

(No Model.)

H. J. HAMMOND & H. S. WILSON.

GRINDING MILL.

No. 285,031.

Patented Sept. 18, 1883.

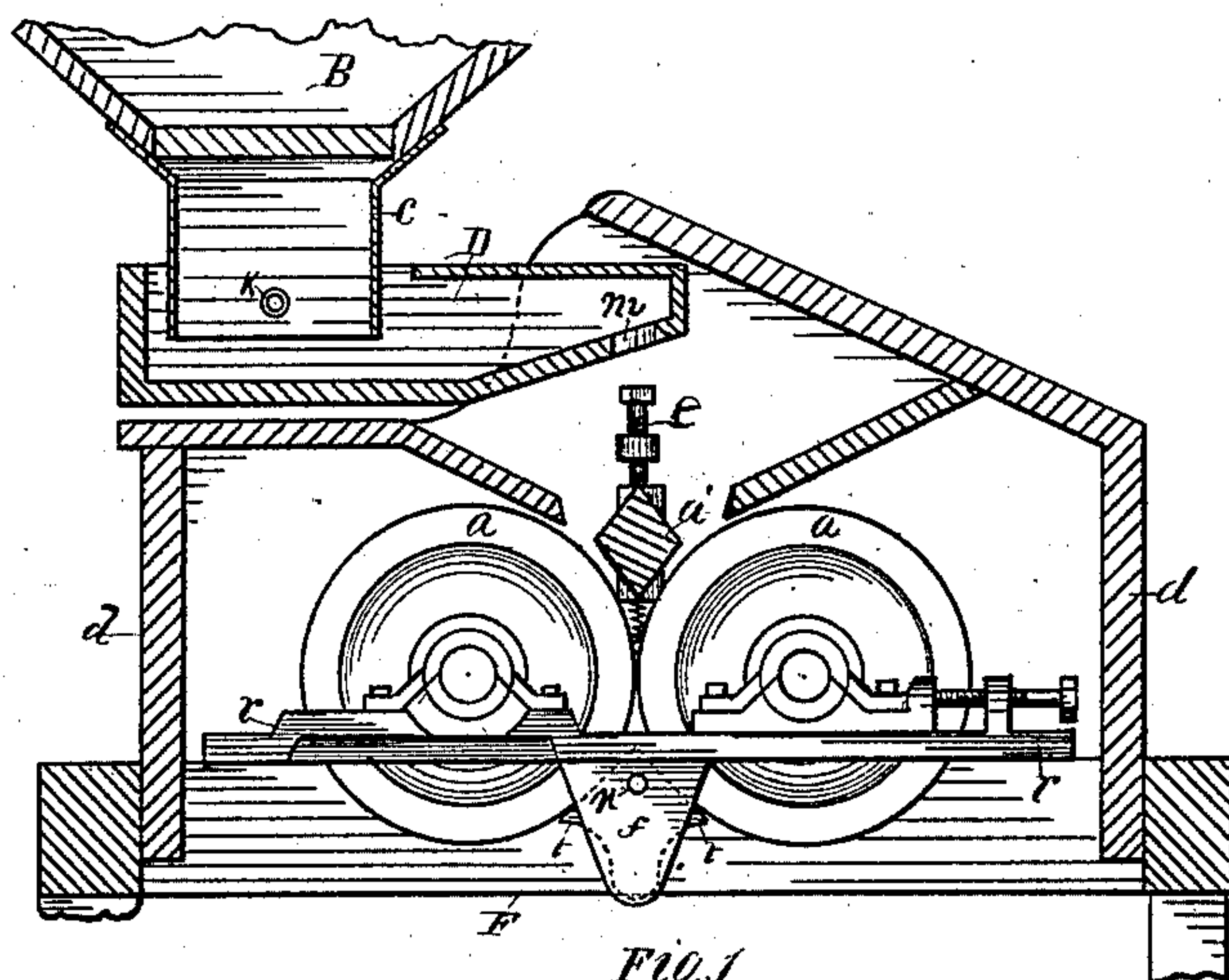


Fig. 1

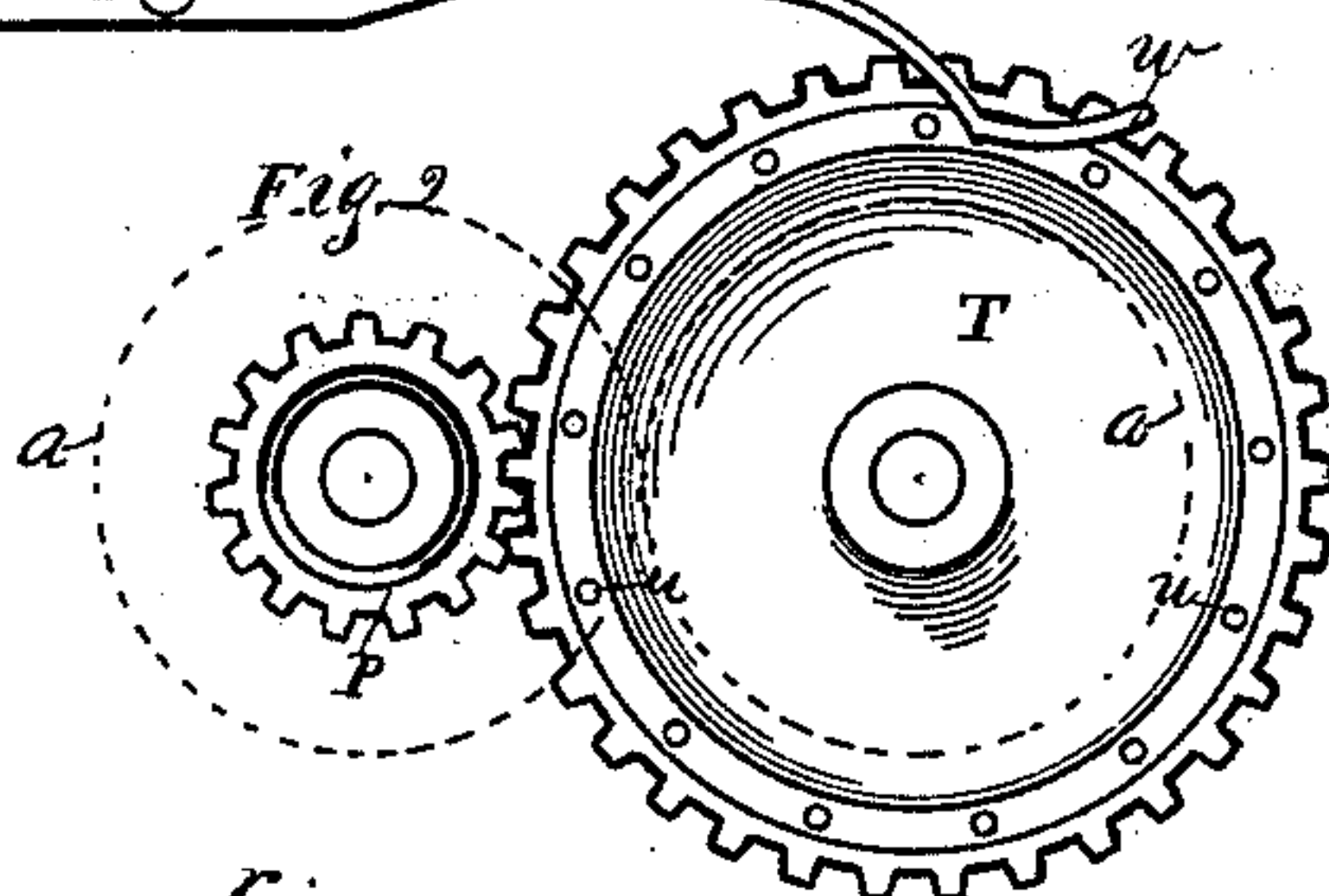
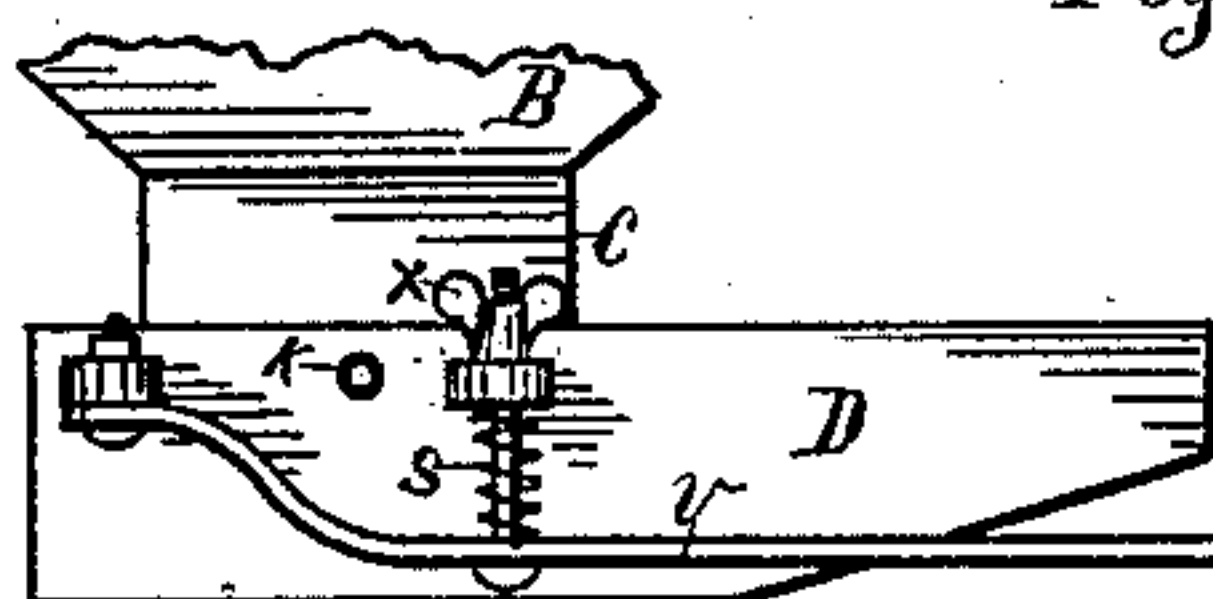


