Jan. 25, 1927. 1,615,622

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CLEANING AND POLISHING MACHINE

Filed Nov. 13, 1922 2 Sheets-Sheet 1

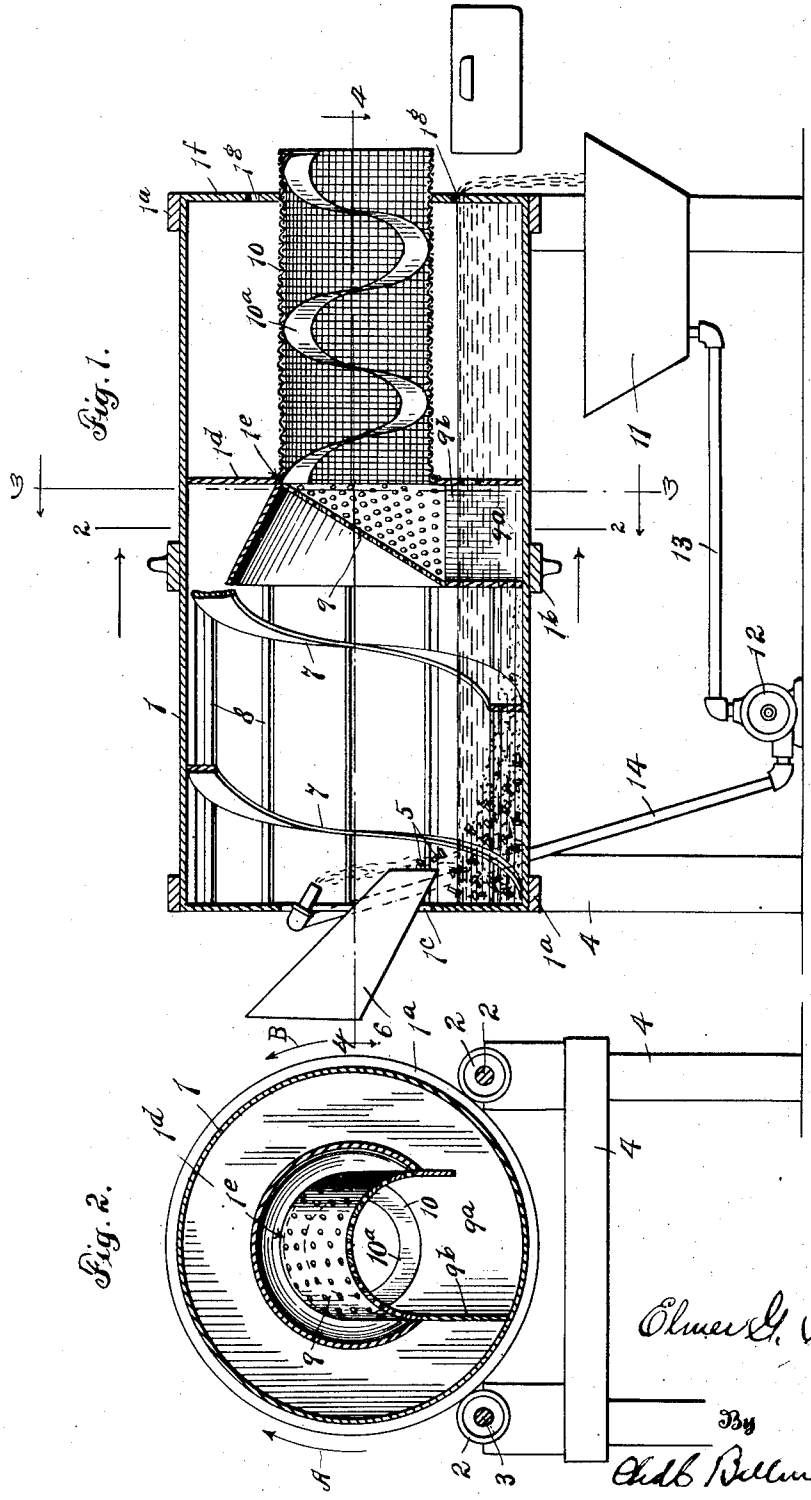


Fig. 1.

Fig. 2.

