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TUMBLING BARRELS AND SCREENS THEREFOR

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2 Sheets-Sheet 1

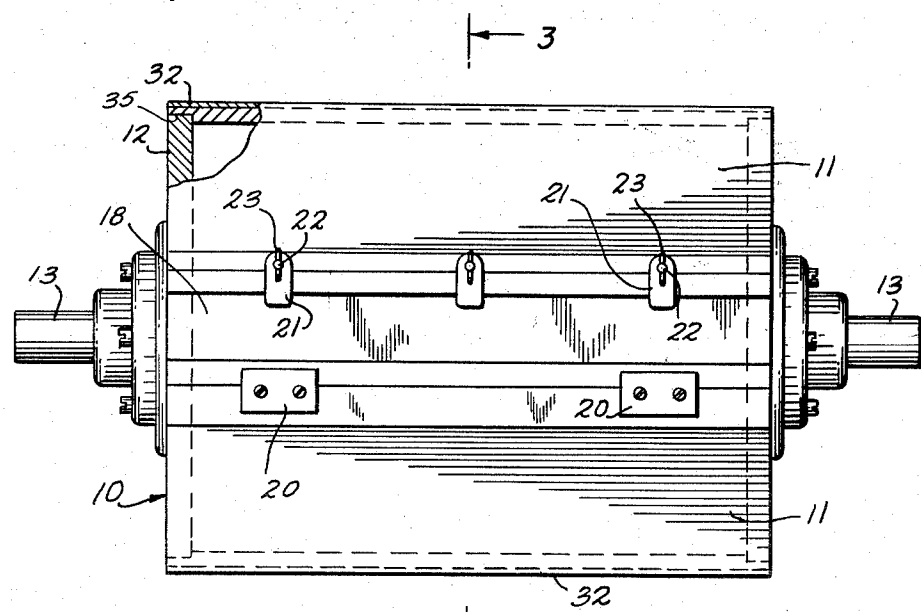


FIG. 1.

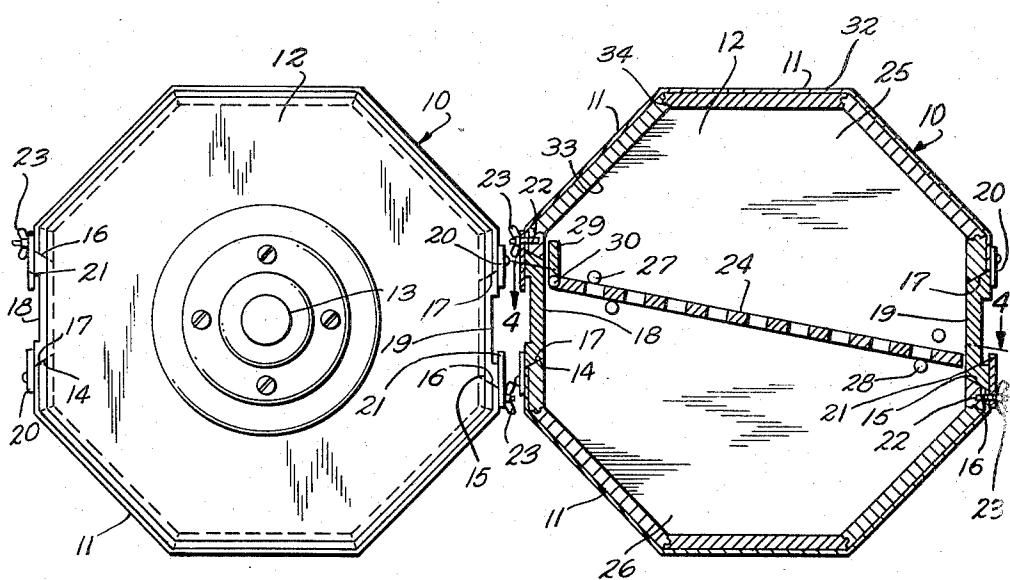


FIG. 2.

FIG. 3.

