

(Model.)

J. W. SARGENT.

MECHANISM FOR OPERATING SLIDE VALVES.

Nº. 318,037.

Patented May 19, 1885.

Fig. 4.

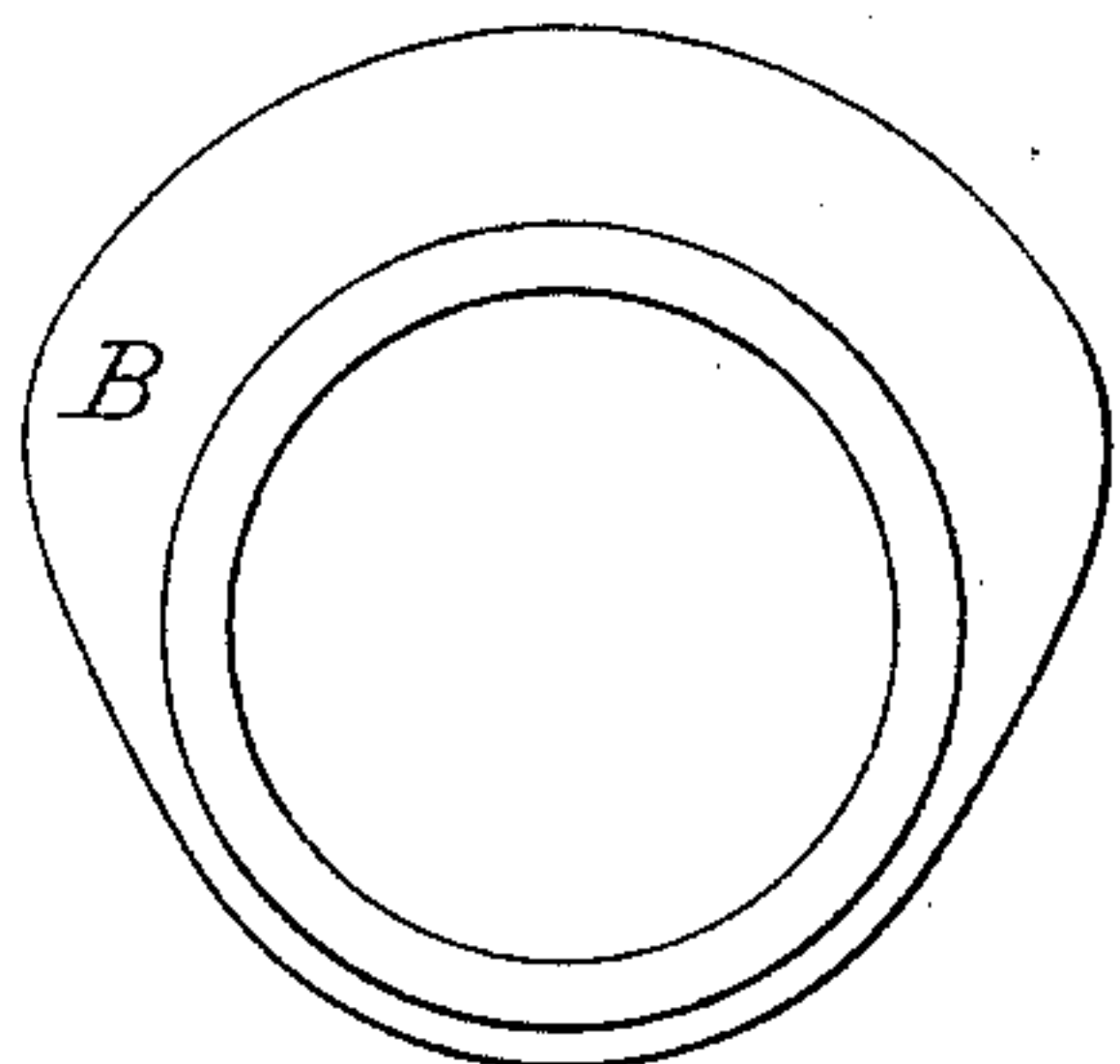


Fig. 5.

