

W. D. McGEE.
MECHANISM FOR CONVERTING MOTION.
APPLICATION FILED APR. 27, 1910.

974,412.

Patented Nov. 1, 1910.

2 SHEETS-SHEET 1.

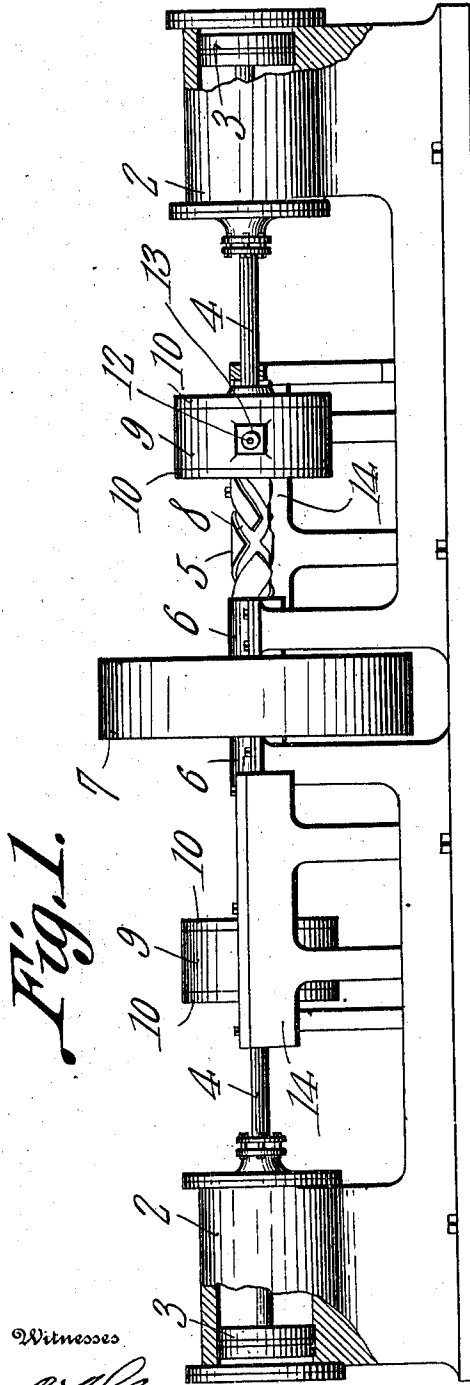


Fig. 1.

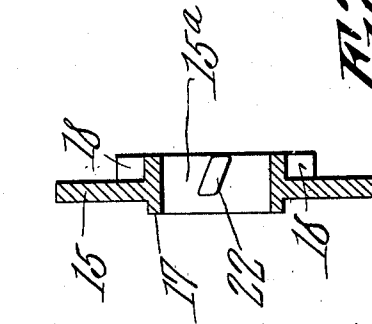


Fig. 3.

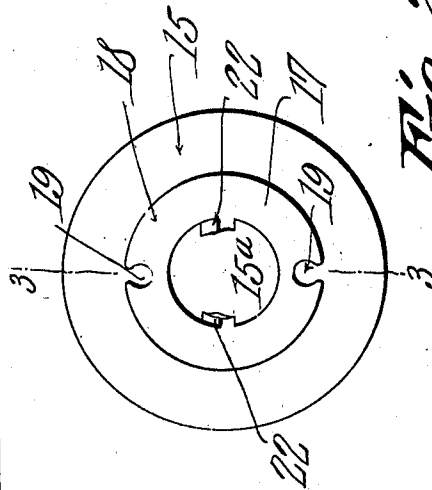


Fig. 2.

