

J. A. WILLEY.
POWER HAMMER.
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1,038,999.

Patented Sept. 17, 1912.

Fig. 1.

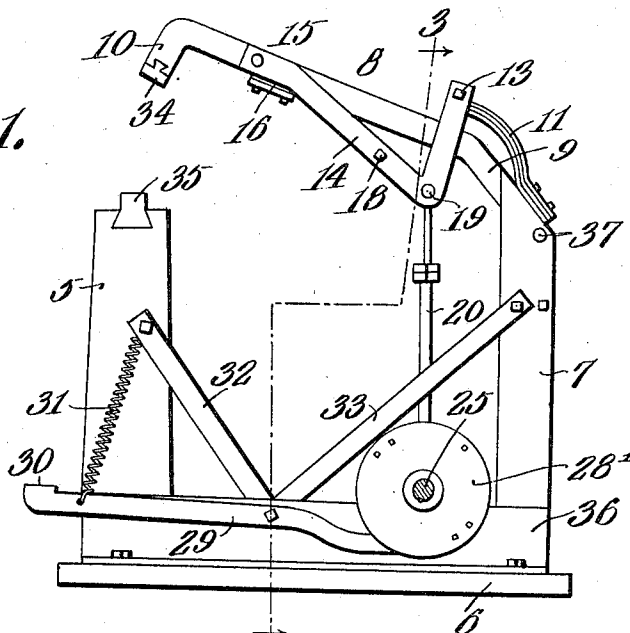


Fig. 2.

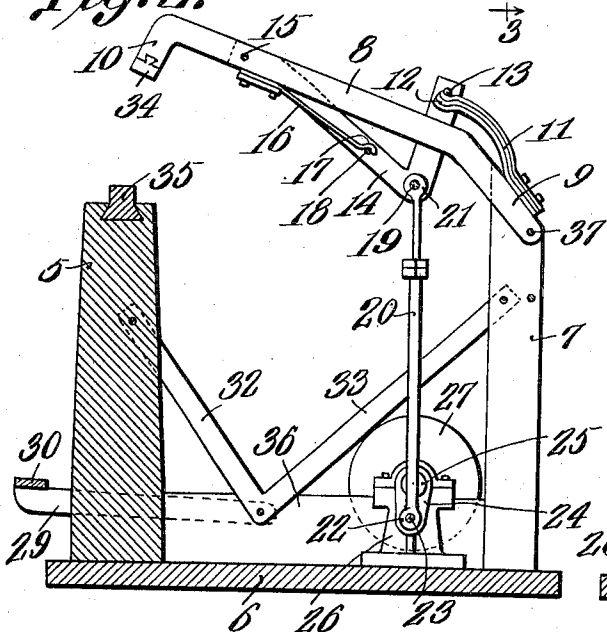
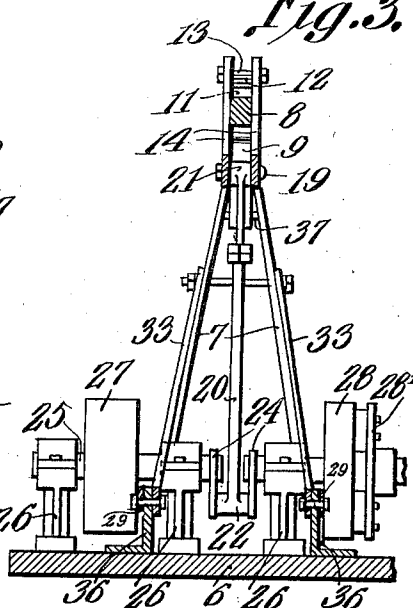


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

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POWER-HAMMER.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN A. WILLEY, a citizen of the United States, residing at Waterloo, in the county of Blackhawk and State of Iowa, have invented a new and useful Power-Hammer, of which the following is a specification.

This invention relates to power hammers, having for its object the provision of a hammer carried by an oscillating arm, and means for actuating the said arm in a novel manner to effectively create a powerful blow of the hammer.

Another object of the present invention is to provide a hammer carried by an oscillating arm, and means for applying power at different points to the arm in order to oscillate the same in a novel manner.

A further object of the present invention is to provide a machine of this character which is comparatively simple and inexpensive in construction, and which shall be convenient and efficient in use.

With the foregoing and other objects in view, which will be apparent as the invention is better understood this invention is embodied in the novel construction and combination of parts hereinafter set forth and claimed, it being understood that the device is susceptible of alteration or deviations in its details within the scope of the appended claims without departing from the spirit of the invention.

The invention is illustrated in its preferred embodiment in the accompanying drawings, wherein similar reference characters denote corresponding parts, and wherein,—

Figure 1 is a side elevation of the device. Fig. 2 is a vertical longitudinal section thereof. Fig. 3 is a section on the line 3—3 of Fig. 1.

