(No Model.)

J. SCHMIDT.

COLOR MILL.

No. 557,150. Patented Mar. 31, 1896.

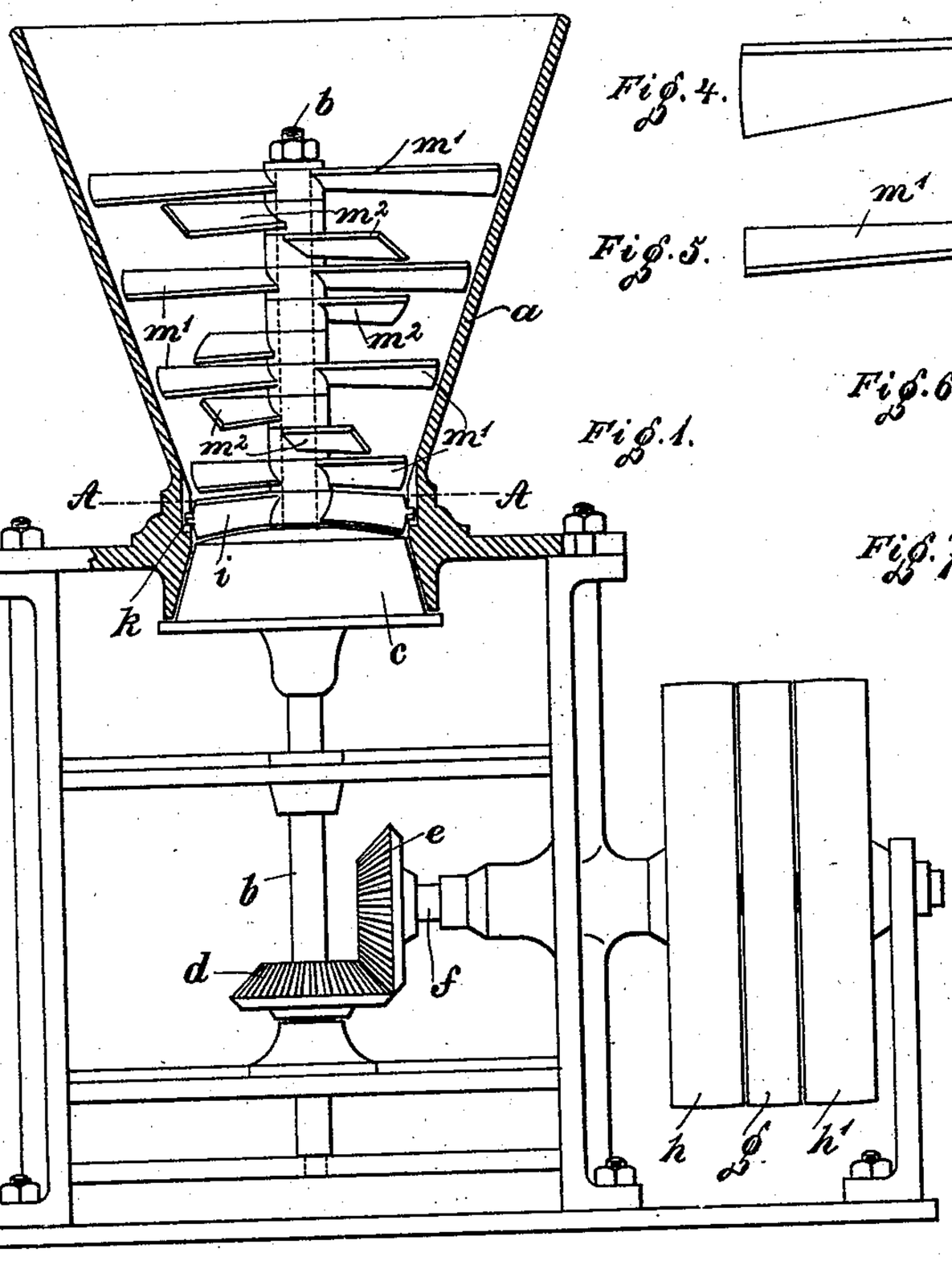


Fig. 1.

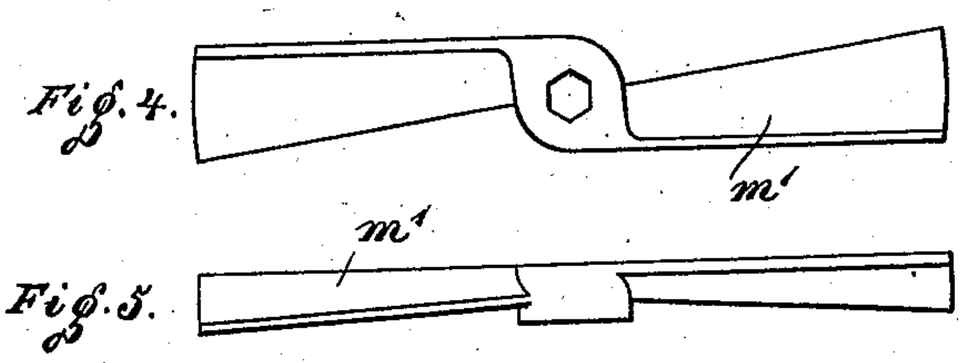


Fig. 4.

