

(No Model.)

A. C. BRANTINGHAM.
FEEDER FOR MILLS.

No. 538,815.

Patented May 7, 1895.

Fig. 1.

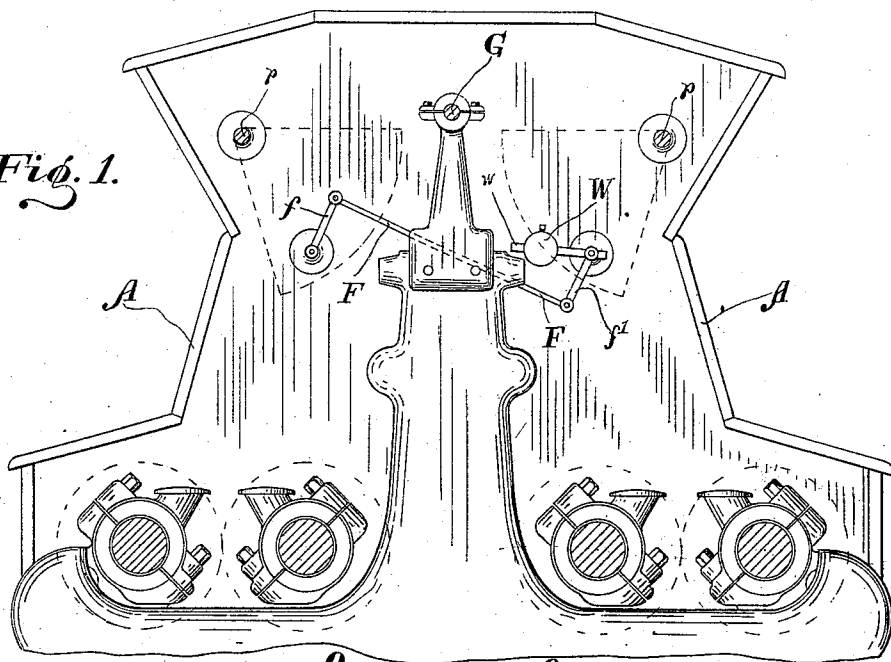
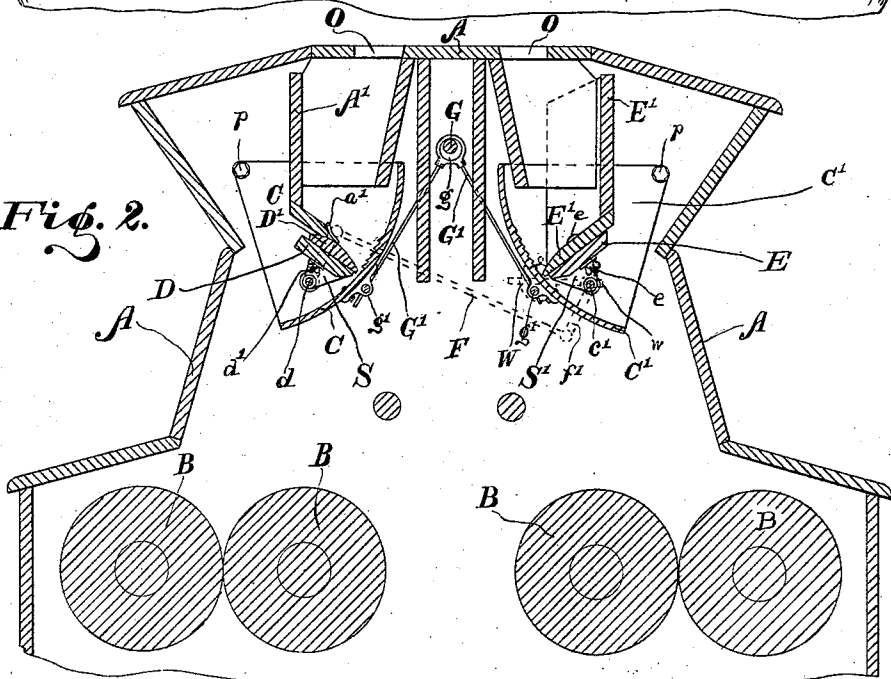


Fig. 2.



WITNESSES:

Edgar A. Kingsley
James D. Walsh

INVENTOR

Allen C. Brantingham.
BY
Chester D. Bradford,
ATTORNEY.

UNITED STATES PATENT OFFICE.

ALLEN C. BRANTINGHAM, OF TOLEDO, OHIO, ASSIGNOR TO THE NORDYKE
& MARMON COMPANY, OF INDIANAPOLIS, INDIANA.

FEEDER FOR MILLS.

SPECIFICATION forming part of Letters Patent No. 538,815, dated May 7, 1895.

Application filed August 13, 1894. Serial No. 520,154. (No model.)

To all whom it may concern:

Be it known that I, ALLEN C. BRANTINGHAM, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Feeders for Mills, of which the following is a specification.

This invention consists in certain improvements upon that for which Letters Patent No. 494,188 were granted to me, dated March 28, 1893.

It consists in certain mechanism whereby the discharge of material from each of two or more hoppers, in the same machine or adjoining machines, is automatically rendered uniform.

A machine equipped with my said improvements will be first fully described and the novel features then pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a side elevation of the upper portion of a double "roller-mill" embodying two feed-hoppers equipped with my present improvements, the pulleys and most of the mechanism being removed; and Fig. 2, a sectional view of the same.

In said drawings the portions marked A represent the frame-work or casing of the machine; B, the grinding rolls; C C', the main portions of pivoted feed-hoppers; D, a pivoted gate to the hopper C; E, a pivoted gate to the hopper C'; F, a connecting rod connecting the mechanism of said two pivoted gates, and G the shaft by which the hoppers C C' are given their movements.

