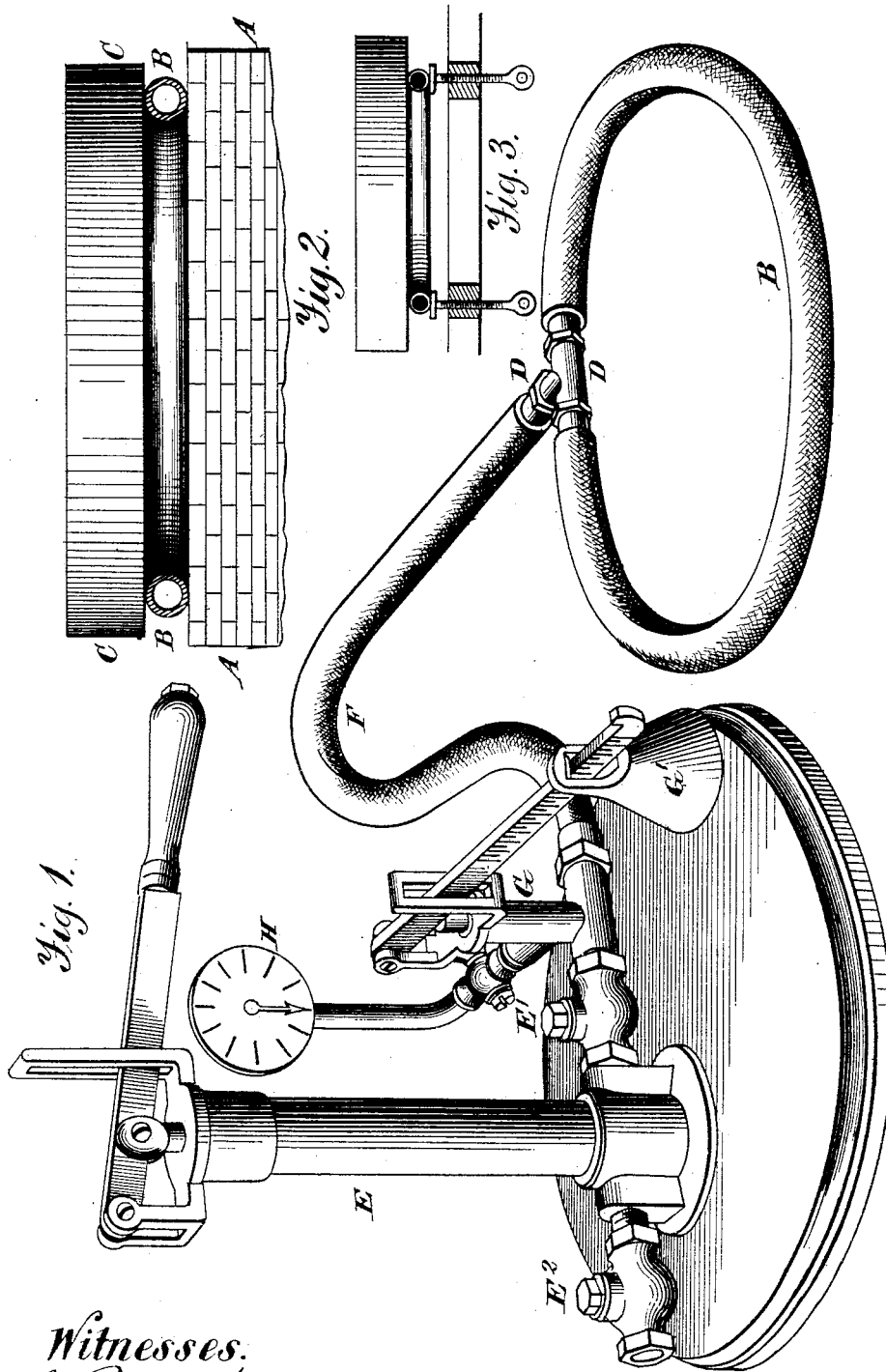


S. KEITH.
Elastic Cushion for Millstones.

No. 218,884.

Patented Aug. 26, 1879.



Witnesses.
A. Ruppert,
C. M. Connell

Inventor.
Squire Keith
Per Jas M Blanchard atty.

UNITED STATES PATENT OFFICE.

SQUIRE KEITH, OF SILVER CREEK, NEW YORK, ASSIGNOR OF ONE-HALF
HIS RIGHT TO ALBERT H. SPAULDING, OF SAME PLACE.

IMPROVEMENT IN ELASTIC CUSHIONS FOR MILLSTONES.

Specification forming part of Letters Patent No. **218,884**, dated August 26, 1879; application filed
May 23, 1879.

To all whom it may concern:

Be it known that I, SQUIRE KEITH, of Silver Creek, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Elastic Cushions for Millstones; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is a perspective view of an elastic cushion or bed for the stationary stone of a grinding-mill, and of the mechanism connected therewith. Fig. 2 is an elevation of a portion of a foundation for the stone to rest upon, the elastic tube or cushion, and the bed-stone, the parts being in position for operation; and Fig. 3 shows the same parts, with the addition of adjusting-screws and an adjustable plate for supporting the yielding tube or cushion, whereby the face of the bed-stone may be adjusted or trammed to cause it to correspond with the face of the revolving stone or the position of the spindle upon which it rests.

