

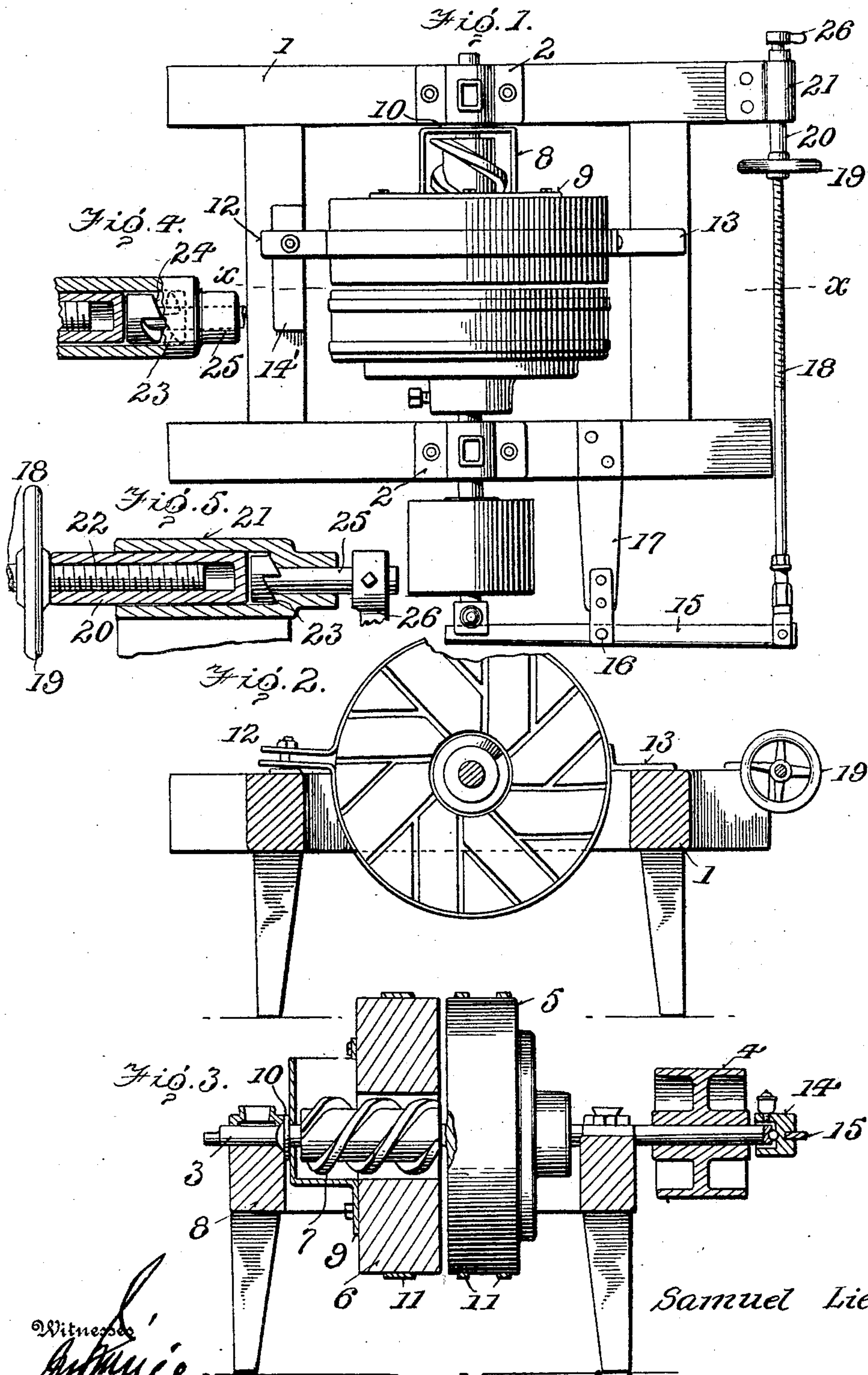
S. LIEBERKNECHT.

GRINDING MILL.

APPLICATION FILED SEPT. 24, 1908.

931,321.

Patented Aug. 17, 1909.



Inventor

Samuel Lieberknecht

Witness

*James*  
Cora H. Handy.

By

*Wm. M. Macey*, Attorney



# UNITED STATES PATENT OFFICE.

SAMUEL LIEBERKNECHT, OF HELLAM, PENNSYLVANIA.

## GRINDING-MILL.

No. 931,321.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed September 24, 1908. Serial No. 454,535.

*To all whom it may concern:*

Be it known that I, SAMUEL LIEBERKNECHT, a citizen of the United States, residing at Hellam, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Grinding-Mills, of which the following is a specification.

The present invention appertains to mills for grinding feed, such as grain, and has for its object to provide a machine of this character which will admit of the grinding stones being easily removed from the supporting framework and made accessible for any purpose and which will insure the stones being kept in tram and prevented from chuckling, as also to provide for regulating the pressure between the stones according to the required fineness of the feed, as well as admitting of the stones being quickly separated either to remove obstructing matter or for any other cause.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings.

