

[54] **METHOD OF FABRICATING AND ASSEMBLING A DAMPER**

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98/121 R

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98/121 R, 121 A; 49/74, 77, 80, 371; 160/5,
381

[56] **References Cited**
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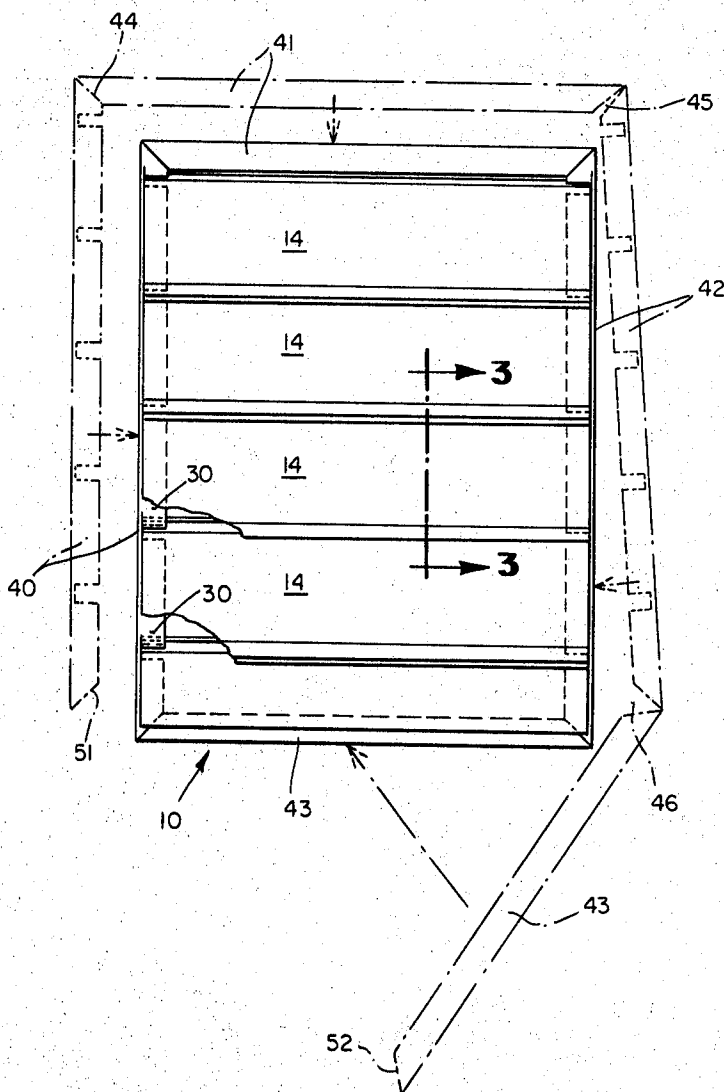
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[57] **ABSTRACT**

A damper is assembled from a formed frame material having a flange provided with hook-shaped hinge portions formed from the flange and arranged so that when the frame material is folded into the shape of a frame, the hinge portions will be on oppositely positioned sides; and a plurality of blades having complementally configured hook-shaped portions for engagement therewith, by inserting one end of each blade into one complementally configured hook-shaped portion on the flange at one side of the damper frame prior to folding, and then folding the damper frame material about the blades so that the hook-shaped portions on the other side of the damper frame engage the other ends of the blades.

