April 2, 1963 R. F. HERRLING 3,083,719

APPARATUS FOR SEPARATING POSTAGE STAMPS AND THE LIKE FROM THEIR BACKINGS AND FOR WASHING THE SAME

Filed March 22, 1962 2 Sheets-Sheet 1

Fig. 1

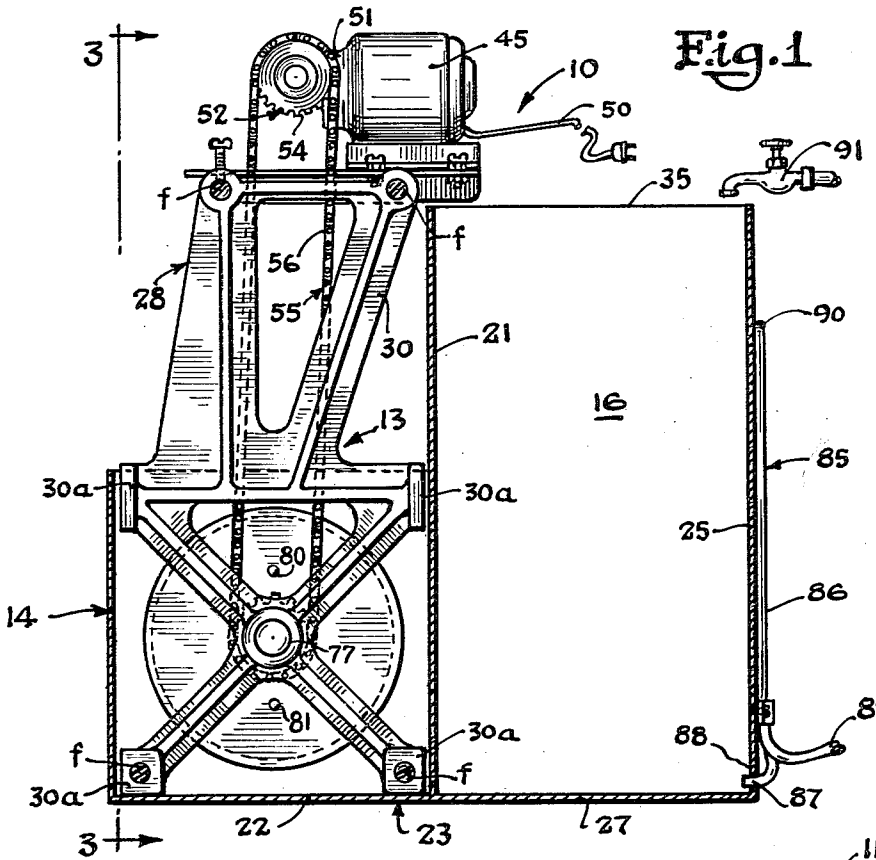
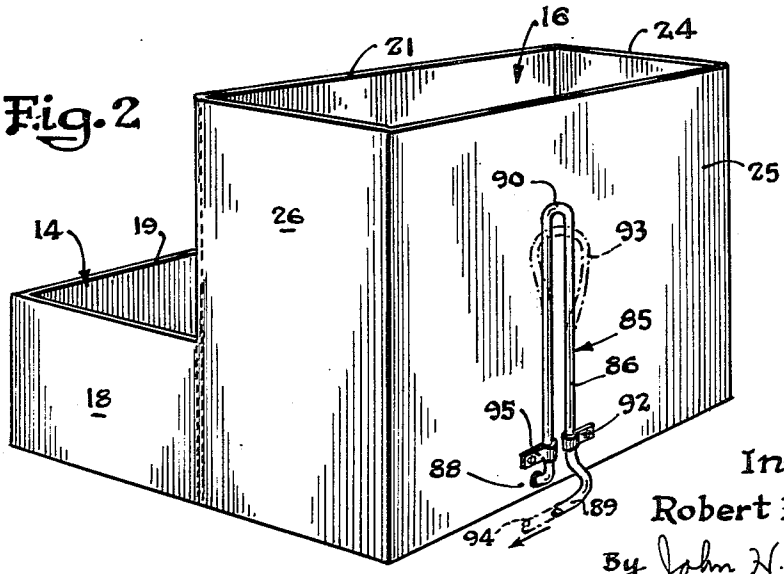