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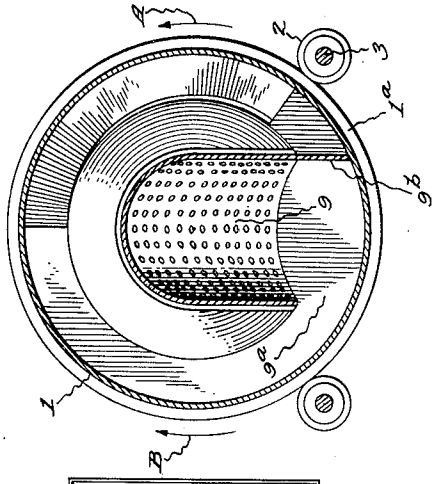


Fig. 3

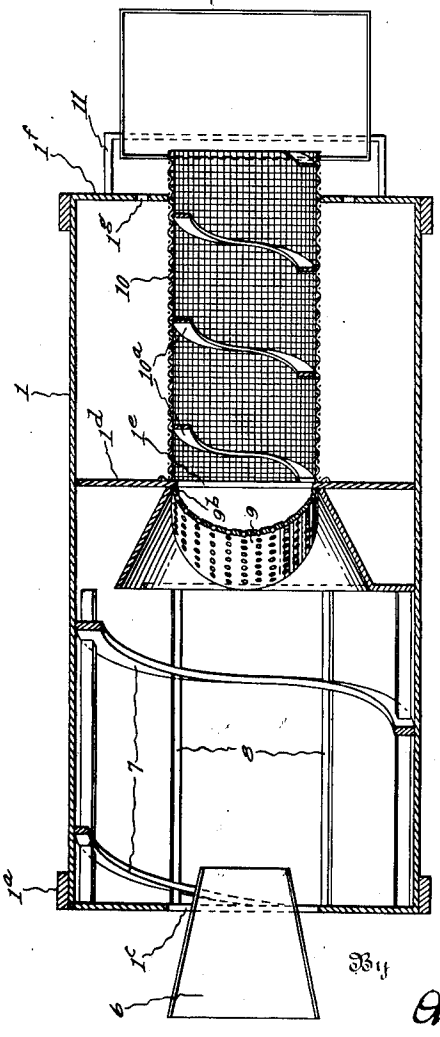


Fig. 4

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UNITED STATES PATENT OFFICE.

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CLEANING AND POLISHING MACHINE.

Application filed November 13, 1922. Serial No. 600,616.

My invention relates to improvements in cleaning and polishing machines and more particularly to that class or type commonly known as "tumbling barrels" used in cleaning or polishing articles by attrition, such as small castings, bolts and nuts, metal stampings, and the like.

The primary object of this invention is to provide a generally improved cleaning and polishing machine for the purposes above mentioned which will be exceedingly simple in construction, cheap of manufacture, and efficient in use.

A further and very important object is the provision of a machine of the rotary cylinder or drum type in which the charging and discharging operations may be carried out continuously during the rotation of the cylinder, together with improved means whereby when the cylinder or drum is rotated in one direction the parts or material being cleaned and polished will be subjected to the necessary attrition and when rotated in an opposite or reversed direction will be discharged therefrom.

A still further object is the provision of a machine of this class admirably adapted to receive and carry a suitable supply of cleaning and polishing material, such for example,—as sand and water, together with improved means for aggregating the material and treating medium for attrition when rotated in one direction and for separating and discharging the completely treated material from the treating medium when driven or rotated in a reversed direction.

With the above mentioned and other ends in view, my invention consists in the novel construction, arrangement and combination of parts, hereinafter described, illustrated in one of its embodiments in the accompanying drawings, and particularly pointed out in the appended claims.

Referring to the drawings, forming a part of this specifcation, Figure 1 is a central longitudinal sectional view of a machine constructed in accordance with this invention, the articles or material being treated and the treating medium being aggregated for cleaning and polishing by attrition in the tumbling cylinder as the latter is rotated in one direction for this purpose.

Fig. 2, a cross sectional view of the same taken on line 2—2 of Fig. 1.

Fig. 3, a cross sectional view of the same, taken on line 3—3 of Fig. 1.

Fig. 4, a horizontal longitudinal sectional view, taken on line 4—4 of Fig. 1.

Similar numerals of reference designate like parts throughout all the figures of the drawings.

The tumbling cylinder or barrel 1 may be mounted and rotated in any suitable and convenient manner, as for example,—by means of supporting rollers 2, mounted on suitable shafts 3, the latter being carried in a suitable supporting frame 4. The cylinder or barrel 1 may be provided with the usual track-ways or rings 1^a, and, in the present instance, the cylinder or barrel 1 is adapted to be driven through the medium of a surrounding sprocket ring 1^b, adapted to receive and be driven by a suitable sprocket chain (not shown) leading to a suitable source of power.

The receiving end or head of the cylinder 1 is provided with a central or axially located charge receiving opening 1^c, through which the material or articles 5, to be treated are introduced, preferably through the medium of a suitable feed or charging chute 6. The tumbling cylinder 1 is provided with a suitable conveyer, preferably in the form of a spirally arranged conveyer blade 7, and the inner periphery of the cylinder is also preferably provided with a series of transverse lifting members or slats 8. The arrangement of the conveyer blade 7 is such that when the barrel or cylinder 1 is driven or rotated in the direction of the arrow marked A, the articles 5 being treated and the treating medium, such as sand as shown, will be aggregated along the receiving portion or section of the tumbling cylinder, as shown most clearly in Fig. 1 of the drawings.

