No. 647,049. Patented Apr. 10, 1900.

S. H. T. TILGHMAN.

ROCKING DRIVER FOR MILLSTONES.

(Application filed May 6, 1899.)

(No Model.)

Fig. 1.

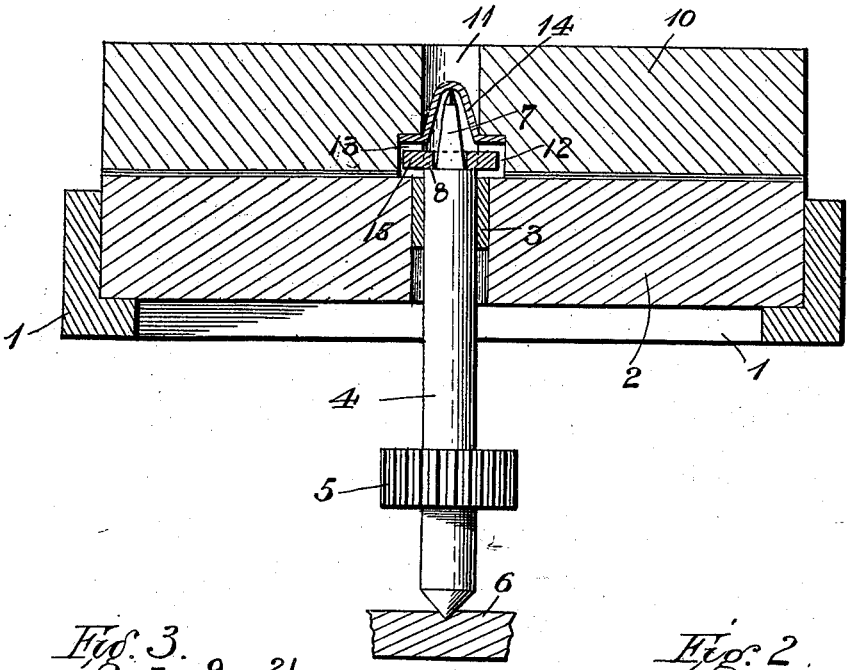

Fig. 3.

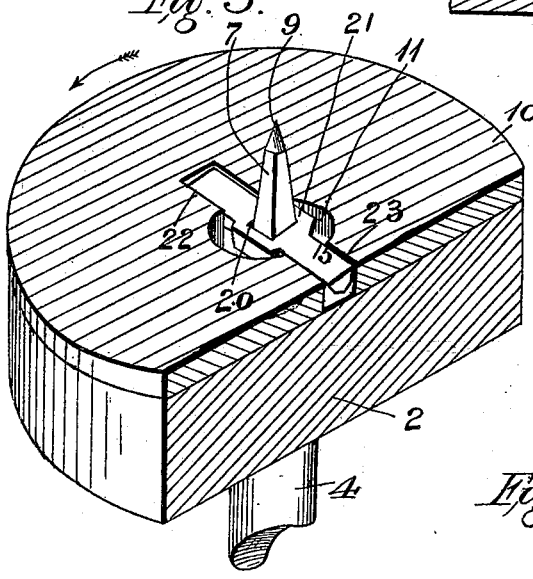

Fig. 2.

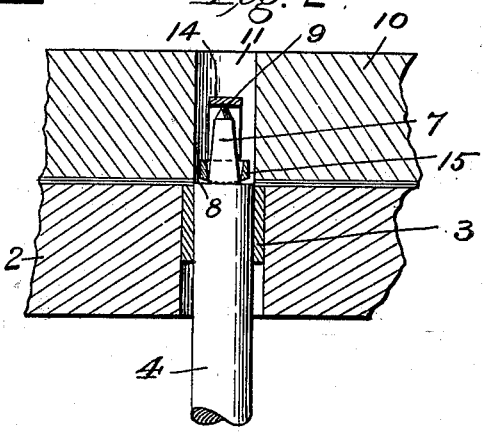

Fig. 4.

