

No. 639,897.

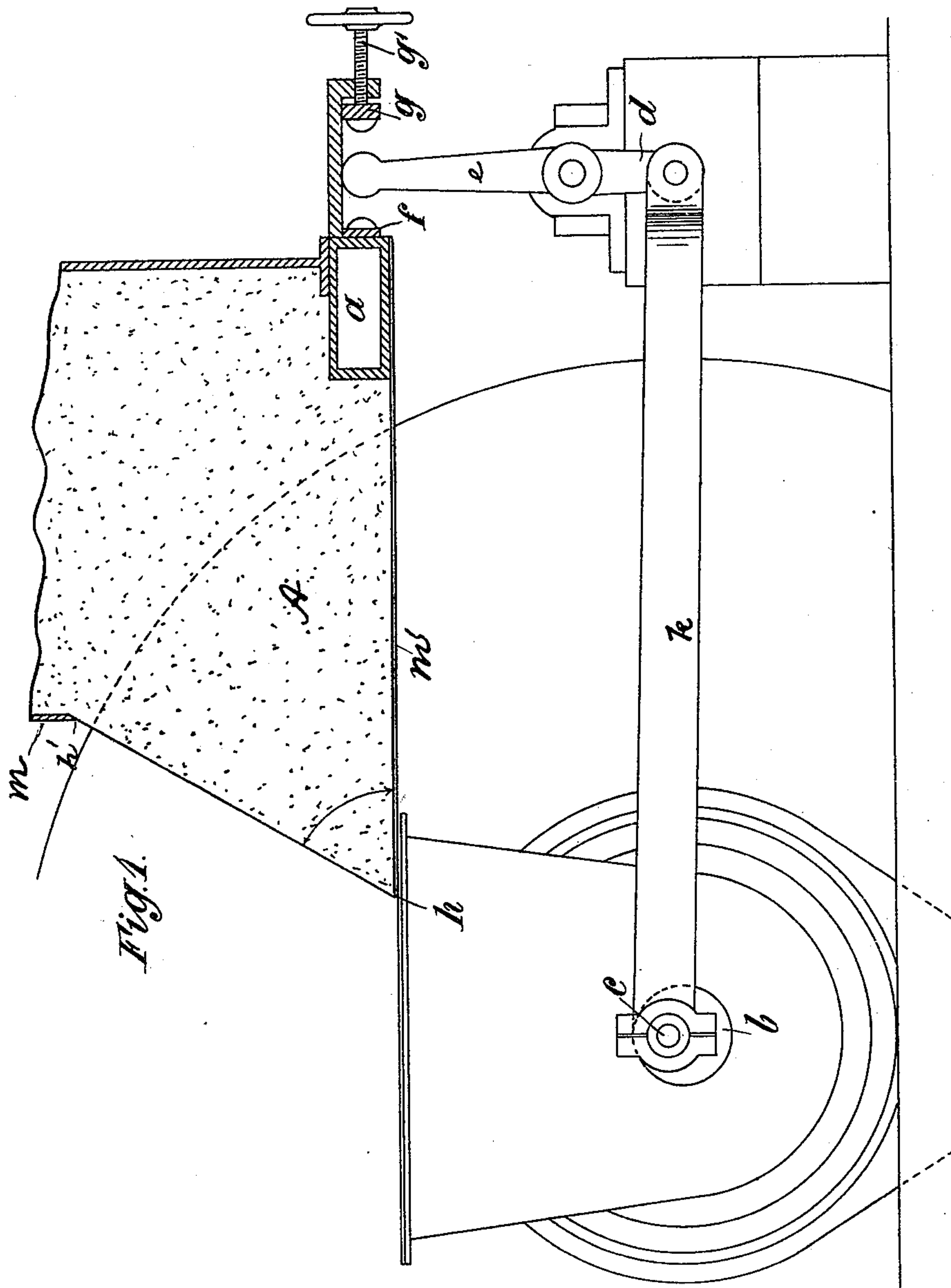
Patented Dec. 26, 1899.

