(No Model.)

J. W. SAGER.

AUTOMATIC CUT-OFF FOR ENGINES.

No. 506,943. Patented Oct. 17, 1893.

Fig. 1.

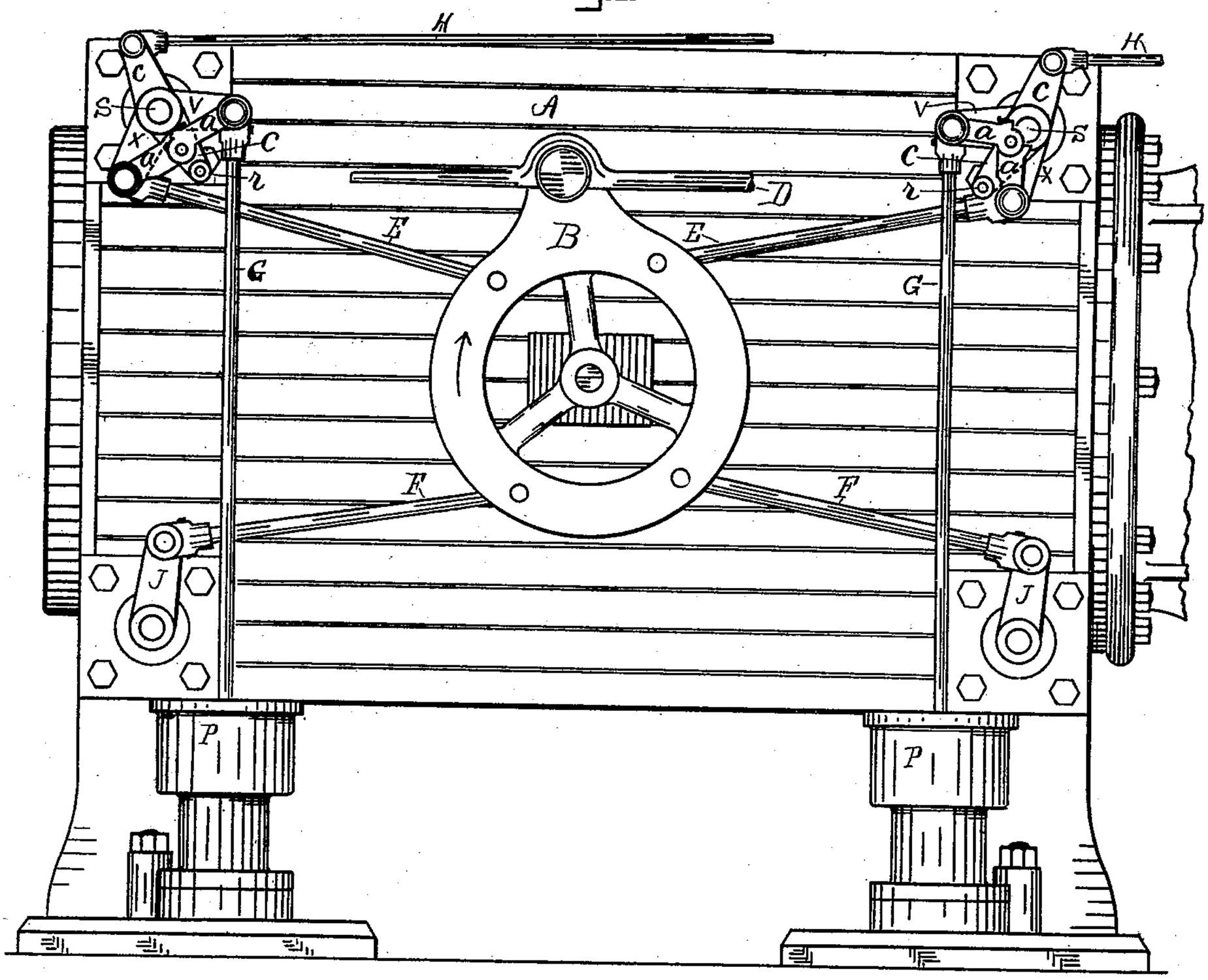


Fig. 2.

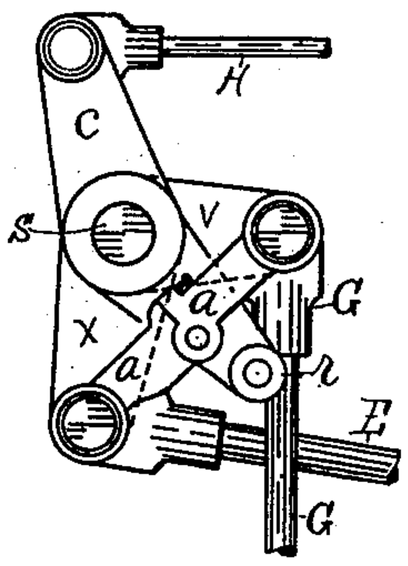


Fig. 3.

