

HENRY PIEPER.  
Improvement in Detective-Clock for Steam-Boilers.  
No. 127,641.

Patented June 4, 1872.

Fig. 1.

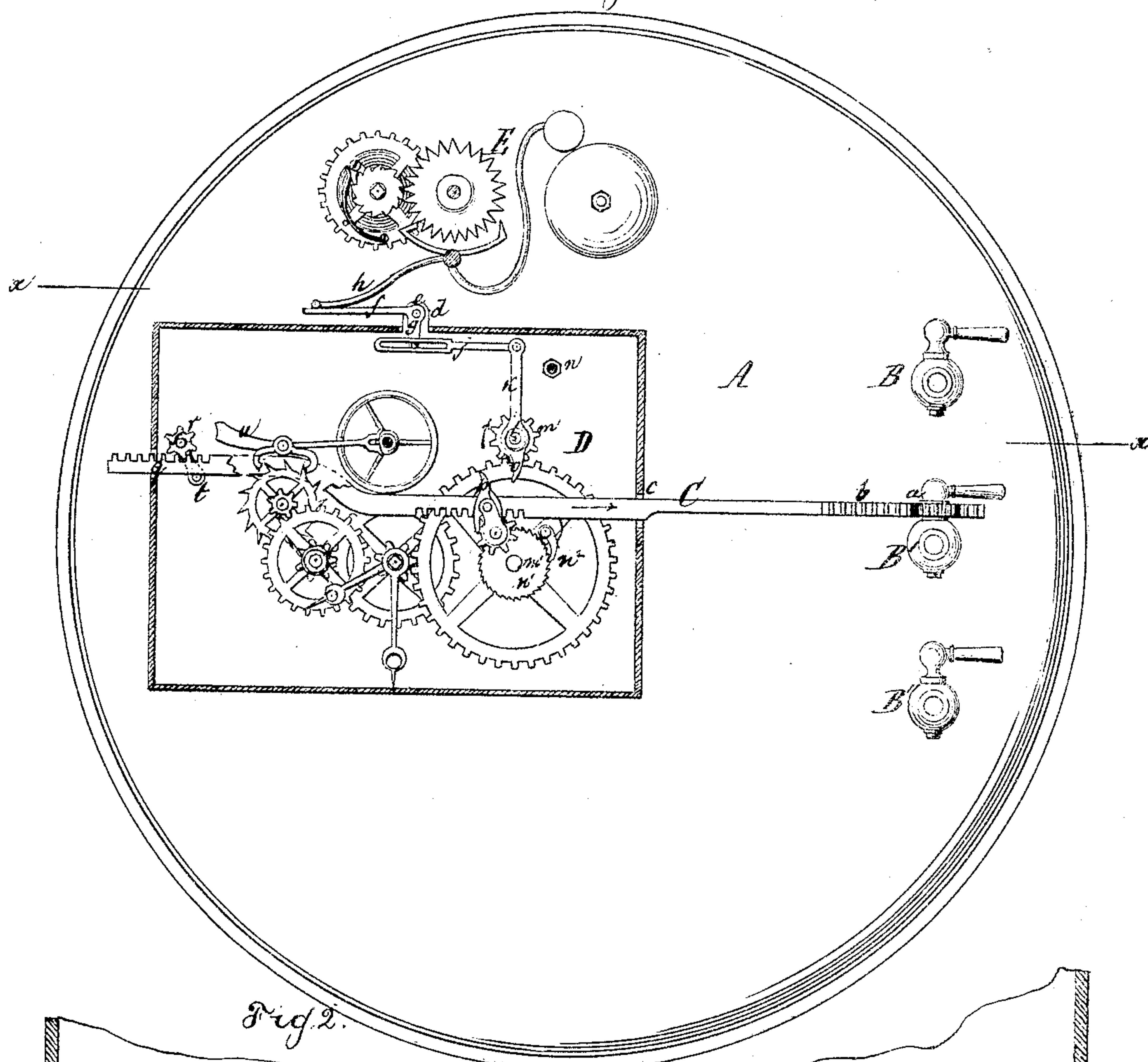
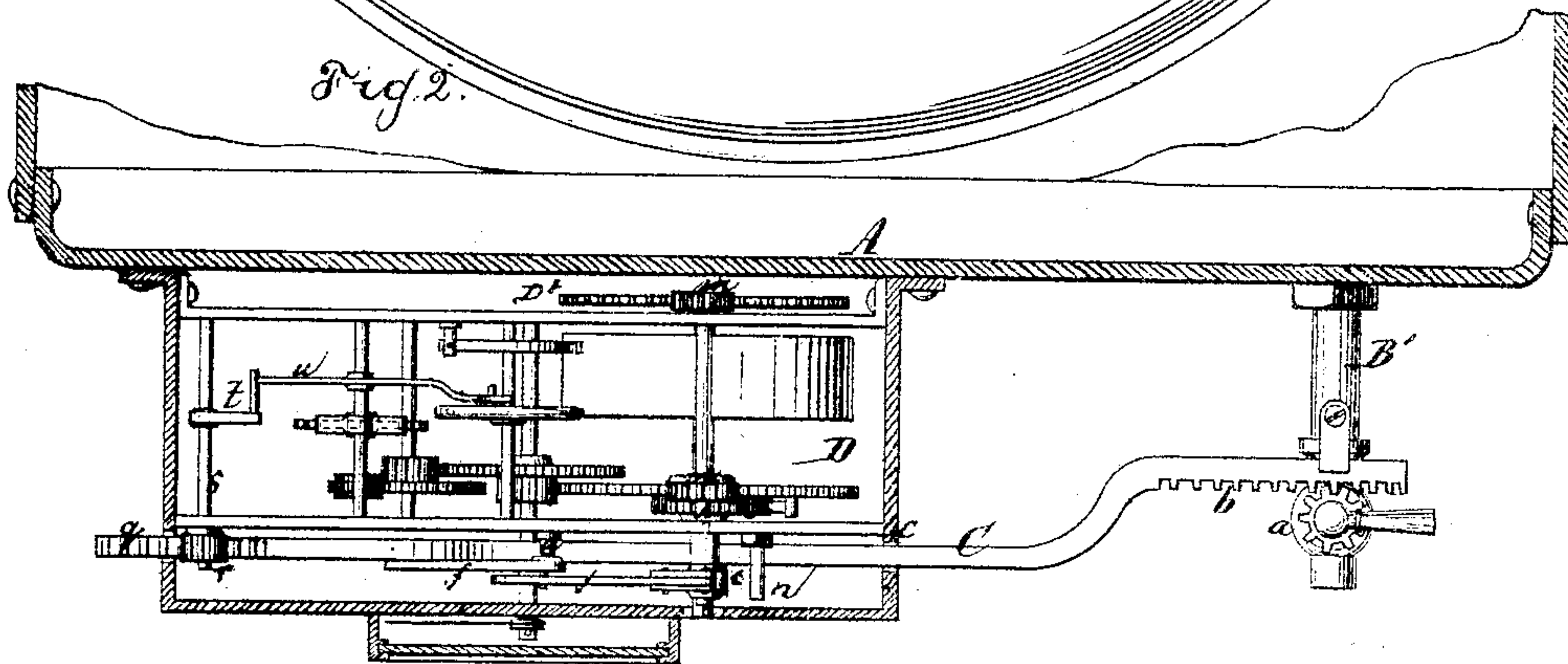


