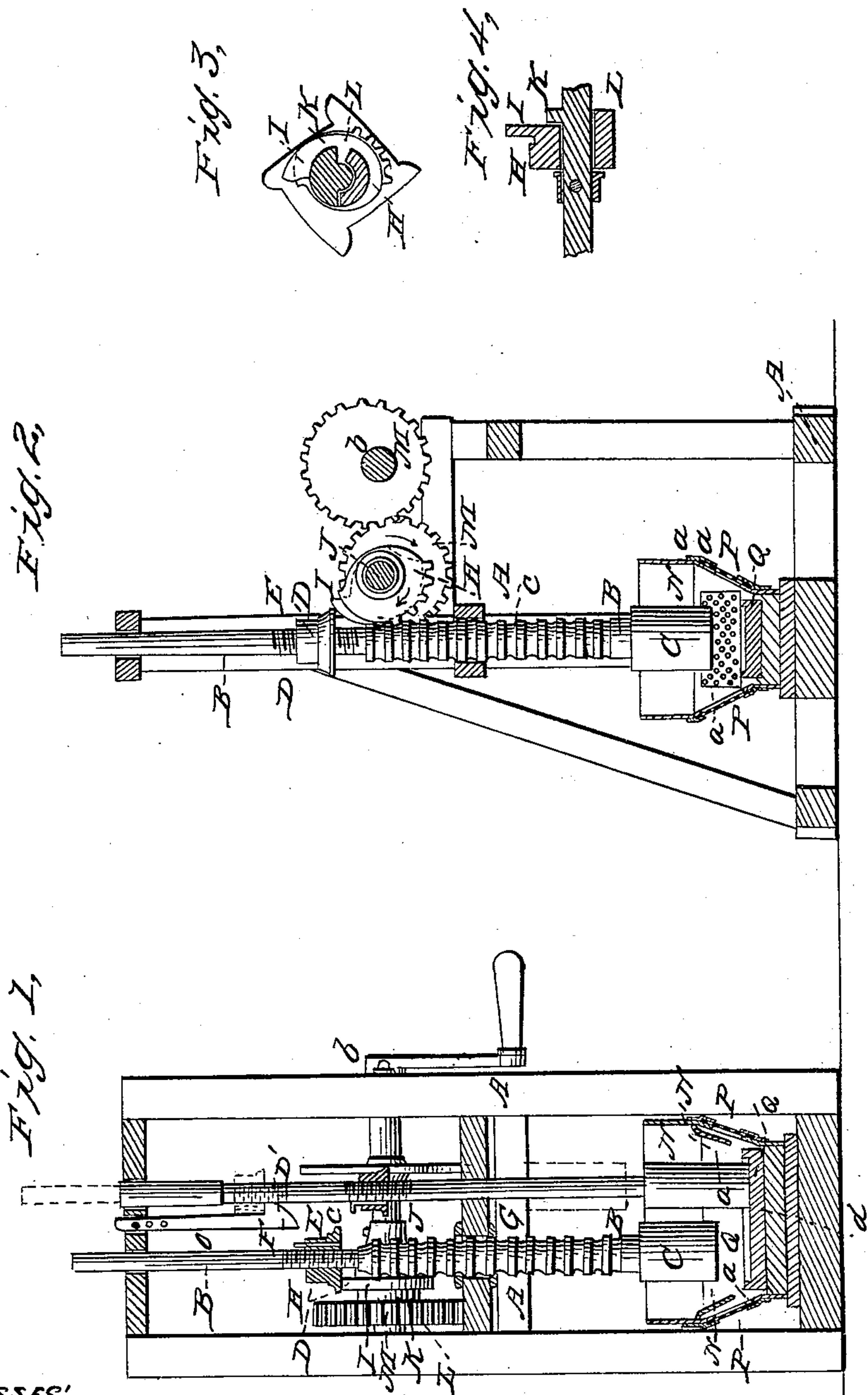


# GATES & FRASER. Stamping Machine.

No. 28,807.

Patented June 19, 1860.



WITNESSES:

Goodwin & Co.  
Attorneys

INVENTOR:

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# UNITED STATES PATENT OFFICE.

PHILETUS W. GATES AND D. R. FRASER, OF CHICAGO, ILLINOIS, ASSIGNORS TO  
THEMSELVES AND THOMAS CHALMERS, OF SAME PLACE.

## MACHINE FOR STAMPING METAL QUARTZ.

Specification of Letters Patent No. 28,807, dated June 19, 1860.

*To all whom it may concern:*

Be it known that we, PHILETUS W. GATES and DAVID R. FRASER, of Chicago, in the county of Cook and State of Illinois, have  
5 invented certain new and useful Improvements in Machines for Stamping Metal Quartz; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the  
10 accompanying drawing, forming a part of this specification, in which—

Figure 1, is a vertical longitudinal section of our improved stamping machine. Fig. 2, is a vertical transverse section of the same.  
15 Fig. 3 is a detached transverse section in the line  $x, x$ , and Fig. 4, is a detached longitudinal section in the line  $y, y$ .

Similar letters of reference, in each of the several figures indicate corresponding parts.  
20 The nature of our invention consists, first, in the combination of a toothed and collared rising and falling power-bar, or its equivalent, with a combined plain and toothed lifting device, whereby a gradual and easy  
25 movement is secured, for the purposes hereinafter stated; second, in so constructing, and arranging the lifting device on its shaft, that it ceases its connection with said shaft at a certain stage of the revolution of the  
30 same, and at the same time, instantly, by its gravity, travels at a quicker speed than the shaft, and thus escapes being arrested by the descending bar; third, in the combination of two eccentric gears, toothed and col-  
35 lared power bar, and the combined lifting device; whereby an easy, but gradually accelerating movement is secured; fourth, in the combination with the inclined screens of the mortars, of the overhanging shields or  
40 guards; whereby while the discharge of the pulverized material is facilitated, the screens are protected from injury caused by large particles of quartz coming in contact with them.