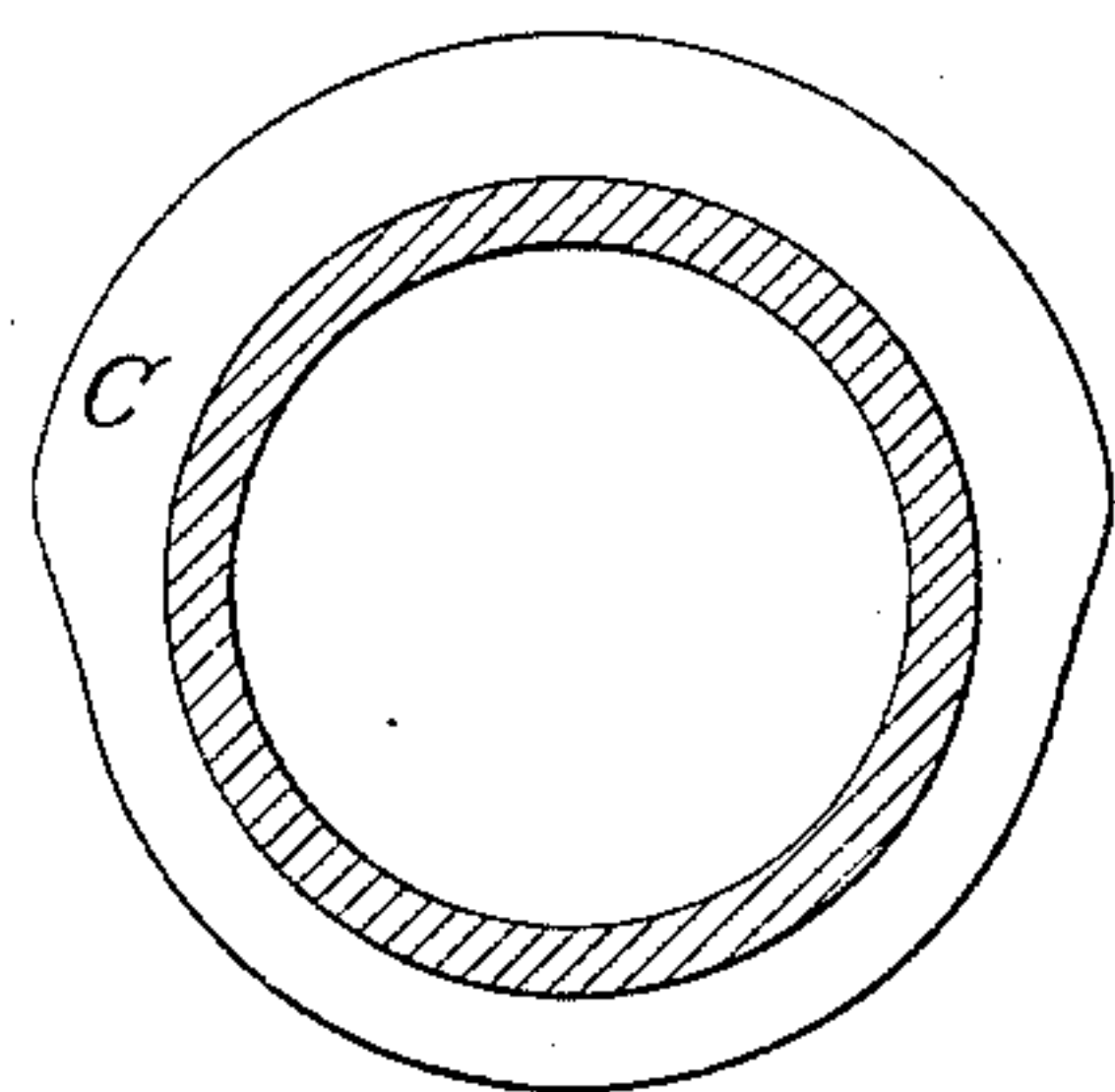
