

U. TREMBLAY.
SHIFTING ECCENTRIC.
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935,708.

Patented Oct. 5, 1909.
2 SHEETS—SHEET 1.

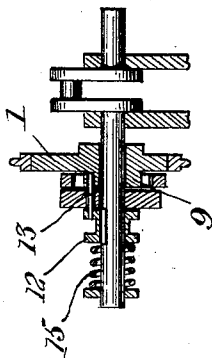


FIG. 3.

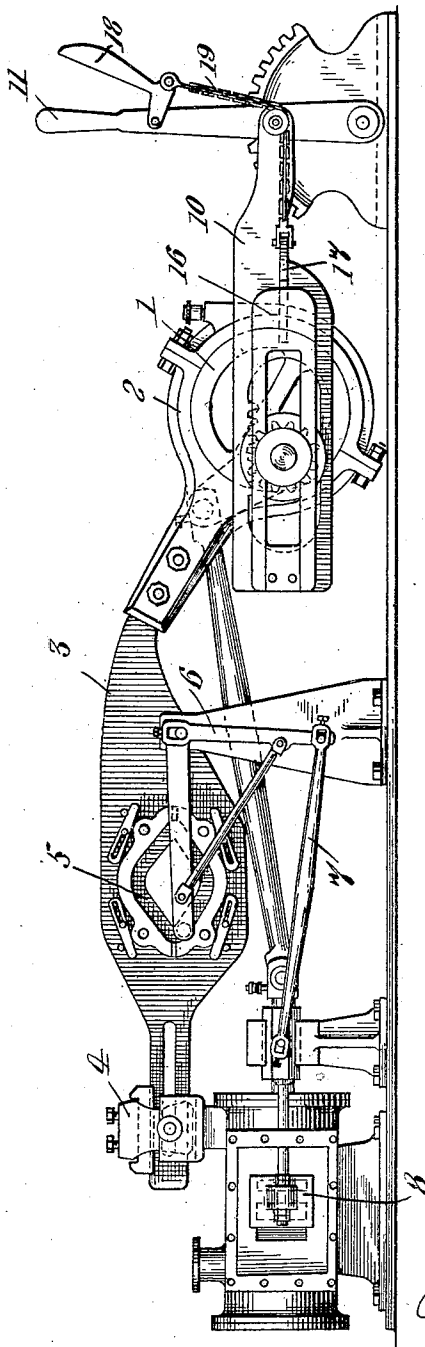


FIG. 1

Witnesses:

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SHIFTING ECCENTRICS.

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To all whom it may concern:

Be it known that I, ULDERIC TREMBLAY, a subject of the King of Great Britain, residing at St. Fulgence, county of Chicoutimi, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Shifting Eccentrics; and I do hereby declare that the following is 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.

The invention to be hereinafter described relates to eccentric shifters, and more particularly to mechanism for effecting the shift to vary the time of inlet and exhaust to and from the working chambers of the engine.

In order to enable one skilled in the art to which the invention relates to the more readily understand the construction, operation and use of the same, reference should be had to the accompanying drawings forming part of the present application.

In the drawings: Figure 1 is a side elevation of the invention; Fig. 2 is a plan view of the same; Fig. 3 is a detail sectional view on line 3—3 of Fig. 2; and, Fig. 4 is a detail side elevation of the rack for adjusting the eccentric.

As shown in the present instance, a simple form of reciprocating engine is used in order to give a clear and concise disclosure of the device.

On the usual form of drive shaft is adjustably mounted an eccentric 1, about which is secured the strap 2, to which is suitably coupled one end of a sliding beam 3, the opposite end of the beam being slidably supported in a yoke 4, mounted on or adjacent the engine cylinder. To the beam 3 is secured a cam-way 5, in which rides a stud or roller carried by the end of one arm of a bell crank 6, which is pivotally mounted on a suitable support or post adjacent the path of movement of the beam 3. The other arm of the bell crank is connected to the pitman rod 7, which in turn is connected to the rod of the slide valve 8, which governs the supply and exhaust of the engine. Thus, as the pitman 3 is reciprocated by the eccentric 1, the bell crank 6 is rocked and the valve 8 is slid back and forth to position for admitting or exhausting a power agent.

