(No Model.)

G. C. ST. JOHN.

GRATE.

No. 574,347. Patented Dec. 29, 1896.

Fig. 1.

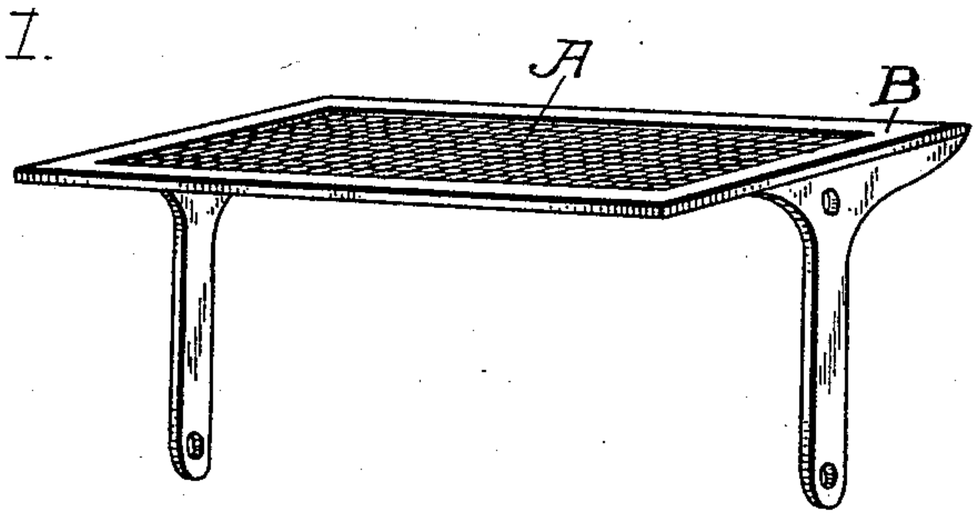


Fig. 2.

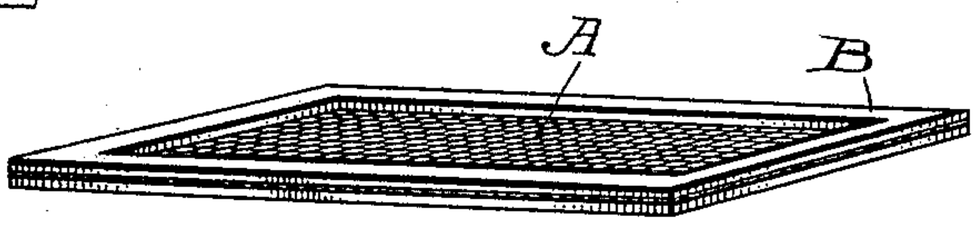


Fig. 3.

