Jan. 7, 1941. E. J. KEENOY 2,227,905

TUMBLING BARREL LINING

Filed Sept. 26, 1940

Fig. 1.

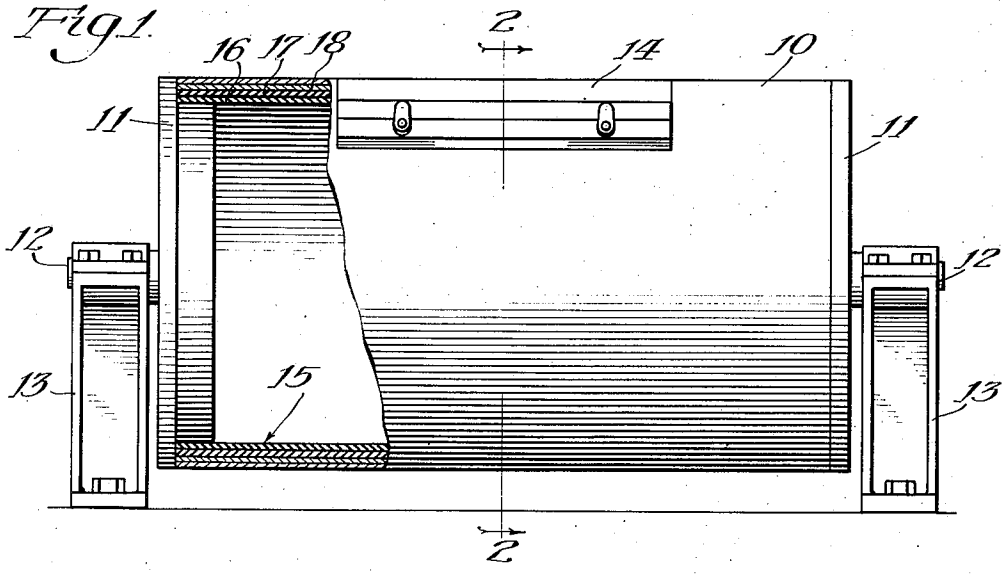


Fig. 2.

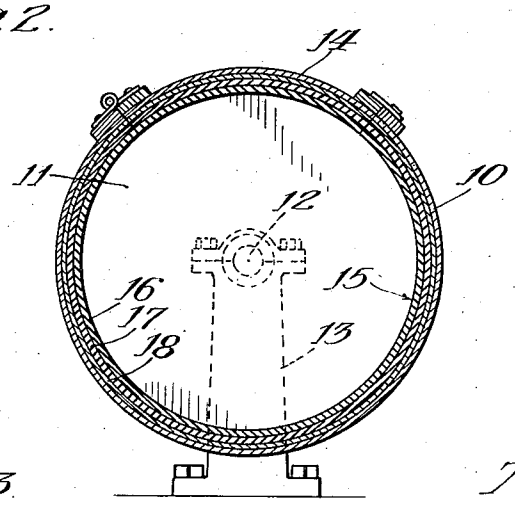


Fig. 3

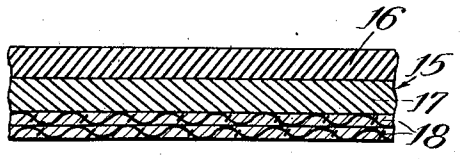
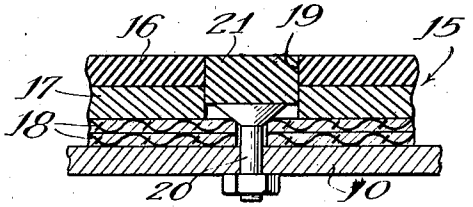


Fig. 4.



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TUMBLING BARREL LINING

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6 Claims. (Cl. 51—164)

This invention relates to a new and improved lining primarily adapted for use in tumbling barrels such as are used for tumbling castings and where generally no other grinding elements are added and the castings merely tumble on themselves.

It is common foundry practice to tumble castings to take off fins, etc., and this action is very destructive of the tumbling barrels. Much work has been done on these barrels to protect them by means of various linings, including rubber linings of various sorts, although heretofore no fully satisfactory construction has been developed. For example, it is recognized that a rubber lining for this purpose must be of a high grade abrasion resistant rubber stock, yet such high grade compounds with the greatest abrasion resistant value have been found to be too stiff and are cut quite readily becoming destroyed before they have outlived their usefulness.

It is therefore an object of this invention to provide a tumbling barrel lining which has a soft, tough base of resilient rubber to absorb the shock of the blows of the material being tumbled in the barrel, and yet withal has a wearing face of high grade abrasion resisting stock to the end that a cushion is provided for the abrasive wearing surface to prevent the cutting thereof and to increase its abrasive resistance and period of usefulness.

