Sept. 26, 1967 K. M. KASNER 3,343,555

PARTS CLEANING APPARATUS

Filed Oct. 23, 1965 2 Sheets-Sheet 1

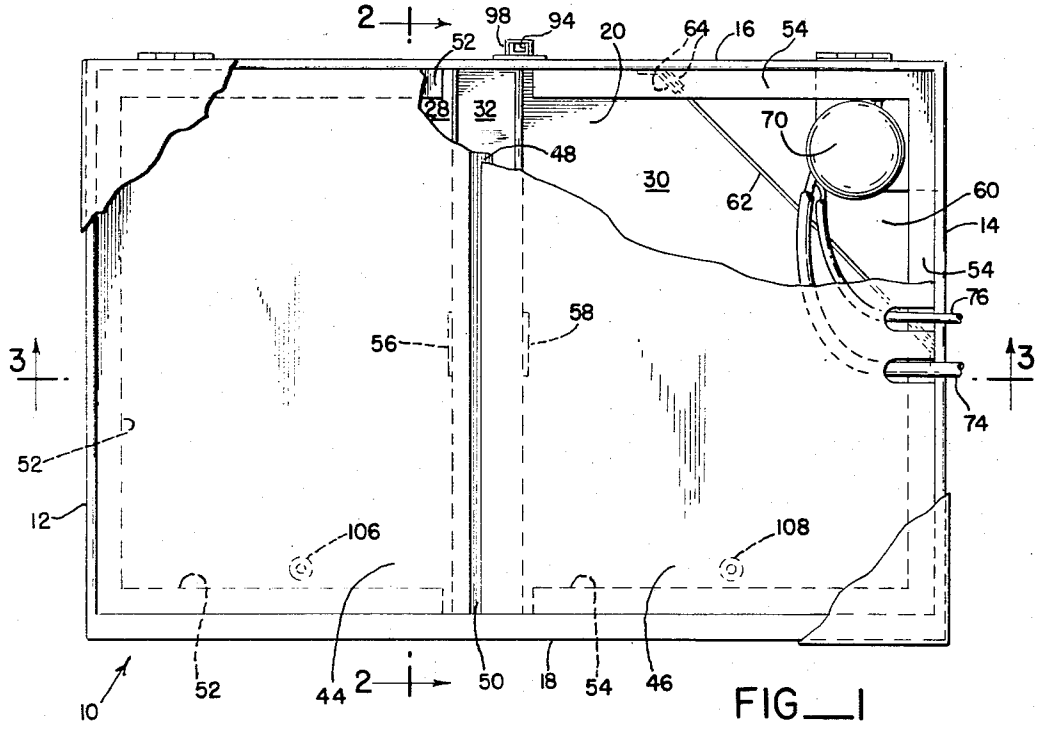


FIG. 1

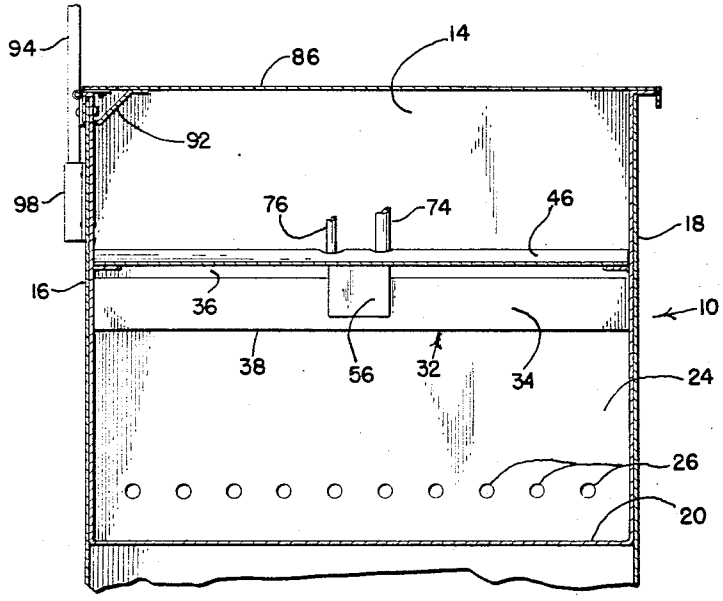


FIG. 2

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FIG_4

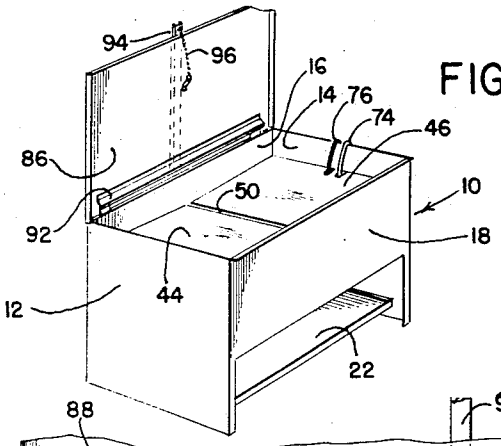
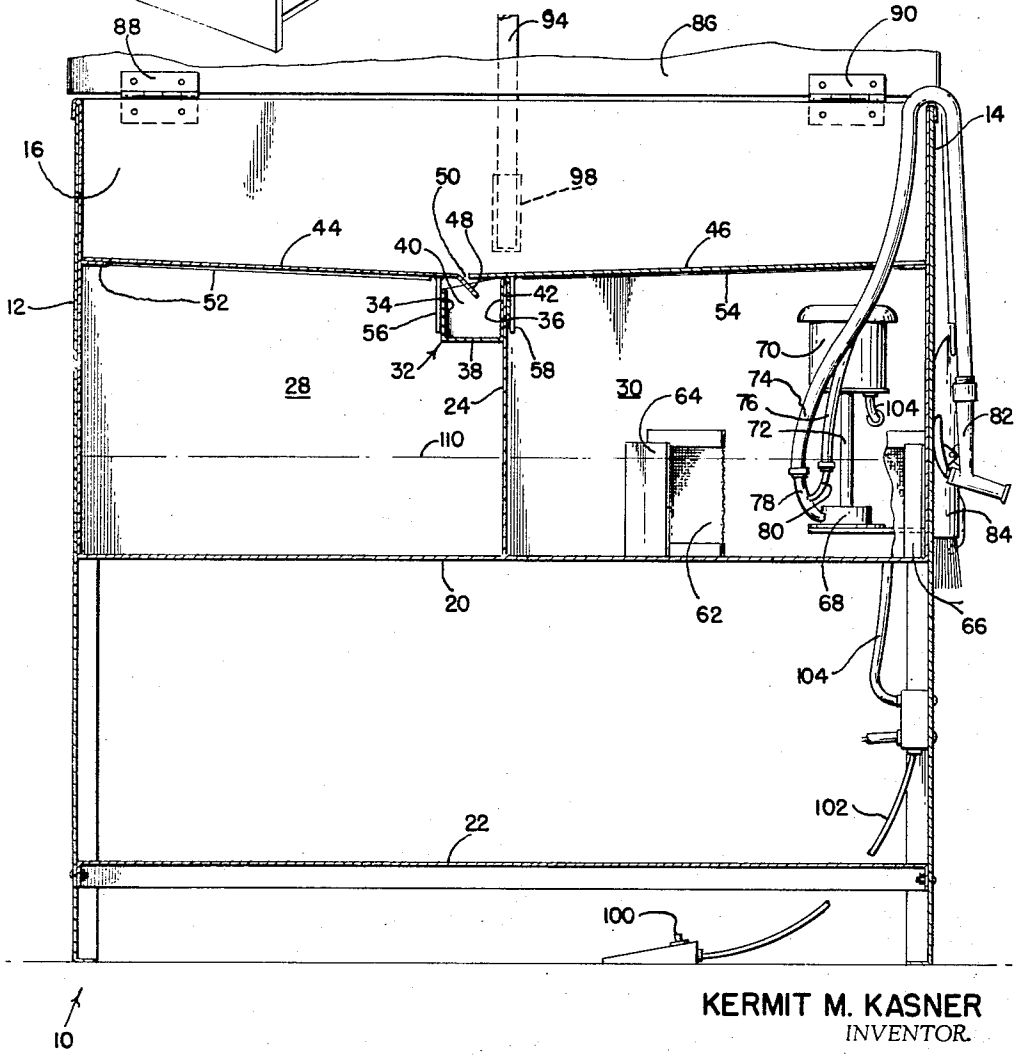


FIG_3



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3,343,555

PARTS CLEANING APPARATUS

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4 Claims. (Cl. 134—111)

The present invention relates to a parts cleaning apparatus, and pertains more particularly to a device for cleaning machine and automobile parts and assemblies such as are found in machine and automotive repair and servicing shops.

