

Aug. 21, 1951

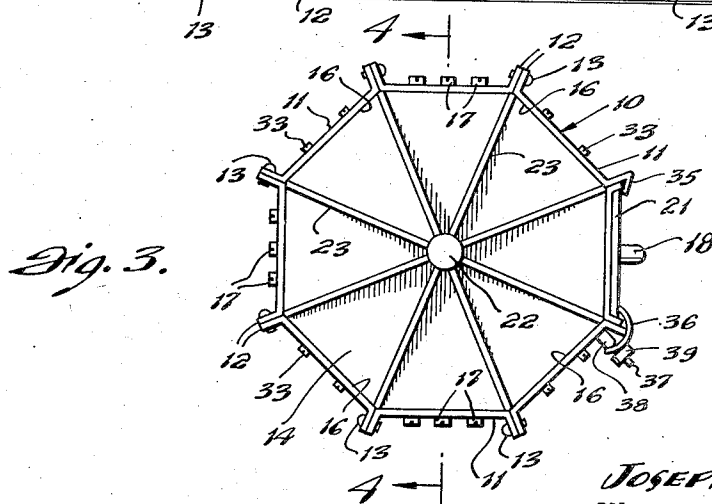
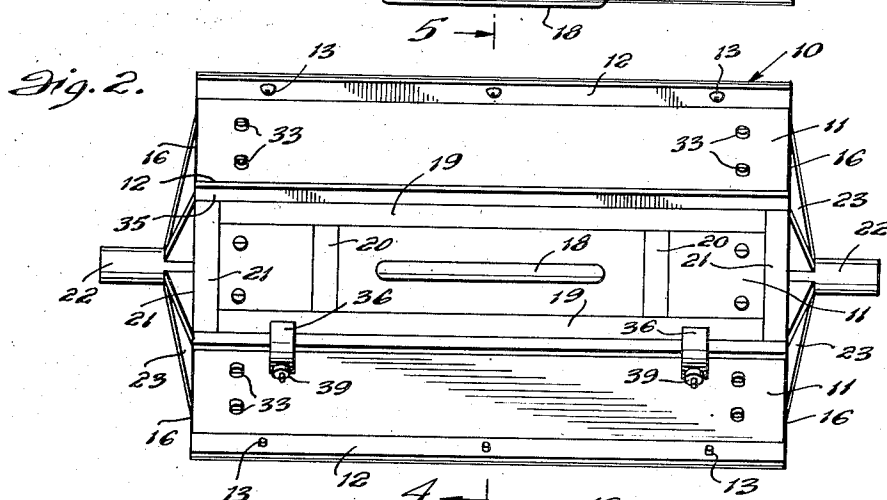
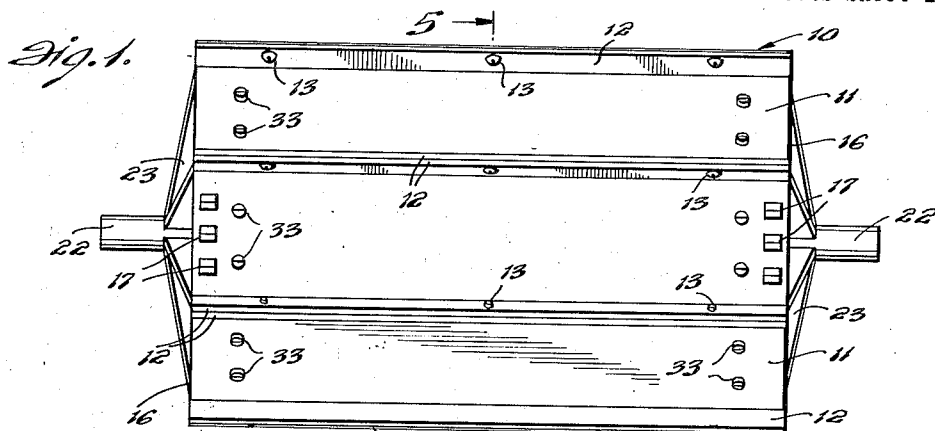
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2,565,385

LINED TUMBLING BARREL

Filed July 10, 1948

3 Sheets-Sheet 1



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Fig. 4.