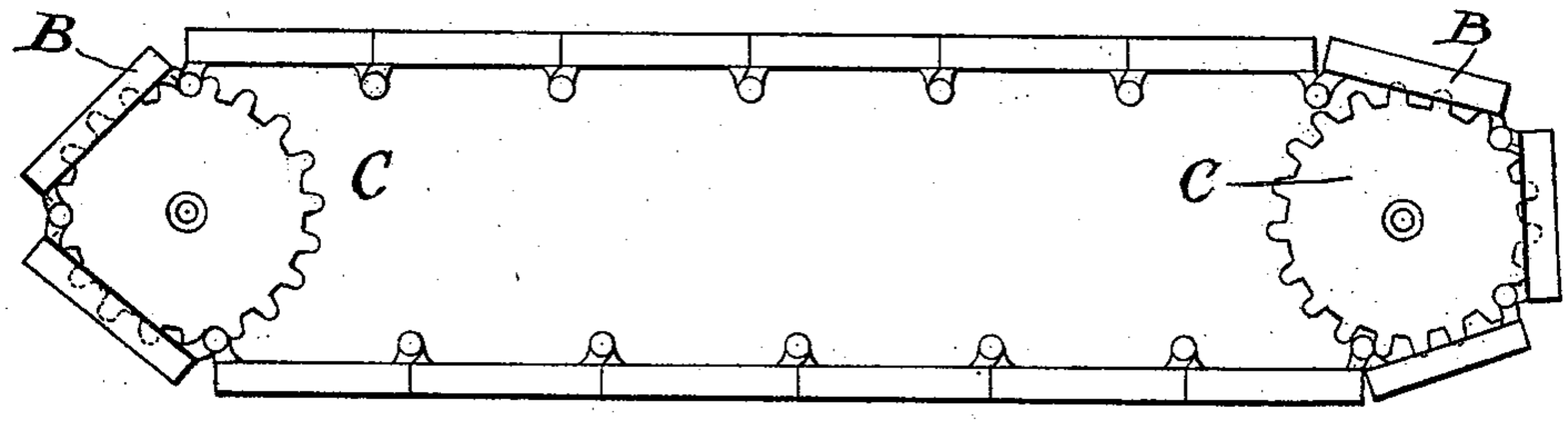
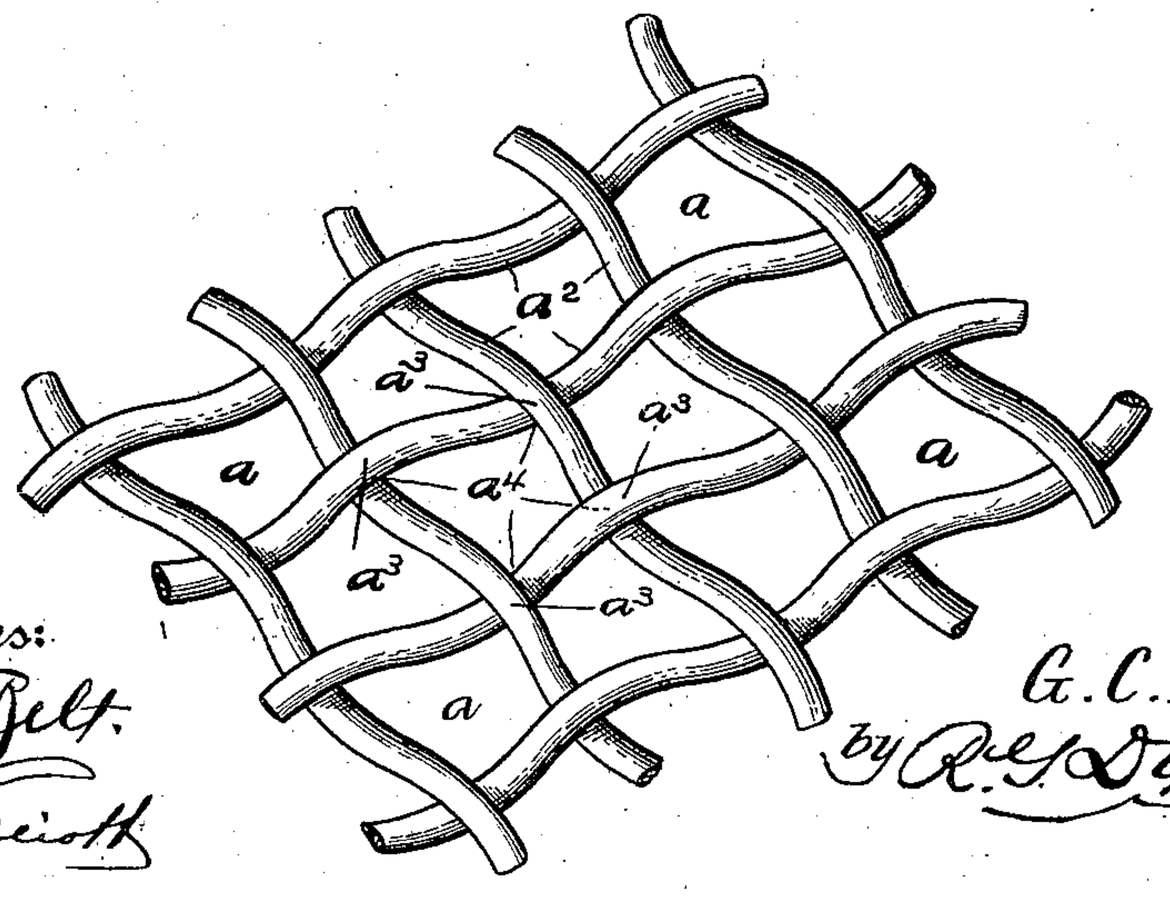


Fig. 4.



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UNITED STATES PATENT OFFICE.

GAMALIEL C. ST. JOHN, OF NEW YORK, N. Y.

GRATE.

SPECIFICATION forming part of Letters Patent No. 574,347, dated December 29, 1896.

