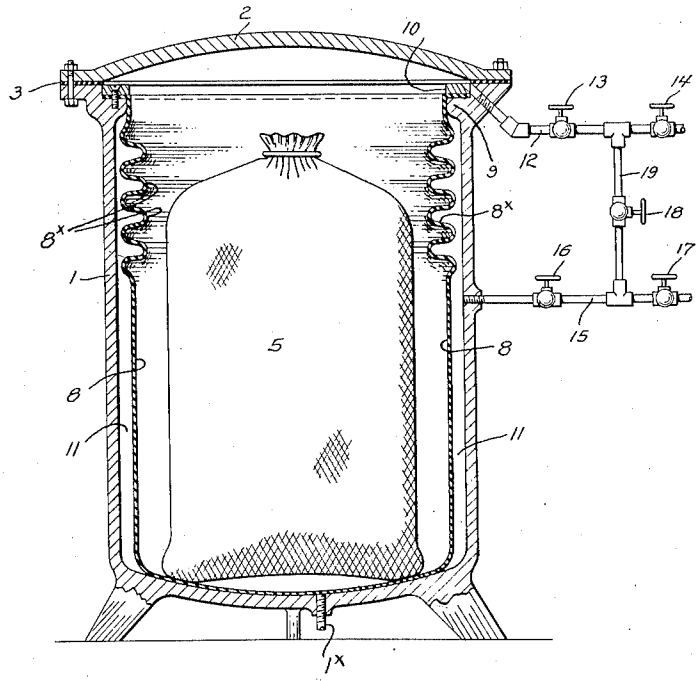
C. J. RANDALL AND R. R. TAYLOR.

APPARATUS FOR COMPACTING PULVERULENT MATERIAL.

APPLICATION FILED JULY 30, 1920.

1,372,190. **Patented Mar. 22, 1921.**



Inventor
Chester J. Randall
and Richard R. Taylor
By their Attorney
Ernest Hopkinson.

UNITED STATES PATENT OFFICE.

CHESTER J. RANDALL AND RICHARD R. TAYLOR, OF NAUGATUCK, CONNECTICUT, ASSIGNORS TO THE GOODYEAR'S METALLIC RUBBER SHOE COMPANY, A CORPORATION OF CONNECTICUT.

APPARATUS FOR COMPACTING PULVERULENT MATERIAL.

1,372,190. Specification of Letters Patent. Patented Mar. 22, 1921.

Continuation of application filed July 26, 1919, Serial No. 313,660. This application filed July 30, 1920. Serial No. 400,274.

To all whom it may concern:

Be it known that we, CHESTER J. RANDALL, a citizen of the United States, residing at Naugatuck, county of New Haven, and State of Connecticut, and RICHARD R. TAYLOR, a citizen of the United States, residing at Naugatuck, county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Apparatus for Compacting Pulverulent Material, of which the following is a full, clear, and exact description.

This invention relates to apparatus for compacting pulverulent particles, more specifically for compacting carbon particles.

This application is a continuation of Serial No. 313,660, filed July 26, 1919.

It is an object of the invention to provide apparatus wherein pulverulent particles, such as carbon particles, may be compacted in order to bring them into a physical condition, such that they will not disperse in the air and fly about when handled in manufacturing processes. It has further as an object the provision of a simple and efficient apparatus for this purpose.

The invention accordingly consists in an apparatus for solidifying pulverulent material comprising a chamber, a closure therefor, a flexible impervious receptacle or bag disposed in said chamber, means for exhausting air from the bag, and means for admitting fluid under pressure against the outside of the bag.

In the drawing the figure illustrates a transverse sectional elevation of a preferred form of apparatus.

