

(No Model.)

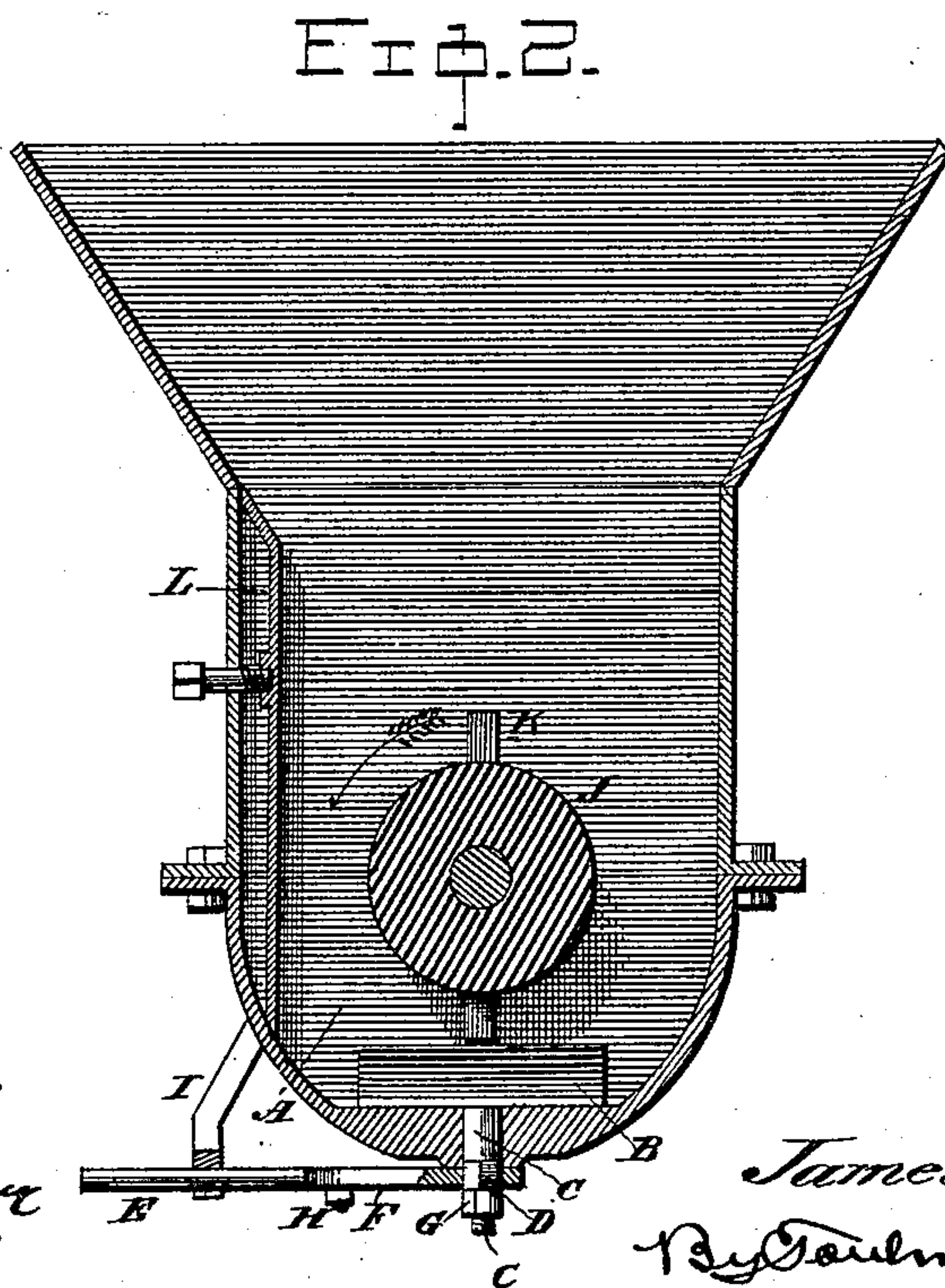
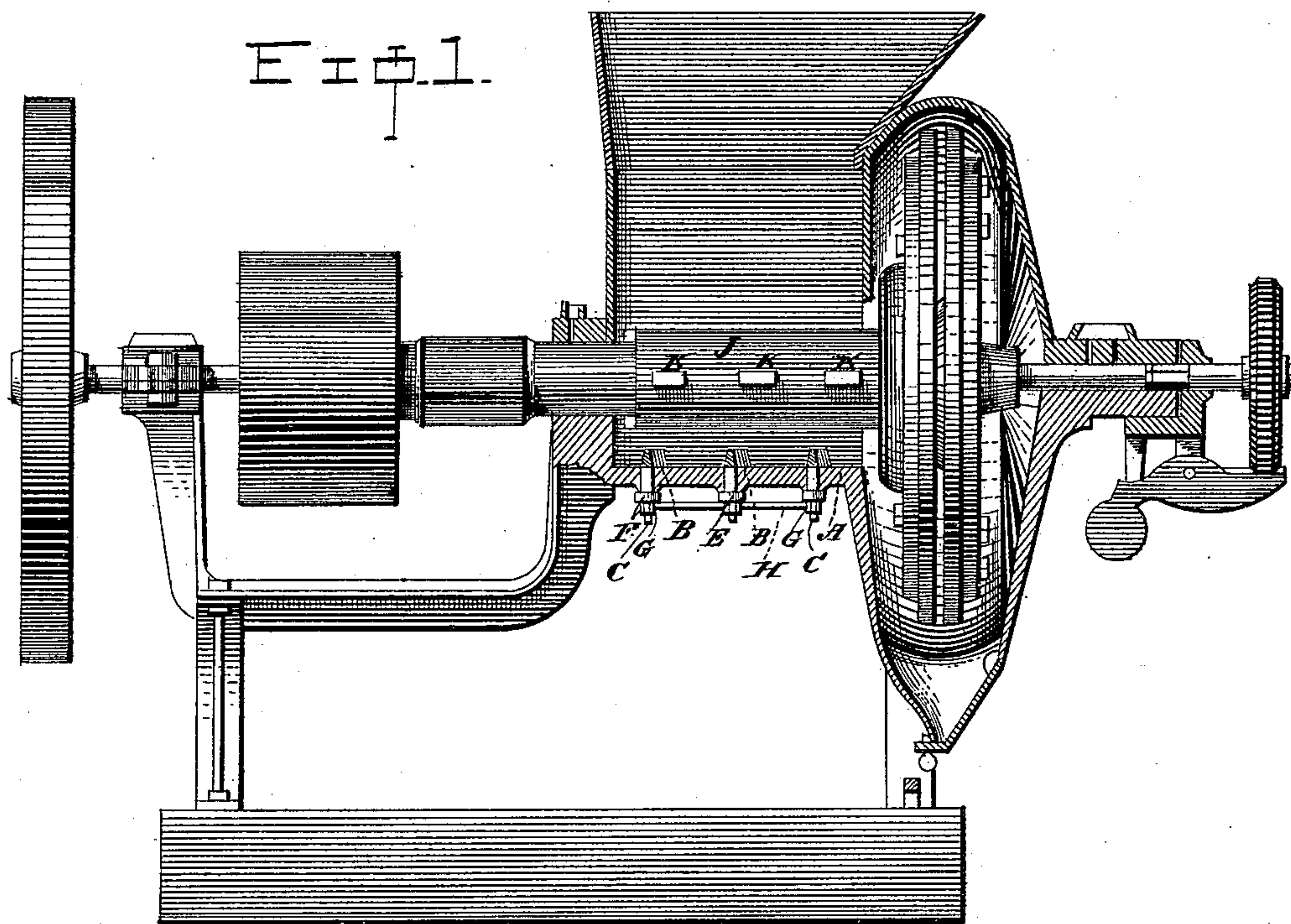
2 Sheets—Sheet 1.

