

(No Model.)

W. P. ALLEN.

FEED REGULATOR FOR GRINDING MILLS.

No. 341,439.

Patented May 11, 1886.

Fig. 2

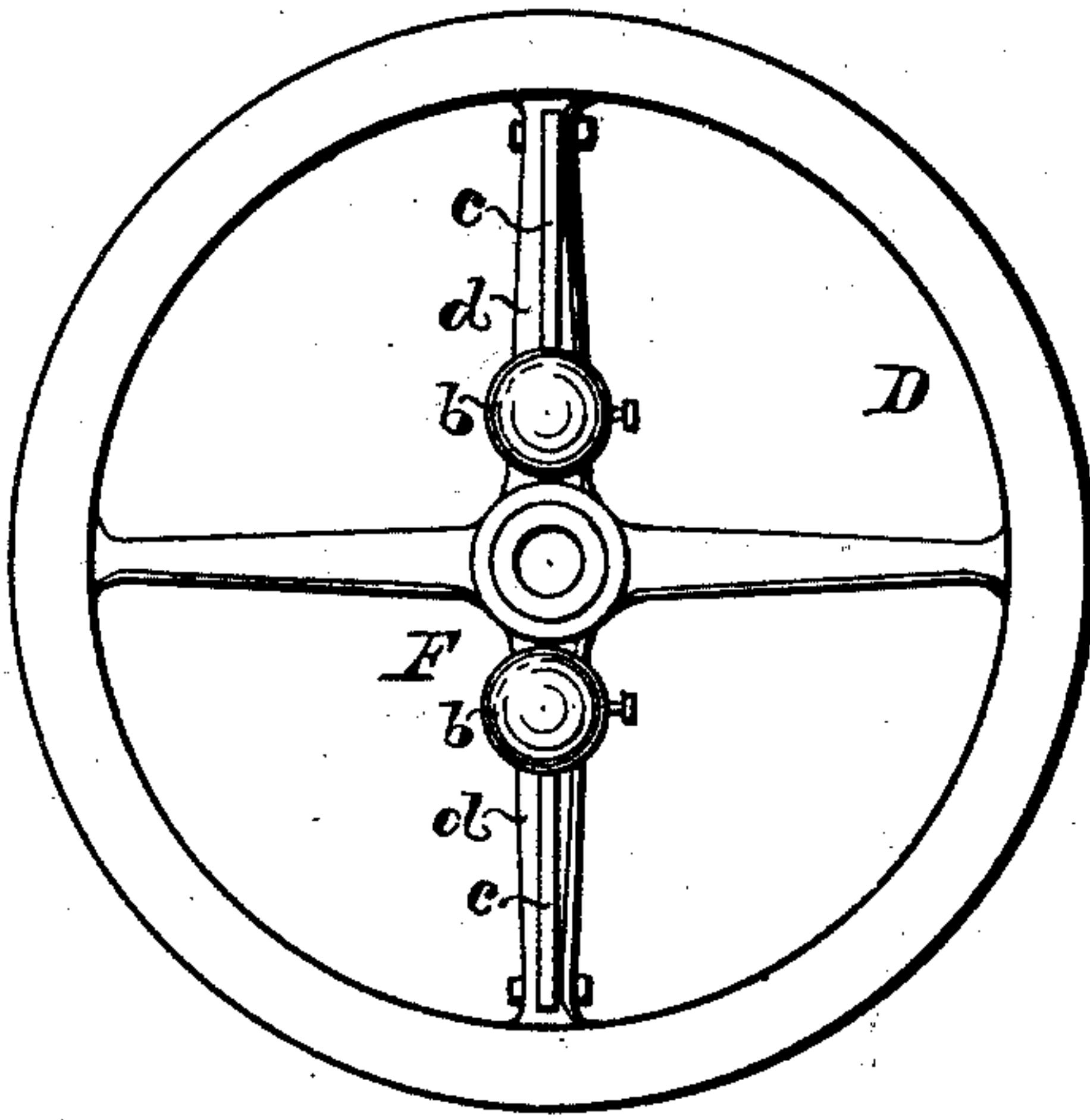


Fig. 1

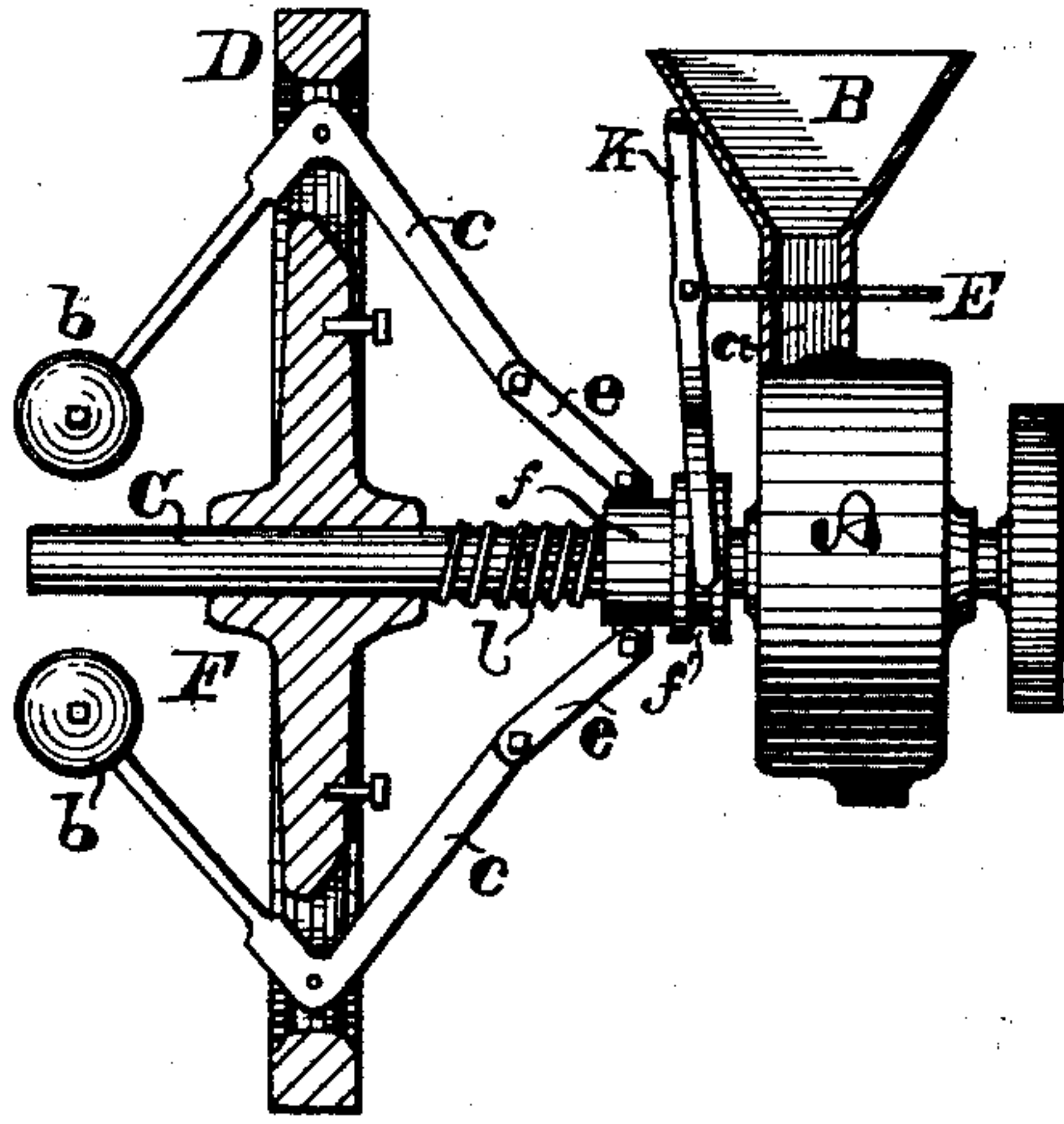


