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Brown

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[54] **APPARATUS FOR ERASING MAGNETIC INK**

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[52] **U.S. Cl.** ..... **401/118,** 401/187, 15/210 R, 161/89, 161/247, 222/382, 209/215, 101/426, 197/181

[51] **Int. Cl.** **B03c 1/02,** B41l 41/00

[58] **Field of Search** ..... 134/6, 42, 1; 15/1.5, 209 R, 15/210 R, 104.92, 257.05, 424; 101/1; 117/238; 222/382; 401/118, 120, 125, 130, 187

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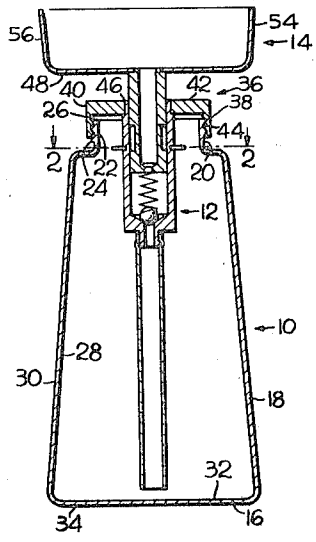
Primary Examiner—Daniel Blum

[57] **ABSTRACT**

An apparatus includes an enclosed reservoir, a trough, and a pump mechanism for raising the contents in selectively limited quantities from the reservoir to the trough, and the trough being designed to hold a specially constructed scrubbing device for removing erroneously magnetically encoded indicia or characters from a paper-type material. The scrubbing device comprises a holder shaped generally like a rubber stamp holder with a handle portion, and a face opposite the handle provided with a groove provided with magnets covered with a layer of liquid and solid impervious material, and then a series of layers of liquid saturable material. If the reservoir contains a liquid to dissolve and lift the erroneously magnetically encoded indicia the scrubber can be saturated with the fluid while being held in the trough and then used to scrub the indicia cleanly from the papertype material without damaging the material for proper magnetic re-encoding.

Various types of structures and methods have been used in the past for removing indicia placed on card stock, checks or other similar material erroneously so they could be electronically data processed. Some of these processes involved a solution which could melt or loosen bonding material holding the indicia to the stock or check. Some involved heat to loosen the bond material. Finally, some loosened up magnetic material or particles and disbursed them by rubbing them about. These particles are often referred to as magnetic ink and if they are not thoroughly removed instead of just being pushed around, the stock or check item cannot be properly processed since the partially removed or spread particles will cause the electronic data processing equipment to malfunction when the stock or check is re-encoded for processing.