J. F. WINCHELL.

FEED REGULATOR FOR GRINDING MILLS.

No. 396,058.

Patented Jan. 8, 1889.



WITNESSES,

W. H. Sealman
H. K. Wells.

INVENTOR,

James F. Winchell

By Guilmin Fenner,
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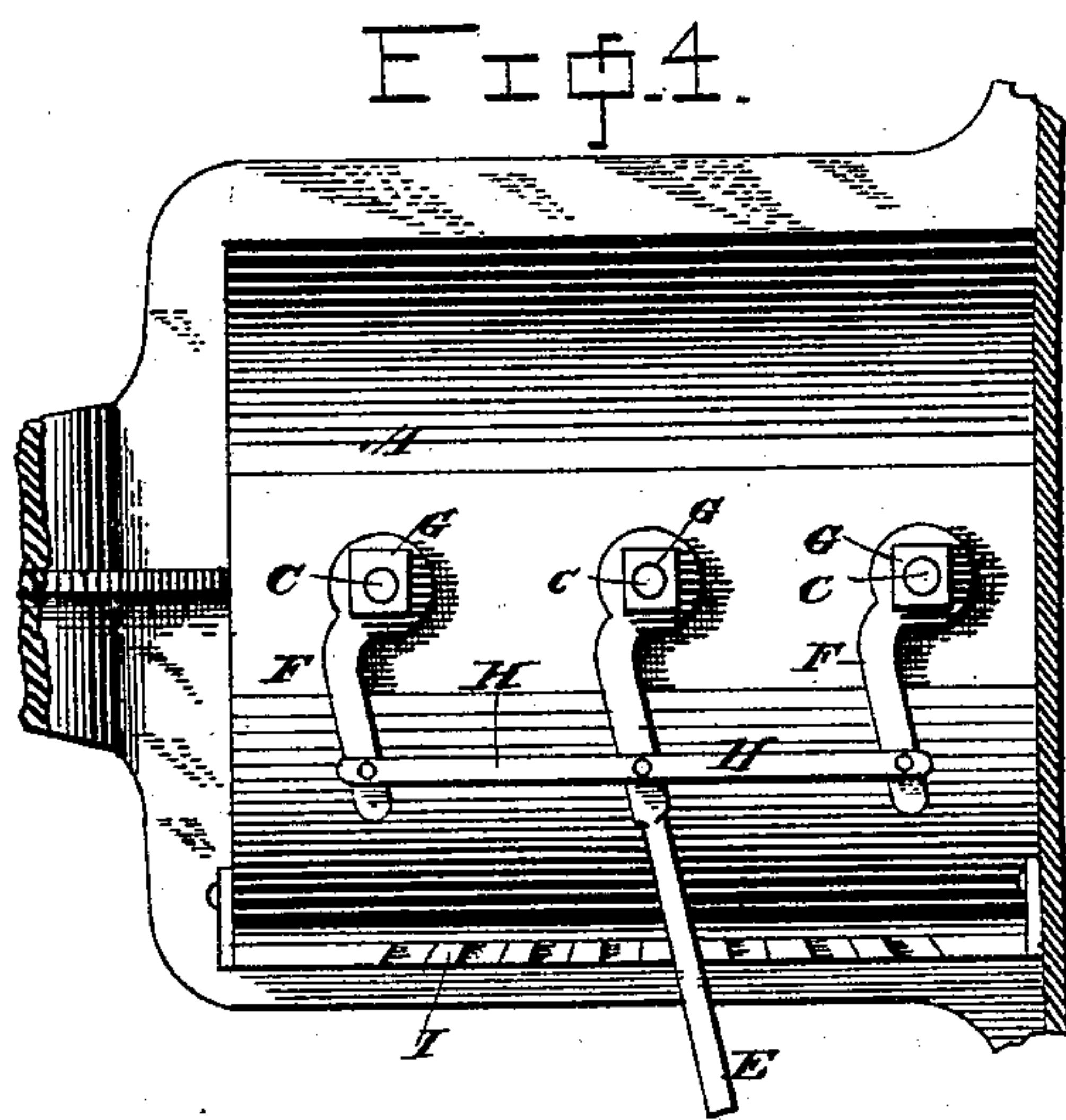
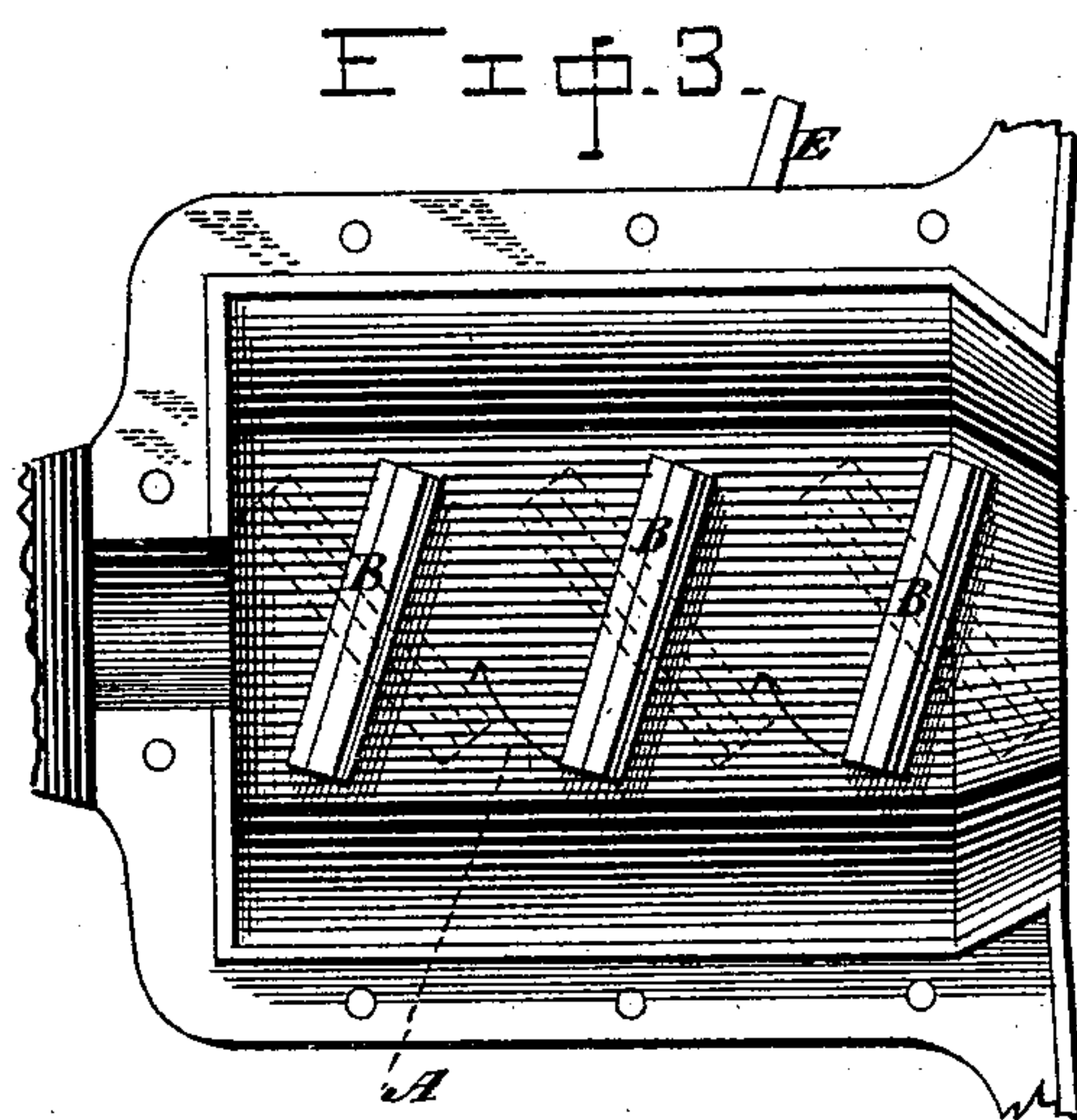
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WITNESSES

