(No Model.)

W. H. KILBOURN.

DEVICE FOR STOPPING ENGINES.

No. 457,837. Patented Aug. 18, 1891.

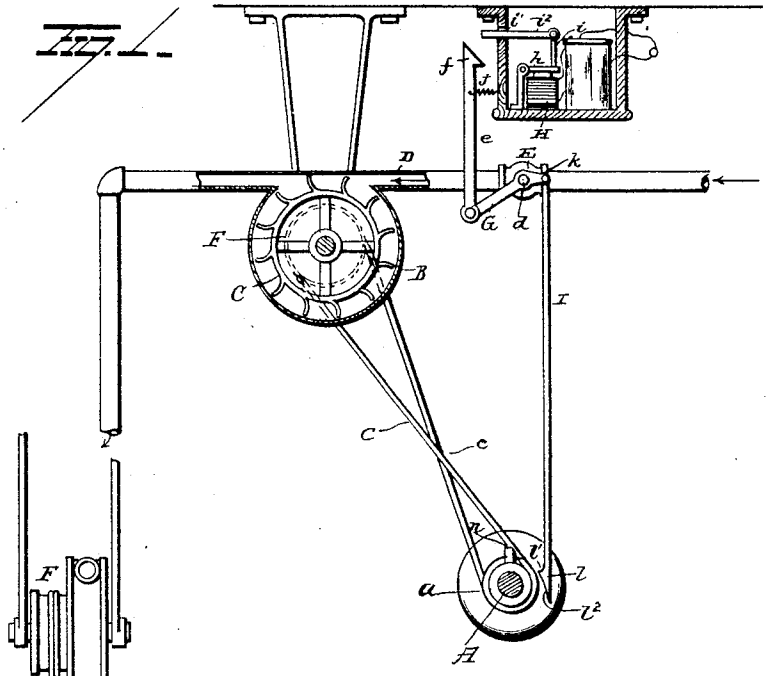


Fig. 1.

Fig. 2.

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UNITED STATES PATENT OFFICE.

WASHINGTON H. KILBOURN, OF GREENFIELD, MASSACHUSETTS, ASSIGNOR TO THE KILBOURN ELECTRIC COMPANY, OF SAME PLACE.

DEVICE FOR STOPPING ENGINES.

SPECIFICATION forming part of Letters Patent No. 457,837, dated August 18, 1891.

Application filed December 18, 1890. Serial No. 375,105. (No model.)

To all whom it may concern:

Be it known that I, WASHINGTON H. KILBOURN, a citizen of Greenfield, in the county of Franklin and State of Massachusetts, have invented certain new and useful Improvements in Devices for Stopping Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in valve-controlling mechanism, its object being to produce devices for automatically operating valves.

A further object is to produce mechanism for the purpose stated, which shall be of simple construction, composed of a small number of parts, and effectual in the performance of its functions.

With these objects in view the invention consists in the combination, with a valve-stem, of a rotary engine, a wire or cord connecting said rotary engine and valve-stem, and devices for controlling the valve which supplies power to the rotary engine, whereby the first-mentioned valve will be closed and the valve which supplies the rotary engine will be first opened and then closed automatically.

It also consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view illustrating the application of my invention. Fig. 2 is an edge view of the rotary engine and its connection with the throttle-valve of a steam-engine.

A represents the stem of the throttle-valve of a steam-engine on which a drum *a* is located. Mounted in a suitable casing B is a rotary engine C, which is included in the circuit of a pipe D, through which steam is made to pass in the direction of the arrow in Fig. 1, said pipe being provided with a valve E. The journal of the engine C is provided with a drum F. Passing over the drums *a* and F and coiled one or more times around each of these drums to prevent slipping is a cord or wire *c*. From this construction it will be seen that when the rotary engine is turned the stem of the throttle-valve will be turned also, and said valve closed. The stem *d* of the valve E is provided with an arm G, to the free end of which a bar *e* is pivoted, said bar being provided at its free end with a hook *f*. Located in proximity to the hooked end of the bar *e* is an electro-magnet H, to the armature *h* of which an arm *i* is attached. Pivoted to the free end of the arm *i* is an arm i^2, which extends through an opening in the casing *i'* and adapted to engage the hook *f*, and thus normally sustain the bar *e*, said bar being prevented from undue lateral movement by a spring *j*. A short arm *k* projects from the stem *d* of valve E at an obtuse angle to the arm G, and to this short arm *k* a rod or bar I is pivotally connected, said rod or bar I extending downwardly in close proximity to the valve-stem A, where it is provided with a shoulder *l*, having inclined faces *l'* l^2.

