H. TRUMBULL.

MACHINE FOR GRINDING ORES.

No. 190,389. Patented May 1, 1877.

Fig. 1.

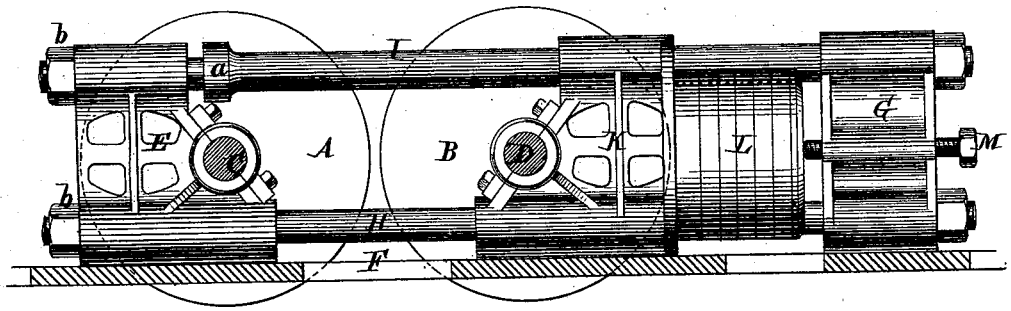
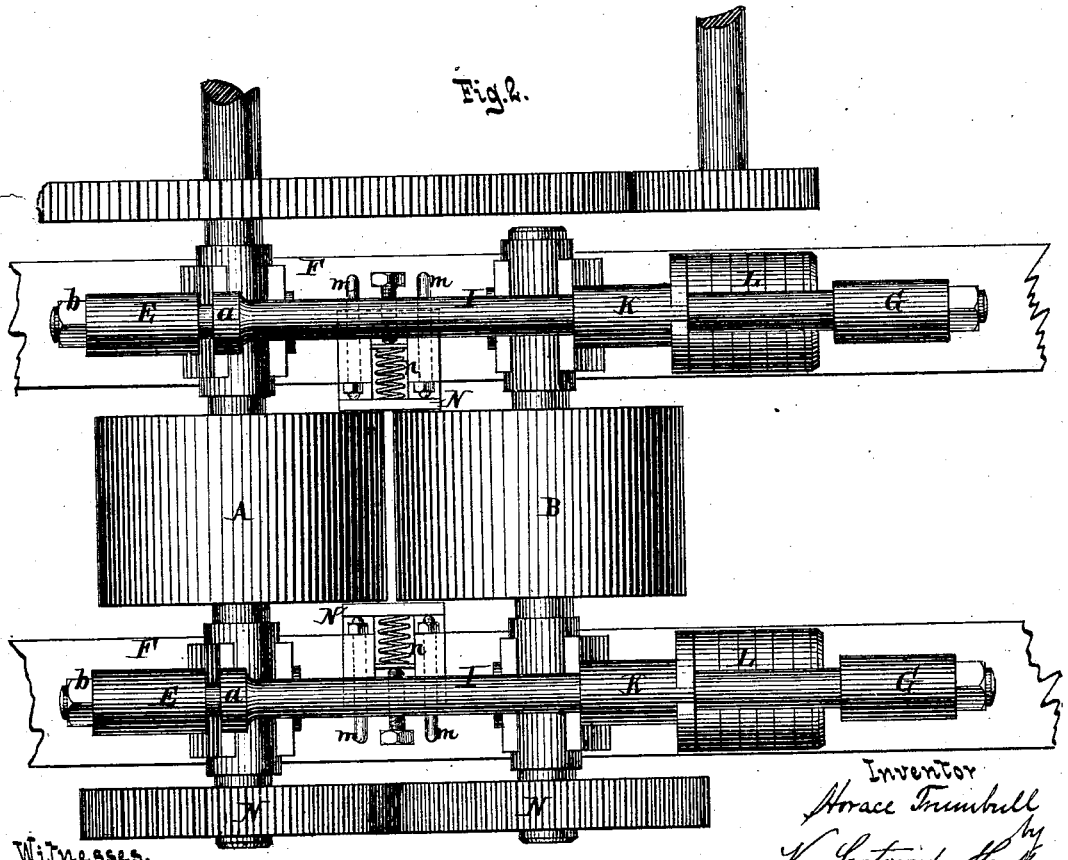


Fig. 2.



