C. G. ATWATER.

DAMPER FOR FURNACES.

APPLICATION FILED NOV. 14, 1906.

936,288. Patented Oct. 12, 1909.

Fig. 1.

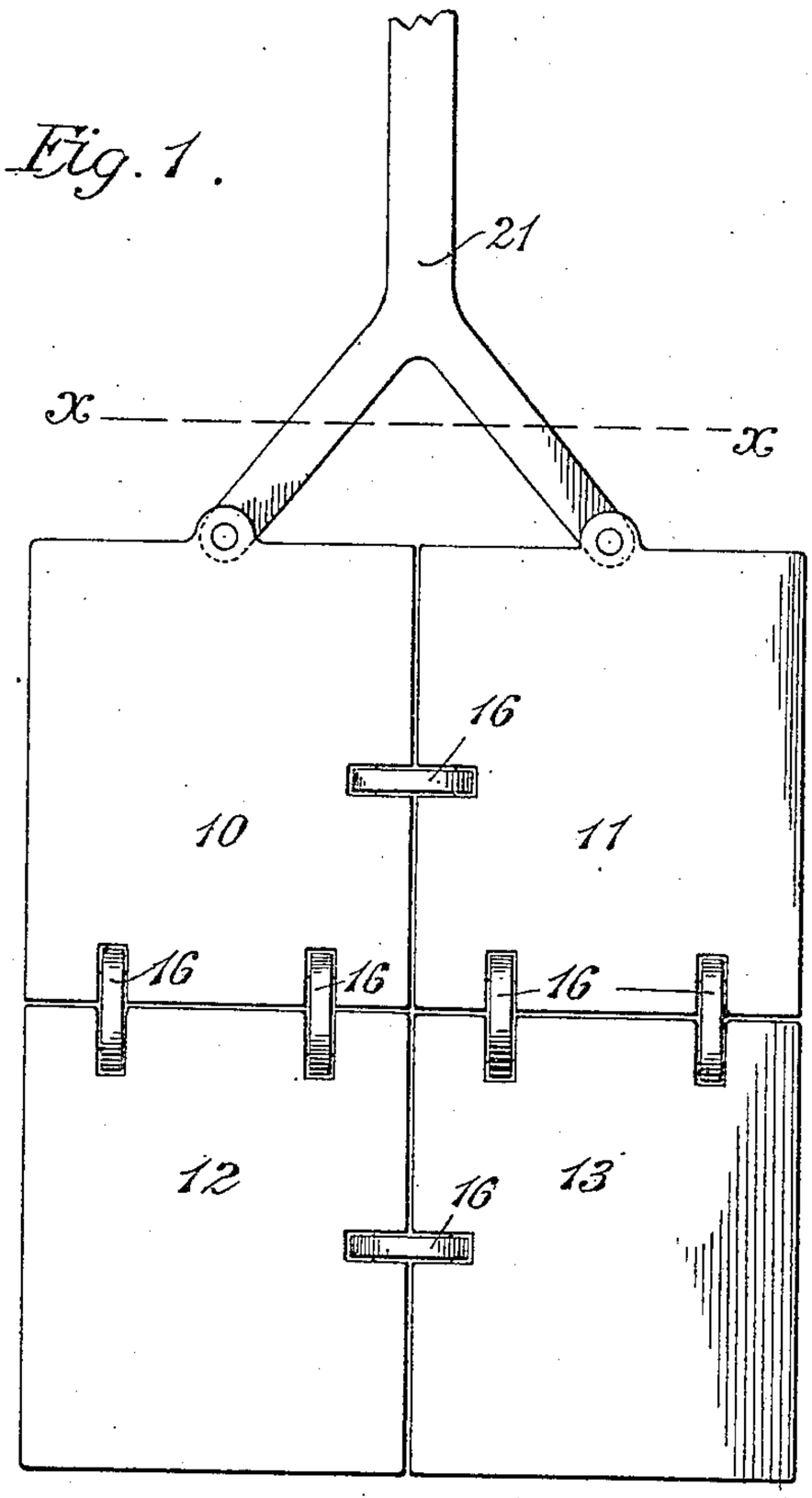


Fig. 3.

