W. YATES.

STEAM-ENGINE GOVERNOR.

No. 183,442. Patented Oct. 17, 1876.

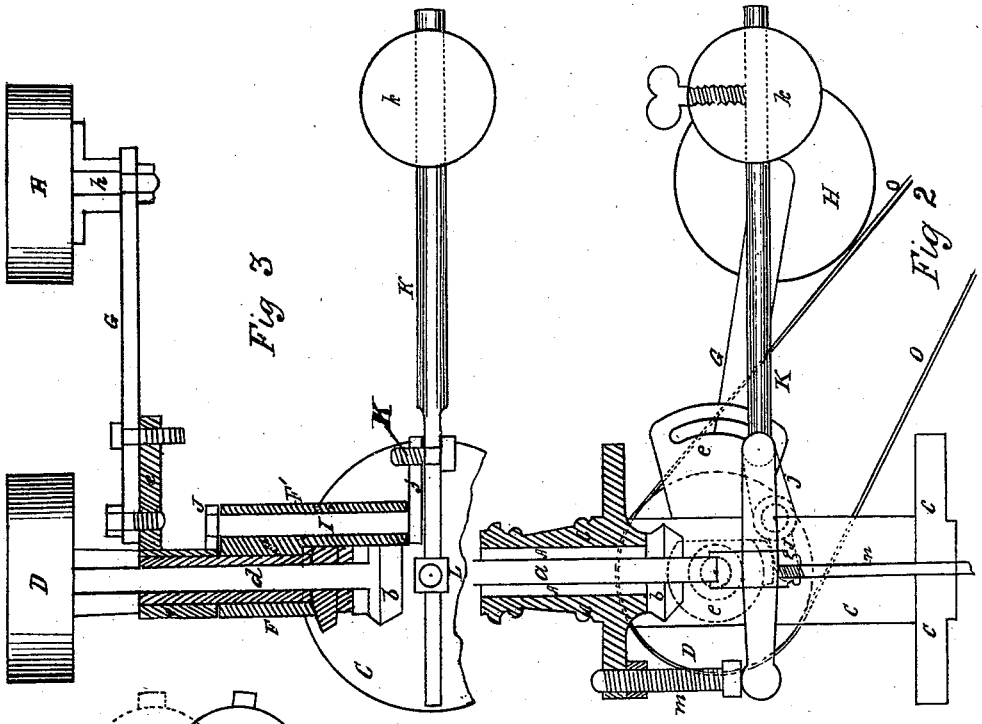

Fig 3

Fig 2

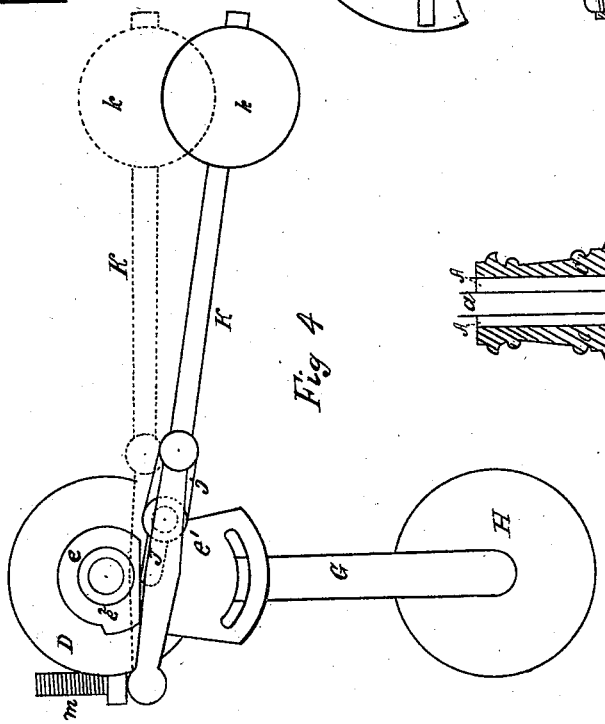

Fig 4

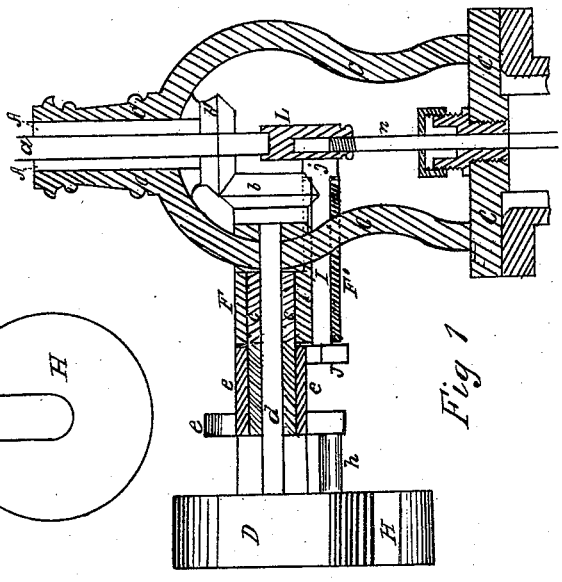

Fig 1

Witnesses
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WILLIAM YATES, OF LONDON, ONTARIO, CANADA.

