

J. D. SLICHTER.
Grates.

No. 147,072.

Patented Feb. 3, 1874.

Fig. 1.

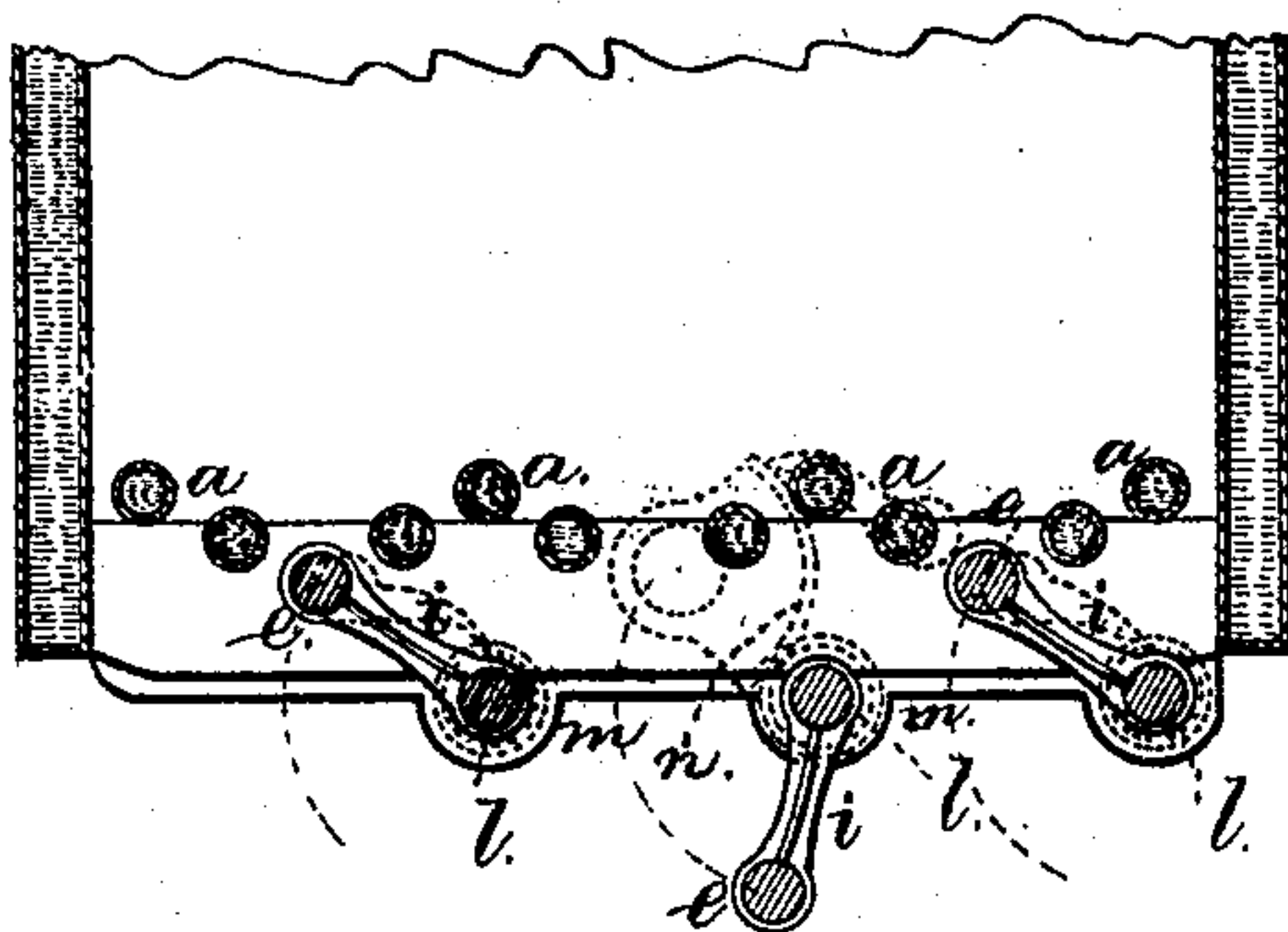
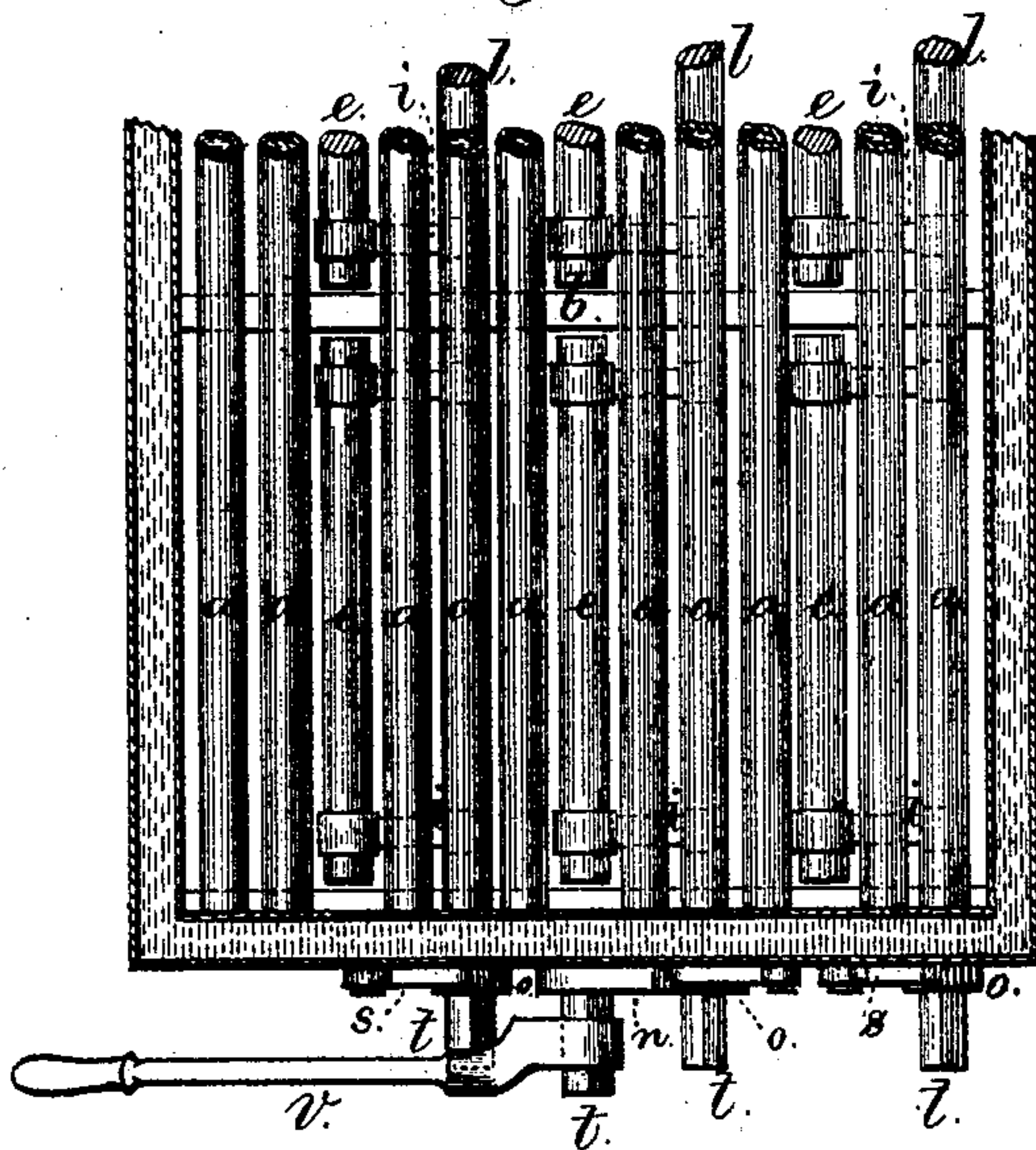