5 Claims, 3 Drawing Figures



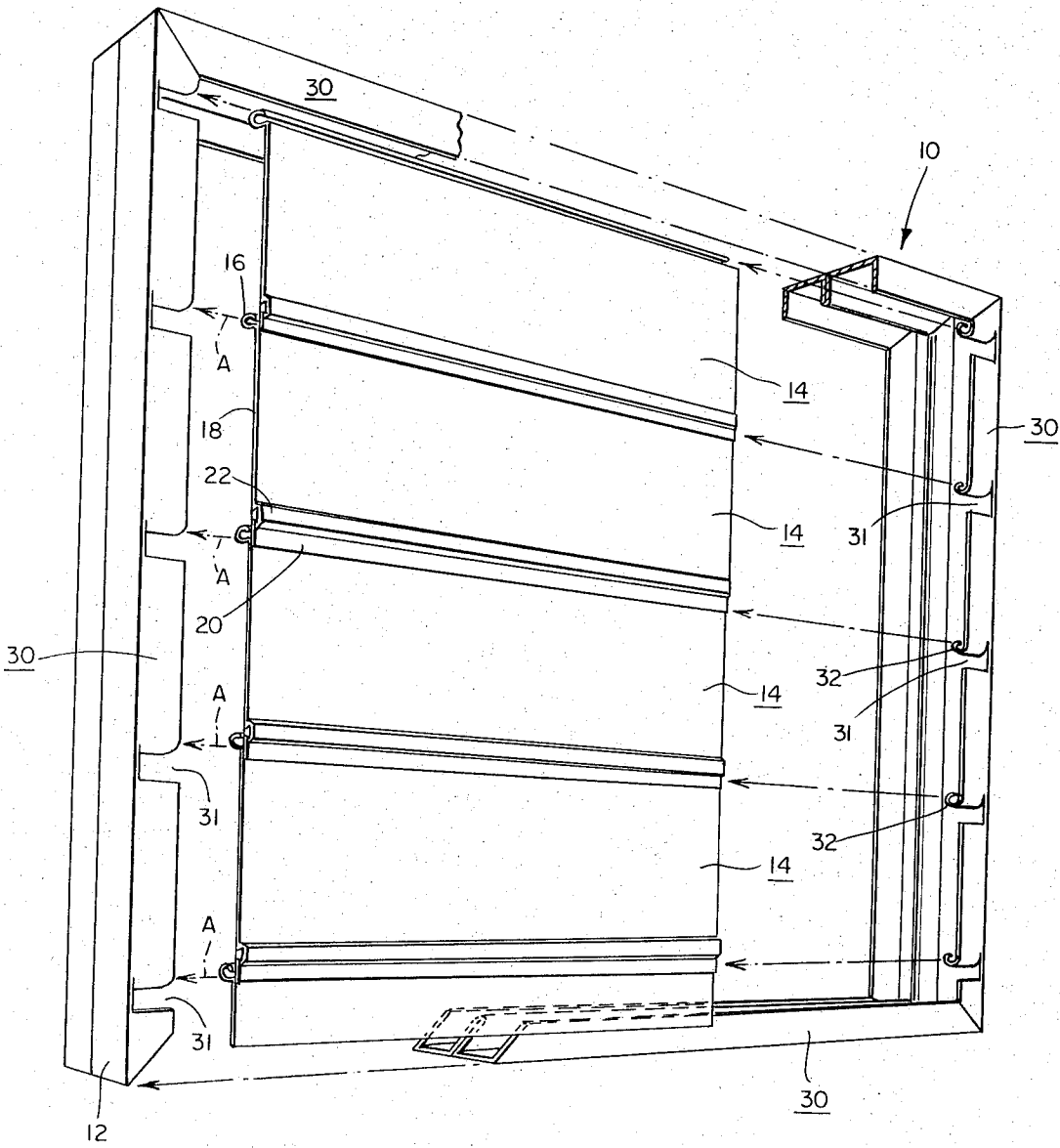
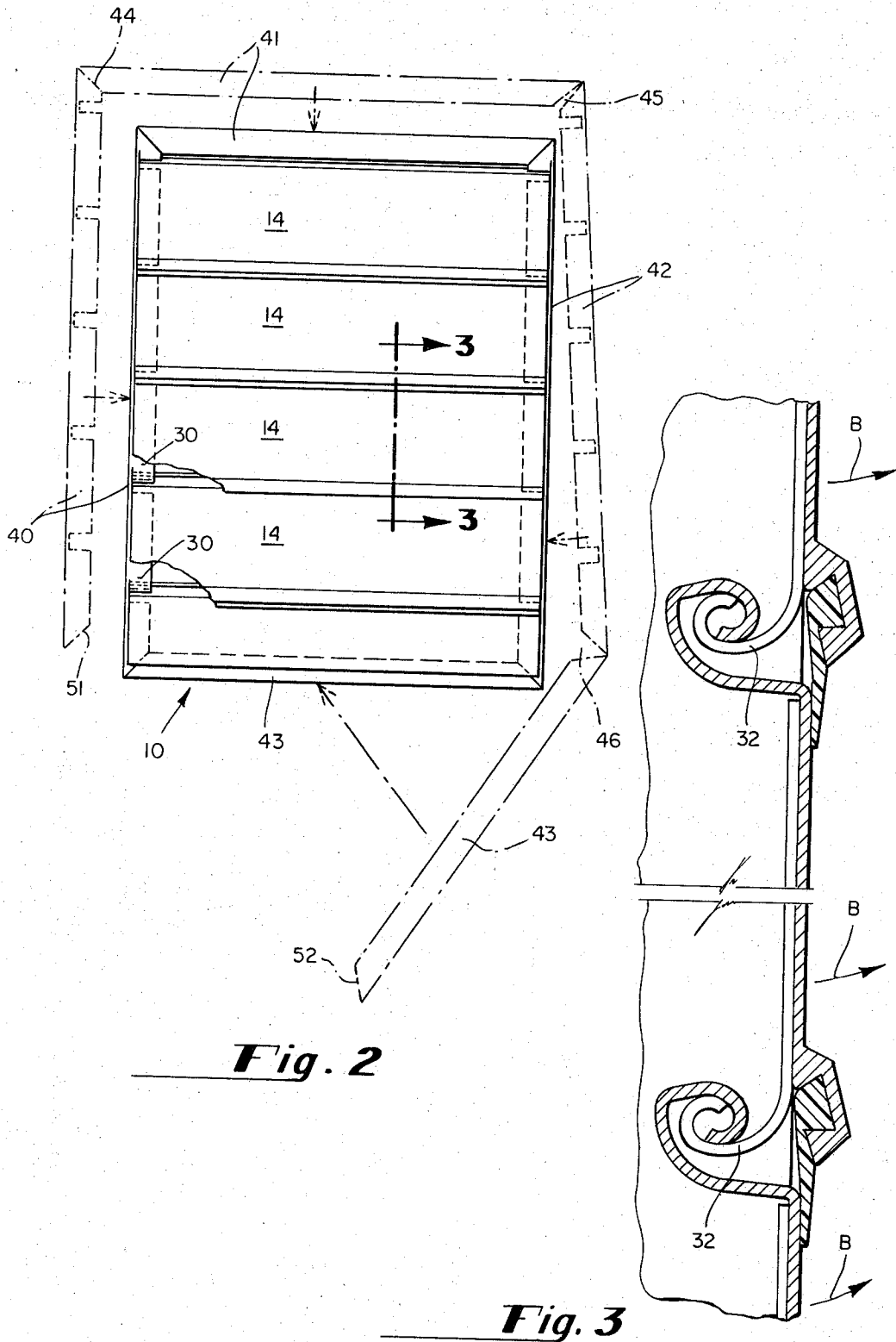