Witnesses

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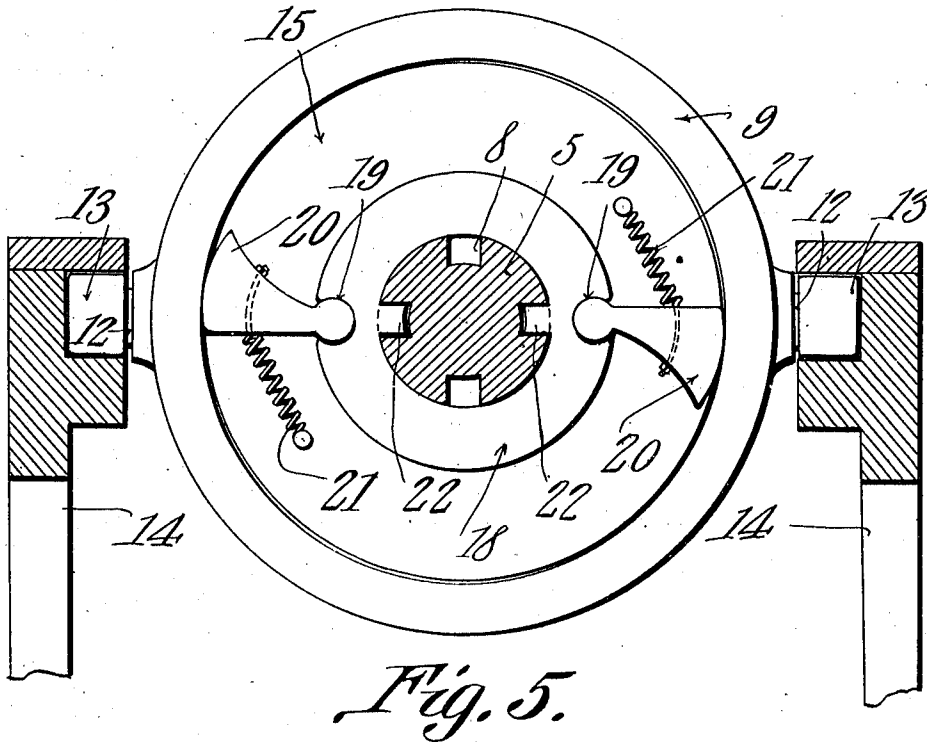
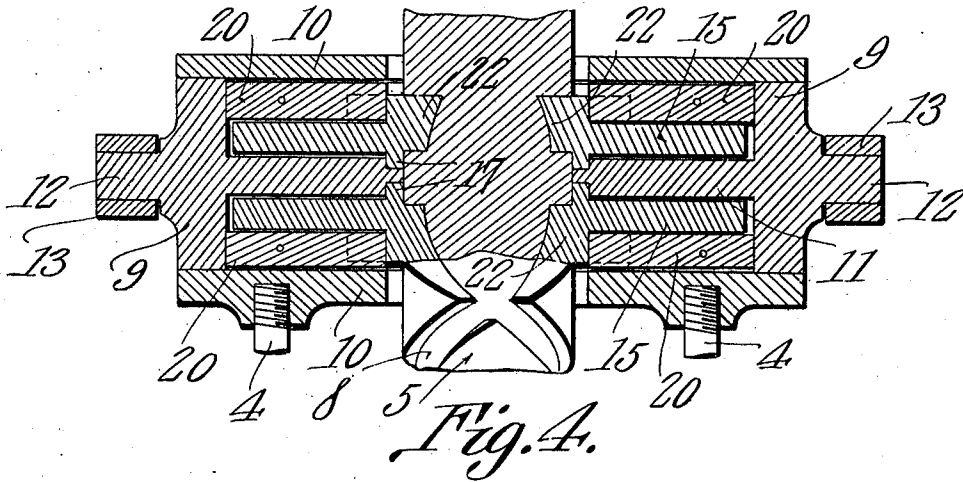
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UNITED STATES PATENT OFFICE.

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MECHANISM FOR CONVERTING MOTION.

974,412.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM D. McGEE, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Mechanism for Converting Motion, of which the following is a specification.

This invention has for its object to provide an improved mechanism for converting the reciprocating motion of an engine or other prime mover into rotary motion, and to this end it consists in a novel combination and arrangement of parts to be hereinafter described and claimed.

The invention is illustrated in the accompanying drawings, in which,

Figure 1 is an elevation of the mechanism, partly broken away. Fig. 2 is an elevation of one of the parts of the reciprocating member to be hereinafter described. Fig. 3 is a vertical section on the line 3—3 of Fig. 2. Fig. 4 is a horizontal section of the reciprocating member, and Fig. 5 is an elevation of said member with one of its end walls removed.