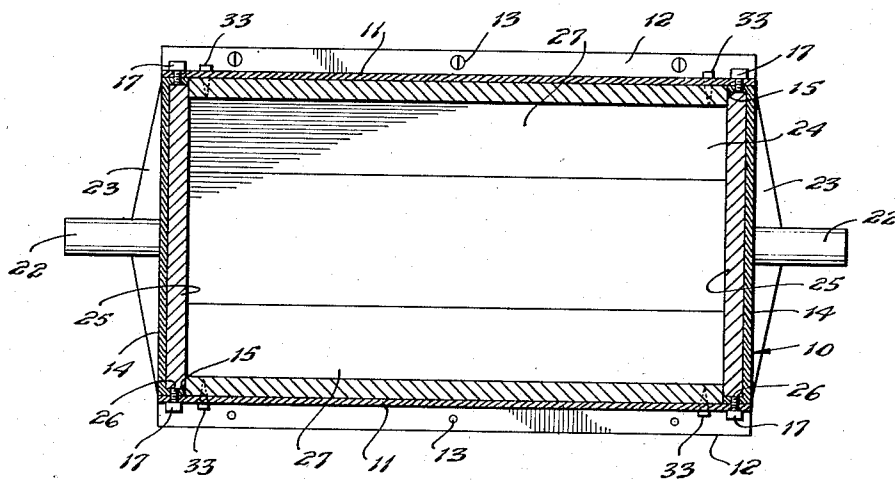
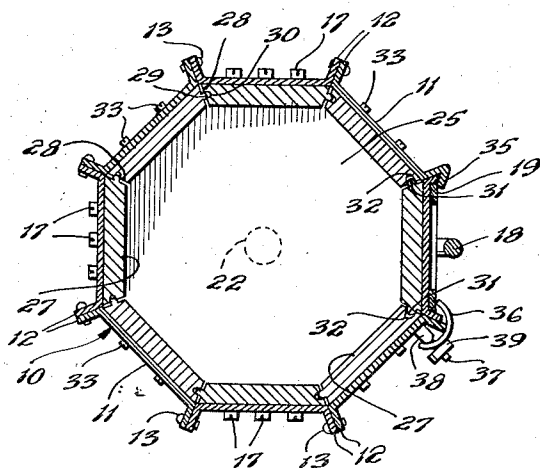


Fig. 5.



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Fig. 6.

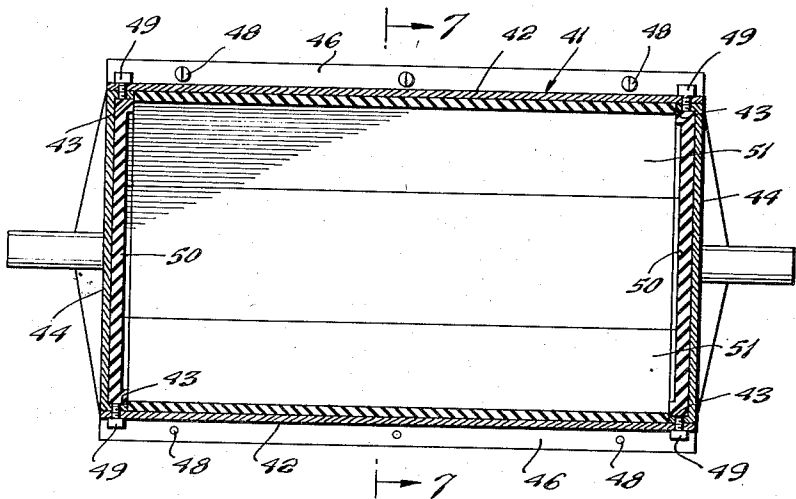


Fig. 7.

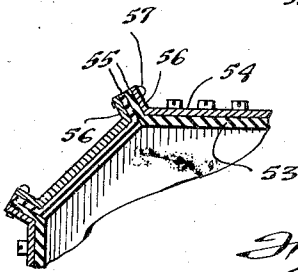
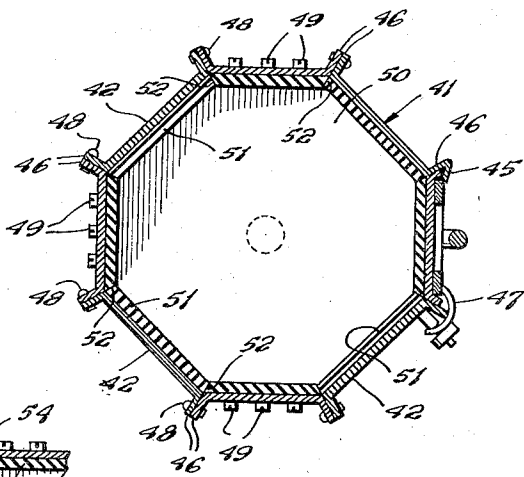


Fig. 8.