The casing A and rolls B are shown merely for purposes of illustration, indicating how my present invention is applied to a roller mill; but the use of said invention is not confined to roller mills; and any other apparatus needing feed hoppers might as well have been illustrated in connection with this invention.

Openings O in the upper portion of the casing A are provided through which the stock may be introduced by means of hoppers, spouts or otherwise, and below these openings are appropriate chutes which lead said stock to the feed hoppers proper.

The feed-hoppers C and C' are in themselves

substantially like those shown in my above mentioned Letters Patent No. 494,188; are supported by pivots or pivot shafts *p* carried from the frame A; and are given movement from a cam *g* on the shaft G, which operates the connecting rods G' extending therefrom to suitable bearings *g'* on said hoppers,—said parts operating in substantially the same way, to impart the movement to the feed hoppers, as the corresponding parts do in the construction of the aforesaid Letters Patent, said construction differing only in details. As will be readily understood, not only may the construction of the feed hoppers be changed without departing from my invention, but said invention can also be used in combination with feed rolls as well as feed hoppers; the form or character of the opposing feed surface being immaterial so far as my present invention is concerned.

In the machine shown the gate D is situated within the hopper C, and is provided with brackets S, which in turn are rigidly connected to the pivot rod *d*, by which said gate D is thus supported, the pivot point being so positioned that as said gate is rocked thereby, the opening between the lower edge of the gate and the interior surface of the hopper—(opposing feeding surface)—will be varied. The pivot rod *d* passes through openings in the ends of the hopper C, (which openings are large enough to permit the prescribed movement of said hopper,) and rests in bearings in the ends of the frame A. The gate D thus does not participate in the movement of the hopper C, but has a wholly independent movement of its own. Said gate is preferably constructed in two parts, and that part or plate, D', which comes in immediate contact with the stock being fed through the hopper, is adjustable on the main part, by means of uniting bolts *d'* and appropriate slots, as will be readily understood upon an inspection of Fig. 2. These parts are adjusted as desired before setting the machine in operation. Extending up from a position closely adjacent to this part D' is a rigid guide-board A', secured to the structure of the frame A, which forms one side of the chute through which the stock is discharged into the hopper, as well as a portion of the hopper itself. This at its lower

end is preferably armed with a sheet of leather or similar flexible material a' , the free edge of which rests upon the part D' , thus closing any orifice that might otherwise exist between these parts. The stock, during the operation of the machine, descends against the part D' and the interior surface of the hopper C , and passes through the narrow slit or orifice between them, as will be readily understood. This orifice is adapted to be automatically varied in operation, under certain circumstances, as will be presently more fully described.

The feed gate E is mounted on the brackets S' , and these on the pivot rod c' , in the feed hopper C' . Adjustably secured thereto is an upper plate E' , similar at the lower end to the plate D' at the other side of the machine, and similarly secured by means of bolts e and appropriate slots therefor. In this case, however, this part E' instead of being a mere short surface-plate, with which the stock comes in contact at about the point of its discharge through the hopper, extends on up, and takes the place of the guide-board A' used in connection with the hopper C , and becomes a lever whereby the automatic operation elsewhere described is effected.

The gates D and E are rigidly secured to their respective pivot shafts d and c' . Extending out from said pivots or pivot shafts are rigid arms f and f' , to the outer ends of which the connecting rod F is pivoted. In operation, the flow of stock is so directed that it enters the hopper C first and fills said hopper, and then overflows so that the discharge is into the hopper C' . The pressure of the stock thus always exerts a greater or less leverage against the part E' , as before stated, and as shown, said part E' extends up nearly to the upper side of the structure, to a point just below the orifice through which the stock is introduced, and forms one side of the chute through which said stock descends. The constant tendency, therefore, of the stock, when introduced into this hopper, is to swing this part E' , and with it the gate E , backward, and thus open the orifice somewhat, and this tendency increases as the quantity of stock increases, thus constantly opening the orifice proportionally to the quantity of stock entering the hopper. Being connected to the gate D through the medium of the pivot shafts, the arms $f f'$, and the connecting rod F , said

gate D is given a corresponding and simultaneous movement with the gate E , thus insuring that the stock shall feed through both gates uniformly, notwithstanding that the amount of stock in the two hoppers may vary;—it being insured by the arrangement described that the amount in the hopper C shall always equal or exceed that in the hopper C' . A counterbalancing weight W on an arm w attached to the pivot shaft c' counteracts the pressure on the part E' , and prevents the ends from opening too widely, and said weight is preferably adjustable.

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

1. The combination of several feed hoppers, pivoted gates in said feed hoppers, one of said gates having a projecting side, and connections between said pivoted gates, whereby they are caused to move simultaneously.

2. The combination of several feed hoppers supplied from a common source, a pivoted gate in one of them having a short bearing surface for the stock, with a rigid guide-board extending from said gate upwardly but not connected thereto, a pivoted gate in the other feed hopper having a bearing plate for the stock connected thereto and extending upwardly in corresponding position to the rigid guide-board in the other hopper, the pivots or pivot shafts on which said ends are mounted, arms on said pivot shafts, and a connecting rod between said arms whereby they are caused to move simultaneously, and the gate subject to the least leverage thus operated from the one subject to the greater leverage, substantially as set forth.

3. The combination, with a hopper consisting of ends and a curved side, and pivoted at approximately the point from which the curve is struck, of an interior gate forming the other side, said gate being mounted on a pivot rod extending through holes in the ends of said hopper, the gate and hopper being thus pivoted independently, substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Toledo, Ohio, this 31st day of July, 1894.

ALLEN C. BRANTINGHAM. [L. s.]

Witnesses:

R. C. WHITTLESEY,
GEO. RUDD.