A. B. HELBIG.  
FEED REGULATOR.

(Application filed June 23, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:  
William Miller.  
William Schulz.

Inventor:  
Albin Berthold Helbig  
by his attorneys  
Roeder & Briesen

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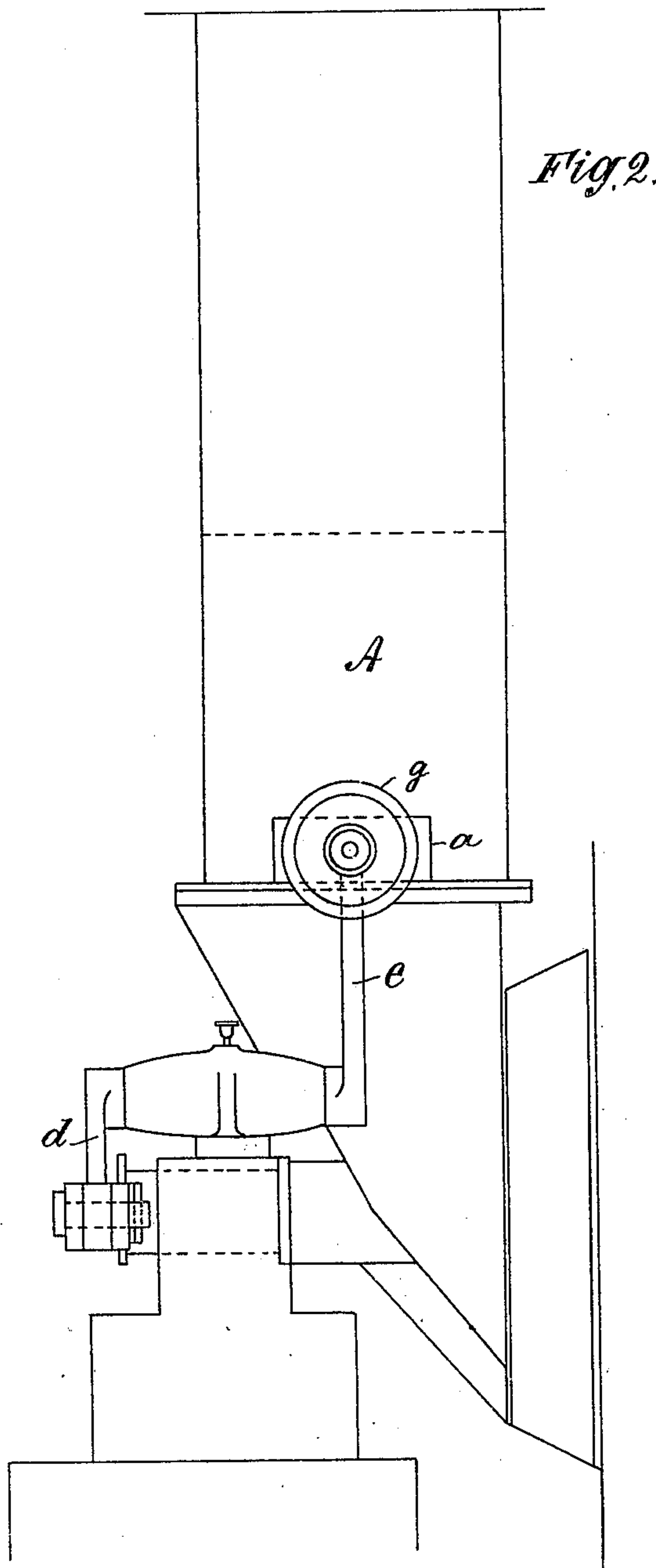
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# UNITED STATES PATENT OFFICE.

ALBIN BERTHOLD HELBIG, OF WARSTADE HEMMOOR, GERMANY.

