

No. 684,819.

Patented Oct. 22, 1901.

J. C. HENDERSON.
OPERATING MECHANISM FOR VALVES.

(Application filed June 13, 1899.)

(No Model.)

Fig. 1.

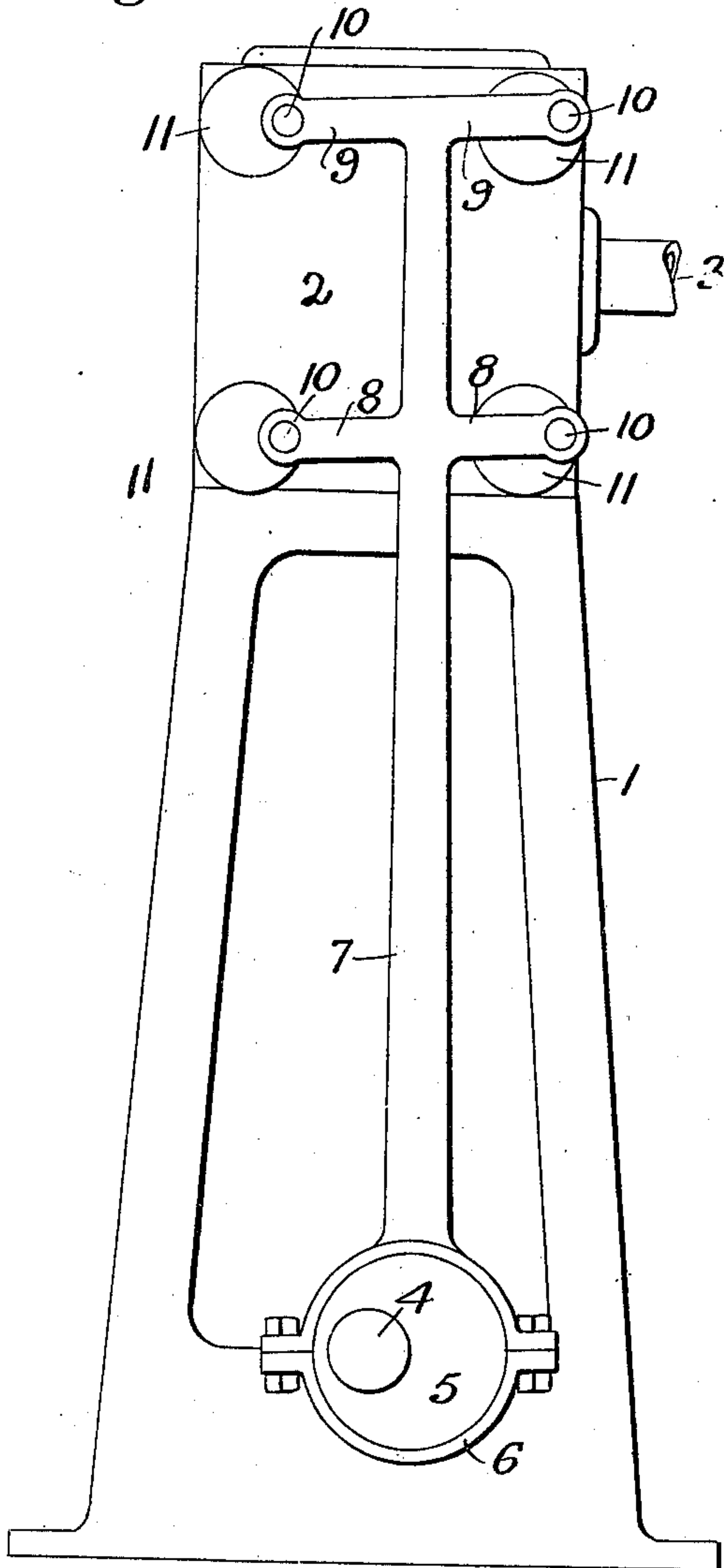
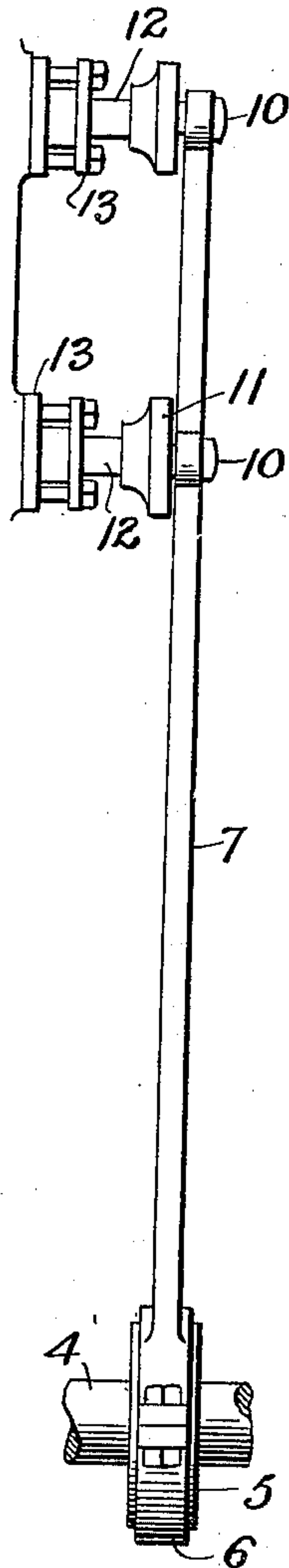


Fig. 2.



