(No Model.)

O. REILLY.

GRATE BAR.

No. 434,722. Patented Aug. 19, 1890.

Fig. 1

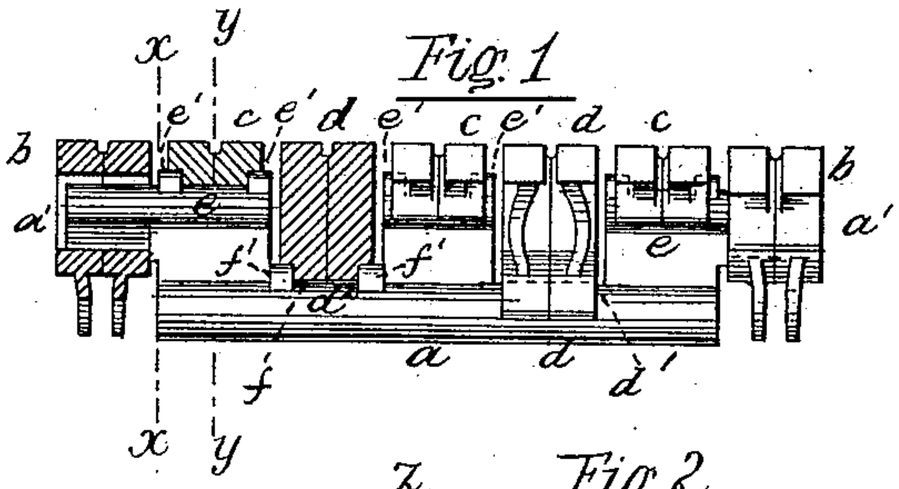


Fig. 2

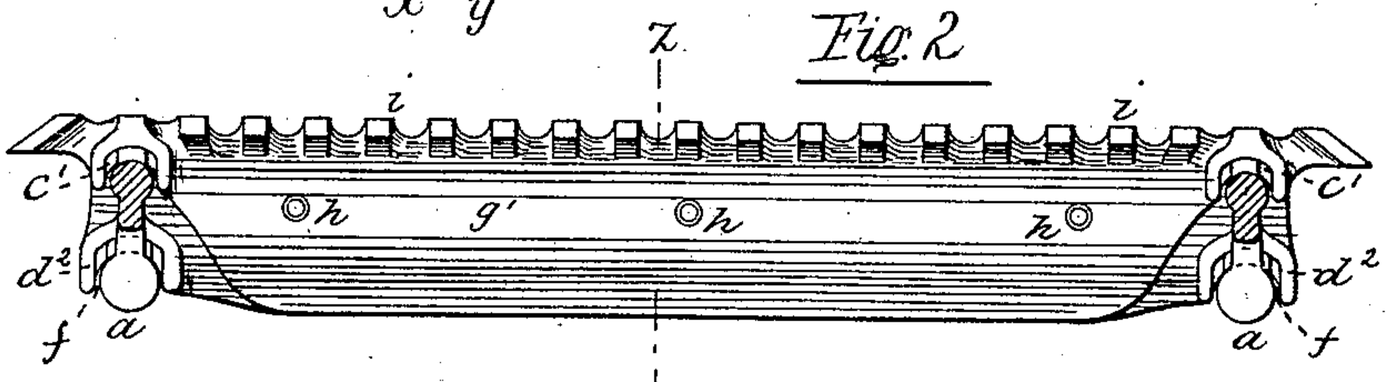


Fig. 3

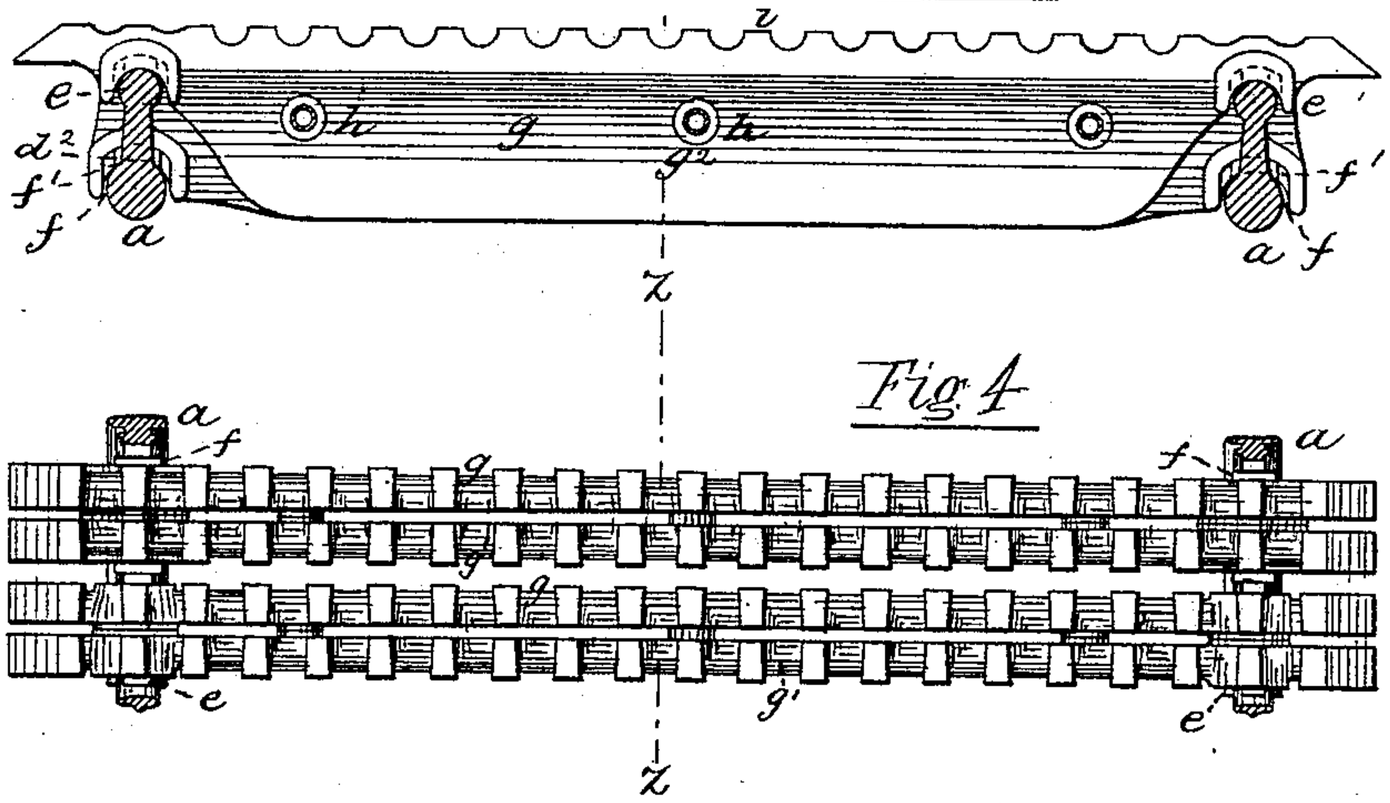
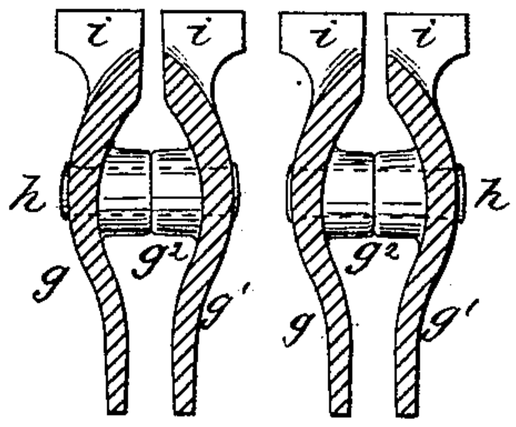


Fig. 4

Fig. 5



Witnesses

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UNITED STATES PATENT OFFICE.

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GRATE-BAR.

SPECIFICATION forming part of Letters Patent No. 434,722, dated August 19, 1890.

Application filed March 1, 1888. Serial No. 265,843. (No model.)

To all whom it may concern:

Be it known that I, OWEN REILLY, a citizen of the United States, residing at New York, county and State of New York, have invented certain new and useful Improvements in Grate-Bars, of which the following is a specification.

In my patent, No. 390,902, of October 9, 1888, I have shown a grate composed of transverse crank-bearing bars and longitudinal bars resting thereon, in which the longitudinal bars are prevented moving laterally by means of teeth on the bearing-surfaces of the transverse crank-bars arranged to project into recesses formed in the central parts of the bearing-surfaces of the longitudinal bars.

Now this invention relates to shaking grates, and embraces means for preventing the lateral displacement of the longitudinal bars, consisting of upwardly-projecting guide-flanges at the ends of the bearing-surfaces of the transverse crank-bearing bars, and corresponding recesses formed in the sides of the longitudinal bars, in which the guide-flanges fit and hold the longitudinal bars apart. These guide-flanges are most useful on the upper bearing-surfaces of the transverse crank-bearing bars; but may in some cases be formed on the lower bearing-surfaces also. By this construction the grate-bars can be cast on their sides without necessitating extra molding or the use of cores to form the recesses for the guide-flanges of the crank-bearing bars, whereas to apply my above-mentioned invention to grate-bars, which require to be molded on their sides, cores are necessary to produce the recesses in the central parts of the bearing-surfaces.

