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POWER DRIVEN HAMMER

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2 Sheets-Sheet 1



INVENTOR

William Witte
by Christy and Christy
his attorneys

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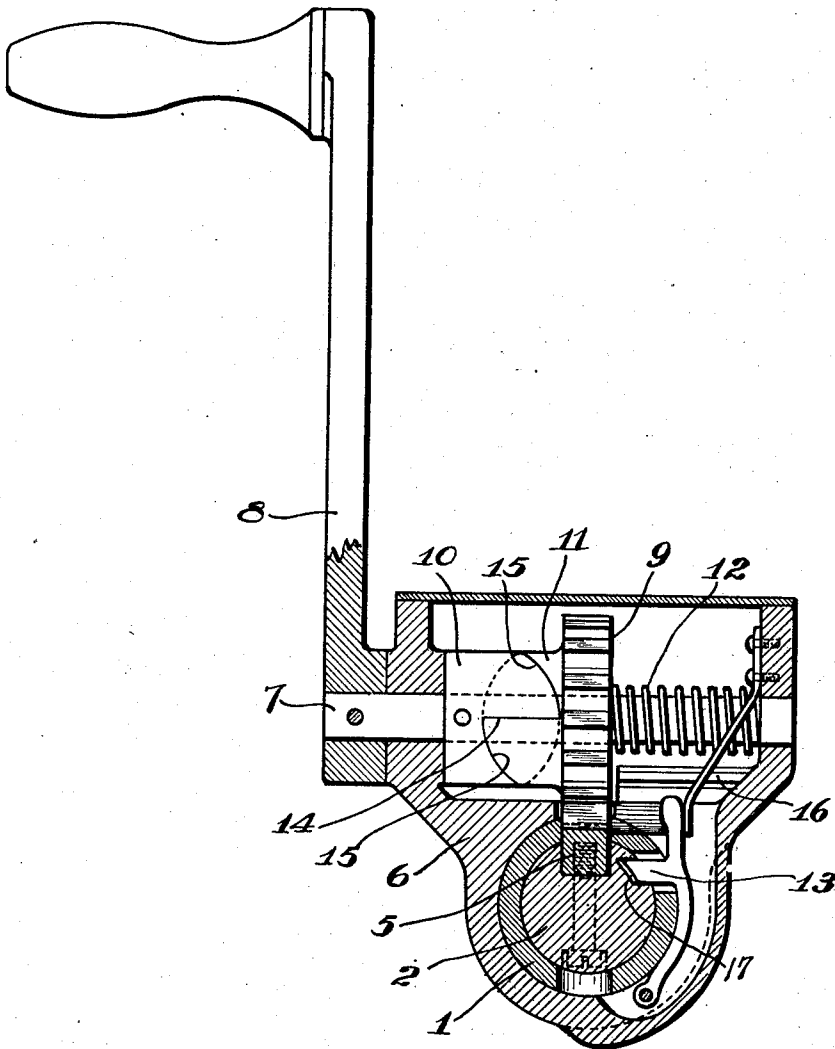
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Fig. 3.



WITNESS

A. B. Wallace.

INVENTOR

William Witte
by Christy and Christy
his attorneys

UNITED STATES PATENT OFFICE

WILLIAM WITTE, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO JAS. H. MATTHEWS & COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

POWER-DRIVEN HAMMER

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My invention relates to improvements in power-driven hammers. I have developed it as an instrument for die-stamping lumber, and in such specific application I shall show and describe it. The objects in view are simplicity of structure and adaptability to service conditions, to the end that lumber may be branded expeditiously, certainly, and effectively.

10 In the accompanying drawings Fig. I is a view in plan and Fig. II a view in longitudinal and axial section of the lumber-marking instrument of my invention. From Fig. I a certain shield plate has, for purposes of illustration, been omitted. Fig. III is a view to larger scale and in transverse section, on the plane indicated by the line III—III, Fig. II.

Within a barrel 1 a plunger 2 is reciprocable. A spring 3 within the barrel affords means for storing and delivering power to drive the plunger to do its intended work. The barrel carries in axial alignment and mounted for axial reciprocation a branding die with elongated stem 4, enlarged head 41, and face 42 equipped with edged characters in relief. The range of longitudinal movement of the die in its mounting in barrel 1 is limited.

30 The plunger carries a longitudinally extending rack 5, and the barrel is slotted longitudinally to afford access to and to guide the rack.