In said figure the chamber 1 which may be of any desired form is provided with a closure 2 which is adapted to be bolted thereto, gaskets 3 being provided to secure a hermetic sealing. At any desired location on the wall of the chamber is provided an annular flange 9 and an annular ring or clamping device 10 is adapted to fit into the recess above said flange. A flexible impervious receptacle such as a rubber bag 8 has its edges inserted between the flange 9 and the ring 10 and is securely clamped therebetween by means of screws as shown. The bag 8 may be provided with folds 8^x as shown in order to provide ample capacity for stretching and distortion while in use. There is thus formed between the walls of the chamber 1 and the bag 8 an annular air space 11. A pipe 12 provided with valve 13 leads to the space on one side of the bag as shown, and the other end of the pipe is connected to a vacuum pump or other evacuating device, a valve 14 being provided for opening and closing the vacuum line. A pipe 15 provided with valve 16 leads through the wall of the chamber 1 to the space 11, and this pipe leads at its other end to a compressor such as an air compressor, a valve 17 being provided for turning on and off the air or fluid supply. Between pipes 12 and 15 is a pipe 19 provided with valve 18 for communication. A pipe 1^x conducts liquid from the chamber, in case liquid is used for compression.

In the operation of this apparatus, the container or bag 5 constructed to permit the passage of air therefrom and containing pulverulent material such as carbon black is placed inside a bag 8 and the cover 2 is clamped to the chamber. Air is exhausted through pipe 12 from the inside of the bag 8 whereby the air residing in and attached to the pulverulent particles escapes through the bag 5 and passes out through pipe 12, valves 13 and 14 being open. While the air is being exhausted from the interior of the bag 5, the air in space 11 should also be exhausted through pipes 15 and 19, valves 16 and 18 being open and 17 closed. After the air has been exhausted, fluid under pressure is admitted through pipe 15, valve 18 being closed, to the outside of the bag 8 which is accordingly compressed around the bag 5 and thereby compacts the pulverulent material to a much reduced bulk. Any sufficient pressure may of course be used but in practice a pressure of approximately 40 lbs. per square inch for a period of five minutes is desirable. A slightly greater compaction may be secured at this point by simultaneously evacuating and compressing, the valve 18 being closed. After the pulverulent material is reduced in bulk by this operation, the closure 2 is removed and the bag 5 withdrawn.

While the material of the bag 8 is preferably rubber, it may also be of leather, cloth, canvas or thin metal, such as tin, and it need not be in the form of a bag,

for it may be of any other shape as long as it stretches across the chamber so as to form a receptacle adapted to contain the sack 5. The receptacle or bag need not necessarily be attached to the wall of the chamber for it may be clamped between the cover 2 and the chamber 1 or it may be suitably attached to the cover 2 so as to be withdrawn when the cover is removed, the pipe 12 communicating in this case through the cover and the cover being provided with means for access to the interior of the bag.

It will be clear that this apparatus is simple and efficient and that it is capable of compacting pulverulent material to greatly reduce its bulk so that it will not disperse in the air when used.

As many apparently widely different embodiments of this invention may be made without departing from the spirit thereof, it is to be understood that we do not intend to limit ourselves to the specific embodiment as herein set forth except as indicated in the appended claims.

Having thus described our invention, what we claim and desire to protect by Letters Patent is:

1. In apparatus for solidifying pulverulent material, a chamber, a closure therefor, a flexible impervious receptacle disposed in said chamber and having its edges clamped to the walls of said chamber, means for exhausting air from the receptacle and means for admitting fluid under pressure to the outside of said receptacle.

2. In apparatus for solidifying pulverulent material, a chamber, a closure therefor, a rubber bag disposed in said chamber having its edges clamped to the walls of said chamber, means for exhausting air from the bag, and means for admitting fluid under pressure against the outside walls of the bag.

3. In apparatus for solidifying pulverulent material, a chamber, a closure therefor, a rubber bag disposed in said chamber having its edges clamped to the walls of said chamber, said bag having sufficient surface area to allow for distortion while in use, means for exhausting air from the bag, and means for admitting fluid under pressure against the outside of the bag.

Signed at Naugatuck, county of New Haven, State of Connecticut, this 16th day of June, 1920.

CHESTER J. RANDALL.

Signed at Naugatuck, county of New Haven, State of Connecticut, this 12th day of June, 1920.

RICHARD R. TAYLOR.