

No. 671,834.

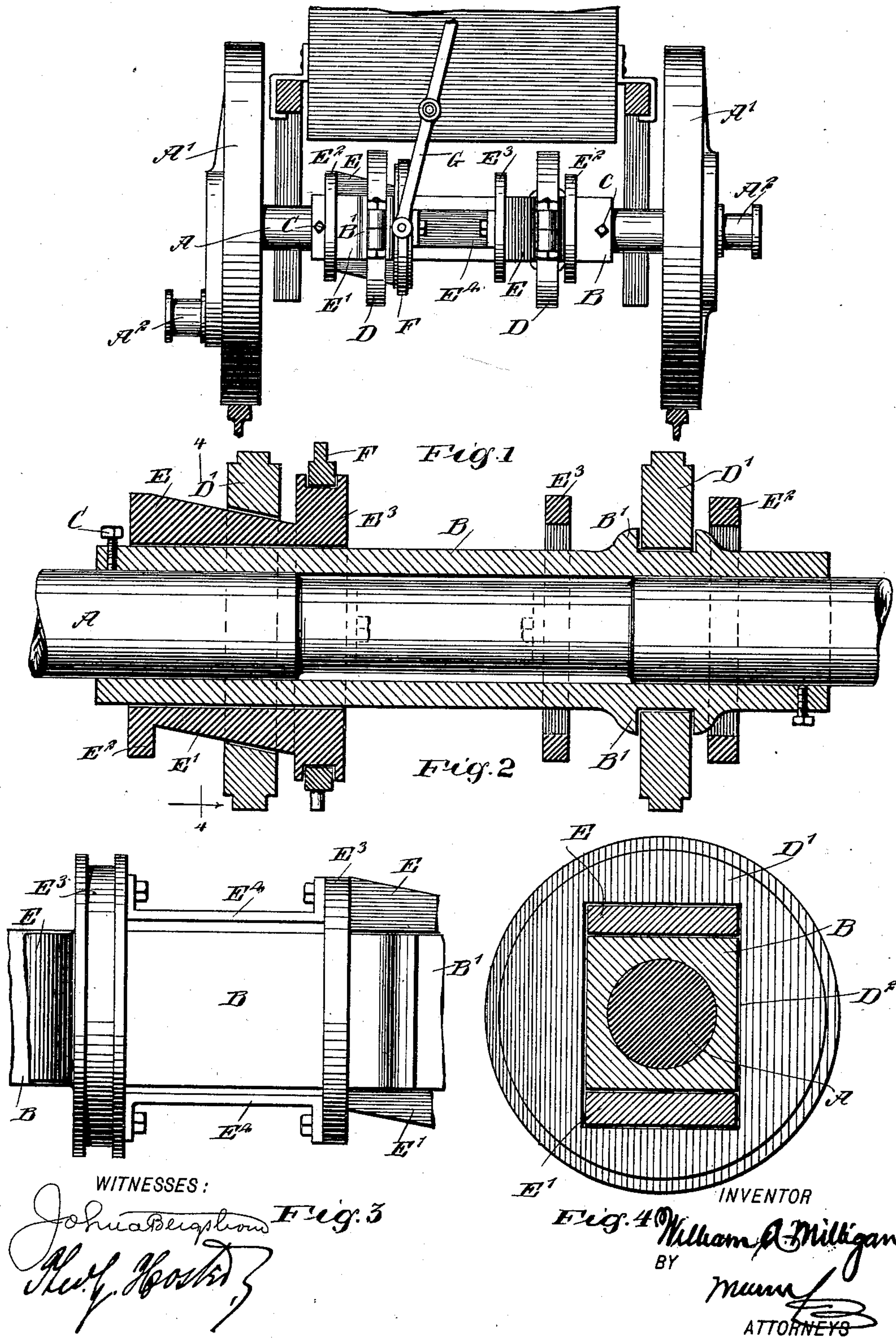
Patented Apr. 9, 1901.