A. A. Graham
H. K. Wells

INVENTOR

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UNITED STATES PATENT OFFICE.

JAMES F. WINCHELL, OF SPRINGFIELD, OHIO, ASSIGNOR TO THE FOOS
MANUFACTURING COMPANY, OF SAME PLACE.

FEED-REGULATOR FOR GRINDING-MILLS.

SPECIFICATION forming part of Letters Patent No. 396,058, dated January 8, 1889.

Application filed April 23, 1887. Serial No. 235,849. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. WINCHELL, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Feed-Regulators for Grinding-Mills, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to improvements in crushing and grinding mills, and is designed to reduce corn-cobs, (with and without the grain upon them,) bark, bones, roots, and other substances first to a broken or coarse
15 state and then to such finer state as may be desired; and it consists in combining an adjustable feed-regulator with a crushing-chamber, whereby the rapidity of the passage of the material from said chamber to the grinding mechanism proper may be controlled to
20 suit the different kinds of material and the different conditions which may arise from time to time in the practical use of the machine.

25 The mill generally is by preference of the general character shown and described in Letters Patent granted to me May 18, 1886, and numbered 342,158, for crushing and grinding mills.

30 In the accompanying drawings, forming a part of this specification, and on which like reference-letters indicate corresponding features, Figure 1 represents a vertical sectional view of a mill of the character just alluded to, showing my improved feed-regulator in sections; Fig. 2, a transverse vertical sectional view through the hopper, the crushing-chamber, and the crusher, showing the feed-regulator in elevation; Fig. 3, a plan view of a
40 portion of the main casing, showing the crushing-chamber and the feed-regulator therein and its different positions; Fig. 4, an inverted plan view of that portion of the casing shown in Fig. 3, and also showing the means of adjusting the feed-regulator.

45 The construction and arrangement of the frame, the casing, the main shaft, and the grinding heads and plates, as also the adjusting mechanism for the shaft, are the same in
50 the present case as in my Letters Patent

above alluded to. These features, however, may be varied at pleasure and some other form of frame and mechanism adopted. Therefore a minute description of the machine generally, exclusive of the feed-regulator and the
55 crusher, is superfluous in this place. Furthermore, the machine generally is used interchangeably with the devices peculiar to crushing comparatively large substances, the devices peculiar to grinding cereals, and the
60 devices peculiar to hulling seed.