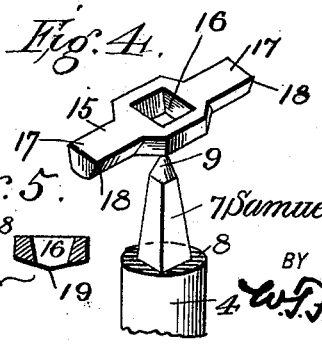

Fig. 5.

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ROCKING DRIVER FOR MILLSTONES.

SPECIFICATION forming part of Letters Patent No. 647,049, dated April 10, 1900.

Application filed May 6, 1899. Serial No. 715,866. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL H. T. TILGHMAN, a citizen of the United States, residing at Whiton, in the county of Wicomico and State of Maryland, have invented certain new and useful Improvements in Rocking Drivers for Millstones; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to milling, and more particularly to a new and improved method or manner of mounting the moving or what is termed the "runner" stone so that it will be perfectly balanced and sensitively poised and held to its work of coöperating with the stationary stone; and, as will be hereinafter fully described and claimed, my invention consists in certain novel features of construction and combination of parts, the preferred embodiment of which will be clearly set forth in the drawings made a part of this application.

The object of my invention may therefore be said to consist in the provision of means for perfectly truing the movable or runner stone of a mill and so connecting it to the spindle or driving-shaft that it will not be thrown out of its adjusted position and will so receive the force of the actuating power that such power will be truly applied upon both sides of the spindle.

While I shall in the following specification and the accompanying drawings set forth the preferred construction to be adopted in the production of the various details of my invention, it will be understood that the substantial equivalent thereof is comprehended by me, and I therefore do not wish to be strictly confined to the exact showing I have made, inasmuch as I wish to include such reasonable modifications and equivalents as will fairly fall within the scope of my invention.

In the accompanying drawings, Figure 1 is a vertical central section of the stationary or bed stone and also of the moving or runner stone and also showing one way of applying power to the actuating-shaft. Fig. 2 is a vertical central section of Fig. 1, taken at right angles thereto. Fig. 3 is a perspective view showing a portion of the stationary stone and the lower portion of the runner-stone, the upper portion of the runner-stone being entirely cut away in order to expose the details comprising my invention. Fig. 4 is a perspective view showing the top of the driving-spindle and my improved driver separated from each other. Fig. 5 shows, respectively, an end view and a central transverse section of my improved driver.

Briefly stated, my invention may be said to consist in so connecting the driving-spindle with the moving or runner stone of a mill that the rotation of said spindle will bring its force to bear equally upon both sides.

It will be understood that in the language of millwrights the driving-spindle is passed loosely upward through a suitable bearing provided in the central portion of the bed-stone, and the squared and tapered end thereof is designed to receive upon its extreme point the balance-iron or metallic yoke, which is permanently secured to the movable or runner stone and by which said stone is truly balanced and suspended above the bed-stone. The spindle acts upon the runner-stone through the mediation of what is termed a "driver," which is a cross-piece secured to the spindle near the end thereof or below said balance-iron or yoke and is of sufficient length to reach into recesses provided in the stone for its reception, and since said driver is fixedly secured to the spindle it must rotate therewith and carry with it the movable or runner stone. The great difficulty arising from the use of this cross-piece or driver is due to the fact that it is very difficult, if not absolutely practically impossible, to so shape the ends of the driver that they will touch the walls of their respective recesses simultaneously, the difficulty being that even with the most careful painstaking adjustment but one of said ends can be brought to bear upon the wall of the recess in which it loosely fits, the consequence being that the runner-stone will not be permitted to remain in a trued position, but one side thereof will come sharply in contact with the stationary stone, and will consequently drag or bind upon the same, while the opposite side of the stone is left clear of the bed-stone, with the result that the product of the mill is not uniform,

inasmuch as a portion of the grain will be very finely ground or pulverized, while the remaining portion, acted upon by the separated sides of the stone, will be coarsely ground, the product being left in an uneven or undesirable condition. It is my purpose therefore to overcome the difficulties which arise as a result of an improper or imperfect coupling between the spindle and the moving or runner stone, and with this end in view I call attention to the details of my invention and the coöperating accessories thereof, which I shall hereinafter specifically refer to.