IMPROVEMENT IN STEAM-ENGINE GOVERNORS.

Specification forming part of Letters Patent No. **183,442**, dated October 17, 1876; application filed April 8, 1876.

To all whom it may concern:

Be it known that I, WILLIAM YATES, of London, in the county of Middlesex, Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Safety Attachments for Steam-Engine Governors, of which the following is a specification:

The object of my invention is to provide means for immediately shutting off the steam in the valve-chamber of the governor in the event of the governor-belt breaking or slipping off, or the connections being in any manner severed.

The present invention is analogous in some of its parts to that described in Letters Patent No. 174,888, granted to me on the 14th day of March, 1876.

By my present improvements I dispense with the joints and the fulcrum-stud of the speeder-arm, but retain the sleeve and the idler connected therewith by an adjustable arm.

My improvements consist in the provision of a journal with a double-crank shaft, for actuating or controlling the speeder-arm, and in a novel mode of hanging the speeder-arm in connection with an adjustable bearing, by which its action may be regulated, as required.

In the accompanying drawing, Figure 1 is a vertical transverse section. Fig. 2 is a side elevation. Fig. 3 is a plan, partly in section. Fig. 4 is an elevation, illustrating the effect on the speeder-arm of the dropping of the idler-pulley, caused by the breaking of the belt.

A is the shank of the head of the governor, which carries the customary arms and balls. (Not here shown.) *a* is the rod, which is acted on by the governor-arms in customary manner. *b b'* are the miter-gears. C is the arch. D is the driving-pulley, and *d* its shaft, on which the miter-pinion *b* is keyed. *e* is a sleeve working over the stationary journal-box F, in which the shaft *d* runs, said box being rigidly attached to the arch C. The sleeve *e* is constructed with a sector-plate, e^1, projecting rigidly from it in a direction horizontal, or nearly so, when the parts are in their normal positions, and with a downwardly-projecting stud, e^2. G is an arm pivoted to the sector-plate e^1, and fixed adjustably thereon by means of a bolt, *g*, passing through a slot in the plate E', curved concentrically with the pivot of the arm G. H is an idler-pulley, connected to the extremity of the arm G by gudgeons *h*, and resting on the governor-belt O when the engine is running, so as to serve as a belt-tightener. F is a journal-box, rigidly connected to the box F. I is a crank-shaft running in the journal-box F, and carrying at its respective ends cranks J *j*, projecting horizontally in opposite directions. The crank *j* rests underneath the lug e^2 of the sleeve *e*, while the idler-pulley is supported by the belt, thus supporting the speeder-arm K, which is connected to the crank-arm J by a bolt, K'. *k* is the weight of the speeder-arm, for which weight a spring may be substituted. L is the usual block connecting the valve-rod *n* and the governor-rod *a*. The speeder-arm K passes through a slot in said block L. *m* is an adjusting-screw forming the bearing or abutment of the inner end of the speeder-arm K.

Operation: Fig. 2 shows the idler-pulley in position on the belt O, holding the speeder-arm and valve-spindle in position to be acted on by the governor-balls through the sleeve *e* and cranks J *j* of the shaft I. In the event of the idler H falling, as shown in Fig. 4, by the breaking or unshipping of the belt O, the projection e^2 of the sleeve *e* will be moved around off the arm *j*, allowing the latter to rise to the extent of the length of said projection. This slight rotary movement of the shaft I is produced by the weight or spring-pressure acting on the speeder-arm K, permitting the latter to descend to a sufficient extent to close the valve by the depression of the block L. The length of the projection on the sleeve *e* is determined by the travel of the valve from a fully-open port to a closed port. It may also be determined by the length of the cranks J and *j*. The journal-box F may be bored out to fit upon the journal-arm of the arch C, or it may be bolted onto the side of the arch C. The adjusting-screw *m* is screwed into a lug cast on the arch C, or may be screwed into the bottom flange of the arch C. The object of adjusting the screw is to allow the end of the speeder-arm to go any required distance for the proper closing of the valve. The speeder-arm K can be acted on

by a spring instead of a weight, as most convenient.

The attachment is either applicable to horizontal or vertical engines. In the case of a vertical engine a supplemental arm or spring is necessary, owing to the vertical position of the arm G. This attachment can be applied to any governor having either an upward or downward cut-off motion, by simply altering the position of the projection on the sleeve *e*.

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

1. In a governor, the speeder-arm K and the shaft I, provided with cranks J *j*, in combination with the valve-rod *n*, the cam e^2 upon the sleeve *e*, and the idler-pulley arm G, all operating together, as and for the purpose set forth.

2. In combination with the valve-rod *n* of a governor, and the speeder-arm K, the supporting and adjusting screw *m*, and the crank-shaft I, controlled by the governor-belt *o*, as and for the purpose set forth.

WILLIAM YATES.

Witnesses:

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