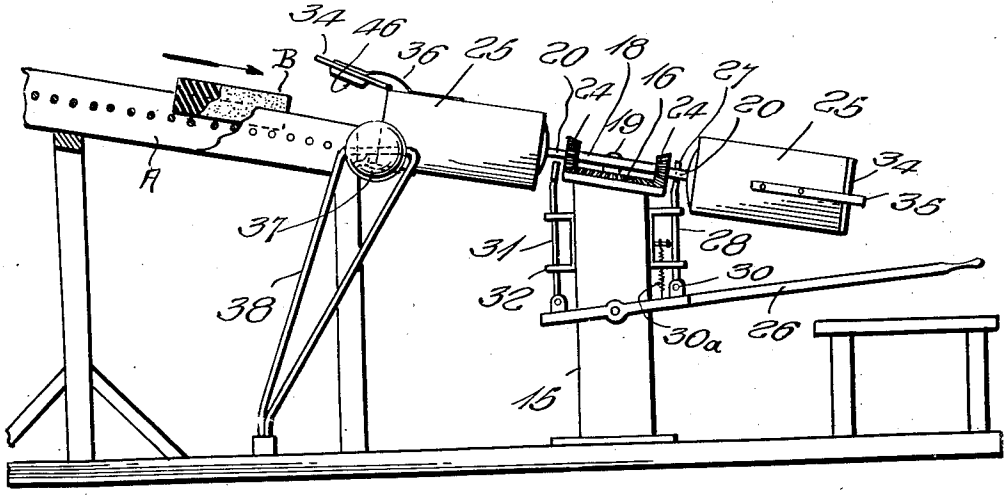
March 6, 1945. A. J. GUTHRIE 2,370,955

RUBBER DUSTING APPARATUS

Filed Nov. 13, 1943 3 Sheets-Sheet 1

FIG. 1



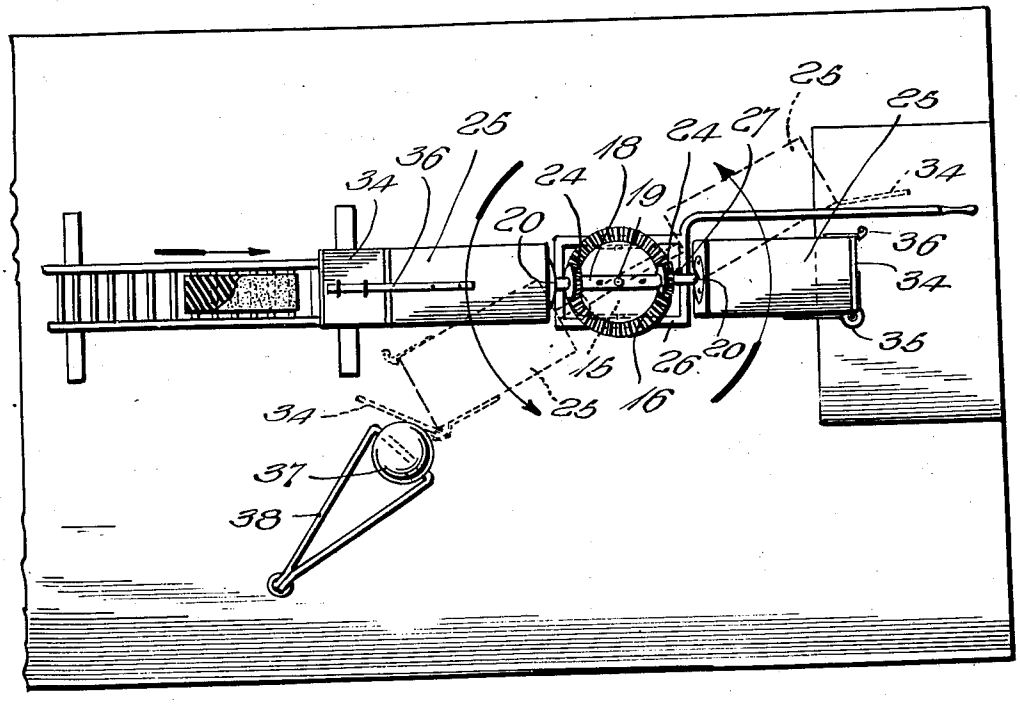


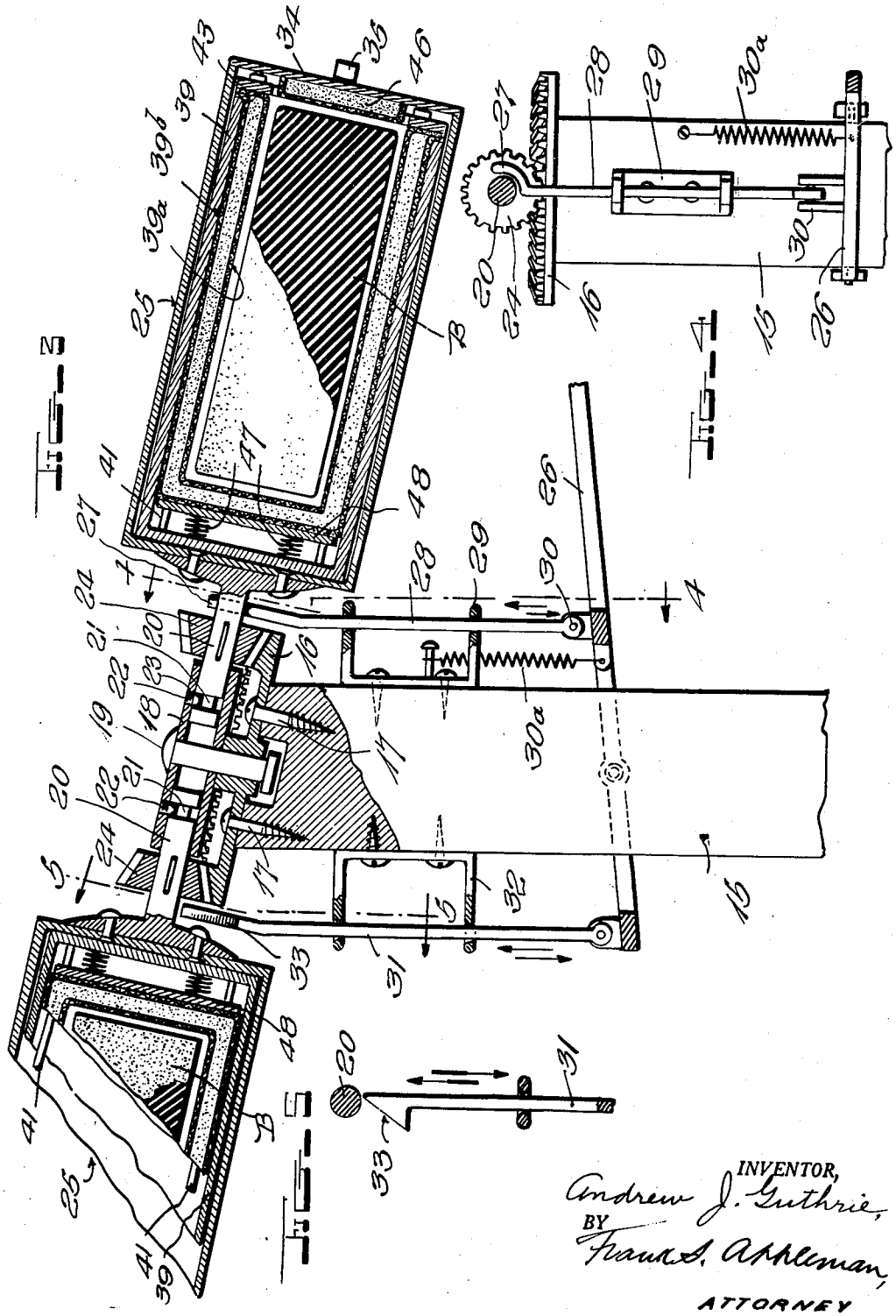
FIG. 2

INVENTOR,
