

No. 681,879.

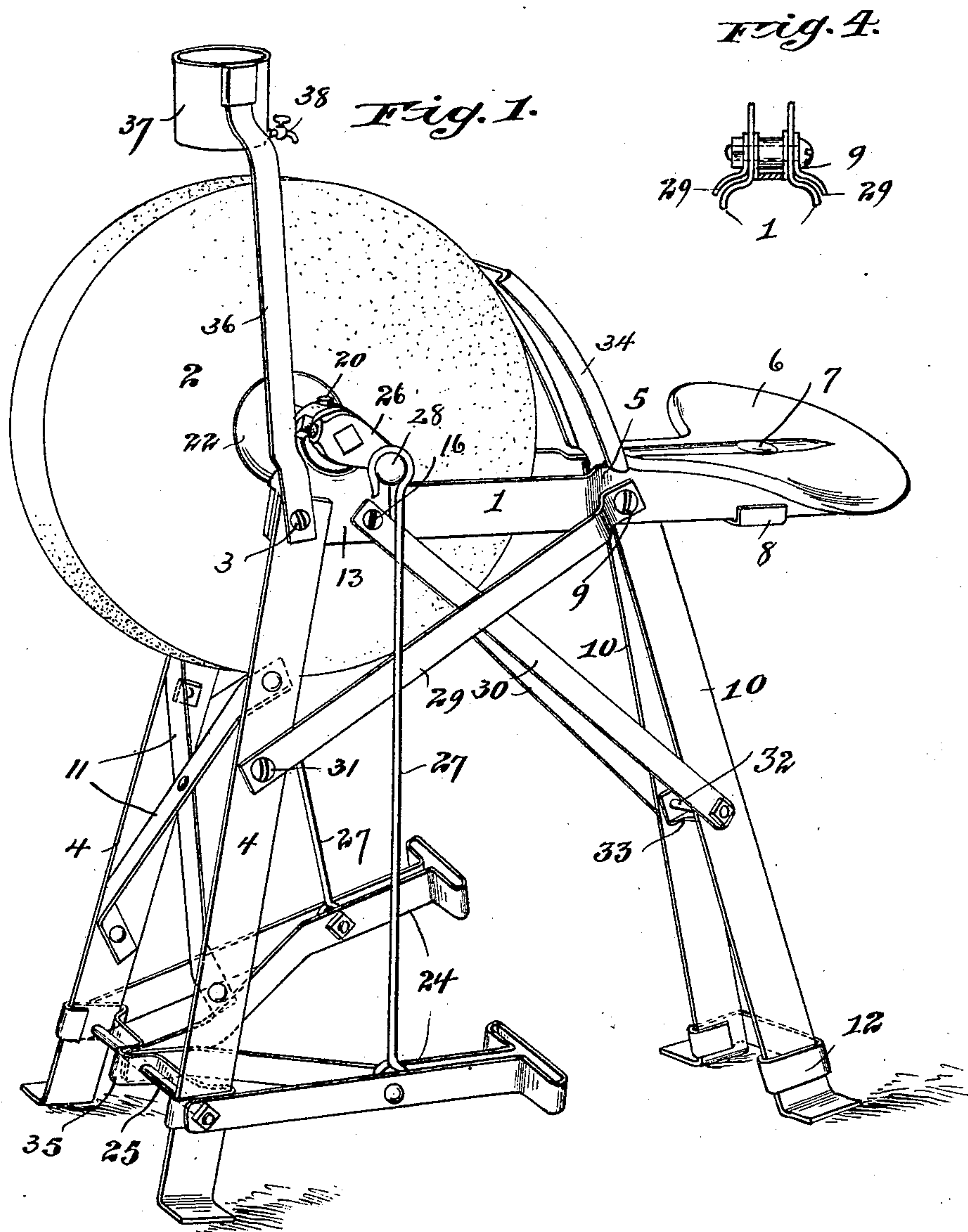
Patented Sept. 3, 1901.

C. H. FERGUSON.
PORTABLE GRINDSTONE.

(Application filed Dec. 13, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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Fig. 2.

