2 Sheets.—Sheet 1.

S. & G. R. SWARTZ.

SAFETY CAR-STOVE.

No. 189,668. Patented April 17, 1877.

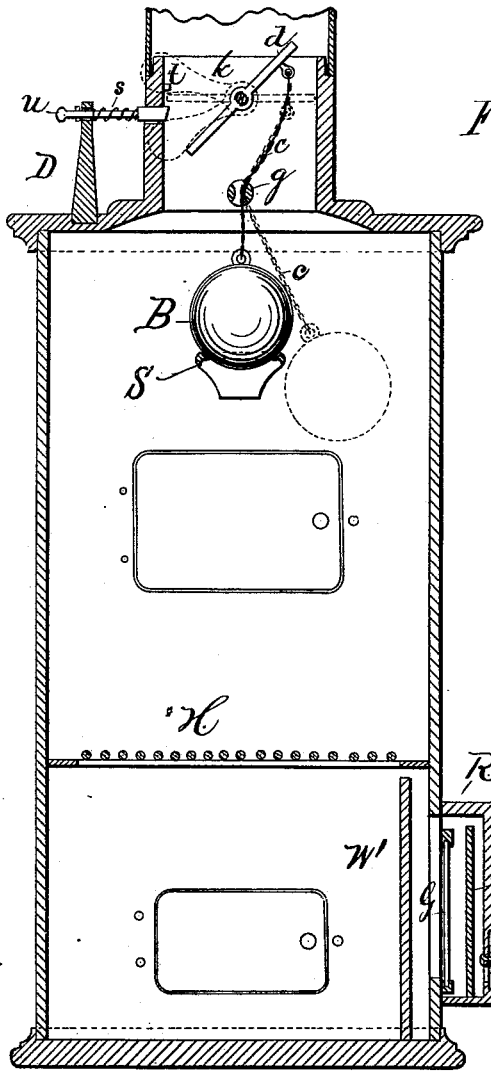
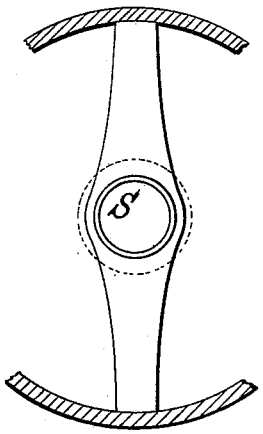


Fig. 1

Fig. 5.



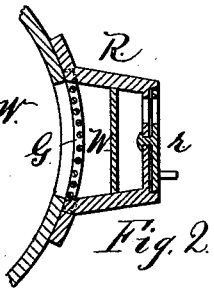


Fig. 2.

Fig. 3.

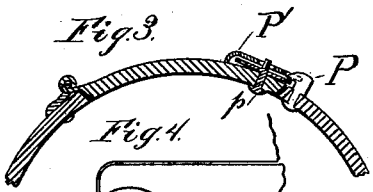
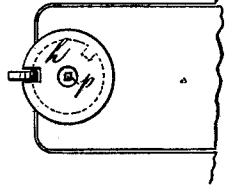


Fig. 4.



Samuel Swartz and
Gilbert R. Swartz,
Inventors,

By Worth Osgood
Attorney.

Attest:
C. R. Searle
D. P. Howe

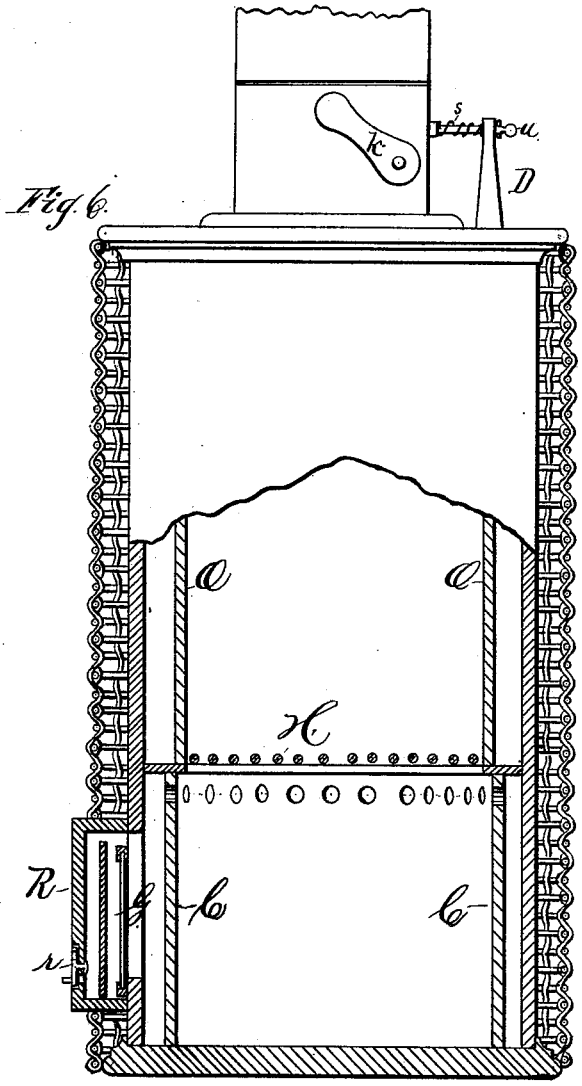
2 Sheets—Sheet 2.