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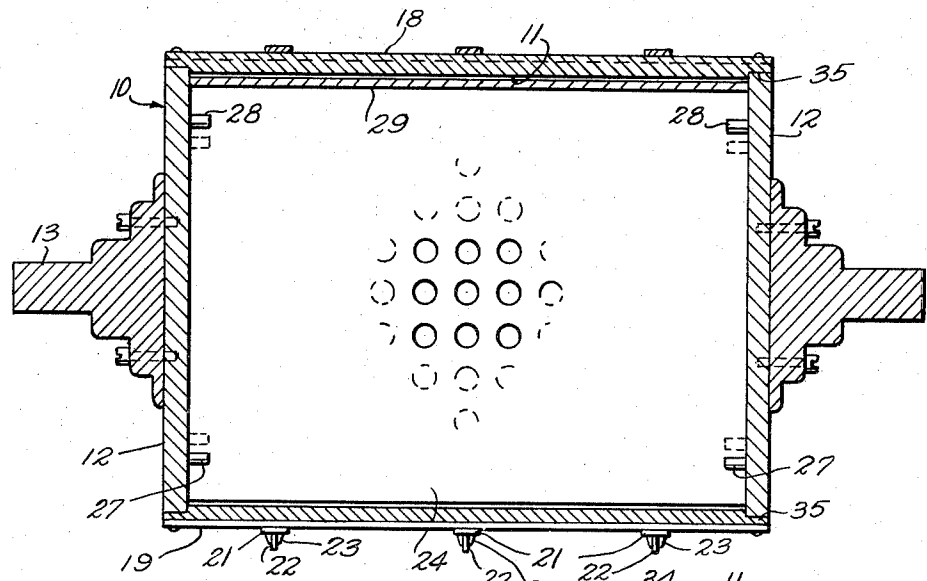


FIG. 4.

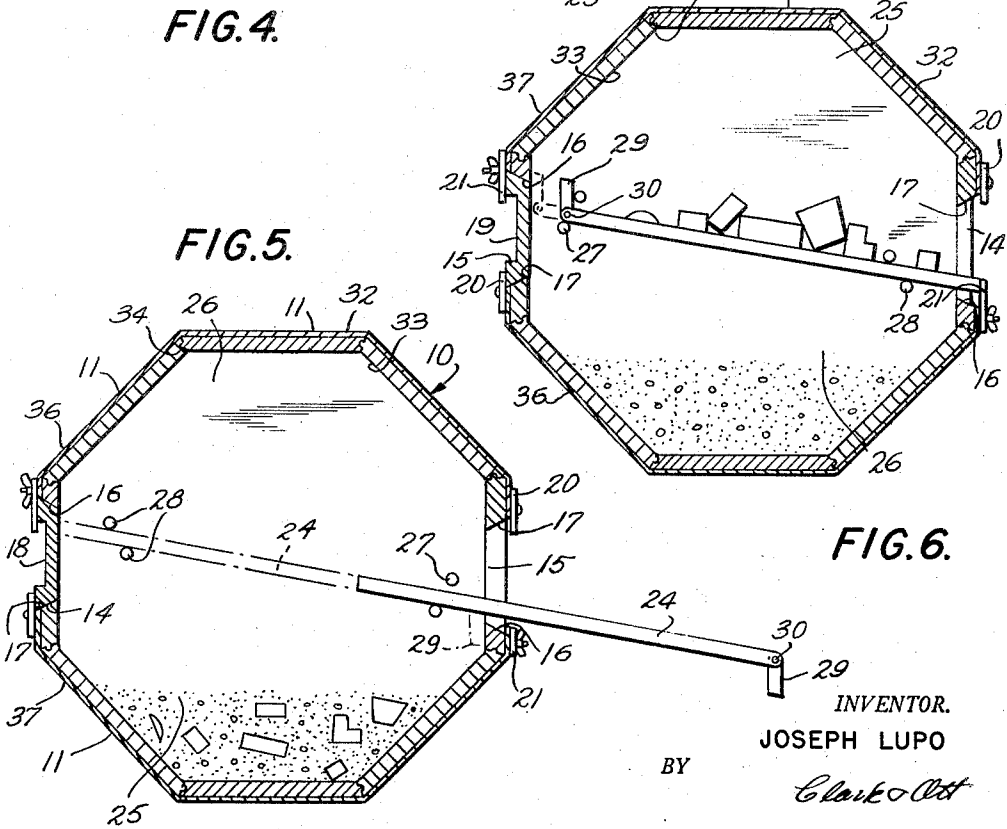


FIG. 5.

FIG. 6.

