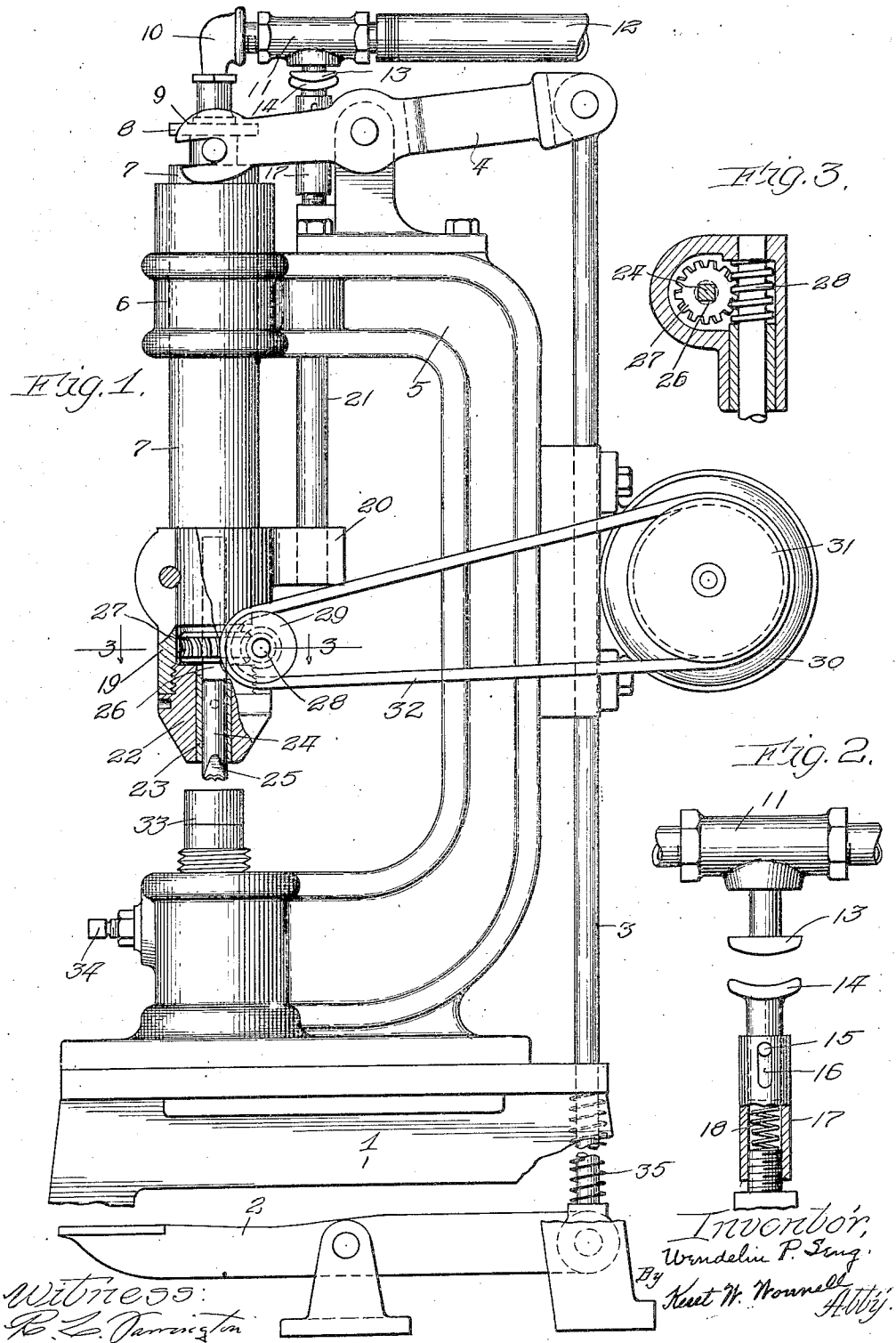


W. P. SENG.
SPIN HAMMER.

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WENDELIN P. SENG, OF CHICAGO, ILLINOIS.

SPIN HAMMER.

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To all whom it may concern:

Be it known that I, WENDELIN P. SENG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Spin Hammer, of which the following is a specification.

This invention relates more particularly to a pneumatic hammer for riveting and the like which is provided with means for rotating the rivet set preferably driven by a small electric motor so that the device constitutes an air hammer, electrically rotated. The principal object of the invention is therefore to provide a new and improved construction of this kind in which the rivet part of the hammer is positively rotated as the hammer is operated. The invention consists in the novel construction, combination and arrangement of the several parts.

In the accompanying drawing Fig. 1 is a side elevation partly in section of a device constructed in accordance with the principles of my invention; and Fig. 2 is a detail of the valve operating device; and Fig. 3 is a detail of the rotating means.

This invention relates to an air hammer in which the rivet set is mechanically rotated continuously by means of an electric motor, so that in the operation of using the hammer, the rivet set also positively rotates. The reason for this is that it has been found more satisfactory to employ a rivet set which is somewhat flattened so that it extends across or diametrically of the rivet, and must be rotated in order that the rivet will be equally upset in all directions.

In carrying out this invention a standard or base 1 is provided with a foot lever 2 connected by means of a rod 3 with an operating lever 4. This operating lever is mounted at the top of a yoke 5 which provides a bearing 6 for a pneumatic hammer 7 which is slidable up and down in the bearing. The upper end of the hammer is formed with a collar 8 which has a pin head connection with the end 9 of the operating lever 4 opposite its joint of connection to the rod 3.

