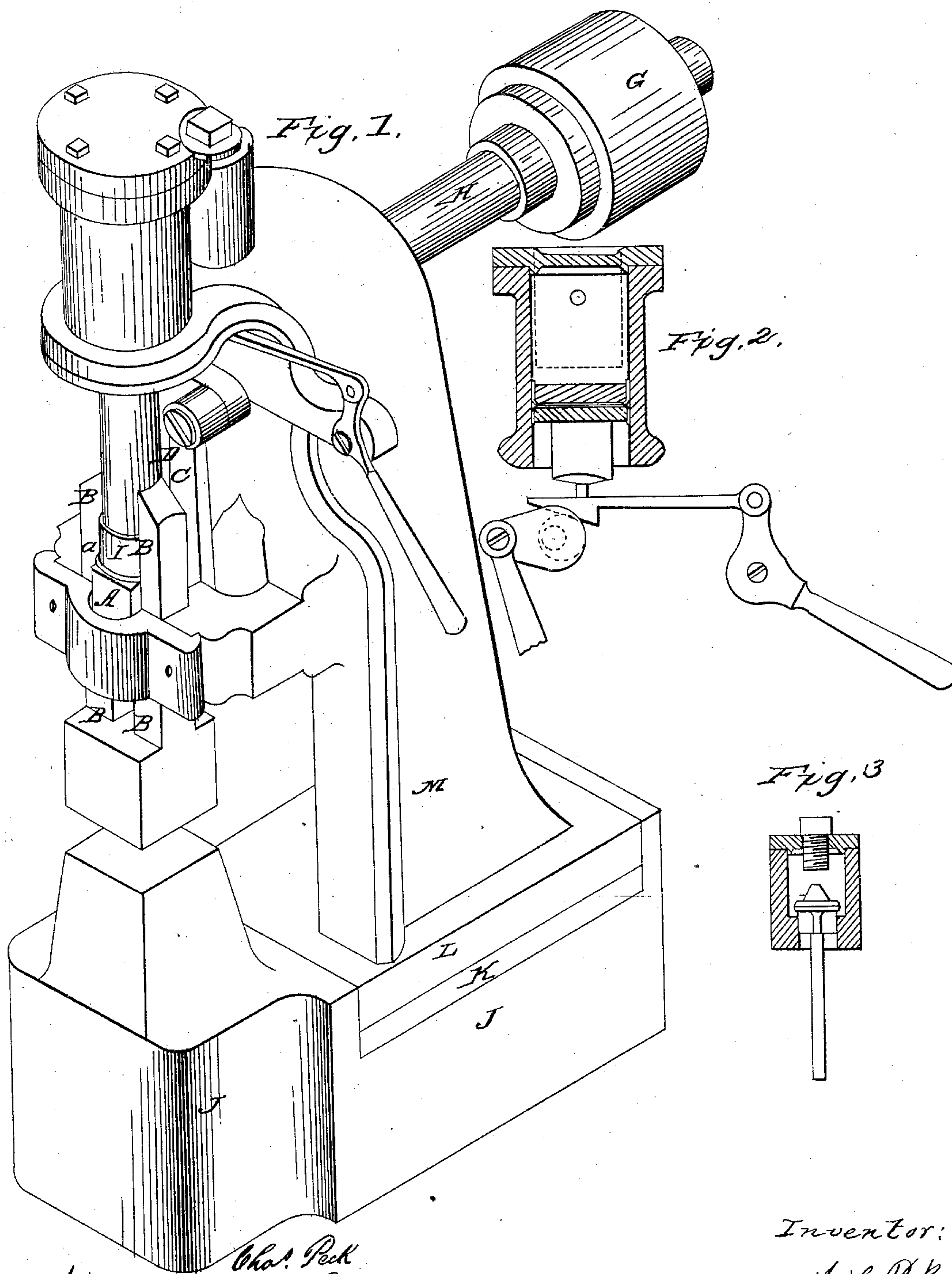


M. PECK.

Atmospheric Hammer.

No. 27,925.

Patented April 17, 1860.



Chas. Peck  
Witnesses: Am R. Peck

Inventor:  
Mile Peck



# UNITED STATES PATENT OFFICE.

MILO PECK, OF NEW HAVEN, CONNECTICUT.

## ATMOSPHERIC HAMMER.

Specification of Letters Patent No. 27,925, dated April 17, 1860.

*To all whom it may concern:*

Be it known that I, MILO PECK, of the city and county of New Haven, in the State of Connecticut, have invented certain new and  
5 useful Improvements in Atmospheric Hammers; and I do hereby declare that the following specification, taken in connection with the drawings making a part of the same, is a full, clear, and exact description  
10 thereof.

Figure 1, is an isometrical view of the whole machine. Fig. 2 is a view of the air cylinder-piston and means for regulating the valve. Fig. 3, is a sectional view of the  
15 valve and its chest.