5 Claims, 7 Drawing Figures



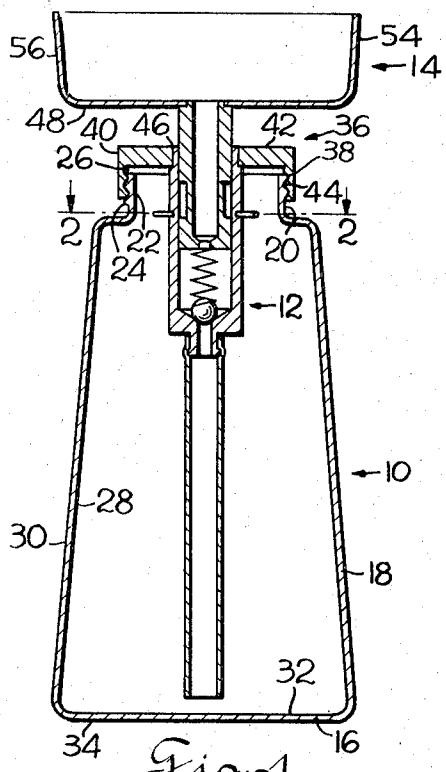


Fig. 1

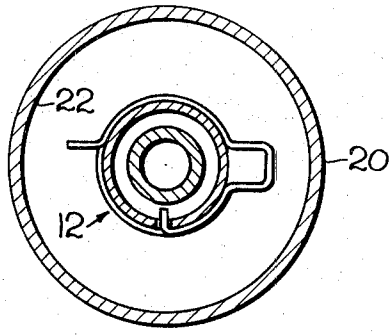


Fig. 2

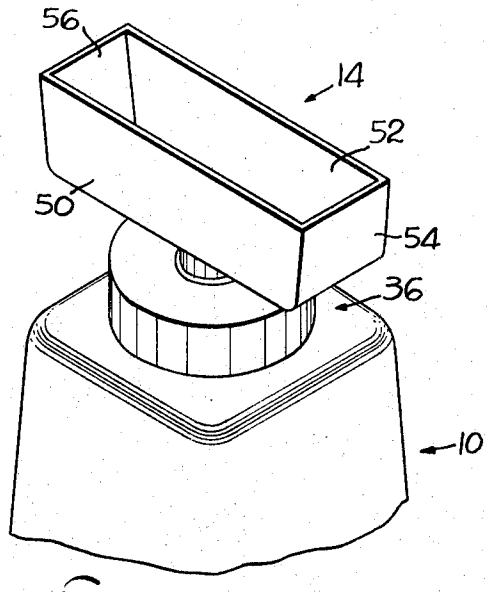


Fig. 3

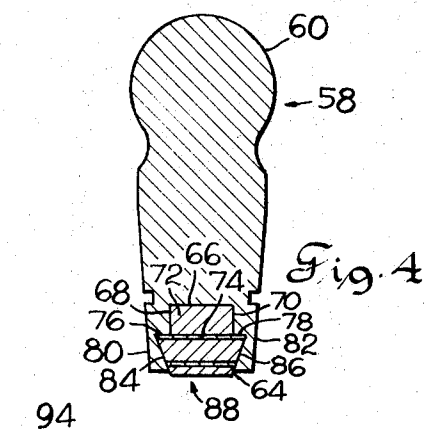


Fig. 4

Fig. 6

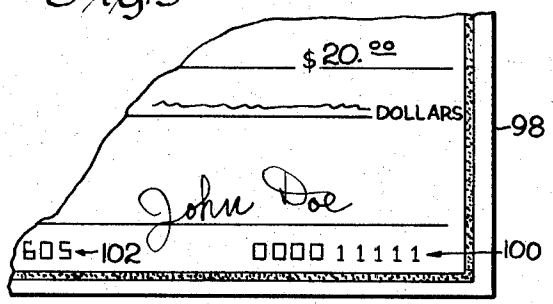


Fig. 7

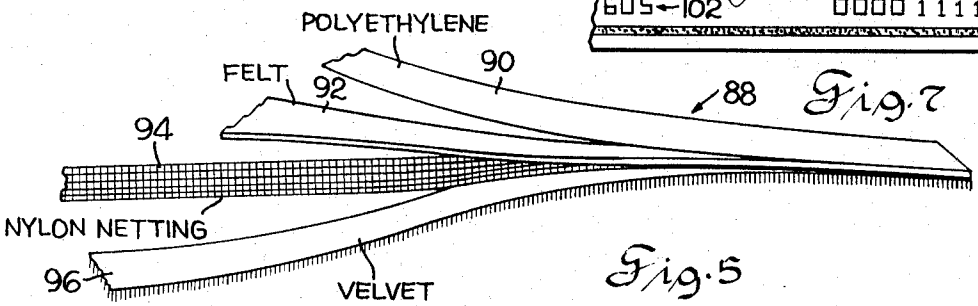


Fig. 5

APPARATUS FOR ERASING MAGNETIC INK

The present invention overcomes all of the problems of the prior art by providing simple structure for quickly and completely removing magnetic ink indicia from card stock or checks to be electronically data processed.

It is, therefore, an object of the present invention to provide an apparatus for the loosening and lifting of indicia formed from magnetic particles on paper products or card stock, said structure including a reservoir, a trough and pump apparatus interconnecting the reservoir and trough, the trough being adopted to receive a scrubber including magnets, saturable scrubbing material and a particle receiving layer between the scrubbing material and magnets separated from the magnets by a partition layer impervious to passage of liquids and solids, but penetrable by the magnetic force of the magnets for lifting and retaining magnetic particles loosened by the saturated scrubbing material practicing the method of first pumping solvent from the container to the trough; second, saturating the scrubbing material of the scrubber resting in the trough; third, scrubbing the indicia manually with the saturated scrubbing material in the scrubber and simultaneously loosening the particles of magnetic ink forming the indicia and finally, lifting the particles into the scrubber by magnetic force.

It is another object of the present invention to provide a device of the character above described wherein said scrubbing device is constructed to have a grooved face for easy insertion and withdrawal of layered pads of scrubbing material, bonding material, porous material, and material impervious to passage of liquids and solids.

It is still another object of the present invention to provide a device of the character described above wherein said scrubbing device is elongated and is constructed to have a grooved scrubbing face adopted to first receive and hold a magnet oriented north and south from side to side rather than end to end, and then removably receive and hold layered pads as previously described.

Various other objects and advantages of the present invention will become apparent as this description proceeds, as will various modifications and changes which can be made to the structure of the present invention without departing from the spirit thereof, and such additional objects and advantages, modifications, and changes are intended to be covered by the scope of the appended claims.