Fig. 2



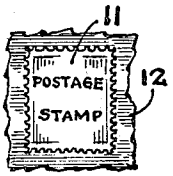


Fig. 7

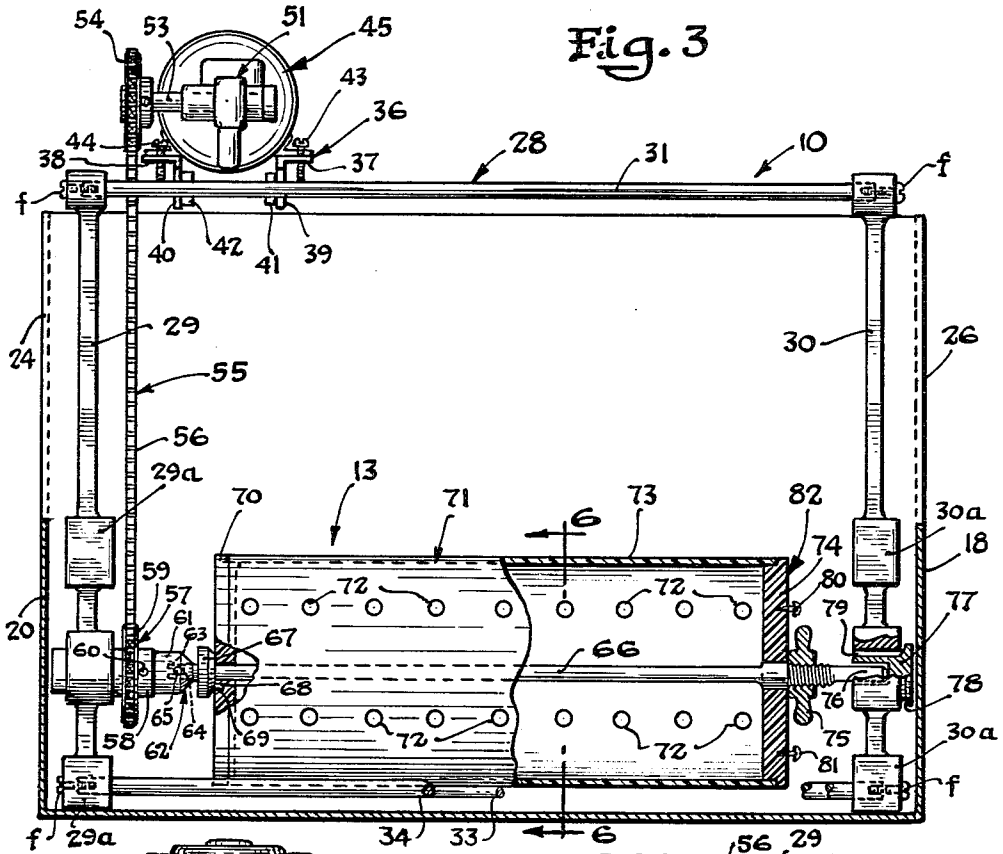
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Fig. 3



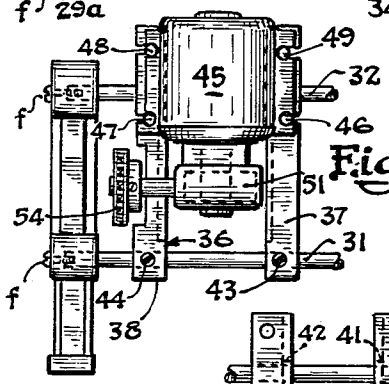


Fig. 4

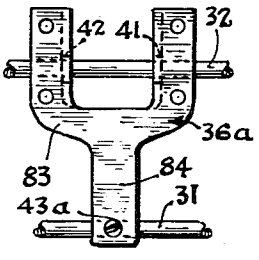


Fig. 5

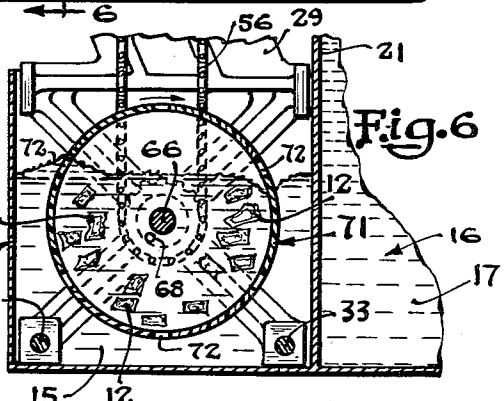


Fig. 6

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APPARATUS FOR SEPARATING POSTAGE STAMPS AND THE LIKE FROM THEIR BACKINGS AND FOR WASHING THE SAME

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2 Claims. (Cl. 134—157)

This invention relates to an apparatus for separating postage stamps and the like from their backings and for washing the same.

