V. G. BECKER.

RUMBLE MILL.

APPLICATION FILED SEPT. 21, 1918.

1,331,739.

Patented Feb. 24, 1920.

4 SHEETS—SHEET 1.

Fig. 1.

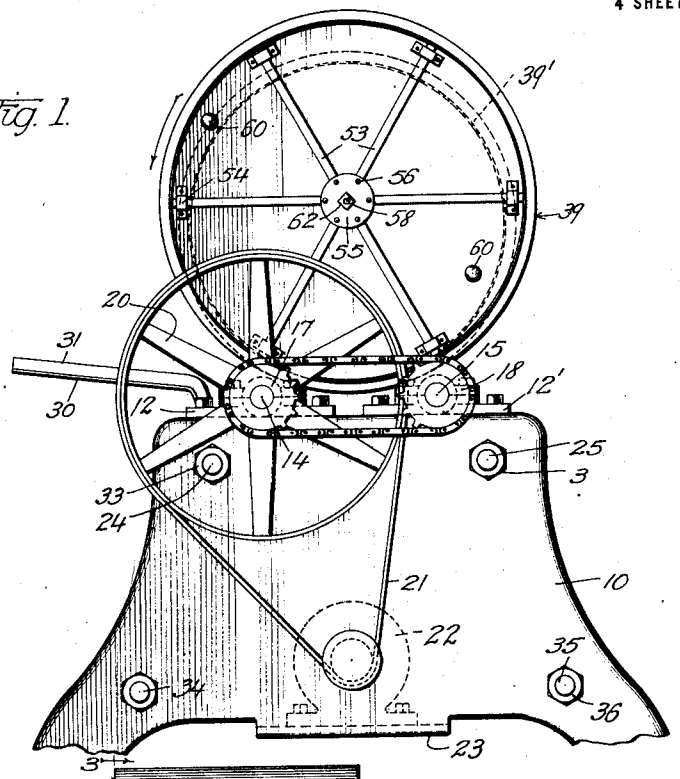
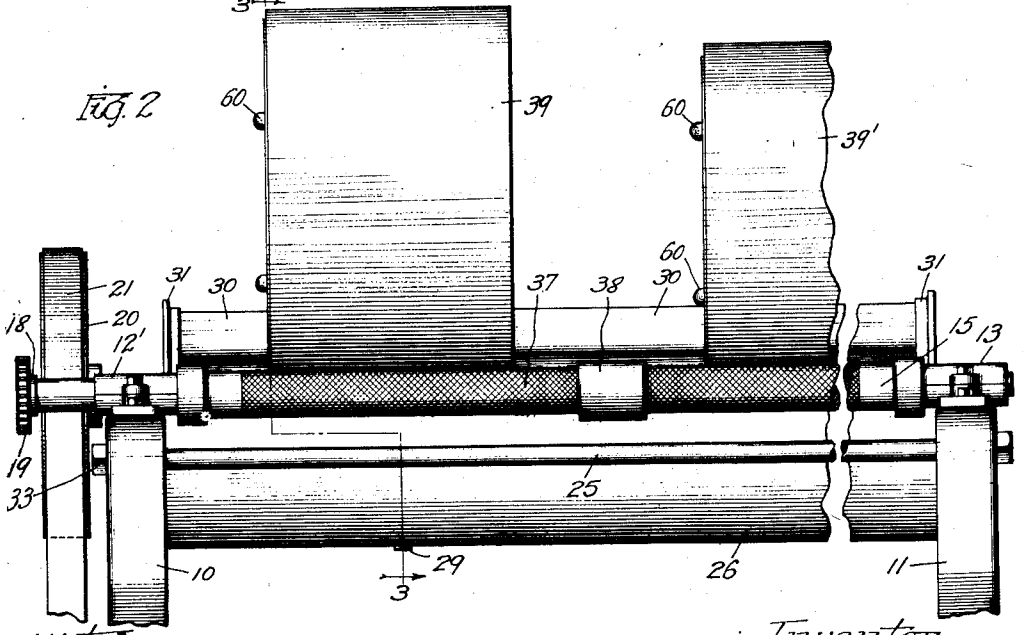


Fig. 2.