Fig. 3

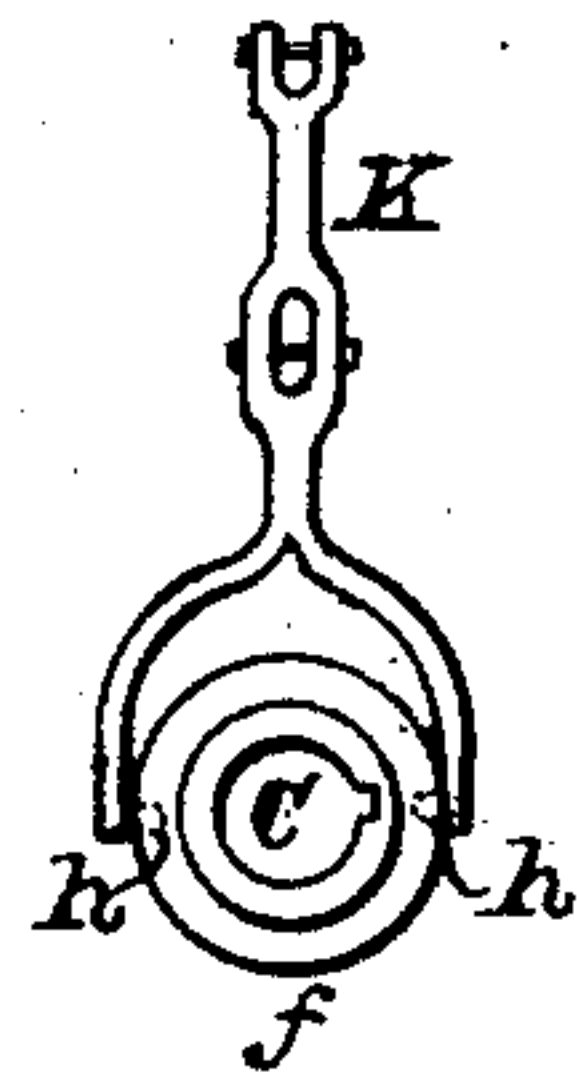


Fig. 4

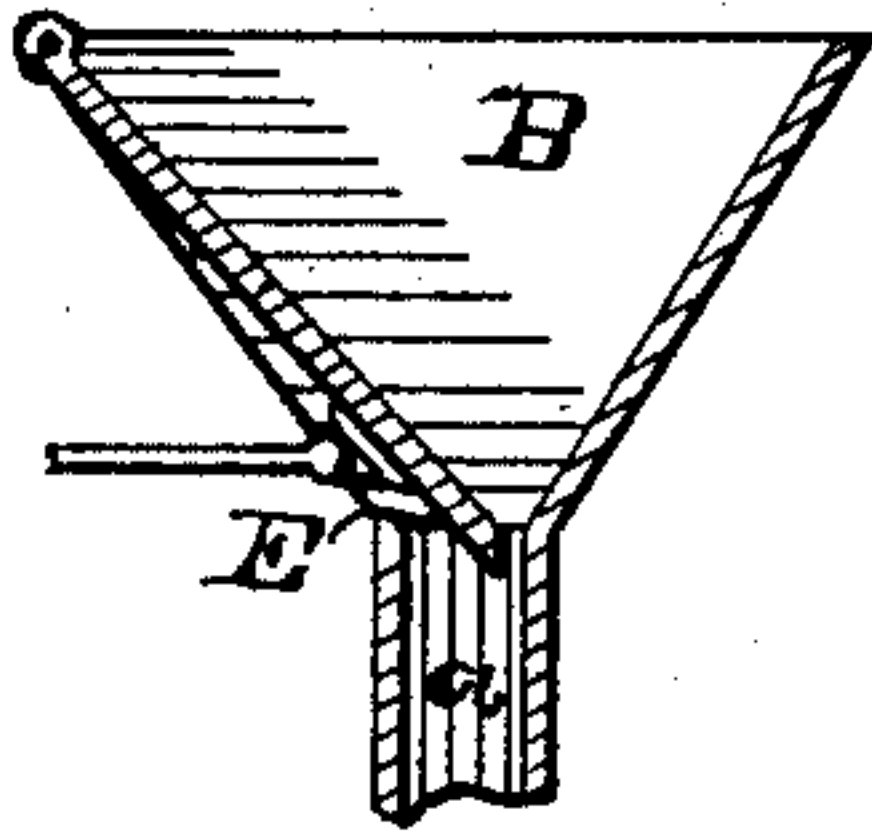


Fig. 5

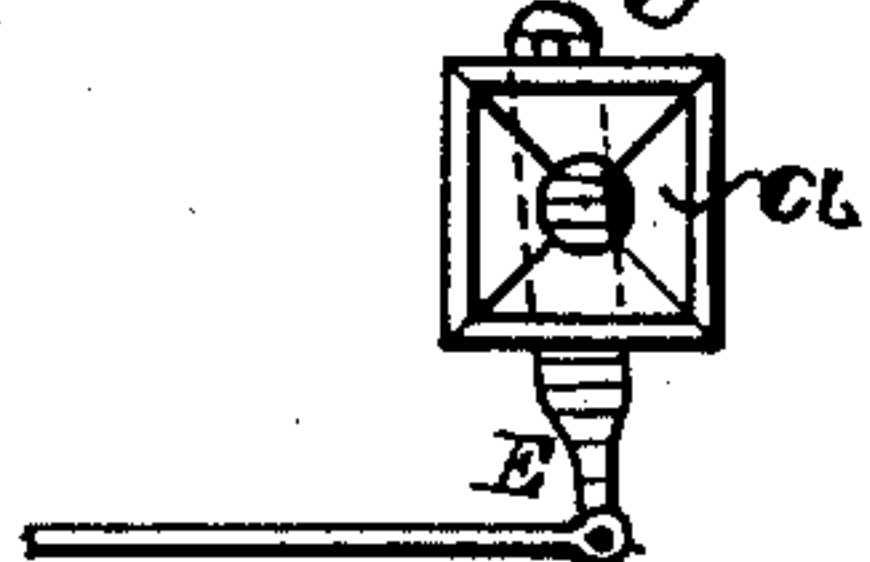


Fig. 6

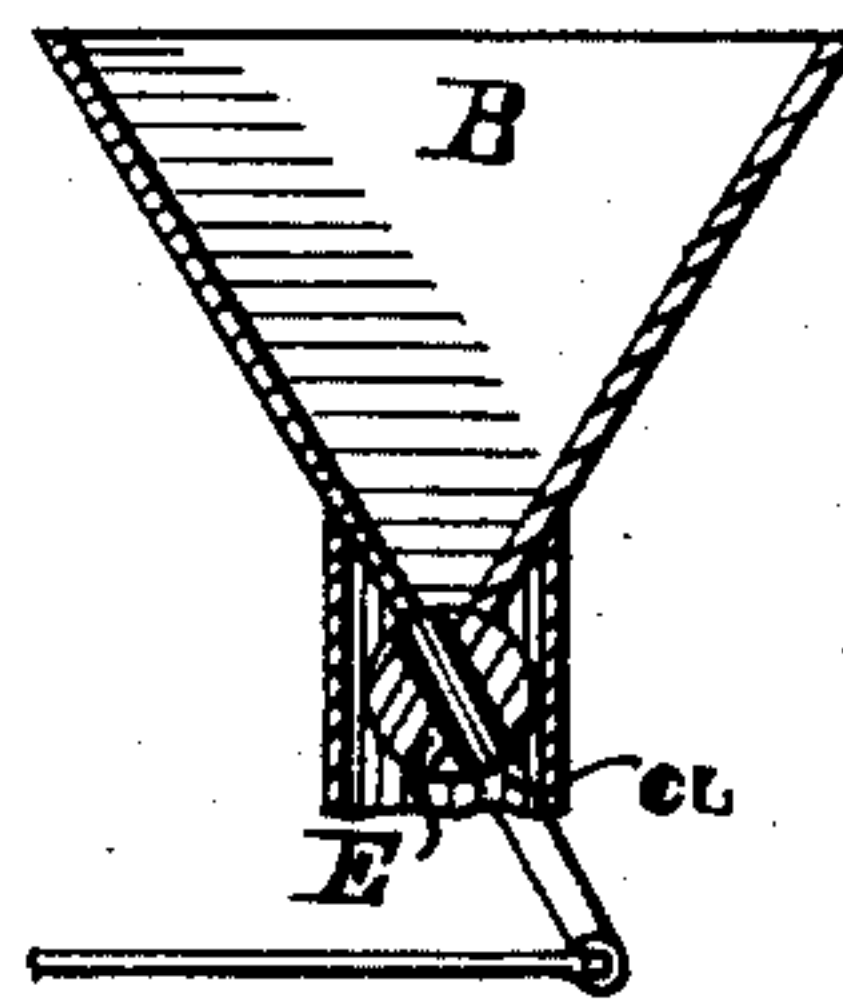
