

5. In crushing, grinding, or pulverising machinery, the combination of a vertical shaft with a pair of upper rollers F F, a pair of straps such as P, an upper pan E, a collar or clamp N, a lower set of rollers D D D D, and lower pan C, substantially as described in the foregoing specification and illustrated in the drawings.

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A NEW AND IMPROVED GOLD-SAVING MACHINE.

I, William Henry Dawson, of Callan Park, Balmain, in the Colony of New South Wales, warder, do hereby declare the nature of my invention for "A New and Improved Gold-saving Machine," and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

My invention relates to machines for saving gold and other metals from all decomposed alluvial matter (including crushed ores, sand, gravels, and clays) in which the same are to be found. Gold-saving machines usually have the matter to be treated placed in the machines at some elevated point, and after treatment the mullock and tailings come out at a lower point, leaving the gold and other metals in the machine, the course of matter under treatment being a downward one. My machine, owing to the peculiar construction of a cylinder and its parts shown in Fig. 2, throws the mullock and tailings out at a higher point than that at which the matter under treatment flows into the said cylinder, and the gold and other valuable metals are collected at the bottom of the same cylinder, thus affording a more secure method of saving gold and other valuable metals, having a greater density than is usual in mullock and tailings, and doing away with the necessity of regulating the flow of water. The manner in which my invention is to be constructed, and a concise description of the drawings lodged herewith, are as follows:—

The frame is made of wood or any other material. The hopper A (Fig. 1) is constructed of malleable or cast iron, is stationary, and is fitted inside cylinder B to C (Fig. 1), which is also constructed of malleable or cast iron. This cylinder is made up of two parts rivetted together as shown on Fig. 4. At B, Fig. 1, there is a collar of angle-iron round the cylinder. This cylinder revolves round hopper on stationary shaft D to E, Fig. 1, at the points *a* and *c*, which are fitted on internal bearings, screw-shaped. On the cylinder is a flanged iron groove, and the motive-power required here is obtained by a belt, as shown on Fig. 1, connected to the main working gear. The shaft D to E, Fig. 1, is secured by pins at D and E, rivetted to the shaft D to E, and running the whole length and inside of cylinder. B to C, Fig. 1, are screw-shaped teeth made of malleable iron. A small handle fitted on shaft at E is used for revolving the said shaft and teeth, when the teeth require cleaning and after removing the pins at D and E. F, Fig. 1, is a hood fitted on shaft D to E at point shown on plan to assure the true course of material under treatment, and may be constructed of any material. G, Fig. 1, is a grating made of iron ribs wired as shown on Fig. 2, revolving on shaft, the motive-power of which is obtained as shown on Fig. 3. H, Fig. 1, is a stationary funnel made of malleable iron held in position by lugs in a circular collar bolted to frame, as shown at *h* in Fig. 4. K, Fig. 1, is a revolving bell-shaped cylinder made of malleable or cast iron. This cylinder is fitted to a plate of iron pinned to vertical shaft as best shown in Fig. 3. Inside the said cylinder are one or more electro-plated spiral scrolls shown in Fig. 3, marked L, which extend from the bottom to the top of the said cylinder. The said spiral scrolls are dropped in the said cylinder and then fastened at points *l* and can be either held in position by the velocity of the cylinder or rivetted to the cylinder. At the bottom of the said cylinder are three rings of malleable iron, and on the top is a similar ring. The bottom of the said cylinder has a cant in it, and is provided with a trap-door. M, Fig. 5, is a shoot to receive mullock and tailings. N, Fig. 3, is the point at which motive-power for the whole machine is applied, and is accelerated by means of cog-wheels. The power may be hand, steam, or of any other description, regard being had to the resources of the worker.

The manner of using my invention:—

The matter to be treated is put into machine at hopper A (Fig. 1) and is passed through the revolving cylinder B to C (Fig. 1) by means of a flush of water. While the matter under treatment passes through this cylinder it is broken up by teeth on shaft *a* to *b*, Fig. 1. The bearings *a* and *b* are screw-shaped, to assist passage of matter under treatment. The hood F, Fig. 1, assures a true passage of stuff into cylinder below and prevents splashing and loss of material. When matter under treatment flows into bell-shaped screen G, Fig. 1, the stones, dirt, and gravel are thrown out into the shoot M, Fig. 5, the coarser gold being retained, and the fine stuff passing through screen into funnel H, falls into bottom of bell-shaped cylinder K. The remaining gold and other metals are retained there, and the balance of stones, dirt, gravel, and other lighter substances are thrown out by the circular velocity of the cylinder into shoot M, Fig. 5. The gold and other valuable metals are then removed through the trap-door. The cylinder can be used with or without the screen in treating sand and crushed ore, and the cylinder can be used with or without quicksilver.

Having thus described the nature of my said invention and the mode of using the same, I would have it understood that I do not confine myself to any shape or size for my machine. I also wish it to be understood that the spiral scrolls can be either electro-plated or not; but I prefer to use the electro-plated ones. I would also have it understood that K, Fig. 1 (which I have throughout this specification described as a semi-vertical cylinder), may be either horizontal, vertical, or at any angle between the horizontal and vertical; but I prefer the semi-vertical cylinder shown on the plans lodged herewith.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is—