S. & G. R. SWARTZ.

SAFETY CAR-STOVE.

No. 189,668. Patented April 17, 1877.

Fig. 6.



Samuel Swartz 2nd
Gilbert R. Swartz,
Inventors,

By Worth Osgood
Attorney.

Attest:
Chas. R. Searle
D. P. Howe

UNITED STATES PATENT OFFICE.

SAMUEL SWARTZ AND GILBERT R. SWARTZ, OF BUFFALO, NEW YORK.

IMPROVEMENT IN SAFETY CAR-STOVES.

Specification forming part of Letters Patent No. **189,668**, dated April 17, 1877; application filed March 12, 1877.

To all whom it may concern:

Be it known that we, SAMUEL SWARTZ and GILBERT R. SWARTZ, of Buffalo, county of Erie, and State of New York, have invented certain new and useful Improvements in Safety Car-Stoves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 is an axial section of our improved stove, exhibiting the means of operating the damper in detail. Fig. 2 is a horizontal section through the draft-register, showing arrangements of protecting wall and grate. Fig. 3 is a horizontal section, and Fig. 4 a front view of a portion of the stove and door, illustrating the safety-lock. Fig. 5 is a plan view of the socket which receives and holds the damper closing weight. Fig. 6 is a partial section and elevation of a stove having our improvements applied, showing particularly the manner of adjusting an exterior foraminated jacket or equivalent interior fire-pot and ash-pit lining.

The principal object of our invention is to so improve the car-heaters at a present in use as that they shall thoroughly inclose the burning fuel within the body of the stove, and thereby prevent communication of fire to surrounding objects or materials when, from any accident to the car, the said stove becomes injured or displaced.

To accomplish this the invention relates, first, to a method or means of automatically closing the damper in the exit-opening whenever the stove receives a considerable or unusual jar, or when it is inclined too much beyond its normal perpendicular position; secondly, to a means of protecting the draft-inlet, so that while the draft may at all times, if desired, remain open, the passage of coals or ashes through said inlet will be practically impossible at any position of the stove.

Within the hot-air passage at the top of the stove is placed the damper *d*, which is operated from without by a crank, *k*, in the usual manner adopted for regulating the draft. A metallic ball, B, of sufficient weight to trip the damper, is connected thereto by a suitable chain, *c*, and is ordinarily seated in a shallow socket, S, within the stove. When in this position the damper may be turned as desired, the chain being of sufficient length to permit the adjustment without displacing the ball; and the socket S is deep enough to retain the ball in its seat under any ordinary shock, such as is occasioned by coupling the cars, &c.

Under any extraordinary shock it is obvious that the ball will leave its seat, and by reason of its weight will immediately draw the damper down to a closed position, thus effectually preventing the coals or flames from finding an egress at this point of the stove. A stop, *t*, limits the closing motion of the damper; and in order that said damper may not be again thrown open from further turning or inclination of the stove, a spring-latch, *u*, is provided, which operates in connection with the damper in a manner similar to the ordinary latch of a door. The spring *s* is suitably supported from without the stove in a position where it will not be easily affected by the heat. In the form shown in the drawing it is coiled about the latch-shaft, which operates through the standard D.

It is obvious that for this purpose the form of spring and latch may be variously changed without departing from the spirit of the invention.

If the damper should become closed by reason of the ball having been unseated, and it be desired to restore the draft, it will only be necessary to withdraw the latch and turn the crank *k* in the opposite direction until the ball is again seated. This operation is facilitated by the chain-guide *g*, through which the chain is passed; and this guide, being located directly over the socket S, causes the ball to be automatically dropped into its proper position after it has been elevated above its seat.

