

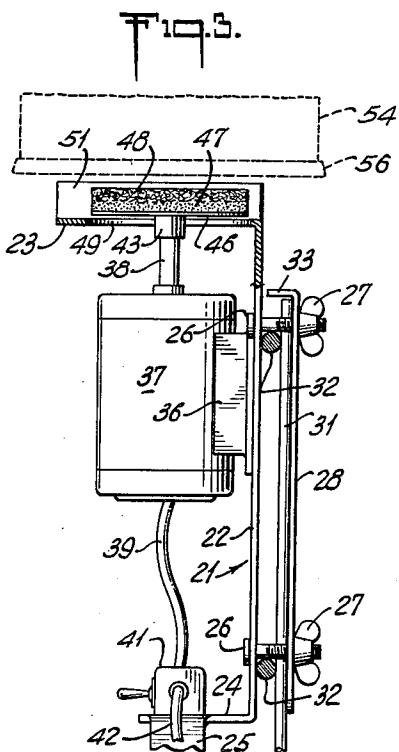
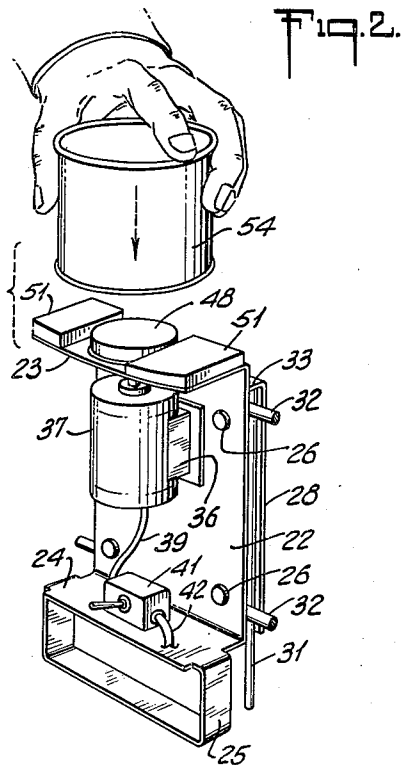
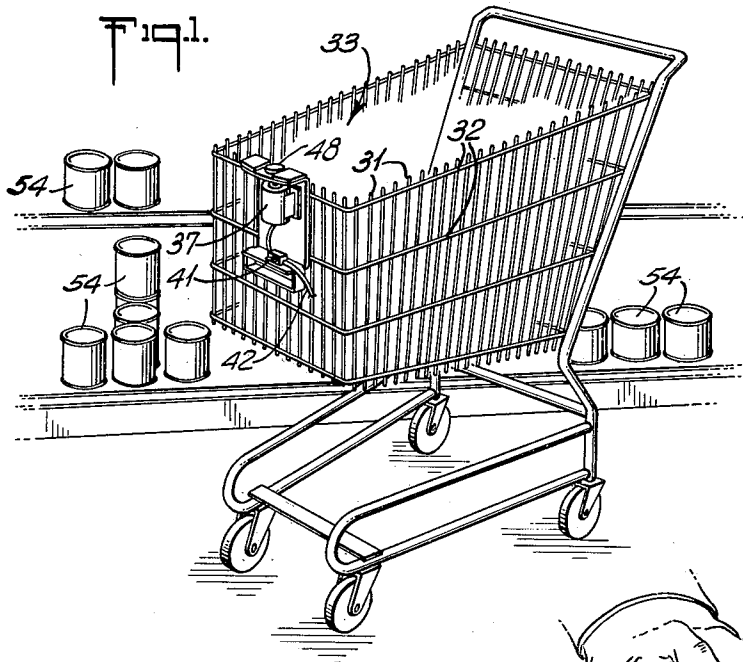
Nov. 6, 1962

