

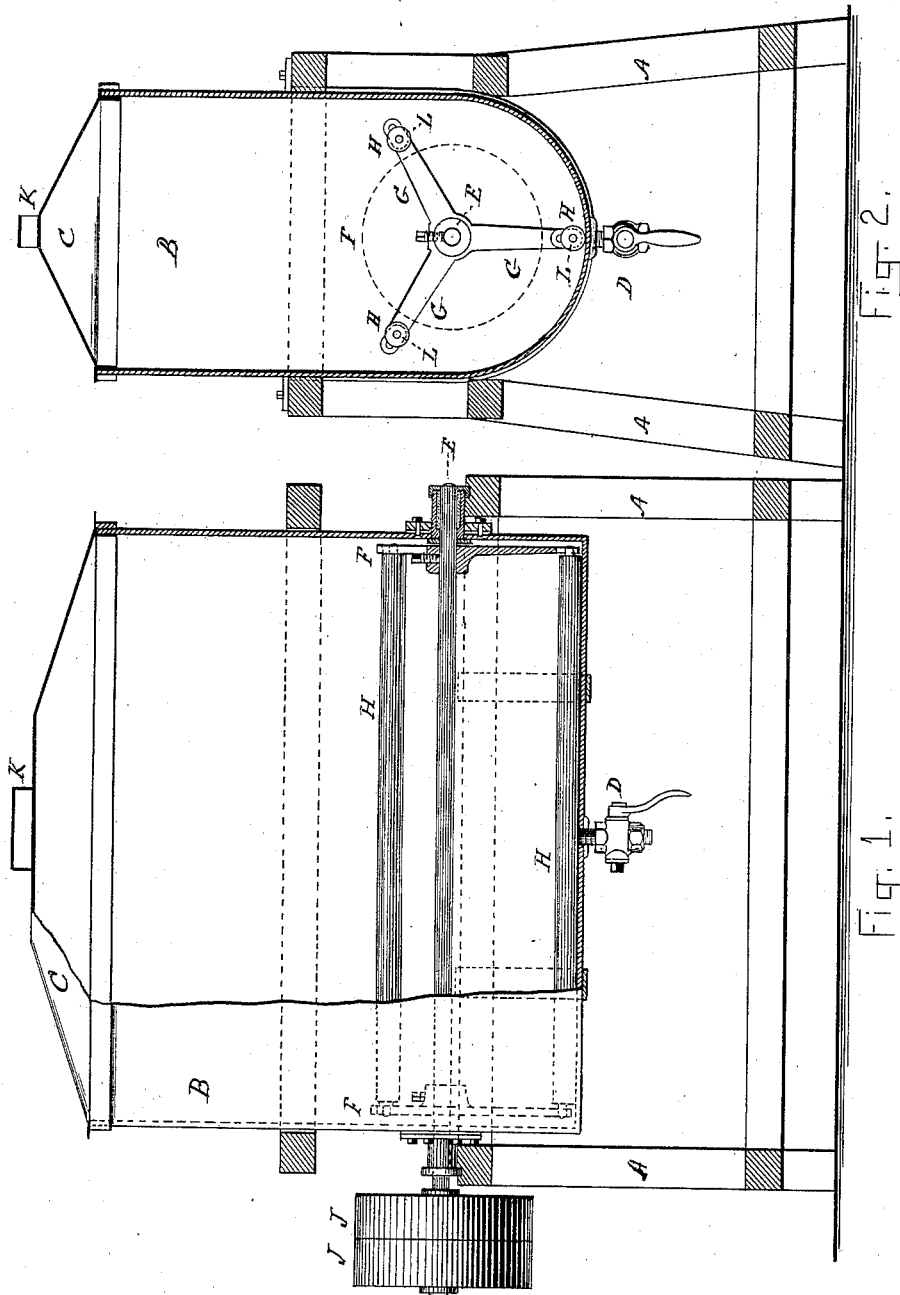
(No Model.)

J. BRIGGS.

PAINT MILL.

No. 385,441.

Patented July 3, 1888.



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UNITED STATES PATENT OFFICE.

JOHN BRIGGS, OF BOSTON, MASSACHUSETTS.

PAINT-MILL.

SPECIFICATION forming part of Letters Patent No. 385,441, dated July 3, 1888.

Application filed December 28, 1887. Serial No. 259,263. (No model.)

To all whom it may concern:

Be it known that I, JOHN BRIGGS, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Paint-Mill, of which the following is a specification.

The nature of my invention is that of a box or tank covered and with a curved bottom supported by standards, in which box or tank, fastened to a rotating shaft, are three (more or less) rollers of peculiar construction and arrangement, the tank being provided with a faucet at its bottom for its convenient discharge; and the object of the device is to effect the mixing and grinding of paints, rubber compounds, paste, &c., by means of a cheap, effective, and permanently-constructed device.

In the drawings, Figure 1 is a side view of my device, partly in vertical cross-section. Fig. 2 is an end view of the same character.

In the drawings, A A, Fig. 1, are two (of a set of four) legs or standards supporting at each side, respectively, a pair of horizontal bars of wood, (eight in all,) and also held together at their lower ends by a horizontal bar at each of the four sides. The upper pair of bars on each side, respectively, are supported by perpendicular bars of wood passing downward, and each connected, respectively, with the bar immediately below it. (These latter upright connections are not all shown in the drawings.) I sometimes with large machines strengthen these bars with iron braces, or I make the whole frame of iron instead of wood. Sometimes I dispense with the arms and legs described and effect their object—that of supporting the box or tank, &c. (hereinafter described)—by making my tank square outside at the bottom, or by placing the tank on a bench or a shelf.