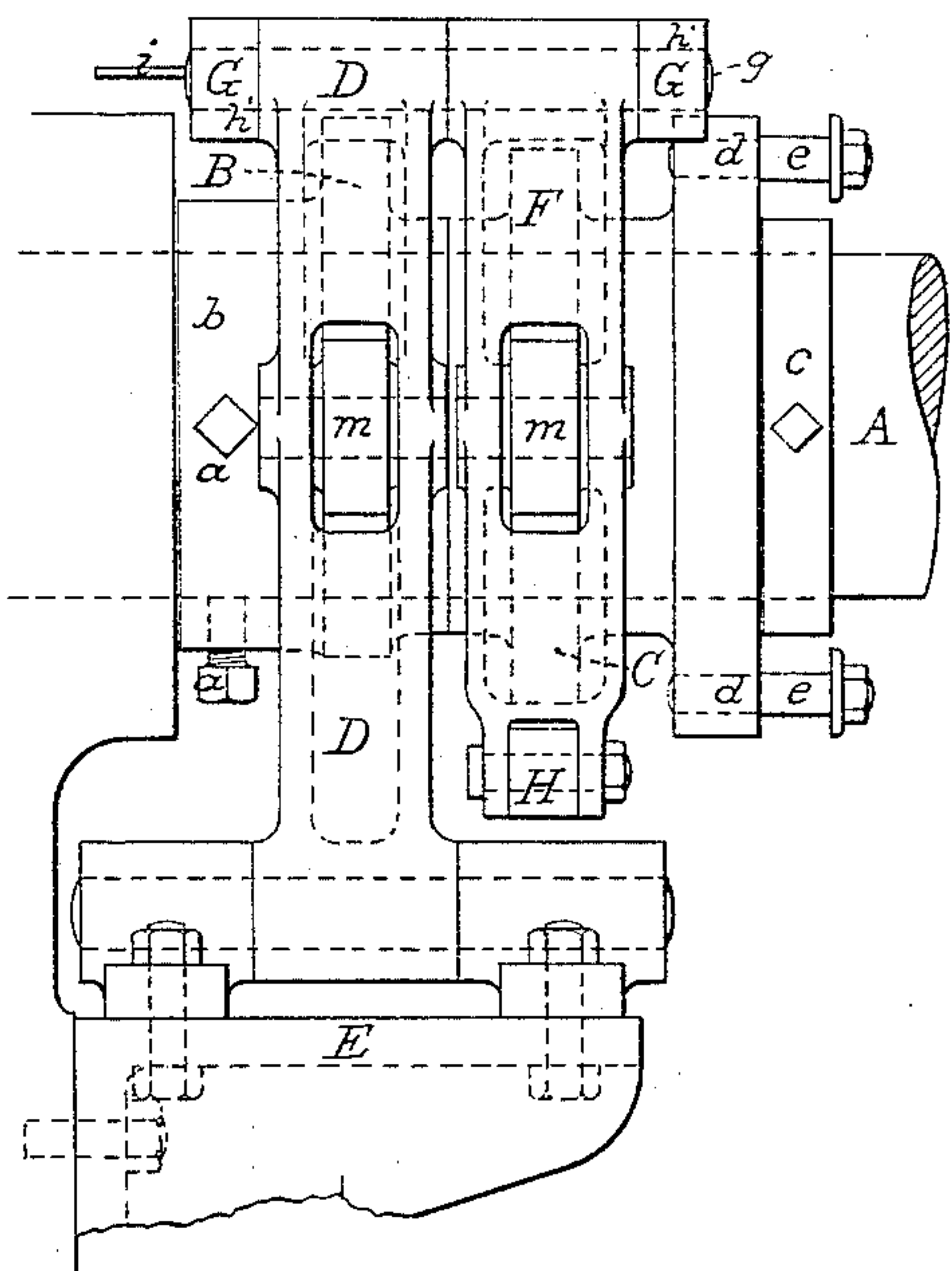