Andrew J. Guthrie,
BY
Frank S. Appleman
ATTORNEY

March 6, 1945. A. J. GUTHRIE 2,370,955

RUBBER DUSTING APPARATUS

Filed Nov. 13, 1943 3 Sheets-Sheet 2

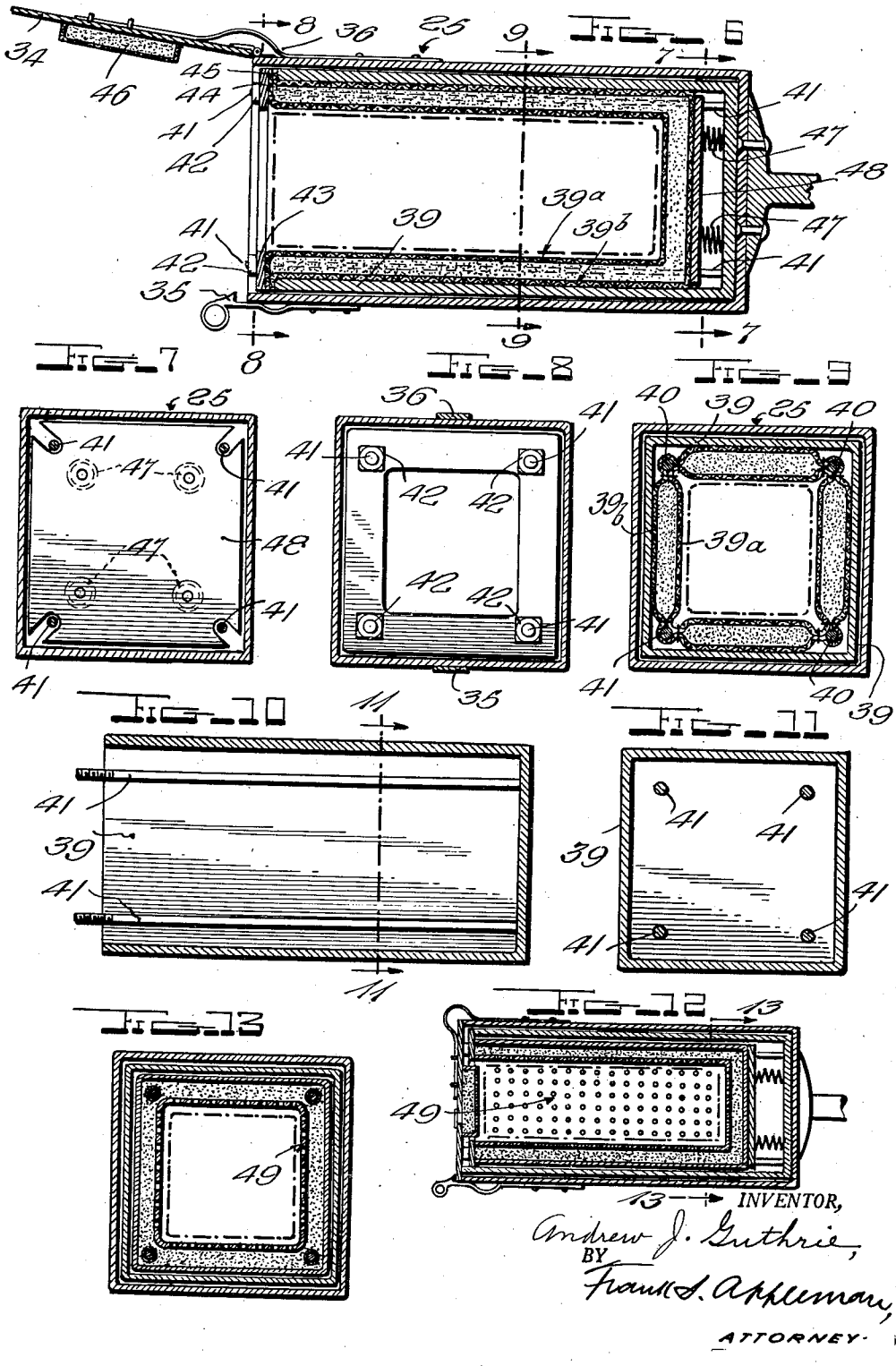


INVENTOR,
Andrew J. Guthrie,
BY
Frank A. Appleman,
ATTORNEY

March 6, 1945. A. J. GUTHRIE 2,370,955

RUBBER DUSTING APPARATUS

Filed Nov. 13, 1943 3 Sheets-Sheet 3



Patented Mar. 6, 1945 2,370,955

UNITED STATES PATENT OFFICE

2,370,955

RUBBER DUSTING APPARATUS

Andrew J. Guthrie, St. Albans, W. Va.