Referring to the drawings, 1 denotes a bed on which are mounted two opposite and axially aligned working cylinders 2 of a reciprocating steam or other engine. The valve mechanism and other parts of the engine have not been shown as they form no part of the present invention. To the pistons 3 working in the cylinders, are connected rods 4, each piston being provided with a pair of such rods, and each pair being connected to a reciprocating element to be presently described, said element being designed to impart a rotary movement to a shaft 5 mounted between the cylinders in axial alinement therewith. The shaft is mounted in suitable bearings 6 on the bed, and carries a pulley 7 for transmitting its motion. The shaft is formed with a double spiral groove 8 on opposite sides of the pulley. One of the reciprocating elements operates on one side of the pulley, and the other one of said elements on the other side of said pulley. Said elements are identical in structure, in view of which a description of one will suffice for both. The casing of the reciprocating elements is in the shape of a drum comprising a rim 9, and heads 10, the latter being fastened to the rim in any suitable manner. The rods 4 are connected to one of the heads, and in the latter are

aligned central openings through which the shaft 5 loosely passes. In the drum is a partition 11 which has a central opening to let the shaft pass through. The drum carries axles 12 located on diametrically opposite sides of the rim, on the outside thereof, on which axles are mounted rollers 13 which travel in guides 14 on the bed 1.

Mounted in the drum, on opposite sides of the partition 11, are disks 15 having central openings 15^a through which the shaft 5 passes. The openings, on the sides of the disks, contiguous to the partition, are surrounded by outstanding annular flanges 17 seating in rabbets made in the shaft opening of the partition. The disks are free to rotate in the drum in one direction under certain conditions to be presently described, they being held in position for such movement by the flanges. The disks are spaced from the inner surface of the drum heads, and on the side opposite said heads are annular enlargements 18 having in their peripheries diametrically opposite sockets 19 in which are pivotally mounted dogs 20, projecting radially in the direction of the rim 9 of the drum, and adapted to engage the inner surface thereof. The sockets and the portions of the dogs which seat therein, are circular to provide a pivotal support for the latter. The ends of the dogs which engage the rim 9 are convex, and said dogs are designed to prevent rotary movement of the disks 15 in the drum in one direction, they yielding to permit a rotary movement in the opposite direction. Any tendency of the disks to rotate in the first mentioned direction at once jams the dogs tightly against the inner surface of the rim 9, and securely locks the disks to said rim. Coiled springs 21 connected at one of their ends to the disks, and at their other ends to the dogs, hold the latter normally in contact with the rim.

In the shaft opening 15^a of the disks 15 are diametrically opposite teeth 22 which extend into the grooves 8 of the shaft 5, the teeth of one disk extending into one of said grooves, and the teeth of the other disk into the other groove.

In operation, the drum is reciprocated on the shaft 5 by the piston 3 through the connection of the latter with the drum. When the drum is traveling in one direction, one of the disks 15 is locked to the rim 9, and its

teeth, by their engagement with one of the spiral grooves, impart a rotary movement to the shaft. At the same time, the other disk 15 is rotating freely in the drum, its dogs 20 yielding to permit this rotary movement, and said movement being due to the engagement of its teeth with the other shaft groove. When the drum travels in the opposite direction, the last mentioned disk is locked to the drum, and operates through its teeth to rotate the shaft, the first mentioned disk now being unlocked from the drum, and rotating therein. Through this operation, a continuous rotary movement is imparted to the shaft, the disks being locked instantly to the drum when the direction of its travel is changed.

The parts constituting the mechanism are strong and durable, and arranged in compact form, so that there is no lost motion whatever. End thrust on the shaft 5 is entirely eliminated by the movement of the pistons toward and from each other.

What is claimed is:

25 1. The combination with a shaft having a double oppositely wound spiral groove, of a reciprocating casing through which the shaft passes, said casing having a partition provided with a shaft opening, the walls of the shaft opening of the partition being rabbeted, a pair of toothed disks rotatably mounted in the casing on opposite sides of the partition, said disks having openings through which the shaft passes, and annular flanges surrounding the openings, said 35 flanges extending into the aforesaid rabbets,

the teeth of one disk extending into one of the shaft grooves, and the teeth of the other disk extending into the other shaft groove, and means for alternately locking the disks to the casing, said means yielding to permit rotary movement of the disks in one direction. 40

2. The combination with a shaft having a double oppositely wound spiral groove, of a reciprocating drum through which the shaft passes, said drum having a partition provided with an opening through which the shaft passes, disks mounted on opposite sides of the partition, said disks having shaft openings, and teeth in said openings entering the grooves of the shaft, the teeth of one disk entering one of said grooves, and the teeth of the other disk entering the other groove, said disks being spaced from the heads of the drum, and having a raised portion opposite said heads, the periphery of said raised portion having sockets, and dogs pivotally mounted in said socket, and extending into engagement with the inner surface of the rim of the drum for locking the disks to said rim, said dogs yielding to permit rotary movement of the disks in one direction. 50 55 60

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses. 65

WILLIAM D. McGEE.

Witnesses:

J. V. PEARCY,
L. LACHMAN.