## FEED-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 639,897, dated December 26, 1899.

Application filed June 23, 1899. Serial No. 721,583. (No model.)

*To all whom it may concern:*

Be it known that I, ALBIN BERTHOLD HELBIG, a subject of the King of Prussia, German Emperor, residing at Warstade Hemmoor, in the Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Feed-Regulators, of which the following is a specification.

The feed-regulator forming the subject of the present invention and shown in the accompanying drawings has for its purpose to automatically feed in a regulatable manner material of the most varied granulated state into grinding, sorting, sifting, and other machines.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of my improved feed-regulator, showing it applied to a ball-mill. Fig. 2 is an end view thereof.

The device consists of a sliding stamp or plunger *a*, of square or any other cross-section, receiving a reciprocating stroke from the machine to which it is attached by means of a crank-pin *c*, secured eccentrically to the shaft *b* of the mill, and of a rod *k* and rocker *d e*. The motion of plunger *a* toward and away from the discharge-orifice of the hopper takes place in such a manner that the upper end of the rocker strikes alternately against a fixed stop *f* and a movable stop *g* of the plunger, the piston of the movable stop being adjustable by means of the set-screw *g'*. By shifting the latter the stroke of the plunger can be varied, as will be obvious from an inspection of the drawings.

The front wall *m* of the hopper *A* terminates at a distance above the base-plate *m'*, so as to form an intervening discharge-orifice. The base-plate *m'* projects forwardly beyond the plane of the wall *m*, so that thus the lower portion of the hopper is greater in horizontal section than the upper portion. The side walls of the hopper are inclined at both sides of the discharge-orifice, the inclination of their free forward edge *h' h*, corresponding to the natural slope of the material fed into the hopper.

The material may consist of the largest or the smallest pieces and is caused to accumu-

late under an angle corresponding to the natural slope. After the apparatus has been set in motion each stroke of the plunger *a*, moving upon the bottom of the hopper, disturbs the equilibrium of the charge by displacing its lowermost stratum, thereby causing a certain quantity of the material to fall into the mill. In other words, the sides of the hopper-outlet form an acute angle with the bottom of the hopper that corresponds to the natural slope of the material to be discharged. The entire mass within the hopper is therefore in equilibrium when the upper edge of the material within the opening is flush with the side edges. If this equilibrium is disturbed, an accurately-measured quantity of the material will be discharged without producing any lateral pressure against the side walls of the hopper. The shifting forward of the material toward the place from which it falls into the mill takes place in a perfectly straight line.

The lateral forces caused by the progress of the material when a worm conveyer or the like is used and which give rise to the formation of arches within the material to be shifted are avoided by the new arrangement, as are also breakages of the shifting device.

In order to work in complete security and use as little motive power as possible, the hopper is enlarged gradually, so as to taper outward toward the part where the material drops into the mill.

What I claim is—

1. In a feed-regulator, a hopper having a front wall open at its lower end, a base-plate projecting beyond said lower end, and side walls having inclined free edges to form an intervening discharge-orifice, combined with a sliding plunger movable within the hopper, and means for imparting a reciprocating stroke to said plunger toward and away from the discharge-orifice, substantially as specified.

2. In a feed-regulator, a hopper having a front wall open at its lower end, a base-plate projecting beyond said lower end, and side walls having inclined free edges to form an intervening discharge-orifice, combined with

a plunger movable upon the base-plate of the  
hopper and adapted to reciprocate toward  
and away from the discharge-orifice, a pair  
of stops on the plunger, means for adjusting  
5 one of said stops, and a rocker adapted to  
alternately engage the stops and reciprocate  
the plunger, substantially as specified.

In witness whereof I have hereunto signed  
my name in the presence of two subscribing  
witnesses.

ALBIN BERTHOLD HELBIG.

Witnesses:

E. H. L. MUMMENHOFF,  
OTTO W. HELLMAN.