I. STEINBERG  
ABRADING MACHINE

3,061,982

Filed May 13, 1960

3 Sheets-Sheet 1



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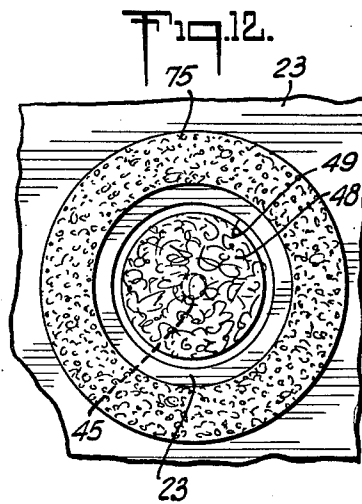
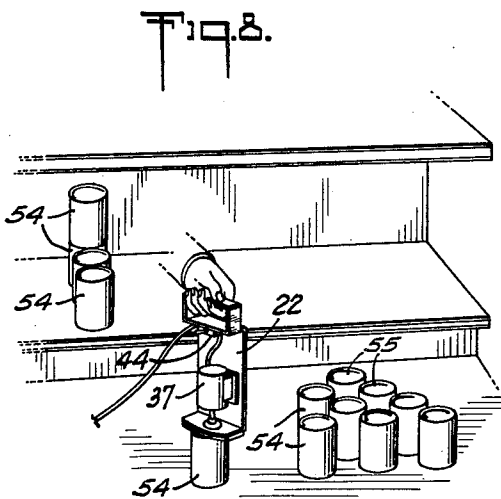
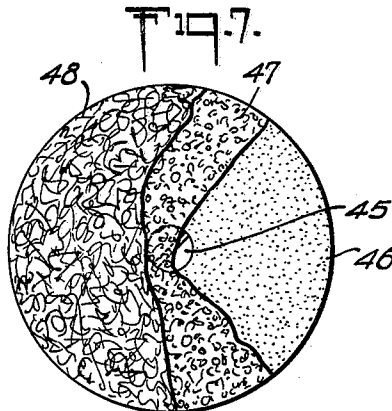
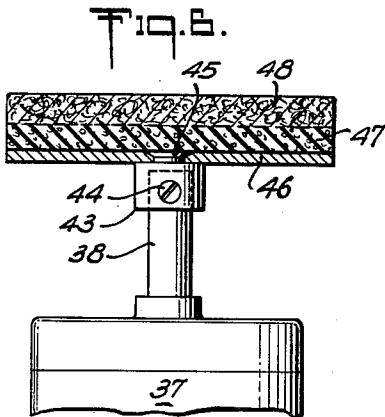
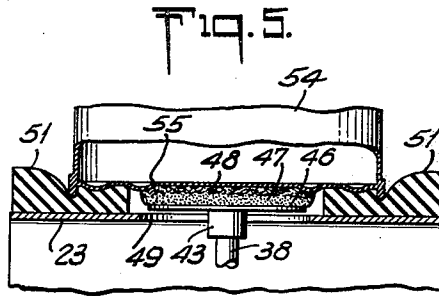
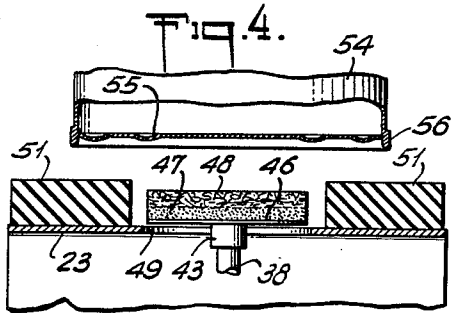
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3 Sheets-Sheet 2



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Fig. 8.

