J. A. VAUGHN, H. B. CAMP, H. E. & C. J. MERRILL.

Clay-Mills.

No. 145,373. Patented Dec. 9, 1873.

Fig. 1.

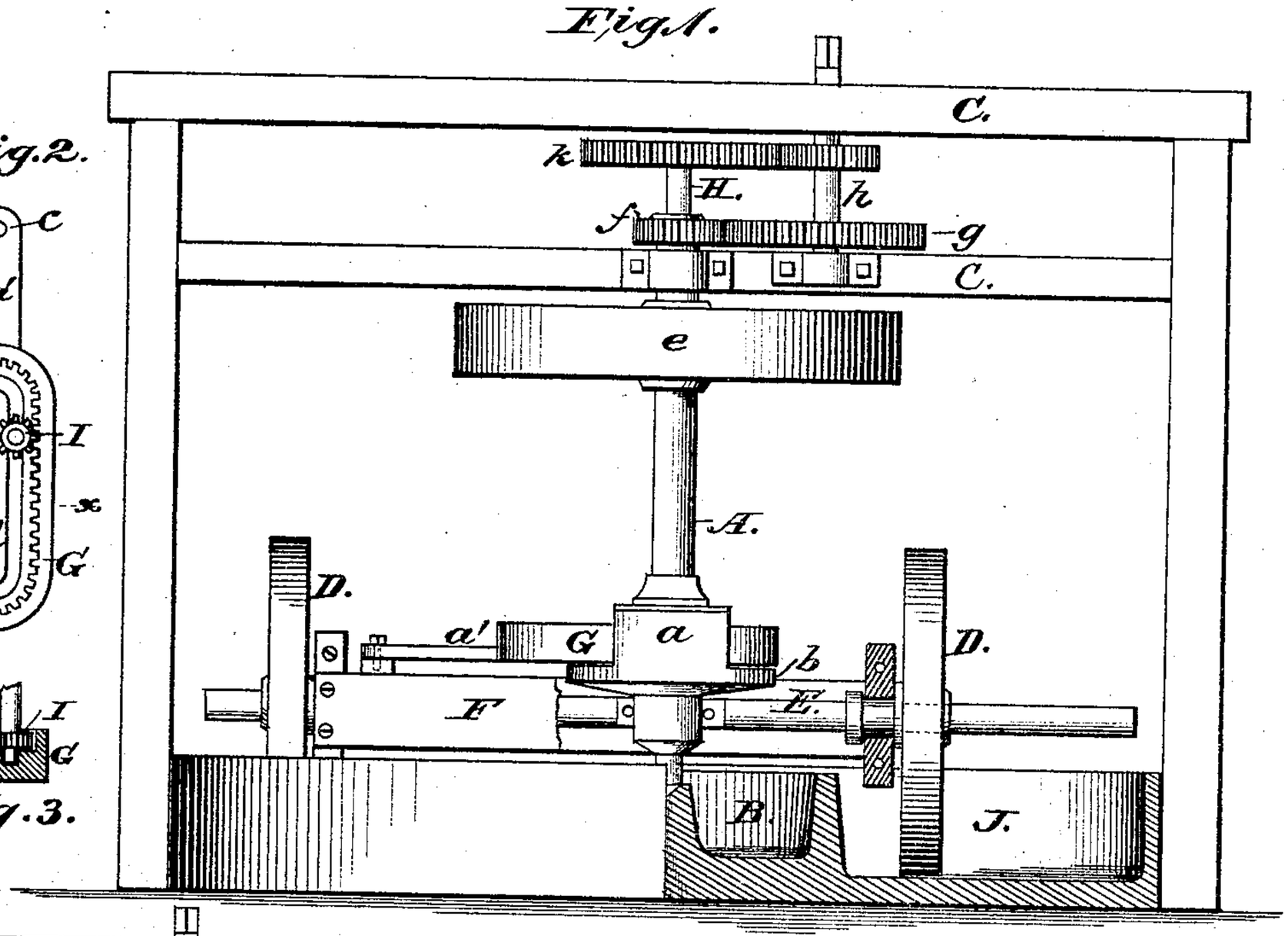

Fig. 2.

