

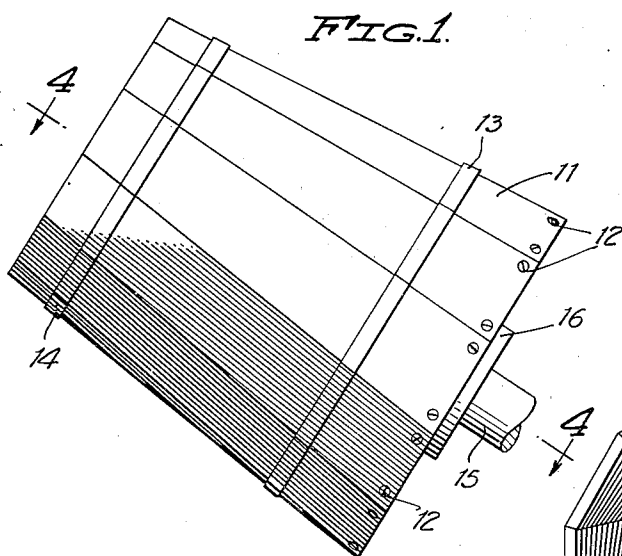
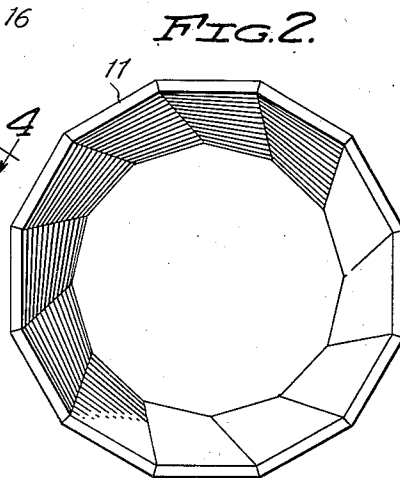
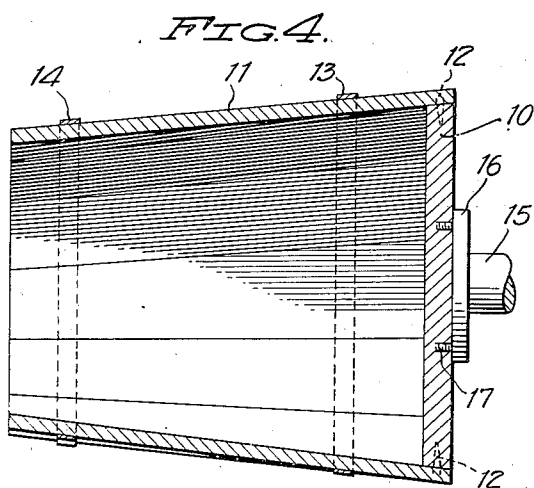
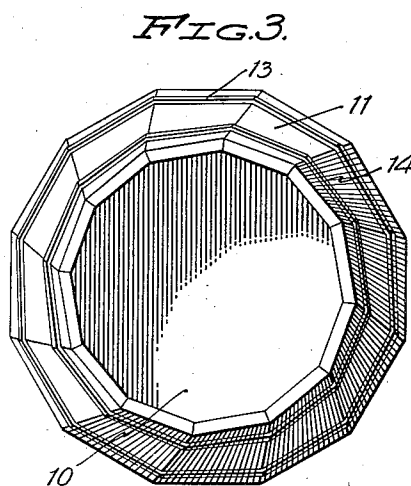
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2,394,450

TUMBLING BARREL

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TUMBLING BARREL

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2 Claims. (Cl. 51-164)

This invention relates to tumbling barrels of the type in which the barrel is mounted on the end of a rotary drive shaft or stud which is raised to an upwardly-inclined position during the working part of the cycle and tilted to a downwardly-inclined position to discharge the finished work.

Barrels of the type contemplated are frequently made in tapered form, larger at the rear or bottom and smaller at the outer or discharge end. To facilitate the sliding and tumbling motion of the work as the barrel slowly rotates on its upwardly-inclined axis, these barrels have commonly been constructed of polygonal cross section, or, in other words, of frusto-pyramidal forms having suitable numbers of sides as, for example, hexagonal or octagonal. The flat sides thus provided form troughs which have a tendency to lift the work at the rising side of the barrel. In the tapered form of barrel, these troughs are longitudinally inclined toward the rear. As the barrel rotates, the work is continually being removed from underneath the pile and permitted to fall upon or slide over the top of the pile, while at the same time it has a certain amount of inward longitudinal motion due to the inclination of the troughs. Any abrasive or other material present for performing, for example, a cleaning, smoothing or polishing function on the work will, of course, partake of this same motion.

