JOHN M. LONG.

Improvement in Punching Machines.

No. 123,407. Patented Feb. 6, 1872.

Fig. 3

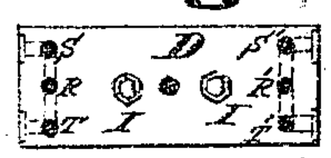


Fig. 1

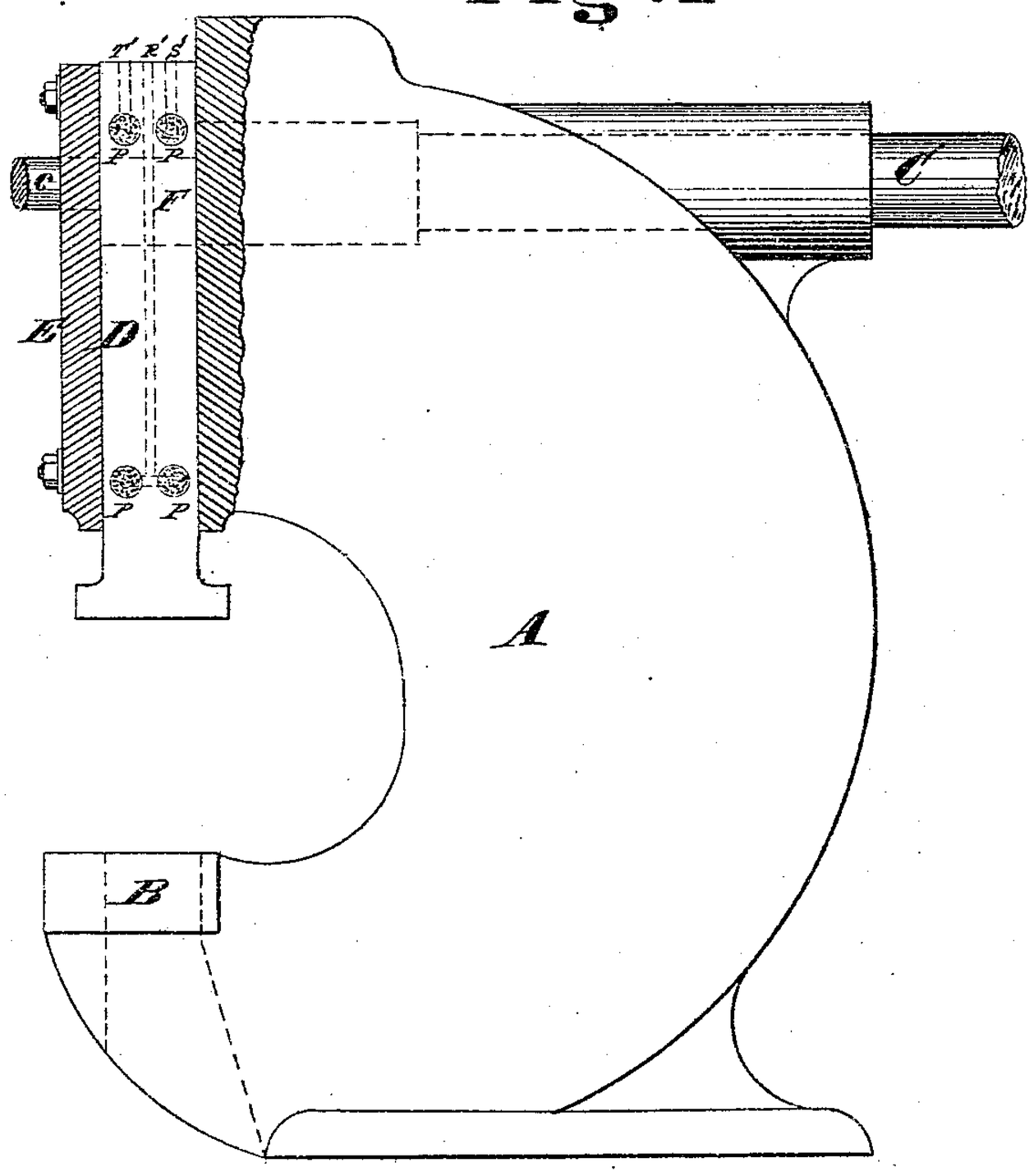


Fig. 2