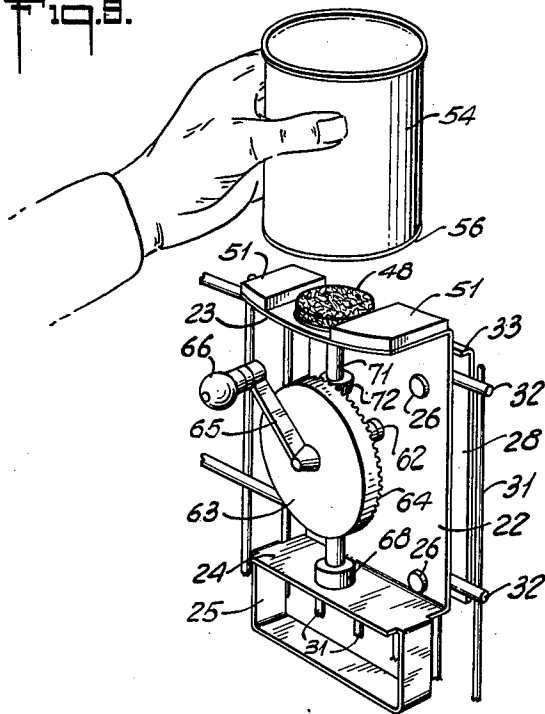


Fig. 10.

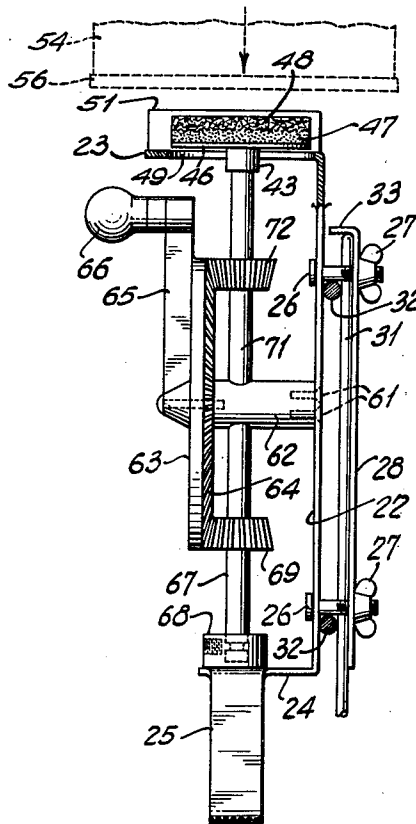
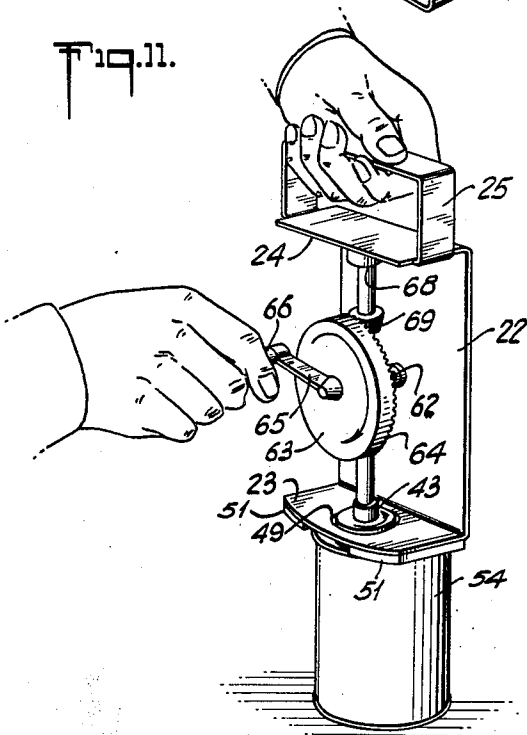


Fig. 11.



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3,061,982

**ABRADING MACHINE**

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5 Claims. (Cl. 51-128)

This invention relates generally to eradicators and more particularly to apparatus for removing ink markings from the surfaces of tin cans or the like containing food, groceries, or other items of merchandise.

In such places as grocery stores and supermarkets, prices are marked in ink upon canned goods and the like, and from time to time it is necessary on the occasion of market fluctuations and special sales events to change said price markings. Since the inks that are utilized are more or less indelible, it has hitherto been the laborious practice to scrape or wash off these markings from each can by hand with crude make-shift materials such as steel wool pads and clothes saturated with solvents or the like. This operation, which is a frequent necessity in present day merchandising, is a time consuming and unpleasant task.