Witnesses.
Otto Hufeland.
Robt. E. Miller

Inventor
Horace Trumbull
by
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his attorneys

UNITED STATES PATENT OFFICE.

HORACE TRUMBULL, OF TICONDEROGA, NEW YORK, ASSIGNOR TO NEW YORK ORE SEPARATOR COMPANY.

IMPROVEMENT IN MACHINES FOR GRINDING ORES.

Specification forming part of Letters Patent No. **190,389**, dated May 1, 1877; application filed October 27, 1876.

To all whom it may concern:

Be it known that I, HORACE TRUMBULL, of Ticonderoga, in the county of Essex and State of New York, have invented a new and useful Improvement in Rollers for Crushing Ore and other materials, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a sectional side view. Fig. 2 is a plan or top view.

Similar letters indicate corresponding parts.

This invention relates to crushing-rollers the axles of which have their bearings in standards, with which are combined guide-rods and elastic cushions, so that by means of the guide-rods the distance between the crushing-surfaces of the rollers can be adjusted, and by means of the elastic cushions one of said crushing-rollers is rendered yielding, while the guide-rods keep the crushing-surfaces of the rollers parallel at all times.

In the drawing, the letters A B designate two crushing-rollers, which are mounted on axles C D, respectively. The axle of the roller A has its bearings in two standards, E E, which rise from bed-plates F F, and are guided in suitable grooves provided for this purpose in said bed-plates. From these bed-plates rise also standards G G, which are firmly connected thereto, and through the standards E E and G G extend four guide-rods, H I. These guide-rods are provided at their ends with screw-threads and nuts *b*, and by turning up these nuts the standards E E are caused to slide toward the stationary standards G G. On the guide-rods I are formed shoulders *a*, which prevent the standards E from being moved toward the standards G beyond the desired distance, or in other words to prevent the crushing-surfaces of the rollers A B from being forced hard up, one against the other, as will be presently more clearly explained.

The axle of the roller B has its bearings in standards K, which slide on the guide-rods H I, and which are provided on their backs with elastic cushions L, which are exposed to the action of set-screws M, secured in the stationary standards G G. By means of these set-screws the rollers B can be made to move up toward the roller A. But the principal object of the set-screws and of the elastic cushions is to render the roller B yielding, so that in case any very hard substance gets between the crushing-surfaces the roller B can give, and injury to the mechanism is avoided.

The crushing-rollers A B are geared together by cog-wheels N N, the cogs of which are of such depth that they will not be thrown out of gear by moving the crushing-rollers a short distance apart, and by means of the shoulders *a* on the guide-rods I the motion of the crushing-rollers toward each other is stopped before the cog-wheels N N begin to bind.

By the guide-rods H I the crushing-rollers and their axles are kept parallel toward each other at all times, so that the material which passes through between said rollers is crushed to a uniform degree of fineness throughout the whole extent of the crushing-surfaces.

On the guide-rods H I are secured two plates, N N, which are supported by pins *m m*, and are pressed up against the sides of the crushing-rollers by springs *n*. The object of these plates is to keep the material to be crushed from passing out at the sides of the crushing-rollers.

I am aware that guide-rods have heretofore been combined with the housings of the shafts of two crushing-rollers; and I do not therefore lay claim to this feature independent of the entire combination.

I am also aware that buffers have been used in similar machines.

What I claim as new, and desire to secure by Letters Patent, is—

The combination, with crushing-rollers A B, their axles C D, standards E K G, and guide-rods H I, of elastic cushions L, situated between the standards G and K, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 4th day of October, 1876.

HORACE TRUMBULL.

Witnesses:

JOHN P. CONKLING,

J. B. RAMSAY.