Referring now to the peculiar features involved in the present case, the letter A designates the crushing-chamber, through which the material passes from the hopper on its
65 way to the grinding mechanism proper, and the letter B a series of bars, of which there are three in the present instance. These bars are fitted, as seen more clearly in Fig. 2, across the bottom of the chamber A, the said bottom
70 being flatter in this case, for the purpose of properly acting in conjunction with the bars, than in the patent already alluded to. Formed in the bottom of the chamber are a series of
75 holes, and in each hole is fitted the shank or spindle C of the respective bars, the lower ends of which are preferably angular, as seen at D in Fig. 2, to receive an adjusting-handle, E, and arms F, and are screw-threaded to receive nuts G. The arms F are connected with
80 the handle E by a pitman, H, through pivotal joints.

Secured to the casing or forming a part of the general structure of the mill is a notched bar, I, with which the handle E is adapted to
85 engage for the purpose of locking the same in any set position. It will now be observed that upon actuating the handle E more or less in one direction or the other the bars B will be adjusted at varying angles across the
90 crushing-chamber, and also that their general direction will be changed, as suggested by the full and the dotted lines in Fig. 3. Now let it be supposed that the crusher (to which reference will hereinafter be made) be revolved in the
95 direction indicated by the arrow in Fig. 2, which is the direction indicated by the arrow in Fig. 3, and the bars B are in the position shown in the full lines in Fig. 3. When the feed will be very much less rapid than if they are

in the position shown in the dotted lines in said figure. This is one illustration of an extreme difference which may be effected in the speed of the feed of the mill. It will be understood, however, that a variation in the angle of the bars B across the chamber, yet without changing their general direction, will also change the speed of the feed. Thus my improved feed-regulator will control the slow feed from maximum to minimum degree and the fast feed from maximum to minimum degree.

I have described what I consider to be the best means of carrying out my invention; but I wish to be distinctly understood as not in any sense confining myself to this form of construction, since my invention is, broadly, that of regulating the feed by a regulator located in the crushing-chamber and capable of varying the speed of the feed.

The letter J refers to the crusher, the same being mounted on the main shaft of the mill, and secured either in the manner set out in the patent already alluded to or in any other way, and provided with crushing lugs or protuberances K. These lugs I have shown with sides substantially parallel to the axis of the crusher, as being a form highly useful in combination with my feed-regulator. The shape of these lugs, however, may be varied, and may be changed to the shape of the lugs shown in said patent. I have spoken of the crusher as a "crusher," and of the chamber A as a "crushing-chamber," and have used these terms for the sake of harmony with the terms used in my said patent and others recited in it which have been granted to me; but it is not to be understood that if the crusher acted merely as a "conveyer" and the chamber as a "conveying-chamber" a departure from my invention would thereby be brought about. As a matter of fact, the organization here shown and described accomplishes both the crushing and the conveying functions, and the bars B assist in the crushing operation while controlling the speed of the feed operation. It will be further noticed that when the bars are in any given position they virtually become fixed, as distinguished from the adjustable, so that bars permanently fixed to the chamber would be but their equivalent without the changes of adjustability. The plate L may or may not be used, and forms the same function as the plate K in my

Letters Patent already recited—to wit, that of reducing the size of the chamber, so as to crush cobs or substances much smaller than the average cob.

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

1. In a mill, the combination, with a casing and a crushing-chamber composing a part of the frame thereof, a main shaft rotated longitudinally through the chamber and across the casing, and grinding mechanism in the casing near one end of the chamber, the rotating part thereof being carried by said shaft, of a series of bars located across the chamber, having shanks which extend through the wall of the chamber, a handle on one of them and arms on the others, a bar connecting the arms with the handle, and a locking device with which the handle engages, whereby the said bars may be adjusted and held, and a cylindrical body on the shaft having lugs or projections which coact with said bars and crush the material and feed it to the grinding mechanism.

2. In a mill, the combination, with a casing and a crushing-chamber composing a part of the frame thereof, a main shaft running longitudinally through the chamber and across the casing, and grinding mechanism in the casing near one end of the chamber, the rotating part thereof being carried by the said shaft, of a series of bars located across the said chamber, having shanks which extend through the wall thereof, devices connected to said shanks to adjust and hold the bars at varying angles in one general direction and at varying angles in the opposite general direction, whereby said bars control the speed of feeding from the maximum to the minimum degree of slowness and from the maximum to the minimum degree of rapidity, one of said directions being of a general slow feeding and the other of a general faster feed, and a cylindrical body on said shaft within said chamber, and having peripheral lugs or projections which coact with said bars to crush and feed the material.

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

JAMES F. WINCHELL.

Witnesses:

WILBER COLVIN,
A. A. YEATMAN.