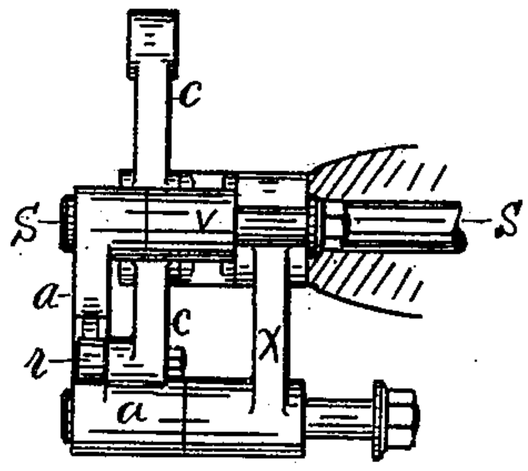
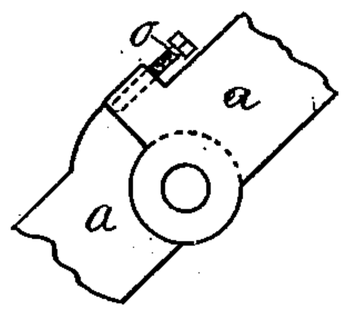


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN W. SAGER, OF JOLIET, ILLINOIS.

AUTOMATIC CUT-OFF FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 506,943, dated October 17, 1893.

Application filed April 21, 1893. Serial No. 471,281. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. SAGER, a citizen of the United States of America, residing at Joliet, in the county of Will and State of Illinois, have invented certain new and useful Improvements in Automatic Cut-Offs for Steam-Engines, of which the following is a specification, reference being had therein to the accompanying drawings and the letters of reference thereon, forming a part of this specification, in which—

Figure 1 is a side elevation of the automatic cut off mechanism applied to the side of a four valve steam cylinder. Fig. 2 is a side view of one of the automatic cut off mechanisms shown as detached from the cylinder. Fig. 3 is end view of one of the automatic cut off mechanisms shown as detached from the cylinder; and being an end view of Fig. 2, and Fig. 4 is a side view of the joint of the toggle arms of the device showing a set screw for controlling the angle of said arms with relation to each other.

This invention relates to certain improvements in an automatic cut off for steam engines, which improvements are fully set forth and explained in the following specification and claims.

Referring to the drawings A represents the side of an ordinary four valve steam cylinder having a wrist plate B journaled on a stud on the side of the cylinder, which wrist plate receives an oscillating motion from an eccentric located preferably on the main shaft of the engine, through the medium of the eccentric rod D detachably connected to said wrist plate through the medium of a wrist pin in the ordinary manner.

V is an arm secured to the valve shaft S, and has its outer end pivotally connected to the piston rod G of the dash pot P.

X is an arm pivotally connected to the valve shaft S, and has its outer end pivotally connected to the reach rod E, pivotally connected to the wrist plate B.

a. a are a pair of toggle arms which pivotally connect the outer ends of arms V and X with each other.

C is an arm journaled at about its center on the valve shaft S between arms *a* and V, and is connected with a governor, (not necessary to be shown,) and is provided on its opposite lower end with a friction roller *r* on its side for engaging the toggle arms *a* sooner or later, as said arm C is oscillated by the governor through the medium of rod H.

O is a set screw for use in regulating the angle of the toggle arms *a a* with each other to cause them to fold together more or less readily.

F is a reach rod for connecting the cranks J of the exhaust valves with the wrist plate B.

In operation oscillation of the wrist plate B in the direction of the arrow thereon, will cause arm V, secured to the valve shaft S, to move upward, through the medium of toggle arms *a. a.* connecting it with the outer end of arm X and reach rod E, and continue to move upward and cause the valve to admit steam until the toggle arms *a. a.* come in contact with roller *r* on the lower end of arm C, which will cause the toggle arms *a. a.* to fold together quickly and permit the valve to be quickly closed by means of the dash pot mechanism G. P. connected with arm V and toggle arms *a. a.* as shown in Fig. 1 at the right of the figure. The toggle arms *a. a.* will be caused to fold sooner or later as the arm C is oscillated by means of the governor. The greater the speed of the governor, the sooner said arm C will cause said toggle arms to fold and permit the dash pot mechanism to close the valve and cut off the admission of steam to the cylinder.

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

1. In an automatic cut off for steam engines, the combination of the inlet valve shaft S, arm V secured thereto, arm X journaled thereon, toggle arms *a. a.* for connecting the outer ends of arms V and X, oscillating arm C journaled on said shaft and having friction roller *r* for engaging said toggle arms to cause them to fold, oscillating wrist plate B, reach rod E for connecting said wrist plate with arms *a* and X, and the dash pot mechanism G. P. connected with arms *a*, V, all arranged to operate substantially as and for the purpose set forth.

2. In an automatic cut off for steam engines, the combination of the inlet valve shaft, an arm secured thereto and connected with a dash pot mechanism, an arm journaled thereon and connected with an oscillating wrist plate, toggle arms for connecting the outer ends of said arms, and an adjustable adjacent stop for engaging said toggles to cause them to fold all arranged to operate substantially as and for the purpose set forth.

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