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LINED TUMBLING BARREL

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4 Claims. (Cl. 259—89)

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This invention relates to a lined tumbling barrel for tumbling articles in an abrasive mixture or compound for cutting down, smoothening and polishing the articles.

The invention has for an object the provision of a tumbling barrel having shell and lining sections which are so constructed and arranged as to permit of the convenient removal of certain of the shell sections so as to render the lining sections readily accessible for removal and replacement if necessary.

Another object of the invention is to provide a tumbling barrel of polygonal shape in cross-sectional formation having longitudinally extending interfitted fixed and removable shell sections forming the side walls thereof and longitudinally extending lining sections arranged on the inside of the shell sections and which removable shell sections are adapted to be conveniently removed for rendering the lining sections accessible for removal and replacement.

Still another object of the invention is the provision of a tumbling barrel of the indicated character in which the lining sections have interlocking engagement which holds the sections in position and prevents the same from dropping out of peripheral engagement with the shell sections thereof while preventing the abrasive mixture in which the articles are tumbled from seeping through the joints between the lining sections and lodging between the shell and lining sections.

Still another object of the invention is the provision of a lined tumbling barrel which is so constructed and arranged as to provide a rigid barrel structure as well as being light in weight and capable of operating with large charging loads so as to lessen the cost of tumbling articles for cutting down and polishing the same.

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

In the drawings:

Fig. 1 is a top plan view of a tumbling barrel constructed in accordance with the invention.

Fig. 2 is a side view thereof.

Fig. 3 is an end view of the barrel.

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

Fig. 5 is a transverse vertical sectional view taken approximately on line 5—5 of Fig. 2.

Fig. 6 is a longitudinal vertical sectional view of a tumbling barrel constructed in accordance with the invention and illustrating a modified form thereof.

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Fig. 7 is a transverse vertical sectional view taken approximately on line 7—7 of Fig. 6.

Fig. 8 is a fragmentary vertical sectional view similar to Fig. 7 and illustrating a modified form of securing the lining sections to the side walls of the barrel.

Referring to the drawings by characters of reference, the tumbling barrel includes a metal shell 10 having angularly related longitudinally extending sheet metal side walls 11 which as illustrated are eight in number forming an octagonal shaped shell in cross-sectional configuration. The shell 10 may however, be formed with any number of sides and may be of any polygonal shape in cross-section.

The side walls 11 are formed with outwardly projecting flanges 12 at the opposite longitudinal edges thereof which are arranged at obtuse angles to the plane of the side walls respectively so that confronting flanges of adjacent side walls are disposed in abutting closely fitting relation. The side walls 11 are secured together by longitudinally spaced sheet metal screws 13 extending through threaded apertures in adjacent flanges 12.

The metal shell 10 also includes sheet metal end walls or heads 14 at the opposite ends thereof which walls or heads have right angularly related inwardly directed peripheral flanges 15 corresponding in length to the width of the side walls 11 and which end walls or heads telescopically interfit within the ends of the metal shell 10 with the side walls 11 at the ends thereof overlying the flanges respectively.

In order to rigidly connect the shell 10 with the end walls so as to provide a rigid barrel structure, alternate side walls 11 are welded at their ends to the underlying flanges 15 respectively of the end walls or heads 14 as indicated by the reference character 16. Three of the remaining intermediate side walls are removably secured to the end walls or heads 14 by studs 17 engaging through openings adjacent the ends thereof with their threaded inner ends threadedly engaged in openings in the flanges 15 and with the heads of the studs disposed outermost to permit of the convenient removal thereof for loosening of the said side walls from the end walls or heads. The remaining removable side wall 11 forms the lid or closure of the barrel and for this purpose the same is provided with a handle member 18 and longitudinally extending reinforcing bars 19 at the opposite longitudinal edges thereof and intermediate transversely extending bars 20 and 21 adjacent the ends of the handle member 18 and at the opposite ends of the lid or closure.