In order to designate the several parts of my invention and the parts designed to cooperate therewith, numerals will be employed, of which 1 illustrates the supporting-base designed to receive and provide a foundation for the bed-stone, said base being constructed in any preferred way, as by securing together a framework of suitable character and providing a bed therein of proper size to exactly receive the stationary stone, which may be perfectly trued or leveled into a horizontal position.

Within the supporting-base I dispose the stationary or bed stone 2, which will be constructed in any preferred way and which is provided with the driving-spindle 4, which may be connected with the source of power in any preferred manner, as by the gear 5, the lower end of the spindle being preferably conical and properly seated in a supporting-bearing 6, all of said parts being substantially of the usual or any special construction desired. The upper end of the spindle 4 is so shaped as to provide the pyramidal or tapered end 7 and the offset or continuous shoulder 8 around the same and is further provided with the conical or pointed end 9.

The movable or runner stone 10 is disposed immediately above the fixed or bed stone 2 and is provided with the centrally-disposed eye 11, which extends entirely through the stone, as is usual. Upon each side of the eye 11 and upon the under side of the runner-stone I form the recesses 12 and 13, which are diametrically opposite each other and are designed to receive the ends of the bail or yoke 14, the middle portion whereof is designed to extend upward into the eye 11 and receives upon the central part and under side thereof the conical or pointed end 9, as it is by this means that the runner-stone is truly balanced or poised immediately above the bed-stone.

The balance-iron or yoke 14 is preferably permanently secured in position, as by means of molten lead poured upon the ends thereof. It will be observed by reference to Fig. 1 that the recesses 12 and 13 below the ends of the balance-iron are of sufficient extent to loosely or freely receive the ends of my improved driver, which is indicated as a whole by the numeral 15.

The driver now in common use consists of a simple piece of iron provided in its central part with a square hole designed to receive the squared end of the spindle, to which it is rigidly or permanently attached. In carrying out my invention I wholly depart from this method of connecting the driver with the spindle, inasmuch as I taper the squared portion or end of the spindle and provide a square aperture 16 in the middle of the driver, which is of larger size at its upper end, the result being that the lower end of the aperture will snugly or tightly fit around the base portion of the pyramidal section 7, while the upper end of the hole will not touch said portion, the result being that the driver is left free to rock and adjust itself to the section 7.

In order to provide an additional adjustability for the driver, I so construct the ends 17 thereof that the sides will be inwardly and downwardly tapered, thus leaving the upper edges of said ends of wider extent, thereby producing the bearing edges 18, which alone contact with the wall of the recess in which they are disposed, and in order to facilitate the free movement of the driver, that it may accommodate itself to its work, I so construct the lower side of the driver that it will have a curved surface or present the swell or pointed middle portion 19, which is designed to rest upon the offset or shoulder 8, and thereby permit the driver to freely rock when it is in the act of accommodating itself, so as to bring each end thereof to bear equally against the runner-stone at points upon each side of the spindle. It will be understood that the spindle may be so adjusted that the shoulder 8 thereof will rest slightly above the surface of the bed-stone, thereby insuring that the ends of the driver will clear the bed-stone and the bushing.

While I have shown the entire under surface of the ends of my driver as being rounded or provided with the swell 19, it will be understood that since only that portion of the driver immediately on each side of the aperture 16 comes in contact with the shoulder 8 the remaining portion of the ends not in contact with said shoulder may be left straight or parallel with the upper portion in order that the extreme ends of the driver may not ride over the grain, but may direct said grain between the stones.

By reference to Figs. 1 and 2 it will be observed that the upper portion of the walls of the aperture 16 is wholly out of contact with the pyramidal section 7, the lower edges of said aperture only being in contact with said section, which enables the driver to freely rock, and thereby adjust itself so that each end thereof will bear equally against the wall of its respective recess, and thereby equally distribute the force brought to bear upon the stone.