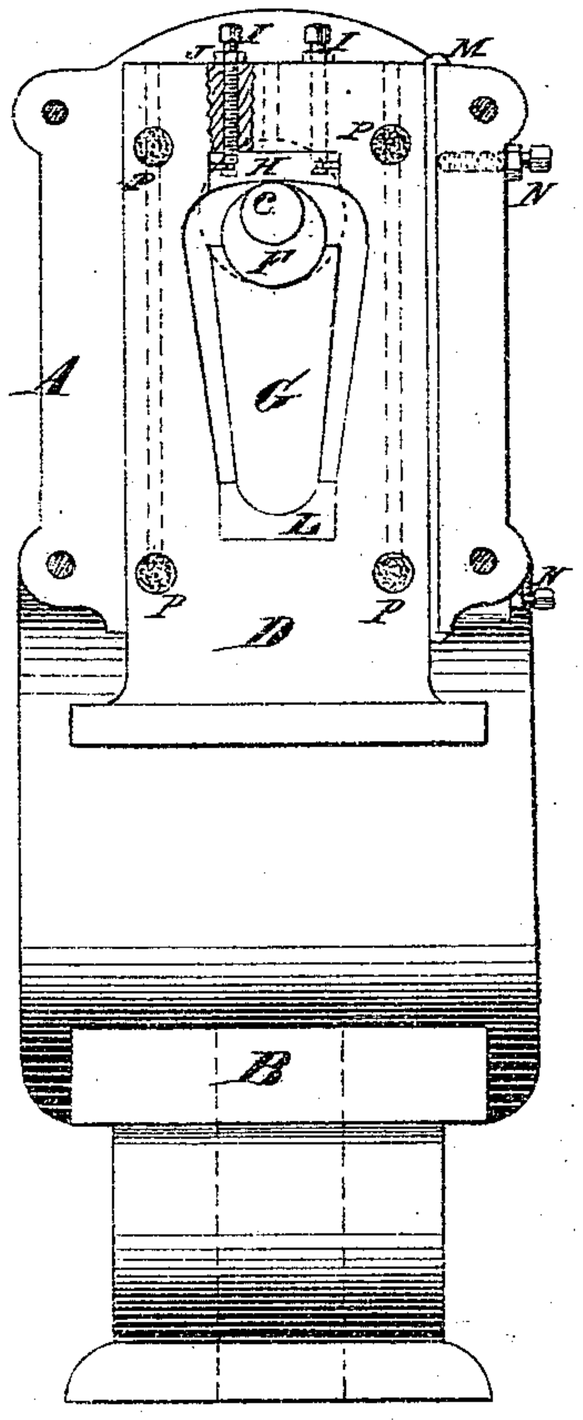
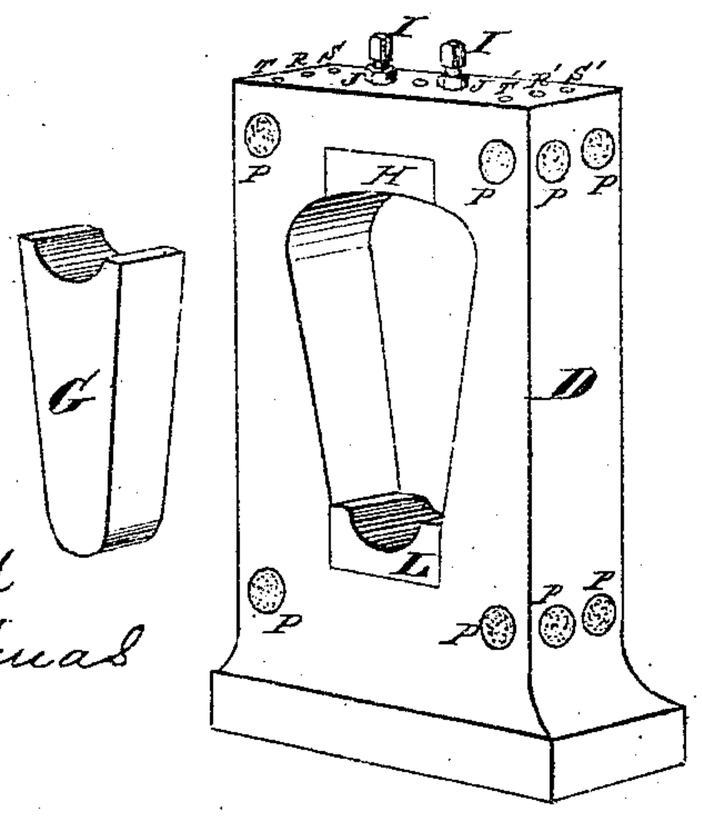
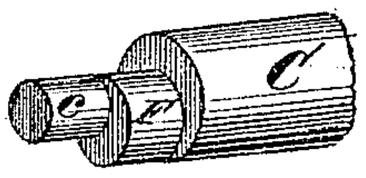


Fig. 4





Attest

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UNITED STATES PATENT OFFICE.

