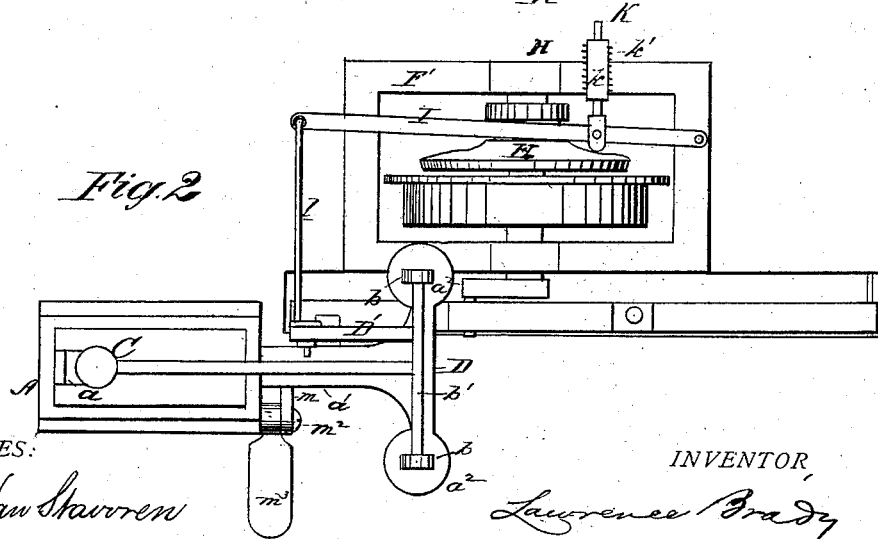
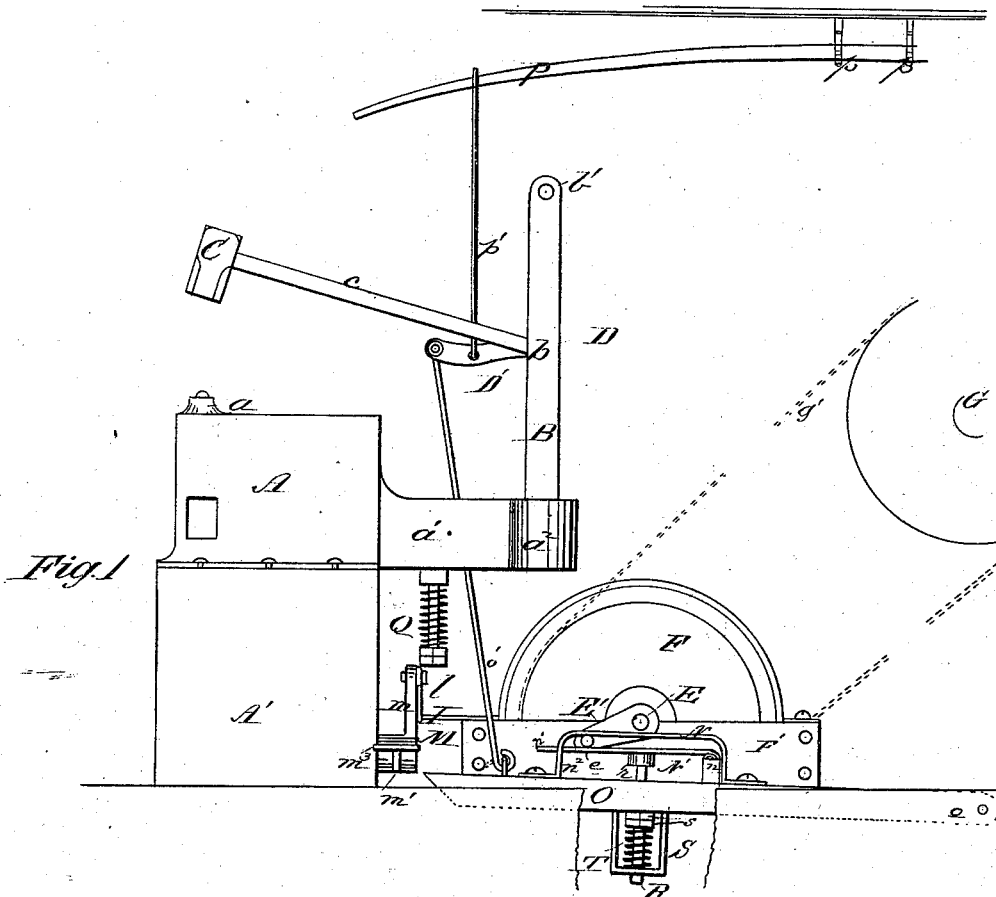


L. BRADY.  
Power-Hammer.

No. 217,327.

Patented July 8, 1879.



*WITNESSES:*

Sam'l J Van Stavern  
Jas. B Connolly

INVENTOR,

Lawrence Brady

By Counolly Bros.  
ATTORNEYS.

# UNITED STATES PATENT OFFICE

LAWRENCE BRADY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO  
MICHAEL HAYDON, OF SAME PLACE.

## IMPROVEMENT IN POWER-HAMMERS.

Specification forming part of Letters Patent No. **217,327**, dated July 8, 1879; application filed  
September 23, 1878.

### *To all whom it may concern:*

Be it known that I, LAWRENCE BRADY, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Power-Hammers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a side elevation, and Fig. 2 is a top view.

My invention has for its object to provide means for applying power from a driven shaft to actuate the hammer employed in heading bolts, which hammer has heretofore been worked by means of a treadle depressed by the foot of the operator.

