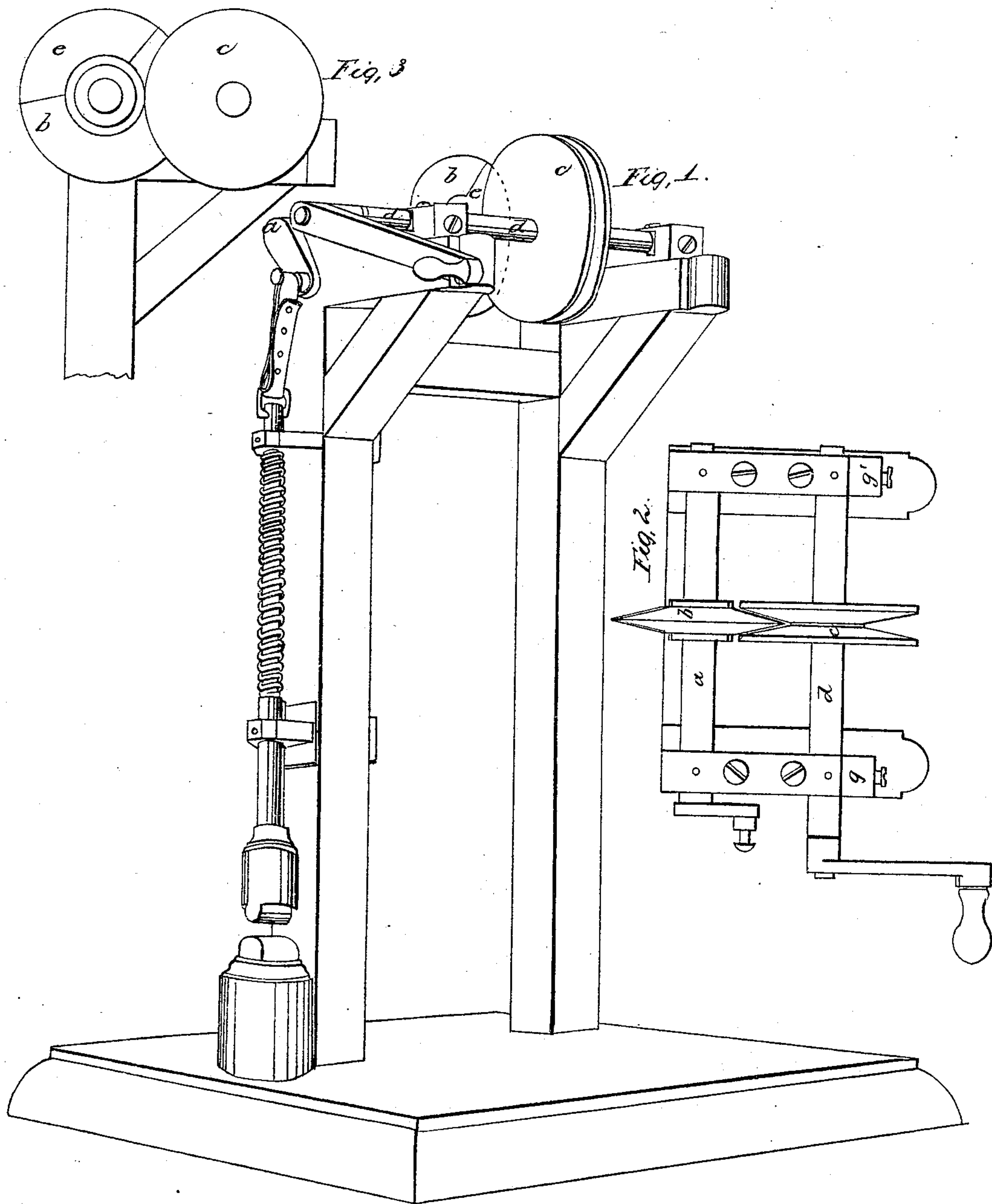


*H. Bushnell,*

*Trij Hammer,*

*N<sup>o</sup> 16,714.*

*Patented Mar. 3, 1857.*



# UNITED STATES PATENT OFFICE.

HENRY BUSHNELL, OF NEW HAVEN, CONNECTICUT.

## TRIP-HAMMER.

Specification of Letters Patent No. 16,714, dated March 3, 1857.

*To all whom it may concern:*

Be it known that I, HENRY BUSHNELL, of the town and county of New Haven, in the State of Connecticut, have invented a new and useful Improvement in Trip-Hammer and Drops; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, in which—

Figure 1 is a perspective view of the hammer complete showing the mode of operation. Fig. 2 is a view of the lifting apparatus showing the manner in which the hammer is lifted by a male and female V wheel. Fig. 3 shows the manner in which the wheels bear upon each other and the section of the male wheel removed.

The trip hammer is made and lifted with a strap and crank as vertical hammers are usually made and lifted.

The peculiarity of my invention consists in the arrangement of the V wheels by which the hammer is lifted and dropped without jar and with the simplest arrangement of the machinery. Upon the lifting or crank shaft *a* I place a male V wheel *b* made on an angle of about three eighths of an inch to the foot, and fitted exactly to a female V wheel *c* on the pulley or driving shaft *d*. The pulley or driving shaft *d* is placed in movable boxes *g*, so that by the motion of a set screw or like arrangement the V wheels can be pressed closely together, or drawn far enough apart not to touch when revolving. From each side of the male V wheel *b* a section (*e*) sufficiently deep to prevent contact when the wheels are in motion and about two fifths of the circumference is removed. The exact portion so removed will be seen by the description of the operation of the machine as follows.

The driving shaft *d* over which the female

V wheel *c* is fastened being set in motion and by means of a lever or set screw operating upon the movable boxes being pressed toward the lifting or crank shaft *a* so as to bring the raised surface of the male V wheel *b* in contact with the female V wheel *c* by means of the friction of the two wheels, both shafts are caused to revolve simultaneously, till the crank is raised perpendicular, and with it the hammer is lifted to its highest point, when as the crank passes its center that section of the male V wheel from which the surface is removed so as not to touch in revolving passes a line drawn horizontally through the middle of the V wheels, when the wheels no longer touching each other the hammer falls by its own weight or by the added force of a spiral or other spring as shown.

The portion of the male V wheel cut away I have described as two fifths, which it is as near as may be, but the exact portion should be such a section as will permit the hammer after the crank shaft when raised has passed its center to fall upon the block.

I have described the portion of surface removed as upon the male wheel but it may be upon the other with corresponding changes.

Having thus described my machine and its mode of operation, what I claim as my invention and desire to secure by Letters Patent of the United States is—

The use of the male and female V wheels having as specified a portion of the surface of either one of them removed so as to permit the hammer to drop freely when arranged substantially in the manner and for the purposes herein set forth.

HENRY BUSHNELL.

In presence of—

CHAS. S. A. DAVIS,  
LUCIUS G. PECK.