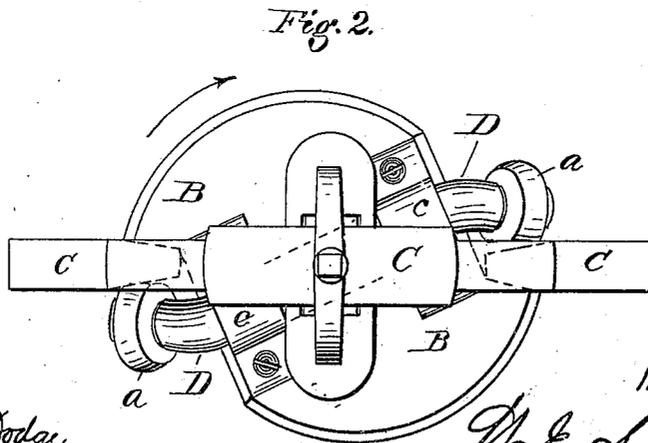
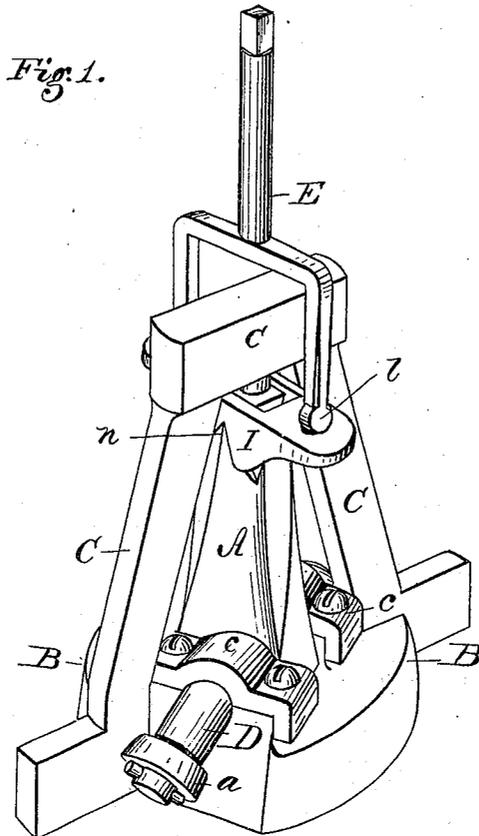


W. E. SERGEANT.  
MILL-STONE DRIVER.

No. 170,454.

Patented Nov. 30, 1875.



WITNESSES:

*Hill St. Dodge.*  
*Donn Twitchell.*

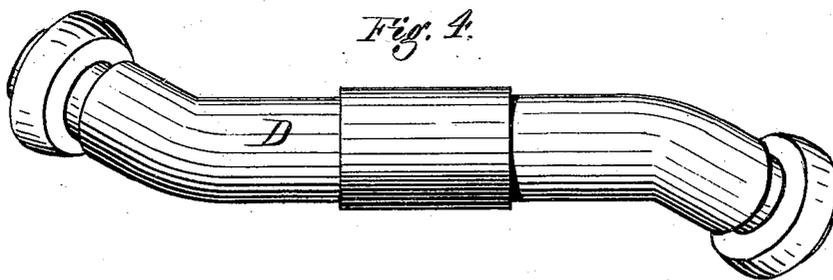
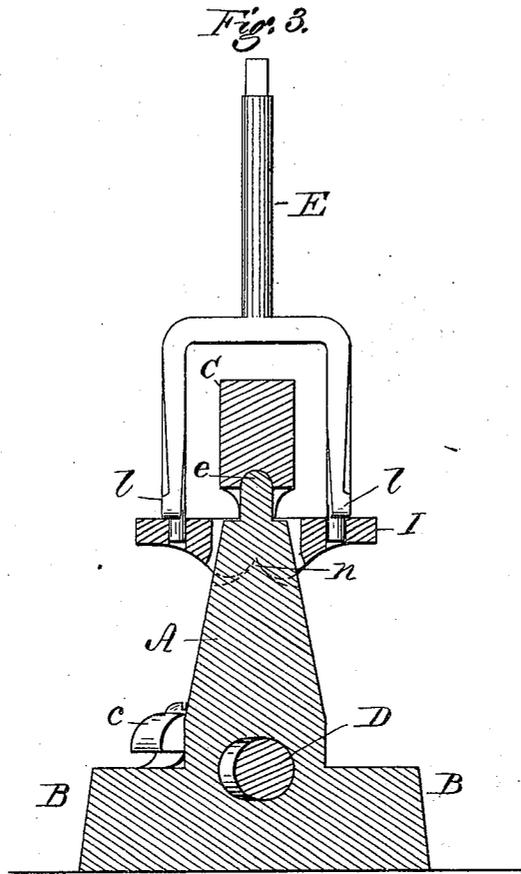
INVENTOR:

*W. E. Sergeant.*  
*by his attys*  
*Dodge & Son.*

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# UNITED STATES PATENT OFFICE.

WELLS E. SERGEANT, OF PINE ISLAND, MINNESOTA.

## IMPROVEMENT IN MILLSTONE-DRIVERS.

Specification forming part of Letters Patent No. 170,454, dated November 30, 1875; application filed September 18, 1875.

