

(No Model.)

J. TULLOCH.
ORE FEEDER.

No. 460,733.

Patented Oct. 6, 1891.

FIG. 1

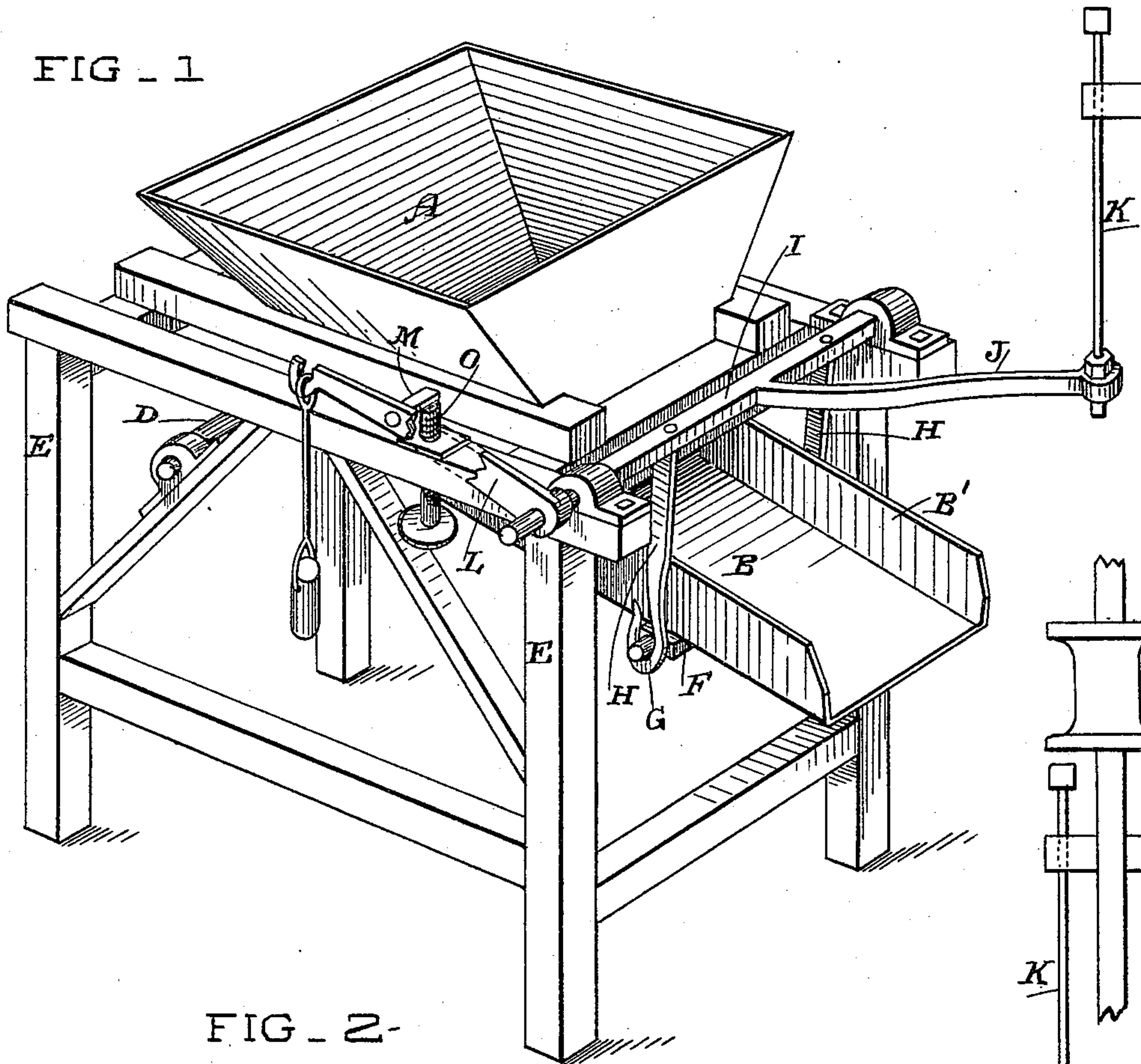
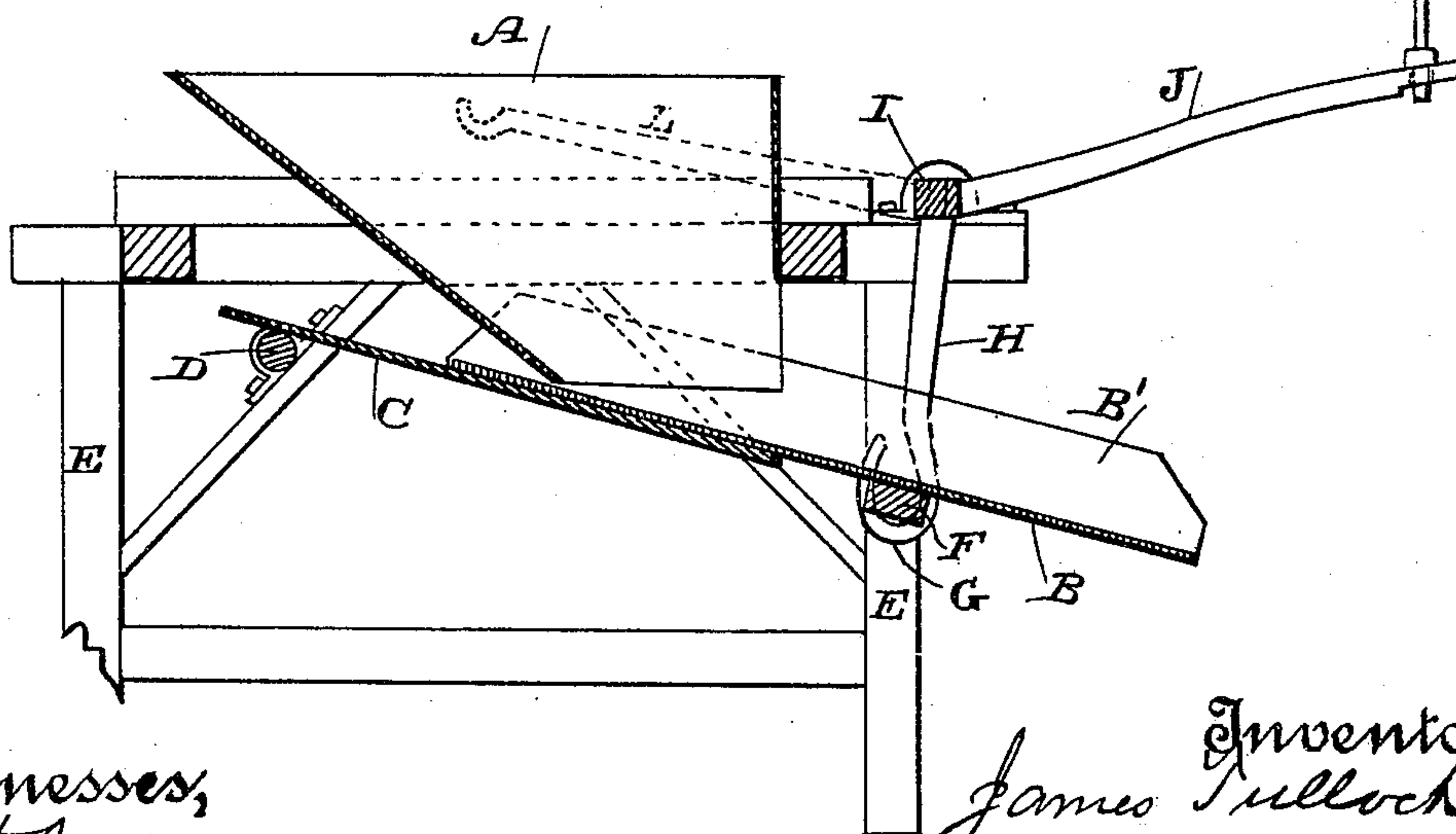