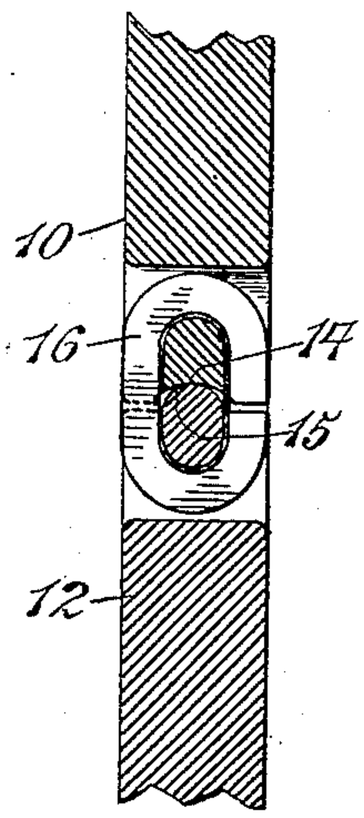


Fig. 4.

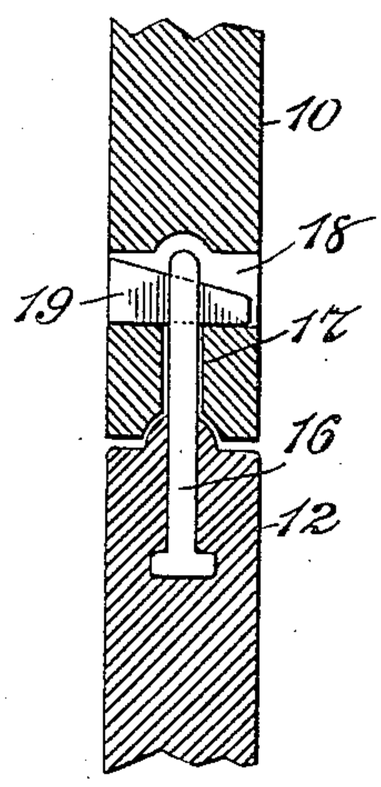
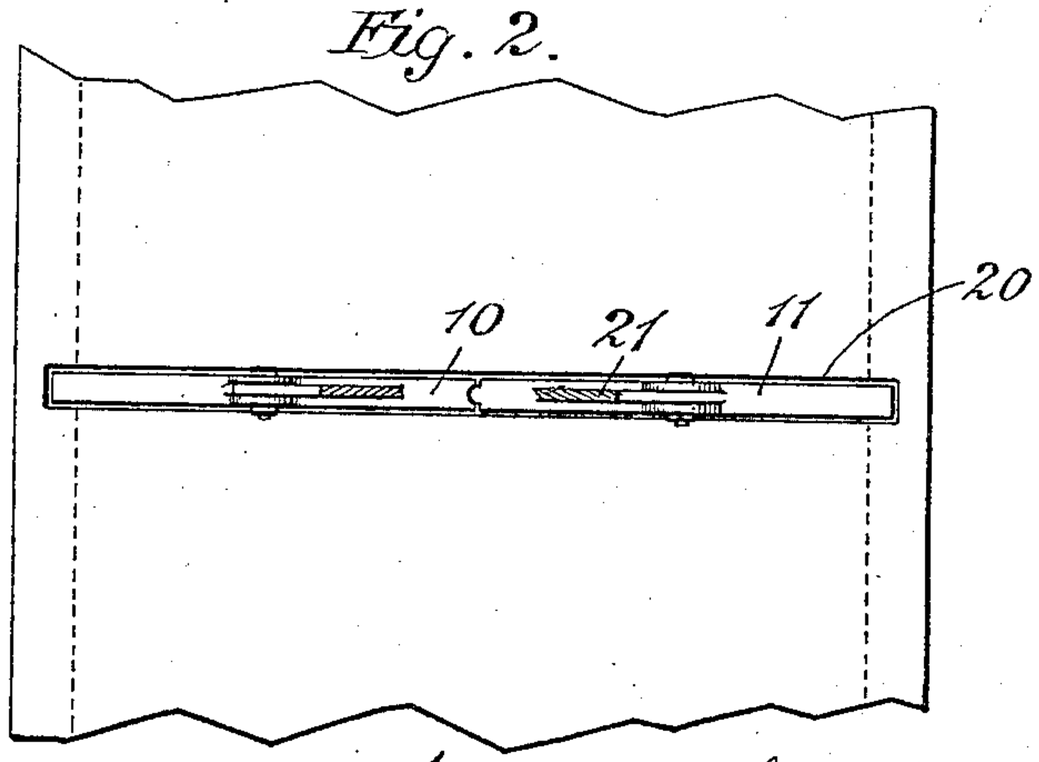


Fig. 2.



Witnesses
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DAMPER FOR FURNACES.

936,288. Specification of Letters Patent. Patented Oct. 12, 1909.