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The tumbling barrel is provided with stub shafts 22 at the opposite ends thereof for mounting the barrel in bearings for rotation. The stub shafts 22 are secured to the end walls or heads 14 by radially arranged triangular shaped sheet metal sections 23 welded thereto above their longitudinal inner edges to project outwardly from the heads in right angular relation and with the side edges thereof welded in circumferentially spaced relation to the stub shafts respectively. The said sections radiate from the stub shafts 22 to the outer periphery of the end walls or heads with the outer ends thereof located at the juncture of adjacent flanges 12.

The tumbling barrel is provided with a wooden lining 24 which completely covers the inside face of the metal shell 10 and within which is contained the articles and compound to be tumbled. The lining 24 includes end sections 25 of octagonal shape in elevation having eight peripheral edge portions 26 which are of a length substantially equal to that of the flanges 15 of the end walls or heads 14 and against which flanges the peripheral edge portions 26 are impinged with the end sections snugly fitting against the inner faces of the end walls or heads respectively. The end sections 25 are retained in position by means of longitudinally extending lining sections 27 which engage flatly against the inner faces of the side walls 11 of the shell 10 and have their ends abutting against the end sections. The lining sections 27 are formed with inwardly converging longitudinal side edges 28 provided with inter-engaging beads and grooves 29 and 30 which hold the sections in position and prevent the abrasive mixture from seeping through the joints between the sections and from lodging between the shell 10 and the said lining sections. The lining section 27 disposed against the lid or closure section 11 of the shell 10 has its longitudinal side edges 26 formed with outwardly projecting longitudinally extending beads 31 while adjacent lining sections are provided with longitudinally extending grooves 32 for receiving the aforesaid beads 31 of the door section. The lining sections are removably secured to the side walls 11 of the shell 10 by means of headed wood screws 33 adapted to be engaged by a tool in the kerfed head thereof for removing the screws when the lining sections require replacement. The lining sections are spaced a short distance apart to permit of the shifting of the sections sidewise when the screws 33 have been withdrawn and any one of the removable side plates 11 have been removed for the purpose of examining or replacing the lining sections 27 or any one thereof or the end sections 25.

In order to render the cover or closure readily removable for charging or filling the tumbling barrel, the longitudinally extending flange 12 at one side thereof releasably engages beneath the angularly rebent outer end 35 of the flange 12 of the adjacent fixed side wall. Clamping elements 36 are provided for clamping the said cover or closure against the flanges of the end walls or heads 14. The clamping elements 36 are apertured at one end thereof through which protrudes the outer threaded ends 37 of studs 38 secured to one of the adjacent fixed side walls with the opposite bowed ends of said elements engaging against the upper face of the cover or closure and impinged thereagainst by the tightening of the nuts 39 threadedly engaging the threaded ends 37. When the clamping elements 36 are released the cover or closure may be shifted

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laterally so as to free the bead 31 on one side thereof from the groove 32 in the adjacent lining section whereby the cover or closure together with the lining section may be swung out of engagement with the angularly rebent outer end 35.

In the form of the invention illustrated in Figs. 6 and 7 of the drawings, the tumbling barrel includes a metal shell 41 similar to the metal shell 10 in the previous form of the invention and which consists of angularly related longitudinally extending side walls 42. Alternate side walls 42 are welded or otherwise permanently affixed to the inwardly directed flanges 43 of the end walls or heads 44. The side walls intermediate the permanently affixed side walls are removably secured in position to permit of the removal and replacement of a lining affixed to the inside face of the shell. One of the removable side walls 42 constitutes the cover or closure for the barrel which cover or closure has one longitudinal edge thereof releasably engaging beneath the rebent end 45 of the flange 46 of the adjacent fixed side wall and is removably clamped in position on the flanges 43 of the end walls or heads 44 by means of clamping elements 47 similar to the clamping elements 36 in the previous form of the invention. The remaining removable side walls 42 are secured in position between the fixed side walls by means of sheet metal screws 48 engaging through threaded apertures in the flanges 46 and by means of threaded studs 49 engaging through openings adjacent the opposite ends thereof with their inner ends threadedly engaged in openings in the flanges 43 of the end walls or heads 44.

In this form of the invention, the metal shell 41 is provided with a lining of flexible and compressible rubber composition. The lining includes end sections 50 vulcanized to and covering the entire inner faces of the end walls or heads 44 together with the flanges 43 thereof. The lining also includes longitudinally extending lining sections 51 which are vulcanized to the inner faces of the fixed and removable side walls and to the cover or closure. These side wall sections are formed with inwardly converging longitudinally extending side edges 52 which are arranged with adjacent side edges disposed in abutting engagement to provide tight joints between adjacent sections.