My improvements consist in the peculiar construction and combination of parts hereinafter set forth.

Referring to the accompanying drawings, A indicates the anvil, recessed at *a* for the reception of the bolt-blank, and having a projection, *a'*, with two arms, *a<sup>2</sup> a<sup>2</sup>*, which form a support for the hammer-frame B. Said frame B consists of the two uprights *b b*, with cross-rod *b'*. C is the hammer, and *c* its handle, made fast in a rock-shaft, D, which has its bearings in the supports *b b*. D' is a short arm which projects forwardly from the rock-shaft D. E is a shaft mounted on a suitable stand, E', and F is a loose pulley thereon, receiving its motion from a shaft, G, through the medium of belt *g'*. H is a friction-clutch on the shaft E, adapted to be slid into and out of clutch engagement with the pulley F by means of a lever, I. Said lever is connected at one of its ends or on one side of the clutch with a rod, K, which passes through a yoke, *k*, in which is a spiral spring, *k'*, the office and tendency of which are to draw the clutch out of engagement with the pulley F. The opposite end of said lever is connected by a rod, *l*, with one arm, *m*, of an elbow-lever, M, pivoted at *m<sup>2</sup>* to the anvil-support A'. The other arm, *m<sup>1</sup>*, of said lever M is formed or provided with a foot-rest, *m<sup>3</sup>*. By depressing the

arm *m<sup>1</sup>* with his foot, the operator standing by the side of the anvil is enabled to bring the clutch H into engagement with the pulley F, and thereby to revolve the shaft E. On releasing the foot-pressure from said arm *m<sup>1</sup>*, the clutch is drawn out of engagement with the pulley F, whereupon the shaft E ceases to revolve. E' is a crank on the shaft E, having a wrist-pin, *e*, which moves between a keeper, N, and a lever, O, to which said keeper is fastened. Said lever O is pivoted at *o*, and connected by a connecting-rod, *o'*, with the arm D' on the shaft D. Accordingly, when the shaft E is revolved, the hammer C is caused to strike, its lifting after each stroke being accomplished by a spring, P, sustained overhead at *p p*, and connected by a rod or chain, *p'*, with the arm D'. Q is a buffer-spring, of any appropriate construction, secured on the under side of the anvil projection *a'*, and designed to break the force or receive the impact of the outer end of the lever O on its upward movement under the influence of the spring P.

The successive blows of the hammer on the blank have the effect of upsetting the latter into the matrix in the anvil, the height or upward projection of such blank being thus diminished. Now, to graduate the blows of the hammer according to the extent of projection of the blank, and to avoid injurious straining between the wrist-pin *e* and keeper N on the first two blows or strokes of the hammer, (three strokes being the number required to form the head of the bolt,) a yielding plate, N', is located in the keeper N, forming the bottom or way on which the said wrist-pin *e* moves on the motion of the crank from its front to its back center. Said plate is fulcrumed at *n* and formed with a tongue, *n'*, which has liberty of vertical motion in a slot, *n<sup>2</sup>*, formed in the front wall of the keeper N. R is a stiff rod passing through the lever O below the center of the plate N', having a head, *r*, on which said plate rests. S is a bracket or hanger secured to the under side of the lever O, and holding a spiral spring, T, through which the rod R passes. *s s* are nuts on the rod R above the spring T.

The operation is as follows: The operator,

standing by the side of the anvil, places a blank in the matrix *a*. He then depresses the arm *m'* with his foot, bringing the clutch into engagement with the pulley *F*, and causing the shaft *E* to revolve and the hammer *C* to strike. As soon as the required number of strokes has been made, he relaxes the foot-pressure on the arm *m'*, whereupon the clutch is moved out of engagement with the pulley *F*, and the hammer ceases to strike. The bolt is then thrown out of the matrix by the usual plunger appliance and a new blank inserted. The spring *P* not only assists in raising the hammer when the crank-shaft is working, but operates to lift such hammer after the motion of said shaft ceases. Thus, for example, if the shaft should be stopped just as the final blow is made or accomplished, the hammer, were it not for the spring *P*, would remain down and would prevent the discharge of the bolt from the matrix; but the spring *P* in such a case raises the hammer and holds it in its elevated position ready to make a downward stroke the moment the shaft *E* is again revolved.

With reference to the purpose and effect of the buffer *Q*, it will be observed that while the primary object of this device is to resist or cushion the blow or upward thrust of the lever *O*, its quality of resistance is such as to

not prevent the lever from rising to the limit required by the throw of the crank. The buffer yields after the impact of the lever, and thus entirely avoids the strain upon or locking of the crank which would ensue if the buffer were of limited yielding capacity.

What I claim as my invention is—

1. The combination, with the hammer *C*, of the shaft *E*, crank *E'*, lever *O*, yielding plate *n'*, lifting-spring *P*, and mechanism, substantially as described, between said lever and lifting-spring, for communicating motion therefrom to the hammer, as and for the purpose set forth.

2. The combination, with the lifting-spring *P*, rock-shaft *D*, lever *O*, and crank-shaft *E*, of the buffer *Q*, substantially as shown and described.

3. In combination with lever *O* and crank *E*, the yielding plate *N'* in keeper *N*, rod *R*, and spring *T*, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 19th day of September, 1878.

LAWRENCE BRADY.

Witnesses:

JOS. B. CONNOLLY,  
CHAS. F. VAN HORN.