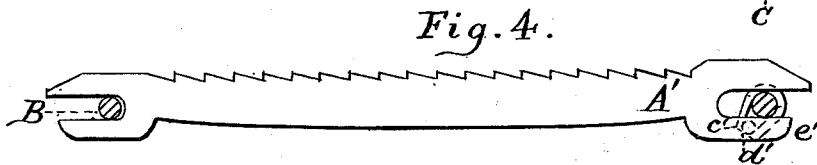
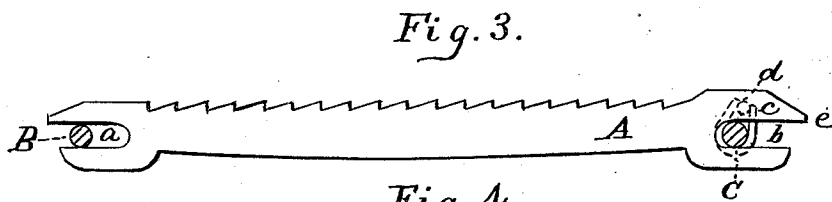
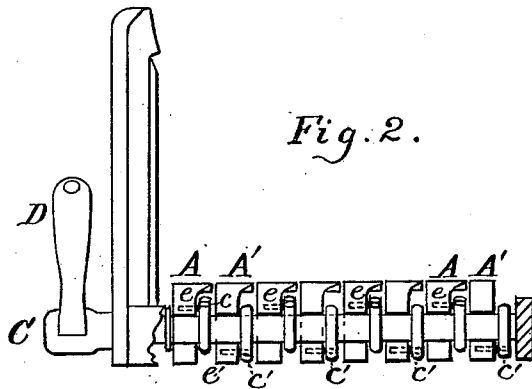
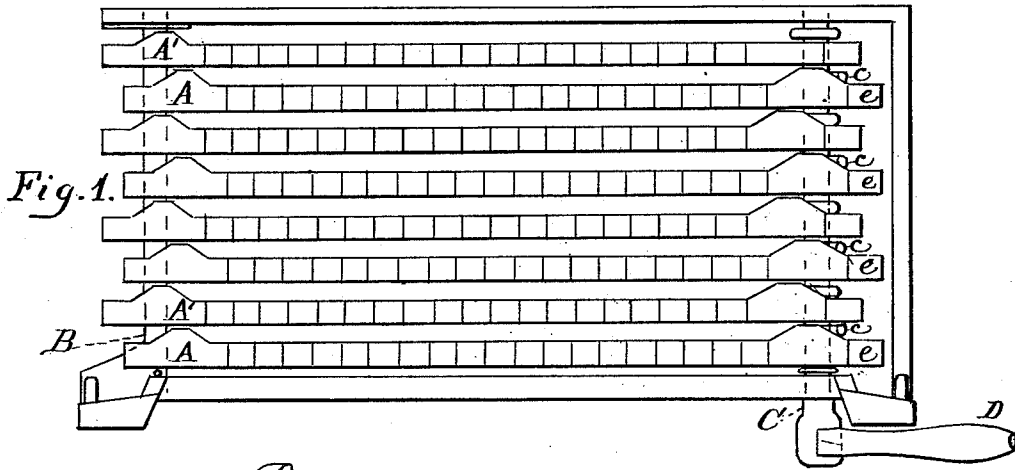


J. E. CREA.

Grate.

No. 168,325.

Patented Oct. 5, 1875.



Witnesses :
G. B. Toivles.
A. Lacey

Inventor :
James E. Crea
By W. Burris
Atty.

UNITED STATES PATENT OFFICE.

JAMES E. CREA, OF ALLEGHENY, PENNSYLVANIA.

IMPROVEMENT IN GRATES.

Specification forming part of Letters Patent No. **168,325**, dated October 5, 1875; application filed June 30, 1875.

To all whom it may concern:

Be it known that I, JAMES E. CREA, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Grates; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a top view. Fig. 2 is a transverse section. Figs. 3 and 4 are detail views of the grate-bars.

A A' represent the bottom grate-bars, made with jaws, forming slots *a* and *b* at the ends, to receive and slide back and forth over the fixed rod B and the rock-rod C. Rod B is fastened at the ends, and rod C has its bearings at the ends in the front and back plates of the furnace or fixed bars of the grate. The rock-rod is provided with a shaker, D, and with lugs *c c'*, attached alternately to each other, to the under and upper sides of the rod,

so that when the rod is rocked the lugs *c* engage pins *d* on the upper jaws *e* of bars A, and lugs *c'* engage pins *d'* in the lower jaws *e'* of bars A', as shown in the drawings, giving the contiguous bars reverse motions, and thoroughly shaking the grate.

The under jaws, at the ends of the bars, serve as guides to the bars, and hold them in place in the grate, and thus avoid the use of guides or stays on the top of the grate.

I claim—

The combination of the grate-bars A A', having slots *a b*, and the guide-bar B and guide and rock-rod C, carrying lugs *c c'*, which engage the pins *d d'* on the jaws *e e'*, substantially as and for the purposes described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JAMES E. CREA.

Witnesses:

W. C. BERINGER,
S. R. SMALL.