It is one of the purposes of the invention to provide an apparatus by which a vast number of postage stamps and the like are separable from their backings quickly and efficiently without impairing the quality of the stamps. The impairment of the quality of the stamps takes the form of, for example, bleeding of the color or colors of the stamps, distortion of the dimensional characteristics of the stamps, and curling of the stamps. Such impairment of quality results when steam is brought into contact with the stamps and their backings. The steam which brings about the softening of the adhesive which secures the postage stamps to their backings, enables the postage stamps to be separated from their backings but not without impairing of the quality of the stamps.

In accordance with the invention there is provided a construction which enables the postage stamps and the like to be tumbled in a liquid stamp separating medium and then to be tumbled in liquid washing medium. The term "tumbled" as employed herein designates the random rotational motion which is imparted to the stamps during both the separating of the stamps from their backings and during the washing of the same.

It is one of the features of the invention to provide a tumbler at least a portion of which is composed of a transparent material so that the completion of the separation of the postage stamps and the like from their backings is visually observable.

It is another feature of the invention to provide a tumbling apparatus which includes a perforate tumbler. There is provided a simple construction of such a character that a large number of stamps are able to be easily loaded into and unloaded from the perforate tumbler.

It is another feature of the invention to provide a tank which is adapted to contain a liquid stamp separating medium and a washing tank which is adapted to contain a liquid washing medium, and a tumbling apparatus for tumbling the stamps and their backings which is transferable from one to the other of the tanks. Two tanks are provided so that the tumbling apparatus is capable of being transferred quickly from the stamp separating medium into the washing medium. Therefore, it will be readily apparent that the stamps and their backings which have been separated therefrom are immediately transferable to the washing medium with a minimum of delay. As the stamps and the backings which have been separated therefrom are brought into contact with the washing medium and as the stamps and the backings are tumbled in contact with the washing medium the stamps and the backings are purged of the stamp separating medium, and depending upon the character of the stamp separating medium more or less of the adhesive is also removed from the stamps and the backings.

There is also provided a means for actuating the perforate tumbler which is simple in construction, and effective and dependable in its operation.

There is also a provision for automatically emptying the washing tank automatically each time the washing medium attains a predetermined level.

In accordance with the method of the invention the stamps and their backings are tumbled in a liquid stamp separating medium. The perforate tumbler is preferably only partially submerged in the liquid stamp separating medium, and most preferably the perforate tumbler is about two-thirds submerged. The liquid stamp separating medium and also the liquid washing medium cause the stamps and their backings to be buoyed up and consequently to be suspended therein. After all or substantially all of the stamps have been separated from their backings the stamps are immediately transferred to the liquid washing medium where the liquid stamp separating medium and at least some of the adhesive which formerly secured the stamps to their backings are urged. The stamps, which are no longer adhesively secured to their backings, are then individually "lifted" from the backings. For convenience this "lifting" can be effectively accomplished when the aggregation of stamps and backings are placed on a screen which permits the washing medium to be drained therethrough.

In the diagrammatic drawings:

FIGURE 1 is a side elevation view, partly in cross-section showing the apparatus of the invention;

FIGURE 2 is a perspective view of the tanks shown in cross-section in FIGURE 1;

FIGURE 3 is a cross-sectional view taken along line 3—3 of FIGURE 1;

FIGURE 4 is a fragmentary view showing one manner in which a motor and a speed reducer are adjustably mounted on a frame of the apparatus of the invention;

FIGURE 5 is a fragmentary view showing another manner in which the motor and the speed reducer are adjustably mounted on the frame of the apparatus of the invention;

FIGURE 6 is a fragmentary cross-sectional view taken along line 6—6 of FIGURE 3; and

FIGURE 7 is a view of a postage stamp which is adhesively secured to a paper backing.

