(No Model.)

G. HUMPHRY.

FOOT POWER HAMMER.

No. 494,335. Patented Mar. 28, 1893.

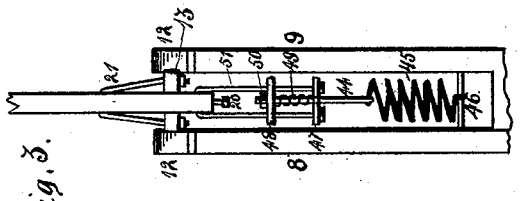

Fig. 3.

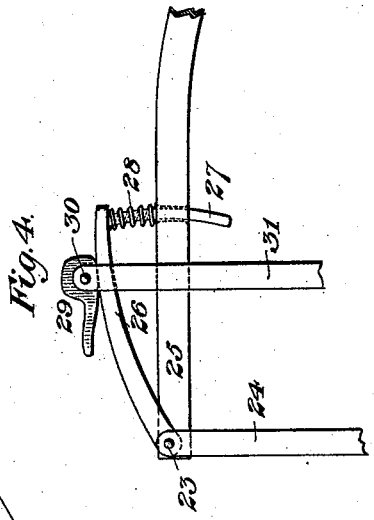

Fig. 4.

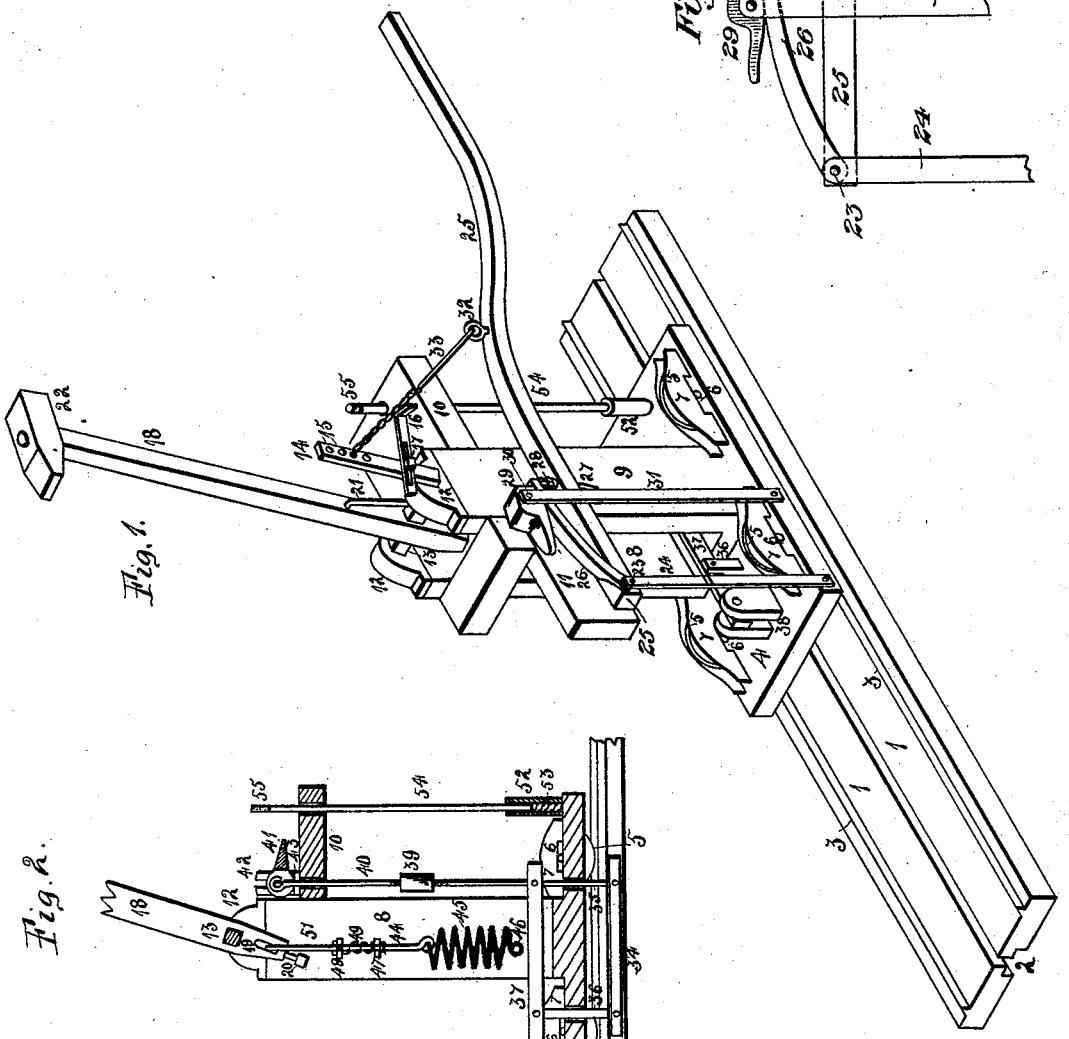

Fig. 1.

Fig. 2.

Witnesses:
E. Bekel
L. L. Miller.

Inventor:
George Humphry
By A. D. Ruff
Atty.

UNITED STATES PATENT OFFICE.

GEORGE HUMPHRY, OF BELVIDERE, ILLINOIS.

FOOT-POWER HAMMER.

SPECIFICATION forming part of Letters Patent No. 494,335, dated March 28, 1893.

Application filed March 21, 1892. Serial No. 425,849. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HUMPHRY, a citizen of the United States, residing at Belvidere, county of Boone, State of Illinois, have invented certain new and useful Improvements in Foot-Power Hammers, of which the following is a specification.

The object of this invention is to construct a foot power hammer that will, in a great measure, dispense with the services of the black-smith's helper, the smith himself striking the required blows by means of a foot lever connected in suitable manner to actuate the hammer.

In the accompanying drawings,—Figure 1, is an isometrical representation of my hammer as seen from the rear. Fig. 2, is a vertical central, longitudinal section of my hammer. Fig. 3, is a fragmental rear end elevation of the spring connection with the hammer helve. Fig. 4, is a detached side elevation of the spring buffer 28, and its relation to the cam 29.

This hammer as I have constructed it consists of two main parts, the track and the carriage, the latter comprising the striking mechanism. In pursuance of this plan I first provide the track composed of the two longitudinal planks 1 rigidly affixed in relation to each other with the inverted T slot 2, between their inner edges.