Fig. 2.



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HENRY PIEPER, OF NEW YORK, N. Y.

## IMPROVEMENT IN DETECTIVE-CLOCKS FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. 127,641, dated June 4, 1872.

*To all whom it may concern:*

Be it known that I, HENRY PIEPER, of the city, county, and State of New York, have invented a new and Improved Control-Clock for Steam-Boilers; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a plan or face view of my invention, the protecting-case of the clock having been removed to expose the working-parts. Fig. 2 is a transverse section of the same.

Similar letters indicate corresponding parts.

This invention consists in combining with the gauge-cock of a steam-boiler a clock-movement and an alarm in such a manner that when the fireman neglects to open the gauge-cock at stated intervals—say each half hour, the clock stops and the alarm is sounded. The connection between the gauge-cock, the clock-movement, and the alarm is such that, by the act of turning the gauge-cock, the alarm is stopped and the clock-movement started, whenever, by the neglect of the fireman, the operation of trying the gauge-cock has been delayed beyond the allotted time, while the gauge-cock can be operated at all times, without interfering with the motion of the clock; and by these means any neglect of the fireman in trying his gauge-cock at the stated intervals will be immediately detected by the clock lagging behind, while at the same time the alarm rouses up the negligent fireman to his duty, and the danger of an explosion from want of water in the boiler is reduced to a minimum.

