

No. 725,130.

PATENTED APR. 14, 1903.

C. H. PECK.
MOTOR.

APPLICATION FILED SEPT. 27, 1902.

NO MODEL.

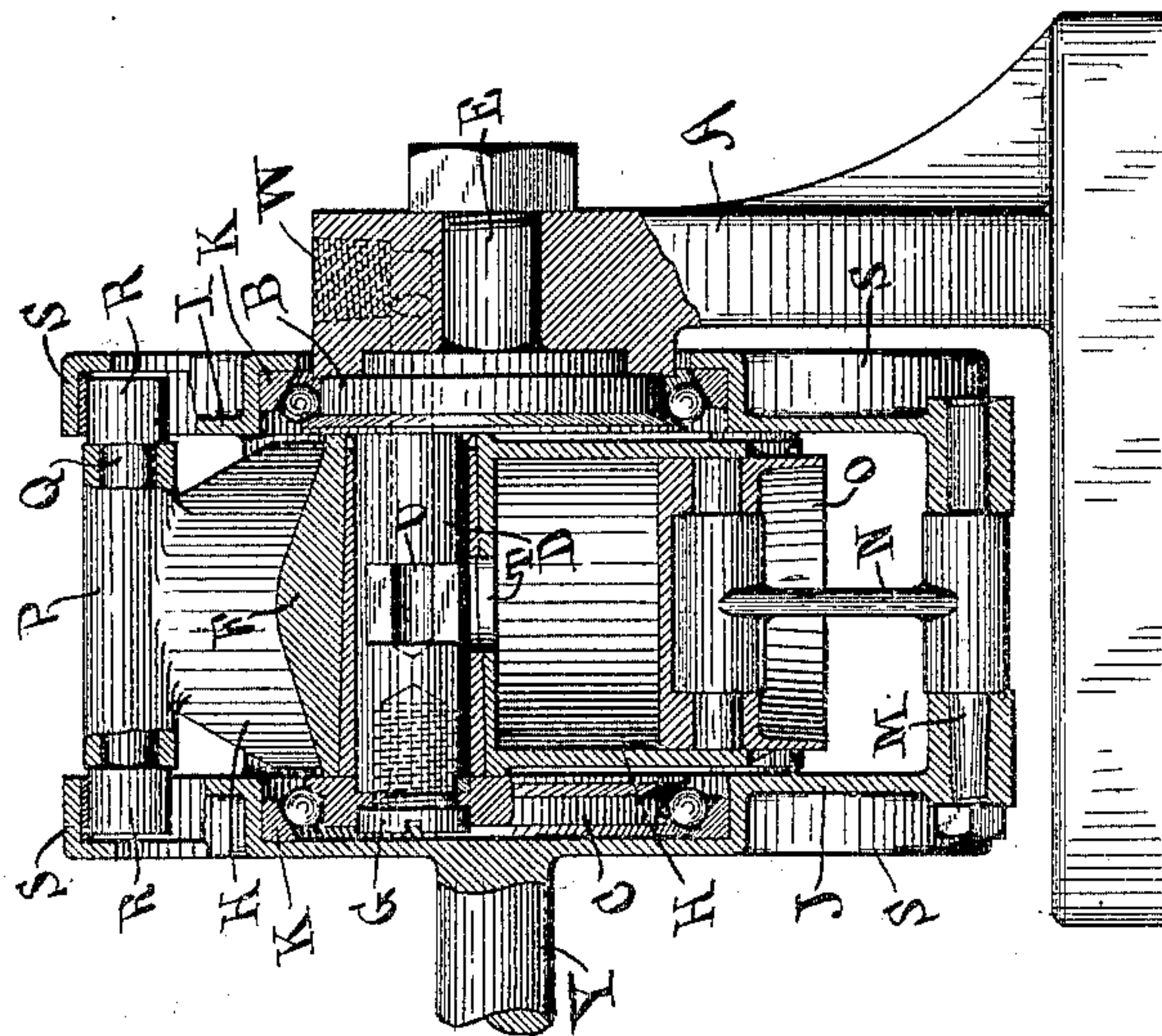


Fig. 1.