In order to speed up this erasing chore and to render it less laborious, I provide, according to the present invention, a mechanical hand driven or electrically driven apparatus wherein a rotating abrading wheel performs the function of erasing the ink markings while at the same time the apparatus is arranged to hold the object such as the tin can or the like in a suitable position to prevent it from twisting or turning while the erasing action is taking place. The gripping action is performed by one or more resilient pads mounted on the apparatus, which frictionally engage the object and prevent its turning while the rotating abrading disc performs its frictional erasing function upon the inked surface. In some embodiments, the abrading disc may be provided with a resilient backing mat in order to permit the abrading surface of the disc yieldably to conform to the contours of the surface of the object from which the ink markings are to be removed.

Still other objects and advantages of the invention will be apparent from the specification.

The features of novelty which are believed to be characteristic of the invention are set forth herein and will best be understood, both as to their fundamental principles and as to their particular embodiments, by reference to the specification and accompanying drawings, in which:

FIGURE 1 is a perspective view of one embodiment of the apparatus of the present invention mounted on a shopping cart in a supermarket or grocery store;

FIG. 2 is an enlarged perspective view of the apparatus shown in FIG. 1, showing the manner in which the can is held in relationship to the apparatus prior to its being treated thereby;

FIG. 3 is a still further enlarged side view of the apparatus shown in FIGS. 1 and 2, some parts being in section and some parts being omitted;

FIG. 4 is a greatly enlarged fragmentary view of a portion of the apparatus showing the manner in which the parts are arrayed prior to their cooperation with a can;

FIG. 5 is a similar to FIG. 4, and shows the manner in which the can is brought into contact with the operative mechanism of the present invention;

FIG. 6 is a still further enlarged fragmentary view of the rotating abrading disc assembly of the present invention;

FIG. 7 is a top view, partly broken away of the disc shown in FIG. 6;

FIG. 8 is a perspective view showing the manner in

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which the apparatus of the present invention may be used in a portable manner;

FIG. 9 is a view somewhat similar to FIG. 2 showing the apparatus of the present invention adapted for manual operation, while the apparatus is secured to a stationary frame;

FIG. 10 is an edge view, somewhat enlarged, of the apparatus shown in FIG. 9;

FIG. 11 is a perspective view of the apparatus shown in FIGS. 9 and 10 being operated in a portable manner; and

FIG. 12 shows a fragmentary plan view of a further embodiment of the invention.

Referring now to the drawings in detail wherein like reference numerals refer to similar parts, the present invention comprises a frame, generally designated 21, made of rigid sheet metal, or the like, and constituting a vertical frame plate 22, an integral shelf 23 formed on the upper end of said plate, and an integral shelf 24 formed on the lower end of said plate, both of said shelves being arrayed substantially 90° in the same direction relative to said plate 22. The lateral ends of shelf 24 are each provided with integral elongated extensions 25 which are bent below shelf 24, jointly to form a handle for manually grasping and transporting the apparatus. See FIGS. 1, 2, 3 and 8.

Extending rearwardly through suitable apertures in frame plate 22 is a plurality of bolts 26 whose outer ends are threadably engaged by wing nuts 27. Positioned captive and movable horizontally between wing nuts 27 and frame plate 22 is a vertical clamp plate 28 which has suitable apertures freely to accommodate the shafts of bolts 26. Clamp plate 28 is adapted to engage the vertical bars 31 and horizontal bars 32 of a shopping cart, generally designated 33, or the like. Said wing nuts 27 when tightened on their respective bolts 26, cause frame plate 22 to be securely mounted on said cart or to any other suitable support.