One of the perennial problems associated with filling stations and machine and automobile repair shops is the cleaning of dirt, grease and other foreign matter from motor parts, bearing and other items. It is common practice particularly in filling stations to pour solvent in a bucket or pan and to use such pail or pan to soak the parts and to then brush adhering dirt and grease therefrom. After several parts have been cleaned, the solvent becomes heavily contaminated with chunks of dirt and grease and also carries finer particles and foreign material in suspension. In such a situation, the solvent is so heavily contaminated that it cannot be used for a final rinse on such parts as bearings. In order to maintain the solvent in a reasonably usable condition, it is necessary to pour out the solvent, clean the bucket, and then replace with fresh solvent. It is under this inefficient system of cleaning parts that so much solvent is used and wasted.

The present invention contemplates an improved apparatus for the cleaning of machine and engine parts and for conserving cleaning fluid or solvent. In brief, the invention embraces a rectangular tank having a center partition with ports above the bottom so that the solvent or cleaning fluid may freely pass from one chamber into another through the partition. At the upper edge of the partition above the solvent is a detachable settling pan or basin. Two removable and inclined working surfaces are supported in the main tank in such a manner that one working surface covers the chamber on either side of the center partition. The working surfaces terminate over the settling basin in spaced apart relationship so that cleaning fluid or solvent as it runs off each of the respective work surfaces runs first into the settling basin and then into one of the lower settling chambers. The solvent then passes through the center partition ports and into the other chamber. The other chamber is provided with a barrier filter behind which is located a motor driven pumping device for recirculating the solvent. Attached to the pump are two hoses, one of which leads to a flow-through brush to aid in hand cleaning and the other which hoses leads to a rinsing nozzle. A foot switch is provided which is attached to the pump motor so that the pump can be selectively operated to provide solvent only when the operator requires it. In this way a live electrical connection to the motor exists only when the operator presses the foot switch. At all other times the electrical connection or circuit to the pump motor is interrupted so that live electrical connections are eliminated except when the parts washer is in use.

Accordingly, it is a prime feature of this invention to provide a parts washing apparatus which is simple in design, durable in construction, and economical to produce.

It is another feature of this invention to supply a parts washing apparatus which has a large working area above the solvent storage location and in which the solvent in any amount desired may be brought directly to the working surface area.

Yet another feature of this invention is to furnish a parts washing apparatus which may be used for long periods of time before cleaning thereof is necessary.

A still further feature of this invention is to provide a parts washing apparatus which eliminates wasteful usage of cleaning fluid by conserving the same through sedimentation and filter purification.

A further feature of this invention is to furnish a parts washing apparatus which has both a flow-through type cleaning brush and a soaking, flushing or rinsing nozzle.

An even further feature of this invention is to supply a parts washing apparatus which has three distinct settling or sedimentation compartments in addition to a filtering means.

A still further feature of this invention is to provide a parts washing apparatus which eliminates buckets and pans and which helps to give a clean work area.

A still further feature of this invention is to supply a parts washing apparatus which is easy to keep clean which has no live electrical circuits connected therewith except when in actual use.

Another feature of this invention is to provide a parts washing apparatus which is adaptable to any shop since it is both small and compact.

Still another feature of this invention is to provide a parts washing apparatus which because it recirculates clean solvent minimizes the danger of leaving foreign matter on cleaned parts.

These, and other features, objects and advantages, which will become subsequently apparent, reside in the details of construction and operation as more fully hereinafter described and claimed. Reference will be had to the accompanying drawings, forming a part hereof, and wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a top plan view of the apparatus with portions thereof broken away in order to clearly show the details thereof;

FIGURE 2 is a partial cross section view in elevation taken along the line 2—2 of FIGURE 1 showing further details of the construction of this invention;

FIGURE 3 is a cross section view in elevation taken along the line 3—3 of FIGURE 1 and further illustrating the details of this invention; and

FIGURE 4 is a perspective view showing generally the external appearance of the parts washer.

Referring now to the drawings, it will be seen that the parts washing apparatus or tank, generally designed by the number **10**, has end walls **12** and **14**, rear wall **16**, front wall **18**, and bottom wall **20**. End walls **12** and **14** extend downwardly to form supporting frame structure for the tank. The legs are interconnected by a stringer or shelf **22** generally above floor level and below the bottom wall **20** of the tank. As can be seen the basic configuration is one of a raised rectangular tank of considerable depth. Substantially midway between the end walls **12** and **14** and running transversely from the front wall **18** to the rear wall **16** is a center partition or wall **24**. It will be noted that the upper edge of center partition **24** terminates below the upper edges of the main tank walls. Center partition **24** near the lower end thereof but above bottom wall **20** has a series of substantially horizontally aligned orifices **26** extending from one end of center partition **24** to the other. Thus center partition **24** defines a first compartment or chamber **28** and a second compartment or chamber **30**. Detachably mounted and received along the upper edge of center partition **24** is an elongated sedimentation or settling basin designated by the number **32**. Sedimentation basin **32** is a rectangular trough-like and open container having a front wall **34**, a real wall **36**, a bottom wall **38**, and end walls **40**. Basin **32** may be detachably secured on the upper edge of center partition **24** by virtue of a double backed hanger wall **42**. Basin **32** extends over the entire width of the washer and is ap-

proximately three or four inches deep by three or four inches wide so that it is supported entirely along and at the upper edge of center partition **24**.

