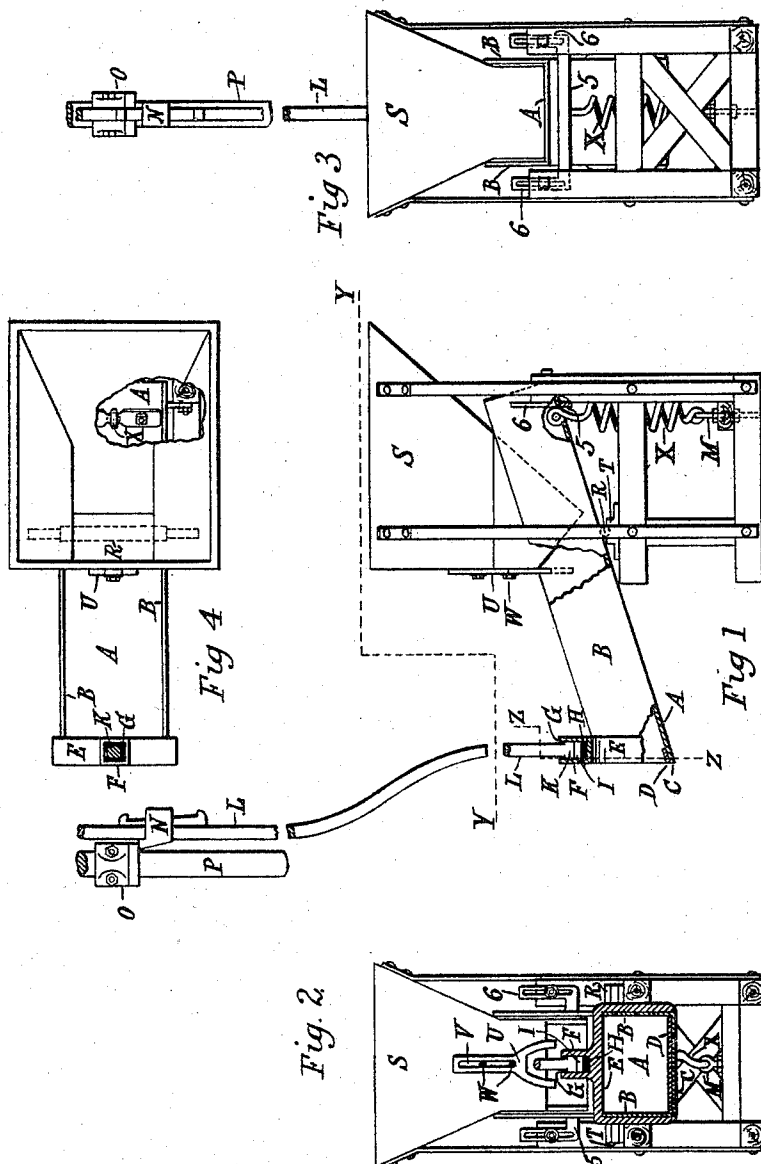


(No Model.)

A. W. GOYDER.  
DISCHARGE CHUTE.

No. 580,309.

Patented Apr. 6, 1897.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## DISCHARGE-CHUTE.

SPECIFICATION forming part of Letters Patent No. 580,309, dated April 6, 1897.

Application filed January 8, 1897. Serial No. 618,469. (No model.) Patented in Western Australia May 28, 1895, No. 833.

*To all whom it may concern:*

Be it known that I, ALEXANDER WOODROFFE GOYDER, assayer, a subject of the Queen of the United Kingdom of Great Britain and Ireland, and a resident of Hillgrove, in the Colony of New South Wales, have invented certain new and useful Improvements in Discharge-Chutes Specially Adapted for Feeding Ore to Stamp-Batteries, (for which I have obtained Letters Patent in Western Australia, No. 833, dated May 28, 1895,) of which the following is a specification.

While this invention is applicable to the intermittent feeding of various materials from chutes, it is chiefly intended to provide improvements in that class of discharge-chutes by which ore is fed automatically in regulated though varying quantities to stamp-batteries, following the principle that the less the quantity of ore on the die as the stamp descends the greater should be the quantity of ore immediately fed into the stamp-box from the chute, and vice versa. Although there are various contrivances known for automatic ore-feeding in which it is attempted to follow this principle, (which has proved to be one of great economic value,) none of these contrivances meet with general acceptance, hand-feeding being still almost universally prevalent in Australia and some other countries. The original simple inclined chute, to which were administered recurring jerks, having been discarded as too crude, more complex motions and mechanisms have since been introduced. My appliance, however, is light, compact, of few parts, comparatively inexpensive, and not easily put out of order, while I so perfect the construction and arrangement of the chute and other parts as to cause the ore to leave said chute more nearly in accordance with the principle above enunciated than it does from other chutes known to me. In the motion given to my chute there is no circular, lateral, or forward-and-backward movement, but simply an up and rocking-down motion, the chute being pivoted to its frame.

I shall now proceed to describe the general construction of my ore-feeder and afterward point out its novel features.

In the drawings accompanying this specification, Figure 1 represents a side elevation,

partly in section, showing an ore-feeder provided with my improvements. Fig. 2 shows an elevation (from the stamp-battery end) of the same, partly in section, on line Z Z in Fig. 1. This end I also call the "delivery" or "discharge" end. Fig. 3 shows an end elevation of the same from the opposite end to that in Fig. 2. Fig. 4 is a plan view from above on the line Y Y in Fig. 1.

Parts are shown broken away and parts are dotted in various figures for the purpose of more clearly illustrating the construction.

The same letters and numerals of reference represent the same parts in the various figures.