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TUMBLING BARRELS AND SCREENS THEREFOR

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1 Claim. (Cl. 51-164)

This invention relates to tumbling barrels for tumbling metallic and plastic articles and the like in an abrasive mixture for cutting down, smoothing and polishing the articles and the invention has particular reference to a tumbling barrel of said character and a screen therefor adapted to be positioned within the barrel adjacent a charging opening for separating the articles from the abrasive material after the completion of the abrasive operation and with the charging opening closed.

According to the usual practice of processing articles by the use of tumbling barrels, the articles are placed in the barrel together with an abrasive material which may include wooden chips, wooden pegs, leather scraps or the like and a compound composed of comminuted materials such as sawdust impregnated or coated with a lubricating and binding vehicle and covered with a powdered abrasive. After the articles have been processed for a predetermined period, the barrel is opened and the contents deposited in screening trays for separating the articles from the abrasive material. The barrel is again charged with the abrasive material for processing another batch of articles while the articles separated from the abrasive material may be re-processed with an abrasive mixture including a finely powdered abrasive until the desired polish or luster is produced on the articles. The separation of the articles from the abrasive material creates considerable dust as the abrasive material wears away during the operation and the dumping of the articles from the barrel together with the action of the screening trays causes the finely powdered abrasive material to rise in a dust cloud which is an occupational hazard in this art necessitating the use of respiratory masks.

The present invention overcomes the aforesaid disadvantages and hazards in the present mode of tumbling articles by providing a screen adapted to be inserted in the barrel through a charging opening and positioned in inclined relation therein and after the charging opening is closed, the barrel is rotated to deposit the articles and the abrasive material on the screen to thereby effect separation of the articles from the abrasive material.

Another object of the invention is to provide an improved tumbling barrel for tumbling articles with an abrasive mixture and for separation of the articles from the abrasive material within the barrel so as to eliminate the repeated handling of the articles and abrasive material to thereby increase the efficiency of the operation and eliminate the occupational hazard of dust arising from the separation of the articles and the abrasive material.

Still another object of the invention is to provide a tumbling barrel having oppositely disposed charging openings and means within the barrel adapted for supporting a screen in inclined relation adjacent the charging openings.

With the foregoing and other objects in view, reference is now made to the following specification and accompanying drawings in which the preferred embodiment of the invention is illustrated.

In the drawings:

Fig. 1 is a view in side elevation of a tumbling barrel constructed in accordance with the invention.

Fig. 2 is an end view thereof.

Fig. 3 is a transverse vertical sectional view taken approximately on line 3-3 of Fig. 1 and showing a screen in position therein.

Fig. 4 is a longitudinal sectional view taken approximately on line 4-4 of Fig. 3.

Fig. 5 is a view similar to Fig. 3 showing one of the closure panels in open relation and with the screen partially inserted.

Fig. 6 is a view similar to Fig. 5 showing the barrel turned one-half revolution and the screen in inverted relation therein.

Referring to the drawings by characters of reference, the tumbling barrel includes a shell 10 consisting of angularly related longitudinally extending side walls 11 which as illustrated are eight in number forming an octagonal shaped shell in cross-sectional configuration, but it is to be understood that the shell may be formed of any number of sides and may be of any polygonal shape in cross-section. The shell 10 also includes end walls 12 which are secured within the opposite ends of the shell and have trunnions 13 affixed thereto for mounting the barrel in bearings for rotation.

The barrel is provided with oppositely disposed charging openings 14 and 15 formed in opposite side walls thereof. The charging openings extend throughout the length of the shell between the end walls 12 thereof and have beveled inwardly converging upper and lower longitudinally extending edges 16 and 17. Similar closure panels 18 and 19 are provided for seating engagement on the edges of the end walls 12 at the opposite ends of the charging openings and for seating engagement on the beveled longitudinally extending edges 16 and 17 for closing the said openings.

Secured to the outer face of the shell 10 are spaced abutment strips 20 which project beyond the longitudinally extending edges 17 of each of the charging openings 14 and 15 and overlie the forward faces of the closure panels 18 and 19 when the lower edges thereof are seated on the longitudinally extending beveled edges 17. Apertured clamping elements 21 are provided for clamping the closure members in closed relation. The clamping elements 21 are mounted on studs 22 which extend through the apertures thereof and are engaged by wing nuts 23 for securing the clamping elements in overlying relation with the outer faces of the closure panels.