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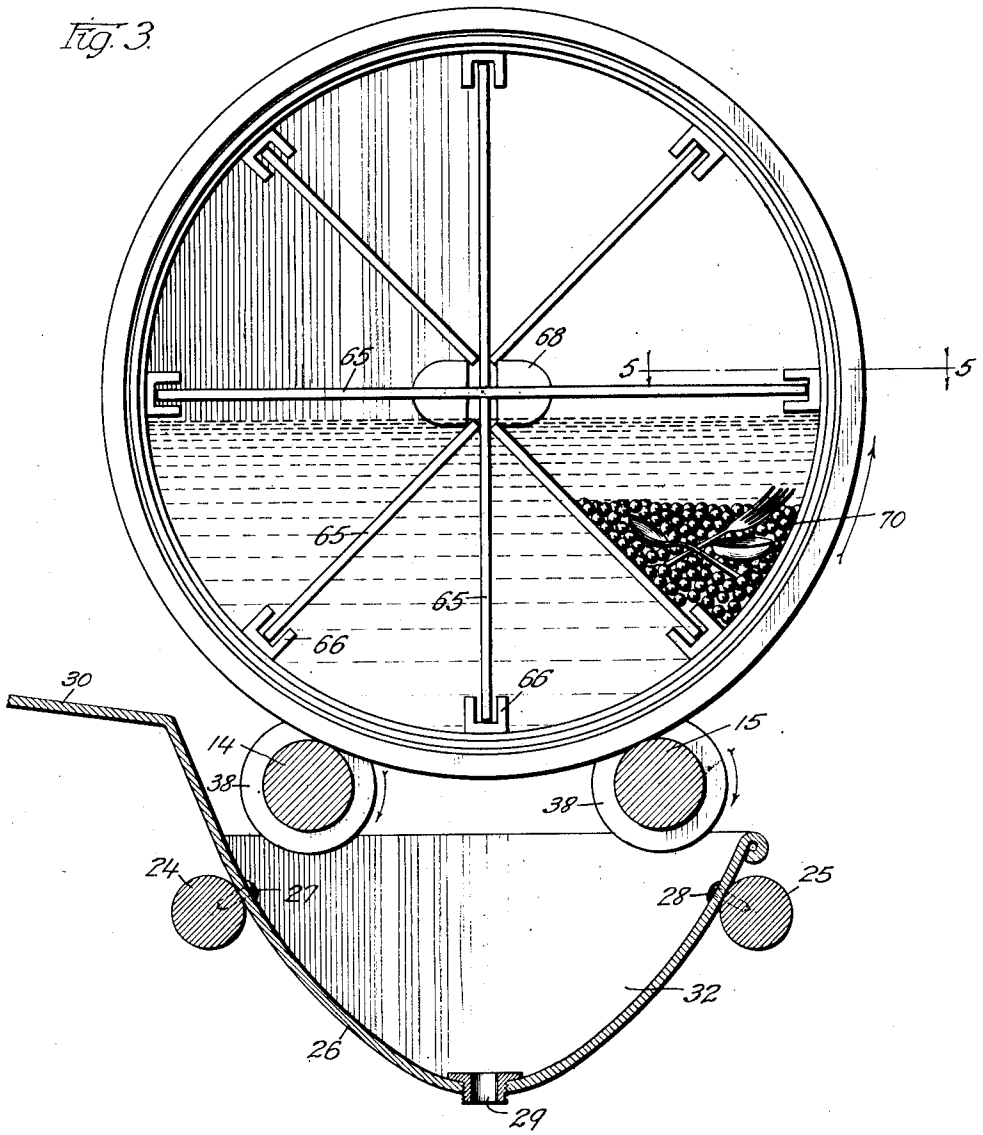
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4 SHEETS—SHEET 2.

Fig. 3.



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4 SHEETS—SHEET 3.

Fig. 4.