Each of the compartments **28** and **30** is generally covered by a detachable or removable work surface slightly inclined to aid solvent flow to the center. Compartment **28** is covered by work surface **44** and compartment **30** by work surface **46**. Work surface **44** terminates over basin **32** with a downwardly sloping lip means **48**. Working surface **46** also terminates at its inner end above basin **32** in spaced relation to lip **48** of work surface **44** to define an elongated opening **50** through which cleaning fluid may pass and run into basin **32**. Working surfaces **44** and **46** are supported on shelves **52** and **54**, respectively. Work surface **44** has a downwardly projecting retaining tab **56** which bears against forward wall **34** of basin **32** in order to retain said working surface in position. In like manner working surface **46** has downwardly extending tab **58** bearing against the hanger wall **42** of basin **32**.

Compartment **30**, as can be seen best by reference to FIGURES 1 and 3 has in its rear outside corner a triangular pump area **60**. Pump area **60** is defined by a barrier type screen or filter **62** which is held diagonally in place by pairs of spaced apart and vertically disposed filter support members **64** and **66**. The filter supports **64** and **66** allow filter **62** to be slipped out vertically by pulling same upwardly from its operative position. Behind barrier filter **62** in pump area **60** is pump **68** driven by motor **70** through shaft **72**. The motor of course is located high enough in chamber **30** so that it is never immersed or submerged in the solvent. The pump is spaced slightly above bottom wall **20** and below surface level **110** of the solvent. Another important feature of this invention is the provision of a pair of hoses **74** and **76** leading from pump **68**. A main pump outlet connection **78** couples to a hose **74** while a branch connection **80** on connector **78** couples to a hose **76**. Obviously those skilled in the art will devise many ways in which the hoses are connected to the pump. The provision of two hoses is necessary so that a rinsing nozzle means **82** can be connected to hose **74** and a flow-through type brush means **84** can be connected to hose **76**. By providing a flow of solvent through the brush, which incidentally may have means connected thereto for opening and closing off the flow, the operator is able to maintain an adequate quantity of clean solvent on the parts being cleaned without having either to dip the brush or the part in dirty solvent. The nozzle **82** allows the operator to rinse the part with clean solvent periodically and when the cleaning is finished to wash away all residual bits of foreign material.

Parts washer **10** is provided with a swinging cover or lid **86** hinged on the back wall **16** as at **88** and **90**. Lid or cover **86** is provided along the hinged edge thereof with a flow deflector means **92**. If solvent is splashed against the inside surface of the open lid, it runs down and will be deflected by means **92** into the tank rather than stream donwwardly on the outside of the tank and form a pool on the floor. A lid rest **94** allows the lid **86** to be retained in a generally vertical position when the parts washer is being used. A chain **96** attached to the upper end of the cover retainer **94** hangs over the upper or free edge of lid or cover **86** to assist in holding the lid in an upright position. The retaining bar **94** is detachably supported in a holder **98**. Motor **70** is actuated by foot switch **100** through wires **102** and **104** connected to an appropriate electrical supply outlet such as a wall plug. The electrical connections of course will provide for complete grounding of the washer. The foot switch is a safety feature that allows the motor to be actuated by a completed electrical circuit only when the button on the foot switch is depressed by the operator. At all other times when the washer is not in use the electrical connections to motor **70** are interrupted so that there are no live electrical wires within the confines of the washer tank. Drain plugs as at **106** and **108** in compartments **28** and **30** allow the parts washer to be periodically drained and cleaned.