Fig. 2

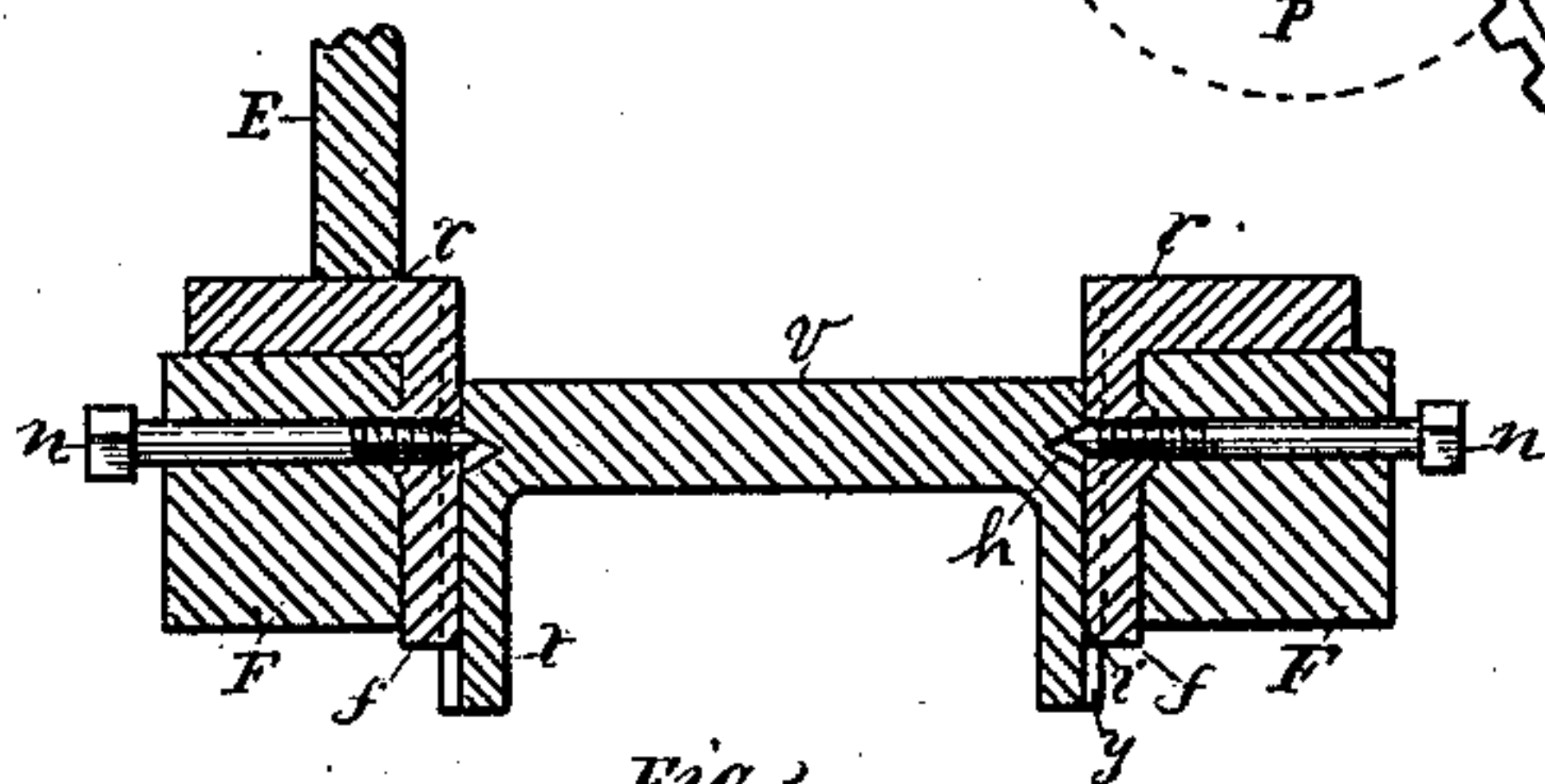


Fig. 3

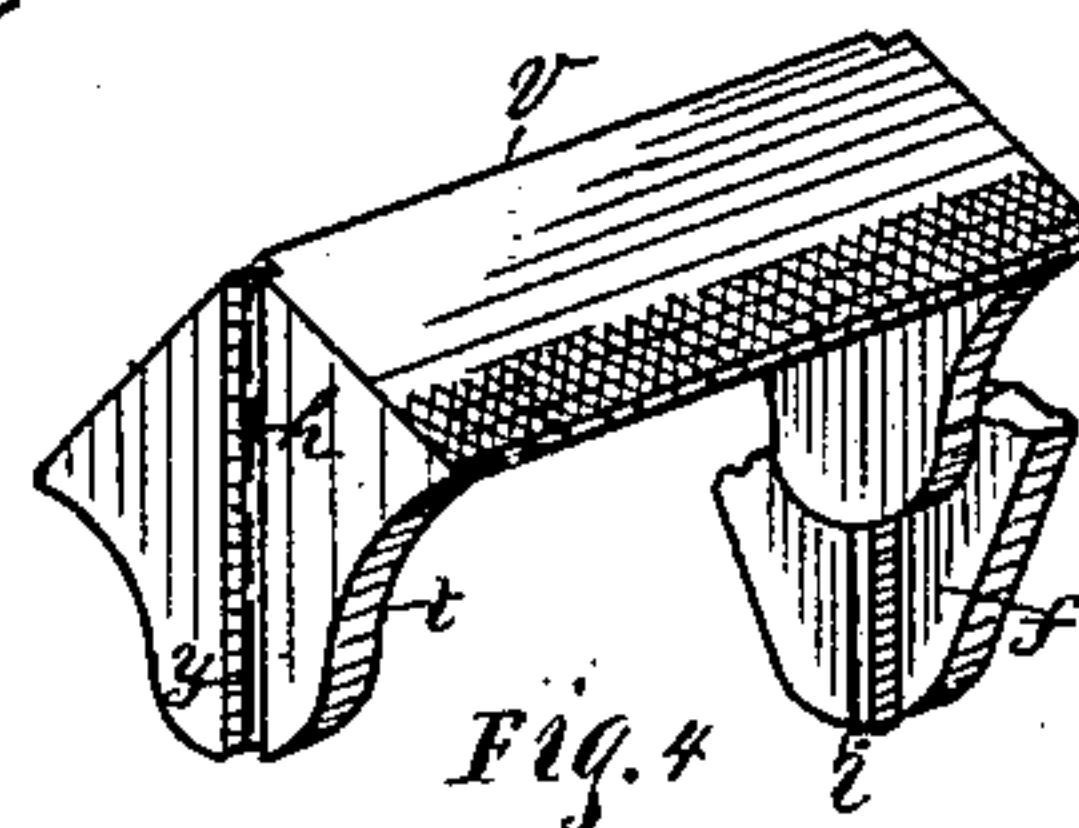


Fig. 4

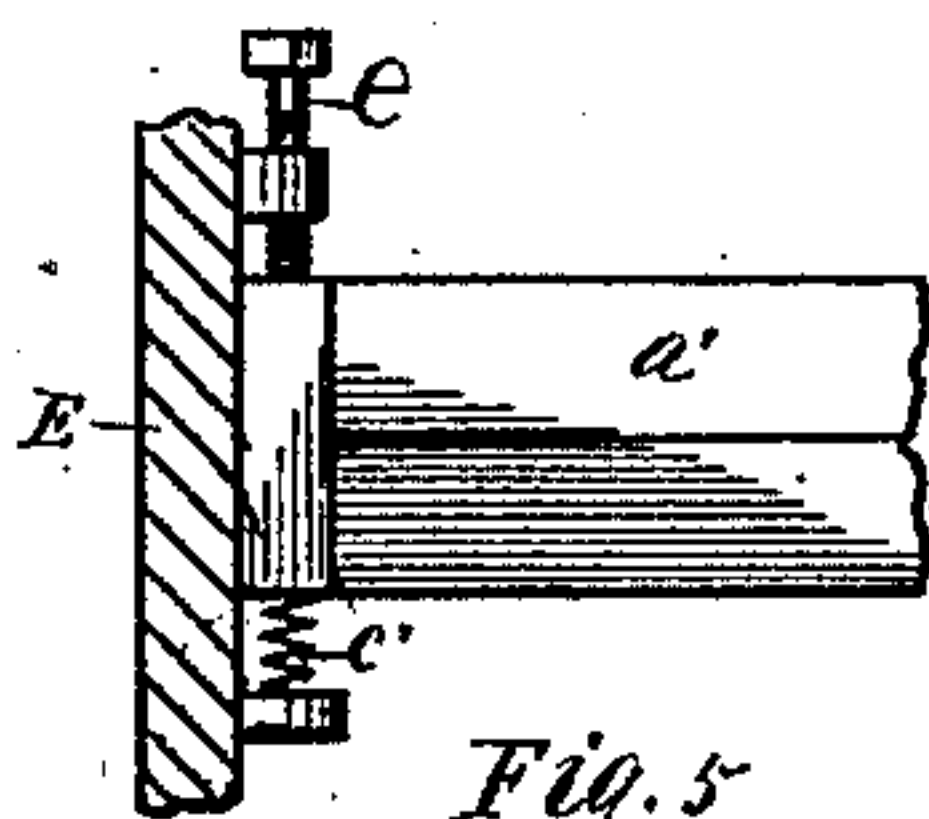


Fig. 5

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# UNITED STATES PATENT OFFICE.

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## GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 285,031, dated September 18, 1882.

Application filed December 2, 1882. (No model.)

*To all whom it may concern:*

Be it known that we, H. JAY HAMMOND and HERBERT S. WILSON, citizens of the United States, residing at Kalamazoo, county of Kalamazoo, State of Michigan, have invented a new and useful Grinding-Mill, of which the following is a specification.

The object of our invention is to construct a grinding-mill having certain improved features, hereinafter described and claimed, whereby the mill is especially adapted for use with a wind-engine or other power having a similar variable velocity.

In the drawings forming a part of this specification, Figure 1 is an end elevation of the grinding-rolls and a cross-section of the frame and hopper; Fig. 2, a side view of the hopper and the grinding-roll gear; Fig. 3, a longitudinal section of Fig. 4 and a cross-section of the lower beams of the frame in Fig. 1; Fig. 4, a perspective view of a pulverizer; and Fig. 5, a side view of a detached part of Fig. 1, termed a "safety-bar."

*a a* are two serrated grinding-rolls, provided with gear-wheels *P T* at one end. The serrated surface of the rolls is not here shown.

*d d* illustrate an inclosure to the rolls *a a* at each side, each end being inclosed by a wall, *E*, Fig. 3.