Fig. 5.

Fig. 6.

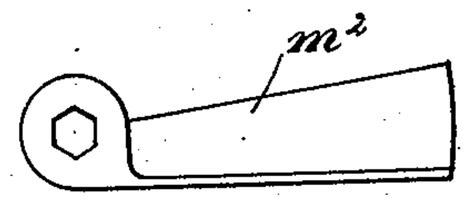


Fig. 7.

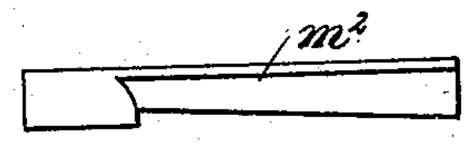
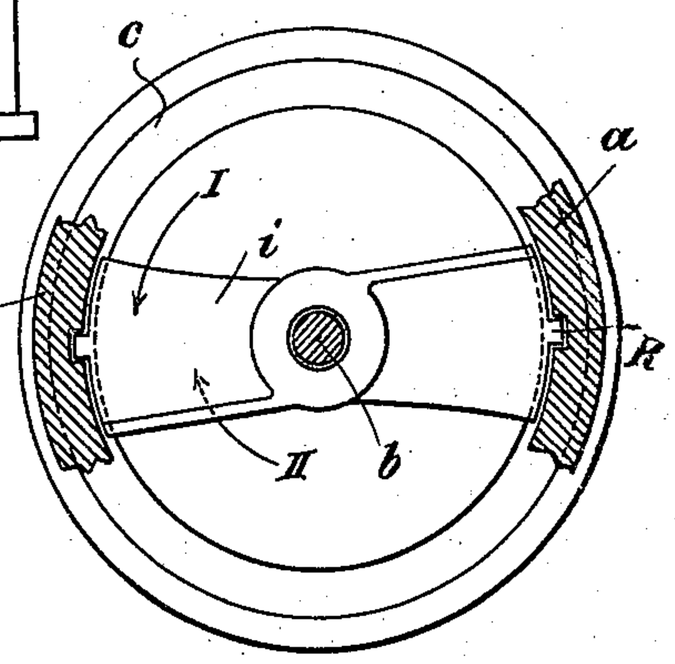


Fig. 8.

Fig. 3.



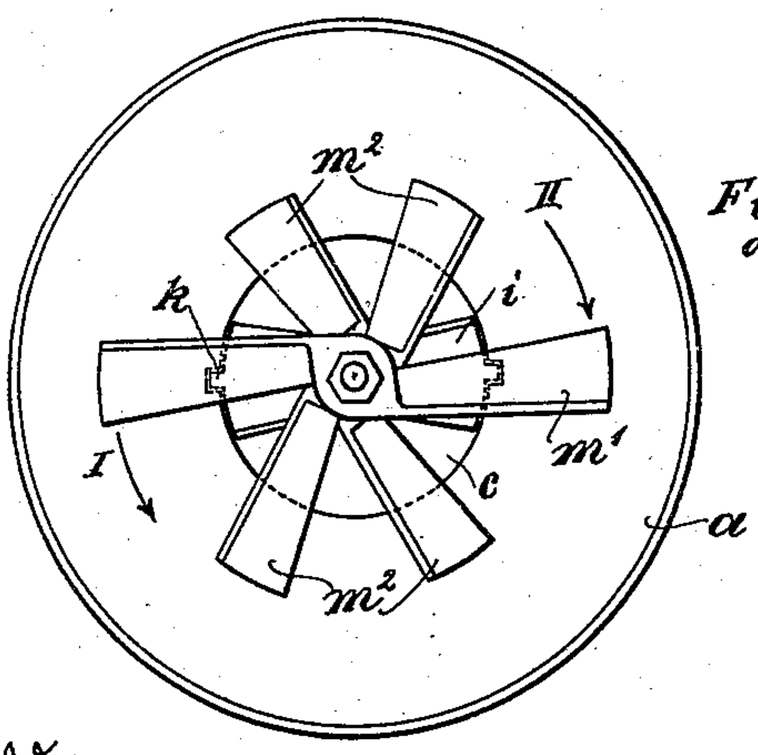


Fig. 2.

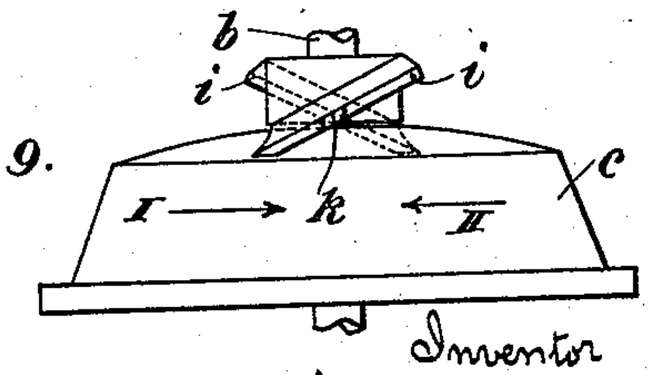


Fig. 9.