This invention also embraces improvements in the construction of the grate-bars particularly adapted for use with transverse crank-bearing bars, and which will be fully described in the following description of the accompanying drawings, in which—

Figure 1 is an elevation, partly in section, of a grate embodying my improvements. Fig. 2 is a section of the same on the line *x x*, Fig. 1. Fig. 3 is a section of the same on the line *y y*, Fig. 1. Fig. 4 is a plan view showing two complete bars; and Fig. 5 is a transverse section of the same on the line *z z* of Figs. 2, 3, and 4.

The crank-bearing bars *a a* are supported by their rocker ends *a' a'* in the two outside longitudinal bars *b b* of the grate, and the inside longitudinal bars *c c* and *d d* are supported by the upper bearings *e e* and the lower bearings *f f*, respectively, of the bars *a a*, as in shaking grates of the class to which this invention relates. The grate-bars, as in my before-mentioned application, are devoid of any side lugs or spacing-pieces, but are controlled as regards lateral movements by a peculiar formation of their bearing-surfaces and the crank-bearing bars. In this case each of the upper bearings *e e* of the bars *a a* are provided at their ends with guide-flanges *e' e'*, between which the central portion of the bearing-surfaces of the bars *c c* fits, as clearly shown at Fig. 1, the sides of the bars *c c* having recesses *c' c'* formed therein for the reception of the guide-flanges *e' e'*, as shown at Fig. 2.

To utilize the full length of the bearing-surfaces between the crank-bearing bars *a a* and the grate-bars *c c*, the tops of the guide-flanges *e' e'* are made to fit against the upper walls of the recesses *c' c'*. These walls are made concentric with the bearings *e e*, which fit sufficiently close in the ends of the bars *c c* to move and control them when one or both of the crank-bearing bars *a a* is or are rocked, and the recesses *c' c'* are somewhat wider than the flanges *e' e'* to allow for this rocking action. The flanges *e' e'* may be made to fit snugly in the recesses *c' c'*, the necessary freedom being provided between the bearing-surfaces of the bars *c c* and bearings *e e*.

The bars *d d* rest at their ends on the lower bearings *f f* of the bars *a a*, and the sides of the upper bearings may, as heretofore, be depended on to hold these bars in position, as shown at *d'*, Fig. 1; but it is preferable to provide these lower bearings *f f* with guide-flanges *f' f'*, and the bars *d d* with recesses d^2 d^2, as shown in one of the bars, Figs. 1, 2, and 3, whereby the bars *d d* are controlled in a manner similar to the bars *c c*.

With the exception of slight differences in the shape of their ends, all of the longitudinal

bars are alike, and my improvement in the construction of the bars, which I will now describe, is clearly shown in Figs. 4 and 5.

Each bar is approximately tubular in form, and is composed of two longitudinally-curved ribs g g', secured together by short pieces of pipe h h, which are passed through the internal lugs g^2 g^2 and riveted over the outer sides of the ribs. The upper edges of the ribs g g' are provided with teeth i i, which extend down the outer curved sides of the ribs. The lower parts of the ribs are flat for a short distance and join the curved portions by a reverse curve, as seen at Fig. 5, which view also clearly shows that with this form of longitudinal ribs the vertical sections of the air-spaces between the ribs of each bar and between the adjacent bars are irregular and parallel and narrow only short distances, thus reducing to a minimum the heating of the ribs by radiation between adjacent ribs and convection of the heated air. Bars of this form have the further advantage of possessing the maximum strength by the use of a minimum amount of metal, which is an important factor in grate-bars. The form insures against breakage and warping, and the light weight greatly reduces the conduction of heat from the upper to the lower part of the bars.

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

1. In a shaking grate, the combination, with transverse crank-bearing bars having guide-flanges at the ends of the crank-bearing surfaces, of longitudinal bars having curved surfaces to set over the bearing-surfaces of the crank-bearing bars, and recesses at their sides for the reception of the guide-flanges, substantially as and for the purposes set forth.

2. In a grate-bar, in combination, the longitudinally-curved ribs g g', each provided with teeth i i at their upper edges, and spacing-lugs g^2 g^2 on their sides, and the connecting pipes or rivets h h.

In witness whereof I have hereunto set my hand this 27th day of February, 1888.

OWEN REILLY.

Witnesses:

ALFRED SHEDLOCK,

G. H. STARRETT.