No. 898,414. PATENTED SEPT. 8, 1908.

W. A. MERRALLS.

STAMP MILL.

APPLICATION FILED JAN. 14, 1908.

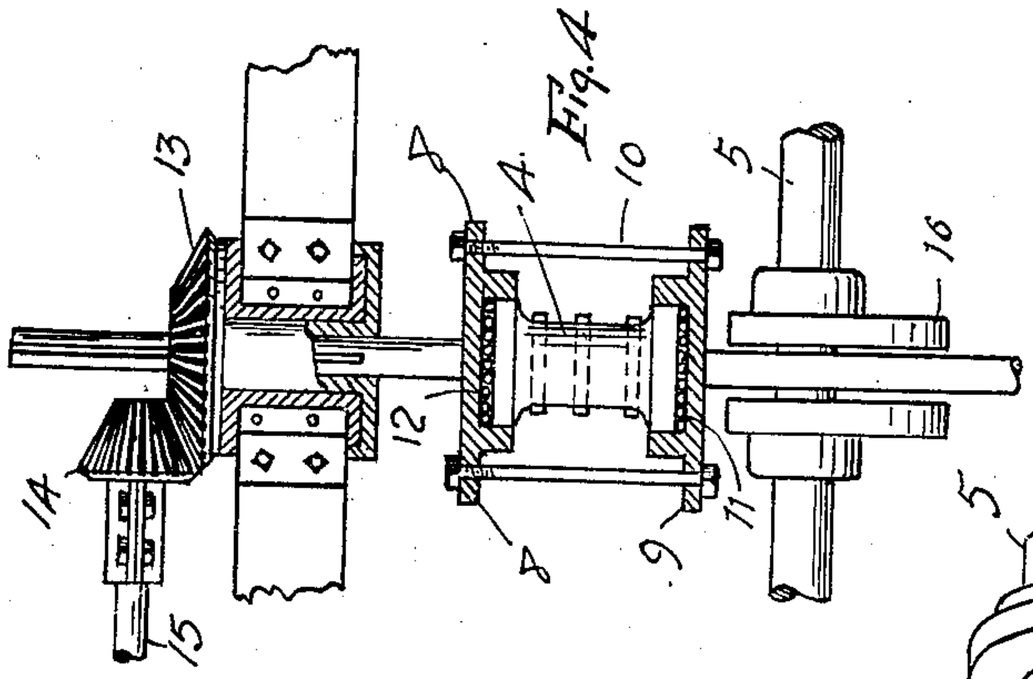

Fig. 4

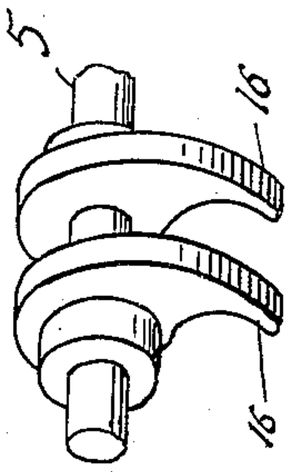