Referring now to the illustrative drawings, there is shown an apparatus generally indicated at **10** for separating stamps and the like from their backings and for washing the same. FIGURE 7 illustrates what is indicated as a postage stamp **11** and a paper backing **12**. A large aggregation of stamps **11** are separable from their respective backings **12** by the employment of the apparatus **10** of the invention. The apparatus **10** of the invention includes a tumbling apparatus generally indicated at **13**. The tumbling apparatus **13** is transferable from a tank **14** which is adapted to contain a liquid stamp separating medium **15** to a washing tank **16** which is adapted to contain a liquid stamp washing medium **17**. The tank **14** is shown to include side walls **18**, **19**, and **20** and a side wall **21** which is common to both tanks **14** and **16**, each side wall being sealed, for example by welding, against leakage to a floor portion **22** of a floor **23**. The tank **16** includes side walls **24**, **25**, **26** and the common side wall **21**, each side wall being sealed, for example by welding, against leakage to a floor portion **27** of the floor **23**. The tumbling apparatus **13** is adapted to rest on either the floor portion **22** or the floor portion **27** of the tanks **14** and **16** and is removable therefrom by manual lifting.

The tumbling apparatus **13** of the invention comprises a frame **28** having opposed end frame members **29** and **30**, and tie rods **31**, **32**, **33** and **34** which connect and space the end frame members **29** and **30**. The end frame members **29** and **30** are secured to the tie rods **31**, **32**, **33**, and **34** by threaded fasteners *f*. The tie rods **31** and **32** serve as convenient handles for lifting the tumbling apparatus **13** from the tank **14** into the tank **16**, and vice versa. The tie rods **31** and **32** are disposed slightly above an upper edge **35** of the washing tank **16** so that even though the tank **16** is filled to the upper edge **35**

the operator can lift the tumbling apparatus 13 out of the washing tank 16 without having his hands wetted by the washing medium.

Pivotally mounted on the tie rods 31 and 32 of the frame 28 is a platform 36 which comprises a pair of opposed angles 37 and 38 through legs 39 and 40 of which the tie rod 32 passes. Platform 36 is free to pivot with respect to the tie rod 32 although axial movement along the tie rod 32 passes. Platform 36 is freet o pivot with are suitably secured to the tie rod 32. Adjusting screws 43 and 44 which bear against the tie rod 31 are threadably received by the angles 37 and 38, respectively. An electrical motor 45, mounted on the angles 37 and 38 of the platform 36 by bolts 46, 47, 48 and 49, is connected by a cord 50 to a suitable source of electrical energy supply. A speed reducer 51 mounted on the motor 45, reduces the speed of the output shaft (not shown) of the motor 45. It is readily apparent that the motor 45, the speed reducer, and an annular drive member 52 are pivotal as a unit about the tie rod 32. An annular drive member generally indicated at 52 is connected to an output shaft 53 of the speed reducer 51. The annular drive member 52 is shown to be a sprocket 54. An endless flexible drive member generally indicated at 55 is engaged with and transfers motion from the annular drive member 52. The endless flexible drive member 55 is shown to be a chain 56. An annular drive member 57, fixedly mounted on a shaft 58 journaled in the end frame member 29, is engaged with the endless flexible drive member 55. The annular drive member 57 is shown to be sprocket 59. The annular flexible drive member 55 is disposed vertically within the side walls of each tank in which it is adapted to be disposed so that any liquid which has been carried along the annular flexible drive member 55 will drip back into the tank. The term annular drive member is intended to include both a sprocket and a pulley, while the term endless flexible drive member is intended to include both a chain and a pulley belt.

The shaft 58 is secured by a set screw 60 to a female portion 61 of a releasable coupling generally indicated at 62. A fork 63 of a male portion 64 of the releasable coupling 62 engages a pin 65 which penetrates the female portion 61 releasably to lock the female portion 61 and the male portion 64 against rotation relative to each other. The fork 63 of the male portion 64 is shown to be formed at the end of a shaft 66. A stop 67, fixedly attached to the shaft 66 is shown to have a pin 68 which is engageable into a recess 69 in an end plate 70 of a tumbler 71. The tumbler 71 is perforate in character, having perforations 72 in its cylindrical shell 73. The perforations 72 are of suffiicent size and number to enable free circulation of the stamp separating medium into and out of the tumbler 71 but small enongh to prevent the stamps 11 or the backings 12 from passing therethrough. The end plate 70 is preferably fixedly secured to the shell 73, while an end plate 74 is removably secured to the shell 73. End plates 70 and 74 and the perforate shell 73 are composed of a transparent material, for example, a plastic like methyl methacrylate, but in order to accomplish one of the purposes of the invention only a sufficient portion of the tumbler 71 need be composed of a transparent material so that the completion of the separation of the postage stamps and the like from the backings is visually observable.