The upper end of clamp plate 28 has an integral flange 33 at the upper end thereof arrayed substantially at a 90° angle relative to said clamp plate. Instead of mounting the apparatus upon the criss-cross wires of a shopping cart, the apparatus may alternatively be mounted upon a suitable shelf or support stand by means of the edge of flange 33 being caused by the tightening of wing nuts 27 to clamp such a shelf or stand between itself and the rear face of frame plate 22.

In the embodiments shown in FIGS. 1, 2, 3 and 8, there is connected to frame plate 22 a bracket 36 on which is securely mounted an electric motor 37 whose drive shaft 38 is arrayed substantially parallel to the plane of said plate. Motor 37 is connected by way of line cord 39 to an on-off switch 41 mounted on shelf 24, said switch in turn being connected by means of line cord 42 to a suitable power source for driving motor 37.

A nut 43 is connected to the upper end of shaft 38 by means of set screw 44. See FIGS. 3, 4, 5 and 6. Secured to nut 43 by means of screw 45, or the like, is a circular metallic wheel backing plate 46, to the upper flat surface of which is secured by means of a suitable adhesive or the like, a circular backing mat 47 made of a resilient material such as rubber, sponge rubber, neoprene, polyethylene foam or the like. Connected to the top surface of backing mat 47 by means of a suitable adhesive is a circular, somewhat flexible, abrading disc 48 made of a mat of nylon fibers or the like, which are coated with suitable abrading particles such as carborundum, aluminum oxide, silicon carbide or the like.

The assembly of the upper end of shaft 38, nut 43, backing plate 46, mat 47 and abrading disc 48, extends upwardly through a circular aperture 49 in upper shelf

23, as is shown particularly in FIGS. 2, 3, 4 and 5. The top surface of disc 48 lies above the plane of shelf 23. Secured firmly by a suitable adhesive to the top of shelf 23 on either side of aperture 49 is a pair of gripping pads 51 made of a resilient material such as rubber, sponge rubber, neoprene, polyethylene foam, or the like whose top surfaces have suitable frictional characteristics for gripping various objects urged against them.

In operation, electric motor 37 is started to rotate abrading disc 48. The container or can, generally designated 54, is held in the hand with its end plate 55 held directly above rotating abrading disc 48, as shown in FIGS. 2, 3 and 4. Thereafter, can 54 is moved downward upon the apparatus to bring the surface of end plate 55 into contact with the rotating abrading disc 48 (FIG. 5), whereby the latter is caused to erase the price markings, or the like, that had previously been stamped in ink thereon. It will be noted that resilient backing mat 47 yields sufficiently, as shown in FIG. 5, whereby the surface of flexible abrading disc 48 is enabled to adapt itself to the contours or bulges that may exist in end plate 55 so that the erasing action of said abrading disc upon the surface of said plate is ensured.

Since can 54 is held by hand, there is a possibility that the rotating action of abrading disc 48 might twist can 54 in the hand of the operator and dislodge it therefrom.

In order to obviate this possibility, the upper surfaces of stationary resilient gripping pads 51 on either side of disc 48 are arranged to be somewhat higher than the normal initial surface of disc 48 whereby a portion of the surface of the end plate 55 as well as the annular downwardly extending bead 56 of can 54 will first sink into said pads and be grasped firmly and prevented from rotating or twisting in the hand of the operator prior to the action of rotating disc 48 upon the surface of end plate 55 to erase the ink markings thereon.

By experience, the operator of the apparatus may urge can 54 downwardly upon the apparatus to a sufficient degree whereby there is a firm engagement between said can and said pads 51 while at the same time the operator refrains from bringing too much pressure to bear that might otherwise cause rotating abrading disc 48 to stop against the action of motor 37. In other words, there is a mutual adaption between the resilience of backing mat 47, the flexibility of abrading disc 48, the yieldability and frictional gripping action of pads 51, and the sensitivity of the manual pressure by the operator upon can 54 which brings about the most effective functioning of the apparatus.