This invention relates to an apparatus upon which the stationary stone of a grinding-mill is to be placed, its object being to provide a means whereby the stationary or bed stone may be made to retain a proper relation to the revolving stone, even though said revolving stone may not be exactly balanced, or in case the unequal wearing of any of the parts should produce a wobbling motion thereof; and it consists in combining, with the stationary or bed stone, an elastic tube or cushion, to be placed between the stationary stone of a grinding-mill and its foundation, or between said stone and an adjustable plate supported by such foundation, and filled with compressed air or other gaseous substance, so that in the event of an undue amount of pressure being brought to bear upon any part of the stationary stone by the imperfect working of the revolving stone said stationary one will be capable of yielding or retreating to such an extent as not to cause any considerable additional pressure at the point or points where such pressure would otherwise be applied, by which means the stones

are at all times maintained in their proper relations to each other; and it further consists in combining, with an elastic tube or cushion for supporting the stationary stone of a grinding-mill, an air-pump or other suitable air or gas forcing device for supplying air or gas to said tube or cushion and for controlling the pressure within said tube or cushion, and in certain other combinations, as will be more fully described hereinafter.

It is an ascertained fact that when the stationary stone of a mill for grinding grain, and especially those used for making flour, is made to rest upon an unyielding foundation or support it is liable to have a greater amount of pressure brought to bear upon parts of it than is applied to other portions at the same time, in consequence of a wobbling motion of the revolving stone, due to an uneven balancing thereof, or in consequence of an unequal wearing of the revolving stone or its supporting parts; and it is also well known that under the circumstances last above recited it is impossible to make an even grade of flour, as the meal which happens to be between the points where the greatest amount of pressure is brought to bear, or between the points where the stones come in contact or the most nearly in contact, will be reduced to a condition of greater fineness than will other portions which are between points where less pressure is put upon the stationary stone.

My improvement is designed to remedy the above-recited difficulty; and to this end, in applying it practically, I provide any suitable foundation, A, for the stationary stone when it is the lower one of the two, as shown in Fig. 2 of the drawings. Upon this foundation there is placed an elastic tube or cushion, B, of rubber, leather, or other suitable and sufficiently strong material to sustain the required pressure; or said cushion may rest upon an adjustable plate supported upon leveling screws or wedges arranged in a portion of the foundation, as shown in Fig. 3, by which means the bed-stone may be brought into tram with the spindle of the revolving stone and with the face thereof. This cushion may be made cylindrical in form in cross-section; or it may be of any other suitable shape, as, for instance, it may be oblong or it may be of such form as to

extend inward nearly to the eye of the stone, and yet not be of proportionately greater vertical depth than the one shown in the drawings. Whatever the form of the cross-section this cushion or tube should be of a diameter not greater than that of the stationary stone, and should be so placed upon the foundation that the bed or stationary stone C may be made to rest thereon, the meal, as it is ground, being taken away by any of the well-known methods.

In order that this tube or cushion may be supplied with air or other forms of gas, its ends are united by a T-shaped coupling, D, the diameter of which is less than the vertical depth of the tube or cushion, in order that it may not prevent the retreating of the stone at the point where it is placed. The tube or cushion is supplied with nuts for connecting its ends to the T-piece, as shown in Fig. 1.

For supplying the tube or cushion B with air or other form of gas, and maintaining the requisite pressure therein, a pump, E, or other suitable compressing device is provided. This device may be a single-acting air-pump, such as is shown, and be operated by hand, or it may be of any other of the well-known forms of air or gas compressors, and it may be driven by the same motor which drives the stones of the mill, or by a separate motor, as found most convenient. This pump or air-forcing device is supplied with the usual induction and eduction valves E^1 and E^2 , and between the eduction-valve E^1 and the hose or pipe F, which leads the compressed air or gas to the tube or cushion B, there is placed a safety-valve, G, which is supplied with a weight, G' , and with a lever, which may, if desirable, be graduated in such a manner as to indicate the pressure maintained within the tube or cushion B. The object had in view in providing this safety-valve is to afford relief to the tube or cushion when the pressure is up to the required point, and thus prevent the possibility of bursting it, and this will be found of great utility when the compressing mechanism is driven by power, as at such times the valve may be set to retain within the pipe and the cushion just the required pressure, and thus any surplus that may

obtain in consequence of any increase in the speed of the motor will pass off without injury to any of the parts.

For the purpose of still further indicating the pressure within the tube or cushion there is shown a pressure-gage, H, which is connected to the safety-valve below or within its point of discharge. By the use of a gage of this character the pressure is at all times indicated, and it may be found useful when the pressure is so low as not to raise the safety-valve. It is not, however, essential to the practical working of the other parts of the device.

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

1. In combination with the stationary bed-stone of a grinding-mill, an elastic tube or cushion in which air or other gaseous substance is maintained under pressure, for the purpose of supporting the stone, substantially as set forth.

2. The combination of a pump or equivalent air or gas compressing device, an elastic tube or cushion for supporting the stationary stone of a grinding-mill, and an intermediate pipe or hose for conveying the compressed air or gas from the pump to the tube or cushion, substantially as described.

3. The combination of the tube or cushion B, the pump E, connecting pipe or hose F, safety-valve G, and pressure-gage H, when constructed and operating substantially as and for the purpose set forth.

4. The combination of the elastic or yielding tube or cushion B with the pump E or other equivalent air-compressing device, the connecting pipe or hose F, stationary stone C, and a bed-plate for the support of said stone, all substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

SQUIRE KEITH.

Witnesses:

D. C. SWIFT,

C. B. BRADLEY,

FRANK C. DAWLEY.