Near the outer edges of the planks 1, I secure to their faces the rails 3, upon which the carriage rests and runs. Above this track is the base 4, of the carriage, the four grooved rollers 5, of which run upon the rails 3. These rollers have no direct attachment to the base 4, but extend through elongated openings in the latter while their axles have a rolling contact with the upper edge of an opening 6, in brackets 7, rigidly affixed to the base 4. Two posts 8 and 9, arise from this base 4, and uniting with these, the table 10, and the rearwardly extending piece 11, form the supporting frame for the striking mechanism.

At the upper ends of the posts 8 and 9, I provide the bearings 12, for the shaft 13, the portion of which, intermediate the boxes, is square and from one end of which, outside the bearings, the arm 14, extends. This arm is provided with a series of holes 15, near its outer end and adjustably secured to it near its inner end is the transverse bar 16, the adjustment of the latter being effected by the set screw 17, passing through the elongated openings therein, and into a threaded hole provided for it in the arm 14. The square portion of the shaft 13, extends through the helve 18, of the hammer and in a portion of the helve extending rearward of the shaft I form the elongated opening 19, and provide the set screw 20, therefor. The brace rod 21, extends through a hole in the helve and passing through holes in the shaft 13, receives nuts on the opposite side thereof, whereby the hammer may be adjusted laterally a little distance. The outer end of the helve bears the hammer head 22, of the ordinary pattern and affixed to the helve in the usual manner.