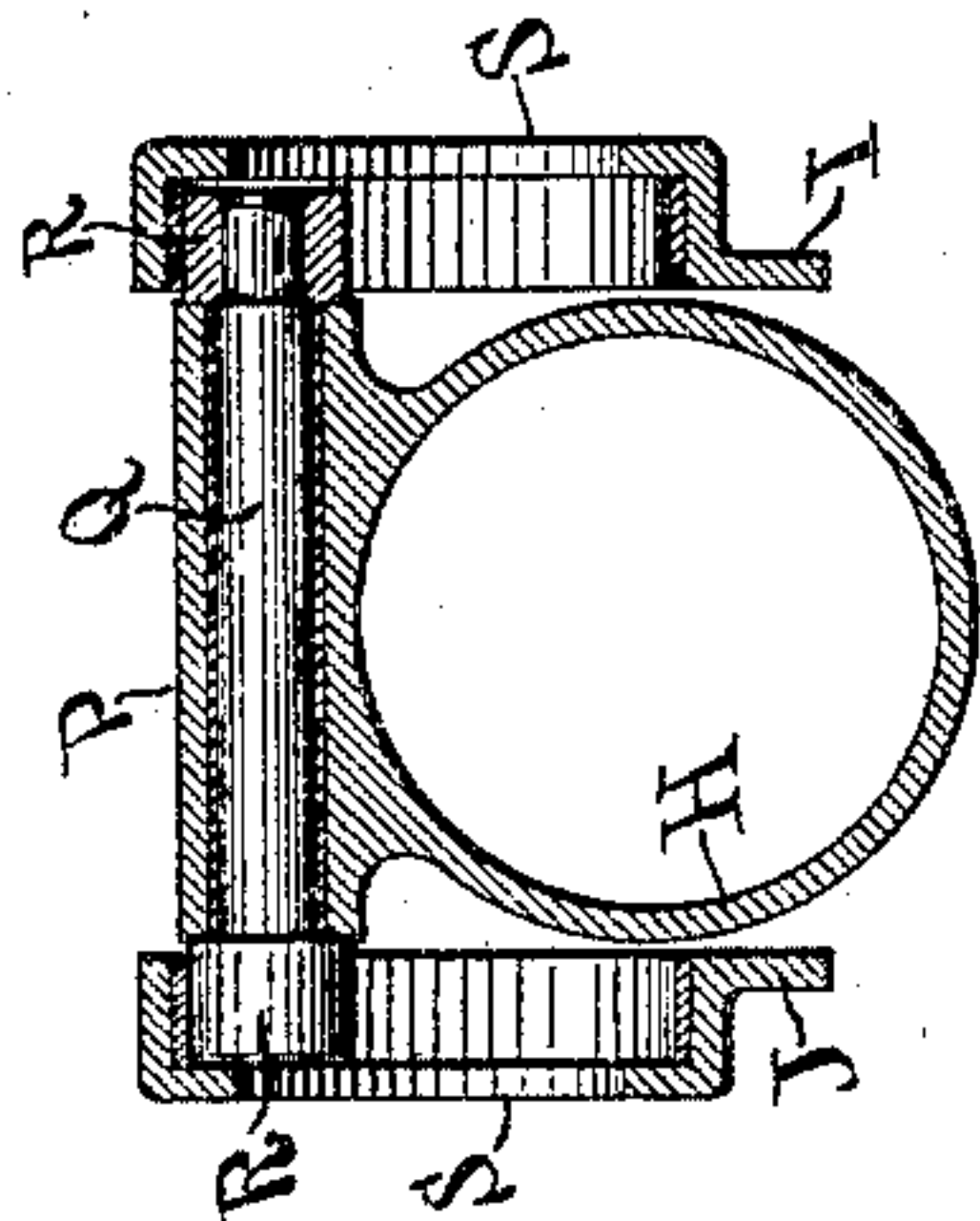


Fig. 3.

