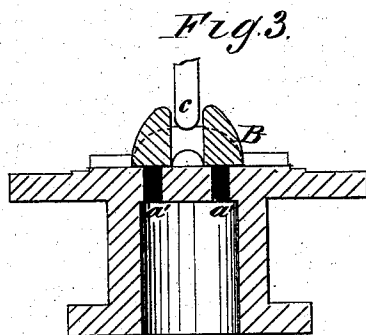
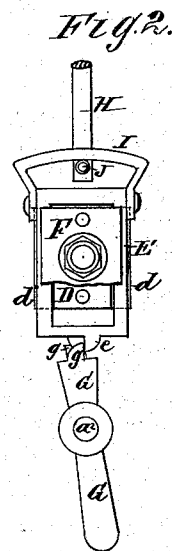
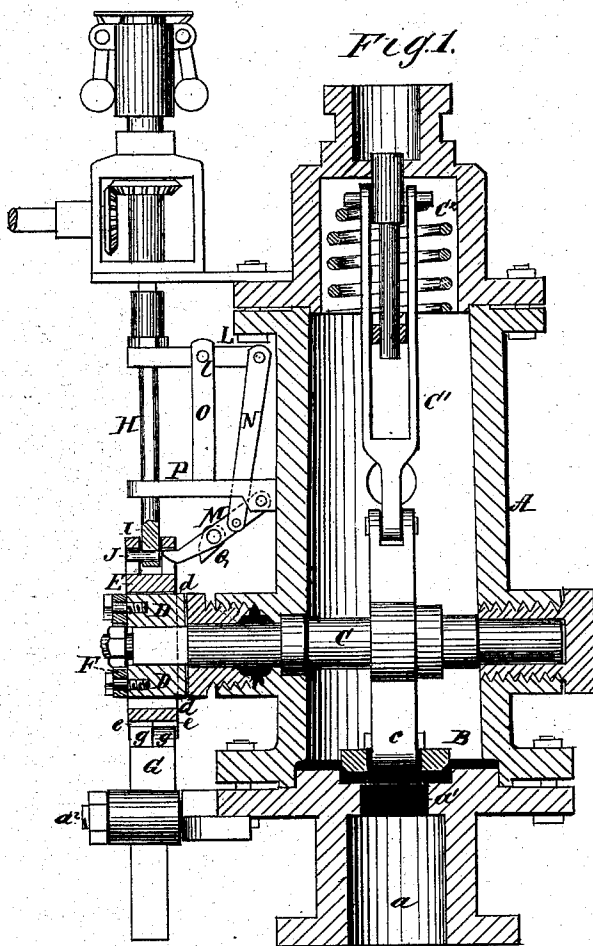


P. J. JOECKEN.

Cut-Offs.

No. 154,869.

Patented Sept. 8, 1874.



WITNESSES:

*G. Matthews*  
*John Kemm*

INVENTOR:

*P. J. Joecken*  
BY *[Signature]*

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

PETER J. JOECKEN, OF CLEVELAND, OHIO.

## IMPROVEMENT IN CUT-OFFS.

Specification forming part of Letters Patent No. **154,869**, dated September 8, 1874; application filed July 9, 1874.

*To all whom it may concern:*

Be it known that I, PETER J. JOECKEN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Cut-Offs; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a sectional elevation; Fig. 2, a detail view in side elevation; Fig. 3, a detail view in vertical section.

The invention will first be fully described, in connection with all that is necessary to a full understanding thereof, and then pointed out in the claims.

A represents the chamber or cylinder, which is interposed between a steam-chest and engine-cylinder, so as to enable the supply of live steam to the latter to be regulated by a governor. It has an inlet, *a*, from the steam-chest, and an outlet to the engine-cylinder through ports *a'* *a'*. These are closed and opened wholly or partially by a slide-valve, B, that is apertured on top, and receives the end of an arm, *c*, of the rock-shaft C, whereby the throw of the valve must correspond to the varying arcs of vibration which the arm *c* is made to describe. C<sup>1</sup> is an arm, and C<sup>2</sup> a spring by which the arm *c* is brought back to a vertical position, so as to cause the valve to cover the ports. On the rock-shaft C is keyed, and held by screw and nut, an oblong rectangular block, D, having edge-flanges *d* *d*, against which are secured loosely the yoke E, by a plate, F. The yoke E is longer than the block D, is allowed to slide freely up and down thereupon, and has on its bottom two cams, *e* *e*, reversed and conjoined diagonally. G is a lever, pivoted on a projecting stud, *a*<sup>2</sup>, of cylinder A, and having two upper-end cams, *g* *g*, corresponding to those of yoke E, and vibrated by a rod connected with an eccentric of main shaft. H is the governor-rod, which is lifted more and more as the speed of machinery or the pressure of steam increases and the balls *h* rise. I connect the lower end of this rod with the yoke E by a slotted bow, I, and cross-pin J.

When there is a minimum of speed the yoke E projects, with its bottom cams, to its lowest point, remains longest in contact with the vibrating cams of lever G, and, consequently, is moved in its largest arc of vibration. As the arm *c* of rock-shaft is to the same extent actuated, the throw of valve is now greatest, and the ports are opened to their full extent. As soon, however, as the speed increases, and the governor-rod H is lifted, the yoke E is carried up, the time of contact of the cams *e* *g* lessened, and the throw of the valve B decreased. The supply of steam is thus cut off as soon as an excess manifests itself on the governor.

If the governor-belt should break it is necessary that the cams *e* *g* should be promptly disconnected. In order to accomplish this automatically I use two levers, L M, connected by a strap, N, the former a lever of the first, and the latter a lever of the third, class, the one pivoted, at *l*, in upright O, and the other pivoted at the rear end of bar P. Q is a pivoted latch, which may be employed to lock the lever M down, when desired.

With this device, when the governor-belt breaks, and the rod H falls by its own gravity, the lever L is actuated to lift the lever M, and with it the yoke E, so that the cams *e* are carried out of reach of the still vibrating cam *g*, and the valve consequently caused to remain stationary over the ports.

I am aware that an arm vibrated from main shaft, in order to oscillate another arm lifted by the governor, and thus made to regulate the throw of slide-valve, is old; but

What I claim is—

1. The block D, yoke E, and bow I, combined with governor-rod H, as and for the purpose described.

2. The combination, with governor-rod H and bow I, of the lever L, strap N, and lever M, to move the cams *e* *g* out of contact when the governor-belt breaks.

PETER JOSEPH JOECKEN.

Witnesses:

P. L. BAUM,  
HOMER STRONG.