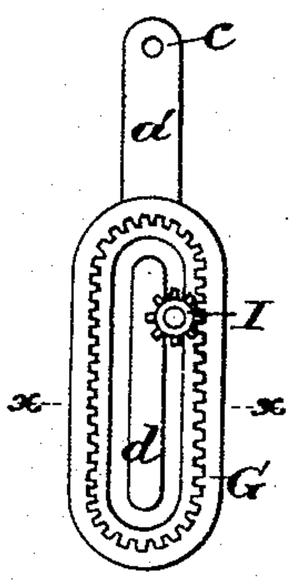

Fig. 3.

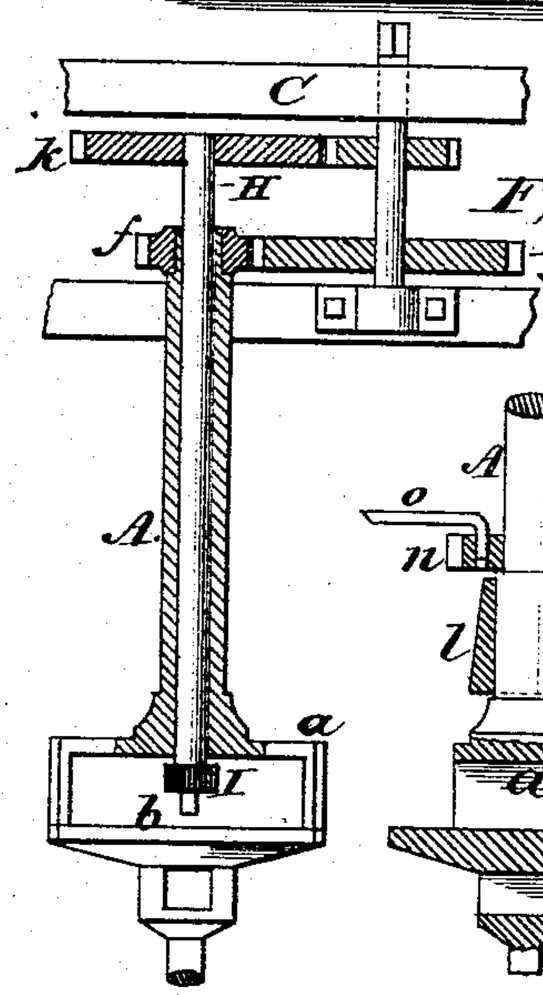

Fig. 4.

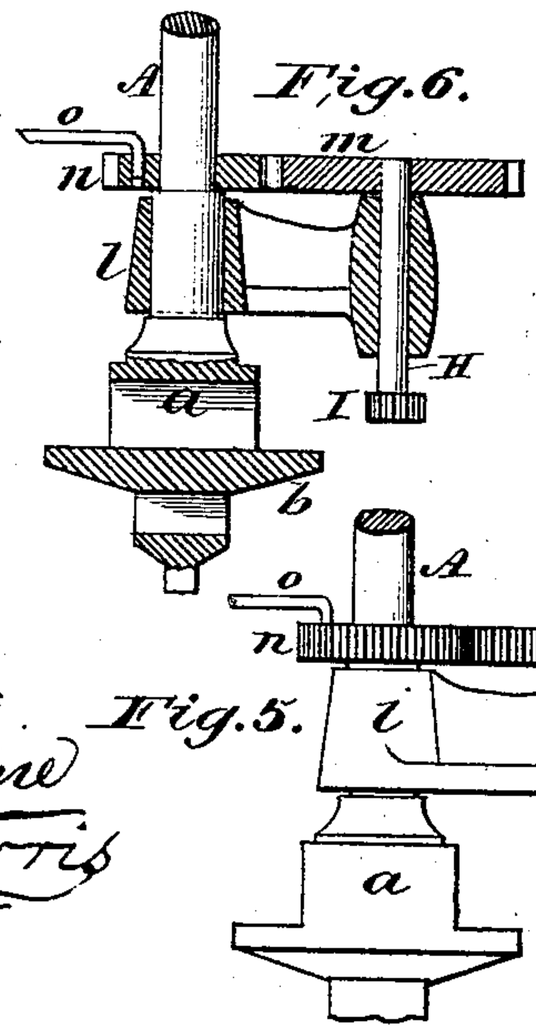

Fig. 6.

