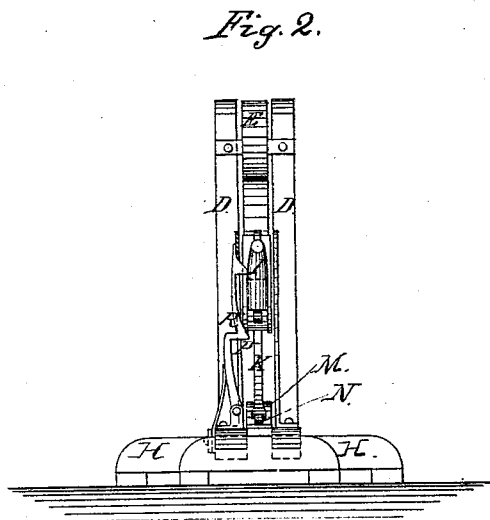
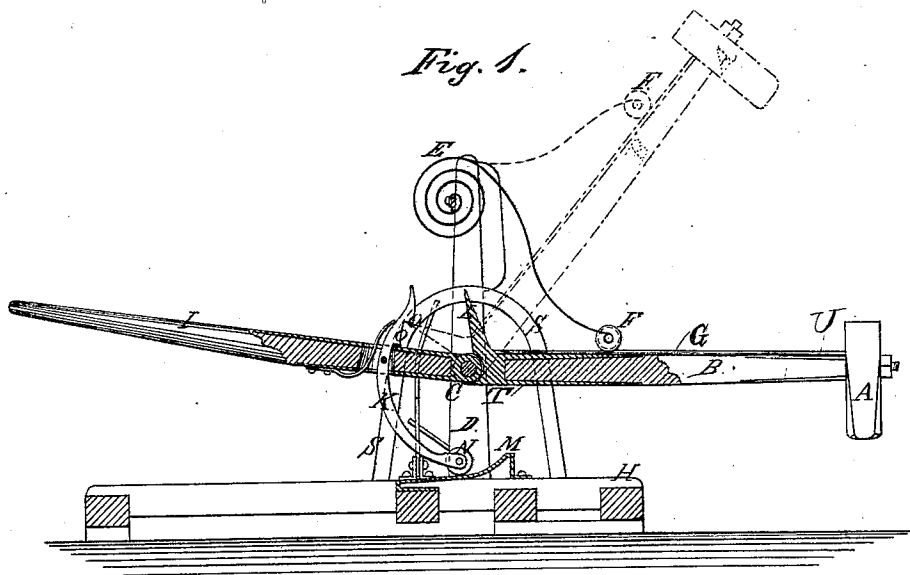


R. F. LIVERMORE.

PORTABLE SPRING-POWER HAMMER.

No. 177,135.

Patented May 9, 1876.



WITNESSES:

*H. Rydquist.*  
*John Goethals*

INVENTOR:

*R. F. Livermore*

BY

*Munn & Co.*  
ATTORNEYS.

# UNITED STATES PATENT OFFICE.

RAY F. LIVERMORE, OF PORT HENRY, NEW YORK.

## IMPROVEMENT IN PORTABLE SPRING-POWER HAMMERS.

Specification forming part of Letters Patent No. **177,135**, dated May 9, 1876; application filed March 13, 1876.

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

Be it known that I, RAY F. LIVERMORE, of Port Henry, in the county of Essex and State of New York, have invented a new and Improved Portable Spring-Power Hammer, of which the following is a specification:

My invention is a contrivance of a lever-catch and tripping device, in combination with a hammer having a spring or springs for striking a powerful blow, whereby a heavy hammer may be easily handled by one man, and made to strike a powerful blow.

The machine is designed for breaking large boulders of rock-ores, iron, &c., but may be used in all cases where a powerful blow is required. It may be used as a stationary machine, with hand or other power, but is designed more particularly for a portable machine in mines, quarries, and all other places where its portability would be a convenience.

Figure 1 is partly a side elevation and partly a sectional elevation of the machine. Fig. 2 is a rear elevation.

Similar letters of reference indicate corresponding parts.

A is a heavy hammer, attached to a strong helve, B, which is made to swing on the pivot C of a standard, D, of any approved arrangement, and is provided with a spring, E, for causing it to strike a heavy blow when raised up against the spring and left free to the action of the spring and its own gravity. The spring is attached at one end to the standard D, and bears at the other end, by a roller, F, on the helve, which has a rail, G, along which the roller runs; but the springs may be arranged in any other approved way. A spiral spring may also be attached to the platform H, and to the under side of the helve, to act alone or in connection with the spring E. The

hammer is raised by the hand-lever I, which carries a catch-pawl, K, which catches on the end of the arm L, and trips by the stationary cam M on the platform, up which the roller N in the end of the catch-pawl runs when the lever reaches the limit of the downward movement. The catch-pawl K has two catches, O, and a stationary catch, P, is employed to engage the hammer when partly raised by the upper catch O, and hold it until the next catch can be raised over the arm L, to engage it for fully raising the hammer for a heavy blow.

The stationary catch is pressed out of the way of the arm L by the lever I acting on its incline R just before it reaches the end of its downward movement, so that said catch does not stand in the way of the arm when the hammer is striking the blow.

The standard D, for supporting the hammer-helve, may be constructed and supported in various ways; but I prefer to arrange the braces S, for supporting it, to serve also for guides for the helve and the lever, as represented in the drawings, and the helve will be connected to the pivot by the metal straps T, and to the hammer by other straps, U.

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

1. The combination, with the spring-pressed hammer A B, arranged on a pivot, C, and having an arm, L, of a lever, I, and the catch and tripping-pawl K, substantially as specified.

2. The combination of holding-pawl P with the hammer A B, arm L, and lever I, substantially as specified.

RAY F. LIVERMORE.

Witnesses:

ROBT. I. CHAHON,  
E. E. HALL.