*To all whom it may concern:*

Be it known that I, WELLS E. SERGEANT, of Pine Island, in the county of Goodhue and State of Minnesota, have invented certain Improvements in Millstone-Drivers, of which the following is a specification:

My invention relates to millstone-drivers; and it consists of a bail hung on a pivot, and locked to the spindle or driving shaft by rigid shoulders and a bent shaft, in such a manner as to make the stone self-adjusting. It further consists in a novel plan of mounting the damsel shaft or spindle, by which it is made self-adjusting, all as hereinafter more fully set forth.

Figure 1 is a perspective view, Fig. 2 a top plan view, and Fig. 3 a vertical section, of my improved apparatus. Fig. 4 is a plan view of a portion shown detached and enlarged.

In constructing my driver, I provide a bail, C, upon which the upper stone is hung in the usual manner. This bail C is suspended on a pivot or point, *e*, (see Fig. 3,) in such a manner as to rock, and also turn freely thereon, when not otherwise held. The driver proper, which is to be secured rigidly to the top of the spindle or driving shaft by any suitable means, consists of a central upright stem, A, having on its upper end the pivot or point *e*, on which the bail is suspended. At a point opposite the lower end or arms of the bail C it is provided with two laterally-projecting shoulders, B, as shown in Figs. 1 and 2, against which the bail would rest if turned in one direction. I then make a shaft, D, of the form shown in Fig. 4, its central portion being straight, while at each end a portion is bent at an angle of about thirty-three degrees. On each end of this shaft I mount a friction-roller, *a*, as shown in Figs. 2 and 4, these rollers being made slightly conical, so that when the shaft is in place they will bear fair against the sides of the bail, as shown in Figs. 1 and 2. A hole is made transversely through the stem A, in which the shaft D is inserted, and where it is secured by boxes *c*, as shown in Figs. 1, 2, and 3, this shaft being so mounted as to have a little end play in its bearings, the rollers *a* also having a little end play on their journals. When the shaft D is thus mounted

it will be seen that its body or straight portion is parallel with the face of the shoulders B, with its bent ends projecting downward in front of said shoulders, and distant therefrom a little more than the thickness of the arms of the bail, so that the latter can have a little play back and forth between the shoulders B and the rollers *a* on the shaft. These parts constitute the driver complete, and the result of this construction is that the stone hangs suspended freely from the point *e*; and being rotated in the direction indicated by the arrow in Fig. 2 it will be seen that the bail is driven by contact of the rollers *a*, which permit the stone to swing freely, allowing it to rise or fall on either side without hindrance, as the rollers prevent such a frictional contact with the bail as would otherwise interfere with its free movements. At the same time the bent ends of the shaft D cause the shaft to turn in its bearings sufficiently to adjust itself to the sidewise movements of the lower end or arms of the bail, one roller moving back as the other moves forward, so that while the rollers bear against the bail on both sides, and carry it around with them, the bail, with the stone hung thereon, has a perfectly-free motion, somewhat on the principle of a universal joint, thereby permitting the upper stone to run true and parallel to the face of the bed-stone, even when the spindle or driving shaft is not exactly perpendicular.

In order that the damsel-spindle E, used for driving a fan or shaking the shoe that feeds the grain to the stones, may in like manner run true, regardless of the driving-shaft, I connect it to the driver, as represented in the drawings. To do this I provide a cross-piece, I, which has an opening at its center, so as to permit it to sit astride of the stem A, and rest loosely on V-shaped shoulders *n*, formed on the sides of the stem A, as shown in Figs. 1 and 3, it having corresponding-shaped notches in its under face, which notches are made broader at their open ends than the shoulders *n* are wide, so as to permit the cross-piece I to rock freely thereon. I then make the spindle E with its lower end forked, so as to straddle the top of the bail C, and form on its lower ends journals, which

fit into holes in the cross-piece I, as shown in Fig. 3. On each prong there is a rounded shoulder, *l*, as shown in Fig. 1, which bear upon the cross-piece and support the spindle, these rounded shoulders permitting it to rock at right angles to the plane in which the cross-piece itself rocks on its bearings *n*, thus forming a universal-joint connection between the driver and the spindle E. This construction permits the damsel shaft or spindle E to run steady and true at its upper end, regardless of the fact that the mill-spindle or driving-shaft may not be true or perpendicular, and thereby the irregular or wobbling movement so common in these spindles is entirely obviated.

The bail C should be made of steel or hardened, and be smooth at the points where the rollers *a* bear against it; and in case old bails be used they should have a piece of hardened steel secured to them for the rollers to work against. In like manner the rollers *a* should

be made true, and be hardened, so as not to wear irregular or out of shape. The rollers *a* may be omitted, but not with as good results.

Having thus described my invention, what I claim is—

1. A millstone-driver, consisting of the body or stem A, provided with the shoulders B, and having the shaft D, with or without the rollers *a*, mounted thereon, in combination with the bail C, all constructed to operate substantially as described.

2. The spindle A, provided with the shoulders *n*, in combination with the cross-bar I, arranged to rest and rock on the shoulders *n*, in combination with the forked spindle E, provided with the shoulders *l*, and loosely connected to the bar I, all constructed and arranged to operate substantially as described.

WELLS E. SERGEANT.

Witnesses:

JOHN B. FRICKE,  
W. M. THOMSON.