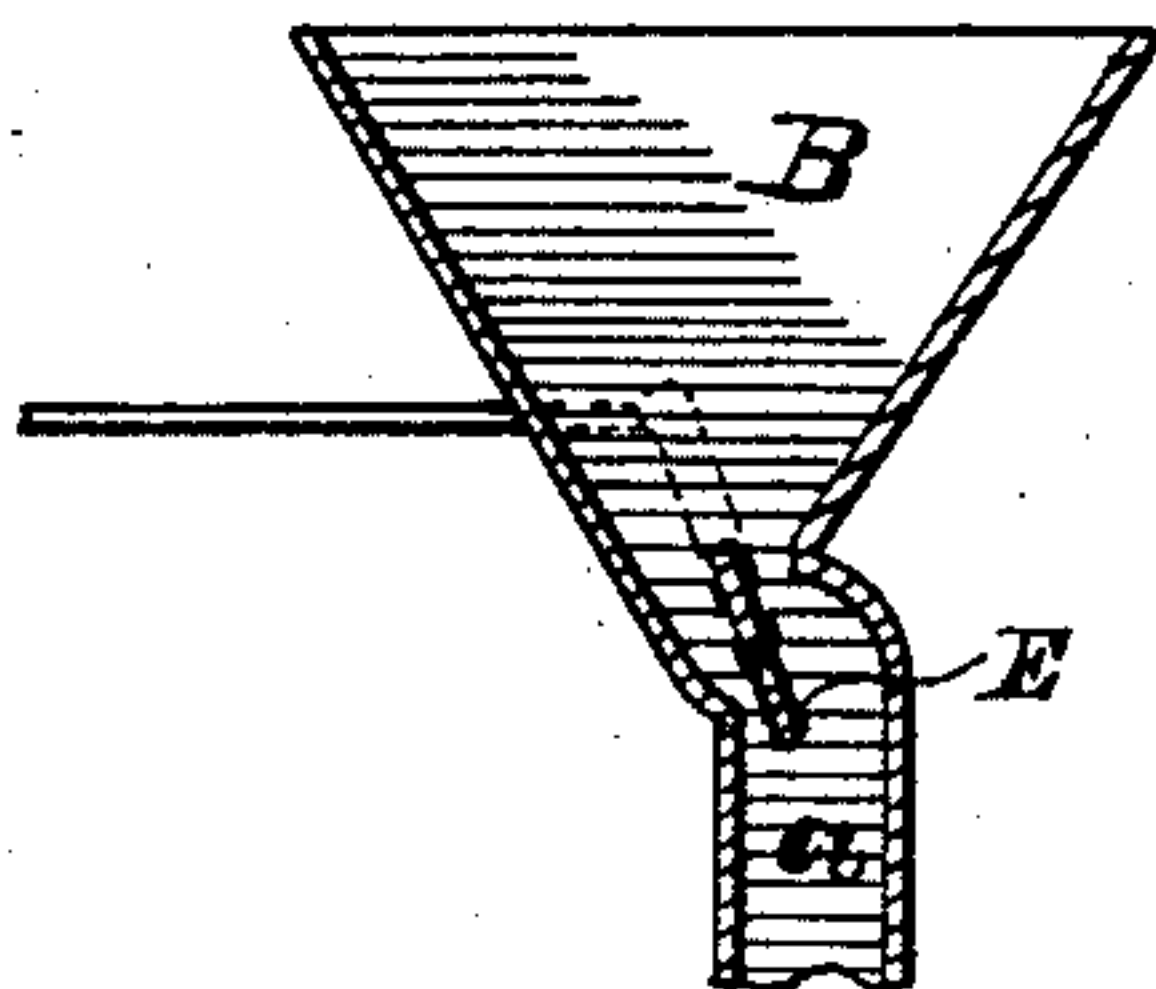


Fig. 7



Attest

F. Willis Baines.
C. Kollfrath.

Inventor
William P. Allen
By Paul N. Shattuck
Att'y.

UNITED STATES PATENT OFFICE.

WILLIAM P. ALLEN, OF WYOMING, OHIO.

FEED-REGULATOR FOR GRINDING-MILLS.

SPECIFICATION forming part of Letters Patent No. 341,439, dated May 11, 1886.

Application filed November 9, 1885. Serial No. 182,175. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. ALLEN, a citizen of the United States, residing at Wyoming, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Feed-Regulators for Grinding-Mills, of which the following is a specification.