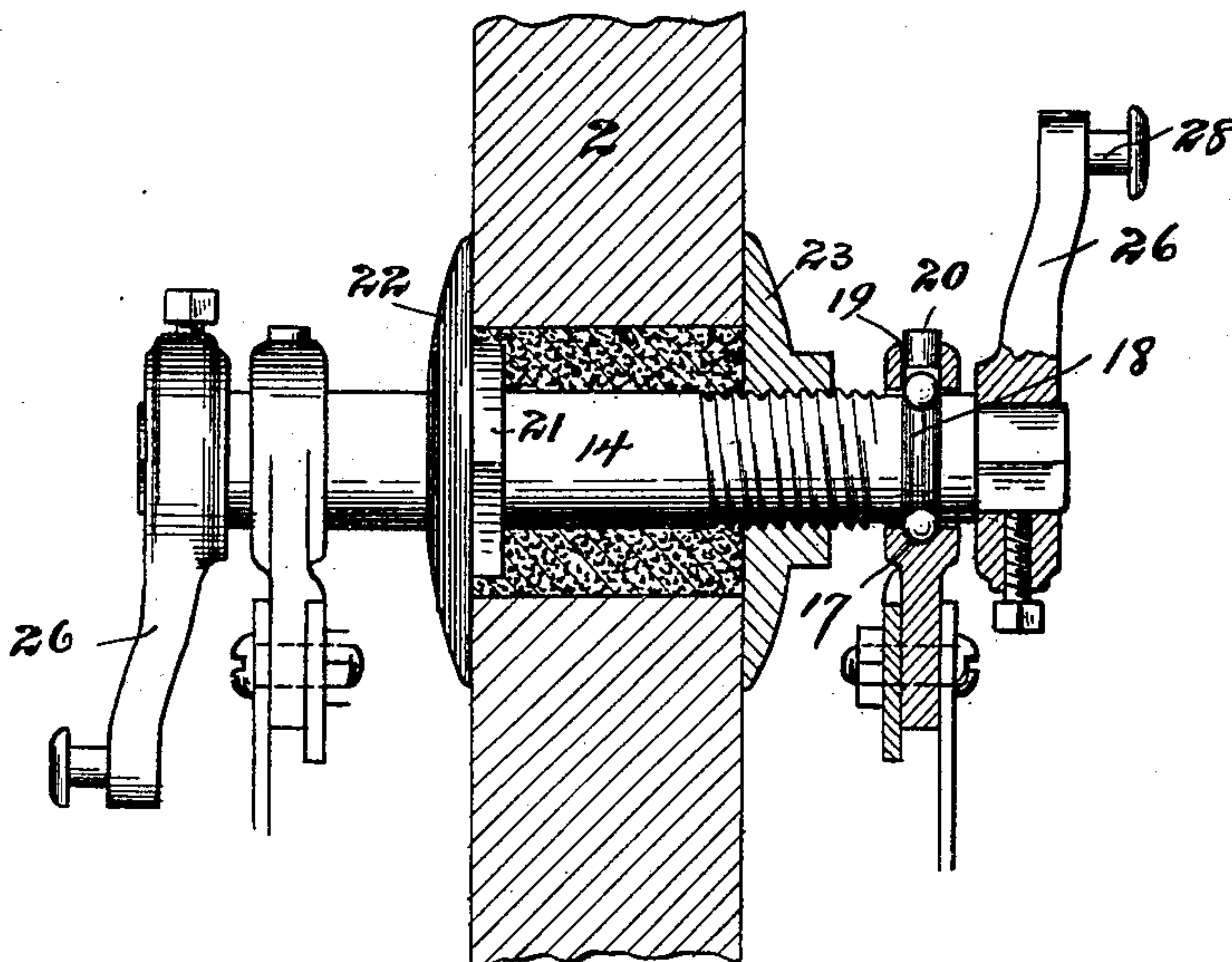