From this construction it is apparent that in the event of any serious accident to the car the smoke-exit opening of the stove will be automatically closed and held closed.

In the locks ordinarily employed upon car-stove doors, a spring or dropping lever has most usually been employed. Both of these are found imperfect—the first because the spring becomes deteriorated by the heat, and the second because it is liable to become unlocked when the car or stove is overturned.

To avoid both these objections we have devised the following very simple, cheap, and effective lock or catch. The body of the stove is provided with an ordinary projection, P, notched upon the side next the door, and upon the door is placed the plate P′, the same being slotted to receive so much of the projection P as is necessary. Beneath the plate P′ is a circular disk attached to the pivot *p*, which latter receives the key. This disk (marked *h*) is notched to correspond with the notch or slot in the plate P′, and being turned so that the notches will correspond, the door may be completely closed and locked by simply turning the disk *h* so that some portion of its entire or uncut perimeter will fall within the notch upon the projection P.

This disk *h*, being properly balanced and held in place by the friction of the surrounding parts, is not at all liable to be disturbed by any undue motion of the stove, and, being operated by a key, prevents interference with the fire by unauthorized persons.

The lock should, of course, be applied to both the feed and ash-pit doors, in order that the objects of the invention, as above stated, may be fully accomplished.

To guard against the passage of fire or ashes through the draft-opening at the bottom of the stove is also an important feature of the invention, since this opening should nearly always be free to permit the passage of cold air. We prefer to place the usual register *r* in the face of a metallic frame, R, projecting slightly from the body of the stove.

Within this frame is a vertical wall, W, which compels the ingoing currents of air to rise nearly to the top thereof, after which they pass through the grate G, and thence into the ash-pit section of the stove, from whence they proceed to the fire upon the grate-bed H. These barriers W and G are ordinarily sufficient to prevent the possibility of any coals finding their way through the register; but to further insure the security of the fire, we propose to erect a wall, as at W′, Fig. 1, or depend a cylinder, C, Fig. 6, from the grate-ring, either of which shall compel the air to pass upward toward the grate-bed H before entering the same, and, as a consequence of the arrangement, will render a passage through the register-opening still more difficult. The cylinder C is preferable to the wall W′, because it forms a secondary receptacle for the coals and ashes within the body of the stove, and, in case the lower portion becomes damaged or broken, will serve to contain them until the fire can be extinguished.

We prefer to make the stove of boiler or wrought iron, on account of its great resistance to fracture. It may, if desired, be surrounded by a wire cage, as illustrated in Fig. 6, suitable openings for the doors, &c., being, of course, provided; or the interior of the wrought-iron stove may be provided with a cast-iron fire-pot and cylinder, O, depending from the grate-ring, as also shown in Fig. 6. Under the latter construction the exterior casing of the stove will act as the protecting-cage.

It is obvious that either of these features may be applied to the stove represented in Fig. 1.

When constructed and arranged in accordance with the several features enumerated, the stove will be found comparatively inexpensive, simple, and easy to operate, and perfectly safe under the most trying circumstances of accidents.

Having now fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In combination with the damper located within the exit opening of a car-stove, and adapted to govern the draft, in the usual manner, a weight connected therewith by means of a chain, substantially as set forth, the arrangement being as described, so that the weight will fall within the body of the stove, and close said damper in case of accident, as and for the purposes specified.

2. In combination with a damper adapted to be closed by a falling weight, a spring catch and stop for the purpose of holding said damper in its closed position, as set forth.

3. The combination of the damper, its attached weight B, and the socket or seat S, as and for the purposes explained.

4. The combination of the damper, its attached weight, the socket or seat S, and the chain-guide *g*, the whole being arranged to operate substantially as set forth.

5. In a car-heater, the combination, with a frame carrying the draft-register, of a wall, and a grate or screen located within said frame, the whole being attached to the outside of the body of the stove, and arranged to operate substantially as shown and described.

6. In a car-heater in which the passage to the draft-register is guarded by means of a wall and a grate or screen, the interior wall W′, extending either partially or wholly around the interior of the ash-pit, substantially as shown and described.

In testimony that we claim the foregoing we have hereunto set our hands in the presence of two witnesses.

SAMUEL SWARTZ.
GILBERT R. SWARTZ.

Witnesses:
EDWARD S. DANN,
CHAS. H. HULL.