A housing 6 is mounted rigidly upon the barrel, and within the housing a shaft 7 is rotatably borne. This shaft is equipped with a crank 8 by which it may be turned manually, alternately in one direction or the other. A pinion 9 is borne by shaft 7 and it is movable upon the shaft both rotatably and in longitudinal direction. The shaft and the pinion are provided with blocks 10 and 11, commonly known as spiral clutch jaws, which engage one another over surfaces which meet in a plane indicated by the line 14, perpendicular to the direction of turning, and over other spiral surfaces which meet in the lines 15, oblique to the direction of turning. A spring 12 tends to hold the pinion in the position shown in Fig. III, at the limit of the

right-to-left range of longitudinal movement and with the blocks in engagement over all the extent of their meeting faces. When the parts are so situated, turning of the shaft in one direction causes the pinion to turn in unison with it, but turning in opposite direction (the rack 5 being at the time secure against longitudinal movement within the barrel) causes the pinion to move from left to right, longitudinally of the shaft, because of the wedging action of the surfaces which meet in the lines 15. The pinion 9, in the range of its longitudinal movement upon shaft 7, alternately engages rack 5 and passes beyond such engagement. A block 16 is so situated that as the pinion moves from left to right, Fig. III, it enters between adjacent teeth of the pinion, and holds the pinion from turning, even after it has passed beyond engagement with rack 5. This left-to-right movement of the pinion 9 upon the shaft 7 is by the proportioning of the parts so limited that the clutch jaw 11 does not pass entirely beyond engagement with the clutch jaw 10. There may not then be any slipping of these parts one past another.

A spring-backed latch 13, bearing upon the plunger, advances when the plunger 2 is retracted against the tension of spring 3, into a socket 17 formed in the body of the plunger to receive it, and, so advancing, locks the plunger in retracted position and holds the spring 3 under tension. The latch is pivoted in a recess in casing 6 and is so arranged that the pinion 9 in left-to-right advance (Fig. III) engaging it, shifts it from its locking position.

Figs. I and II show the instrument in inactive position. When in this position, rotation of shaft 7 clockwise, as seen in Fig. II, will cause retraction of plunger 2 and compression of spring 3. When the plunger is thus brought to the limit of its intended range of retraction, the spring-backed latch 13 enters the socket provided for it, and locks the plunger. The instrument then is set ready for action.

The operator having so set the instrument brings it to position with the face 42 of the die against the surface of the lumber, where

the brand is to be imprinted. He then turns the crank counter-clockwise. Fig. III shows the parts when the instrument is set. The turning of the crank in the direction last indicated will, through the wedge surfaces upon blocks 10 and 11, and because the rack-bearing plunger 2 is at the time locked against longitudinal movement, shift the pinion 9 from left to right, and in this left-to-right shifting of the pinion, two conditions are successively brought about; first, the pinion passes beyond engagement with rack 5, and, second, the pinion, when so free of rack engagement, swings the latch and withdraws it from engagement with the plunger. Thereupon the plunger, unrestrained and fully responsive to the tension of spring 3, is, under such tension, driven powerfully from left to right, Fig. II. It delivers its blow upon the head 41 of the die and sinks the characters which the face 42 of the die carries, into the surface of the lumber, thus effecting the branding desired.

When the crank is relieved of pressure the spring 12 will be effective to carry the pinion 9 back in right-to-left direction and to bring it again into engagement with rack 5. The instrument then is ready for repeated operation.

I have described the invention in application to a lumber branding instrument. Manifestly it is applicable to instruments generally in which the delivery of a single powerful hammer blow is desired.

I claim as my invention:

1. In a power-driven hammer the combination with a barrel, a plunger reciprocable within the barrel, and means for powerfully driving the plunger within the barrel, of a latch for the plunger, a rotatable shaft, means operated by shaft rotation in one direction for shifting the plunger within the barrel, and means operated by shaft rotation in opposite direction for shifting said latch.

2. In a power-driven hammer the combination with a barrel, a rack-equipped plunger reciprocable within the barrel, and means for powerfully driving the plunger within the barrel, of a latch for the plunger, a rotatable shaft, a rack-engaging pinion borne by and movable on the shaft both longitudinally and circumferentially, blocks borne by shaft and pinion and engaging one another over cooperating rotation-imparting surfaces and over other cooperating thrust-imparting surfaces, and yielding means tending to hold the pinion against longitudinal movement upon the shaft, the said latch being movable in response to movement of the pinion longitudinally of the shaft.

In testimony whereof I have hereunto set my hand.

WILLIAM WITTE.