A wing nut 75, threadably received on the shaft 66, is shown to removably retain the end plate 74 in position. One end 76 or the shaft 66 is rotatably mounted in a removable bearing 77 which is limited in axial movement upon abutment with the side wall 18 of the tank 14 or the side wall 26 of the tank 16. An annular undercut 78 is provided for ease of finger engagement, so that the bearing 77 is easily grippable and removable. With the bearing 77 removed from within a passageway 79 in the end frame member 30, the shaft 66 and the tumbler 71 are axially removable as a unit toward the end frame member 30 until the coupling 62 has been released. Then the shaft and the tumbler 71 are separated from the remainder of the tumbling apparatus 13. The wing nut 75 is then threadably removed from the shaft 66. Knobs 80 and 81 anchored to end plate 74 are grasped to remove the end plate 74. The end plate 74 is actually a door generally indicated at 82 which, when removed from the shaft 66, enables the stamps and their backings to be loaded and unloaded.

Side portions 29*a* and 30*a* of the end frame members 29 and 30 space the tumbler 71 in the tanks 14 and 16. An alternate form of platform 36*a* is shown in FIGURE 5 of the illustrative drawings. The platform 36*a* comprises a yoke 83 having an extension 84 which threadably receives an adjusting screw 43*a*. The adjusting screw 43*a* bears against the tie rod 31 and is operable to pivot the platform 36*a* about the tie rod 32. For the sake of simplicity the motor 45 and the speed reducer have been omitted from FIGURE 5 of the illustrative drawings.

As shown in FIGURES 1 and 2 of the illustrative drawings the washing tank 16 is shown to be provided with a siphon assembly generally indicated at 85. The siphon assembly 85 includes a conduit 86 which is shown to be formed into a generally inverted U-shaped configuration. One end 87 of the conduit 86 is sealably secured to a lower end 88 of the side wall 25 of the washing tank 16, while another end 89 of the conduit 86 leads to a drain (not shown). When the liquid level in the tank 16 reaches a bight portion 90 of the conduit 86 the tank 16 is automatically emptied by the siphoning action of the siphon assembly 85. Assuming that a liquid washing medium is passed into the tank 16 through a faucet 91 or the like from a suitable source of liquid washing medium supply, the tank will continue to be filled until the liquid level again reaches the bight portion 90 of the conduit 86 at which time the tank 16 is again automatically emptied. To provide for a variable maximum liquid level in the tank 16 the conduit 86 is composed of a flexible material so that the conduit 86 can be bent and slipped partially through a retainer 92. In this event the conduit will assume a new position indicated in part by the phantom lines 93 and 94. Another retainer 95 is also employed to hold the conduit 86 in position.

Adjusting screws 43 and 44 in the embodiment of FIGURE 4, and the adjusting screw 43*a* in the embodiment of FIGURE 5 are employed to adjust the tension on the chain 56.

By way of example but in no way to limit the invention, a specific embodiment of the invention includes a motor having a rating of 1/10 horsepower at 1725 r.p.m. The speed reducer has a speed reduction ratio of 180 to 1 so that the angular velocity of the tumbler 71 is roughly 10 r.p.m., since the sprockets 54 and 59 have the same effective diameter. The tumbler 71 has an inside diameter of about 5½ inches and an inside length of about 18 inches. The perforations 72 are about 3/8 of an inch in width and are about 126 in number. The tank 14 is about 7 inches wide, about 25 inches long, and about 7 inches deep, while the washing tank 16 is about 7 inches wide, about 25 inches long, and about 14 inches deep. The tumbler 71 is large enough, with the above-mentioned dimensions, to hold about 10,000 stamps 11 and their backings 12. The backing 12 is that small portion of an envelope which remains after the stamp or stamps are clipped or torn from the envelope. The tank 14 is preferably filled to a level so that the tumbler 71 submerged in the stamp washing medium to about two-thirds of its diameter so that air and liquid turbulence therein is achieved. In the washing tank 16 the tumbler is preferably completely submerged in the liquid washing mdium to effect rapid purging of the traces of the stamps separating medium and adhesive. The stamps 11

and their backings 12 are tumbled in the stamp separating medium 15 for about 2 to 3 minutes when the stamps are United States stamps, while stamps of most foreign countries require about 4 to 5 minutes of tumbling. The tumbling in the liquid washing medium 17 of the stamps 11 which have been separated from their backings 12 requires about one hour. The stamp loosening medium 15 includes a composition of 3 to 4 parts by volume of a surface active agent to 1 part by volume of alcohol. About 10 to 15 cubic centimeters of this composition is employed per 14 liters of water. The liquid washing medium generally employed is water.

