(No Model.)

C. A. CHAINEUX.

GOVERNOR FOR STEAM ENGINES AND OTHER MOTORS.

No. 307,268. Patented Oct. 28, 1884.

Fig. 1.

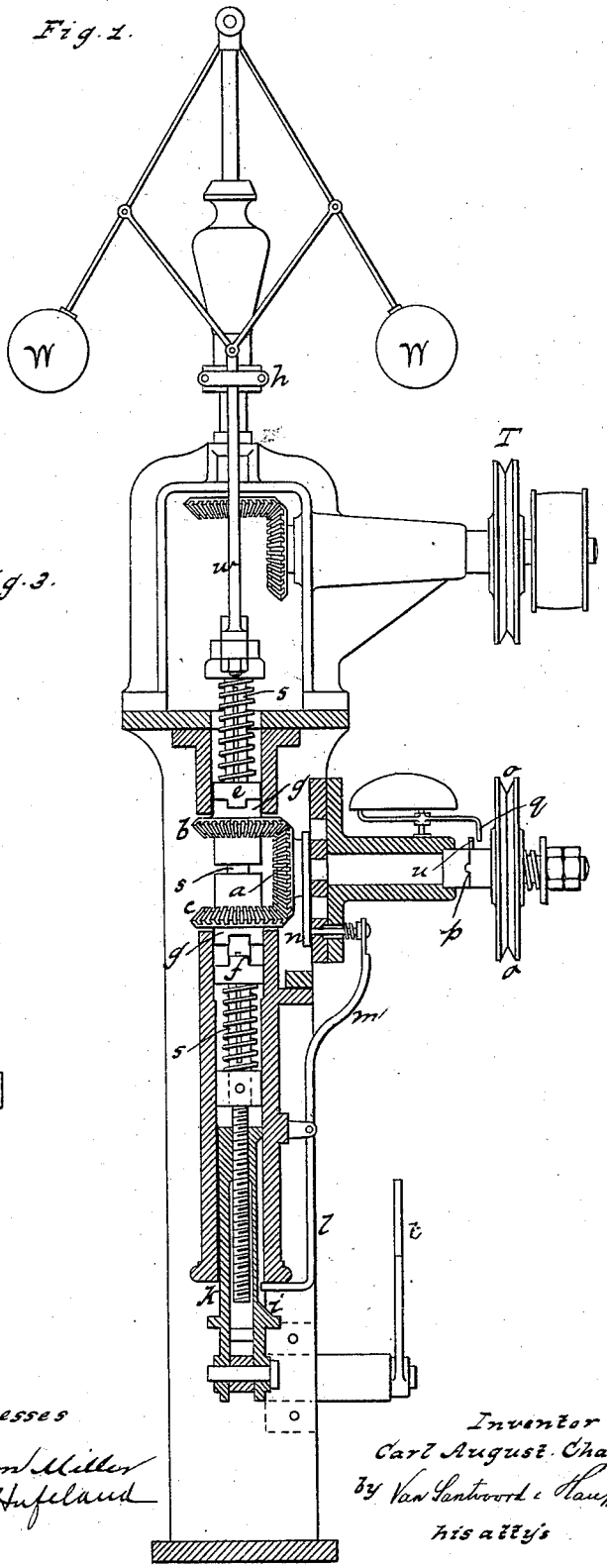

Fig. 2.

