J. F. WOOD.

Journal-Box for Shafts of Stone-Crushers.

No. 218,847. Patented Aug. 26, 1879.

Fig. 1.

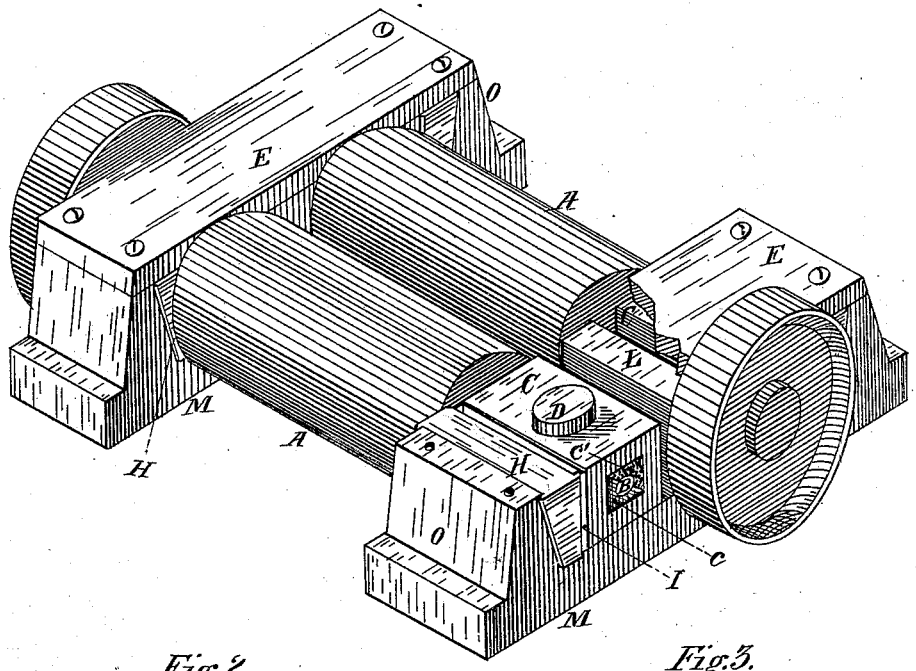


Fig. 2.

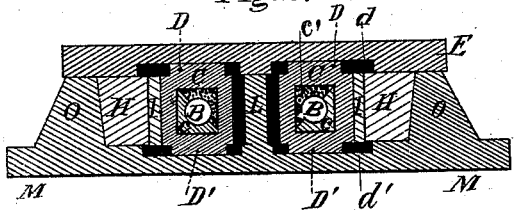
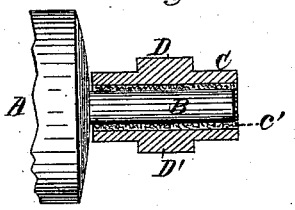


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN JOURNAL-BOXES FOR SHAFTS OF STONE-CRUSHERS.

Specification forming part of Letters Patent No. **218,847**, dated August 26, 1879; application filed February 8, 1879.

To all whom it may concern:

Be it known that I, JOHN F. WOOD, of Boston, county of Suffolk, and State of Massachusetts, have invented a new and useful Improvement in the Construction of Boxes for the Protection and Lubricating of the Main Shafts of a Crusher for the Grinding of Stone, Ore, Emery, or other hard material, and in the manner of placing said boxes on said shafts, and the lining and packing thereof.

I will proceed to describe my invention as follows, reference being had to the accompanying drawings, which form part of this specification, like letters representing the same parts shown in the different figures.

Figure 1 shows a perspective view of the crusher embracing my invention; Fig. 2, a sectional view of shafts, boxes with round trunnions, linings of the same, slotted covers and base-pieces, elastic bearings, wedges, and fixed partition; and Fig. 3 shows a sectional view of the box placed upon the shaft.

A, Fig. 1, represents the two rolls of a crusher, and B shows the shafts upon which said rolls are placed. C represents boxes, four in number, there being one at each end of each shaft, and occupying the entire space between the roll and the end of the shaft. In these boxes is fitted what may be called a "semi or half lining," *c*, made concave, as is usual in such a device. This lining is to be placed in the side of the box next to the wedge H, and opposite the shaft B, and extending around under said shaft, so that it may receive the full and entire bearing of the shaft. This half-lining may be made of any metal that is softer than the shaft, as usual in such cases. In the opposite half of the box may be packed waste, (shown by *c'*, Fig. 2,) saturated with oil or other lubricating material, the object of which is obvious.

On each box, and cast with and forming part of the box, are two round trunnions, D and D', one on the top and one on the bottom of the box. In the two covers E and in the two base-pieces M are made elongated slots, said slots being elongated longitudinally of said covers and base-pieces, and are shown by *d* and *d'* in Fig. 2.

It may readily be seen that in case a piece of stone or other matter too large and hard to be run between the rolls A without breaking or injuring the said rolls or shafts, the rolls and shafts, and, in fact, all parts of the machine, are relieved from undue pressure and consequent injury by the ease with which the trunnions D and D' are enabled to move back and forth in said elongated slots *d* and *d'* when caused so to move by undue pressure between the rolls A.