In the drawing, the letter A designates the head of a steam-boiler, in which are secured a series of gauge-cocks, B B' B'', one above the other, in the manner usually practiced by boiler-manufacturers. On the plug or handle of the middle gauge-cock B' is mounted a pinion, *a*, which gears in a toothed rack, *b*, formed on one end of a slide, C, that moves in guide *c* secured to the frame of a clock-movement, D. From this frame extends an arm, *d*, which supports the fulcrum-pin *e* of an elbow-lever, *f g*, the long arm *f* of which is held by a spring, *i*, in contact with a stop-lever, *h*, extending from

the escapement of an alarm-clock, E, while the short arm *g* of said elbow-lever catches in a slotted bar, *j*, which is pivoted to the end of a lever, *k*. This lever is mounted on an arbor, *l*, which connects, by means of a pinion, *m*, with the wheel D' mounted firmly on the arbor *m'*. On this shaft is mounted loosely the wheel D, which is connected with the arbor by a ratchet-wheel, *n*<sup>1</sup>, and pawl *n*<sup>2</sup>. By these means the lever *k* receives a slow revolving motion in the direction of the arrow marked near it in Fig. 1. This motion is so timed that, at fixed intervals of thirty minutes, (more or less,) the outer end of the slot in the rod *j* will bear against the arm *g* of the elbow-lever *g f*, and by turning this lever on its pivot the stop-lever *h* is released and the alarm-clock is set in motion. At the same time the lever *k* is brought up against a stop, *n*, which is fixed to the frame of the clock-movement and the motion of the clock-movement is arrested. From the inner end of the lever *k* projects a toe, *o*, and rigidly secured on the arbor of the pinion which gears with the rack of the slide C is mounted an arm, to which is pivoted the tappet *p*, so that if the plug of the gauge-cock B' is turned so as to move said slide in the direction of the arrow marked thereon in Fig. 1, the tappet, on coming in contact with the toe *o*, turns the lever *k* away from the stop *n*, while if the slide moves in the opposite direction of the arrow the tappet, on coming in contact with the toe *o*, yields and passes said toe without producing any motion of the lever *k*. While the lever *k* is moved away from the stop the arbor *m'* is turned in the direction of the arrow marked near it in Fig. 1, the ratchet-wheel *n* slides under the pawl *n*<sup>2</sup>, and the wheel D remains stationary, so that the hands of the clock are not affected by this motion of the slide. If the gauge-cock B' is tried at intervals of less than thirty minutes, or any other fixed time, the lever *k* and slotted arm *j* will be prevented from moving back far enough to start the alarm-clock and to stop the motion of the clock-movement; but if the fireman neglects to try his gauge-cock within the fixed time the lever *k* strikes the stop *n*, the alarm sounds, and the clock stops. By the alarm the fireman's attention is called immediately to his neglect, and, since the clock is intended to be locked up, the time which the clock-movement



lags behind indicates the length of time for which the fireman has neglected to attend to the gauge-cock. On the outer end of the slide C is formed a toothed rack, *q*, which gears in a pinion, *r*, mounted on an arbor, *s*, and this arbor also carries a tappet-arm, *t*, (best seen in Fig. 2,) which acts against the end of the escapement-lever *u* of the clock-movement, whenever, by moving the slide C, a revolving motion is imparted to the arbor *s*. If the clock has been permitted to come to a stop, and the gauge-cock B is then operated, the tappet-arm *t* imparts to the escapement-lever *u* a swinging motion, and the clock is started automatically. By these means the action of the fireman is controlled, and, at the same time, whenever the fireman has neglected his duty in trying the gauge-cock within the required intervals his attention is awakened by the alarm-clock,

so that the danger of an explosion from want of water in the boiler is entirely avoided.

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

1. The tappet *p*, pivoted to an arm mounted on the arbor of the pinion that moves the slide C, in combination with the lever *k* and the parts connecting with the stop-lever of the alarm-clock, substantially as set forth.

2. The tappet *t*, escapement-lever *u*, shaft *s*, and pinion *r*, in combination with the slide rack-bar C, which is operated by the plug of the gauge-cock, the several parts arranged and operating substantially as and for the purpose set forth.

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Witnesses:

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