*B* is the tray, and *c* a spout leading to the hopper *D*. Said hopper is pivoted to spout *c* at *k* in a manner to be rocked or jolted on said pivot vertically. A jolting-bar, *v*, is secured to the hopper at one end, the other end being formed with a shoulder for engagement with projections *u u* on the side of gear-wheel *T*. By this means the hopper is jolted in accordance with the speed at which the motive power runs. Power is applied to the shaft of one of the gear-wheels *P T*. The angle at which the hopper is hung is governed by bolt *S*, connecting with bar *r*, and a lug on the side of the hopper. By screwing down on nut *x* the delivery end of the hopper is lowered. A spring is located on bolt *S* between the lug and bar *r*, which keeps the lug pressed up against the nut, and should said nut become loose the delivery end of the hopper would be raised by said spring and the feeding stopped. The bottom of the hopper *D*, at the delivery end, is

made on an upward incline, up which the grain runs to reach the delivery-mouth *m*, caused by the jolting of the hopper. This end of the hopper may be made open, if preferred, in lieu of mouth *m*.

The hopper and jolting-bar are so proportioned and adjusted in relation to the projections *u u* and the speed at which the mill runs that no grain will be delivered between the rolls *a a* until they are under a sufficient rate of speed to grind and clear themselves without being clogged by the grain. To illustrate: In the case of wind-engine power, if the grain is fed when running slow, just after starting, or before stopping, or when barely moving in a light wind, the rolls might become clogged; but when the mill is running fast enough to do good work at grinding the hopper is jolted hard enough to throw the grain up the incline to the delivery-mouth, as before stated.

If preferred, the free end of the jolting-bar may play upon the cogged periphery of gear *T*.

*v* is a device located beneath the rolls *a a*, for pulverizing the grain after it has been crushed by the rolls, its sides being corrugated or made rough at the lower edge, Fig. 4. Fig. 1 shows the location of the pulverizer. The ends *t t* are formed with grooves *y y*, which play upon ribs *i i* of the plates *r f*, secured to beams *F* on opposite sides of the frame, Fig. 3. The pulverizer is adjustably sustained in position by bolts *n n*, having tapered ends, which are located in tapered notches in the sides of the pulverizer at *h*. By turning the bolts in, the device is thus quickly, slightly, and accurately raised by the bolts, which sustain it in place. It is lowered by the reverse movement of the bolts *n n*. In the operation, the grain, after having been crushed by passing between the rolls *a a*, runs down the inclines of the pulverizer, between the same and the rolls, and is pulverized by the friction of said pulverizer and rolls upon it.

The safety-bar *a'* is preferably made diamond-shaped. It extends nearly or quite the length of rolls *a a*, and is located between and above them, as in Fig. 1. Its use is to prevent an undue amount of feeding and to prevent any large or foreign substance from falling between



the rolls to clog them, such as corn-cobs and the like. It is raised sufficiently far above the rolls to allow a due quantity of grain to pass between the rolls. Substances too large to pass will thus be held back and be ground away by the friction of the rolls or be removed by hand. This bar *a'* is adjustably connected with walls *E* at each end of the rolls. It is vertically adjusted by means of screw *e* and spring *e'* at each end, it being lowered by the screws and raised and held up in place by the springs.

This mill may be used for grinding all kinds of grain or other substances suitable for grinding in such mills; but perhaps its more general use will be for grinding corn with wind-engine power.

Having thus described our invention, what we claim is—

1. In a grinding-mill, the combination, with grinding-rolls provided with gear-wheels, one of said wheels having the side projections, of a pivoted hopper having a bottom inclining upwardly to the delivery end, and an adjustable jolting-bar having a free end adapted to play upon the gear projections, substantially as set forth.

2. A vertically-jolting hopper having an upward incline in the bottom, at the delivery end, and an adjustable jolting-bar secured at

one end to said hopper, in combination with parallel feed-rolls having gear-wheels, one of said wheels having projections for the engagement therewith of the free end of the jolting-bar.

3. The grinding-rolls, a frame for supporting them, provided with ribbed plates, and sustaining-bolts having the tapered ends, in combination with a vertically-adjustable pulverizer, having the side grooves and tapered notches, adapted as set forth, all substantially as described.

4. The combination, with a hopper and grinding means, of a vertically-adjustable safety-bar, and the adjusting screws and springs, substantially as described.

5. The combination, with parallel grinding-rolls, of a diamond-shaped safety-bar located above and between said rolls, substantially as specified and shown.

6. In a grinding-mill, the combination, with a hopper and two parallel grinding-rolls, of an adjustable safety-bar located above and between said rolls, and the adjusting screws and springs, substantially as set forth.

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