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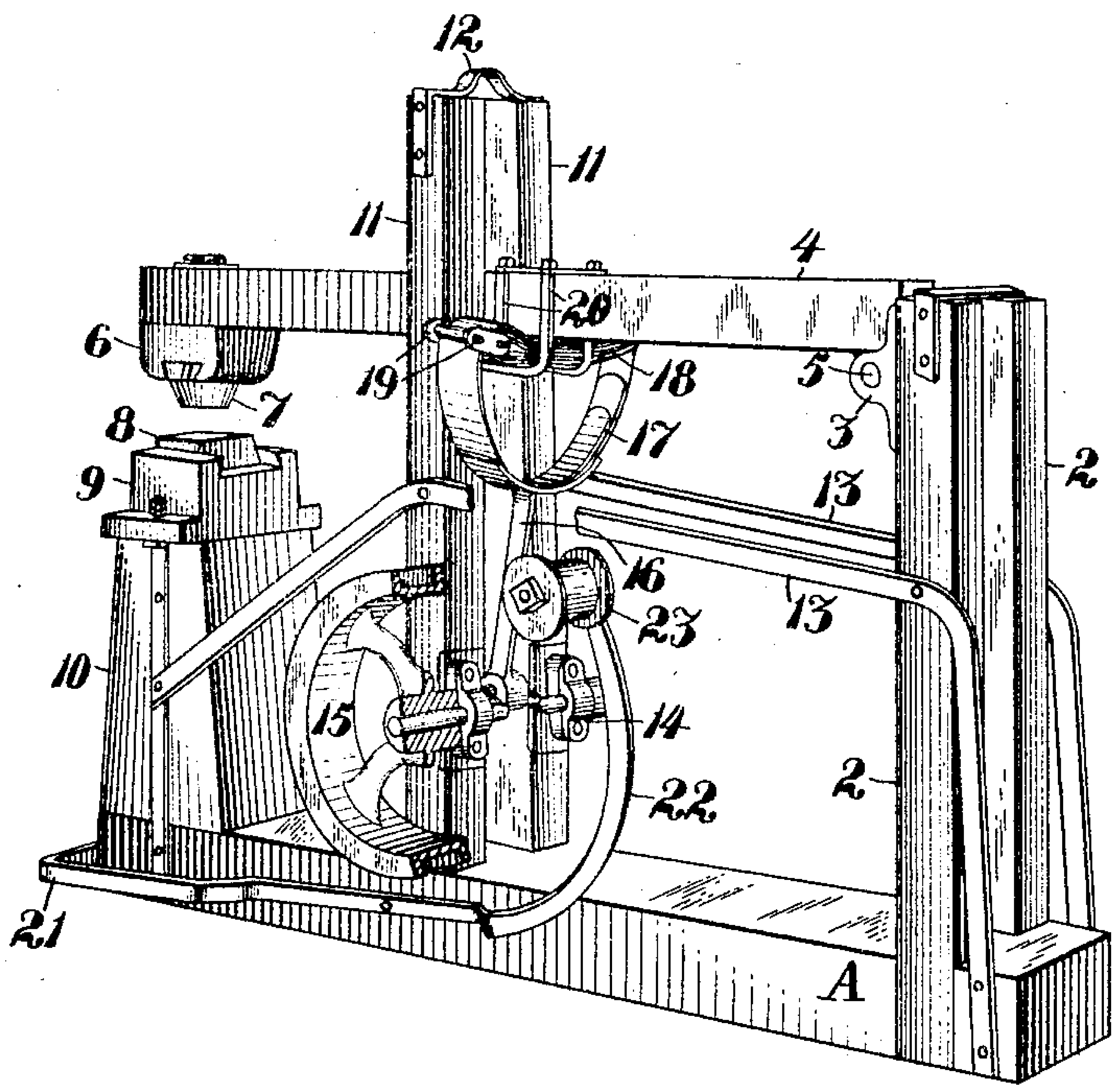
A. E. LEECH.

RECIPROCATING HAMMER.

APPLICATION FILED MAY 11, 1904.



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No. 779,721. Patented January 10, 1905.

UNITED STATES PATENT OFFICE.

ALBERT E. LEECH, OF FULTON, CALIFORNIA.

RECIPROCATING HAMMER.

SPECIFICATION forming part of Letters Patent No. 779,721, dated January 10, 1905.

Application filed May 11, 1904. Serial No. 207,407.

To all whom it may concern:

Be it known that I, ALBERT E. LEECH, a citizen of the United States, residing at Fulton, in the county of Sonoma and State of California, have invented new and useful Improvements in Reciprocating Hammers, of which the following is a specification.

My invention relates to a reciprocating or power hammer and means for operating the same.

It consists of the construction and combination of parts which I will hereinafter describe and claim.