In some cases, by personal preference or by virtue of the physical surroundings, it may be desirable to utilize the apparatus in a portable manner. Accordingly, as may be seen in the illustration of FIG. 8, the handle formed by extensions 25 may be grasped manually, and while motor 37 is operative to rotate abrading disc 48, the apparatus may be brought down upon the end plates 55 of stationary cans 54 in order to erase the ink markings, as described hereinabove. The suitable requisite downward pressure of the apparatus upon the cans will quickly be determined by experience of the operator in utilizing the apparatus.

Another embodiment of the invention is shown in FIGS. 9, 10 and 11 wherein the electric motor is replaced by a manually operated crank arrangement.

Connected by suitable screws 61 to plate 22 is a laterally extending crank post 62 at the outer end of which is mounted a rotatable gear plate 63 on whose inner surface is formed an annular bevel gear 64. Gear plate 63 is rotated by crank 65 secured thereto, the outer end of said crank having a rotatable crank handle 66 that may be manually grasped by the operator for rotating said plate in either direction. Extending downwardly from crank post 62 is a rotatable gear shaft 67, the lower end of which is mounted in a bearing 68 secured to shelf 24. Mounted fast on gear shaft 67 is a bevel gear 69 that is

engaged and rotated by bevel gear 64. Extending upwardly from crank post 62 is a rotatable gear shaft 71, to the upper end of which is connected the assembly of backing plate 46, mat 47, and abrading disc 48 in the same manner as shown in the embodiment of FIGS. 2, 3 and 6.

Mounted fast on gear shaft 71 is a bevel gear 72 which is engaged and rotated by bevel gear 64. In this embodiment the apparatus may either be mounted on the wire frame of the shopping cart, or the like, or it may be held manually as shown in FIG. 11. Crank handle 66 is grasped to rotate gear plate 63 causing abrading disc 48 to rotate. In the same manner as described above, can 54 is brought into contact with the apparatus in order to cause the abrading disc 48 to erase the ink markings on end plate 55 of the can.

The manual rotation of gear plate 63 causes the rotation of bevel gear 72, shaft 71, and abrading disc 58, whereby the ink markings on the surface of end plate 55 of can 54 may be erased in the manner as shown in FIGS. 9 and 10, where the apparatus is mounted on a shopping cart or other suitable support stand. This manually operated embodiment may also be transported for erasing the ink markings on stationary cans as shown in FIG. 11.

In this manually operated embodiment, as in the electrically driven embodiment described hereinabove in connection with FIG. 8, when can 54 is caused to approach the apparatus or vice versa, the end plate 55 of the can is initially gripped and secured in position by resilient pads 51 just prior to the impingement of rotating abrading disc 48 upon the surface of end plate 55 whereby twisting of the can out of the hand of the operator in the arrangement of FIG. 9, or the dislodgement of the can from its stationary position (FIG. 8 or 11) are obviated.

It is contemplated that in either the electrically or manually operated embodiment, separate pads 51 may be replaced by a unitary circular frictional gripping ring 75 made of a resilient material such as rubber, sponge rubber, neoprene, polyethylene foam or the like, as shown in FIG. 12, with shelf 23 extending a sufficient distance to accommodate said ring. In this form, the whole circumferential portion of the end of can 54 will be gripped by ring 75 in order to stabilize its position while rotating abrading disc 48 performs its function of erasing the ink markings on end plate 55. The initial surface of ring 75 is arranged to be somewhat higher than the normal surface of abrading disc 48 so that can 54 is gripped and stabilized in position by said ring prior to the impingement of said rotating disc upon the surface of end plate 55.

In some embodiments, the normal initial surface of abrading disc 48 will be positioned either on the same plane or higher than the surfaces of pads 51 or ring 75, when the contours of the object upon which said disc is to operate requires that arrangement or other circumstances make it necessary. In such case, the operator of the apparatus will quickly adapt his technique of handling both the apparatus and the work objects so that he will bring the two into operative juxtaposition so that the work objects will be stabilized in position by the resilient pads or ring while abrading disc 48 performs its erasing function.