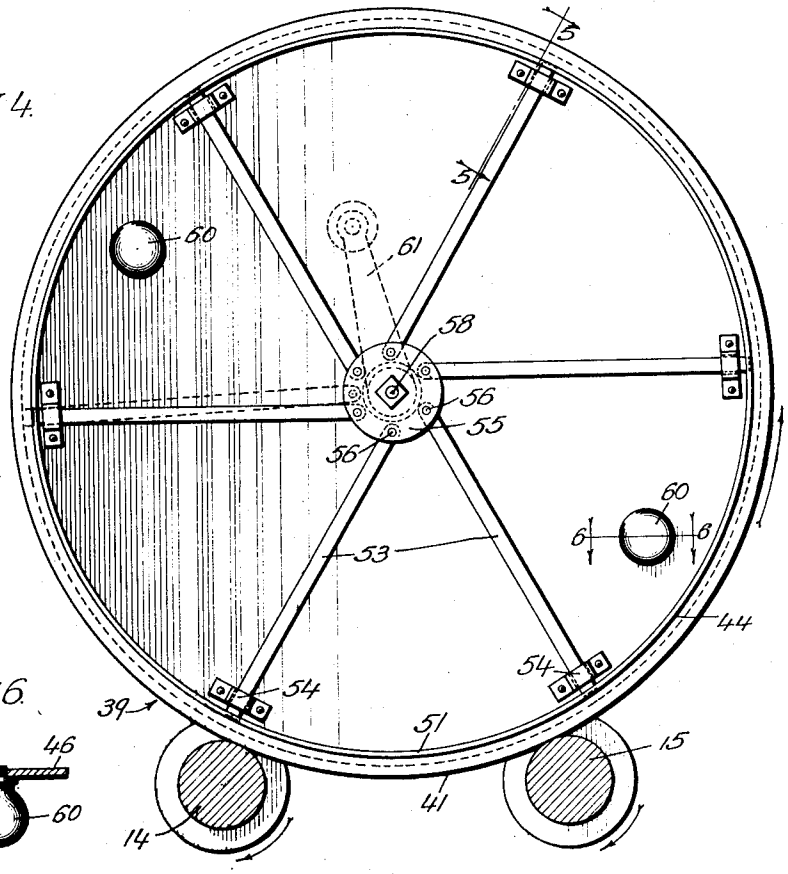
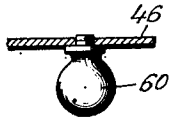


Fig. 6.



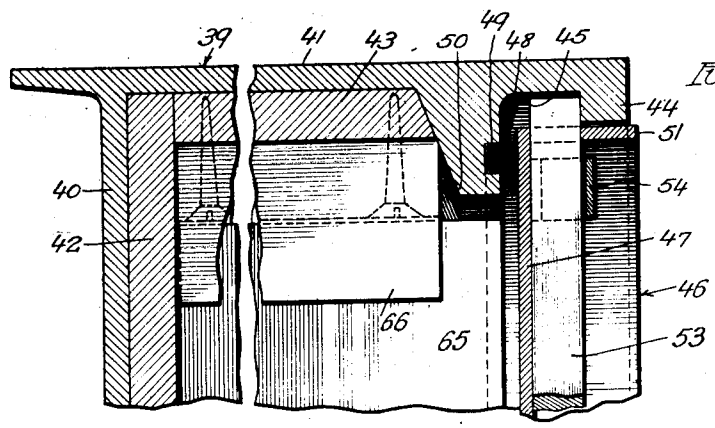


Fig. 5.

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4 SHEETS—SHEET 4.

Fig. 7.

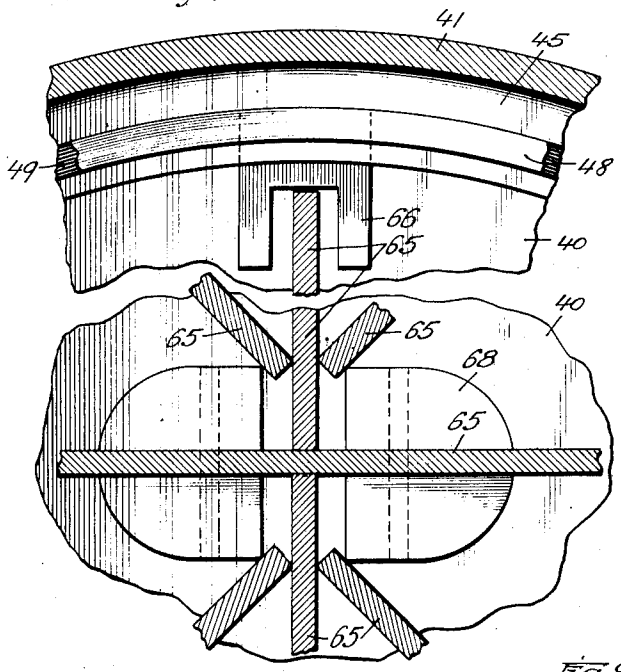


Fig. 9.