The figure is a perspective view of my apparatus.

As shown in the drawing, A is a base having vertical posts 2 fixed substantially near one end, and upon these posts are fixed journal-boxes 3.

The hammer consists of a handle 4, which has a fulcrum pin or shaft 5 passing through it and preferably fixed in the end of the handle opposite to the head. This fulcrum pin or shaft is turnable in the boxes 3, which are of sufficient dimensions to provide a long bearing, which will be subject to very little wear on account of the small amount of movement. At the opposite end of the handle 4 is fixed the hammer-head 6, and this is adapted to carry one member of any suitable or desired form of die 7. The other member, 8, of the die is fixed in an anvil-block 9, and this is securely bolted and fixed upon a pillar or block 10, which is in turn secured solidly to the opposite end of the base A.

Intermediate between the standards 2 and the block 10 are fixed the parallel vertical posts 11. These posts are connected by a yoke at the top, as at 12, and have a space between them sufficient to admit the hammer-handle 4, moving freely but closely in its reciprocations. These posts, the standards 2, and the pillar 10 are united by braces, as at 13, which extend between these parts and serve to bind them and maintain them in proper alinement.

Power may be transmitted to reciprocate the hammer by means of a crank the shaft of which is journaled upon the guides 11, as shown at 14, and this crank-shaft has a pulley 15 upon one end for a belt connection by which it is revolved. From the crank-shaft a connecting-rod 16 extends upwardly and has fixed to its upper end a segmental leaf-spring 17. The connecting-rod is attached to this spring 17 midway between its ends, so that these ends are upturned, as shown, and stand substantially on a level with the handle 4 of the hammer.

18 is a flexible strap connection between the ends of the spring 17. The connection is here shown by means of links 19, which are pivoted to the upper ends of the spring 17, and the strap 18 is carried back and forth between these links until as many thicknesses as may be desired are provided, the strap in this respect resembling the leather thorough-brace straps of a coach. The central portion of the strap is secured to the handle 4 of the hammer by means of yokes 20, through the lower U-shaped ends of which the strap passes, and the open ends of the yokes or U-bolts pass through bars or straps extending across the top of the hammer-handle and are firmly secured by nuts upon the threaded ends of the yokes, as shown. By means of this connection the reciprocating movement transmitted through the crank and connecting-rod to the curved spring 17 and thence to the transverse elastic strap or thorough-brace 18 provides for a yielding movement, so that the power is transmitted gradually by the yielding of these connections to first lift and then pull the hammer down, and the inertia of the hammer allows these yielding connections to first move, and a certain tension is brought upon them by this movement which after the hammer commences to fall will produce a blow similar to that produced by striking with a sledge by hand-power, the movement increasing as the hammer approaches the anvil or die, and thus effecting a very powerful blow. By means of the guides 11, between which the handle moves, an absolutely vertical movement of the hammer is effected, and when dies or surfaces of impact are not at right angles with the line of movement the hammer will be held to its work and inclined or other irregular surfaces can be accurately formed.

The belt of the pulley 15, which is fixed

upon the end of the crank-shank, is normally sufficiently slack so that it will slip upon the pulley and no motion will be transmitted to the hammer. In order to transmit such motion, I have shown a foot-lever 21, fulcrumed upon the sides of the base A and having an upturned arm, as at 22, and between the ends of this arm is journaled a tightener-pulley 23, holding such relation with the belt that when the foot of the operator is placed upon the lever 21 the pulley 23 will be pressed against the belt and the latter brought into sufficient frictional contact with the crank-shaft pulley to rotate the latter. Thus motion is transmitted to the hammer, and the blows of the hammer are under the absolute control of the operator, so that if one or more blows are necessary to form the article as many blows as may be needed can be given and the hammer instantly stopped.

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

An improved reciprocating hammer having in combination a base with an anvil block or pillar at one end, a vertical standard at the opposite end and intermediate vertical guides fixed to the base, braces by which a die-holder or anvil is fixed to the block, braces connecting the anvil-block, the central guides and the oppositely-fixed standards together and with the base, a hammer-handle fulcrumed in the standards passing between the guides, a hammer-head and die-holder fixed to the opposite end of the handle and movable vertically to deliver blows upon the anvil, power mechanism consisting of a crank-shank journaled across the lower portions of the standards having a belt-pulley upon the end and a tightener-pulley with fulcrumed foot-lever by which it is engaged with or disengaged from the belt, transverse flexible straps below and centrally fixed to the hammer-handle, a downwardly-bowed semicircular spring having upturned ends and swinging links with which the ends of the flexible strap are connected, and a connecting-rod having its upper end fixed to the center of the semicircular spring, and its lower end connected with the crank.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ALBERT E. LEECH.

Witnesses:
G. H. JACOBS,
E. H. BARNES.