FIG. 2



Witnesses,
J. A. Bayless

Inventor,
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By Dewey & Co
attys

UNITED STATES PATENT OFFICE.

JAMES TULLOCH, OF ANGEL'S CAMP, CALIFORNIA, ASSIGNOR OF ONE-HALF
TO DAVID C. DEMAREST, OF SAME PLACE.

ORE-FEEDER.

SPECIFICATION forming part of Letters Patent No. 460,733, dated October 6, 1891.

Application filed June 18, 1891. Serial No. 396,765. (No model.)

To all whom it may concern:

Be it known that I, JAMES TULLOCH, a citizen of the United States, residing at Angel's Camp, Calaveras county, State of California, have invented an Improvement in Ore-Feeders; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to certain improvements in devices for feeding ore from a hopper or other receiver to the crushing mill or stamps.

It consists of an improved construction of the inclined tray or chute movable beneath the open-bottomed hopper in which the ore is placed and in certain details of construction and adjustment, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of my feeder. Fig. 2 is a vertical section taken through the hopper and tray.

In former patents issued to me in November, 1873, and March, 1875, I have shown a feeding-tray and a means for reciprocating it beneath an open-bottomed hopper; but in each of these inventions certain details in the mechanism and operation of the device were shown and claimed which differ in construction and practical operation from my present invention, and upon these differences I base my claims for improvement.

A is a hopper or receiver of any suitable shape adapted to contain the ore in form to be crushed by the stamps of a stamp-mill. This ore is usually reduced to a certain size by rock-breakers or other means, so that when fed to the stamps it is already small enough to be readily operated upon by the stamps.