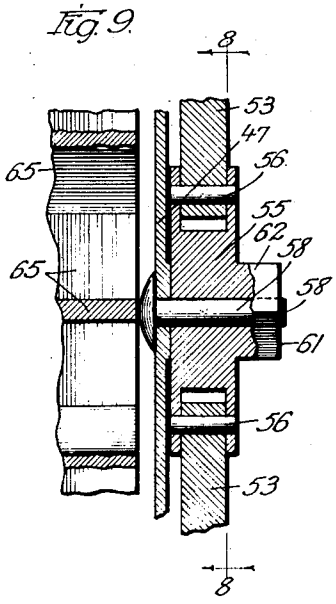
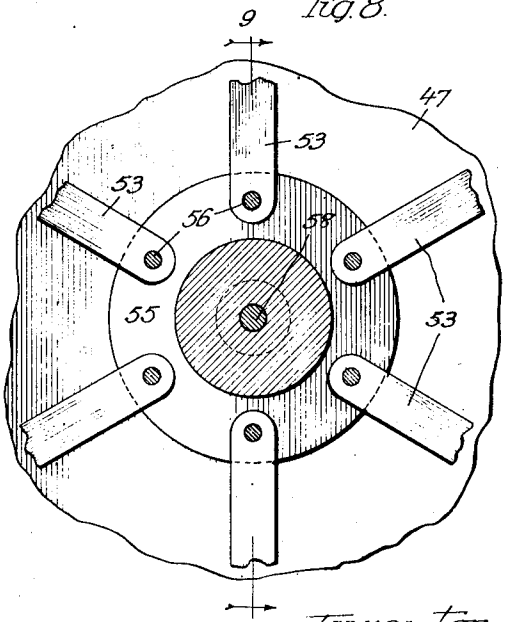


Fig. 8.



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UNITED STATES PATENT OFFICE.

VALENTINE GEORGE BECKER, OF ST. PAUL, MINNESOTA, ASSIGNOR TO CHARLES A. ALLEN, JR., OF LA GRANGE, ILLINOIS.

RUMBLE-MILL.

1,331,739. Specification of Letters Patent. Patented Feb. 24, 1920.

Application filed September 21, 1918. Serial No. 255,127.

To all whom it may concern:

Be it known that I, VALENTINE G. BECKER, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Rumble-Mills, of which the following is a specification.

My invention relates to improvements in rumble mills for cleaning and polishing metal articles, or the like.

One of the objects of my invention is to provide a machine, or mill, capable of rotating a plurality of separable drums, from which one or more of the drums may be removed without disturbing the others thereon, and another object of my invention is to improve the construction of the drums to the end that each drum may be divided, separably, on radial lines, into a number of angular compartments to prevent the article to be cleansed and polished, from tumbling about too violently while the polishing and cleansing agencies may freely be moved around the relatively stationary articles to be polished, by the combined effect of gravity and centrifugal action, due to the speed at which the drum is revolved.

And still another object of my invention is to construct a machine in such manner that the drums, when heavily loaded, may readily and easily be placed on the machine or mill, and removed therefrom by one person, the machine contributing and assisting in the operation of emplacement and removal of said drums.

Other, further and more specific objects of my invention will become at once obvious to persons skilled in the art from a consideration of the following description, when taken in conjunction with the accompanying drawings, wherein:—

Figure 1 is an end elevation of the mill, the lower part being broken away.

Fig. 2 is a side elevation of substantially the same parts.

Fig. 3 is an enlarged transverse section taken on line 3—3 of Fig. 2.

Fig. 4 is an end view of one of the drums.

Fig. 5 is an enlarged fragmentary section of the drum taken on line 5—5 of Fig. 4.

Fig. 6 is a section through the drum closure on line 6—6 of Fig. 4.

Fig. 7 is an enlarged, broken away section through the drum showing the manner of attaching the partitions therein.

Fig. 8 is a section taken on line 8—8 of Fig. 9 and showing the operating, closure-locking means.