W. A. MILLIGAN.

REVERSING AND CUT-OFF MECHANISM FOR ENGINES.

(Application filed Feb. 14, 1900.)

(No Model.)



UNITED STATES PATENT OFFICE.

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REVERSING AND CUT-OFF MECHANISM FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 671,834, dated April 9, 1901.

Application filed February 14, 1900. Serial No. 5,208. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ASBURY MILLIGAN, a citizen of the United States, and a resident of Strasburg, in the county of Shelby and State of Illinois, have invented a new and Improved Reversing and Cut-Off Mechanism for Engines, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved reversing and cut-off mechanism designed for use on the various types of engines, notably locomotive and traction engines, said mechanism being simple and durable in construction, completely under the control of the engineer, and arranged to be easily manipulated to readily shift the engine-valves for cut-off or reversing purposes.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claim.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is an end elevation of the improvement as applied to a locomotive-engine. Fig. 2 is an enlarged sectional end view of the same. Fig. 3 is a plan view of part of the same, and Fig. 4 is a sectional side elevation of the same on the line 4 4 in Fig. 2.

The improved reversing and cut-off mechanism illustrated in the drawings is applied to the axle or driving-shaft A, carrying at its ends the drivers A', having wrist-pins A² set to quarter positions and connected in the usual manner with the pistons reciprocating in the engine-cylinders. On the axle A between the drivers A' is arranged a sleeve B, preferably made square in cross-section and secured by set-screws C or other suitable means to the axle, so as to rotate with the same.

On the sleeve B are formed two sets of guideways B', set at quarter positions, the same as the wrist-pins A², and each of the said guideways B' is engaged by the eccentric-disk D' of an eccentric D, connected in the usual manner with the link mechanism of

the valves of the engine. Each eccentric-disk D' is mounted to slide across the sleeve for reversing and cut-off purposes, and for this purpose each disk is formed with an elongated opening D² for engagement with the sleeve B, as plainly shown in Fig. 4, and also for engagement by two wedges E E', mounted to slide lengthwise of the sleeve on opposite sides thereof, the wedges extending in opposite directions, so that when the wedges are simultaneously moved outward or inward a shifting of the disk D' takes place on the guideways B' in a direction across the sleeve, so that a corresponding shifting of the link mechanism and the valve mechanism takes place for reversing or cut-off purposes. The ends of the two wedges E E' are attached at opposite sides of the eccentric to disks E³ E³, extending loosely around the sleeve B, and the two innermost disks E³ for the two sets of wedges are rigidly connected with each other by bars E⁴, so that movement given to one set of wedges causes a corresponding movement of the other set of wedges, so that the two disks D' for the two eccentrics are simultaneously shifted to uniformly set the valves in the two locomotive-engines correspondingly. One of the disks E³ is provided on its peripheral surface with a shifting-ring F, engaged by a shifting-lever G under the control of the engineer, so that when the latter imparts a swinging motion to said lever G then the ring F imparts a corresponding sliding motion lengthwise of the sleeve to the sets of wedges, so as to shift the eccentrics accordingly for the purpose mentioned.

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

A reversing and cut-off mechanism for engines, comprising a sleeve adjustably secured to the axle or driving-shaft to turn therewith, the said sleeve being rectangular in cross-section, two sets of guideways formed on the exterior of said sleeve, eccentrics having their disks formed with elongated slots and mounted to slide in said guideways across the sleeve, sets of wedges engaging said elongated openings in said eccentric-disks, the wedges of each set extending in opposite directions rela-

tively to each other and mounted to slide lengthwise on the sleeve, disks to which the ends of the wedges of each set are connected, the said disks being mounted loosely on the
5 sleeve at opposite sides of each eccentric, bars rigidly connecting the two innermost disks for the two sets of wedges with each other, one of the said innermost disks being provided on its peripheral surface with a shift-

ing-ring, and a shifting-lever engaging said shifting-ring, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM ASBURY MILLIGAN.

Witnesses:

BENJAMINE W. KERR,
EDWARD R. ALLEN.