Witnesses
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UNITED STATES PATENT OFFICE.

JULIUS SCHMIDT, OF MUNICH, GERMANY.

COLOR-MILL.

SPECIFICATION forming part of Letters Patent No. 557,150, dated March 31, 1896.

Application filed January 16, 1895. Serial No. 535,171. (No model.) Patented in Germany March 10, 1894, No. 77,718, and in France May 28, 1894, No. 238,828.

To all whom it may concern:

Be it known that I, JULIUS SCHMIDT, a subject of the King of Bavaria, and a resident of Munich, Bavaria, Germany, have invented certain new and useful Improvements in Color-Mills, of which the following is a specification.

Patents have been granted for this invention in Germany, No. 77,718, dated March 10, 1894, and in France, No. 238,828, dated May 28, 1894.

The processes of mixing color with oil and grinding the same in the manufacture of oil-colors up to the present time have always been separate either by means of two different machines or in such a manner that the mixing of the colors and oil was made by hand and that the thus-prepared mass was poured in the color-mill for being ground. By the present invention I effect these two actions in one apparatus, which has the advantage that no second machine is required and that there is no need for a workman to do the mixing, as this can be done in the machine much better and in a much more uniform manner.

Figure 1 of annexed drawings shows a side view, partly in section, of the mixing and grinding apparatus. Fig. 2 is a plan view of the grinding-hopper; Fig. 3, a partial section on the line A A of Fig. 1. Figs. 4 to 8 are views of the paddles. Fig. 9 shows the cone and fixed paddle.

As can be seen from Fig. 1, the apparatus consists of a color-mill with funnel *a*, at the bottom of which is the grinding-cone *c*, rotating around the vertical shaft *b*. The shaft *b* is operated by the shaft *f* by means of a cog-wheel transmission, which shaft *f* turns in one or in the other direction, according to whether a direct or a cross driving belt is made to pass from the loose pulley *g* to the fixed pulleys *h h'*. Part of the shaft *b* projects into the grinding-hopper. A double-winged paddle-piece *i* of iron is slipped upon said shaft, the two ends of which are close to the walls of the funnel, and it is held against the same by means of two ribs *k* engaging in two vertical grooves of the funnel. The two wings of this paddle are oblique, and the diametrically-opposite arms have their oblique surface in the same direction—that is, one of them toward the front, the other toward the rear. The paddle-piece *i* is close to the grinding-cone, and its shape is adapted to the shape of the same. Paddle-pieces m' m^2 are placed spirally above the fixed paddle along the shaft *b* and are suitably fixed to the latter. These paddle-pieces are partly two-winged and partly provided with only one wing, as shown in the drawings, and as may be required for making up the spiral.

Figs. 4 to 8 show the detail construction of the paddles m' m^2. The successive paddles form such angles that a number of them—for instance, five—correspond to the full circumference of a circle. The obliquity of these spirally-superposed paddles is exactly the same as that of the fixed paddle *i*.

When the color and oil are put in the grinding-funnel for mixing the same, the shaft *b* will be rotated in the direction of the arrow I, Figs. 2, 3 and 9, and thereby the grinding-cone and the paddles m' m^2. Thereby the color will be driven upward from the cone *c* to the upper paddles m' m^2 by means of the fixed paddle-arms *i*, while the oil runs downward and mixes thoroughly with the color. This produces a thorough stirring and mixing of the color and the oil. The fixed paddles *i* prevent at the same time the color from penetrating into the grinding-surfaces. When after this the other driving-belt is put in action, the shaft *b* will rotate in an opposite direction (that of the arrow II) and the grinding-cone will commence to operate. The mixture of color and oil is successively conveyed from the paddles m' m^2 under the paddle *i* to the grinding-cone, and will be thoroughly triturated before coming out through the bottom of the funnel *a*. The motion of the mentioned color-mill can be imparted by crank and connecting rod, as well as by the belt-pulleys.

I claim—

1. In combination, in an apparatus for both mixing and grinding colors, a hopper, the spirally-arranged mixing-arms therein, the shaft supporting the same, the grinding-cone at the base of the funnel and a fixed paddle between the cone and the mixing-arms, said fixed paddle having inclined arms adapted when the mixing-arms are moved one way for mixing the material to direct the same up-

wardly in conjunction with said mixing-paddles and when the mixing-arms are rotated in the other direction to force the material downwardly upon the grinding-cone, substantially as described.

2. In combination, the hopper, the shaft having the spirally-arranged mixing-paddles therein, the grinding-cone at the base of the hopper, and the fixed paddle on the shaft and having its arms connected with the wall of the hopper, substantially as described.

3. In combination, the hopper, the mixing-paddles spirally arranged thereon, the grinding-cone and the paddle interposed between the cone and mixing-paddles, the shaft carrying the cone and paddles, the driving-shaft and the three pulleys g, h, h', thereon whereby the grinding-cone with the paddles may be turned either one way or the other.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JULIUS SCHMIDT.

Witnesses:
EMIL HENZEL,
ALBERT WEICKMANN.