In the drawings:

FIG. 1 is a vertical cross-sectional view through reservoir, pump and trough structure of the present invention,

FIG. 2 is a horizontal cross-sectional view taken along line II — II of FIG. 1,

FIG. 3 is a fragmentary perspective of the reservoir top and trough structure of FIG. 1,

FIG. 4 is a vertical cross-sectional view through a scrubbing device of the present invention,

FIG. 5 is an enlarged fragmentary view of the layered scrubbing pad showing its construction and layer orientation,

FIG. 6 is an enlarged view of the nylon netting layer with bonding material applied, and

FIG. 7 is a fragmentary view of a typical bank or personal check showing encoding numbers thereon.

Referring now to the drawings, and particularly to FIGS. 1 through 3 thereof, a portion of apparatus for removing erroneously magnetically encoded indicia or characters from a paper-type material is shown, including a reservoir generally identified by the numeral **10**, pump structure generally identified by the numeral **12**, and trough structure generally identified by the numeral **14**.

Reservoir **10** is of a traditional type such as a bottle made of glass, plastic, or other common material, and includes a generally rectangular bottom **16**, an annular side wall **18** and top neck **20**. Side wall **18** is generally shaped like a truncated hollow trapezoid, and is connected at the largest extremity in cross-section to the outer peripheral margin of bottom **16**. The smaller extremity of side wall **18** in cross-section is connected to a top neck **20**, the latter being annular and generally cylindrical in cross-section. Neck **20** has an inner surface **22** and an outer surface **24**. A portion of outer surface **24** is provided with helical threads **26**.

Side wall **18** has an inner surface **28** and an outer surface **30** and bottom **16** is provided with an inner surface **32** and an outer surface **34**. A top closure **36** is provided for reservoir **10** and is generally cylindrical in cross-section open at one end such that closure **36** has an inner wall **38**, an outer wall **40**, and an end closure or top **42**. Inner wall **38** is provided with helical threads **44** complementary to threads **26** previously described, such that top closure **36** can be threadably engaged with neck **20** of reservoir **10** in drop tight sealing connection. Top **42** is provided with a centrally disposed aperture **46** for receiving pump structure **10** therethrough in a drop tight sealed manner.

Pump structure **12** is of a very conventional kind well known in many kinds of dispensing apparatus, and need not be further described except that the uppermost portion of pump structure **12** is a conduit which is connected to the bottom **48** of generally rectangular trough **14** in drop tight sealing manners such that pushing downward on trough **14** will operate pump structure **12** to draw liquid contents of reservoir **10** up into trough **14**. The displacement of pump **12** is not sufficient to entirely fill trough **14** and, therefore, the operator can control the amount of contents entering trough **14** by the number of times he operates pump **12** and the extent to which the pump stroke available is used.

Trough **14** includes side walls **50** and **52** and end walls **54** and **56** whose lowermost margins are joined to bottom **48** and side margins to each other as viewed in FIG. 3 of the drawings to form a hollow generally rectangular trough and whose uppermost margins define a generally rectangular aperture in trough **14** for receiving a scrubber generally identified by the numeral **58**.

Scrubber **58** can be made from wood, metal, or other suitable material, and is shaped generally similar to an ordinary rubber stamp holder. Scrubber **58** is elongated and includes an upper, generally circular in cross-section, hand gripping portion **60** and a lower generally trapezoidal in cross-section shank portion. The lowermost surface of portion **62** being generally rectangular, is provided with a groove **64**. Groove **64** has an upper generally rectangular margin **66** running the length of the elongated scrubber and a pair of downwardly extending side wall margins **68** and **70** as viewed in FIG. 4 co-extensive in length with margin **66** defining a rectangular recess for receiving one or more magnets **72**, since side walls **68** and **70** are spaced and parallel fac-

ing each other. Magnet **72** is oriented with north and south poles being disposed from side to side as viewed in FIG. **4.** The lowermost margin **74** of magnet **72** lies in the same plane as the lowermost extremities of side walls **68** and **70.**

Wall margins **76** and **78** co-extensive in length with margins **66** and side walls **68** and **70** extend at 90° angles from the lowermost extremities of side walls **68** and **70** in the same plane as margin **74** of magnet **72** but in opposite directions toward the outwardly facing surfaces **80** and **82** of shank **62,** but each terminating at a point spaced from its respective surface. Groove margins **84** and **86** extend downwardly from wall margins **76** and **78** at an angle of less than 90° forming converging surfaces facing toward each other and co-extensive in length with margin **66** defining a lower groove portion below magnet **74** which, as viewed in FIG. **4** is generally in the shape of an inverted truncated trapezoid in cross-section, and is therefore able to removably receive and retain a layered scrubbing pad generally identified by the numeral **88.**