B, Fig. 1, is the box or tank, made of galvanized iron or other sheet metal and resting in the frame above described, to which it is firmly attached. This tank B carries a cover, C, which is removable. K, Fig. 1, is a handle attached to the cover C. The bottom of the tank B is seen in Fig. 2 to be of a curvilinear form, being in the shape of a half-circle. From the points, Fig. 2, which respectively mark the ends of the half-circle, the sides of the tank proceed straight upward, the appearance of the box or tank above thus presenting

in vertical section the shape of an oblong square. At the center of the tank in both figures is seen the discharging-faucet D, which is made in the usual manner. At the center of the lower part of the tank in Fig. 2 is seen a shaft passing horizontally from end to end of the tank and held at each end, respectively, of the tank by bearings or stuffing-boxes of the usual construction outside the tank, through which stuffing-boxes the shaft E passes. (This mode of construction enables me to connect two, three, or more tanks with one shaft, and thus to operate them all together.)

F F, Fig. 1, are two disks (see Fig. 2) or spiders bearing three radial arms, G G G, Fig. 2, proceeding from the center or hub to the periphery. These arms carry, respectively, the ends of a round iron journal, (or short shaft,) L L L, Fig. 2, (three of these on each side, six in all,) the inner ends of which journal, being enlarged, enter into and are firmly fastened, respectively, to the respective ends of a roller or hollow cylinder of iron, H H H, Fig. 2, (three of these.)

J J, Fig. 1, is a fast and loose pulley which operates the machine, and is carried by the shaft E.

The rollers or pipes H H H, I sometimes make solid, turning the journals upon their respective ends.

Operation: The cover C being removed, the two paints to be mixed or the granular substances and oil (say white lead and linseed-oil) are placed in the tank, and the cover C being replaced and the moving belt being placed on the tight pulley, the shaft E is rotated, carrying with it the three rollers H H H. The mixing result of the motion (in the liquid, &c.) of the three horizontally-disposed rollers H, &c., is readily apprehended. There is, however, another action of great importance. By means of the slots, Fig. 2, in the arms G, &c., the shafts L, &c., are enabled to move back and forward in a line coincident with that of a radius of the disk circle. The centrifugal action thus tends to drive the rollers H, &c., away from the shaft E; but the weight and gravitation of these shafts L, &c., and rollers H, &c., tend, respectively, as the rotation of the shaft and disks brings the axial line of the respective slots to a position diagonally upward, (from a line drawn horizontally across

the center of the shaft E,) to cause the shafts and their respective rollers to slip or slide back again toward the shaft E. A new element is thus added to the continuous disturbance of the contents of the tank, which variation of the direction of the course of motion of the shafts or journals L, &c., and rollers adds in an extraordinary degree to the efficiency of the machine, and accounts for its remarkable rapidity of action. Further, if a nail or similar non-compressible object gets between the roller H and the bottom or side of the tank, the roller gives way and slips back toward the shaft E, the breakage of the machine being thus avoided. The substances being duly mixed, the rotation of the rollers H, &c., is stopped, and by means of the faucet D the thoroughly-mixed contents of the tank are removed. The faucet being closed, a sufficient quantity of naphtha or other hydrocarbon is poured in and the pulley-wheel is again set in motion and the inside of the tank, the shaft, rollers, &c., are quickly cleansed, the liquid-wash being drawn off by the faucet. I sometimes place spiral or other springs on the arms G, &c., respectively, to press the shafts or journals L, &c., outward; but I do not find them essential. The capacity of the tanks of the three machines used by me daily in my business are respectively sixty, sixty, and thirty gallons, which are handy sizes; but I do not limit myself to any particular size of the tanks, nor to any special number of the rollers H, &c. One would answer, but more are better. Nor do I limit myself to the exact shape shown of the vertical section of the tank, Fig. 2. The curvilinear portion of the inner surface of the tank (shown in Fig. 2 as at the bottom side of the tank) should be, to a certain extent, invariably preserved, because the curve being, as seen in Fig. 2, in the shape of an arc of the circle of rotation of the rollers H, &c., and the rollers being so arranged as to pass when in action exceedingly close to that part of the tank,

any conglomeration of the granular (or other) components of the contents of the tank is, in action of the machine, struck forcibly, broken, and thus fully disintegrated. This would not occur were not the arc of the circle of rotation of the rollers, &c., and that of the curved inner surface of the tank the same at some point. To increase the size of this arc I sometimes make the bottom of my tank of the shape, instead of a half of a hollow cylinder, as shown, of three-quarters of a cylinder, more or less; but so far the shape shown seems the best. Sometimes I form the bottom of my tank of staves, so that it presents internally the shape of the inside of a barrel divided longitudinally. The production of an exactly circular or semicircular contour is not essential. I do not claim making the bottom of my tank of a semicircular form. I sometimes add to the bottom of my tank a steam-jacket or a jacket provided with pipes carrying steam or hot air, or pipes without a jacket. I sometimes make my tank-cover irremovable and provide it with a hand-hole and cover.

I claim—

In machines for mixing substances, the combination and arrangement of a containing-tank with the lower portion of its inner surface in the shape of an arc of a circle, or nearly so, and a vacant space forming the upper portion of the tank, the tank provided with an entrance-aperture above, with a rotating shaft passing from end to end of the tank parallel with its axis in the largest direction, the shaft-carrying one or more rotating rollers whose bearings are permanently fixed at any certain distance from the center of the shaft, all constructed, arranged, and fitted for the purpose named, substantially as shown and described.

JOHN BRIGGS.

Witnesses:

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