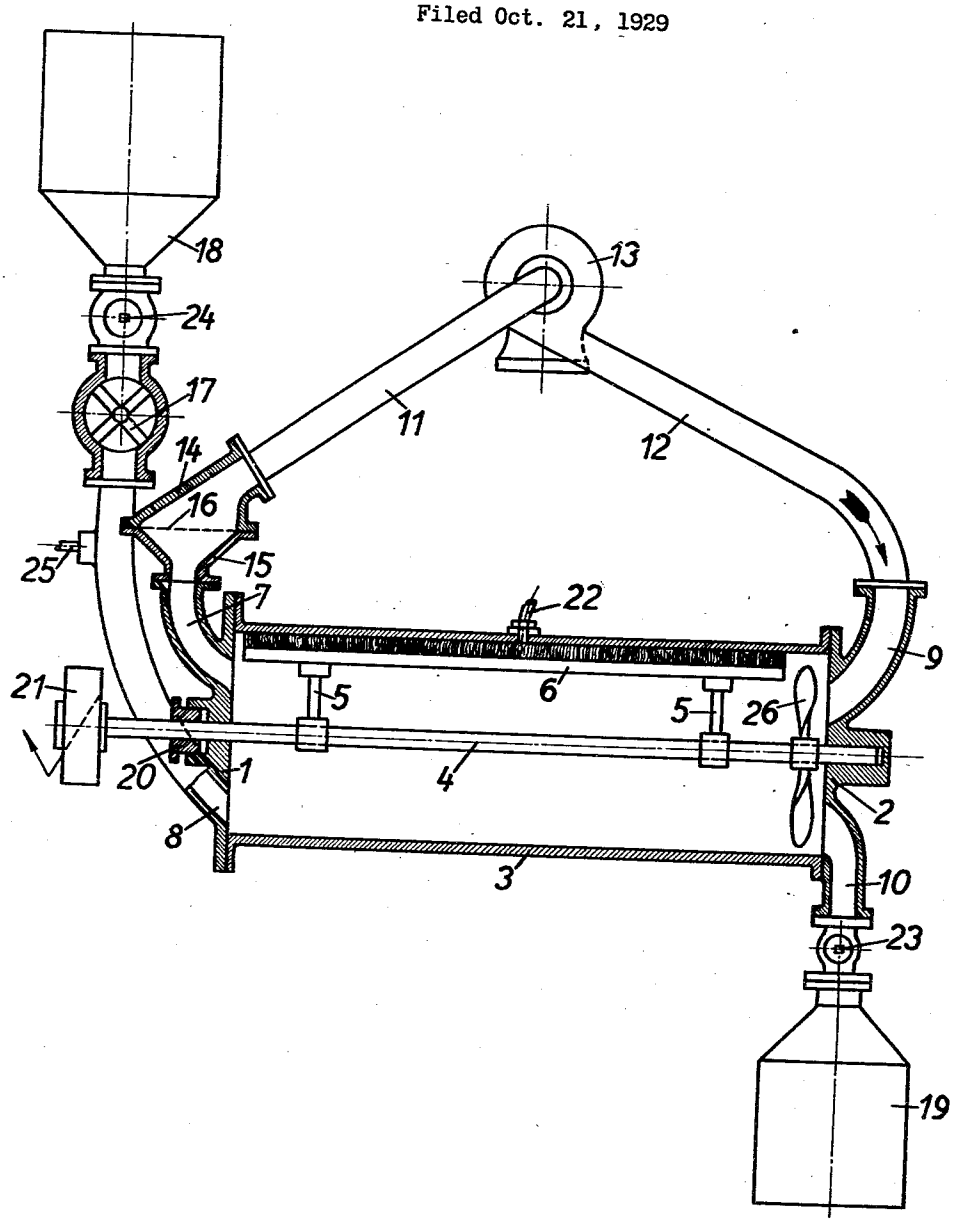
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POLISHING MACHINE FOR COLORED PULVERULENT BRONZE

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POLISHING MACHINE FOR COLORED PULVERULENT BRONZE

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This invention relates to a machine for polishing the metal powders known as bronze. The object of this improved machine is to provide with a luster the delicate metal foils, of which said powders consist, and also, if necessary or suited to the purpose in view, to coat them with a thin layer of a suitable fat or stearin or the like. The merit of this machine over the known ones consists therein that it allows of a continual service. With the known machines for polishing bronze powders in which a cylindrical drum and brushes rotating therein are employed, the drum is supplied with the material through an aperture provided in the upper part of the cylindrical wall and being normally closed by a flap which is opened when the material is to be introduced into the drum, and the finished powder is removed through another aperture also provided in said wall, but in the lower part thereof. Even if said apertures and their closing flaps are carefully manufactured, they interrupt the circumferential wall of the drum whereby the proper polishing operation is detrimentally affected. Besides, the filling and the emptying of the drum is accompanied with a pretty considerable development of dust whereby attending to the machine is rendered onerous, the more, as the individual amounts of the material are only small and the filling and the emptying must thus be repeated many times.