In the case taken for illustration of the

invention, one complete revolution of the drive shaft results from one complete reciprocation of the piston of the engine. Consequently, when the piston travels the full length of the cylinder, the drive shaft will be given one-half a revolution. Also, when the eccentric is coupled to the drive shaft, one complete revolution of the drive shaft results in one complete reciprocation of the beam 3 and one-half revolution of the shaft in a single longitudinal movement of the beam. With the form of cam-way shown, one complete reciprocation of the beam 3 results in one complete reciprocation of the slide valve 8, and a single longitudinal movement results in a single full length longitudinal movement of the valve. Thus, assuming the eccentric 2 to be locked to the drive shaft, each complete reciprocation of the engine piston results in a complete reciprocation of the slide valve, and, of course, proportional movements of the piston will give corresponding movements of the slide valve. Therefore, if it is desired to reverse the engine, or to admit a power agent to the cylinder while the piston is in a different position, it is simply necessary to change the position of the eccentric 1 about the drive shaft. In order to effect this change, the eccentric is provided with a hub 9, having gear teeth which mesh with a mutilated rack 10 slidably mounted about the drive shaft and adapted to be reciprocated by means of the lever 11. In the instance given, the teeth of the rack are arranged in two groups with a space between, each group of teeth being adapted to impart one-quarter of a revolution to the hub 9 and its eccentric 1 relatively to the drive shaft. Consequently, assuming that the eccentric is so positioned as to admit the motive agent at the end of each longitudinal movement of the piston, in order to change the admission so that the inlet port will be open to deliver a motive agent when the piston is about midway of the cylinder, it is simply necessary to move the rack so that the teeth of the hub 9 will be engaged and the hub rotated by all of the teeth of one group on the rack. Likewise, if it is desired to reverse the engine from the position first assumed, the movement of the rack should be continued so that all of the teeth of both groups will successively engage and rotate the teeth of the

hub 9, thus changing the admission of the motive agent from one end of one longitudinal movement of the piston to the opposite end, or, from one end of the cylinder to the opposite end.

During the shifting of the eccentric about the drive shaft, it is necessary, of course, to free the eccentric from the shaft, and, conversely, in order to operate the valve, it is essential that the eccentric be coupled to the shaft. For this purpose, a collar 12 is slidably keyed to the drive shaft and provided with a pin 13, which is adapted to enter a socket in the face of the hub 9 to couple the hub and collar together for driving. A washer is interposed between the collar and hub to act as a brace for the pin. A spiral spring 15 acts to keep the collar and hub normally coupled. In order to slide the collar along the drive shaft to withdraw the pin 13, a yoke 16 is used. This yoke is pivotally mounted on the rack 10 and embraces the collar 12, so that horizontal movement of the yoke on its pivot will force the collar outward against the tension of the spring 15. This outward movement of the yoke is effected by means of the cam 17 pivoted to the rack 10 adjacent and underlying the free end of the yoke 16. An elbow lever 18, secured to the upper end of the lever 11, and connected to the cam 17 by a chain 19, or the like, is used for swinging the yoke. Thus, the collar 12 and hub 9 may be uncoupled and the eccentric shifted almost simultaneously. Of course, re clutching is effected by simply releasing the elbow lever 18 to allow the sliding of the collar 12 by the spring 15.

It is thought that the operation of the reg-

ulator will be clear from the above description.

It is clear that many changes in the construction of the several parts, many rearrangements of these parts, many other combinations of them, and many substitutions for them may be resorted to, without in any way departing from the field and scope of the present invention, and it is meant to include all such within this application, wherein only a preferred form has been shown and described.

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

1. A shifter of the character described, comprising a rotary shaft, an adjustable eccentric thereon, means for connecting and disconnecting said eccentric and said shaft, a gear on said eccentric, a mutilated rack adapted to engage and rotate said gear, and means for moving said rack.

2. A shifter of the character described, comprising a rotary shaft, an adjustable eccentric thereon, a gear on said eccentric, a mutilated rack adapted to engage and rotate said gear, means for moving said rack, a collar slidably keyed to said shaft, means for connecting said collar to the aforesaid eccentric, a spring adapted to normally maintain said collar and said eccentric in locked relation, and means for disconnecting said collar and eccentric.

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

ULDERIC TREMBLAY.

Witnesses:

LUC MALTAIS,

WALLEY TREMBLAY.