Referring specifically to the drawings, the numeral 6 designates a suitable base which has an anvil block 5 mounted on one end thereof and a pair of upstanding members at the other end thereof forming a standard 7, the said block and standard being arranged between angle iron members 36 secured to the base. The anvil block 5 and the standard 7 are braced by means of the respective braces 32 and 33 secured thereto and secured to the angle irons 36. At the rear end of the base 6 adjacent the standard 7 is arranged the shaft 25 journaled in suitable bearings 26, the said shaft

having a fly wheel 27 at one end thereof and a belt pulley 28 at the other end with which the clutch 28' operates. This clutch 28' may be of any desired construction or type and as the said clutch forms no part of the present invention, it is not thought necessary to describe the same in detail. The shaft 25 is arranged transversely of the base and has an intermediate crank 24. The clutch 28' is operated by means of a U-shaped lever 29 having its arms fulcrumed on the angle irons 36 and which has its intermediate portion forming a tread 30 arranged in front of the anvil block 5, this lever being normally held in inoperative position by means of a coiled retractile spring 31. The said shaft may be driven by any suitable source of power, as will be understood, the clutch 28' being actuated by the depression of the tread 30. The lever 29 is connected to the clutch 28' in any suitable manner so that the clutch will be operated by the depression of the tread and as this connection forms no part of the present invention, it is not thought necessary to illustrate or describe the same in detail. An arm 8 has the rear end 9 thereof deflected or bent downwardly and fulcrumed to the standard 7 by means of a pin or other member 37, and the forward end of the said arm is bent downwardly or angularly as designated by the numeral 10 to provide a hammer head. A laminated leaf spring 11 is secured to the upper side of the arm adjacent the fulcrum and has the free end thereof hooked as designated by the numeral 12, and a second leaf spring 16 is secured to the lower side of the arm 8 at a point remote from the fulcrum and also has the free end thereof hooked as designated by the numeral 17, the said springs projecting toward each other and being directed away from the arm 8 sufficiently to permit a suitable "play" of the springs. An L-shaped lever 14 is arranged at each side of the arm 8, the said levers having the extremities of their long arms pivoted to the arm at a point remote from the fulcrum by means of a pin or other member 15. The long arms of the levers 14 project in a direction following the spring 16 and the short arms thereof cross the arm 8, the long and short arms of the said levers carrying the respective pins 18 and 13 coöperating with the respective hooks, 17 and 12. The pin 19 is passed through the angular portions of the levers 14, and a con-

necting rod 20 has an upper eye 21 engaging the pin 19 and has a lower eye 22 engaging the wrist pin 23 of the crank 24. This connecting rod is preferably adjustable, and is given a reciprocatory movement by the rotation of the crank 24 in order to impart an oscillatory movement to the arm 8. The block 5 carries an anvil 35, and the hammer head 10 is provided preferably with a detachable face plate 34, the hammer head being swung to and from the anvil as the arm 8 is oscillated.

In the operation of the machine, when the shaft 25 is rotated, the connecting rod 20 is given a reciprocatory movement by the crank 24, which in turn will impart an oscillatory or vibratory movement to the levers 14. When the levers 14 are swung upwardly by the up stroke of the connecting rod 20, the pin 18 will engage the hook 17 of the spring 16 and therefore raise the arm 8 to elevate the hammer head from the anvil, and when the levers 14 are swung downwardly by the downward stroke of the connecting rod 20, the pin 13 will engage the hook 12 of the spring 11 in order to impart a downward movement to the arm 8 and cause the hammer head to strike the anvil, or any object held thereon. It will be noted that when the connecting rod 20 is raised to cause the pin 18 to engage the spring 16, the arm 8 will be gently raised, for the reason that the power is applied to the forward end of the lever or at a point remote from the fulcrum, whereas, when the connecting rod 20 is forced downwardly to engage the pin 13 with the spring 11, the momentum of the arm 8 and hammer head tend to retain the same in raised position which will cause the spring 11 to be brought under considerable tension prior to the downward movement of the arm 8, which will cause the arm 8 to move downwardly with a greatly accelerated movement causing the hammer head to strike the anvil or any object held thereon with an effective blow. Thus, as the shaft is rotated the arm 8 will be given a novel oscillatory movement, somewhat in the manner of a trip hammer.

This hammer is adapted particularly for use in hammering out plow lays or other similar work, the chief feature of the present invention being the gentle lifting movement of the arm or beam carrying the hammer and the sharp downward movement of

the said arm or beam to effectively cause the hammer to strike the anvil or other object held thereon.

This machine is comparatively simple in construction and capable of manufacture at a comparatively small expense, and requires but a minimum power to actuate the same, as well as being convenient and efficient in use.

It is apparent that the various parts may be constructed of any suitable material, and that the dimensions or proportions may be altered as is deemed desirable or necessary, it being further understood that this device is otherwise susceptible of alteration or deviation in its details within the scope of the appended claims without departing from the spirit of the invention.

Having described the invention what is claimed as new is:—

1. In a power hammer, the combination of a frame, a hammer helve pivoted thereto at one end, two yielding members each fixedly secured at one end to the said helve at opposite sides thereof, one at a point adjacent to and the other at a point remote from the fulcrum of the helve, the free ends of said members extending toward each other, and a member reciprocable transversely of the helve and engaging the free ends of the yielding members to impart a yieldable oscillatory movement to the helve.

2. In a power hammer, the combination of a suitable frame, a hammer helve pivoted thereto at one end, two yielding members each fixedly secured at one end to the said helve at opposite sides thereof, one at a point adjacent to and the other at a point remote from the fulcrum of the helve, the free ends of said members extending toward each other, a lever pivoted to the helve at a point remote from the fulcrum and having members engageable with the free ends of the respective yielding members, and a member reciprocable transversely of the helve and connected to the said lever so as to impart a yieldable oscillatory movement to the helve.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOHN AMOS WILLEY.

Witnesses:

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F. L. LUCKE.