Carrying out the procedure in a continuous manner according to the present invention affords also the advantage that the product is more uniform.

Furthermore, the capacity of the machine is increased. Another advantage is this that there are no interruptions in the circumferential wall of the drum, the apertures mentioned being now provided in the frontal walls of the drum. The powder enters into the drum through one of said frontal walls, travels through the drum in the entire length thereof, and leaves the drum in finished state through the other frontal wall, the powder having been worked on its way between the two apertures by means of the rotating brush or brushes by which the fine foils have been polished in the desired degree.

The machine may be completely encased, and be filled with an indifferent gas so that the entire procedure can be carried out without any contact of the material with air, and oxidation of the material is completely prevented; besides the very dangerous dust-explosions (occurring particularly easily with aluminum bronze) are perfectly prevented.

It is known from experienc that bronze powder must be subjected to the polishing operation for several hours so that the polishing drums must be correspondingly long. My invention aims also at reducing that great length. I attain this effect by letting a tender current of air or gas act upon the powder counter to its direction of movement through the drum, that current of air retarding the passage of the powder through the drum so that it is retained, and acted on, therein for a correspondingly longer time. The current of air or gas can be used also for cooling the foils which are heated by the action of the brushes.

Also if the machine is enclosed and contains an indifferent gas, it is practically impossible to prevent completely the particles of the material from coming in contact with air prior to being introduced into the drum. That amount of air is very small, it is true, too small to be able to give rise to dust-explosion, but there is a certain possibility that a superficial oxidation of the particles takes place. This is the case, however, only if the particles have become hot and it is also from this reason advantageous to cool them by a current of a suitable fluid. This latter may fill up the entire sectional area of the drum so that practically every particle of the material is subjected to the action of that fluid.

The invention is illustrated diagrammatically and by way of example on the accompanying drawing which shows an axial section through a machine designed according to this invention. On this drawing, 3 denotes a cylindrical casing or drum made preferably of sheet-metal having on its inner side ripples or convex protuberances or the like. The drum is closed at its frontal ends by covers 1 and 2, the centre portions of which form bearings for the shaft 4 to which are attached arms 5 holding a long brush 6, the bristles of which move round over the inner surface of the drum when the shaft 4 is rotated whereby the particles getting between the bristles and the said surface are worked, i. e. polished.

The powder, the particles of which are to be polished, is preserved in a receptacle 18, from which it passes through a cock 24 into a charging device 17 in and by which it is subdivided into small individual amounts which then pass through a tube 8 into the drum 3.

In this latter the particles are acted on by the rotating brush 6 and are polished while passing slowly from the one end of the drum to the other end where they are discharged through a branch 10 and a cock 23 into a receptacle 19.

The cover 2 is provided, besides with the branch 10, also with a branch 9 by means of which the

drum is connected with a tube 12 forming a part of a circuit 3, 9, 12, 13, 11, 15, and 7, in which 13 denotes a blower, 11 a tube connected with the blower, 15 a casing enclosing a sieve 16, and 7 a branch connecting said casing 15 with the drum 3. An indifferent gas is continually driven through this circuit by said blower in a direction counter to the direction of movement of the particles of the powder, as indicated by the arrow. Particles carried, perhaps, away by and with the current of the respective gas are retained by the sieve 16. When the operation has been finished, the retained particles may be removed from the sieve and re-introduced into the drum at some later occasion.

Owing to the provision of the cocks 23 and 24 it is possible to exchange the receptacles 18 and 19 while the operation is going on, i. e. during the service.

I wish it to be understood that instead of a continuous brush like 6 a plurality of smaller brushes may be used, and that two or more brushes may be distributed on the circumference of the drum. Besides, it is possible to arrange the brush or brushes slightly obliquely like a very steep thread or very steep threads of a screw, the direction of the obliquity being then such that the speed of the particles on their path from the pipe 8 to the branch 10 is reduced and the time of action, therefore, extended.