An important object of my invention is to improve the motion of the material within the barrel. This I accomplish by making the sides of the barrel in the form of trapezoids in which the inner and outer ends are parallel to each other and the longitudinal sides are inclined oppositely and at unequal angles toward the median longitudinal line. The barrel constructed with such trapezoidal units has the appearance of a twisted frusto-pyramidal figure in which the one end has been slightly rotated with respect to the other. Such a change in the shape of the barrel brings about a marked improvement upon the movement of the work as the barrel rotates. This will be better understood by reference to an example of the barrel construction illustrated in the accompanying drawing.

In said drawing—

Figure 1 is a side elevation of the barrel in its upwardly-inclined working position.

Figure 2 is an interior view of the barrel as seen from the rear, with the bottom wall or head removed.

Figure 3 is a front elevation of the barrel in horizontal position, and

Figure 4 is a vertical longitudinal section of the barrel.

Referring to said drawing, the barrel is shown as comprising a rear wall or head 10 around which are disposed a continuous series of contiguous trapezoidal panels 11 fastened to the head 10 as by screws 12 and banded together by two or more rings or hoops 13, 14.

The barrel is intended to be rigidly secured to a drive shaft or stud 15 by means of a flange or plate 16 which is fastened to the barrel head 10 by screws or bolts 17. The plate 16 is integral with or fixedly secured to the end of the driving stud 15 either permanently or removably. As my invention is more particularly concerned with the barrel construction per se, rather than the driving mechanism, it may be assumed that the drive shaft or stud 15 represents any of the conventional driving connections of standard machines already known.

In the operation of the barrel, the drive shaft is raised so that the barrel rotates on an upwardly-inclined axis, as illustrated in Figure 1. The material (work pieces and treating materials) may be introduced into the barrel in known manner, and as the barrel rotates it will be carried partly up the rising side of the barrel and allowed to fall or roll back in a transverse direction, while at the same time moving inward or rearward due to the inclination of the tapered wall. It will be noted, by reference to Figure 2, that the adjacent panels or wall sections form at each line of contact or junction a trough with inclined sides terminating at the bottom in a line which not only tilts inward or rearward, but at the same time slants transversely with respect to the vertical plane in which the barrel axis lies. The present example shows this line slanting to the left as it extends from front to rear at the lower portion of the barrel, and of course in the opposite direction at the upper portion of the barrel. These directions could be reversed without departing from the principle of the invention, but this inclination or slant bears a very definite and important relation to the direction of rotation of

the barrel. If, in the embodiment shown, we assume the barrel to be rotating clockwise, as viewed in Figure 3, this transverse inclination of what I may term the trough axis to the barrel axis increases the tendency of the material to feed inward. The rubbing and sliding motion of the particles against each other and against any processing material is thereby greatly enhanced, with consequent increase in the efficiency of operation and economy of time in securing the desired result. On the other hand, the reaction of the work to this inclination of the trough axis is reversed when the direction of rotation is reversed. Hence, with the barrel tilted downward for discharging the work, the direction of rotation is changed from clockwise to counterclockwise, in the example shown, and the reaction of the work to the inclination of the trough axis in this direction of rotation is outward, so that the discharge of the work is facilitated.

In the above example I have described a construction in which the barrel wall is formed of a peripheral series of separate trapezoidal panels

secured in juxtaposed relation by screws passing into a wall or head at the rear and by bands or hoops extending around them. The invention, however, is not limited to any particular method of assembly or construction, but embraces the broad principle disclosed, whether the troughs with inclined axes are provided by separate trapezoidal panels joined together or by a unitary or integral wall structure.

10 I claim:

15 1. A tumbling barrel comprising a peripheral series of contiguous trapezoidal elements together forming a wall in which the junctions of adjacent elements provide troughs whose axes are transversely inclined to the barrel axis.

20 2. A tumbling barrel comprising a peripheral series of trapezoidal panels secured together in contiguous relation and constituting a distorted frusto-pyramidal body tapering to an open mouth at the forward end, the junctions of adjacent panels forming troughs with axes transversely inclined to the barrel axis.

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