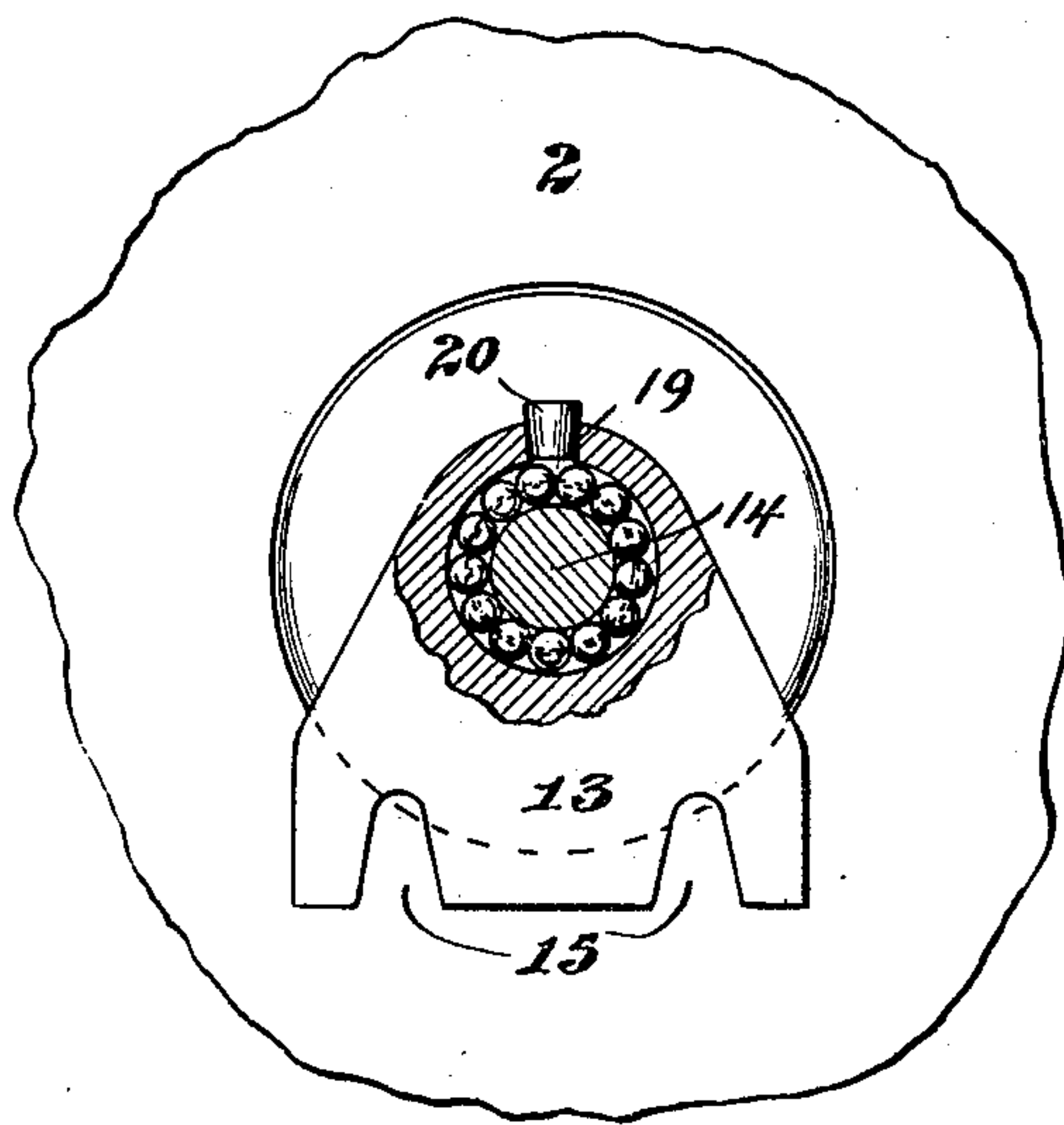