45 To enable others, skilled in the art, to make and use our invention, we will proceed to describe its construction and operation.

In the drawing, we have shown an ordinary stamping and lifting device in order  
50 to make more evident the advantages of our improved arrangement. The ordinary stamp, however, has its collar secured after our improved plan. In practice, for stamp-  
55 ing quartz, we place two or more stamps in

the same frame and work them by means of a series of lifters on one shaft, but in order to facilitate the description we shall only refer to the machine as employing one stamp.

A, is the frame of a stamping machine.

B, is the stem or lifter, having a stamp C, on its lower end.

D, is a collar made fast to the stem of the stamp by means of a screw thread E. The  
65 screw thread is formed on the stem and is to prevent the collar D, which is furnished with a female screw thread on its inner circumference, from falling down.

F, is a piece of the female screw fitted to  
70 a space cut in the inner circumference of the collar so as to admit the key D, behind it and thus prevent any injurious contact of the same with the thread E.

G, are teeth or cogs formed on the stem of  
75 the stamp for a segmental cog wheel H, to work into to raise the stamp. The cog-wheel H, with a cam I, attached fast to one side of it, forms the lifting device. This  
80 lifting device is fitted loosely on a transverse shaft J, but compelled, by means of a stop K, on the shaft and a stop L, on the cam, to turn with said shaft from the commence-  
85 ment of the lifting operation to the completion of the same, when it ceases its connection with the shaft and instantly falls back so as to escape from the descending stamper. The cam lifts the stamp first, by taking hold  
90 of the collar D, and as the stamp rises the cog-segment gradually gears with the cogs of the stem B, and continues the elevation of the stamp until the full movement is accomplished, when the stamp falls.

M, M, are two eccentric gear wheels, to  
95 give a gradually accelerating motion to the lifting device, so that as it first takes hold of the stamp, it shall lift it slowly a certain distance or until the clogged segment gears with the clogged stem.

N, is a mortar, its sides and ends  $a, a$ , are  
100 inclined so as to facilitate the flow of pulverized quartz through the screens P, P, said screens regulating the fineness of the quartz.

N', N', are shields to prevent the larger  
105 particles of quartz from injuring the screens P, P.

O, is a catch to hold up the stamp when it is necessary to clean out the mortar.

Q, Q, are the dies forming the bottom of  
110



the mortar. These dies are beveled off at  $d, d$ , so that they overlap one another where they join and consequently cannot be forced down so tightly as to be difficult of removal.

5 Instead of using a separate section F, of a female screw in confining the collar to the stem of stamp a key seat may be cut in the screw thread of the shaft, as shown at  $c$ .

10 The operation is as follows: Power being applied to the driving shaft  $b$ , the cam of the lifter comes under the collar and lifts the stamp with a motion so slow that no injurious sudden jarring of the machinery is experienced. The cam "leads" the seg-  
15 ment wheel into gear with the cogs or rack on the stem of the stamp and thus prevents sudden injurious contact at this stage of operation; the wheel being brought in gear raises the stamp without much friction and  
20 with a gradually accelerating motion, some three or four feet, more or less, accordingly as the collar is set on the stem. The collar on the stem is adjusted to a position in relation to the lifting device, as may occa-  
25 sionally be necessary, by reason of wear, by withdrawing the key and turning the collar on the screw. When the collar is thus adjusted, and the key inserted the jarring of the stamp when it falls, does not loosen the  
30 collar, as is the case when simply a key without a screw is used, and therefore much loss is prevented, as the collar cannot fall down to a position which will endanger the breaking of the machinery when the lifter  
35 comes in contact with it. When the stamp descends, it comes in contact with the quartz in the mortar and pulverizes it, and the pulverized material being driven up by the force of the blow falls upon the inclined  
40 sides of the mortar and screen and passes out easier and faster than if the sides were vertical as they have usually been made.

As the quartz flies onto the inclined sides, the larger particles strike the shield  $N', N'$ , and thus the screens are protected from any 45 injurious contact of the same. The shields being perforated with holes sufficiently large to allow the smaller particles to fall through upon the screen, nothing is lost by their use. When it is necessary to clean out 50 the mortar, the collar of the stamp is suspended on the catch, and owing to being thus suspended, the engine and part of the machinery may be kept in motion.

Our improvements are especially adapted 55 to quartz-stamping machines, but it is obvious that their use is not necessarily limited to such machines; for in forge-hammers, drop-presses, pile-drivers, &c. it is very essential to have a lifting device which op- 60 erates substantially as we have set forth.

What we claim as our invention and desire to secure by Letters Patent, is—

1. The combination of a toothed and collared rising and falling power bar  $D, G$ , 65 or its equivalent, with a combined plain and toothed lifting device  $H, I$ , substantially as and for the purposes set forth.

2. The manner substantially as specified, of arranging the lifting device on its shaft, 70 for the purposes set forth.

3. The combination of two eccentric gears  $M$ , toothed and collared power-bar  $D, G$ , and the combined lifting device  $H, I$ , sub- 75 stantially as and for the purposes set forth.

4. The combination with the inclined screens  $P, P$ , of the mortars, of the overhanging shields or guards  $N', N'$ , substantially as and for the purposes set forth.

PHILETUS W. GATES.  
DAVID R. FRASER.

Witnesses:

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