C. Monson,

Hammer,

No. 50,262, Patented Oct. 3, 1865.

Fig. 1.

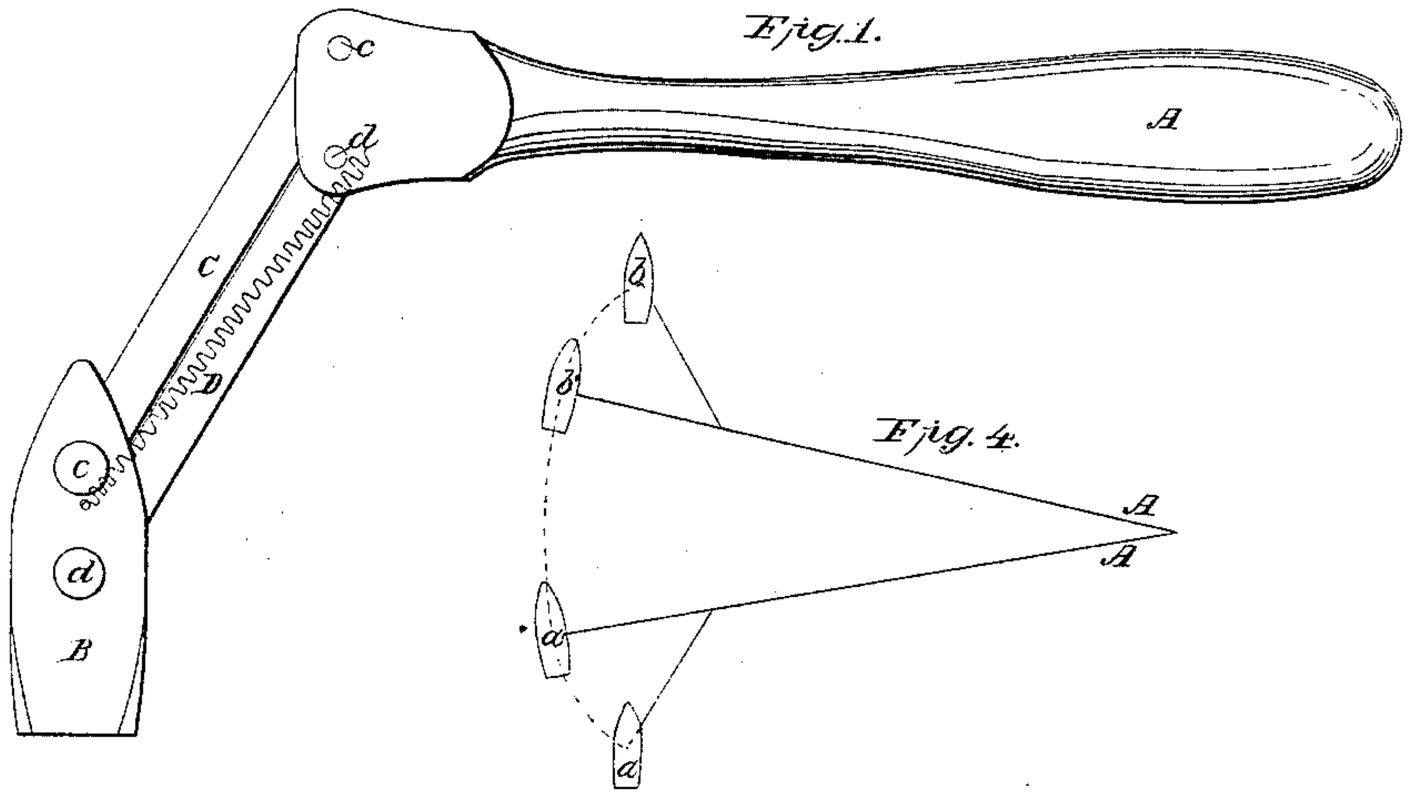
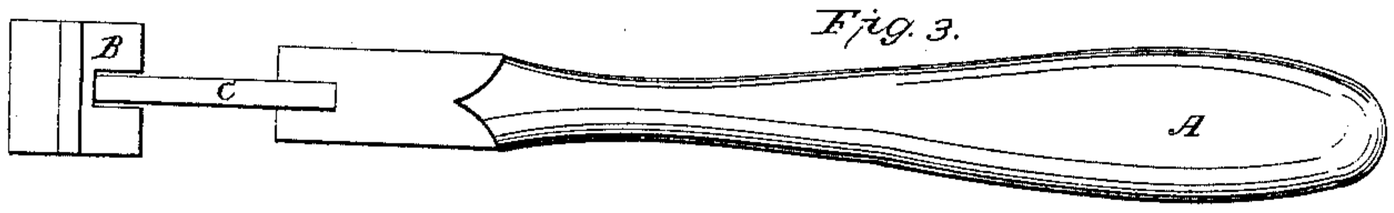


Fig. 4.