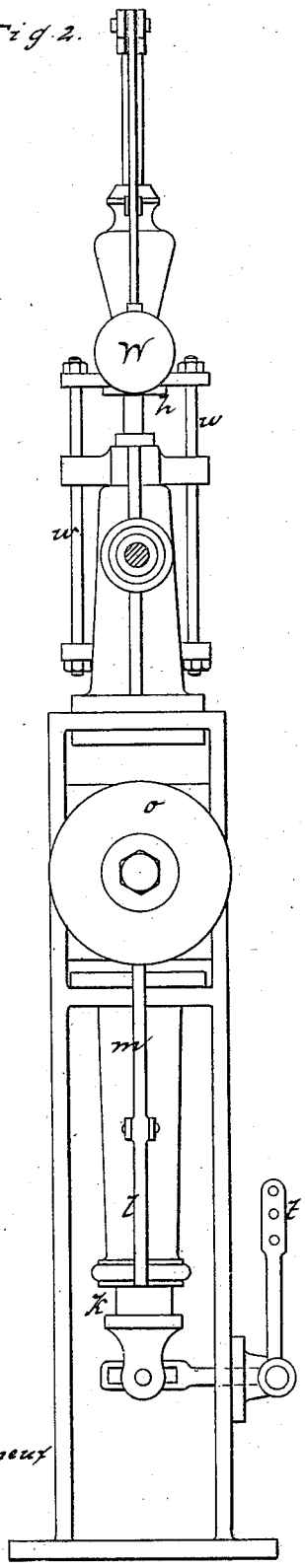

Fig. 3.

Witnesses
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CARL AUGUST CHAINEUX, OF AACHEN, PRUSSIA, GERMANY.

GOVERNOR FOR STEAM-ENGINES AND OTHER MOTORS.

SPECIFICATION forming part of Letters Patent No. 307,268, dated October 28, 1884.

Application filed July 10, 1884. (No model.) Patented in Germany March 31, 1880, No. 13,555.

To all whom it may concern:

Be it known that I, CARL AUGUST CHAINEUX, a subject of the King of Prussia, residing at Aachen, in the Province of Rhenish Prussia, in the Kingdom of Prussia and German Empire, have invented new and useful Improvements in Governors for Steam-Engines and other Motors, of which the following is a specification.

This invention has for its object to provide a novel governor for engines; and it consists in the mechanism hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a front elevation, partly in section. Fig. 2 is a side elevation. Fig. 3 is a detail view of the spindle.

Similar letters indicate corresponding parts.

The letters W indicate a governor, which may be made of a usual form—as, for example, two weights actuated by centrifugal force. A pulley, T, with suitable gears, or other convenient arrangement, may be applied for operating the governor W.

To the governor W is connected by suitable means—as, for example, a collar, *h*, and links *w w*—a spindle, *s*, which rises and falls with the increase or decrease in speed of the governor W. The governor W causes the spindle *s* to rise and fall, but without revolving the spindle.

The letters *b c* indicate two actuating or bevel wheels, the axes of which are hollow or made in form of a collar, and sit loosely about the spindle *s*, so that said bevel-wheels *b c* can revolve freely on said spindle *s* without turning the spindle. The bevel-wheels *b c* are revolved in opposite directions by a bevel-wheel, *a*, with which they gear, and which bevel-wheel *a* is revolved by a pulley, *o*, receiving motion from any convenient source.

On the collar or axle of each bevel-wheel *b c* is a coupling device, *g*, which, in the example shown in the drawings, is formed by a notch or notches cut into the outer edge of each such collar or axle.

On the spindle *s* are coupling devices *e f*, adapted to engage with the coupling devices *g*. These coupling devices *e f* are shown as being formed of collars, which are feathered on the spindles *s*, so as to slide thereon, but which collars cannot revolve independently of the spindle *s*. These coupling devices *e f* are held in position on the spindle by springs, as shown in the drawings, which springs allow the couplers *e f* to be slid out of place and return them to their original position when free. The couplers *e f* are such a distance apart that when the governor W holds the spindle *s* in such a position that the couplers *g* lie midway between the couplers *e f* the couplers *g*, *e*, and *f* are out of engagement and the bevel-wheels *b c* do not revolve the spindle *s*. This relative position of parts is that adapted to the machine when at its proper degree of speed. An increase of speed causes the governor W to raise the spindle *s* and bring the coupler *f* into engagement with the coupler *g* of the bevel-wheel *c* when the spindle *s* begins to turn, and a screw-thread at the end of said spindle *s*, engaging a nut or slide, *k*, causes said nut or slide *k* to move longitudinally and actuate a lever or arm, *t*, which may connect with a valve to shut off or diminish the supply of power. A decrease of speed causes the governor W to allow the spindle *s* to descend, and brings the coupler *e* into engagement with the coupler *g* of the bevel-wheel *b*, turning the spindle in the opposite direction, and causing the slide *k* to move in a direction opposite to that referred to in connection with the bevel-wheel *c*, and causing the arm or lever *t* to open or increase the supply of power. When the slide *k* has risen to its highest point, an incline, *i*, on said slide *k* strikes against the arm *l* of the detent-lever *l m* and presses said arm *l* outward, forcing inward the arm *m*. The end of the arm *l* rests in a groove in the slide *k*. By this motion of the arm *m* a stud or pawl is forced into the path of a detent-arm, *n*. This detent-arm *n* is rigidly attached to the wheel *a* or to its axle, and when the arm *m* forces the detent-stud into the path of said detent-arm *n* it arrests the revolutions of said arm *n* and the revolutions of the bevel-wheel *a* and its axle. The detent-arm *n* may be formed of a plain strip or rod, of metal or other suitable material, firmly fixed or keyed to the bevel-wheel *a* or to its axle, so as to revolve therewith. The pulley-wheel *o*, which revolves the axle of the bevel-wheel *a*, is mounted on a sleeve having a projection, *p*,