In order to separate the articles from the abrasive material after the processing operation is completed, a foraminous panel 24 is provided defining a screen which is adapted to be inserted through and removed from the barrel through either one of the charging openings and to occupy a position within the barrel to form the interior thereof into upper and lower compartments 25 and 26. Preferably the foraminous panel 24 is arranged in inclined relation within the barrel with one end thereof located adjacent the lower longitudinal edge of one of the charging openings. For this purpose the end walls 12 are provided with spaced pairs of inwardly projecting studs 27 and 28, one pair being located adjacent the upper edge 16 of the charging opening 14 and the other pair being located adjacent the lower edge 17 of the opening 15 with the studs of each pair spaced apart to permit of sliding movement of the panel therebetween. This positions the panel at an inclination of approximately twenty degrees to the horizontal when the charging openings are in horizontal alignment whereby the articles on the panel which have been separated from the abrasive material will slide down the panel and through the charging opening. The foraminous panel 24 is of a length to snugly fit between the end walls 12 of the barrel and the same is provided

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with a longitudinally extending narrow flap 29 which is pivoted to one of the longitudinal edges thereof by a pivot pin 30 to permit of swinging movement of the panel.

The articles are processed by rotating the barrel with the articles disposed therein in commingled relation with the abrasive material and with the closure members in closed relation. After the completion of the processing operation one of the closure members is opened, for instance the closure 19, and the foraminous panel 24 inserted therein to the dotted line position indicated in Fig. 5 of the drawings. The closure 19 is then secured in closing relation and the barrel rotated one-half revolution. As the barrel approaches the completion of the one-half revolution, the articles together with the abrasive material will be deposited on the panel 24 and during the completion of the one-half revolution the abrasive material will gravitate through the openings in the panel and be deposited in the lower compartment of the barrel while the articles will remain on top of the panel. The closure 18 is then opened to permit of the discharge of the processed articles on the screen which slide down the inclined panel and may be agitated to expedite the discharge thereof by rocking movement imparted to the barrel. When the foraminous panel is inserted through the charging opening, the flap 29 is disposed toward the operator and when the panel is in position in the barrel the flap 29 is disposed in depending position adjacent the opening through which the panel has been inserted. When the barrel is rotated a one-half revolution to separate the articles from the abrasive material, the flap 29 is arranged in upstanding relation remote from the opening through which the articles are discharged. Constructed in this manner, metallic and plastic articles and the like may be processed as well as separated from the abrasive material within the tumbling barrel and with the closure members in closed relation to retain the dust produced by the abrasive action from forming a cloud in the room in which the operation takes place. It is to be understood that a single installation may include many tumbling barrels operating in the same building or room so that continuous handling of the abrasive material and separating the articles therefrom by means of open screening trays produces an occupational hazard. The separation of the articles from the abrasive material within the barrel eliminates the aforesaid occupational hazard and does away with the

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repeated handling of the abrasive material which together with the articles being tumbled, when of metal, may approximate a total of 300 lbs. in a single charge.

The walls 11 of the shell are made up of an outer casing 32 of sheet metal and wooden lining sections 33 which have their longitudinal edges formed with interengageable tongues and grooves 34 and are secured to the metal casing by screws 35 or equivalent fastening means which permit of the renewal and replacement of the lining sections when worn. The lining sections are rabbeted at their ends as at 35 with the end walls 12 fitting the rabbeted ends thereof. The sheet metal casing 32 as illustrated may be made up of two portions 36 and 37 each of which extend from one charging opening to the other.

While the preferred form of the invention has been shown and described herein, it is to be understood that the same is not so limited but shall cover and include any and all modifications which fall within the purview of the claim.

20 What is claimed is:

A tumbling barrel for tumbling articles in an abrasive material, said barrel including a shell having end walls and a peripheral wall, said end walls having means for rotatably supporting the barrel and said peripheral wall being provided with a pair of diametrically opposed openings extending longitudinally thereof between the end walls, a removable closure member for each of said openings, a foraminous panel providing a screen insertable into the barrel through one of said openings so as to subdivide the interior of the shell substantially medially thereof into oppositely disposed compartments each extending longitudinally of the shell, and means on the interior of the shell slidably removably mounting the panel in the shell with one edge of the panel closely adjacent and parallel to one longitudinal side edge of one of the openings and the opposite edge of the panel closely adjacent and parallel to the diametrically opposed longitudinal side edge of the other opening and with the plane of the panel inclined at an acute angle to the plane which is equidistant from the longitudinal side edges of both of the openings.

References Cited in the file of this patent

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