It is also an object of this invention to provide a rubber tumbling barrel lining having a wearing surface of good abrasion value and a soft resilient cushioning base all in a unitary construction, and which may readily and economically be installed in a tumbling barrel.

Other objects and advantages will be apparent from a consideration of the following specification and drawing, wherein:

Fig. 1 is a diagrammatic elevation of a tumbling barrel, with parts broken away and parts in section, illustrating my new lining.

Fig. 2 is a transverse section on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary section of a tumbling barrel lining illustrating my invention.

Fig. 4 is a fragmentary section of a tumbling barrel body and my lining, illustrating attachment means.

Referring to the drawing, the reference numeral 10 indicates a cylindrical tumbling barrel body for the purposes of illustration, although it will be understood that my invention is applicable to barrels of other shapes, such as hexagonal, octagonal, etc., and comprises heads 11 provided with trunnions 12 journaled on the standards 13. For the purpose of illustration the barrel 10 is provided with a hinged panel 14, although it will be understood that sliding panels may be utilized, or that doors may be provided in the ends of the barrel instead of in the periphery.

The inside of the barrel 10 is provided with my lining generally indicated at 15, and the ends of the barrel may or may not be lined. As illustrated in greater detail in Fig. 3, this lining comprises a wearing surface layer 16 of firm, abrasion and cutting resistant rubber stock, a cushioning layer 17 of soft, tough, resilient rubber compound, and preferably a backing formed of one or more plies 18 of woven duck, the whole being vulcanized together to provide an integral unitary construction.

For securing the lining 15 within the tumbling barrel 10, the lining 15 is provided with a requisite number of counterbored holes 19 which are drilled into the lining after vulcanization thereof, although they can be molded into the lining if desired. The lining may thereafter be joined to the barrel by suitable bolts such as the bucket elevator bolt 20, after which the aperture in the lining is filled by cementing in a rubber plug 21 over the bolt. In attaching the lining to the barrel, the duck backing thereof may suitably be cemented to the metal barrel to prevent sand and scale from working under the lining.

Each of the portions 16 and 17 of the lining is generally of a thickness of approximately from ⅛ to ¼ of an inch. Generally both portions 16 and 17, are of equal thickness. However, at times it is desirable to have them of different thickness. For example, the portion 16 may desirably be of greater thickness than the portion 17, and the relative thicknesses of the two layers may depend somewhat upon the size of the casting being treated, the type of cleaning and whether the cleaning is done with sand, split steel shot, or other cleaners. For example, if the castings should be large and rather heavy, creating a great deal of impact with possibly less abrasion to the lining, then the cushioning layer 17 should be thicker to give under these blows and the abrasion resisting wearing surface 16 need not be as thick to stand the abrasion. Thus it will be seen that the proportions or relative thicknesses of the two component rubber layers can be varied to suit the requirements for the particular type of work undertaken.

It will thus be seen that the lining may be made in large unitary lengths, and cut to suit requirements or portions of the tumbler barrel

which are desired to be covered or to replace other or old linings in existing tumbling barrel installations, and that the lining may be readily and quickly installed by merely providing it with suitably counterbored holes and cementing and bolting it in place, and thus provides a unitary tumbling barrel lining that will readily absorb the shock of the blows of the material being tumbled in the barrel while providing an abrasive wearing surface of good resistance, the whole having a long and normally wearing life.

I claim as my invention:

1. An integral lining of the class described comprising a wearing layer formed of firm, abrasion resistant rubber compound and a cushioning layer formed of relatively soft, tough, resilient rubber compound.

2. A tumbling barrel lining of integral composite structure comprising a wearing layer formed of firm, abrasion resistant rubber compound and a cushioning layer formed of relatively soft, tough, resilient rubber compound.

3. A tumbling barrel lining comprising a wearing layer formed of a firm, abrasion resistant rubber compound, a cushioning layer formed of relatively soft, tough, resilient rubber compound integrally joined thereto, and a backing of woven fabric integrally joined to said cushioning layer.

4. A tumbling lining comprising a wearing layer formed of firm, abrasion resistant rubber compound, a cushioning layer formed of relatively soft, tough, resilient rubber compound, and a backing layer formed of woven textile fabric, the said layers being integrally vulcanized to provide a unitary composite structure.

5. The combination with a tumbling barrel of a lining therefor comprising a wearing layer formed of firm, abrasion resistant rubber compound and a shock absorbing cushioning layer formed of relatively soft, tough, resilient rubber compound, the said layers being integrally joined.

6. The combination with a tumbling barrel of a lining therefor comprising a wearing layer formed of firm, abrasion resistant rubber compound, a cushioning layer formed of relatively soft, tough, resilient rubber compound, and a backing layer formed of woven textile fabric, the said layers being vulcanized together in the form of a laminated unitary composite.

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