Fig. 9 is a section taken on line 9—9 of Fig. 8.

In all the views the same reference characters are employed to indicate similar parts.

While my rumble mill is especially well qualified to restore the polish to treated articles, by effect of attrition, by relatively movable contacting agencies in the presence of a suitable detergent or menstruum, it is also adapted for use with dry abrasives, or for washing alone.

The particular use for which my mill is designed is to remove soil and the oxidized, tarnished or corrosive film from the surfaces of silver plates, silver containers, and other such utensils used in clubs, hotels, restaurants, and the like, thereby restoring the original brilliant luster and polish to such articles without removing, materially, any of the component metal or plating.

In the preferred embodiment of my invention, the mill comprises end frame members 10 and 11, each provided with a pair of spaced apart shaft bearings 12, 12′ and 13, 13′, respectively, spaced apart, as shown in Fig. 1, for the constantly rotatable knurled shafts 14 and 15. Each of these shafts is provided with a projecting end carrying sprocket wheels 17 and 18, respectively, of practically the same diameter, and connected together by a drive chain 19. On the shaft 14, there is a drive wheel 20, driven by a belt 21 from an electric motor 22, the latter being mounted upon a shelf or bracket 23 secured to the end frame member 10. By this means the shafts 14 and 15 are driven at the same speed in the direction shown in Fig. 3 by the respective arrows.

The end frames, 10 and 11, are tied together by rods 24 and 25.

Extending between the frame members and connected to the rods 24 and 25 is a trough-like structure 26, of sheet metal, secured to the rods 24 and 25 by the screws 27 and 28 and provided at a suitable point, with a drain opening 29. The trough-like structure is extended laterally into an apron 30, which is located in a horizontal plane

substantially parallel with a plane containing the upper surfaces of the shafts 14 and 15. The apron 30 is provided on each of its ends with a flanged margin 31, to prevent the drums from rolling off either end of the apron, when they are moved from the mill onto the apron or from the apron onto the mill. The trough is also provided with end plates 32 which abut against the respective frame members 10 and 11, the trough thereby serving as a means for spacing the frame members apart when the threaded rods 24 and 25 are tightened by the nut 33. Other rods 34 and 35, having nuts 36, are also employed with suitable spacing members for holding the frame members 10 and 11 in their spaced apart relation.

The shafts 14 and 15 are each preferably knurled, as at 37, to give a better tractive surface, and spacing sleeves 38 are freely movable on one or both of the shafts so as to maintain the drums 39 and 39′ in spaced relation and sufficiently separated from each other, that they never come in contact, whereby either drum may be separately removed without interference by the other drum.

The drum proper is preferably made of a casting having a fixed end or head 40, and a peripheral part 41. The periphery 41, as shown in Figs. 3 and 4, has bearing upon the rotatable shafts 14 and 15, whereby the drum may be rotated.

The drum is preferably lined interiorly with wood, consisting of a disk member 42 and a circumferentially extending wooden band member 43. The open end of the drum is provided on its end surface with a flange 44 extending inwardly from the part 41 to provide an annular space 45 whereby to secure the cover or closure 46. A closure 46, is provided with a back plate 47, which is brought forcibly into connection with a yielding annular gasket or packing ring 48, preferably of soft rubber, which is inserted in an annular groove 49 made in an inwardly projecting flange 50 of the outer casing of the drum. The closure 46 is provided with an outwardly extending marginal rim 51. This rim is provided with a series of spaced apart openings through which project radially disposed bolts 53. The outer ends of the bolts also pass through clips 54, to hold them in place when they are withdrawn from the openings in the rim 51. The inner ends of the bolts are loosely connected to a rotatable disk 55, as at 56. The disk 55 is pivoted to the back plate 47, of the closure, by a bolt 58. When the disk 55 is rotated, into the position shown in Fig. 4, the bolts 53 are thereby withdrawn from under the flange 44 of the drum, and the cover, or closure may be removed by grasping the knobs 60 and lifting it from the drum. A crank arm 61, shown in dotted lines in Fig. 4, is a means whereby the disk 55 may conveniently be rotated. The crank arm is a substantial extension of the hub 62, shown in Fig. 9.