As a means of segregating and discharging the articles or material being treated when subjected to the necessary attrition, and upon a reverse rotation of the cylinder, as indicated by the arrow marked B, the cylinder 1, in the present instance, is provided with an intermediate wall 1^d, having a central or axially located discharge opening 1^e, the latter being provided with a transfer device in the specific form of a discharge chute 9, provided with a mouth or receiving portion 9^a, the latter being preferably formed by means of a vane or baffle 9^b, extending to the outer wall of the tumbling cylinder 1 at the discharge portion of the latter and being adapted to intercept and

pick up and divert the finished material as received from the conveyer 7 as a segregating element, when the latter travels in a conveying position by the reversal in direction of rotation of the tumbling cylinder. The upper portion of the chute 9 is preferably perforated as shown, and as a means of separating and discharging the finished material as thus segregated and delivered through said chute 9 during the reverse or discharging rotation of the cylinder, the discharge opening 1^e is preferably provided with a concentrically located article separating and discharging cylinder 10, of suitable pervious or foraminous material, such as wire as shown, said discharging cylinder being provided with a spiral conveyer 10^a.

As a means of causing the treating medium, such as sand and water, or the like, to return to the tumbling cylinder and to be maintained in the latter at substantially a constant level, the discharge portion of the cylinder is preferably arranged to inclose the major portion of the separating cylinder 10 and the head 1^f, is preferably provided about its periphery with a series of openings 1^g, adapted to permit the cleaning liquid or water to discharge or drain into the discharge tank 11.

The tumbling cylinder or barrel 1 may be supplied with liquid by means of a suitable pump 12, communicating with suitable receiving and discharging pipes 13 and 14, respectively, communicating with the tank 11, and the charge receiving opening 1^c.

In view of the above described construction and arrangement of parts, it will be obvious that when the tumbling cylinder or barrel 1 is rotated in the direction of the arrow marked A the articles 5 to be cleaned and polished and the cleaning medium, such as sand, will be held toward the receiving and charging end of the cylinder by the reverse rotation of the conveyer 7 and it will also be apparent that immediately upon the reversal of the direction of rotation of the tumbling and separating cylinders 1 and 10, and the intermediate transfer device or chute 9^b, the conveyer blade 7 will carry the articles or material being treated toward the intermediate wall 1^d and the articles striking or being intercepted by the vane or baffle 9^b forming the mouth 9^a of the chute will be thus segregated and directed into the feed end of the article separating and discharging cylinder 10.

Having thus described one of the embodiments of my invention, without having attempted to set forth all the forms in which it may be made, or all the modes of its use, what I claim and desire to secure by Letters Patent, is—

1. In a cleaning and polishing machine, a rotatably mounted imperforate cylinder provided at one end with conveyer means adapted when said cylinder is rotated in one direction to aggregate the material and treating medium near the feed end thereof and provided with means for segregating the material being treated when the cylinder is rotated in the other direction, a concentric cleaning cylinder enclosed by and communicating with said tumbling cylinder, and a transfer device between said tumbling and cleaning cylinders constructed and arranged to engage and transfer the segregated material to said cleaning cylinder.

2. In a machine of the character described, a pair of rotatably mounted imperforate and perforate tumbling and separating cylinders, respectively, said tumbling cylinder being provided with an axially located article receiving opening at one end and provided on its interior with means for keeping the articles being treated aggregated near said receiving opening when the cylinders are rotated in one direction, and means within said tumbling cylinder for separating the articles being treated from the cleaning material and discharging the same into said separating cylinder when said cylinders are rotated in the other direction.

3. In a machine of the character described, a pair of rotatably mounted imperforate and perforate tumbling and separating cylinders, respectively, carrying the treating medium and articles being treated and separated, said tumbling cylinder being provided with an article receiving opening at one end and having on its interior a spiral conveyer blade constructed and arranged to keep the articles being treated aggregated near said feed opening when the cylinders are rotated in one direction, and transfer means within said tumbling cylinder for separating the articles being treated from the cleaning material and discharging the same to said separating cylinder when said cylinders are rotated in the other direction.

4. In a cleaning and polishing machine, a rotatably mounted cylinder provided with conveyer means adapted when rotated in one direction to aggregate the material and treating medium and provided with means for segregating the material being treated when rotated in an opposite direction, a concentric screening cylinder inclosed by and communicating with said tumbling cylinder, and a transfer device establishing material transferring communication between said cylinders when rotated in a reverse direction.

In testimony whereof I have affixed my signature.

ELMER G. GREENE.