Application filed February 21, 1896. Serial No. 580,273. (No model.)

To all whom it may concern:

Be it known that I, GAMALIEL C. ST. JOHN, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Grates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to grates.

The objects of the invention are to supply a light, neat, efficient, and comparatively inexpensive grate structure adapted to burn coal, hard or soft, of any size; to increase the air-supply; to render the grate practically indestructible; to prevent any clogging of the coal on the surface, and to prevent sagging of the grate from heat.

With these objects in view the invention consists in the device substantially as hereinafter described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like letters of reference indicate corresponding parts, I have illustrated an embodiment of my invention, although it is to be understood that other forms of embodiment thereof may be employed without departing from the spirit of the same, and in these drawings—

Figure 1 is a view in perspective of my improved grate, showing it as applied to an ordinary tilting grate, with the rim or frame cast integral with the grate. Fig. 2 is a like view showing the frame constructed of two rectangular parts, between which the grate-body is secured by any suitable form of fastening device. Fig. 3 is a view in side elevation, showing the structure as applied to a form of traveling grate. Fig. 4 is a view in perspective, showing the configuration of the grate structure.

Referring to the drawings, A designates the body of the grate, constructed of wires or bars preferably circular in cross-section, although it is to be understood that they may be of other form. The wires are interwoven, interlaced, or intermeshed to produce a reticulated, that is to say, open-worked, warped, and woofed, structure, with the draft-openings a, formed by the webs or walls a^2, of substantially the same size and shape. The wires are to be of such thickness and so assembled that at the points where they cross each other a bulge or swell a^3 will be formed, so that at each of the four corners of each draft-opening there will be a bulge, or four bulges to each opening, and for each bulge there will be a corresponding depression a^4 at each corner of the opening. These bulges form points or surfaces on which the fuel will rest. Thus at every draft-opening there will be four of these points or separate fuel-supports and also four draft-openings formed by the depressions a^4, which are supplemental to and coact with the regular draft-openings described.

The grate-body is secured to a frame or rim B, made of rods or casting, or both conjointly, which serves to stiffen and reinforce it and constitutes the perimeter and also the means by which the grate may be mounted in position in the stove, furnace, or the like. This frame may be secured to the grate-body by means of bolts, rivets, or other forms of fastening device; but by preference it is cast around the grate-body and forms an integral part thereof.

In Fig. 3 I have shown a series of these grates connected together to form an endless traveling grate, which is supported on suitable wheels or rollers C, adapted to be turned to bring the successive grate-surfaces beneath the point of ingress of the coal, which is to be carried forward into the furnace or into proper position with the fire-door thereof.

By constructing the grate-body of woven or interlaced wires or bars I produce a light and exceedingly strong structure, possessing greater elasticity, durability, and effectiveness in use than a cast-iron grate, and by the number and proximity to each other of the draft-openings I am enabled to obtain a very strong, widely-diffused, constant, and uniform draft up through the entire grate area, that operates not only to shield the wires or bars from destructive action of the heat, but also renders possible the use of very small-sized fuel without loss by falling through the grate into the ash-pit and without danger of prevention of proper combustion from any close packing of the fuel.

While I have shown the grate-body as supported or reinforced only at its sides and

ends, it is to be understood that in some instances, as where a large grate is used, it may be reinforced by cross-bars secured to the rim and extending beneath the body or cast integral therewith.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A grate in the nature of a reticulated structure, and a reinforcing frame or rim secured to and constituting the perimeter of the grate, the grate being substantially a plane surface freely exposed underneath, substantially as described.

2. A grate having its body portion constructed of interlaced or interwoven wires or rods, and a reinforcing frame or rim secured to and constituting the perimeter of the grate, the combined area of the draft-spaces of the grate being greatly in excess of the area of the metal presented to the direct action of the heat, whereby a strong and constant upward draft will be generated by the rapid intake of air beneath the grate, operating to convey the heat away from the meshes or webs constituting the fuel-supporting surfaces and, also, shielding these surfaces, thereby protecting them from rapid destruction, substantially as described.

3. A grate in the nature of a reticulated or woven structure having raised portions at the air-openings constituting fuel-supports, and a reinforcing frame or rim secured to and constituting the perimeter of the grate, substantially as described.

4. A grate comprising an open-work body portion and a frame or rim cast integral therewith, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GAMALIEL C. ST. JOHN.

Witnesses:

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