Fig. 3.



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UNITED STATES PATENT OFFICE.

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PORTABLE GRINDSTONE.

SPECIFICATION forming part of Letters Patent No. 681,879, dated September 3, 1901.

Application filed December 13, 1900. Serial No. 39,782. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. FERGUSON, of Chicago, Illinois, have invented certain new and useful Improvements in Portable Grindstones, of which the following is a specification.

My invention relates to certain new and useful improvements in portable grindstones, and more especially to certain features of construction in a foldable or collapsible frame therefor whereby an increased rigidity of the structure as a whole is obtained, together with greater ease of operation.

More specifically, my invention contemplates improvements in, first, the treadle mechanism for operating the stone; secondly, an improved mode of bracing the frame whereby an increased stability of the structure as a whole is obtained; thirdly, an improved means for adjusting the water-guard to and over the periphery of the stone; fourthly, an improved method of mounting the axle-bearing blocks on the frame, and, finally, an improved ball-bearing for the journals of the axle.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is an elevation in perspective of a grindstone and frame set up in working position. Fig. 2 is a transverse sectional view of the grindstone, showing the manner of securing the axle or shaft therein and also illustrating in section one of the journal-bearings of said shaft. Fig. 3 is a detail in vertical section of the said shaft-bearing at right angles to the view of the same shown in Fig. 2, and Fig. 4 is a detail illustrating the manner of mounting the water-guard.

Referring to the drawings in detail, 1 represents a pair of horizontally-disposed iron bars between which the stone 2 is journaled in the manner hereinafter explained. To the forward ends of these bars 1 are pivoted at 3 two legs 4, which support the forward end of the frame and its load. Approximately two-thirds of the distance from their forward ends the bars 1 are bent inwardly toward each other, as at 5, and to their rearwardly-extending portion is secured a saddle 6 by means of a screw-bolt 7, engaging a clip 8 on

the under side or edge of said bars 1. Just in rear of the inwardly-curved parts of the bars 1 are pivoted, as at 9, a pair of rearwardly-extending vertical supports or legs 10. All four of the vertical supports or legs are given a slight lateral and longitudinal straddle, whereby the base area, and consequently the stability of the structure, is increased. The forward legs 4 are suitably braced by diagonal braces 11, and the rear legs 10 are rigidly secured at their lower ends by a transverse brace 12. Upon the forward ends of the horizontal bars 1 are supported bearing-blocks 13, in which is journaled the shaft 14 of the grindstone. In order to make these bearing-blocks readily removable, they are notched on their lower edges, as at 15, whereby they may be readily slipped down over a pair of screw-bolts 3 and 16, by which they are readily clamped to the bars 1. The upper part of each bearing-block 13 constitutes the seat for the journal-bearing of the axle or shaft of the stone. In the construction of said bearing the transverse hole through which the shaft passes is channeled out centrally thereof, as at 17, to form a race in which the balls may run, and that part of the surface of the shaft which registers with the said race 17 is also hollowed or channeled, as at 18, to engage the inner faces of the balls constituting the antifriction-bearing. Through the top of the bearing-block is formed a hole 19, leading into the ball-race 17 and through which the balls may be dropped one at a time until the bearing has been supplied with the requisite number, after which the hole may be stopped by a suitable cork or plug 20. In addition to the foregoing the hole 19 forms a convenient means whereby the bearing may be oiled when desired.

Another advantage of the above-described construction of bearing resides in the fact that it automatically determines the exact position of the shaft and guards the same against endwise thrust or displacement without the necessity of any additional guides or guards.

The stone may be secured to the shaft 14 in a simple and efficient manner as follows: A hole of a diameter somewhat exceeding the

diameter of the shaft is formed centrally through the stone, and the shaft 14, having rigidly secured thereon a square nut 21 and a collar 22, is passed therethrough in such a manner that the axis of the shaft will coincide with the axis of the stone. The space between the surface of the shaft and the inner surface of the hole is then filled with cement or similar material, and the collar 23, which engages the outer screw-threaded end of the shaft, is turned up hard against the stone, thus securely clamping the shaft 14 rigidly in true central relation to the stone.

Referring next to the mechanism for operating the stone, 24 designates a pair of treadles which are pivoted at their forward ends on a rod 25, extending transversely across and between the lower ends of the forward legs 4 of the frame. Each of these treadles is simply and cheaply constructed out of a single length of strap metal, preferably iron, bent into the form plainly shown in Fig. 1, the closed end of the treadle constituting the pedal and the open end being pivoted on the rod 25, as above described. The treadles are connected to the crank-arms 26 on the ends of the shaft 14 by means of the pitman-rods 27, the upper ends of which may be simply bent over, so as to hook on the flanged crank-pins 28 in a manner which enables them to be readily removed from engagement with said crank-pins when desired. The rods 27 are at their lower ends connected to the treadles 24 at a point between the ends of the latter, thus constituting said treadles levers of the second class.