While the invention may be adapted to different forms and conditions by changes in the structure and minor details without departing from the spirit or essential features thereof, still the preferred embodiment is shown in the accompanying drawings, in which:

Figure 1 is a top plan view of a grinding mill embodying the invention, the casing being omitted. Fig. 2 is a vertical longitudinal section on the line  $x-x$  of Fig. 1. Fig. 3 is a cross section on the line  $y-y$  of Fig. 1. Fig. 4 is a sectional view of the means for effecting a quick movement of the set-rod, showing the normal position of the co-operating cam members. Fig. 5 is a view similar to Fig. 4, showing the cam members closed, as when the grinding stones are separated.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The framework 1 may be of any construction best adapted for supporting the operating parts and comprises longitudinal sills provided with bearings 2 in which the spindle 3 is mounted, said spindle being adapted

to have a longitudinal movement imparted thereto and provided with a drive pulley 4 and with the runner 5, both being fast thereto so as to rotate and move with the spindle. The bed stone 6 is supported by cross sills of the framework in such a manner as to balance and aline with the runner 5. The eye of the bed stone is sufficiently large to receive a worm feeder 7 fast with the shaft 3 and either forming a part thereof or attached thereto. The worm feeder 7 projects beyond the outer side of the bed 6 and enters the lower portion of a hopper 8 arranged to receive the feed and direct the same into the eye of the bed. The inner end of the feeder 7 terminates about in the plane of the grinding face of the bed so as to insure a positive feed of the material into the space between the two grinding stones or runs. In the preferable construction, the hopper 8 is formed with a disk 9, which latter is bolted or otherwise secured to the outer side of the bed 6. The hopper 8 obtains a bearing against the adjacent longitudinal sill of the framework and serves to hold the bed against the pressure of the runner when the mill is in operation. A washer 10 is interposed between the hopper 8 and the adjacent sill to admit of the bed 6 moving to adapt itself to the runner 5, thereby preventing chuckling and insuring tramming of the mill. The grinding stones are encircled by metal bands 11 which prevent their bursting. The metal band applied to the bed 6 has outstanding lugs 12 and 13 at diametrically opposite points, and which obtain a bearing upon the cross sills of the framework and support the bed. The lugs 12 and 13 are so arranged as to insure a perfect balance of the bed so that it may adapt itself to the runner 5 and maintain the mill in tram. The lug 12 is formed by the outwardly bent ends of the band encircling the bed, said ends being apertured to receive the connecting bolt. The other lug 13 is bolted or otherwise attached to the band 11. Inasmuch as the lugs 12 and 13 are subjected to unequal pressure, the one, as 12, receiving the greater pressure or load rests upon a wear plate 14 attached to the cross sill supporting said lug.

A box 14' is loosely mounted upon the end of the spindle 3 provided with the drive pulley 4 and its outer end is formed with a groove or depression to receive one end of a lever 15 by means of which pressure is trans-



mitted to the spindle for holding the grinding stones together. The lever 15 is mounted at 16 upon an arm 17 projected outward from the framework. A set-rod 18 is pivotally connected to the opposite end of the lever 15, and its end is threaded and receives the hand nut 19 by means of which the set rod 18 is moved to operate the lever 15 and press the spindle 3 inward to bring the grinding stones close together according to the fineness of the food or grain to be ground. A socket 20 is loosely mounted in a bearing 21 attached to the end of a longitudinal sill and said socket 20 receives the threaded end 22 of the set rod 18. The outer end of the bearing 21 is reduced and the shoulder formed at the inner end of the reduced portion is provided with cam members 23 which cooperate with cam members 24 at the inner end of a shaft 25 mounted in the reduced end of said bearing 21. A handle 26 is fitted to the outer end of the shaft 25 and serves as means for turning the same. A head is provided at the inner end of the shaft 25 and the side of the head facing the shoulder at the inner end of the reduced portion of the bearing 21 is formed to provide the cam members 24 which match and cooperate with the cam members 23. When the mill is set, the cam members 24 and 23 occupy a position about as shown in Fig. 4, thereby moving the set rod 18 so as to hold the grinding stones in the adjusted position, the adjustment being effected by means of the hand nut 19, which bears against the outer end of the socket 20. Upon moving the shaft 25 to a position to admit of the cam members 24 and 23 coming together, as indicated in Fig. 5, the set rod 18 moves inward and permits the spindle 3 to move outward and the runner 5 to move away from the bed 6 so that access may be had between the grinding stones for any purpose. The cam members 23 and 24 provide a quick adjustment or movement of the spindle 3, whereby the runner may be moved away from or toward the bed at a moment's notice. The hand nut 19 provides for a nicety of adjustment of the mill to regulate the degree of fineness of the material being ground.

Having thus described the invention, what is claimed as new is:

1. In a grinding mill the combination of a framework, a spindle mounted upon the

framework and adapted to receive both a rotary and a longitudinal movement, grinding stones receiving said spindle, the one being fast thereto and movable therewith and constituting the runner and the other being fixed and forming the bed, a lever arranged to engage said spindle to effect longitudinal movement thereof, a set-rod connected at one end to said lever and having its opposite end portion threaded, a socket loose upon the threaded end of the set rod, a hand nut mounted upon the threaded end of the set rod and adapted to engage said socket, a bearing attached to the framework and receiving said socket and provided upon its inner side with cam members, a shaft mounted in said bearing and adapted to engage the inner end of the aforementioned socket, and cam members upon said shaft adapted to cooperate with the cam members of the bearing to effect longitudinal movement of the aforementioned socket and set rod, substantially as and for the purpose set forth.

2. In a grinding mill a framework, a spindle mounted to both rotate and move longitudinally on said framework, runs or grinding stones, one fast to said spindle to move therewith, and provided with an eye, a hopper interposed between the framework and fixed grinding stone, a feeder attached to the spindle and rotating within the hopper, a metal band encircling the fixed grinding stone and provided at opposite points with lugs engaging the framework for supporting said grinding stone in balance, a set rod having a threaded portion and arranged to move said spindle to bring the grinding stones together, a socket receiving the threaded portion of the set rod, a hand nut mounted upon the threaded portion of the set rod and adapted to exert a pressure against said socket, a manually operable shaft, a bearing for said shaft and socket, and cooperating cams between said bearing and manually operable shaft to effect a quick movement of the said rod for the purposes specified.

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

SAMUEL LIEBERKNECHT. [L. s.]

Witnesses:

DANIEL W. HILDEBRAND,  
A. M. ZINN.