Fig. 1



METHOD OF FABRICATING AND ASSEMBLING A DAMPER

BACKGROUND OF THE INVENTION

This invention relates to air dampers and, in particular, to dampers permitting air flow in one direction only.

In the prior art such as shown in my U.S. Pat. No. 3,327,764, it is known to fabricate a damper frame having a plurality of inwardly depending flanges, from a single sheet of material, by forming the flanges, notching them, and folding the formed and notched structure so as to form an overall box-shape. The free ends can either be connected in any suitable way, such as by a series of tabs interlocked with one another, or by welding along the seam formed by the engagement of the ends.

The prior art also discloses the use of blades having hook-shaped portions along one longitudinal edge which mate with hook-shaped mounting brackets attached to an inwardly depending flange of a damper to provide a structure for regulating unidirectional air flow. See for example, the blade shown in FIG. 6 of my U.S. Pat. No. 3,581,650 and the damper construction shown in my U.S. Pat. No. 3,605,603.

SUMMARY OF THE INVENTION

By the present invention I improve upon the known prior art devices by providing a new damper consisting essentially of only two elements, that is, the damper blade and the damper frame. These elements are engaged in such a manner as to be articulated with respect to one another by means of hinged portions formed in each element. In the present application, I disclose the method of fabricating these elements and of assembling them into a damper.

Accordingly, it is an object of this invention to provide a new method of constructing a new damper. This and other objects of the invention will become apparent from the following description with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view partially broken away and partially in section, showing the basic assembly of the damper in accordance with the preferred embodiment of my invention;

FIG. 2 is a front view on a smaller scale partially broken away, of the assembly shown in FIG. 1; diagrammatically illustrating the assembly of the frame portion of the damper in phantom lines; and

FIG. 3 is a foreshortened section on a greatly enlarged scale, taken as indicated by the lines and arrows 3—3 in FIG. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Although specific forms of the invention have been selected for illustration in the drawings, and the following description is drawn in specific terms for the purpose of describing these forms of the invention, this description is not intended to limit the scope of the invention which is defined in the appended claims.

