A. H. KIRK.

Millstone Bail.

No. 198,732. Patented Dec. 25, 1877.

Fig. I.

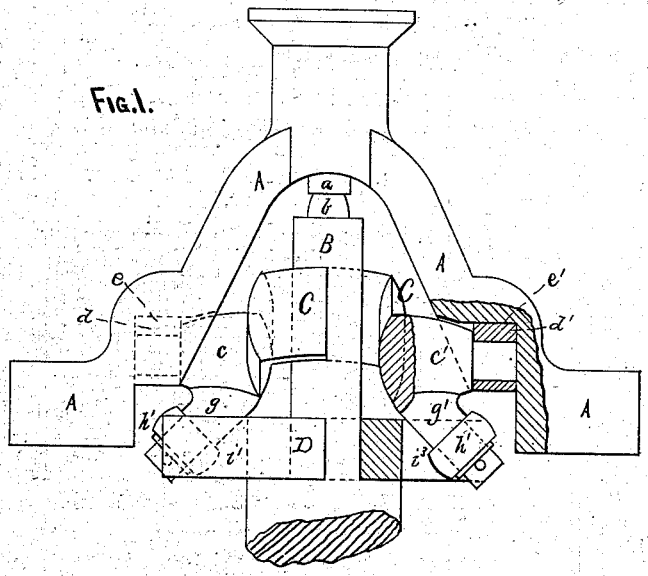


Fig. II.

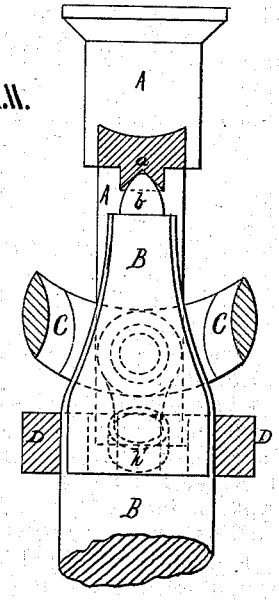


Fig. III.

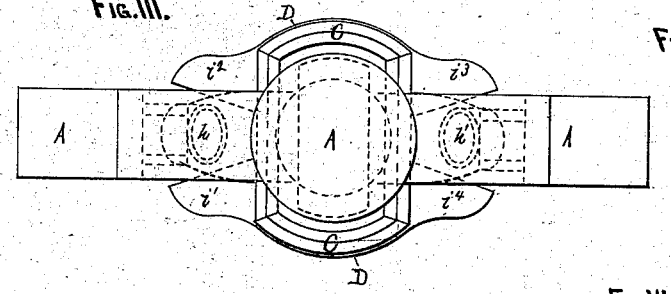


Fig. VII.

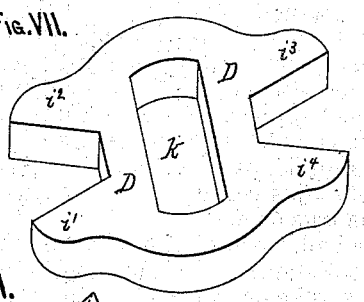


Fig. IV.

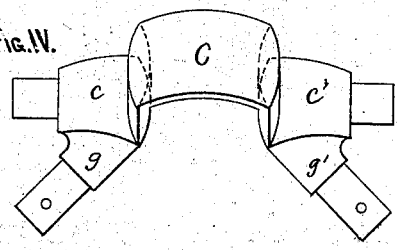


Fig. VI.

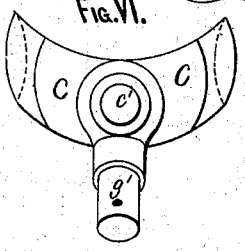


Fig. V.

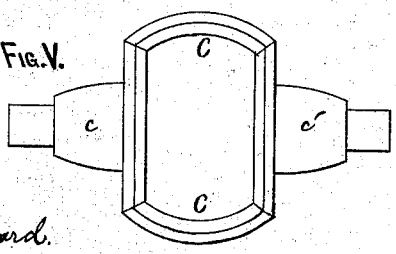
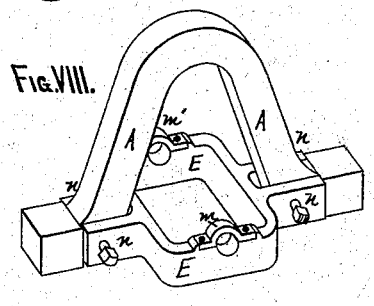


Fig. VIII.



Witnesses,
C. N. Woodward.
John T. Halsted

Alva H. Kirk,
Inventor, By
Louis Fesser, Bles.
Atty's.

UNITED STATES PATENT OFFICE.

ALVA H. KIRK, OF MINNEAPOLIS, MINNESOTA.

IMPROVEMENT IN MILLSTONE-BAILS.

Specification forming part of Letters Patent No. **198,732**, dated December 25, 1877; application filed September 4, 1877.