Fig. 5.

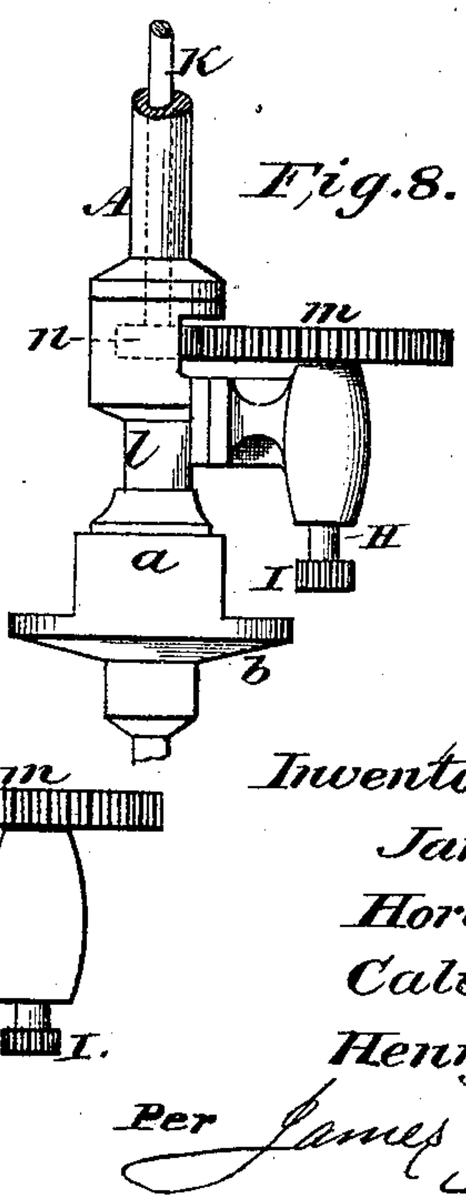

Fig. 8.

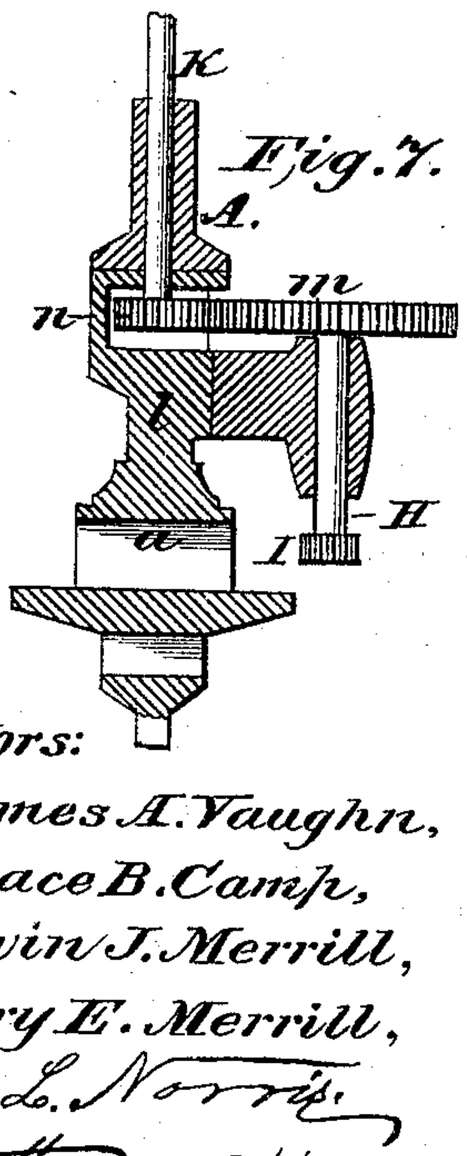

Fig. 7.

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UNITED STATES PATENT OFFICE.

JAMES A. VAUGHN AND HORACE B. CAMP, OF CUYAHOGA FALLS, HENRY E. MERRILL, OF AKRON, OHIO, AND CALVIN J. MERRILL, OF ALTON, ILL., ASSIGNORS TO TURNER, PARKS & CO., OF CUYAHOGA FALLS, OHIO.