Fig. 3.



Witnesses

S. N. Piper
Ernest P. Pratt

Fig. 1.

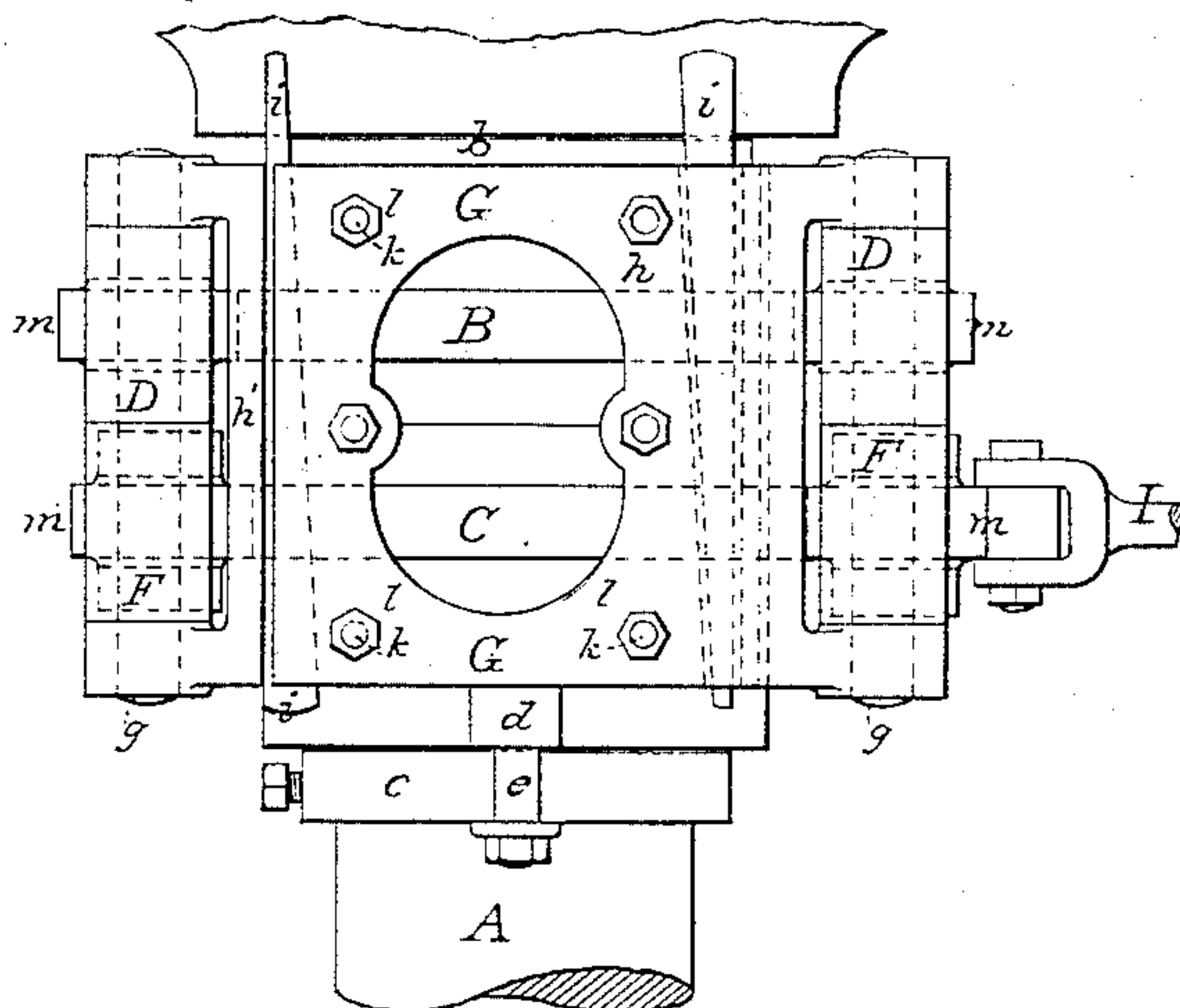
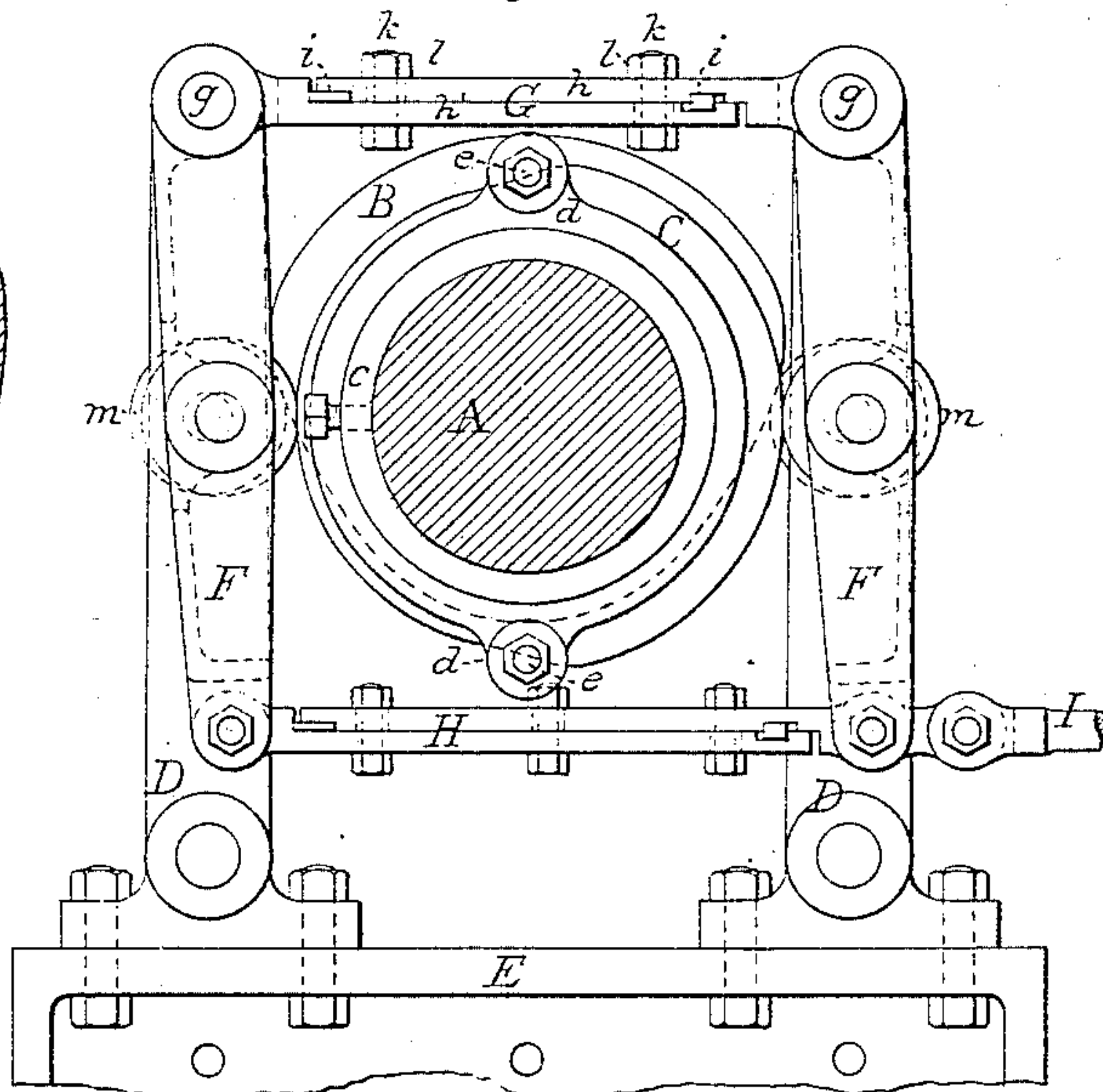