Constructed in this manner, the removable side walls together with the cover or closure may be readily removed for replacing the lining. The removable side walls being alternately spaced with reference to the fixed side walls permits of the vulcanizing of the rubber lining to the end walls and the fixed side walls of the metal shell.

Instead of vulcanizing the lining sections 51 to the side walls 42 as illustrated in Figs. 6 and 7 of the drawings, the lining sections may be in the form shown in Fig. 8 consisting of similar sections 53 disposed in overlying relation with the side walls 54 of the barrel and having the longitudinal side edge portions 55 of said lining sections extending outwardly between the flanges 56 of the side walls 54 with the side walls and lining sections secured together in barrel formation by means of sheet metal screws 57 extending through the flanges 56 and through the outwardly projecting portions 55 of the lining sections 53.

In the form of the invention illustrated in Figs. 1 to 5 inclusive of the drawings, the flanges 15 of the end walls or heads 14 and the flanges 43 of the end walls or heads 44 in the form of the invention shown in Figs. 6 and 7 thereof are

preferably welded together at their side edges so

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that said flanges form a continuous inwardly directed rim about the edges of the end walls or heads.

What is claimed is:

1. In a tumbling barrel, an open-ended tubular metallic shell having contiguous angularly disposed portions defining side walls, said walls having outwardly projecting flanges at the longitudinal edges thereof with the flanges of each wall disposed in confronting relation with a flange of the adjacent walls respectively, flanged metallic heads fitted within the opposite ends of said tubular shell with the flanges thereof directed inwardly and rigidly secured to alternately spaced side walls of said shell to thereby provide a rigid barrel structure, means removably securing the remaining alternate side walls of said shell to the flanges of said heads and to the flanges of the rigidly secured side walls to permit of access to the barrel by removing any of said removable side walls, and a sectional lining arranged within the barrel adapted to be removed and replaced through openings in the tubular shell obtained by removing said removable side walls.

2. In a tumbling barrel, an open-ended tubular metallic shell having contiguous angularly disposed portions defining side walls, flanged metallic heads fitted within the opposite ends of said tubular shell with the flanges thereof disposed inwardly, a plurality of said side walls being rigidly affixed to said flanges to provide a rigid barrel structure and a plurality of said side walls being removably secured to said flanges to permit of access to the barrel, and a sectional wooden lining arranged within the barrel including end sections disposed against the metallic heads and side wall sections having longitudinally extending tongue and groove interfitted engagement for preventing the entrance of tumbling material through the joints between adjacent side wall sections and said side wall sections being shiftable relative to adjacent side walls to permit of the removal thereof through openings in the tubular shell obtained when the removable side walls are displaced.

3. In a tumbling barrel, an open-ended tubular metallic shell having contiguous angularly disposed portions defining side walls, said walls having outwardly projecting flanges at the longitudinal edges thereof with the flanges of each wall disposed in confronting relation with a flange of the adjacent walls respectively, flanged metallic heads fitted within the opposite ends of said tubular shell with the flanges thereof directed inwardly and rigidly secured to alternately

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spaced side walls of said shell to thereby provide a rigid barrel structure, means removably securing the remaining alternate side walls of said shell to the flanges of said heads and to the flanges of the rigidly secured side walls to permit of access to the barrel by removing any of said removable side walls, and a sectional wooden lining arranged within the barrel including end sections disposed against the metallic heads and side wall sections having longitudinally extending interfitted engagement for preventing the entrance of tumbling material through the joints between adjacent side wall sections and said side wall sections being shiftable relative to adjacent side walls to permit of the removal thereof through openings in the tubular shell obtained when the removable side walls are displaced.

4. In a tumbling barrel, an open-ended tubular metallic shell having contiguous angularly disposed portions defining side walls, said walls having outwardly projecting flanges at the longitudinal edges thereof with the flanges of each wall disposed in confronting relation with a flange of the adjacent walls respectively, flanged metallic heads fitted within the opposite ends of said tubular shell and rigidly secured to alternately spaced side walls of said shell to thereby provide a rigid barrel structure, means releasably securing the remaining side walls in position between said alternately spaced side walls, and a sectional flexible resilient lining arranged within the barrel and including side wall sections having longitudinal side edge portions extending outwardly between the flanges of the side walls of the shell for securing the lining sections against the side walls of the shell and providing tight joints between adjacent sections.

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