which engages with a recess on the axle of the wheel *a*, so as to cause the pulley *o* to turn the wheel *a*. On the revolutions of the wheel *a* and its axle being stopped by the detent *n*, the pulley *o* continues to revolve, said pulley *o* and its projection *p* move or slide outward against the resistance of the spring on the outer side of the pulley *o*, and said projection *p* passes out of engagement with the notch on the axle of the bevel-wheel *a*. At the same time a stud, *u*, on the sleeve of pulley *o* is brought into contact with the hammer-arm *q* of an alarm, thus sounding the alarm and giving notice of the stoppage of the bevel-wheel *a*. The upper end of the slide *k* is provided with an incline similar to the incline *i*, and when the slide *k* reaches its lowest point the bevel-wheel *a* is again stopped and the alarm sounded. The arm *t* is shown as being a bell-crank lever. In place of this the lower end of the slide *k* may be provided with a rack, which gears into a pinion or cog-wheel, which wheel may serve the purpose of the lever or arm *t*; or the screw end of the spindle, instead of moving a slide, may engage with a cog-wheel and revolve the same.

In Fig. 3 is shown the spindle *s* as being provided with longitudinal slots or holes, into or through which may pass studs on the coupling-sleeves *e f*, whereby the couplers *e f* are compelled to turn with the spindle *s*, at the same time being free to move longitudinally on the spindle. Fig. 3 also shows part of the screw-thread at the end of the spindle *s*.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a governor, W, a spindle, *s*, connected therewith, actuating-wheels *b c*, revolving in opposite directions, and a bevel-wheel, *a*, of a slide, *k*, having a screw-connection with the spindle, and provided adjacent to each of its ends with an incline, *i*, and a detent mechanism actuated by the inclines to stop the rotation of the said bevel-wheel, substantially as described.

2. The combination, with a governor, W, a spindle, *s*, connected therewith, actuating-wheels *b c*, and bevel-wheel *a*, of a slide, *k*, connected with the spindle, and a detent mechanism operated by the slide to stop the rotation of the said bevel-wheel, substantially as described.

3. The combination, with a governor, W, and a spindle, *s*, provided with coupling devices *e f*, held in place by springs, of actuating-wheels *b c*, revolving in opposite directions, and provided with coupling devices *g*, adapted to engage alternately with the coupling devices *e f*, substantially as set forth.

4. The combination, with a governor, W, and a spindle, *s*, of actuating-wheels *b c*, revolving in opposite directions, and adapted to engage alternately with said spindle *s* and a detent apparatus, *l m n*, substantially as set forth.

5. The combination, with a governor, W, and a spindle, *s*, of actuating-wheels *b c*, revolving in opposite directions, and adapted to engage alternately with said spindle *s*, a detent apparatus, and an alarm, substantially as set forth.

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

CARL AUG. CHAINEUX.

Witnesses:
YOS HARNADHEY,
VICTOR NAREWSKI.