In order to supply the fat requisite for the polishing of the particles, the pipe 8 is provided with a branch 25 through which the respective fat or oil etc. can be introduced into said pipe and to the drum and to said particles. Also another suitable place can be used for that purpose. There are cases in which it is suitable to the purpose in view to make use of several different fats, for instance first olive-oil and then stearin or stearin-oil. In the example shown in the drawing a branch 22 is provided in the middle of the drum expressly for the purpose of supplying the particles with another fat when they arrive at this part of their path. On the first part of that way only the fat introduced through the branch 25 acts upon the particles together with the brush, on the other part also the other or second fat or the like becomes operative. Another possibility is this to supply the fat already in the receptacle 18, or to supply it directly to the particles of the powder already prior to introducing them into said receptacle.

The machine also permits working intermittently or in steps, that is to say, a certain definite amount of the powder to be polished is introduced into the drum, worked until having become polished to the desired degree of lustre, and then removed from the drum, whereafter another amount of the material is introduced into the drum and so on.

In the example shown in the drawing the shaft 4 is provided with a pulley 21 and with a propeller 26 which is rotated in such a direction that it produces a gentle current of air or, may be, of an indifferent gas streaming in a direction counter to the direction of the particles of the material. In this case the blower 13 may be dispensed with, but it is as well possible to employ the blower and the propeller together, this latter acting then as a means for distributing the respective gas or fluid over the entire sectional area of the drum.

I claim:

1. A polishing machine for colored pulverulent bronze, comprising, in combination, a stationary cylindrical drum closed at its ends by a cover, said covers being provided respectively with a charging aperture and a discharging aperture near the bottom of the drum; a brush rotating in said drum in contact with its inner wall; means for supporting said brush and means for rotating it, the arrangement being such that the bronze powder while being polished is conveyed by said brush from said charging aperture to said discharging aperture.

2. A polishing machine for colored pulverulent bronze, comprising, in combination, a cylindrical drum having a charging aperture at one of its ends and a discharging aperture at its other end; a brush rotating in said drum; means for supporting said brush and means for rotating it, the arrangement being such that the bronze powder while being polished is conveyed from said charging aperture to said discharging aperture, and means for producing a current of a fluid and causing it to pass through the drum in a direction counter to that of the bronze powder.

3. A polishing machine for colored pulverulent bronze, comprising, in combination, a cylindrical drum having a charging aperture at one of its ends and a discharging aperture at its other end; a brush rotating in said drum; means for supporting said brush and means for rotating it, the arrangement being such that the bronze powder while being polished is conveyed from said charging aperture to said discharging aperture, a fan arranged outside the drum, and connections between it and the drum ends, the arrangement being such that the current produced by said fan passes through the drum in a direction counter to that of the bronze powder.

4. A polishing machine for colored pulverulent bronze, comprising, in combination, a cylindrical drum having a charging aperture at one of its ends and a discharging aperture at the other end; a rotary brush in said drum; a shaft to which said brush is affixed; means for rotating said shaft; a propeller also affixed to the shaft, the arrangement being such that the bronze powder while being polished is conveyed from said charging aperture to said discharging aperture, and that the current produced by said propeller passes through the drum in a direction counter to that of the bronze.

5. A polishing machine for colored pulverulent bronze, comprising, in combination, a cylindrical drum closed at its ends by a cover, said covers being provided respectively with a charging aperture and a discharging aperture; a brush rotating in said drum; means for supporting said brush and means for rotating it, the arrangement being such that the bronze powder while being polished is conveyed from said charging aperture to said discharging aperture, said brush being arranged slightly obliquely in such a manner as to retard the passing of the bronze powder through the said drum.

6. A polishing machine for colored pulverulent bronze, comprising, in combination, a cylindrical drum closed at its ends by a cover, said covers being provided respectively with a charging aperture and a discharging aperture; means for introducing a fat, an oil or the like into the drum; a brush rotating in said drum; means for supporting said brush and means for rotating it, the arrangement being such that the bronze powder while being polished in conveyed from said charging aperture to said discharging aperture.

7. A polishing machine for polishing colored pulverulent bronze, comprising a cylindrical drum closed at its ends by a cover, said covers being provided respectively with a charging aperture and a discharging aperture, a brush rotatably journalled in said covers, means for rotating said brush, means for charging the material into said drum, and means for collecting the finished product discharged from said drum, the said charging and collecting means being gas-tightly connected with said drum.

8. A polishing machine for polishing colored pulverulent bronze, comprising a cylindrical drum closed at its ends by a cover, said covers being provided respectively with a charging and a discharging aperture, a brush rotatably journalled in said covers, means for rotating said brush, and means for gradually conveying fresh material in measured quantities to said drum.

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