No. 690,320. Patented Dec. 31, 1901.

D. ROBERTSON.

MACHINE FOR HAMMERING OR TAPERING PISTON RINGS.

(Application filed Aug. 3, 1901.)

(No Model.)

Fig. 1.

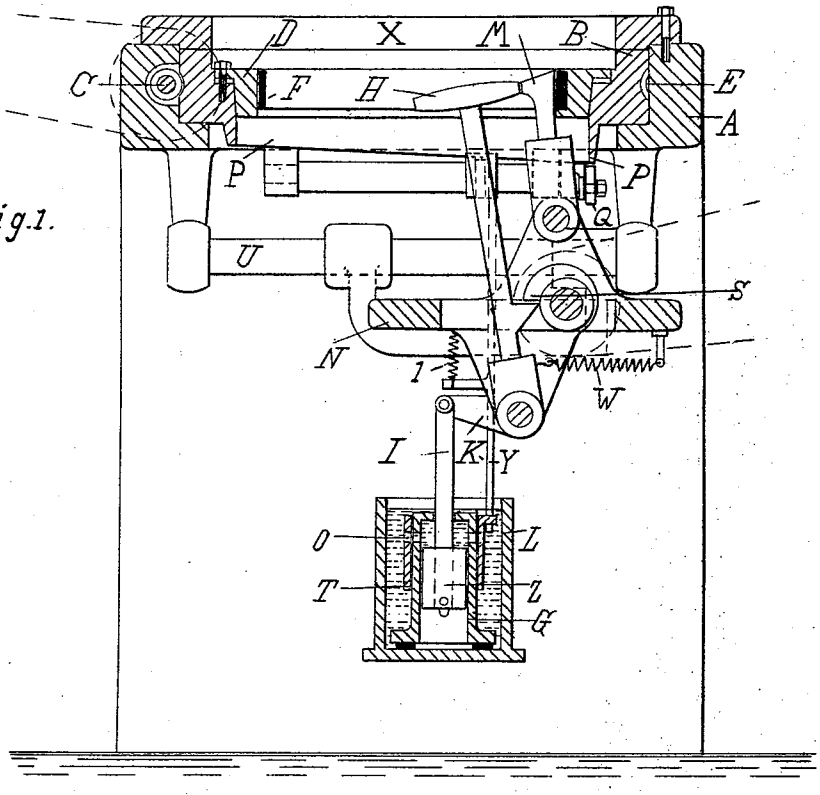
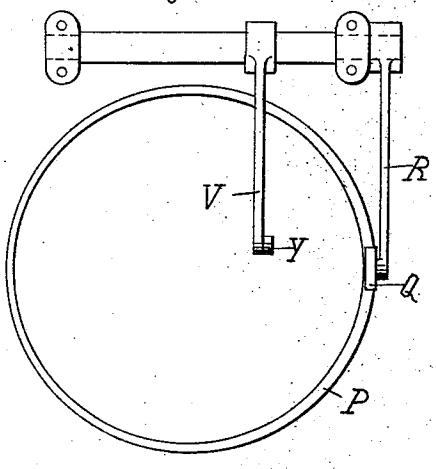


Fig. 2.



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UNITED STATES PATENT OFFICE.

DAVY ROBERTSON, OF GOTHENBURG, SWEDEN.

MACHINE FOR HAMMERING OR TAPERING PISTON-RINGS.

SPECIFICATION forming part of Letters Patent No. 690,320, dated December 31, 1901.

Application filed August 3, 1901. Serial No. 70,816. (No model.)

To all whom it may concern:

Be it known that I, DAVY ROBERTSON, a subject of the King of Sweden and Norway, residing at Gothenburg, in the Kingdom of Sweden, have invented new and useful Improvements in Machines for Hammering or Tapering Piston-Rings, of which the following is a specification.

The present invention relates to tapering-machines which serve for the hammering of piston-rings, at whose middle portions the hammering strokes or blows are of greatest strength, while toward the free ends of such rings the strength of the strokes is gradually diminished. This is accomplished by means of a hydraulic brake arrangement, which controls the stroke of the hammer, and the action of which brake is varied mechanically with reference to the position of the hammer.

Figure 1 is a sectional elevation of the tapering-machine. Fig. 2 is a plan view of a part of the same.

Within the stationary ring A an annular carrier or ring B is rotatably journaled. On its periphery the ring B is provided with gear-teeth E, so that it can be rotated by the worm-gear C. The removable ring X secures the position of the ring B. To the ring B is fastened the ring D, which serves as a support for the packing-rings to be hammered. The size of ring-support D to be fastened to the annular carrier is determined by the diameter of the packing-ring F. Its inner diameter must, however, be such that the work or blank F will fit exactly therein.