The interior of the drum is divided into a series of angularly constructed compartments by wooden partitions forming radially disposed walls 65, secured at their outer ends in wooden cleats 66 that are fixed to the inner wooden wall of the drum.

The arrangement is such that the selected partitions 65 may be removed to provide larger compartments than are maintained when a partition is located in each of the cleats 66. The centrally disposed block 68 receives the wooden partitions and holds their ends in substantially axial position. The object of dividing the interior of the drum, in the manner described, is to be able to hold the article to be polished in place so that it will not pass from one side of the diameter to the other, and thereby tumble about, and become bruised or bent, when the drum is rotated, but will remain in substantially a fixed position near the periphery of the drum while the polishing agencies, shown as steel balls 70, in a suitable liquid, in Fig. 3, will be projected by the joint effect of gravity and centrifugal motion, into contact with all of the exposed inner and outer surfaces of the object to be cleansed and polished.

In the use of my device, a number of partitions 65 may be placed inside of the drum, as the size and character of the articles to be polished would warrant, or require, after which the articles are placed in the respective compartments so that they may not move inwardly toward the axis of the drum to any great extent, as the drum is being revolved, then a number of steel balls, or other similar agencies may be placed inside of the respective compartments with the article or articles to be treated, after which the drum is partly filled with a solution of soft water and some aqueous soap. The rotation of the drum will cause the balls in the separated compartments, to be moved around the articles to be polished, and in the presence of the soapy solution, all of the accumulated soil, tarnish or other coating that previously had overlain the polished surface of the article to be cleansed and polished will be removed. The arrangement of the cover is such that a practically complete seal is made in its contact with the rubber packing or ring 48 with the rear surface of plate 47 of the closure and the bolts 53 having their outer ends underlying the flange 44 in the body part of the drum, serve to hold the cover in substantially a hermetically sealed condition with reference to the body part of the drum, thereby retaining

the water in the drum and causing a washing and polishing action by the water and balls upon the objects to be operated upon as the drum is rotated. Openings may be made in the partitions 65 so that the water may pass through these openings as the drum is revolved, thereby causing a more positive and extended agitation of the water in and around the articles operated upon. The openings between the partitions, however, are not sufficiently large to permit the balls to pass therethrough and therefore each of the compartments is supplied with its proper quota of balls to perform the polishing effect to the best advantage.

When the drum is taken from the mill, the roller 14 will rotate the drum in proper direction so that it may easily be moved upon the apron 30, without much effort being exerted by the operator, the shaft 14 while rotating assists the operator also in placing the drum upon the mill.

While I have herein shown a single embodiment of my invention for the purpose of clear disclosure, it will become manifest to persons skilled in the art, that changes may be made in the configuration and disposition of the parts within the scope of the appended claims.

Having described my invention, what I claim is:—

1. In a mill of the character described, two rotatable, parallel spaced apart shafts; a support for said shafts, comprising two end frame members carrying bearings for said shafts; rods securing the end members together, below the shafts; a trough extending between the end members below said shafts to catch the drip from the drums; means for driving said shafts constantly in the same direction, carried by one of said frame members, and one or more rumble drums supported on and rotated by said shafts by peripheral contact therewith.

2. In a mill of the character described, two rotatable parallel spaced apart shafts; a support for said shafts comprising two end frame members carrying bearings for said shafts; rods for securing the end members together, below the shafts; a trough below the shafts extending between the end members and supported by the rods; an apron extending laterally from the upper edge of the trough and in substantially the same horizontal plane as the shafts to receive the drums; means for driving said shafts constantly in the same direction to rotate the drum, carried by one of said frame members; one or more rumble drums supported on and rotated by said shafts by peripheral contact therewith and drum spacing collars slidably mounted on either shaft to maintain the drums in separated relation.

3. A machine of the character described having in combinative association, two side frame members; tie rods connecting the members together; two spaced apart parallel shafts rotatably supported on said end frame members; a geared connection between said shafts to rotate them in the same direction; a plurality of drums, having their perimeters in contact with said shafts and rotated at a reduced speed thereby; means to drive the shafts; shiftable collars on the shafts to space the drums apart; and a trough under said shafts having a flat lateral extension in a substantially horizontal plane to afford a support for said drums when removed from said shafts.

In testimony whereof I hereunto subscribe my name.

VALENTINE GEORGE BECKER.