Near the lower rear corner of the cross piece 11, I provide the pivot 23, supported at its outer end by the brace 24, from the base 4, of the carriage between which brace and the cross piece 11, the curved foot lever 25, is pivoted. Pivoted also on this pivot is the leaf 26, having affixed to its outer end the curved rod 27, which latter extends through a hole in the foot lever 25, and between which lever and leaf upon the rod 27, I interpose the coiled spring 28. Above the free end of the leaf 26, I pivot the three face cam 29, the bearing 30, of which is supported between the upper end of the brace rod 31, and the piece 11, of the frame. About midway of the length of the foot lever 25, I provide an eye 32, between which and one of the series of holes 15, in the arm 14, extends the rod and chain 33, the end of the chain bearing a hook that it may be attached in any hole of the series and at a greater or less distance from the center of the shaft 13. The carriage as now described is free to be moved along its track to bring it near or at a distance from the anvil and to affix it any desired position that it may not be displaced by the jar of its blows, I provide the following described clamp. In the "T" groove 2, I place a shoe 34, rods 35, and 36, pivoted to which extend upward through the groove and pivotally join the bar 37, which latter is secured between two ears 38, arising from the base 4. The rod 36, extends upward above the bar 37, is threaded at its upper end and lies within a threaded sleeve 39, as does also the rod 40, forming a

continuation of the former rod, the sleeve forming an adjustment of their length. The upper end of the rod 40, terminates in an eye embracing the eccentric center of the cam 41. This cam is located on the table 10, between two divided ears 42 of a bracket 43, and bearing on the base of the bracket the ears of which are divided to admit the pivot upon which the eye rod 40, is hung. The cam 41, is indeed a double one being cleft through its center and the parts being united only by the handle, the rod 40, extending between its two parts.

To hold the hammer in an upraised position I attach to the rod 44, extending between the supporting posts 8 and 9, the coiled extension spring 45, the upper end of which has a link connection with a rod 46. This rod passes through two cross bars 47, and 48 between which upon the rod I interpose the compression spring 49. The nut 50 turned upon the threaded end thereof holds the bars upon the rod. The free ends of the "U" shaped rod 51, pass through holes in the outer ends of the bars 47 and 48, and nuts on the ends of the "U" shaped rod prevent displacement of the rod and the intermediate transverse portion of the rod lies in the slotted hole 19, of the hammer helve and the set screw 20, adjusts the tension of the springs and their leverage on the shaft 13.

Extending upward from the base 4, near its forward middle parts I secure the sleeve 52, inclosing the spiral spring 53, and the end of the rod 54 resting thereon. This rod 54, extends upward through an opening in the table 10, and is capped by the rubber top 55, against which the helve strikes on its downward stroke and the purpose of which co-acting with the spring 53, is to take up the violence of the blow of the hammer.

In use my hammer is placed in position on its track adjacent to the blacksmith's anvil and so that the hammer in striking its blow will descend upon the desired point on the face thereof. The carriage is then locked in position by turning the cam 41, raising the bar 37, and drawing the shoe 34, tightly against the upper face of the "T" shaped slot 2, and the strength given to the grip of the shoe against the groove is regulated by adjusting the combined length of the rods 35 and 40, by means of the threaded sleeve 39. The foot lever is then depressed and because of the connection between it and the hammer it will be caused to descend upon the anvil, the strength of the blow struck depending upon the force imparted to the lever. Releasing the foot lever the elasticity stored in the springs 45, and 49 brings the hammer again into an upraised position ready for another blow. The spring 28, which I interpose between the leaf 26, and the foot lever 25, cushions the return of the hammer and the force of the spring is varied by presenting the different sides of the cam 29, to the leaf 26. The transverse arm 16, holds the chain from the center of the shaft 13, thus bringing into action the cushion return spring 28.

I claim as my invention—

1. In a foot power hammer, the combination of a track, a carriage thereon, a hammer having a pivotal connection with the carriage, a foot lever having a connection with the hammer, a spring having a connection with the hammer and with a stationary support, a cam for varying the distance through which the hammer is raised and a connection between the cam and the hammer.

2. In a foot power hammer, the combination of a track, a carriage thereon, means for affixing the carriage to the track a shaft journaled on the carriage, an arm extending from the shaft, a bar adjustably secured to the arm, a hammer affixed to the shaft, a lever pivoted to the carriage, a connection between the lever and the before mentioned arm, a spring for raising the hammer, a cam for varying the distance through which the hammer is raised and a connection between the cam and the hammer.

3. In a foot power hammer, the combination of a track having a groove therein, a carriage on the track, a shoe in the groove and a cam supported by the carriage, having a connection with the shoe for holding the shoe in engagement with the track.

GEORGE HUMPHRY.

Witnesses:
FRANK A. CARPENTER,
ARCHIE N. TRIPP.