Fig. 2.



Witnesses

Charles Smith,
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Inventor

Joseph D. Slichter,
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UNITED STATES PATENT OFFICE.

JOSEPH D. SLICHTER, OF READING, PENNSYLVANIA.

IMPROVEMENT IN GRATES.

Specification forming part of Letters Patent No. **147,072**, dated February 3, 1874; application filed December 16, 1873.

To all whom it may concern:

Be it known that I, JOSEPH D. SLICHTER, of Reading, in the State of Pennsylvania, have invented an Improvement in Grates for Furnaces; Stoves, &c., of which the following is a specification:

In order to discharge clinkers that accumulate in furnaces, some of the bars have been removable by drawing them out endwise. This is difficult, and sometimes impossible, to do. I have made the alternate bars so that they can be raised and lowered, such device forming the substance of a separate application for Letters Patent.

My present invention consists in a grate-bar sustained, by crank-arms, upon a shaft that can be partially turned to lower the bar or raise it up to place in the grate between the stationary bars. The shaft can be partially rotated by a lever, and the bar sustained when in place; hence this device gives an easy, reliable, and cheap means for removing clinker and other foreign material from the furnace without removing the incandescent fuel.

In the drawing, Figure 1 is a section, transversely, of the grate-bars; and Fig. 2 is a plan of the same at one end.

The bars *a a* are stationary and of any desired character. I have represented them as metallic tubes, through which water circulates, and they are arranged in sections, with the central bar of each section the highest; and at the ends these tubular bars open into water-spaces, so that the water may pass in at one end and out at the other. This feature, however, is well known, and it will be apparent that my improvement is available in any furnace to which the movable bars and crank-arms can be applied. Instead of providing bars all the way across the furnace, that are fixed, I omit one of the stationary bars at the space between every three bars, more or less, and introduce at that point one of my mov-

ble bars. Each movable bar *e* is at the ends of arms *i*, that are connected to or formed with the shaft *l*, and this shaft *l* passes through the fire box or supports *m*, below the grate *a*, and is located in such a manner that the bar *e* may be turned up into the proper place between the groups of bars *a a* or turned down, as shown in Fig. 1, to open that space and allow for the delivery of clinkers between the groups of bars *a a*. The shafts *l* may have two or more bars, *e*, upon them in line with each other, as in Fig. 2, so as to allow of the introduction of cross-bearing bars or supports *b* for the shafts *l* and bars *a*. In order to move the shafts *l*, their ends may be made square, as at *t*, to receive a lever, *v*, by which each shaft is partially turned to raise or lower the bars *e*, and a ratchet-wheel, *o*, and pawl *s*, may be used to hold the shaft when the bar *e* is turned up to its place. Any other suitable stop may be employed for this purpose, and where the shaft *l* is in a position not easy of access, a toothed segment, *n*, may be provided that gears into a pinion at the end of the shaft *l*, and to this segment the lever *v* may be applied. The movable bar or bars, in being raised or lowered, maintain a position parallel to the stationary bars, or nearly so, and the devices for moving these bars up and down may be varied, and a rack and pinion, levers, or similar devices, be employed.

I claim as my invention—

A series of stationary bars, with movable bars applied intermediately and sustained by arms and raised or lowered parallel, or nearly so, to the stationary bars, substantially as set forth.

Signed by me this 12th day of December, A. D. 1873.

J. D. SLICHTER.

Witnesses:

GEO. T. PINCKNEY,
CHAS. H. SMITH.