Fig. 5

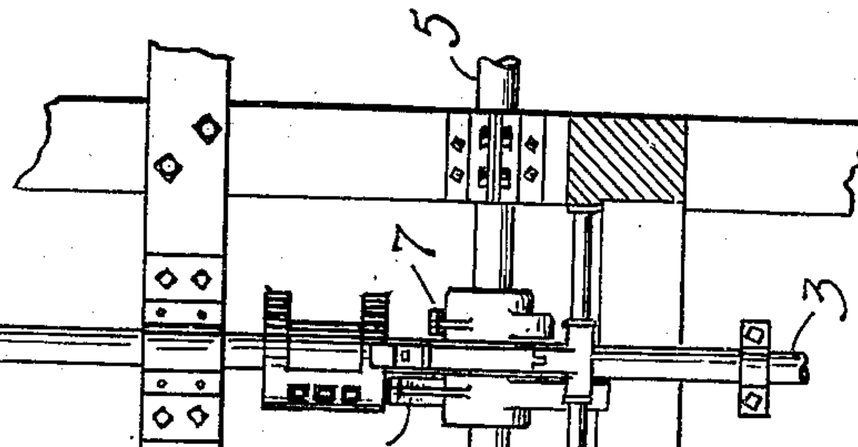

Fig. 2

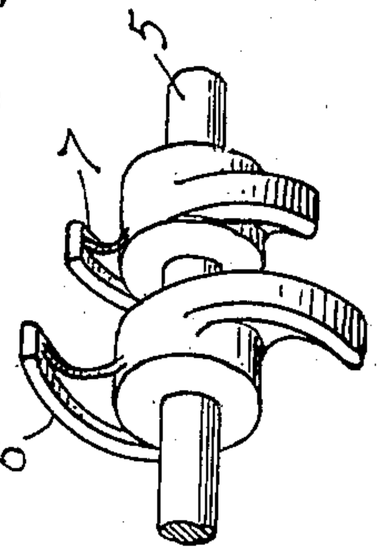

Fig. 3

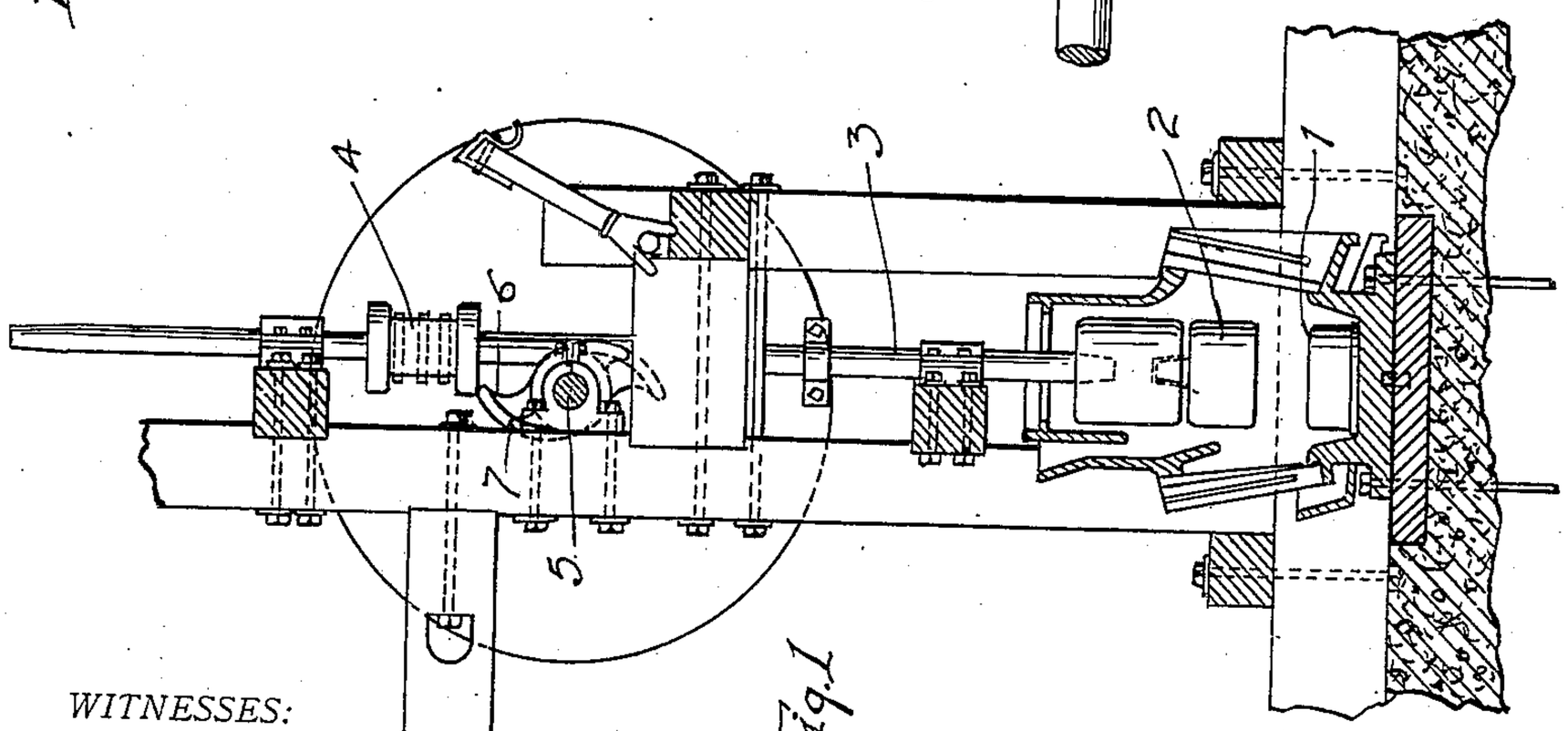

Fig. 1

WITNESSES:

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STAMP-MILL.

No. 898,414. Specification of Letters Patent. Patented Sept. 8, 1908.

Application filed January 14, 1908. Serial No. 410,758.

To all whom it may concern:

Be it known that I, WILLIAM A. MERRALLS, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Stamp-Mills, of which the following is a specification.

This invention relates to improvements in stamp mills, and the object of the invention is to provide means for raising the stamp which will be more effective in operation than those heretofore employed.

In the accompanying drawing, Figure 1 is a vertical section of a stamp mill equipped with my improvement; Fig. 2 is a section of the upper portion of the mill at right angles to that shown in Fig. 1; Fig. 3 is a perspective view of the cams for lifting the stamp; Fig. 4 is a view similar to Fig. 2 of a modification of the invention; Fig. 5 is a side view of the cams.

Referring to the drawing, 1 indicates the mortar of a stamp mill, 2 being the stamp and 3 the stem therefor, having secured thereon the usual tappet 4.

5 is the cam shaft for raising the stamp by means of said tappet. It has formerly been the practice to employ a single cam for each tappet, and since the cam engages the tappet only at the one side of the stem, it has the effect of imparting to said tappet and stem a rotary motion. While the rotary motion is necessary for effective operation of the stamp, there are disadvantages connected with the raising of the stamp by engagement of the cam with one side only of the tappet. One of these is the excessive lateral pressure on the guides for the stamp stem. Another is the irregularity of the strain upon the cam shaft, and of the work to be done thereby. The greatest strain is thrown upon the cam shaft just at the moment of lifting the stamp from a position of rest. After the lifting commences, the momentum of the moving parts greatly reduces the work required to be done by said shaft. In order to more effectively take up this initial strain at the moment of raising the stamp from a position of rest, instead of a single cam, I provide two cams on the cam shaft, one on each side of the stamp stem, both of which initially engage the tappet. These cams are shown at 6 and 7, the main cam 6 being considerably longer than the auxiliary cam 7, both, however, being formed with the same evolute. Both of said cams engage the tappet at its position of rest, but, very soon after the stem has been so raised, and when it has acquired sufficient upward momentum, the auxiliary cam 7 leaves the tappet and its subsequent upward motion is caused only, by the main cam 6, which then, by reason of its engagement with the tappet at one side imparts sufficient rotary motion to the stamp stem and stamp.

In the modification shown in Figs. 4 and 5, the two cams 16 on opposite sides of the cam stem are of the same length. The tappet proper 4 is contained within upper and lower bearing plates 8, 9, connected by bolts 10, and having sockets 11 adapted to receive the ends of the tappet, balls 12 being interposed between said tappet ends and bearing plates. Thrust plates may be used instead of the balls. The stamp stem is positively rotated by a bevel gear 13 on said stem actuated by a bevel pinion 14 on a shaft 15 rotated from any suitable source of power.

By providing the two cams on the cam shaft, on opposite sides of the stamp stem, and adapted to engage the tappet at opposite sides of the stem, I greatly reduce the strain and wear upon the cams, and also reduce the power required to operate the cam shaft. I also eliminate the pressure upon the stamp stem and its guides due to the lifting of the tappet by the cam at one side only of said tappet.

I claim:—

In a stamp mill, the combination with the stamp stem and tappet, of a cam shaft having cams thereon on opposite sides of the stamp stem, both arranged to lift the same tappet, one of said cams being longer than the other, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM A. MERRALLS.

Witnesses:

FRANCIS M. WRIGHT,

D. B. RICHARDS.