At the upper end of the hammer 7 is a pipe elbow 10 to which a valve 11 is connected and extending from the valve is a flexible connection 12 by means of which fluid under pressure is supplied to the hammer for operating it automatically in any well known manner whenever the valve 11

is opened. The valve has a stem 13 adapted to be engaged by a spring pressed abutment 14 which is mounted on the top of the yoke 5, whenever the lever 4 is operated. This abutment carries a pin 15 which extends through a slot 16 in a shell 17 in which the abutment is slidable and the spring 18 which presses the abutment upwardly is stronger than that which tends to keep the valve on its seat, so that whenever the stem 13 of the valve 11 is moved into engagement with the abutment, the valve is opened and the hammer is operated. The shell 17 may be adjustable on the yoke 5 and the slot 16 permits a yielding movement of the abutment 14 downwardly when the valve 11 is directly moved downwardly with the hammer by means of the operating lever 14, so that the hammer can follow up the rivet as it is flattened out.

At the lower end of the hammer 7 is a housing 19 which has a perforated projection 20 through which extends a rod 21 projecting downwardly from the yoke parallel with the hammer, forming a guide for the housing 19 and preventing its rotation.

In the end of the housing is a removable head 22 carrying a bushing 23 inside of which is a removable rivet set 24. The upper portion of the rivet set extends into the hammer, the lower end 25 is formed to engage a rivet and an intermediate portion 26 is squared or otherwise shaped to slidably receive a worm gear 27 which is mounted at the top of the head 22 and does not reciprocate at each stroke of the rivet set 24. Meshing with the worm gear 27 is a worm 28 to which a drive or pulley wheel 29 is attached. Mounted at the side of the yoke 5 is a motor 30 having a drive pulley 31 which is connected by means of a belt 32 with the pulley 29.

Below the hammer, the yoke 5 forms a support for an adjustable anvil 33 which may be threaded into the yoke and provided with a set screw 34 for holding it in place.

In operation the motor 30 drives the gear 26 and the rivet set 24 constantly and positively, and the position of the motor is preferably such that the belt 32 is tightened as the hammer is moved to riveting position. This insures that the rivet set will be rotated without so much danger of the belt slipping. The hammer is advanced to operating position and operated by the movement of the

pedal 2 which causes the valve 11 to be opened at the same time that the hammer is advanced by it to operating position. As soon as the pressure on the pedal is relieved the hammer is retracted by the operating lever and the valve 11 is closed, by means of a spring 35 preferably located in the base 1.

I claim:

1. The combination with a pneumatic hammer movable toward and from its work, of a valve for controlling the hammer dependent upon the movement of the hammer in relation to the work, and means for independently rotating the hammer.

2. The combination with a pneumatic hammer having a movable rivet set and movable toward and from its work, of a valve to control the operation of the hammer depending upon the movement thereof in relation to its work, and means for rotating the rivet set independently of the hammer.

3. The combination with a pneumatic hammer including a longitudinally movable rivet set, means for moving the hammer toward and from its work and actuating the hammer by such movement, and means for rotating the rivet set independently of the movement of the rivet set toward and from its work.

4. The combination with a pneumatic hammer, of a yoke by which it is supported, means for moving the hammer in the yoke and opening and closing the fluid pressure connections to the hammer by such movement, the hammer including an independently movable rivet set which is reciprocated by the hammer in its riveting movement, and means in connection with the rivet set for rotating it independently of its movement by the hammer and independently of its movement in the yoke.

5. The combination with a pneumatic hammer and anvil, the hammer being movable toward and from its anvil, of means for actuating the hammer controlled by such movement, and other means for independently rotating the striking portion of the hammer without regard to its movement toward the anvil or to its hammering action.

6. In a spin hammer, the combination with supporting means, of an air hammer mounted for reciprocation therein including a control valve opened and closed by such reciprocation and a reciprocating rivet set, means including a gear and worm for rotating the rivet set independently of its re-

ciprocation, and a driving member for continuously rotating the gear and worm.

7. In a spin hammer, the combination with a yoke forming a support, of an air hammer reciprocable in the upper end of the yoke, means operated by the reciprocating movement of the hammer for opening and closing air connection thereto, a housing carried by the hammer, a guide extending from the yoke to prevent the rotation of the housing, the hammer including a rivet set longitudinally movable for riveting action, a gear supported in the housing and slidable relatively to the rivet set for rotating it independently of its longitudinal movement, a worm for rotating the gear, and driving means including a pulley supported by the yoke, and a driving belt for continuously operating said worm.

8. In a spin hammer, a reciprocable air hammer, a housing carried thereby, means for preventing the rotation of the housing, the air hammer comprising a rivet set longitudinally movable for riveting action with an angular portion intermediate its ends, a gear carried by the housing and slidable on the angular portion, means with a pulley attached thereto for rotating the gear, and driving means including a fixed pulley, and a belt extending to the other pulley, the pulleys being so arranged that the belt is tightened when the air hammer is advanced to its work.

9. The combination with a support, of an air hammer mounted for vertical reciprocation in the support and adapted to be actuated by such reciprocation, the air hammer including a longitudinally movable rivet set, and means for rotating the rivet set independently of its longitudinal movement, such means including a driving pulley fixed on the support, and driving means including a pulley carried by such air hammer, with a flexible belt extending between said pulleys which is tightened when the hammer advances the rivet set to riveting position.

10. The combination with a fixed support, of an air hammer reciprocable therein, having an air valve and a rivet set reciprocable for riveting action, means for advancing and withdrawing the hammer from its work and thereby opening and closing the valve, and an electric drive for rotating the rivet set independent of the reciprocation of the hammer and of the riveting action thereof.

WENDELIN P. SENG.