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.
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 threads 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 removable 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-snap 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 upon 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.

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 satureable 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-snap 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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