29 and 30 designate a pair of oppositely-disposed diagonal braces or tie-bars applied to each side of the frame structure. The braces 29 are pivoted at their upper ends on a pivot-bolt 9 and at their lower ends are removably secured by screw-bolts 31 to the legs 4, while the oppositely-disposed braces 30 are pivoted at their upper ends to the screw-bolts 16 and at their lower ends are removably secured to the rear legs 10 by means of a bolt 32, extending between said legs and through a transverse brace 33, as shown. Between horizontal bars 1 and just in rear of the curved parts 5 of said bars is adjustably clamped a water-guard 34, the heel of said guard being engaged by the pivot-bolt 9 and forming a spacing-block between the upper ends of the legs 10.

From the foregoing construction it will be seen that the side braces 29, the horizontal bars 1, the rear legs 10, and the heel of the water-guard 34 are all clamped together by the single pivot-bolt 9, and by slightly loosening the latter the water-guard 34 may be adjusted toward the stone as required by the wearing away of the periphery of the latter.

35 is a transverse brace disposed between the lower ends of the front legs 4 and conveniently secured by the treadle pivot-bolt 25. A standard 36, secured at its lower end to the frame structure, as by the screw 3, supports at its upper end a can 37 for con-

taining water the flow of which onto the stone may be regulated by a cock and faucet 38.

Referring to the collapsible and portable character of my invention, it is noted that by slightly loosening the screw-bolts 3, 16, and 9 and withdrawing screw-bolts 31 and 32 and detaching the pitman-rods 27 from their crank-pins 28 the stone, with its shaft and bearings, may be lifted out of the frame, the side braces, treadles, standard, and pitman-rods swung alongside the front and rear supports 4 and 10, and the front and rear portions of the frame may then be folded together in small and compact compass for shipment or storage. This construction forms a very substantial and rigid support for the stone when in use, and by reason of the fact that the various parts of the frame can be made from commercial forms of strap or bar iron simply cut and bent in the required lengths and shapes and secured together by screws and bolts it is obvious that such a frame as I have described can be produced at a low cost of manufacture.

I claim as my invention—

1. In a portable grindstone, the combination, with the stone and its shaft and a suitable supporting-frame therefor having a seat for the operator thereon, of a pair of treadles each formed from a single length of strap metal bent into appropriate shape and pivoted at its open end to the lower forward end of the frame, the closed end of the treadle constituting the pedal, and suitable pitman-rod connections between said treadles and the cranks of the shaft, substantially as described.

2. In a portable grindstone, the combination with the stone and its shaft and a suitable supporting-frame therefor of a pair of treadles, each formed from a single length of strap metal doubled upon itself and pivoted at its open end to the lower forward end of the frame, the closed end of the treadle constituting the pedal and being disposed at right angles to the body portion thereof, and suitable pitman-rod connections between said treadles and the cranks of the shaft, substantially as described.

3. In a portable grindstone, a collapsible supporting-frame therefor comprising a pair of horizontal bars carrying the shaft-bearing blocks at one end and the operator's seat at the other, front and rear supporting-legs pivoted at their upper ends to said horizontal bars, suitable braces between the front and rear legs of the frame respectively, and a pair of oppositely-disposed diagonal braces pivoted at their upper ends to the horizontal bars and removably secured at their lower ends to the front and rear legs on each side of the frame, all united and combined, substantially as described.

4. In a portable grindstone, the combination with the stone and its shaft, of a suitable supporting-frame therefor, and a water-guard pivotally clamped through its heel between the upper horizontal members of the sup-

porting-frame and adjustable toward and away from the stone by loosening its pivot-bolt, substantially as described.

5 5. In a grindstone-frame, the combination with the horizontal supporting members of the frame, of a pair of shaft-bearing blocks having notches cut in their lower edges, and a series of screw-bolts passing through said horizontal members and through said notches
10 in the bearing-blocks, whereby the latter may be securely clamped to the horizontal members of the frame and may be readily removed therefrom by loosening said bolts, substantially as described.

15 6. The combination, in a grindstone-frame, of the horizontal and supporting members of the frame suitably pivoted together, a pair of oppositely-disposed diagonal braces on

each side of the frame pivoted at their upper ends to the horizontal member and secured 20 at their lower ends to the front and rear supporting members, and a pair of bearing-blocks having notches cut in their lower edges to engage and rest upon the screw-bolts which unite the upper ends of the forward support- 25 ing member and one of the diagonal braces on each side to the horizontal member of the frame, and to be removably clamped between said parts, whereby, by loosening said screw-bolts said bearings may be readily lifted out 30 of place, substantially as described.

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