IMPROVEMENT IN CLAY-MILLS.

Specification forming part of Letters Patent No. **145,373**, dated December 9, 1873; application filed May 3, 1873.

To all whom it may concern:

Be it known that we, JAMES A. VAUGHN and HORACE B. CAMP, of Cuyahoga Falls, in the county of Summit and State of Ohio, HENRY E. MERRILL, of Akron, in said county and State, and CALVIN J. MERRILL, of Alton, in the county of Madison and State of Illinois, have invented certain Improvements in Clay-Mills, of which the following is a specification:

This invention relates to that class of mills for grinding clay wherein the clay is ground by two wheels revolving in a circular trough or bed; and the invention consists of a main or driving shaft and an auxiliary shaft geared with an endless rack for reciprocating the same, the main shaft and auxiliary shaft being so geared together that the grinding-wheels shall be reciprocated by the action of the rack and auxiliary shaft, in the manner hereinafter described.

In the drawings, Figure 1 is an elevation of a clay-mill embodying our invention; Figs. 2 and 3, a plan and a cross-section of the endless rack. Fig. 4 is a vertical section of the shafts and gearing. Figs. 5, 6, 7, and 8 are modifications of the manner of operating the auxiliary shaft.

A represents the hollow main or driving shaft, Figs. 1 and 4, having its lower bearing in a step, B, and its upper bearing in the frame C. The shaft A is forked near its lower end to form two arms, *a a*, descending upon a base or disk, *b*, thus producing an opening, as shown, beneath which the shaft is of the usual form. The grinding portion of the mill is composed of two wheels, D D, which revolve on a horizontal shaft, E, which passes through an opening in the shaft A. Between the two wheels is located a rectangular frame, F, and said frame and wheels have a longitudinal motion on the shaft E, as hereinafter described. An endless rack, G, possessing an arm, *a'*, is arranged in the opening created by the branching arms *a a* of the shaft A, and its arm *a'* is secured to the frame F by a pin passing through the opening *c* in the end of said arm. An auxiliary shaft, H, passing through the shaft A, has near its lower end a pinion, I, which gears with the rack G, and its lower end bears in a continuous groove, *d*, formed in the base portion of the rack, thus retaining said pinion constantly in gear with the rack. The main shaft is revolved by means of a belt passing around the pulley *e*, and by means of the shaft E causes the wheels D to travel around the bed J, and at the same time motion will be communicated to the shaft H by means of the pinion *f* on the upper end of the shaft A, which meshes with a gear-wheel, *g*, located on a vertical shaft, *h*, having on its upper end a pinion, *i*, meshing with a gear-wheel on the upper end of the auxiliary shaft H, thus imparting a revolving motion to the latter, and by means of the pinion I causing the endless rack G to have a reciprocating motion, imparting a corresponding motion to the frame F, which has the effect of moving the wheels longitudinally on the shaft E, and causes them to traverse every portion of the bed J, thus effectually accomplishing the grinding process. Instead of making the shaft A hollow and arranging the auxiliary within it, we in some instances make said shaft solid, and arrange on it a collar, *l*, possessing an arm which serves as a bearing for the auxiliary shaft H, the lower end of which carries the pinion I, and its upper end carries a gear-wheel, *m*, meshing into a pinion, *n*, loosely arranged on the driving-shaft A, and prevented from turning by a rod, O, by which means, as the shaft A revolves, a slow motion will be

communicated to the shaft H, and also to the endless rack and grinding-wheels, as shown in Figs. 5 and 6; or, instead of this manner of operating the auxiliary shaft and endless rack, we in some instances make the shaft A hollow above the collar *l*, and arrange shaft K within it, said shaft having at its lower end a pinion, *n*, meshing with the gear-wheel *m* on the auxiliary shaft H, as shown in Figs. 7 and 8. In this instance motion is communicated to the shaft K by the means described in Fig. 1.

We claim as our invention—

In combination with the main shaft A and endless rack G, the auxiliary shaft H for reciprocating the rack, the main and auxiliary shafts being so geared together that the grinding-wheels shall be reciprocated, in the manner herein described.

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