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To all whom it may concern:

Be it known that I, CHRISTOPHER G. ATWATER, a citizen of the United States, residing in Flushing, in the State of New York, have invented a certain new and useful Improvement in Dampers for Furnaces, of which the following is a specification.

The present invention relates to an improved form of damper for use in connection with coke ovens and other furnaces producing very high temperatures and has for its object the provision of a damper or draft regulator of simple and relatively inexpensive construction capable of withstanding the high temperatures in the flues of furnaces of the above named character.

A great deal of difficulty has been experienced in the past by reason of the dampers in furnace flues of large dimensions becoming distorted or warped by the intense heat so as to become jammed in one position. This difficulty is frequently so serious as to make it practically impossible to move the damper and thus entirely destroys its utility. By use of the present invention, I am able to overcome these difficulties and to provide a form of damper, capable of use in furnace flues of large dimensions and so constructed that the intense heat to which they are subjected is not capable of rendering them inoperative.

My invention is illustrated in a preferred form in the accompanying drawings wherein—

Figure 1 is a front view of a suspended damper made in accordance with my invention, Fig. 2 is a top view of the same partly in section on the line *x*—*x* in Fig. 1, Fig. 3 is a sectional detailed view of one form of flexible joint used in this device and Fig. 4 is a similar view of another form of flexible joint.

Although I have shown in the drawing a suspended sliding damper, it is to be understood that my invention applies to any familiar damper however arranged and whether sliding or moving otherwise.

The essential feature of my invention lies in so constructing the total damper plate as to distribute the distorting or warping effect of the heat over small sections, thus diminishing the effective distortion in the total device. For this purpose the damper is divided into sections of iron plate as shown at 10, 11, 12 and 13 in Fig. 1, which sections are joined by flexible connections permitting a certain degree of limited movement between contiguous plates. It is plain that, in this construction, one section is warped or distorted by itself and to a relatively small extent, corresponding to the relatively small area of the sections. It is to be understood that I am not limited to any given number or relative arrangement of the sections.

One form of flexible joint which may be used is shown in Figs. 1 and 3. This is shown in connection with a preferred mode of fitting together contiguous edges, wherein the edge of one plate as 10, is provided with a shallow, curved, transverse channel 14, while the meeting edge in the next plate, 12, has a corresponding transverse, curved ridge, 15, which loosely fits said channel. Each plate is chambered near the edge at suitable intervals as shown in the drawings. An iron bar 16 is bent to the form of a link within said chamber and surrounding the edge portions of the two plates as shown in Fig. 3. This makes a flexible connection allowing a limited movement of rocking or sliding between the two plates so as to permit opposing movements due to distortion left around the parts of the joint may be filled up with fire clay, which may also be applied all along the edges of the sections.

I do not limit myself to any particular construction of the flexible connections and in Fig. 4 I have shown another modified form of said connection wherein a bolt 16 is fixed in one plate, as 12, said bolt passing loosely through a hole 17, in the next plate as 10, and terminating in a chamber 18 in said plate 10. A wedge 19 is driven through the end of the bolt 16, to complete the connection.

In Fig. 2 the arrangement of the damper with relation to the flue is shown. A slot 20 through the top of the flue extends a little distance into the side walls thereof, and within this slot the damper slides up and down being manipulated by means of the suspension 21.

By distributing the total distortion due to heat as above described, the extent of such distortion never becomes sufficient so that the warping or twisting of the damper causes it to jam within the slot 20 and my improved damper can thus be relied upon to be easily movable in spite of any degree of heat to which it may be subjected in practice.

Various changes may be made in this con-

struction without departing from my invention and I am not to be limited to the details herein shown and described.

What I claim is—

1. A damper for furnaces comprising substantially flat sections set edge to edge and having pairs of abutting chambers in the meeting edges, and securing means at each pair of abutting chambers, each of said means entering both abutting chambers and engaging a portion of each section, substantially as described.

2. A damper for furnaces comprising substantially flat sections set edge to edge and having pairs of abutting chambers at their meeting edges, said chambers being substantially U-shaped, and links in said pairs of abutting chambers, said links surrounding the portions of the joined sections which are embraced by said U-shaped chamber, substantially as described.

3. A damper for furnaces comprising two sections set edge to edge, one edge being concave and the other convex to fit the concave edge and both sections having chambers near said meeting edges, and links terminating in said chambers and engaging portions of said sections respectively whereby two contiguous sections are secured firmly together while permitting a certain degree of relative rocking movement between them.

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Witnesses:
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