In Fig. 3 I have illustrated simply the lower edge of the runner-stone 10, as I have wholly cut away the upper portion of the stone on a line immediately above the surface of the driver, therefore leaving said driver and the recesses wholly exposed. In this view the

driver is shown to be in its operative position, ready to turn the runner-stone in the direction indicated by the arrow, and special attention is therefore called to the position of the driver, inasmuch as it will be seen that said driver is not disposed in a truly-horizontal position, as one edge thereof is higher than the other, thus showing that the driver has turned or rocked slightly in order to accommodate itself upon the tapered or pyramidal section and also bring its upper edges to bear against the walls of the recesses in which the ends of the driver are loosely disposed. It will be further observed that an opening or space 20 is left between the upper edge of the aperture 16 and one side of the pyramidal section 7, while upon the opposite side, as indicated by the numeral 21, said parts are shown to be in close contact with each other. It will be further observed, as indicated by the numeral 22, that the upper edge of one end of the driver is in close contact with the wall of its recess, while the opposite edge of the opposite end, as indicated by the numeral 23, is in contact with the wall of its recess.

It is obvious that if the tapered or pyramidal section 7 was adapted to fit tightly in the recess 16, as would be the case if the walls of both of said parts were vertical, the result would be that the driver could not tip to one side or rock, and the ends thereof could not, therefore, accommodate themselves so that each would bear equally upon the stone.

The essential feature, therefore, of my invention consists in shaping the driver, the pyramidal section 7, and the aperture 16 and combining them in the manner specified.

It will be readily appreciated that it is a very important matter to keep the runner-stone truly adjusted, as when so disposed the result will be that the stones are not so readily dulled or injured by contacting with each other, while the product is absolutely uniform and consequently more desirable and valuable. It is further obvious that as a result of perfect adjustment and the employment of means to permanently preserve such adjustment less power will be required to operate the mill, while the resultant heat due to the contact of the stones will be greatly reduced, the consequence being that the product or ground grain will be delivered with a much lower temperature or in a comparatively-cool state.

Inasmuch as the driver is left free to rock in the manner specified, it is obvious that it will readily adjust itself so that both ends will be truly in contact with the runner-stone without regard to the direction which the spindle may be rotated, thereby enabling the runner-stone to be freely reversed at will with the full assurance that it will remain undisturbed or removed from a true horizontal position.

While I have illustrated the balance-iron or yoke 14 as being disposed parallel with the driver and in the same recess occupied thereby, it will be understood that equally-desirable results may be obtained by disposing the driver in recesses made at right angles to the recesses occupied by the ends of the yoke, and I desire, therefore, to reserve the right to make either disposition, as I may deem productive of the best results.

It is further obvious that while I have disposed the aperture 16 as being squarely at right angles to the longitudinal plane of the driver said hole may be obliquely disposed, if desired, in which case the corners of the pyramidal section would be adjacent to the sides or middle portion of the driver, thus enabling the ordinary form of driver now in common use and having the obliquely-disposed hole to be readily changed so as to comprise the other features of my invention, as by enlarging the upper end of the aperture upon every side and rounding the lower side of the driver, as specified.

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

1. In mills, the combination with a running-bur formed with shoulders and a central aperture, and a spindle formed with an angular tapering upper extremity, of a driving-block having a central aperture of greater size than the upper extremity of the spindle and adapted to fit over the spindle, said block having also extended ends or arms provided with downwardly and inwardly tapered sides, and a convex bottom resting upon a shoulder upon the spindle and permitting the rocking of the runner, as set forth.

2. The herein-described block having a centrally-disposed aperture of greater size at its upper end, the ends of the block being provided with inwardly and downwardly tapered sides, whereby the upper surface of the block will be of greatest width, thereby bringing its edges to bear against the walls of the recess formed in the millstone, said central aperture permitting said block to rock or adjust itself in order to insure that both ends thereof will bear equally upon the millstone in the manner specified and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

his
SAMUEL H. T. × TILGHMAN.
mark

Witnesses:
HERBERT E. TREADWELL,
E. E. OVERHOLT.