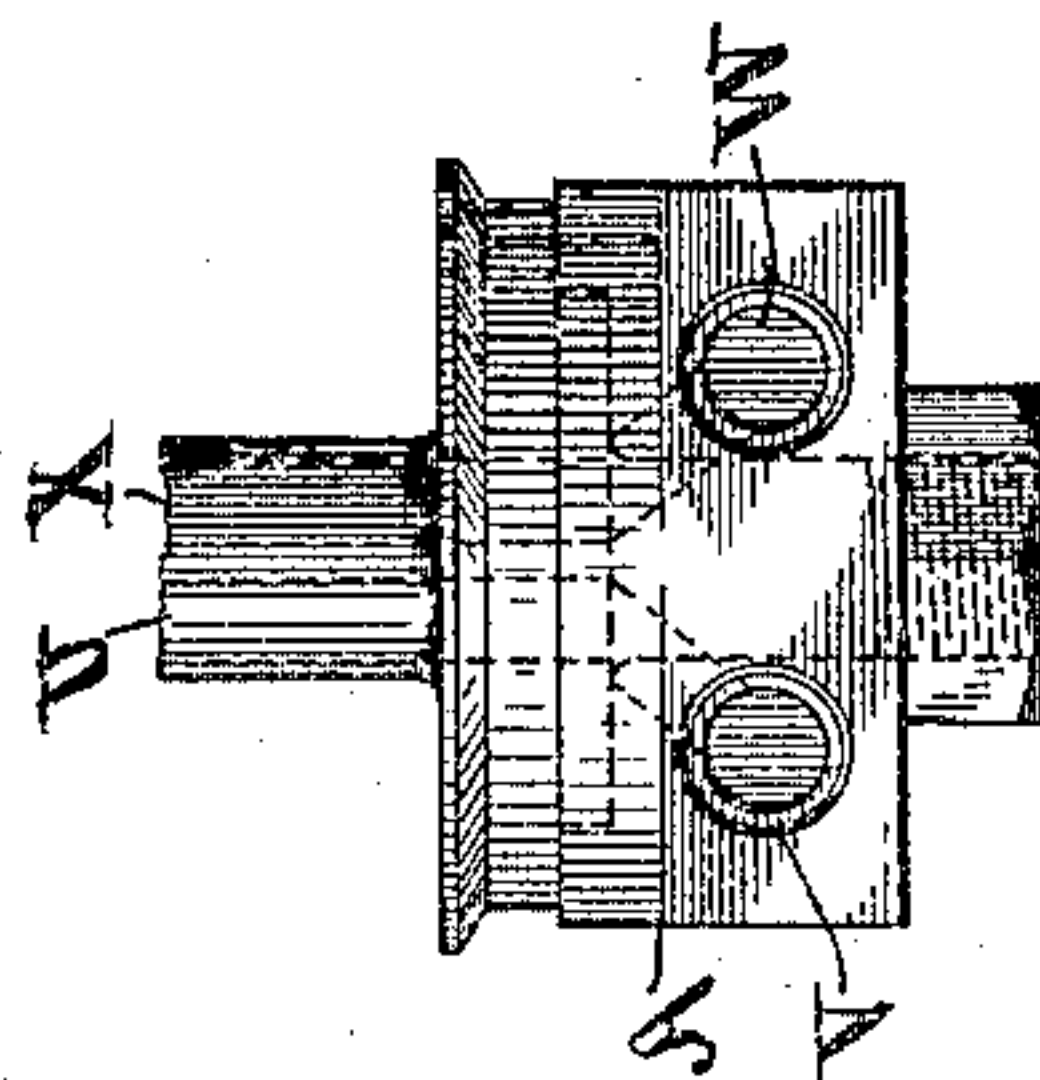


Fig. 4.