Fig. 3.



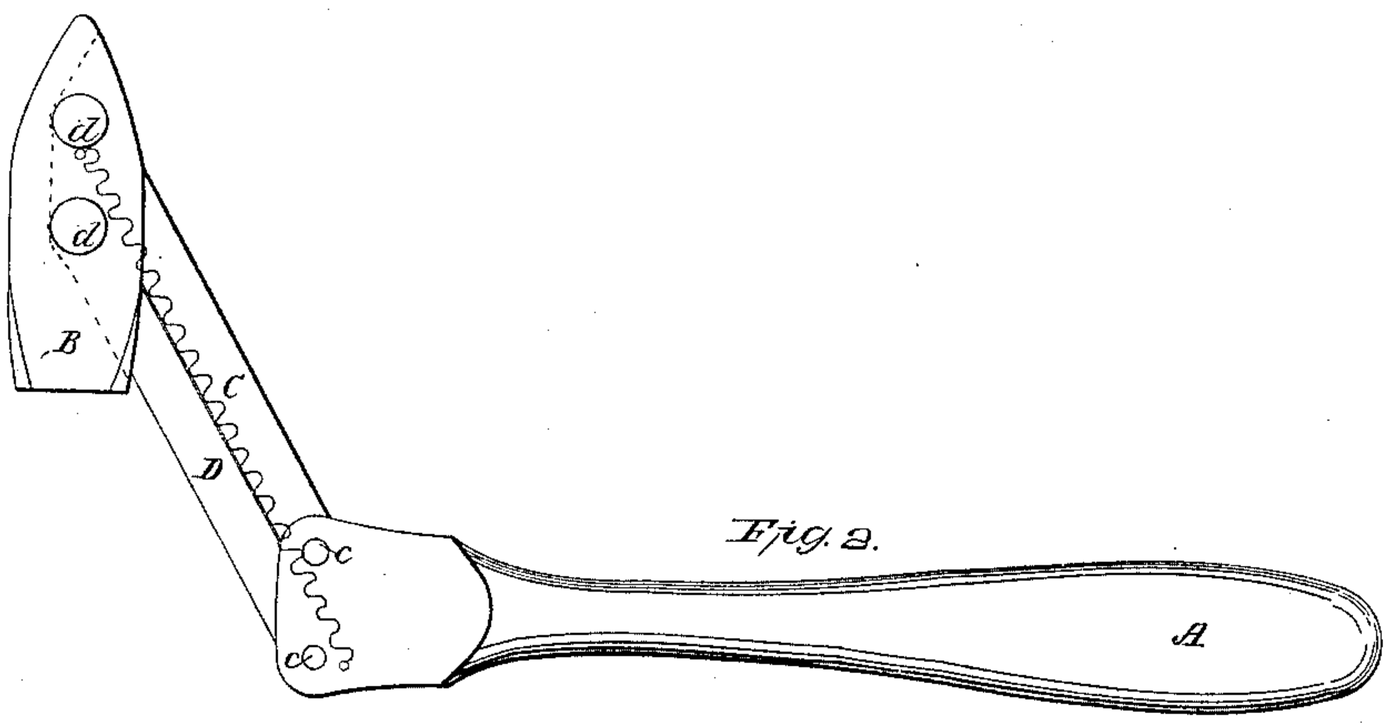


Fig. 2.

Witnesses:

E. Heaton.

Rufus Holanford.

Inventor:

Chas. Monson

by his att'y

John E. Earle

UNITED STATES PATENT OFFICE.

CHAS. MONSON, OF NEW HAVEN, CONNECTICUT.

IMPROVED HAMMER.

Specification forming part of Letters Patent No. **50,262**, dated October 3, 1865.

To all whom it may concern:

Be it known that I, CHARLES MONSON, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Hammers, &c.; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view, the hammer in the position as at the termination of the blow; Fig. 2, the same, the hammer in the position as raised in the act of striking a blow; Fig. 3, a top view, and in Fig. 4 a diagram illustrating the advantage of my improvement.

My invention relates to an improvement in hammers, whereby both the length of the stroke and the power of the hammer are increased without a corresponding increase in the movement of the arm or of the muscular force.

I may, as a partial illustration of said invention, compare it to the movement of the human arm in the usual mode of striking a blow with a common hammer, or rather—supposing the hammer to be a pestle grasped in the hand—the shoulder, elbow, and wrist joints all working as usual. Then contrast such proper action of the arm with its movement in striking when only the shoulder-joint should be moved, all the other joints being stiff. A blow thus struck (moving only the shoulder-joint) will be far less effective than a blow struck by the same arm with the proper and ordinary use of the several joints. My hammer possesses a similar advantage over the common hammer that a proper human arm, used as above indicated, would have over one with only a shoulder-joint.