In operation, it will be understood that the cover may be swung open, parts deposited on the working surfaces **44** and/or **46**, the motor and pump actuated by foot switch **100**, and the part treated with brush **84** and nozzle **82** as many times as needed in order to complete the cleaning operation. Large particles and accumulations of grease and dirt will be caught in the first sedimentation chamber or basin **32**. For this reason basin **32** is readily slipped off center partition wall **24** and emptied of accumulated sludge. While basin **32** is in position, solvent will overflow front wall **34** thereof and drop into the second sedimentation chamber or compartment **28**. There, more sediment, sludge and waste material will settle to the bottom of the tank. Solvent will flow through ports or orifices **26**, which are above the primary sedimentation range, into a third sedimentation chamber or compartment **30**. The solvent is maintained at a level below the top of filter **62** as shown in FIGURE 3 by dash-dot line **110**. As the solvent flows through orifice **26** from chamber **28** it will carry only fine particles of waste into compartment **30**. There the finer waste particles will settle to form a sludge on the bottom of said chamber **30**. The solvent then flows through filter **62** into pump chamber **60** where it can be circulated for reuse through nozzle **82** and flow-through brush **84**. Thus, there is provided a three stage sedimentation structure together with an easily removable filter for keeping the solvent clean and for eliminating waste material.

It will be appreciated that numerous modifications and changes will occur to those skilled in the art, and that the embodiments shown herein are merely illustrative of the principles of this invention. Accordingly, it is not desired to limit this invention to the exact construction and operation as shown and described. Hence, all suitable modifications and equivalents may be resorted to which fall within the scope of the invention.

What is claimed is:

1. A parts washing apparatus, comprising: (a) a generally rectangular tank means having bottom, end, front and rear walls, said tank also including a general vertically disposed partition means extending between the front and rear tank walls to define first and second sedimentation compartments in said tank and having ports therein above the bottom tank wall to allow cleaning fluid to flow from one compartment to the other, (b) a catch basin detachably secured on and extending over substantially the entire upper portion of said partition on the first compartment side thereof, (c) filter means within said second compartment defining a pump area, said pump area having power driven pump means therein and hose means attached to said pump means, and (d) work surface means disposed over each of said compartments, said work surface means being formed to define an opening over said catch basin, whereby cleaning fluid directed to said work surface means by said hose means flows into said catch basin, thence overflowing into said first compartment, thence passing into said second compartment through said partition means ports and finally through said filter means into said pump area for recirculation through said hose.

2. A parts washing apparatus, comprising: (a) a generally rectangular tank means having bottom, end, front and rear walls, said tank also including a generally vertically disposed partition means extending between the front and rear tank walls to define first and second sedimentation compartments in said tank and having ports therein at a predetermined distance above the bottom tank wall to allow cleaning fluid to flow from one compartment to the other, (b) a catch basin detachably secured on and extending over substantially the entire upper portion of said partition and within said first compartment, (c) a pump area within said second compartment having filter means through which said pump area communicates with

said second compartment, said pump area having a motor driven pump means therein and hose means attached to said pump means, and (d) work surface means removably positioned over each of said compartments, said work surface means being formed to define an opening over said catch basin, whereby cleaning fluid directed to said work surface means by said hose means flows into said catch basin, thence overflowing to said first compartment, thence passing into said second compartment through said partition means ports and finally through said filter means into said pump area for recirculation through said hose.

3. A parts washing apparatus, comprising: (a) a generally rectangular tank means having bottom, end, front and rear walls, said tank also including a generally vertically disposed partition means extending between the front and rear tank walls to define first and second sedimentation compartments in said tank and having ports therein above the bottom tank wall to allow cleaning fluid to flow from one compartment to the other, (b) a sedimentation catch basin detachably secured on and extending over substantially the entire upper portion of said partition and within said first compartment, (c) filter means within said second compartment together with said tank walls defining a pump area, said pump area having a motor driven pump means therein and conduit means attached to said pump means, and (d) work surface means disposed over each of said compartments, said work surface means being formed to define an opening over said catch basin, whereby cleaning fluid directed to said work surface means by said conduit means flows into said catch basin, thence overflowing to said first compartment, thence passing into said second compartment through said partition means ports and finally through said filter means into said pump area for recirculation through said conduit.

4. A parts washing apparatus, comprising: (a) a generally rectangular tank means having bottom, end, front and rear walls, said tank also including a generally vertically disposed partition means extending between the front and rear tank walls to define first and second sedimentation compartments in said tank and having ports therein above the bottom tank wall to allow cleaning fluid to flow from one compartment to the other, (b) a catch basin detachably secured on and extending over substantially the entire upper portion of said partition and within said first compartment, (c) filter means within said second compartment defining a pump area, said pump area having a motor driven pump means therein and conduit means attached to said pump means, and (d) an inclined, removable work surface means disposed over each of said compartments, each of said work surface means terminating generally over said catch basin and in spaced apart relation to each other to define an opening over said catch basin, whereby cleaning fluid directed to said work surface means by said conduit means flows into said catch basin, thence overflowing to said first compartment, thence passing into said second compartment through said partition means ports and finally through said filter means into said pump area for recirculation through said conduit.

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