Application November 13, 1943, Serial No. 510,247

7 Claims. (Cl. 91—52)

This invention relates to the handling and treatment of rubber while in the process of manufacture, the same being more particularly adapted for subjecting units or blocks of partially completed synthetic rubber to a coating of dust or soapstone in order that the rubber may be handled without adhering to other blocks of said rubber or to surfaces with which they come in contact.

It is known that in the manufacture of synthetic rubber the partially treated rubber is formed into appropriate masses separated for convenient handling and manipulation and that in common practice these masses are coated, as stated, but with the methods now in common use the soapstone is disseminated and pollutes air in which the workmen are occupied to the great detriment of the workers. Hence, the advantages of the invention can be visualized when it is observed that means are provided for confining the blocks while they are tumbled or agitated within the treating area from which soapstone contained therein can not escape. The foregoing method results in an economical use of the soapstone, the proper coating of the blocks of rubber, and the apparatus facilitates the handling of the blocks and saves time of employes.

A further object of this invention is to provide a dusting apparatus of the character indicated, the parts of which are actuated by gravity, due to the weight of the blocks being introduced into the dusting receptacles on a plane higher than that from which they are removed after the said receptacle has gravitated from one position to another; and the invention furthermore contemplates the provision of novel means whereby the receptacles are rotated so that the block inside will be tumbled in the space and as it comes in contact with a fibrous lining of the receptacle back of which the soapstone is lodged, the particles of soapstone will be forced through the meshes of the fibrous lining and be distributed over the surface of the block, so that by the time the receptacle has traveled from its highest position to its lowest position, the block will be so coated as to readily slide from the receptacle when the door of the receptacle is unlatched, and the block will be deposited on a platform or other appropriate surface for its further treatment.

A still further object of this invention is to provide a receptacle of the character indicated which is preferably angular in cross section so that the block will be tumbled or partially rotated therein, and to facilitate the operation of the machine a separate unit is confined within the receptacle, which unit carries a soapstone lining, and it is intended that the unit may be removed when the soapstone is exhausted and replaced by another unit, which may be termed a cartridge, newly charged with soapstone so that only a slight cessation of operation is necessary for renewing the charge of the soapstone or other dust contained lining or element for treating the block.

It is a further object of the invention to provide a yielding element, spring pressed, for engaging the inner end of the fabric in order that it will cushion the action or force of the block and aid in dispelling the soapstone.

Furthermore it is an object of the invention to provide means for arresting the movement of the receptacle as it reaches its lowermost position where the block is discharged and for imparting slight motion to the shaft by which the receptacle is carried to force the said shaft off center to start it on its downward movement under the force of gravity; and a further object of the invention is to provide novel means by which the shaft is rotated through the employment of a stationary gear and pinions keyed to the shaft for engaging the gear, it being seen that the arresting means heretofore mentioned and the impelling means are actuated oppositely for stopping and starting the movement of the receptacles.

A still further object of the invention is to provide a spring-held door for each receptacle which spring serves to open the door and to hold it open when the block is being introduced into the receptacle, and to provide novel means for automatically closing the door as the receptacle travels during its initial movement.

With the foregoing and other objects in view, the invention consists in the details of construction, and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this application, wherein like characters denote corresponding parts in the several views, and in which:

Figure 1 illustrates a view in elevation of the apparatus on a reduced scale;

Figure 2 illustrates a plan view thereof;

Figure 3 illustrates an enlarged detail view with the receptacles in section and parts broken away for the more complete disclosure of the operating parts;

Figure 4 illustrates a sectional view on the line 4—4 of Fig. 3;

Figure 5 illustrates a sectional view on the line 5—5 of Fig. 3, omitting the receptacle;

Figure 6 illustrates a longitudinal sectional view of one of the receptacles;

Figure 7 illustrates a sectional view of the receptacle on the line 7—7 of Fig. 6;

Figure 8 illustrates a sectional view of the receptacle on the line 8—8 of Fig. 6;

Figure 9 illustrates a sectional view of the receptacle on the line 9—9 of Fig. 6;

Figure 10 illustrates a longitudinal sectional view of the receptacle with parts omitted;

Figure 11 is a sectional view of the receptacle on the line 11—11 of Fig. 10;

Figure 12 illustrates a view of a receptacle having a dust retaining means of modified form; and

Figure 13 illustrates a sectional view on the line 13—13 of Fig. 12.