My invention relates to feed-regulators for grinding-mills.

The object of my invention is to provide a feed-regulator particularly adapted for use with that class of grinding-mills which are driven by wind-power, in which the speed of the mill varies as the wind changes, the particular object of my invention being to provide an automatic regulator by means of which the amount of grain fed to the mill is regulated by, and depends upon, the speed of the mill.

My invention consists in various constructions and combinations of parts, hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side-elevation view, partly in section, of a grinding-mill to which my improved device has been applied. Fig. 2 is an end elevation of the governor. Fig. 3 is a detail view of a portion of the governor-connections; and Figs. 4, 5, 6, and 7 are detail views showing modifications of the valve for regulating the quantity of grain fed.

In the said drawings, A represents the grinding-mill; B, the hopper thereof; C, the main shaft of the mill, and D the fly-wheel secured on said shaft.

The hopper B is connected by a suitable conduit, *a*, to the grinding-mill, and may be provided with any of the well-known agitating devices to insure the feeding of the grain.

Located in the conduit *a*, between the hopper B and grinding-mill A, is a valve, E, which is connected by suitable means to a centrifugal governor, F. This governor F is preferably located in the fly-wheel D, secured on the main shaft C of the grinding-mill, so that its motion is obtained from and dependent upon the motion of the mill.

The governor consists of balls *b*, secured on the ends of the bell-crank levers *c*, which are pivoted in the arms *d d* of the fly-wheel D.

These bell-crank levers *c* are connected at their inner ends by suitable connecting-links, *e*, to a sliding collar, *f*, secured by a spline or feathered key to the main shaft C, so that the said collar, while revolving with the said shaft, is capable of longitudinal movement thereon. The collar *f* is provided at one end with a groove, *f'*, in the periphery thereof, in which two projecting pins, *h*, on the forks of a bifurcated lever, K, are adapted to engage. The bifurcated lever K is pivoted at its upper end to the hopper, and is connected at or near its center to the valve E in the conduit *a*.

Around the shaft C, between the collar *f* and the hub of the fly-wheel D, I provide a spring, *l*, the tension of which works in opposition to the spreading of the balls by the centrifugal force produced by revolving the shaft. This spring is made of proper tension, so that the valve E will not begin to open until a certain number of revolutions of the fly-wheel shaft is attained.

If desired, suitable means may be provided whereby the tension of the spring *l* may be made adjustable, so that the speed at which the grain will commence to feed may be varied at will.

The operation of the device is obvious. As the shaft C is revolved the centrifugal force acting on the balls *b* will tend to force them from the center of rotation. When sufficient speed has been acquired by the revolving balls to overcome the tension of the spring *l*, the collar F will be drawn longitudinally on the shaft C, and thus, through the medium of the bifurcated lever K, open the valve E. As the speed increases the valve will be further opened, and as the speed decreases the valve will be more or less closed.

It is evident that the device as above described admits of various modifications.

In Figs. 4 to 7, inclusive, modified forms of the valve are shown.

Various other modifications of the different parts of the invention may be employed without departing from the spirit of my invention.

By placing the governor in the fly-wheel, which is located on the main shaft of the mill, it will be seen that the entire device is rendered simple and compact. The governor being thus

directly connected with the mill from which it receives its motion, and also connected with the valve which regulates the feed, any variation in the speed will be at once communicated to the feed, thus compensating for the variation.

Having thus described my invention, I claim—

1. The combination, with the mill A, hopper B, and a valve between said mill and hopper, of the shaft C, the fly-wheel on said shaft, the governor-balls located in said fly-wheel, and means for connecting said balls and valve, substantially as and for the purpose set forth.

2. The combination, with the mill A, hop-

per B, and valve E, of the shaft C, fly-wheel D, balls *b*, sliding collar *f*, means for connecting said balls and collar, and means for connecting said collar and valve, substantially as set forth.

3. The combination, with the mill A, hopper B, and valve E, of the shaft C, fly-wheel D, balls *b*, arms *c*, links *e*, sliding collar *f*, and bifurcated lever K, substantially as specified.

In testimony whereof I have hereunto set my hand this 4th day of November, A. D. 1885.

WILLIAM P. ALLEN.

Witnesses:

D. SCHOONMAKER,

A. J. DUNCAN.