JOHN M. LONG, OF HAMILTON, OHIO.

IMPROVEMENT IN PUNCHING-MACHINES.

Specification forming part of Letters Patent No. 123,407, dated February 6, 1872.

I, JOHN M. LONG, of Hamilton, Butler county, State of Ohio, have invented certain new and useful Improvements in Punching and Shearing Machines, of which the following is a specification:

Nature and Objects of Invention.

This invention relates to that class of punching and shearing machines in which the slide carrying the moving punch or blade is reciprocated by means of an eccentric and an oscillating pitman arranged to operate within the slide; and it consists, first, in such a construction and arrangement of the oscillating pitman that it shall play between the eccentric and the lower bearing in the slide, and not touch the upper bearing therein which is in direct contact with the eccentric, the object being to reduce the surfaces of contact and consequently the friction between these parts to a minimum; second, in the provision, in connection with the slide and pendulum, of detachable bearings for the cam and pendulum; third, in a peculiar device for adjusting the cam-bearing; fourth, in a peculiar device for automatically oiling the reciprocating slide.

Description of Accompanying Drawing.

Figure 1 is a side elevation, partly sectionized, of a machine embodying my invention. Fig. 2 is a front elevation of the same with the front plate of the slide removed to exhibit the oiling mechanism. Fig. 3 is a plan of the upper end of the slide, exhibiting the oil-feeding apertures for lubricating the slide. Fig. 4 represents detached views of the slide and devices for operating the same.

General Description.

A is the frame of the machine; B, the lower or stationary die-plate; and C, the driving-shaft, the latter being journaled in the frame in the manner shown. The reciprocating slide D is snugly fitted to the frame A and secured in place by means of the outside plate E, between which and face of frame a gasket of wood or other suitable material may be inserted to permit of the wear of the slide being taken up by the compression of the gasket under the action of the fastening-bolts. The driving-shaft C has an outside journal, *c*, fitted to revolve in the plate E, and has also formed upon it a cam, F, which, through the medium of pendulum G, operates the slide. The cam is fitted to press closely against and move over the face of the bearing H, which is constructed with a curved surface of a character adapted to preserve a close contact with the cam. In order to permit of adjustment and renewal of this bearing it is made to move vertically in the slide D, and is adjusted by means of screws I, which are tapped into the slide, as shown in Fig. 2, their lower ends being grooved and fitted into the bearing H, where they are held secure against withdrawal (at the same time being permitted to revolve) by means of gibs, which fit into the grooves of the screws. Lock-nuts J secure the screws in any position to which they may have been adjusted. The pendulum or vibrating pitman G is interposed between the cam F and the lower bearing L of the slide, the lower end of the pendulum being circularly formed to fit the half-circle bearing-surface in bearing L. The bearing L is detachable to permit of renewal. When the parts are in place within the slide the distance between the faces of bearings H and L is snugly filled up by the pendulum G and cam F, and any slack that may occur in consequence of wear can be readily taken up by means of the adjustability of block H and screws I. The wear of slide D is taken up in front by the plate E, before explained, and on the side by gib M and set-screws N. For the purpose of providing for the proper lubrication of the slide I counterbore its contact surfaces, front and rear sides, sufficiently to insert disks P of leather or other material calculated to permit the passage of oil, but slowly. I conduct the oil to the back of these disks by passages or oil-holes R R′, S S′, and T T′, the holes R R′ serving to supply the oil to all of the lower disks, and the holes S S′ T T′ to the upper ones.

When the holes are filled with oil and the slide in motion, the parts in contact are automatically lubricated, the motion of the slide serving to assist the passage of oil through the disks P, which are sufficiently dense of themselves to prevent almost entirely the flow of oil when the slide is at rest.

I do not desire to confine myself to the lo-

cation of the disks P in the slide, as the same result substantially can be produced by locating them in the frame A in such a manner as to be in contact with the slide, the apertures for the flow of oil being similarly arranged to those described.

Claims.

1. The combination, within the slide D having bearings H and L, of the cam F and pitman G, when said cam turns between the upper end of the pitman and the upper bearing H of the slide, substantially as and for the purpose specified.

2. In combination with the slide D, cam F, and pendulum G, the detachable bearings H L, as and for the purpose set forth.

3. In combination with the elements of the preceding clause, (second,) the adjusting-screws I I, as and for the purpose described.

4. In the described combination with the frame and slide of the machine the oiling device P R R′ S S′ T T′, operating substantially as and for the purpose set forth.

In testimony of which invention I hereunto set my hand.

JOHN M. LONG.

Witnesses:

ISRAEL WILLIAMS,

P. W. STEPHERT.