In the Letters Patent from the United States granted to me July 3rd 1855 for an improvement in trip hammers the hammer is described as operated by means of a connecting rod attached at one end to the wrist  
20 pin of a crank on the driving shaft, and at the other end to a lifting pin on the hammer shank; this latter connection being made by means of a slot in that end of the connecting rod through which the pin passes. By this  
25 arrangement the connecting rod ascending with the crank, raises the hammer to its highest point of elevation while the slot permits the hammer to rest upon the object on the anvil when the crank which operates the  
30 connecting rod is passing the lower center.

A practical trial of a machine constructed on the principle of the one referred to, demonstrated the existence of some serious difficulties in the way of its success, the most  
35 important of which, was the injury which the various parts of the mechanism sustained from the shock occasioned by the strain on the connecting bar in overcoming the inertia of the hammer;—the danger of  
40 injury from this cause being, in practice, increased in proportion to the height to which the hammer was raised above the face of the anvil by the object to be hammered, from the fact that the connecting rod moves  
45 at an accelerated speed after the crank has passed the center until it reaches the half stroke, and the usual thickness of the article to be worked being less than one half the stroke of the piston. The means by which  
50 I have overcome this difficulty constitute the first part of my invention and consist in interposing between the device attached to the connecting rod which operates the

hammer and the hammer itself, or the instrument connected with it for working it, an elastic body or substance which shall dissipate the force of the concussion of the parts.

In the accompanying drawings, A, is a  
60 cross-head block working between the two guides, B, B, which together constitute a part of the hammer shank. This block is connected in the usual way by means of the shackle bar, C, with the wrist of the crank  
65 D on the driving shaft. The upper end of the hammer shank is provided with a piston which works in the air cylinder E. This cylinder is provided with a valve, *b*, and a set of devices F (Figs. 2, 3) to regulate its  
70 closing and determine the volume of air in the cylinder to be compressed and consequently to determine the degree of force which is to be imparted from that source to the piston. As this part of the machinery,  
75 however, is substantially identical with that described in the patent heretofore granted to me and above referred to I will not describe it more minutely.

The pulley G is connected with the crank  
80 shaft, H, by means of a clutch or by any similar mode of connection so that the crank shall be carried by the action of the pulley past the upper center and then be permitted to fall by the weight of its attachments,—  
85 the object being to enable the hammer to descend upon the anvil with a speed greater than the speed of the pulley, without danger of being retarded in its descent by the cross-head block A. 90

As the cross head block, A, always has the same extent of travel and as in the operation of the machine the face of the hammer will be separated from the face of the anvil by the thickness of the intervening object  
95 it is apparent that a severe shock must result from the contact of a body moving as rapidly as the cross head block with a perfectly inert mass of the weight of the hammer. To counteract the injurious effects in  
100 the machine from this cause I place a cushion of india rubber or other elastic body, I, in the instance shown in the drawings, at the extremity of the cylindrical portion of the hammer shank, and protect, this cushion  
105 by a movable sliding plate, *a*, which when it receives the blow of the cross-head block is forced upward, and compresses the



cushion, thus causing the force of the blow to be so deadened that injury from that source is effectually prevented.

I have experimented with various elastic bodies, but have found none which would combine the advantages of economy and utility so highly as india rubber. An air cushion produced by a piston on the cross-head block working in a socket on the hammer shank would answer a good purpose but would be objectionable on the score of increased expense of construction, and liability to derangement, without any compensating advantage.

I consider the arrangement of the hammer shank, cross-head block and cushion as shown in the drawings as good, if not better than any other though there are various other ways in which the combination which I employ may be used to produce the same result. As for instance instead of making the guides for the cross-head block a part of the hammer shank they may be made independent of it and located elsewhere, in which case an arm or projection must be attached to the shank between which and the cross-head block the elastic body can be placed, and this arrangement possesses the advantage of enabling the constructor to increase the extent of surface of the cushion more conveniently than can be done by the arrangement shown in the drawings.

The second part of my invention relates to a method for preventing the bad results upon the machine from the concussion produced by the blow of the hammer upon the anvil, while at the same time the supporting frame of the hammer, and the anvil have a bed piece composed of one casting. The ad-

vantage of having the same metallic bed for both hammer and anvil, is appreciated by all who have occasion to use the hammer for the purpose of swaging metal into peculiar forms by means of a pair of dies—one upon the hammer and the other upon the anvil. A slight variation from a correct adjustment of the two dies is productive of serious injury to the work and cannot well be avoided unless the two have a common bed. A common bed piece, however, causes the shock of the hammer upon the anvil to be communicated to the hammer frame and tends to produce the disarrangement of the lighter parts of the machine. Accordingly to preserve the advantage of a common bed piece without its attendant evils I make the bed of both hammer frame and anvil in one casting, J, J. The plate L upon which the standards M, M rest and which forms a part of the frame is placed upon a thick planking, K, of wood or some equally good non-conductor and then I bolt the bottom plate L through the planking to the bed piece. By this means the jar of the hammer is not communicated to the injury of the machinery.

What I claim as my invention and desire to secure by Letters Patent is—

Interposing a wooden planking or other nonconducting material between the frame which supports the mechanism of a trip hammer, and the bed piece which forms the common foundation of the frame and the anvil—substantially as described for the purposes specified.

MILO PECK.

Witnesses:

CHAS. PECK,  
IRA R. PECK.