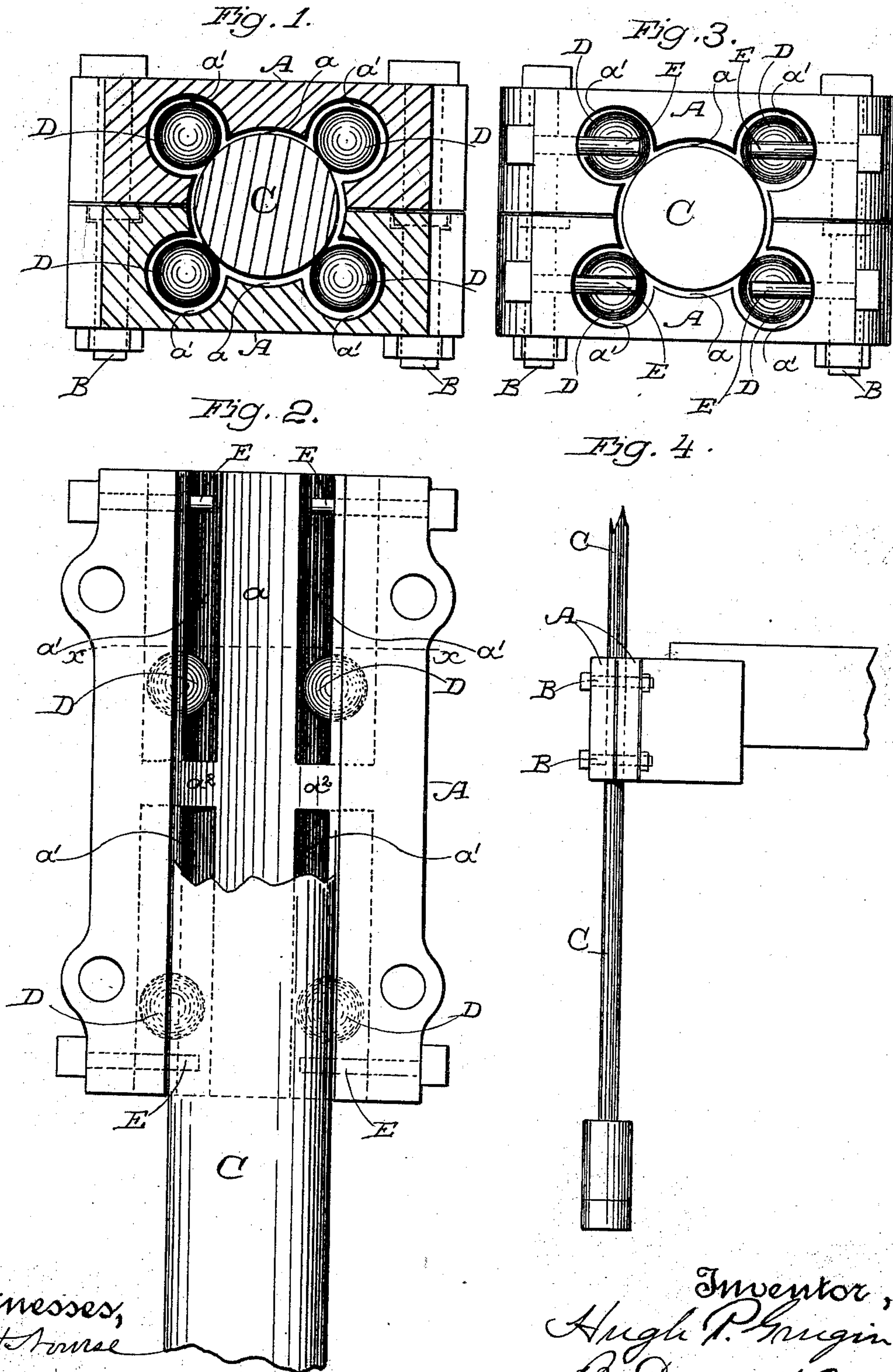


(No Model.)

H. P. GRUGIN.  
STAMP STEM GUIDE.

No. 505,400.

Patented Sept. 19, 1893.



Witnesses,  
J. A. Bayless

Inventor,  
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attys



# UNITED STATES PATENT OFFICE.

HUGH P. GRUGIN, OF HELENA, MONTANA.

## STAMP-STEM GUIDE.

SPECIFICATION forming part of Letters Patent No. 505,400, dated September 19, 1893.

Application filed March 17, 1893. Serial No. 466,442. (No model.)

*To all whom it may concern:*

Be it known that I, HUGH P. GRUGIN, a citizen of the United States, residing at Helena, Lewis and Clarke county, State of Montana, have invented an Improvement in Stamp-Stem Guides; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of guides for lineally reciprocating bars, and especially to the guides for the stems of the stamps of stamp mills or batteries used principally for crushing ores.

It consists in the novel constructions herein-after fully described and specifically claimed.

My invention, though applicable to any bars which have a lineally reciprocating motion, has for its special object, the provision of a durable and efficient anti-friction guide for the stamp stem of ore stamp mills.

Referring to the accompanying drawings for a more complete explanation of my invention,—Figure 1 is a horizontal cross section of my guide, on the line  $x-x$  of Fig. 2. Fig. 2 is a vertical section of same. Fig. 3 is a top view. Fig. 4 is a side elevation.

The guide consists of a stock A, preferably formed in two parts held together by bolts B. In each part is formed the half of the socket  $a$  through which the bar or stem C passes and plays, said socket being conformable in cross section to the cross section of the bar or stem. In each section are also formed the longitudinally disposed channels or seats  $a'$  which open into and are exposed to the socket  $a$ . There may be as many of these channels as may be found desirable, and they may be continuous or as here shown divided centrally by a transverse rib or wall  $a^2$ . Their outer extremities are open to admit the insertion of the anti-friction balls D, and said balls are then confined in the channels by means of removable stops E traversing or entering the outer extremities of said channels. There may be as many of these balls as may be desired, as, for example, one for each channel, and said balls are freely movable in their seats, having both a rotary movement on their axes and a bodily

movement or travel in the line or direction of the reciprocation of the bar or stem. The diameter of the balls is sufficient to cause them to project into the socket  $a$  of the stock and to bear upon the stem or bar. Though the balls may be of any suitable material, the highest efficiency of the invention is obtained by making them of rubber, whereby they serve as cushions as well as anti-friction bearings.

In the use of these guides in stamp batteries a large percentage of wear and tear is saved. It makes no difference which way the stamp drops on the die, nor how hard the piece of quartz may be upon which it drops. The lifting cam picks it up easily, the rubber balls acting as cushions and yielding sufficiently to ease the stem, and as they roll with the stem, the friction is reduced to the minimum. Friction is also avoided in the contact of the cam and tappet, as the stem turns axially easily upon the balls in the guide, and these parts, therefore, last longer. This guide also prevents the stem from breaking off at the boss head. No guide fasteners are needed, as my guide is both guide and fastener. It is durable as there is no wear except on the balls, which will last a long time and may be easily replaced. There are no fasteners to break and the consequent stopping of the mill for a long time is avoided.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The stamp stem guide herein described, consisting of the socketed stock through which the stem passes, said stock having the open ended longitudinally disposed channels therein, opening into its socket, the balls seated and freely movable in the channels and bearing on the stem, and the removable stops at the open ends of the channels, substantially as herein described.

In witness whereof I have hereunto set my hand.

HUGH P. GRUGIN.

Witnesses:

W. H. TAYLOR,  
LEM A. LACROIX.