Referring now to FIG. **5** in particular, it can be seen that layered scrubbing pad **88** is comprised of four layers including a first polyethylene layer **90,** a second felt layer **92,** a third nylon netting layer **94,** and a velvet layer **96.** The polyethylene first layer **90** is heat bonded to one surface of the felt layer **92** in a well known manner. The other surface of felt layer **92** is bonded to the non-nap surface of the velvet layer **96** by use of nylon netting layer **94** coated with glue in the manner shown in FIG. **6.** The glue is applied by drawing strips of the netting over a roller surface (not shown) which is partially immersed in glue and then feeding the netting between the felt and velvet. The nap on the velvet **96** is ideal for scrubbing and the velvet is sufficiently porous to allow loosened magnetic particles to be drawn up through the velvet **96** and through the netting **94** into the felt **92** where its further progress is prevented by the polyethylene layer **90** which allows magnetic lines of force from magnets **72** to affect the magnetic ink particles, but prohibits actual contact between the particles and the magnet. Therefore, when a scrubbing pad **88** is filled with particles of magnetic ink, it can be removed from scrubber **58** and replaced with a fresh pad **88.**

FIG. **7** discloses a fragmentary portion of a common form of bank draft such as a personal check **98.** Note that below the signature line commonly found in the lower right hand corner of check **98** some numbers have been encoded in magnetic ink consisting of **4** zeros and **5** ones and identified generally by the numeral **100.** These numbers **100** are not the account number, a portion of which can be seen to the farthest bottom left portion of check fragment **98** and which is identified generally by the number **102.** The account number **102** is permanently imprinted on the check **98** before the check is received by the party owning the account while the encoding number **100** is added after the check is written and presented during bank processing. Sometimes this number **100** is erroneously encoded and must be erased, which creates the need for the structure of the present invention.

Reservoir **10** normally contains a magnetic ink solvent solution and scrubber **58** is normally resting handle portion **60** up in trough **14.** When it is desired to remove an erroneous magnetic encoding **100** on a check **98,** an operator simply depresses and releases pump **12** through pressure against scrubber **58** or trough **14** drawing solvent from reservoir **10,** through pump **12** and into trough **14,** thereby soaking pad **88.** Scrubber **58** is then manually removed from trough **14** and the velvet **96** having a nap which protrudes from groove **64** of scrubber **58** is applied in its soaked or saturated state to number **100** in a scrubbing motion, loosening the magnetic particles from check **98.** The lines of magnetic force from magnet **72** draws the particles up through the velvet **96,** netting **94** and into the felt **92,** where they are held against contact with the magnet by polyethylene layer **90,** thoroughly removing the erroneous encoding **100** from check **98** such that the latter may be re-encoded and processed without difficulty. From this description, it can be seen that the apparatus of the present invention accomplish the objects previously set forth herein without the difficulties of prior apparatus.

I claim:

1. In combination, magnetic ink erasing structure including; a reservoir for magnetic ink solvent solution, a trough, a pump interconnecting said reservoir and said trough in solvent transporting relationship therebetween, and scrubbing apparatus adapted to be received within said trough, said scrubbing apparatus including a magnet structure secured in said apparatus, and a pad removably secured to said apparatus adjacent said magnet structure having multiple layers of porous saturable material and a layer of non-porous and non-saturable material separating said porous layers from said magnet structure.

2. The structure as set forth in claim **1,** wherein said reservoir is a bottle made from material which is non-reactant with said solvent material and having a neck aperture provided with external helical threads, and a closure in threadable drop tight sealing engagement with said neck and provided with a centrally disposed aperture and said pump is coupled with said closure in drop tight sealing engagement through said centrally disposed aperture.

3. The structure as set forth in claim **1** wherein said trough is hollow, elongated, and generally rectangular, having an elongated generally rectangular bottom and two elongated generally rectangular sides extending upward from said bottom and two ends, one joining the elongated bottom and sides at each extremity defining an open side of said trough opposite said bottom, said bottom being connected to said pump in drop tight solvent receiving relationship.

4. The structure as set forth in claim **1,** wherein said scrubber is elongated and includes a generally circular in cross-section hand grip portion and a shank extending therefrom and terminating in a generally rectangular margin provided with a groove for receiving and holding magnet structure and a scrubbing pad secured to said margin adjacent said magnet structure, said magnet structure being oriented north and south from side to side of said elongated shank.

5. The structure as set forth in claim **1,** wherein said scrubber pad includes a layer of polyethylene heat bonded to one surface of a layer of felt, the opposite surface of which is bonded to the non-nap surface of a layer of velvet by a layer of nylon netting, the net strands of which are coated with non-soluble adhesive.

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