The valve-stem A is provided, preferably, at the inner end of the drum *a* with a lug or projection *n*, which when the stem A is rotated to close the valve will engage the shoulder *l* and actuate the rod I, as presently explained.

Suppose, now, that the throttle-valve is open and it is desired to close it. It is simply necessary to open (or close) the circuit, which includes the electro-magnet H, whereupon the bar *e* will be released and permitted to drop. In its descent it will turn the valve E, through the medium of the arm G, and thus open said valve and permit steam to pass through the pipe D and operate the rotary engine C. Motion will be imparted by the rotary engine to the valve-stem A through the medium of the cord or wire *c* and thus turn said valve-stem A and close the valve. When the throttle-valve shall have nearly closed, the lug or projection *n* will engage the inclined face *l'* of the shoulder *l* on rod or bar I and cause said rod or bar to descend, thus closing the valve E in pipe D to shut off the supply of steam from the rotary engine and at the same time return the bar *e* to its normal position in contact with the arm i^2. Thus it will be seen that when the bar *e* is released by the magnet H steam is first admitted to the rotary engine, which latter operates to shut off the throttle-valve, and while the throttle-valve is

being closed the supply of steam to the rotary engine will be closed and the tripping mechanism made to assume its normal position. The upper face l' of the shoulder l on rod I being inclined, the lug or projection n, after having returned the parts to their normal position, slips off the shoulder l and thus permits the throttle-valve to close tightly.

Slight changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope. Hence I do not wish to limit myself to the precise details of construction herein set forth; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a steam-supply, of an engine connected therewith, tripping devices for automatically opening and closing the supply of steam to said engine, a throttle-valve, and means connecting the throttle-valve with said engine, whereby the engine may be actuated to close the throttle-valve and the tripping devices automatically reset, substantially as set forth.

2. The combination, with a steam-supply pipe, of a rotary engine, a throttle-valve, a crossed belt connecting the rotary engine and throttle-valve in a steam-supply pipe, tripping mechanism, electrical devices for operating the tripping mechanism to open the supply to the rotary engine, and a projection on the stem of the throttle-valve adapted to engage the tripping devices to reset them and close the supply of steam to the rotary engine, substantially as set forth.

3. The combination, with the stem of a throttle-valve having a drum thereon, of a rotary engine, a belt or wire connecting said drum and engine, a pipe for supplying steam to the rotary engine, a valve in said pipe, devices for opening said valve automatically, and a lug or projection on the stem of the throttle-valve for causing said valve in the supply-pipe to be closed when the throttle-valve shall have nearly closed, substantially as set forth.

4. The combination, with the stem of a throttle-valve having a drum thereon, of a rotary engine, a belt or wire connecting said drum and engine, a pipe for supplying steam to the rotary engine, a valve in said pipe, devices for opening said valve automatically, a lug on the stem of the throttle-valve, a rod connected to the stem of the valve in the supply-pipe, and a shoulder on said rod with which the lug on the throttle-valve stem is adapted to engage to shut off the valve in the supply-pipe, substantially as set forth.

5. The combination, with the stem of a throttle-valve having a drum thereon, of a rotary engine, a belt or wire connecting said rotary engine and drum, a supply-pipe for said rotary engine, a valve in said supply-pipe, devices for automatically opening said valve, a rod connected to the stem of said valve, a shoulder at the free end of said rod having inclined faces, and a lug or projection on the throttle-valve stem adapted to engage the shoulder on said rod and close the valve in the supply-pipe and reset the mechanism, substantially as set forth.

6. The combination, with the stem of a throttle-valve having a drum thereon, of a rotary engine, a belt or wire connecting said rotary engine and drum, a supply-pipe for said engine, a valve in said supply-pipe, arms projecting from the stem of said valve, a bar connected to one of said arms, electrically-actuated mechanism for tripping said bar to open the valve in the supply-pipe, a rod connected to the other arm of said valve-stem, a shoulder at the free end of said rod, and a lug or projection on the stem of the throttle-valve adapted to engage the shoulder on said rod and thus close the valve in the supply-pipe and reset the tripping mechanism, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WASHINGTON H. KILBOURN.

Witnesses:
W. F. WEST,
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