In these drawings 15 denotes a suitable standard or base on which a ring gear 16 is anchored by appropriate means, as by screws 17. The upper end of the base is inclined and the ring gear applied thereto is likewise inclined.

A bearing tube 18 is rotatably mounted above the ring gear by a king pin 19, and the bearing tube at each end has a shaft 20 rotatably mounted in it. The shaft is shown as having a groove 21 into which a threaded lug 22 projects, the said lug engaging threads in a hole 23.

Each shaft 20 projects a suitable distance beyond the periphery of the ring gear and a pinion 24 keyed to each shaft engages the teeth of the ring gear and as the shafts move over the ring gear, the pinions communicate rotary motion to the said shafts. Each shaft has a receptacle or housing 25 secured to it in appropriate manner, and one such installation is illustrated in section, Figure 3.

A lever 26 is oscillatively mounted on the base and at the edge of the ring gear which is lowermost an abutment 27 projects into the path of travel of the shaft and arrests the shaft. The abutment is formed as a part of a rod 28 which is guided in a bracket 29, and the lower end of the rod is pivotally connected to the lever 26, as at 30, under the tension of a spring 30*a* which holds the parts normally in the positions in which they are shown in Figure 3.

A starting device is connected to the lever on the opposite side of the pivot from that to which the arresting device is connected and, in the present embodiment of the invention, it comprises a rod 31 guided in a bracket 32 and the upper end of the rod has a cam 33 which engages the shaft 20 to impart initial movement to the shaft, which shaft thereafter is moved under the influence of gravity so that it travels to the lowermost position in which the receptacle is shown in Figure 3, and during the travel aforesaid the shafts are rotated and the contents of the receptacle are tumbled about, contacting first one side and then the other of the lining which is in front of the soapstone and the force of the tumbling action serves to impel soapstone through the meshes of the fabric so that the mass is coated, and when the receptacle reaches the lowermost position in which it is shown in Figure 3, an operator actuates a latch, to be presently explained, and the door is moved to an open position and the mass of rubber escapes from the receptacle, the said rubber being identified by the letter B and it is delivered to the receptacle over a conveyor A which alines with the receptacle.

Each receptacle is closed by a door 34 appropriately hinged in place and held closed by a latch 35 that can be actuated by an operator for releasing the door, which door is automatically closed as the receptacle is moving from its initial elevated position, as will presently appear. A spring 36 is connected to the external surface of the receptacle and to the external surface of the door and is so shaped that it will open the door to the position in which it is shown in Figure 6 and hold it in that position until closed when the receptacle is moving. This last closing operation is accomplished through the use of an abutment 37 on a resilient arm 38 which is stationed in the path of travel of the open door of the receptacle and as the receptacle moves, the door comes in contact with the abutment and forces the door closed so that the latch engages it and retains it in its closed position until manually released, as stated.

The container for the soapstone includes a removable soapstone holder which is in the nature of a box 39 with a lining on its inner surface at four sides, and each section of the lining comprises two layers of material or fabric 39*a* and 39*b* for each of the sides of the box and they are of such capacity between the layers as to hold a suitable charge of soapstone. The linings are connected together at four corners and are shaped to form tubes 40, into which posts or rods 41 are introduced. The posts are anchored to the inner end wall of the box in any appropriate manner and project slightly beyond the end of the box. The outer ends of the posts are threaded to engage nuts 42. A retaining frame 43 has apertures so that the retaining frame can be applied to the posts and when the nuts are threaded in place, they bind the retaining frame against projecting ends 44 and 45 of the linings 39*a* and 39*b*, respectively of the box. In order to aid in the distribution of the soapstone, the door is likewise provided with a soapstone container 46 attached in place in suitable manner, the details of which are believed not material. It is shown that springs 47 are lodged against the inner end of the box and bear against a plate 48 which is engaged by the containers of the soapstone so that the springs yield under the impact of the blocks and also serve to hold the block against the container that is attached to the door.

A modification of the means for retaining the soapstone in the box may comprise a rectangular holder for the block in which said holder is formed of foraminous material, as shown at 49 so that soapstone will be distributed to the block as the receptacle is rotated, the receptacle being otherwise substantially that heretofore described.