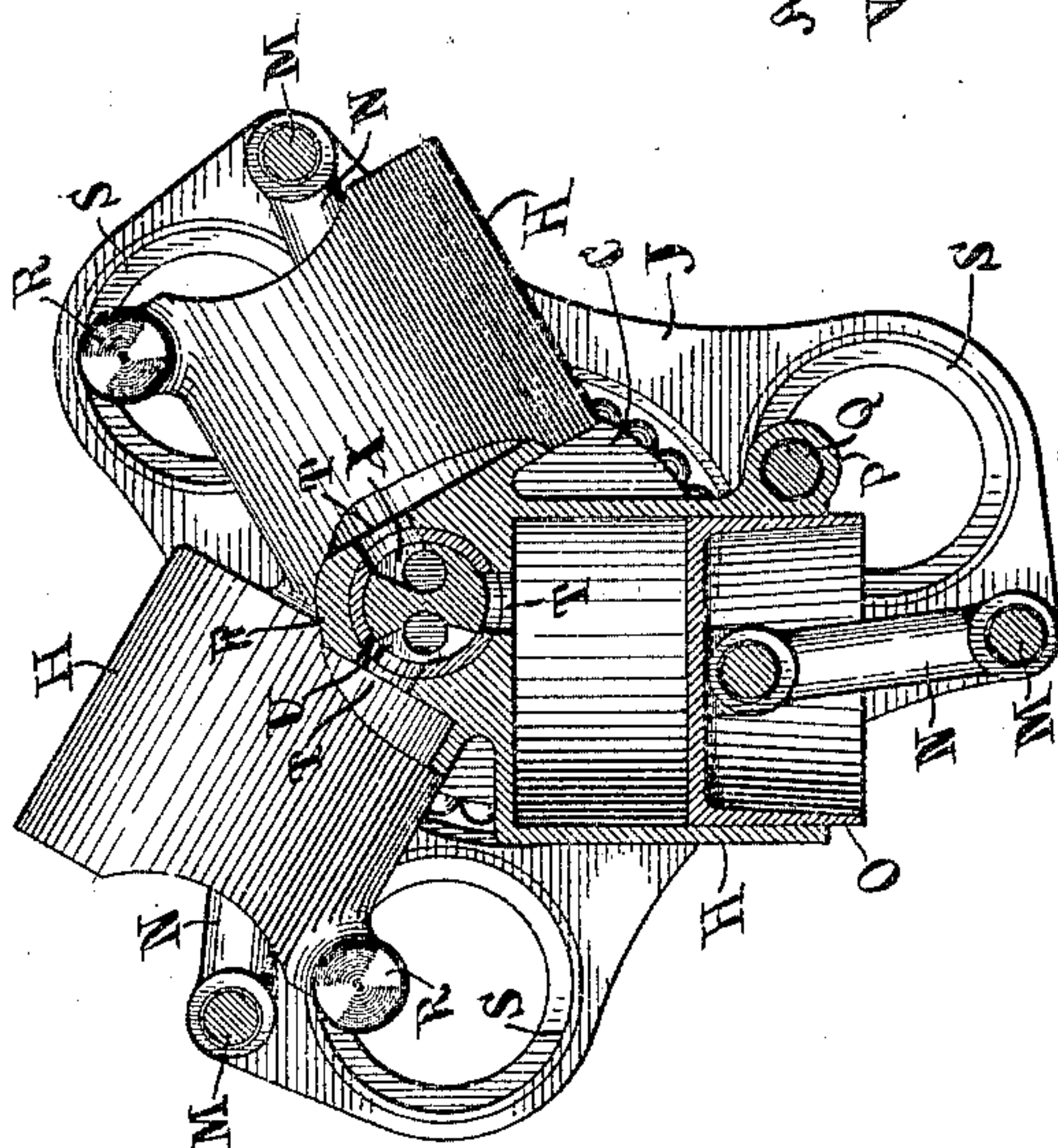


Fig. 2.

WITNESSES:

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CAID H. PECK, OF ELMIRA, NEW YORK, ASSIGNOR TO IMPERIAL PNEUMATIC TOOL COMPANY, OF ATHENS, PENNSYLVANIA.

MOTOR.

SPECIFICATION forming part of Letters Patent No. 725,130, dated April 14, 1903.

Application filed September 27, 1902. Serial No. 125,046. (No model.)

To all whom it may concern:

Be it known that I, CAID H. PECK, a citizen of the United States, residing at Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Motors, of which the following is a specification.

This invention relates to improvements in motors intended more especially to be driven by compressed air, although steam or other fluids under pressure may be utilized equally well as the driving power, and the motor to which my improvements particularly relate belongs to that class in which a rotary frame journaled upon fixed bearings is propelled by a plurality of cylinders rotating upon a fixed shaft set eccentric to the axis of said bearings, the cylinders and their pistons being so connected to the frame that they will coact therewith to produce rotation when motive fluid under pressure is admitted to and exhausted from the cylinders by way of suitable passages and ports in the eccentric shaft.

The object of this invention is to improve the motor of this type, which has already been described by me in my United States Letters Patent No. 641,034, dated January 9, 1900, by providing certain changes in the details of construction whereby the motor will be rendered more durable and be made to run more accurately and freely and with increased power and speed.

I attain my object by means of the construction and arrangement of parts as illustrated in the accompanying drawings, in which—

Figure 1 represents a vertical longitudinal section of my improved motor attached to an upright support or standard; Fig. 2, a transverse section of the same; Fig. 3, a detail showing one of the cylinders and its guides, and Fig. 4 a detail plan view of the support and a portion of the engine-bearings.

Like letters of reference designate like parts in the several views.

A is a standard, to which a bearing-disk B is secured by a stud-bolt E. Integrally formed with the disk B and stud E is a shaft D, set eccentrically on said disk, and a second disk C is secured to the end of said shaft

D, concentric with the disk B, said disk C being secured to the eccentric shaft by means of a screw G after the hub F, carrying a plurality of cylinders H, has been slipped into place upon said shaft. On the disks B and C are formed cones for ball-bearings, upon which bearings rotate triangular frame-plates I and J, these plates being formed with central cup-shaped portions or hubs in which are ball-races K K. The three cylinders H H H radiate from the hub F, which rotates upon the shaft D, a conical bushing being inserted between the hub and shaft in order that wear between the parts may be taken up when necessary.