It is also contemplated that instead of being secured to the top surface of shelf 23, gripping pads 51 may alternatively be mounted upon separate spring biased yieldable plates connected to the apparatus and in an equivalent manner perform their function of stabilizing the position of can 54 while rotating abrading disc 48 approaches end plate 55 and erases the ink markings therefrom.

It is claimed:

1. Apparatus for erasing ink markings or the like from an object, comprising a frame, a rotatable shaft on said frame, means on said frame for rotating said shaft, an abrasive disc mounted on said shaft and rotated thereby,

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a shelf on said frame, an aperture in said shelf, said disc extending through and rotating freely beyond said aperture and with its abrading surface extending above said shelf, at least one resilient pad mounted on said shelf near said aperture, the initial surface of said pad being somewhat higher than the abrading surface of said disc, said pad yieldably gripping a portion of said object as the latter is brought together with said apparatus, said gripping action taking place prior to said object being brought into frictional engagement with said disc, said pad stabilizing the position of said object while said disc rotates against another portion of said object.

2. Apparatus for erasing ink markings or the like from an object, comprising a frame, a rotatable shaft on said frame, means on said frame for rotating said shaft, an abrasive disc mounted on said shaft and rotated thereby, a shelf on said frame, an aperture in said shelf, said disc extending through and rotating freely beyond said aperture and with its abrading surface extending above said shelf, a pair of resilient pads mounted on said shelf on opposite sides of said aperture, the initial surface of said pads being somewhat higher than the abrading surface of said disc, said pads yieldably gripping a portion of said object as the latter is brought together with said apparatus, said gripping action taking place prior to said object being brought into frictional engagement with said disc, said pads stabilizing the position of said object while said disc rotates against another portion of said object.

3. Apparatus for erasing ink markings or the like from an object, comprising a frame, a rotatable shaft on said frame, means on said frame for rotating said shaft, an abrasive disc mounted on said shaft and rotated thereby, a shelf on said frame, an aperture in said shelf, said disc extending through and rotating freely beyond said aperture and with its abrading surface extending above said shelf, a circular resilient pad mounted on said shelf and surrounding said aperture, the initial surface of said pad being somewhat higher than the abrading surface of said disc, said pad yieldably gripping a portion of said object as the latter is brought together with said apparatus, said gripping action taking place prior to said object being brought into frictional engagement with said disc, said pad stabilizing the position of said object while said disc rotates against another portion of said object.

4. Apparatus for erasing ink markings or the like from an object, comprising a frame, a rotatable shaft on said

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frame, means on said frame for rotating said shaft, an abrasive disc mounted on said shaft and rotated thereby, a shelf on said frame, an aperture in said shelf, said disc extending through and rotating freely beyond said aperture and with its abrading surface extending above said shelf, at least one resilient pad mounted on said shelf near said aperture, the initial surface of said pad being somewhat higher than the abrading surface of said disc, said pad yieldably gripping a portion of said object as the latter is brought together with said apparatus, said gripping action taking place prior to said object being brought into frictional engagement with said disc, said pad stabilizing the position of said object while said disc rotates against another portion of said object, and a clamping plate mounted on said frame for securing the latter to a stand.

5. Apparatus for erasing ink markings or the like from an object, comprising a frame, a rotatable shaft on said frame, means on said frame for rotating said shaft, an abrasive disc mounted on said shaft and rotated thereby, a shelf on said frame, an aperture in said shelf, said disc extending through and rotating freely beyond said aperture and with its abrading surface extending above said shelf, at least one resilient pad mounted on said shelf near said aperture, the initial surface of said pad being somewhat higher than the abrading surface of said disc, said pad yieldably gripping a portion of said object as the latter is brought together with said apparatus, said gripping action taking place prior to said object being brought into frictional engagement with said disc, said pad stabilizing the position of said object while said disc rotates against another portion of said object, and a handle on said frame for providing manual grasping means for said apparatus.

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