In the present case the receiver A is hopper-shaped, having an approximately vertical side nearest the stamps, the other three sides being diverging, the rearmost side having the greatest inclination. Beneath this hopper is the tray B, having the upturned sides B', which extend up just exterior to the sides of the hopper, moving in close proximity thereto. The bottom of this tray passes closely beneath the edge of the rearmost side of the hopper and has a stout bar or plate C fixed to it and extending backward in line with it. This bar rests upon an easily-moving roller

or shaft D, which is supported or journaled upon the frame E of the feeder. A bar F extends transversely across beneath the front portion of the tray, and the ends of this bar rest in the supporting hooks or yokes G, formed upon the lower ends of the arms H. These arms are fixed in a transverse shaft I, which is journaled upon the top of the frame E and in front of the hopper A. To the center of this shaft is fixed an arm J, which projects to a considerable distance from the shaft and has at its outer end a hole or means for attaching a stem or rod K, which is supported in suitable guides upon the battery-frame, so that its upper end will stand just beneath one of the stamp-stem tappets, and in such position as to be struck by the tappet whenever there is a small amount of ore beneath the stamp, and the motion thus given to this stem is communicated through the lever-arm J and oscillating shaft to the tray suspended beneath. This motion is a quick sharp jerk, which causes the tray to slide backwardly beneath the rear edge of the hopper, and this edge, acting as a scraper, forces a portion of the ore toward the front end of the tray, from which it falls into the mortar beneath the stamp.

L is a lever-arm fixed to the oscillating shaft I and projecting in the opposite direction from the arm J. To the end of this lever-arm L is suspended a weight by which the lever is drawn down after it has been lifted by the action of the tappet upon the oppositely-projecting lever J. From this arm, at some point in its length, projects a short arm or spur M, which stands above one of the timbers of the feeder-frame E. Through this timber and suitable stationary nuts fixed thereon the adjusting-screw O passes. The upper end of this screw stands at such a point that the lug M will rest upon it when the arm J is released from the action of the stamp-stem tappet to allow the lever L to fall.

It will be manifest that by turning the screw up or down the position of the arm J, carrying the rod which is acted upon by the tappet, will be altered. By raising this arm the tappet will strike the rod or stem sooner and will thus feed more ore into the mortar, while by turning the screw up and depress-

ing the arm J the tappet will not strike the rod to operate the feeder until the mortar is more nearly emptied of material.

The movement of the rear portion of the tray is a simple reciprocating motion sliding upon the supporting roller or traveler D; but the front portion being suspended by the links previously described it will be manifest that when it is caused to swing backwardly by the action of the stamp-stem tappet, and the consequent rotation of the shaft which carries the suspending links, this portion of the tray will be slightly lifted in addition to its backward movement. This facilitates the loosening or lifting of the ore and causing it to feed freely from the discharge end of the tray.

By reason of the length of the lever-arm J but little power is necessary to actuate the feed mechanism.

The peculiar feature of my present device is the T-shaped arrangement of the levers J L and the arms H, from which the tray is suspended to project rigidly from the central shaft I, which forms a fulcrum about which they all turn in unison, so that an impulse given to either will act upon the others to move them simultaneously.

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

1. In an ore-feeder for stamp-mills, the open-bottomed receiver or hopper having the rear side inclined, as shown, a tray having the upturned flanges extending exterior to each of the sides of the hopper, an extension to the rear of the bottom of the tray and in line therewith, a roller support upon which said extension reciprocates, a shaft extending across the front of the feeder-frame, links extending downwardly from the shaft to which they are rigidly fixed and supporting the front end of the tray, a lever-arm projecting from said shaft midway between the suspending links and at right angles thereto, a rod extending upwardly from the outer end of said lever, with its upper end guided to stand in line beneath the stamp-stem tappet, and a second arm projecting from the rocker-shaft in the opposite direction and having a weight

acting upon its outer end to return the parts after they are released from the falling stamp-tappet, substantially as herein described.

2. In an ore-feeder, a hopper or receiver having an open bottom and an inclined rear side, an inclined tray having upturned flanges exterior to the side walls of the hopper, the tray-bottom receiving the ore directly from the open bottom of the hopper, a roller-support situated in rear of the hopper, an extension in line with the hopper-bottom resting upon said support, so that the tray-bottom moves in close proximity to the rear wall of the hopper, a shaft extending across the feeder-frame in front of the hopper, rigid links extending downwardly therefrom and supporting the front end of the tray, so that it forms an inclined plane beneath the hopper, a rigid arm projecting centrally from said shaft, having a rod or attachment by which its outer end is actuated by the fall of the stamp-stem tappet, a weighted rigid arm extending from the shaft to the opposite side from this actuating-lever, a lug projecting from said arm, and an adjustable screw passing through the frame beneath the lug and movable so as to regulate the amount of motion imparted to the tray by the fall of the stamp, substantially as herein described.

3. In an ore-feeder, a bottomless hopper and an inclined tray beneath the hopper, adapted to deliver ore from the hopper to a vertically-reciprocating stamp-battery, in combination with a shaft journaled across the feeder-frame above the tray, and rigid arms radiating from said shaft in form of a T, one of said arms being actuated by the tappet of a falling stamp, the opposite one weighted to return the shaft after this movement, and the vertical ones suspending the front end of the tray and communicating a rotary reciprocating motion thereto, while the rear end is supported upon a roller and reciprocates in a direct line, substantially as herein described.

In witness whereof I have hereunto set my hand.

JAMES TULLOCH.

Witnesses:

S. H. NOURSE,
J. A. BAYLESS.