Fig. 2.



Inventor.

John W. Sargent.

By RH Soley att'y.

UNITED STATES PATENT OFFICE.

JOHN WARREN SARGENT, OF CAMBRIDGEPORT, MASSACHUSETTS.

MECHANISM FOR OPERATING SLIDE-VALVES.

SPECIFICATION forming part of Letters Patent No. 318,037, dated May 19, 1885.

Application filed November 24, 1884. (Model.)

To all whom it may concern:

Be it known that I, JOHN WARREN SARGENT, of Cambridgeport, in the county of Middlesex, of the Commonwealth of Massachusetts, have invented a new and useful Improvement in Mechanism for Operating the Slide Valve or Valves of a Steam-Engine Cylinder; and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a plan or top view, Fig. 2 a side elevation, and Fig. 3 an end view, of mechanism embracing my invention, the nature of which is defined in the claim hereinafter presented. Fig. 4 is a side view of the "main cam" B, and Fig. 5 is a side view of the "cut-off cam" C, of such mechanism.

With my invention the steam can be cut off at any suitable part of the stroke of the piston, in order for such steam to act expansively, as may be required, the cut-off mechanism being variable for such purpose. The cut-off cam, hereinafter set forth, may be adjusted by means, as hereinafter described, to effect a constant degree of cutting off of the steam for each stroke of the piston of the engine-cylinder, this constant degree being varied as the cam may be further adjusted on the shaft.

In the drawings, A denotes the shaft of a steam-engine, such shaft having upon it two cams, B and C, the first of which is the "main" and the second the "cut-off" cam, they being shown in separate side views in Figs. 4 and 5.

The main cam B is, by clamp-screws *a* in its hub *b* or by a key or keys, to be firmly fixed on the shaft A, alongside of and at a proper distance from the cut-off cam C, which is revoluble on the shaft, so as to be adjustable either way thereon relatively to the main cam; but by the main cam on one side and a collar, *c*, fastened to the shaft on the other, is prevented from moving endwise on the shaft.

The cam C has to its hub lugs *d d*, carrying pins *e e*, from which in practice the links from a governor are to extend. This governor, when used, is to turn the cam C more or less either way, as may be required, relatively to the cam B. As the cutting off of the steam is effected by means of the cut-off cam, the governor will control the cut-off.

The governor above referred to is to be of the class of centrifugal governors in which the balls or weights revolve with and about the main or driving shaft of the steam-engine. Examples of such kinds of governors are shown in the United States Patents Nos. 1,179 and 204,924, and in Reissue No. 8,433.

When a governor is not used in connection with the cam C for giving a variable cut-off, the said cam may be either firmly fastened to the shaft, or it may be provided with means of adjusting it thereon, or enabling it to be adjusted or turned and fixed relatively to the cam B.

The main cam B is situated directly between two parallel levers, D D, fulcrumed at or near their lower ends to a bed-plate, E. Alongside of each of the said levers is another but shorter lever, F, the cam C being immediately between the two levers F.

At their upper ends all the levers are connected to an extensible and contractile link, G, to which they are jointed, the joint-pins of such link and levers being shown at *g g*. This link is formed in two sections, *h h'*, which lap on each other, and are provided with keys or wedges *i*, arranged in them as shown, for moving one or the other of them. They also have screws *k* and nuts *l* for clamping them together, such screws going through slots in the two sections. The link G is thus made, in order for it to be contracted in length, as may be necessary to bring the rollers of the levers into proper contact with the main cam as such cam and rollers may become worn.

The two levers F at their lower parts are connected by another such link, H, which is jointed to them and to the connecting-rod I, for working the valve or valves of the engine-cylinder, &c. In each of the levers is a friction roller or wheel, *m*, for the cam next to such levers to bear against.

From the above it will be seen that as the two cams revolve with and are turned by the shaft A a vibratory movement will be imparted to the levers D, link G, levers F, link H, and connecting-rod I, whereby the valve or valves will be intermittently reciprocated across the induction and eduction ports of the engine-cylinder, so as to alternately open and close the said induction-ports.

The action of the main cam B on the levers D through the levers F, moving on the cut-off cam C as a fulcrum, and link I, is to give the valve or valves a constant lead or opening of steam-port, a constant compression or closing of exhaust - port, and a constant release or opening of exhaust - port for each end of the cylinder, this constant action being variable only by a readjustment of the main cam on the shaft.

The action of the cut-off cam C on the levers F, turning on the pins *g g* as fulera, through the connecting-rod I, is to give the valve or valves an automatic variable cut-off under different loads of the engine, when the cam C may be operated by a governor, or a constant cut-off, provided such cam be firmly clamped on the shaft. The movement which the cam C imparts to the valve or valves is just sufficient to close the steam-port at one end of the

cylinder at a time, and at the same time not enough to choke the exhaust at the other end of the cylinder, the valve or valves having sufficient travel and lap on the steam side to accomplish this.

I claim—

The valve cut - off motion or operative mechanism, substantially as described, consisting of the two cams B and C, the two pairs of vibratory levers D and F, their common connecting-link G, and the link H, joining and jointed to the shorter pair of such levers, such cams being applied to the shaft A, and the levers D being fulcrumed at or near their lower ends, and all being adapted in manner to operate essentially as represented.

JOHN WARREN SARGENT.

Witnesses:

GEO. A. PERKINS,
S. N. PIPER.

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