The preferred surface active agent is a nonionic surface active agent, such as p-iso octyl phenyl ether of polyethylene glycol containing 58.1% (made and sold under the trade name Triton X–100 by Rohm and Haas). The preferred alcohol is ethyl alcohol. Other surface active agents and alcohols useful for the present purposes are described in a co-owned, co-pending patent application Serial Number 758,546 filed September 2, 1958, now Patent No. 3,062,749.

In operation, assuming the tumbling apparatus 13 is in one of the tanks 14 or 16, the tumbling apparatus 13 is first lifted therefrom. The removable bearing 77 is moved axially out of the end frame member 30 by gripping the bearing 77 at the annular undercut 78. The shaft 66 and the tumbler 71 are then slid axially toward the end frame member 30 until the fork 63 clears the female portion 61 of the releasable coupling 62. Then the shaft 66 and the tumbler 71 are moved axially away from the end frame member 30 and they are freed from the remainder of the tumbling apparatus 13. The wing nut 75 is then turned to release the door 82 which is defined by the end plate 74. With wing nut 75 removed, the knobs 80 and 81 are grasped and the end plate 74 is then slid over the end 76 of the shaft 66 and the stamps 11 and their backings 12 are loaded into the perforate tumbler 71. The tumbler 71 is then reassembled and repositioned. The tank 14 having been filled with a liquid stamp separating medium to a level at which the tumbler 71 will be about ⅔ submerged therein, the tumbling apparatus 13 is manually lowered into the tank 14. The motor 45 is then operated and the tumbler 71 rotates. Visual observation through the shell 73 will reveal when the stamps 11 have been separated from their backings 12. The washing tank 16 having been filled with a liquid washing medium 17 to a level which is high enough to completely submerge the tumbler 71, is in readiness so that the tumbling apparatus 13 is immediately transferable from the tank 14 into the washing medium 17 in the washing tank 16 after the stamps 11 have been separated from their backings 12. This assures that the stamps 11 are in contact with the stamp separating medium for a minimum amount of time, thereby obviating impairment of the quality of the stamps 11. The stamps 11 and their backings 12 are tumbled in the tumbler 71 for the required period of time until the completion or substantial completion of their separation and then the tumbling apparatus 13 is immediately transferred into the washing medium 17 of the washing tank 16, thereby purging the stamps immediately of at least some of the remaining liquid stamp separating medium which remains in contact therewith. The stamps are tumbled in the liquid washing medium for a sufficient period of time. Then the tumbling apparatus 13 is manually lifted out of the washing tank 16 and the shaft 66 and the tumbler 71 are removed as a unit in the manner described above. The motor 45 need not be rendered inoperative during the transfer of the tumbling apparatus 13 from the tank 14 to the tank 16 since the time required for this purpose is in the nature of seconds.

Although it is conceivable that the separation of the stamps 11 from their backings 12 could be accomplished in a single tank, with the tank 14 being drained of the stamp separating medium and immediately filled with a washing medium, this construction is not especially desirable because of the inherent wastage of some of the stamp separating medium and the loss of time before the stamps 11 are purged.

The above-described embodiments being exemplary only, it will be understood that modifications in form or detail can be made without departing from the spirit and scope of the invention. Accordingly, the invention is not to be considered as limited save as is consonant with the scope of the following claims.

What is claimed is:

1. In an apparatus for separating postage stamps and the like from their backings, a combination, comprising: a tank adapted to contain a liquid stamp separating medium; a tumbling apparatus including a frame disposed in said tank, said frame having opposed end frame members, a shaft supported at each end by one of said end frame members, a perforate tumbler fixedly and axially mounted on said shaft, means for driving said shaft, means for releasably coupling said shaft with said driving means, a removable bearing mounting one end of said shaft in one end frame member, said shaft being limited in axial movement by said removable bearing, said removable bearing being limited in movement upon abutment with said tank when said tumbling apparatus is in said tank and being freely removable when said tumbling mechanism is removed from said tank, said shaft being axially shiftable to uncouple said coupling means and to remove said shaft and said tumbler from the remainder of said tumbling means when said removable bearing has been removed.

2. The invention defined in claim 1 wherein said tumbler includes at least one removable end plate through which said shaft passes, and means for removably retaining said end plate in position.

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