To enable others to construct and use my improved hammer, I will proceed to describe the same as illustrated in the accompanying drawings.

A is the handle; B, the hammer. The form and size of the hammer should be in accordance with the use for which it is to be employed—represented here as an ordinary hammer. I connect the hammer B to the handle A by means of two parallel bars, C D, jointed to the hammer and handle by pivots *c c d d*. The handle is taken in the hand of the operator in the usual manner, it being in the position denoted by Fig. 1, and at *a*, Fig. 4, and raised to strike a blow in the usual manner of common hammers. The momentum of the upward movement will cause the hammer to ascend farther than the actual movement of the handle A, to the position denoted in Fig. 2, and at *b*, Fig. 4. The movement of the handle is seen in Fig. 4, denoted in black, the movement of the hammer more than the actual movement of the handle being denoted in red. Descending, the hammer returns to the position in Fig. 1, as also seen in Fig. 4; thus the movement of the handle of the hammer from the position of *b'* to *a'*, Fig. 4, being the same as for a common hammer. With my improvement the hammer ascending still farther to the position denoted at *b*, Fig. 4, and in Fig. 1, descends from the position denoted from *b* to *a*, passing through, in the same length of time, a distance as much greater than that of the common hammer as the range of the joints will admit, proportionally increasing the momentum and consequently the force of the blow, and, being nearer to the hand which works it, it is more easily lifted than is a common hammer of the same weight. Thus it will be seen that although the arm should not move any further nor exert any more muscular force than when using the common hammer, yet it (my hammer) would be more effective than the common hammer, even if it had no other advantage than the momentum as thus illustrated.

My improvement is applicable to the variety of instruments which are used to strike with, and in the use of which weight is important in adding to the force of the blow, and I design that it shall be made available wherever it can be well applied; but although applicable to various instruments, I deem it peculiarly adapted to heavy hammers, as hand-sledges, trip-hammers, &c.; also to stamps for pulverizing ores and ore-rocks.

It remains now to describe a further improvement of said hammer, the effect of which is to increase still more the force of the blow—namely, by attaching to it a spring or springs. Said springs may be of any suitable material and of any known forms.

At present I prefer a coiled spring attached to one or more of the pivot-joints, pivots turn-

ing with the lever. Such a spring need occupy but very little space, and may be well protected by a small strong iron disk or lid screwed over it. Now, I may represent the use of said spring as amounting to whatever power is desirable from the weight of the hammer, which power can be reserved (treasured) in the spring when the hammer is brought up to a momentary rest—as, for example, suppose that with an eight-pound sledge the blow is struck and the hammer is brought back with a natural jerk-like motion over the shoulder, the spring, of course, is instantly brought to an equivalent tension, and there is reserved, as it were harnessed up in that spring, a certain amount of power. Suppose it to be equal to three-quarters the weight of the hammer, (it must be more;) but whatever the power may be equal to which the springs reserve it has cost nothing—that is to say, nothing more than that which with the common hammer is wholly lost. With mine it is used again at every blow. This is an advantage never before attained. It is the putting of so much where there was nothing before, and in the use of the sledge-hammer it is putting what must be an acceptable bonus into the hardy hand of toil.

The spring or springs to which I have referred may have a further use, though of a secondary importance—namely, in cases where a quick sharp blow with a rebound or reaction of the hammer is desired. I believe that such strokes are sometimes useful. If so, let the hammer be double-headed and turn it over, reversing the heads, and the same springs will act instantly after the blow to pull the hammer upward, thus preventing it resting on the object struck, and somewhat helping to recover the hammer.

There doubtless may be an advantage gained by the use of the spring compressed by the momentum of the hammer, but such advantage is not new; but a great advantage which I do claim in my arrangement of the springs arises from the compression of the springs by the dead weight of the hammer as it falls (as over the shoulder of the laborer) upon the spring.

I have represented two bars, C D, as connecting the hammer with the handle. Instead of the two a single one, with suitable guides to insure accuracy in striking, may be arranged to answer the purpose; but though I mean that my claims shall cover a connection by one or more levers, I prefer the parallel bars as described herein and as shown by the drawings.

I do not broadly claim the application of a spring or springs to hammers and similar instruments for the purpose of using the power which may be forced into said spring simply by the momentum of the hammer, for that is common and not new; but,

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

1. The application of a spring or springs, or their equivalent, to hammers and other similarly-used instruments, substantially as and for the purpose herein set forth.

2. Connecting hammers and similarly-used instruments to the handle or shank thereof, substantially in the manner herein set forth, and either with or without the use of a spring, as described, or the equivalent therefor.

CHAS. MONSON.

Witnesses:

JOHN E. EARLE,

RUFUS H. SANFORD.