WITNESSES:

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OPERATING MECHANISM FOR VALVES.

SPECIFICATION forming part of Letters Patent No. 684,819, dated October 22, 1901.

Application filed June 13, 1899. Serial No. 720,385. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. HENDERSON, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Operating Mechanism for Steam or other Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to the conversion of eccentric motion into rotary power, and particularly to mechanism for the operation of valves, shafts, rollers, or axles requiring rotary motion from an eccentric or eccentrics, and the means or mechanism employed may be termed "eccentric-gearing."

Some of the objects of the invention are to provide direct and positively operating means adapted to be connected with and operated by an eccentric or eccentrics on the main or drive shaft of an engine or motor to actuate the valves of an engine or other apparatus, and the operation of such valves is preferably effected by the employment of crank-disks carrying crank-pins actuated by the eccentric-rod, the valves operated being preferably of the rotary type.

Another object of the invention is to simplify some of the mechanism usually employed for operating valves, shafts, rollers, and axles requiring rotary motion and to provide simple, cheap, and positively-operating means for actuating these parts preferably from the main or drive shaft of the engine or other apparatus employed.

With these and other objects in view the invention consists, essentially, in the construction, combination, and arrangement of parts, substantially as hereinafter more fully described in the following specification and illustrated in the accompanying drawings, forming a part of this application, in which—

Figure 1 illustrates a cylinder and main or drive shaft of any suitable apparatus to which the invention is shown as applied; and Fig. 2 is a side elevation of a portion of the construction shown in Fig. 1, illustrating the eccentric-rod, crank-disks, valve rods or stems, and a portion of a main or drive shaft of any suitable apparatus.

Similar characters of reference designate corresponding parts throughout both views.

In illustrating the invention the same has been shown as applied to steam-valves, preferably of the rotary type, although the invention is not limited to use in connection with steam-valves, as it is obvious that the same may be employed in numerous other connections or applications.

Referring to the drawings, the reference character 1 designates a base or support of any suitable character for a cylinder 2, of any preferred construction, provided with suitable steam inlet and exhaust connections, whereof 3 represents the latter; but it will be understood that the construction herein shown is illustrated only as an exemplification of the invention in order that the function and operation of the same may be more readily appreciated.

Suitably mounted or journaled in the framework supporting the cylinder is the main or drive shaft 4, actuating in any suitable manner the apparatus to be driven, and this shaft is preferably provided with an eccentric 5, connected therewith in the usual manner, and upon the eccentric 5 is secured an eccentric-strap 6, of any preferred form or construction carrying or connected to an eccentric-rod 7. The other end of the eccentric-rod is preferably T-shaped or provided with lateral extensions or arms 8 and 9, substantially as shown, or any number of arms may be employed, or the eccentric-rod may be bifurcated or otherwise constructed for connection with the crank-disks, as will be readily understood.

The extremities of the arms 8 and 9 are preferably provided with an eye or opening, which is desirably bushed to receive crank-pins 10, so that the latter are permitted to revolve freely in said bushings during the operation of the parts. The other ends of the crank-pins 10 are preferably connected eccentrically with crank-disks 11, of any preferred form or construction, so as to provide for rigid connection between said pins and disks, and valve stems or shafts 12 are also connected with said crank-disks 11, as shown in Fig. 2 of the drawings.

The stems or shafts 12 of the valves (not shown) are preferably held in position by

stuffing boxes or glands 13, of any preferred form or construction, or a bearing may be employed for said stems or shafts, if desired.

The valves here contemplated but not
5 shown are of the rotary type and are constructed to be continuously rotated if the radius or half-strokes of the crank-pins 10 are exactly the same length as the eccentricity of the eccentric 5, or the distance between
10 the center of the shaft 4 and the center of the eccentric.

The operation of the invention will be readily understood from the foregoing description when taken in connection with the accompanying drawings and the following explanation thereof. The actuation of the main
15 or drive shaft 4 will cause the rotation of the eccentric 5, which in turn will reciprocate the eccentric-rod 7, thus rotating the crank-disks
20 11 and imparting rotary motion to the valves through the mediation of the valve-stems 12, as will be readily understood.

I do not desire to confine myself to the specific construction, combination, and arrangement
25 of parts herein shown and described

and reserve the right to make all such changes in and modifications of the same as come within the spirit and scope of the invention.

Having fully described my invention, what
I claim as new, and desire to secure by Letters
Patent, is—

1. The drive-shaft, the eccentric-rod, and arms integral therewith, the crank-disks and valves operated thereby.

2. The eccentric-rod provided with rigid arms, crank-disks connected thereto, the valve-stems and valves carried thereby.

3. The drive-shaft, the strap and eccentric-rod, rigid arms, crank-disks eccentrically connected to said arms and valves operated
40 thereby.

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

JOHN C. HENDERSON.

Witnesses:

FRANCIS W. BREUIL,
JOHN J. ROSE.