval for the belt to travel from the tank **54** over the top roller **49** and down to the brushes **65** permits a suitable soaking of the grease in the belt by the solvent. The brushes **65** disposed in the brush holder **61** are preferably the conventional kitchen type fiber brushes so that a plurality of brushes are disposed in each holder and each is replaced individually as need be when worn out by use.

Turning now to FIGS. 2 and 3 there is shown the manner of supporting the suspended front end of the bottom roller by the front end of the top roller when both the top and the bottom support bearings with their bars **27** and **25** (FIG. 4) are removed from the frame.

To produce this result a telescope hanger **67** is employed. The hanger **67** consists of a bottom flat rod **68** having a suitable aperture at its base to receive the axle **69** of the bottom roller **66** (FIG. 3). The axle **69** may be secured directly to the end of the roller **66** or it may be welded to a plate **70** which in turn is bolted to the end of the roller **66**.

The flat rod **68** is provided adjacent its top end with a wrap around guide clip **71** welded thereto and embracing an interiorly disposed flat bar **72**. The flat bar **72** is also provided with a like wrap around guide clip **73** welded to its bottom end. A set screw **74** is threaded into a threaded aperture disposed in clip **71** to permit locking of bar **68** to bar **72** after selectively telescoping one to the other.

As shown in FIG. 2, the interior telescope bar **72** is provided at its top end with a plate **75** having a pair of spaced-apart apertures. A top oversized aperture **76** in plate **75** is provided with opposed lugs **77** disposed on the top axle **78** (FIG. 5). Plate **75** is secured to rod **72** by conventional means such as rivets.

A bottom oversized aperture **76X** may be round if desired since it may be hung into the axle **78** exteriorly of the lugs **77** (FIG. 2). Also as shown in FIG. 2, the carriage T-bar **50** is preferably provided with a suitable semi-cylindrical cradle **79** welded to its front end to prevent the top roller **49** from rolling off the T-bar during the loading operation.

The axle **78** of the top roller **49** and axle **69** of the bottom roller **66** preferably run through the respective roller and walls, but as shown in FIG. 2 stubby axles welded to plate pieces which in turn are secured to the roller end walls are also operable.

The rollers **49** and **66** are preferably made of corrosion resistant material such as aluminum and each is preferably provided with a rough cylindrical surface in order to effect an increased frictional engagement with the belt **53**. The bearings employed for the axles of the rollers are preferably of the universal type.

In the operation of this invention the hanger **67** remains disposed between the rollers **49** and **66** at all times. When a belt **53** is to be removed from the apparatus the front bearing support unit **27** is removed from the frame **10** by loosening the bolts **38** and then retracting the plates **36** and **37**. Next the bottom support unit **25** is loosened by loosening the set screws disposed in catch plates **23** and **24**. Next axle **78** is inserted into aperture **76X**, lifting the front end of the roller **66** and the bearing assembly **25**. Next the bearing assembly **25** is removed from its position above lugs **23** and **24**. The belt **53** is now easily removed and a new belt inserted thereon because of the conveying relationship of the front ends of rollers **49** and **66** (FIG. 3) with the top roller **49** resting on the front end of T-bar **50** and held thereon by saddle **79**.

After the insertion of the belt **53** over the convergent rollers, the bearing support **25** is disposed on axle **69** and lowered into the lugs **23** and **24** with insertion of axle **78** into aperture **76** from aperture **76X**. The set screws in the lugs are tightened and assembly **27** is disposed on axle **78**. The top bearing support **27** is dis-

posed over axle **78** so that the pair of cut-out channels of the handle unit **29** engage the pair of lugs **77**. Next, the bearing support unit **27** is suitably lifted and secured to the frame bars **13** and **14** by means of the plates **37** and **36** and the bolts **38** to effect tautness of belt **53**. Turning of the crank handle **80** of the crank handle unit **29** rotates the top roller **49** and due to friction of the tautly held belt **53** on bottom roller **66**, the latter is rotated also.

As can be seen from the drawing the carriage unit to which the rear bearing unit **44** is attached, can be moved captively up and down on the rear vertical frame bars **11** and **12** by loosening of the set screws **48**.

And since the front bearing unit can be freely moved up and down and selectively locked to the front vertical bars **13** and **14**, it is clear that endless belts of various sizes up to the height of the vertical bars **11**, **12**, **13** and **14** may be accommodated in this invention.

This invention was illustrated by an illustrative embodiment but it is of greater scope than this illustration, and is limited only by the claims herein.

I claim:

1. A device for solvent cleaning with scrubbing of endless grime clogged sanding belts comprising a rectangular frame of suitable height and having a front pair of parallel bars and a rear pair of parallel bars; a top rear slidable carriage having a bearing means and an extension holder arm secured thereto and disposed interiorly of said frame; locking means for securing said slide carriage to the rear pair of parallel bars; top front removeable bearing means having a crank handle and axle engagement arm slidably disposed on said front parallel bars; locking slide plate means secured to said top front bearing means for slideably engaging said front bars; removeable bottom front bearing means adapted for slideable engagement with said front parallel bars; and bottom rear bearing means secured to the rear parallel bars; a top roller having axle means disposed rotatably in said top rear and said top front bearing means; a bottom roller having axle means rotatably disposed in said bottom rear and said bottom front bearing means; lug means on said top roller front axle for engagement with said axle engagement arm; a pair of flat slideable bars secured captively together, one of said bars having an aperture for engagement with the bottom roller front axle, the other bar having plate means thereon having a pair of suitably spaced-apart suitable apertures to selectively receive said lug means of said top axle; stationary scrubbing means disposed pivotally and adjustably between said front and said rear parallel bars adjacent the bottom roller and pan means disposed below said bottom roller whereby the belt about said bottom roller dips into solvent in said pan means and is moved upwardly while carrying solvent over said top roller and then downwardly against the scrubbing means.



2. The device of claim 1 wherein the scrubbing means comprises a round bar rotatably journaled in apertures of said front and rear frame bars; a pair of locking studs secured to said round bar; channel means for receiving a plurality of brushes; a pair of bifurcated claws fixedly secured to said channel means and slidingly disposed about said studs whereby brush pressure on the belt adjacent the bottom roller may be selectively adjusted.

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