In the drawings, A is a chute made of plate-iron or other suitable material, having sides B and delivery edge C, an important peculiarity of which is a transverse lip D of bar-iron, which is neither broad nor high, say one inch wide and half an inch or rather more deep, fixed across and upon the whole length of the said edge C. The inclination of my chute is materially steeper than in ordinary chutes, which are not provided with a lip on their delivery edge. The discharge end of the chute has fastened to it a fork E, which forms a bridge over the top of said end, and has a vertical shank F, provided with a recess G, within which are inserted first an elastic block H, (as of rubber,) then a non-elastic block I, (as of metal,) and lastly the foot K (not rigidly fastened in) of an ordinary jogging-rod L, (hereinafter called the "jogger," which extends upward and is provided with an ordinary adjustable buffer N, adapted at certain times to be struck by the under side of the tappet O on a stamper-stem P. Fig. 1 shows the tappet when descending and just beginning to strike the buffer. The jogger works in a guide, (not shown,) so that the motion at its base shall be a vertical one.

The chute A is secured to a shaft R at a point approximately under the back end of the base of the feed-hopper S, and the ends of said shaft are journaled at T on the framework, so that the chute is adapted to rock up and down with the shaft as a pivot. A vertically-adjustable comb U is connected to the front of the hopper S. This comb has two or more teeth, which depend in front of the discharge-opening at the bottom of said hopper,

the vertical adjustment of the comb being secured by having a slot V therein, through which pass screw-threaded bolts W, on which are nuts for holding the comb in place.

5 X is a vertically-arranged steel spiral spring situated below and attached at one end to the bottom of the chute at the upper end of the latter. The lower end of this spring is attached by a screw-bolt M to a cross-bearer on  
10 the framing. The function of the spring is to sharply restore the chute to its previous position after its battery end has been swung down by the jogger. I do not, however, claim any novelty in respect of the spring.

15 An adjustable plate having a horizontal base 5 and a slotted upright arm 6 at each side is fastened to the framing in such a position that the base 5 is at a greater or less distance (according to the adjustment) below the bottom of the upper end of the chute when the latter has been raised by the action of the jogger. The adjustment is effected by tightening the  
20 nuts on bolts which pass through the framing and through the slots in the upright arms 6. The position of this plate regulates the angle of inclination of the chute when the bottom of the upper end of the latter is brought down to its normal position (*i. e.*, resting on the plate 5) by the tension of the spring.

30 In using this invention the ore is fed into the hopper S, falling onto the inclined surface of chutes A and sliding down said incline until stopped by the presence of the lip D, so that a greater body of ore accumulates immediately behind the edge C than there would be  
35 in the case of there being no lip D. The comb U, (necessary to prevent too great a body of ore sliding down at one time,) when properly adjusted, allows a sufficient quantity of ore to come to a stop just behind the said lip D for the effective operation of this invention.

The spring X can be tightened up or loosened by operating the screw-bolt M, so as to give the spring such abruptness and force of  
45 action as the user finds desirable. Each time that a jolt is communicated to the chute (by the action of the jolter L, actuated by the kick of the tappet against the buffer, immediately followed by the rebound produced by the  
50 spring) a quantity of ore will be jolted out of the chute over the lip, the said ore thus being fed to the stamp-battery, the quantity varying with the nature of the jolt. As is the case with other ore-feeders the jolt is greater the less ore there is on the die when the stamp is descending, seeing that the stamp then descends a greater distance.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed,  
60 I declare that what I claim is—

1. The combination with a feed-hopper, of an inclined ore-chute pivoted beneath said hopper and having a raised rib at its delivery  
65 end; an adjustable device for limiting the

egress of ore from said hopper; a yoke having a hollow vertical shank mounted upon the said chute; an elastic block mounted in said hollow shank; a non-elastic block superposed upon said elastic block; and a jogger having  
70 its foot resting in said hollow shank upon said non-elastic block, substantially as described.

2. The combination with an inclined ore-chute, pivoted upon its frame and having a raised rib at its delivery end; of a feed-hopper provided with adjustable means for limiting the egress of ore therefrom; a coil-spring exerting a downward pull on the upper end of said chute; an adjustable stop limiting the  
80 downward movement of the upper end of said chute; and a jogger mounted upon the delivery end of said chute, substantially as described.

3. The combination with an inclined ore-chute, pivoted upon its frame and having a raised rib at its delivery end; of a coil-spring exerting a downward pull on the upper end of said chute; a horizontal bar having a slotted upright at each end adjustably mounted  
90 upon said frame transversely beneath the upper end of said chute and adapted to limit the downward movement of the said upper end of the chute; clamping-screws mounted in said slotted uprights and holding the same rigidly  
95 in position; and a jogger mounted upon the delivery end of said chute, substantially as described.

4. The combination with an inclined pivoted ore-chute, of a yoke having a recessed shank, mounted upon its delivery end; an elastic block fitting in the bottom of said recess; a non-elastic block superposed upon said elastic block; and a jogger having its foot resting in said recess upon said non-elastic block,  
105 substantially as described.

5. The combination with an inclined ore-chute pivoted upon its frame and having a raised rib at its delivery end; of a coil-spring exerting a downward pull on the upper end  
110 of said chute; a horizontal bar having a slotted upright at each end adjustably mounted upon said frame transversely beneath the upper end of said chute, and adapted to limit the downward movement of the upper end of said  
115 chute; a yoke having a recessed vertical shank, mounted upon the delivery end of said chute; an elastic block fitting in the bottom of said recess; a non-elastic block superposed upon said elastic block; and a jogger having  
120 its foot resting in said recess upon said non-elastic block, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALEXANDER WOODROFFE GOYDER.

Witnesses:

E. F. NICHOLLS,  
W. H. CUBLEY.