While soapstone and dust have been mentioned in connection with the distribution on the rubber, the inventor does not wish to be limited with respect to the character of the dust with which the rubber is coated.

I claim:

1. In a rubber dusting apparatus, a ring gear supported at an angle to a horizontal plane whereby the said ring gear is inclined, a shaft journal turnably supported to move over and concentric with the ring gear, shafts rotatably mounted in the journals and extending outwardly beyond the ring gear, pinions on the shafts meshing with the ring gear and adapted to travel on the inclined surface of the ring gear for ro-

tating the shafts while carried over the ring gear, dust receptacles carried by and rotating with the shafts, the said receptacles being adapted to receive blocks of rubber to be tumbled in the said receptacles in contact with the dust.

2. In a rubber dusting apparatus, a suitable support, a ring gear held on an incline on said support, a mounting for shafts turnable above the ring gear, shafts rotatable in said mounting and projecting therefrom beyond the periphery of the ring gear, pinions keyed to said shafts engaging the teeth of the ring gear whereby as the mounting for the shafts is turned over the ring gear the shafts are rotated, receptacles attached to the ends of the said shafts whereby they rotate with the shafts, dust containers in the receptacles for receiving blocks of rubber, closures for the ends of the containers, spring means for holding the closures open, a stationary member with relation to which the receptacles move for engaging the closures to close them, and manually operated means for holding the closures shut.

3. In a rubber dusting apparatus, a suitable support, a ring gear held on an incline on said support, a mounting for shafts turnable above the ring gear, shafts rotatable in said mounting and projecting therefrom beyond the periphery of the ring gear, pinions keyed to said shafts engaging the teeth of the ring gear whereby as the mounting for the shafts is turned over the ring gear the shafts are rotated, receptacles attached to the ends of the said shafts whereby they rotate with the shafts, cartridge-like boxes having foraminous linings for holding dust applied to the interior of the receptacles and into which rubber blocks are introduced, the said blocks being tumbled in contact with the linings as the shaft carries them from their elevated to their lowermost positions.

4. In a rubber dusting apparatus, a suitable support, a ring gear held on an incline on said support, a mounting for shafts turnable above the ring gear, shafts rotatable in said mounting and projecting therefrom beyond the periphery of the ring gear, pinions keyed to said shafts engaging the teeth of the ring gear whereby as the mounting for the shafts is turned over the ring gear the shafts are rotated, receptacles attached to the ends of the said shafts whereby they rotate with the shafts, cartridge-like boxes having foraminous linings for holding dust applied to the interior of the receptacles and into which rubber blocks are introduced, the said blocks being tumbled in contact with the lining as the shaft carries them from their elevated to their lowermost positions, a closure for each of the receptacles, means for temporarily holding the closure shut, spring means for opening the closure, and means in the path of travel of the receptacle engaging the closures for shutting them as the receptacle moves.

5. In a rubber dusting apparatus, a receptacle, an auxiliary container therein, a dust holding lining for the container, a spring-held plate at the inner end of the container on which the inner end of the lining rests, a closure means for the receptacle, and a dust-contained lining on the inner surface of the closure against which successive blocks of rubber are forced by the action of the spring-held plate.

6. In a rubber dusting apparatus, a suitable receptacle angular in cross section having means by which the receptacle is rotated and moved, a box in the receptacle angular in cross section, a dust-contained lining on the inner surface of the box, a spring-held plate at the inner end of the box on which the lining rests, a closure for the receptacle, means for temporarily holding the closure shut, a dust-contained lining on the inner suface of the closure against which successive blocks of rubber are forced by the action of the spring-held plate, a spring for opening the closure, and means in the path of travel of the closure operative to shut the closure as the receptacle is moved.

7. In a rubber dusting apparatus, a receptacle angular in cross section, means for rotating the receptacle and moving it from a higher to a lower plane, the said means being operated by gravitation of the contents of the receptacle, a box angular in cross section within the receptacle, posts anchored to the inner end of the box and projecting from its outer end, a dust-contained lining on the inner surfaces of the inner surfaces of the box, the said lining having tubes to receive the posts, the outer ends of the linings overlapping the outer edge of the box, a clamping ring applied to the posts and engaging the ends of the lining, and nuts threaded on the posts for holding the ring in place.

ANDREW J. GUTHRIE.