A hammer H and a chisel M are made use of in the hammering of the packing-ring or blank. The hammer is under action of spring W. The turning of cam S moves the hammer away from the chisel and extends the spring W. When released, the hammer strikes with the power of spring W against the chisel M and presses the latter against the piston-ring F, whereby such ring is condensed or packed at the portion struck. The strength of the hammer-strokes is to be varied according as the piston-ring is hammered at the middle or at its ends. For this purpose a braking arrangement is employed, the action of which is regulated mechanically.

To the side arm or crank K of the hammer is connected the piston-rod I of piston Z, the latter moving in cylinder G. This cylinder is constructed in the tank L, which contains the brake fluid. By means of openings above the piston the cylinder G communicates with the fluid-compartment of vessel L, and consequently the up-and-down movement of the piston Z, caused by the hammer movement, transports a portion of the fluid from the cylinder into the vessel, and vice versa. The quantity of fluid conveyed is to be regulated by means of slide or valve T, which surrounds the cylinder-jacket and which is provided with suitable outlets or holes O. According as these openings aline more or less with those in cylinder G a greater or less amount of fluid is conveyed from the piston Z. The position of the valve or slide T is made dependent upon the rotation of the annular carrier B, the latter being provided with a wedge-like or inclined rim P. Against this rim rests the roller Q of the feeler-lever R, which, with lever-arm V, is secured to an axle, Fig. 2. By means of the arm or rod Y the slide or valve T is connected to the lever-arm V, so that the position of the valve depends on whether the roller Q rests on a higher or lower portion of the rim P.

The reference-numeral 1 denotes a spring attached to an arm of the sliding rod or arm Y for the purpose of keeping this rod in the highest position. The slide-rod Y is connected the arm B, to which is attached also the feeler-lever R, which carries the roller Q. Consequently by means of spring 1 the roller Q is pressed against the spring P.

The tapering-machine operates in the following manner: Upon the rotation of the ring or carrier B, effected by the driven worm-gear C, the hammer H strikes continuously against the chisel M, thereby tapering the packing-ring or blank F. If now the roller Q rests upon a rising or lowering portion of the rim P, the lever-arm V, and with it the valve or slide T, is slowly depressed or raised, so that the openings of the slide pass over the holes or openings of the cylinder G. The fluid's in-and-out passage is then more or less prevented, and the stroke of the hammer H is weakened in consequence. Only when the roller Q rests upon the lowest portion of rim P are the holes in cylinder G entirely free or open, and the hammer works without

any brake action, hence, with the greatest power. The piston-ring or blank F will therefore have to be placed within the ring D, so that its middle portion lies against the chisel M when the roller Q rests upon the lowest portion of rim P.

In order to be able to change the position of the hammer H, of the chisel M, and of the driving mechanism of the hammer according to the size of the packing-ring which is to be tapered, they are located upon a plate N, which is movable or adjustable along the track U.

Instead of the fluid resistance there can of course be applied a different braking arrangement, which is to govern for the purpose of varying the action of the hammer H.

What I claim as new, and desire to secure by Letters Patent, is—

1. A machine for hammering or tapering piston-rings comprising a hammer or striker, an annular carrier provided with a wedge-like or inclined rim, a feeler made to contact with the rim, and a brake for the hammer engaged or adjusted by the feeler substantially as described.

2. A hammer or tapering-machine comprising a striker, a carrier for the work, a rim or inclined face on the carrier, a lever actuated by the rim, a fluid-brake for the hammer, and a slide-valve or closure for the outlets of the fluid-brake engaged by the rim-actuated lever substantially as described.

3. A carrier and a hammer or striker, combined with actuating mechanism substantially as described for the hammer, a brake-piston connected to the hammer, a cylinder for the piston provided with outlets for the braking or retarding fluid, a slide or valve for the outlets, and a lever actuated by the carrier for adjusting the valve substantially as described.

4. A hammer and a brake-piston therefor, combined with a cylinder having outlets, a valve for the outlets, an arm or rod for actuating the valve, an actuating-lever for the arm, and a carrier having an actuating rim or face for the lever substantially as described.

5. A machine for hammering or tapering piston-rings comprising a hammer or striker, an annular carrier provided with a ring-shaped support D and with a wedge-like or inclined rim, a feeler made to contact with the rim, and a brake for the hammer engaged or adjusted by the feeler substantially as described.

6. A hammer and a brake-piston therefor, combined with an adjustable carrier or plate N for the hammer, a track along which said plate can be adjusted, a cylinder having outlets, a valve for the outlets, an arm or rod for actuating the valve, an actuating-lever for the arm, and a carrier having an actuating rim or face for the lever substantially as described.

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

DAVY ROBERTSON.

Witnesses:
HILMER ALMIEZ,
DAVID ANDERSSON.