The plates I and J are set apart by spacing-bolts M, to which are coupled the connecting-rods N, attached to the pistons O. In order that rotary motion may be transmitted from the cylinders to the frame-plates, each of these plates is provided with three annular guideways S in proximity to the bolts M, and each cylinder is provided with a boss P, in which rotates a small shaft or arbor Q, the ends of which project beyond the cylinders and are provided with rollers R. These rollers engage the guideways S and act with the piston connections to impart the required relative motions between the cylinders and the frame-plates to give the whole a rotary motion, the frame-plates I and J revolving about the central disks and the cylinders revolving about the eccentric shaft. The guideways S are also formed up from the plates I and J in a cup shape, the inturned flanges forming housings for the outer ends of the rollers R. By reason of this manner of coupling the parts together the motor is caused to run steadily and freely without vibration or binding. The frame-plates I and J are placed the required distance apart by shoulders on the bolts M, so that when fastened together the ball-races K will bear against the balls on the disks B and C just sufficiently to prevent end play of the said plates upon the said disks. As so adjusted the motor will run for an indefinite period of time without further attention to these ball-bearings, and when wear does occur in the bearings it may be readily taken up by inserting paper washers or liners in the hubs of plates I and J behind

the ball-races, so as to set the races in toward the cones the required amount. By fastening the rollers R to the ends of the arbors Q, running in the bosses P, there is provided
 5 for the rollers a long journal, the wear upon which will be at a minimum. As these rollers revolve at a high speed, this is much to be desired, since where the rollers are jour-
 10 naled to turn upon small pins the wear soon produces a rattling and vibration at this point, and the smooth running of the engine is destroyed.

Ports T in the heads of the cylinders are placed in alternating communication as the
 15 cylinders revolve with corresponding ports leading to the admission and exhaust passages X and U in shaft D, said passages communicating with corresponding openings or connections W and V in standard A, into
 20 which connections are attached the pipes or other conduits for the supply and exhaust of the motive fluid. Thus if the opening W be connected with the source of supply the mo-
 25 tive fluid passing through passage X will enter the cylinders and produce a rotation from left to right in Fig. 2, exhaust taking place through passage U and opening or outlet V. The motive fluid may be passed through the engine in the opposite direction—that is, from
 30 V to W; but in that case the motor will run with less power in the reversed direction, because of the tangential position of the cylinders, as shown in Fig. 2. In order that the motor may run in either direction with equal
 35 power, the cylinders must be located radially on the hub F, and this may be done without affecting the details of construction involved in the improvements described herein.

Projecting from the frame-plate J is a driv-
 40 ing-shaft Y, which may be connected in any desirable manner to the tool, apparatus, or machinery to be driven by the motor.

The motor as thus described may be made of any desirable size and power and may be
 45 applied to driving different kinds of tools or machines by attaching the motor to a suitable tool casing or support by means of the stud-bolt E, the standard A being shown in the drawings merely as one of many means
 50 of supporting the engine.

Having thus described my improvements

and set out those features which I deem to be new, what I claim as my invention, and desire to secure by Letters Patent, is—

1. In a motor, the combination of a rotary
 55 frame, a plurality of cylinders rotating between the frame-plates thereof upon a shaft eccentric to the axis of rotation of said frame, rollers projecting at each side from the outer
 60 ends of said cylinders, annular guideways to engage said rollers on each frame-plate provided with inturned flanges at the outward
 65 sides, pivot-bolts connecting said plates, connecting-rods coupling said bolts to pistons within the cylinders, and admission and ex-

2. In a motor, the combination of a rotary frame comprising two frame-plates set apart by a plurality of pivot-bolts, a plurality of
 70 cylinders rotating within said frame upon a shaft eccentric to the axis of rotation of said frame, connecting-rods coupling said pivot-bolts to pistons within the cylinders, trans-
 75 verse bosses on the outer ends of each cylinder, arbors turning in said bosses, rollers on the exposed ends of said arbors, annular
 80 guideways on each frame-plate to engage said rollers, and admission and exhaust ports to and from the cylinders.

3. In a motor, the combination of a pair of stationary cone-shaped disks, a rotary frame comprising two frame-plates having cup-
 85 shaped hubs containing ball-races for ball-bearings upon said disks, said plates being set apart by a plurality of pivot-bolts, a plurality of cylinders rotating within said frame upon a shaft set eccentrically between said disks,
 90 connecting-rods coupling said pivot-bolts to pistons within the cylinders, rollers projecting laterally from the outer ends of the cylinders, cup-shaped guideways on each frame-plate to engage said rollers, and admission and exhaust ports and passages to and from
 95 the cylinders.

In testimony whereof I have affixed my signature in presence of two witnesses.

CAID H. PECK.

Witnesses:

A. S. DIVEN,
 M. E. VERBECK.