To all whom it may concern:

Be it known that I, ALVA H. KIRK, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Millstone-Bail Attachments, which invention is fully set forth in the annexed specification, in which—

Figure 1 is a half-sectional side elevation, Fig. 2 a sectional end elevation, and Fig. 3 a plan view, of a millstone-bail, showing my device attached thereto. Figs. 4, 5, and 6 are views of the yoke detached. Fig. 7 is a perspective view of the driver. Fig. 8 is a perspective view, showing the method of attaching the device to an ordinary bail.

This invention relates to the bails by which the runner-stone in mills is supported; and consists in pivoting in said bail a yoke or frame having inclined lugs, with or without friction-rollers, which project downward at an angle, and are acted upon by a double-jawed driver upon the spindle, by which means the runner is made self-adjusting in any direction, whether the bail be true or not.

A is the bail, pivoted, in the usual manner, upon the spindle B by the cockeye and head *a b*. C is a yoke or frame encircling the spindle B, and having upon either side trunnions *c c'*, cast in one piece therewith. These trunnions are provided with boxes *d d'*, which are secured in sockets or recesses *e e'* in the interior of the bail, near the bottom.

g g' are two lugs or bearings cast upon the lower side of the trunnions *c c'*, and projecting downward and outward at an angle of about forty-five degrees. These bearings are provided with friction-rollers *h h'*, and set between the jaws i^1 i^2 i^3 i^4 of the driver D. (See Figs. 1 and 3.) This driver D has the usual elongated slot *k*, through which the flattened neck of the spindle B passes.

It will be readily seen that when the driver is revolved the bail will be carried with it, (through the bearings *g* and yoke C,) and thus operate the runner.

By this arrangement I accomplish many important results not obtained by the old style of driver, or any attachment with which I am acquainted.

It is a well-known fact among millers that it is almost an impossibility to set a bail in a millstone perfectly true; and to overcome this difficulty is the main object of my invention.

The yoke, by its oscillating motion, will allow the lugs or bearings to assume, under all circumstances, a position directly under and in a perfect line with the cockeye *a*, and consequently cause the driver to come exactly beneath the center of the stone, whether the bail be true or not.

The drivers are made by machinery, and can be set perfectly true; but the bail, being set by hand, is often out of true, and often renders it necessary to recut the stone; hence the advantage of any device which will obviate this difficulty.

The yoke will be made large enough to allow it to have free play about the neck of the spindle, to enable the stone to move in any direction.

By using a double-jawed driver, D, the same yoke may be used upon a burr running with or against the sun. The yoke, trunnions, and bearings for the friction-rollers may be cast in one piece of steel or iron. The yoke may be contracted into a rod and made to pass through a large hole in the neck of the spindle; but I prefer it arranged as shown.

The yoke will be made of an oval form through its cross-section, as in the drawing, so that its sharp edge will prevent grain from lodging beneath it upon the driver and form a false bearing, and throw the runner out of true. It will also prevent grain lodging upon its top.

I am acquainted with several styles of attachments and drivers, but not arranged like mine.

The patent of Wells E. Sargeant, November 30, 1875, No. 170,454, shows a bent shaft passing through the neck of the spindle, and secured by boxes to the driver; but this is simply intended to overcome any imperfections that may exist in the driver, and has, and can have, no effect upon the upper stone to true it.

My device is for an entirely different object, and is arranged in an entirely different manner.

I am also acquainted with the patent of W. S. Bacon, December 29, 1874, No. 158,192, who shows a recessed bail having a single-horned driver working therein; but his invention is simply and only a slight variation of the old

style of driver, adapted to run with or against the sun.

Fig. 8 represents the method I use for attaching my yoke to ordinary bails. It consists in a frame, E, having bearings *m m'* for the reception of the trunnions *c c'* of the yoke C, and two forks, *n*, to inclose the sides of the bail, to which the device is secured by set-screws.

The frame E may be made in two parts, if desired, with one box, *m*, in each piece.

By this simple and inexpensive device the yoke may be readily attached to any ordinary bail without in the least changing any part, not even the driver, as the bearings *g g'* will work in the ordinary slip-driver, it being simply necessary to turn the driver at right angles to the bail; but the action will be the same.

I am aware that transverse rock-shafts having crank or bent ends and a central eye or yoke passing around the spindle instead of through it are old, nor do I claim such as my invention.

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

1. The combination, with the spindle, bail, and driver, of the pivoted yoke C, having the trunnions *c c'*, provided with the downwardly and outwardly inclined bearings *g g'*, the several parts constructed and relatively arranged to operate substantially in the manner specified.

2. The combination, with the spindle, bail, and driver, of the pivoted yoke C, having the trunnions *c c'*, provided with the downwardly and outwardly inclined bearings *g g'*, having the friction-rollers *h h'*, the several parts constructed and relatively arranged to operate substantially in the manner specified.

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

ALVA H. KIRK.

Witnesses:
C. N. WOODWARD,
JOHN T. HALSTED.