The trunnions D and D', being made round, are enabled to take a compound motion—the longitudinal and circular—and thus are made entirely self-adjustable to and with the main shafts.

The lining of the boxes C being composed of half-waste, which is elastic and compressible, the shaft is permitted to take the adjusting motion, as described. Thus it appears that in order to produce the adjusting motion of the boxes C so necessary to the successful operation of this appliance as well as the motion in a longitudinal direction, round trunnions and lining of half-waste or other equally elastic and compressible material are important. For instance, a piece of rock or other hard matter is brought between the rolls at any point between the center and one end of said rolls, when instantly the boxes at this end move in an outward direction, and the boxes at the opposite end at the same time move in an inward direction by means of the round trunnions and slots before described; and if the said hard matter should by chance come between the rolls at exactly the central point, all four boxes would take an outward direction, and thus in any event the shafts, rolls, boxes, and, in short, all parts of the appliance are protected from strain or breakage.

Another very important advantage gained by my invention is that, in case the rolls become worn so as not to crush equally throughout their entire length, the wedges H may be moved in an inward direction at the end, between which and the center of the rolls the wear has occurred, until the space between the rolls is again made equal and uniform throughout their entire length—that is to say, the wedges H may be moved as far as the length of the slots *d* and *d'* will permit. When said wedges are required to be moved, as before described, keys of iron or steel of the thick-

ness required may be driven in between the wedges and the outside walls, O, in order to hold the wedges in their proper places.

The wedges herein described are made tapering, being thicker at the top than at the bottom, so that in case a piece of rock or other hard material too large to be passed between the rolls, even with the use of my invention, should become wedged between said rolls the rolls, shafts, and all parts of the appliance may be relieved from undue pressure by merely starting the wedges at one or both ends of the appliance from the bottom; whereas, if said wedges were of equal thickness throughout their entire width, it will be readily seen that the wedges must be removed from their places completely and entirely before the desired relief can be produced.

I in Figs. 1 and 2 represents a piece of rubber or any other elastic packing of suitable thickness placed between the boxes C and the wedges H, in order to produce additional elasticity to the bearings.

The ends of the boxes C may, when necessary, be protected by covers in the ordinary manner of protecting packing-boxes.

L represents a fixed partition, to serve as a bearing, if in any event the boxes should be forced to that extremity by pressure caused by rock or other hard material passing between the rolls A; and the inward ends of the elongated slots *d* and *d'* being brought to within just the distance from the side of the partition L that intervenes between the circumferences of the trunnions D and D' and the inside edge of the box C, so that if on account of wear upon the rolls A it is desired to move the boxes C in an inward direction by the process of keying, hereinbefore described, said boxes may be moved until their sides shall bear against the partition L.

If desired, pieces of elastic packing may be placed between the box or boxes C and the fixed partition L, in the same manner and for the same purpose that they are placed between the boxes C and the wedges H.

In order to save time and trouble the top of the wedge H may be cut off horizontally at about one-third of the distance between the top and bottom of said wedge, a bolt inserted in the top of the wedge at a medium point between each end thereof, this bolt being perpendicular to the top surface of the wedge, and passing through the cover E by means of a hole bored therein for the purpose. In the upper end of said bolt is an eye, through which a lever may be passed when it is desired to lift the wedge H, for the purpose of relieving the rolls of hard matter too large to pass between them, as hereinbefore described, using the cover E as the fulcrum for said lever.

It will be seen that by this means the wedge H may be raised and again lowered into place, and the time and trouble required in removing the covers E avoided.

I claim as my invention—

1. The box C, with round trunnions D and D' and linings for adjustment, *c* and *c'*, constructed and combined with the shaft B, substantially in the manner described, and for the purposes set forth.

2. The method of arranging the boxes C upon the shafts B, with the round trunnions D and D', placed within the elongated slots *d* and *d'*, so that said trunnions may move back and forth therein and take on a limited circular motion at the same time, substantially in the manner and for the purposes described.

3. The method of placing the semi or half metallic lining *c* and waste *c'* as packing, saturated with oil or other lubricating material, within the boxes C and around the shaft B, substantially in the manner and for the purposes set forth.

4. In combination, the box C, with round trunnions D and D', semi or half metallic lining *c*, and waste *c'*, saturated with lubricating material, with the cover E, and base-piece M, with elongated slots *d* and *d'* made therein, and with the shaft B, constructed and arranged substantially in the manner described, and for the purposes specified.

5. In combination, the boxes C, with round trunnions D and D' and half metallic lining *c* and waste *c'*, saturated with lubricating material, the shafts B, the covers E, and base-pieces M, with elongated slots *d* and *d'* made therein, the elastic bearings I, the tapering wedges H, with eyebolts, and lever, the outside walls, O, the fixed partition L, and rolls A, all constructed and arranged substantially in the manner described, and for the purposes set forth.

JOHN F. WOOD.

In presence of—
CHAS. ALLEN TABER,
GEO. S. BOUTWELL.