Referring to the figures, the damper assembly designated generally 10 comprises a frame 12 which is E-shaped in section, and a plurality of blades 14. The blade construction is similar to that shown in my prior

U.S. Pat. No. 3,605,603 and comprises a hook-shaped upper portion 16 offset from the flat intermediate blade portion 18 and a seal member 20, preferably made of vinyl or similar material, which is retained in a dovetailed slot formed in a longitudinally extending boss 22 along one edge of the blade.

The damper frame is formed of light gauge aluminum, which is fabricated preferably by roll forming to provide a plurality of inwardly depending flanges once the damper is assembled into a box shape. However, at the initial stages, the flanges are merely perpendicular to the sheet of aluminum material. These flanges are V-notched so that the material can be folded into the box shape. In this regard, the disclosure of my prior U.S. Pat. No. 3,327,764 is incorporated herein by reference (see for example, FIG. 5 of that patent).

The front flange 30 is notched at spaced intervals, as at 31, to provide a plurality of tabs which are then formed into hook-shaped elements as at 32. The spacing of these elements is such that when the frame material is assembled into a box-like configuration, these elements will be disposed along parallel lines on opposed sides of the frame, as shown in FIG. 1. Two such elements are required for every blade.

Once having provided the requisite number of hook-shaped elements formed in the front flange, the damper can be assembled by folding the notched E-shaped frame material about the blades. In accordance with this invention, one end of each blade is inserted into a notch 31 of the front flange 30 so that the hook-shaped portion on the end of the blade engages a hook-shaped element 32 on the flange, as shown by the arrows "A" in FIG. 1. While the closed position is shown in FIG. 3, the blades could be slightly articulated in the direction of the arrows "B" shown in FIG. 3 and the same condition would obtain.

Once the ends of the blades are inserted into the notches on one side of the frame (such as the side 40, shown in phantom lines in FIG. 2), then the remainder of the frame material sections 41, 42 and 43 can be folded about the blades, as shown in phantom lines in FIG. 2. As this folding is taking place, each of the blades is inserted into the corresponding notch on the other side 42 of the frame. Note that the V-notched areas 44, 45 and 46 come together as the frame is formed. To finish off the structure, the bottom 43 is closed so that the edges 51 and 52 are in engagement with one another and can be welded.

By fabricating the frame and assembling the damper as described above, there is a great saving in labor and material. Further, there is provided a new damper with excellent draft control characteristics, formed of only two elements, which are articulated with respect to one another.

It will be understood that various changes in the details, materials and arrangement of parts which have been herein described and illustrated in order to explain the nature of this invention may be made by those skilled in the art within the principle and scope of the invention as expressed in the following claims.

It will further be understood that the Abstract of the Disclosure set forth above is intended to provide a non-legal technical statement of the contents of the disclosure in compliance with the Rules of Practice of the United States Patent Office, and is not intended to limit the scope of the invention described and claimed herein.

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What is claimed is:

1. A method of making a damper from at least one blade having a hook-shaped hinge portion along one edge thereof, and a frame material having at least two hook-shaped hinge elements integrally formed therein complementally configured to the hinge portion of said blade, comprising the steps of: inserting the hinge portion at one end of said blade into one of said hook-shaped elements so that they are engaged in articulated relationship; then folding the frame material about the blade and inserting the other end of the hook-shaped hinge portion of said blade into the other hook-shaped element so that a frame is formed with the blade in articulated relationship thereto.

2. The method of claim 1 wherein the frame material is provided with a flange having said hinge elements.

3. The method of claim 2 wherein the hinge elements are fabricated from the flange material.

4. The method of claim 3 wherein the flange is

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notched to form tabs and the tabs are formed into the hook-shaped elements.

5. A method of making a damper comprising the steps of:

a. forming at least one blade having a hook-shaped hinge portion along one edge thereof,

b. forming a frame material having at least two integrally formed hook-shaped hinge elements complementally configured to the hinge portion of said blade,

c. inserting the hinge portion at one end of said blade into one of said hook-shaped elements so that they are engaged in articulated relationship,

d. folding the frame material about the blade, and

e. inserting the other end of the hook-shaped hinge portion of said blade into the other hook-shaped elements so that a frame is formed with a blade in articulated relationship thereto.

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