A. K. BECKWITH.

ADJUSTABLE FURNACE ELBOW CONNECTION.

APPLICATION FILED NOV. 19, 1913.

1,179,995.

Patented Apr. 18, 1916.

2 SHEETS—SHEET 1.

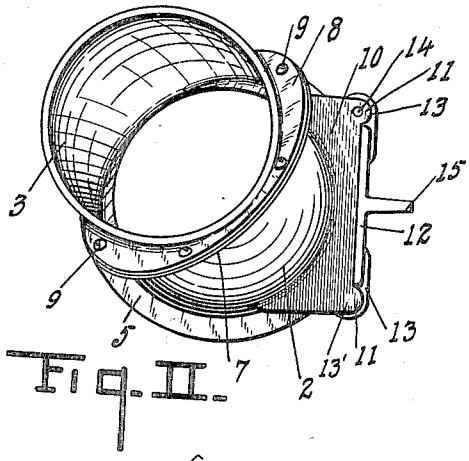


Fig. II.

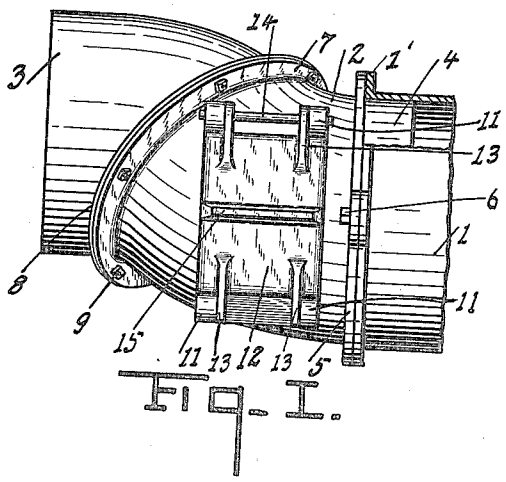


Fig. I.

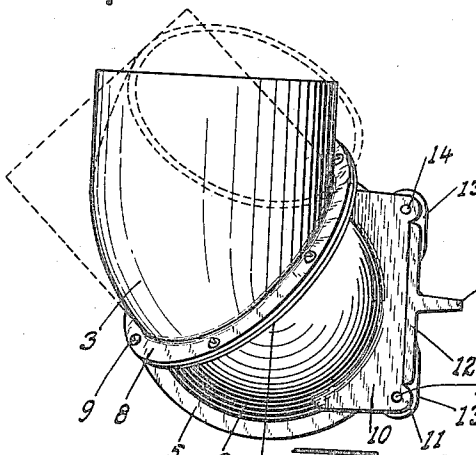


Fig. IV.

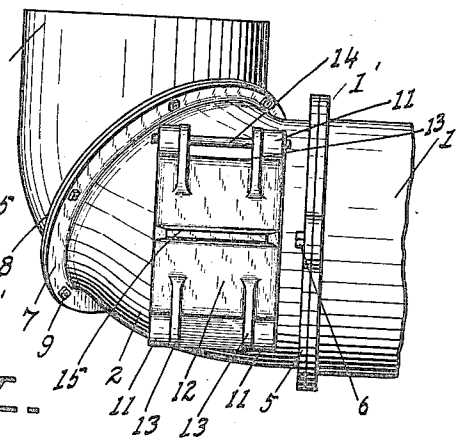


Fig. III.

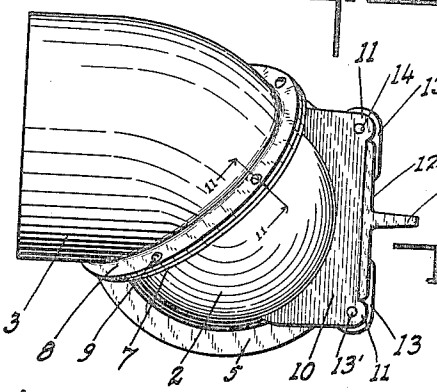


Fig. V.

Witnesses

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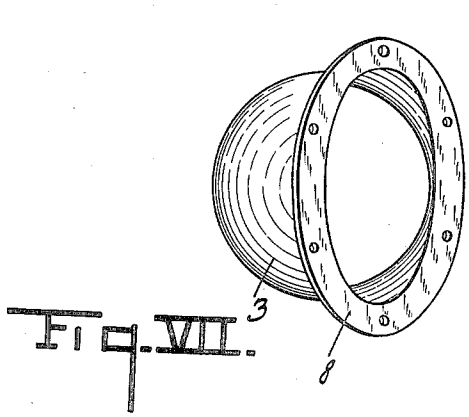


Fig. VII.

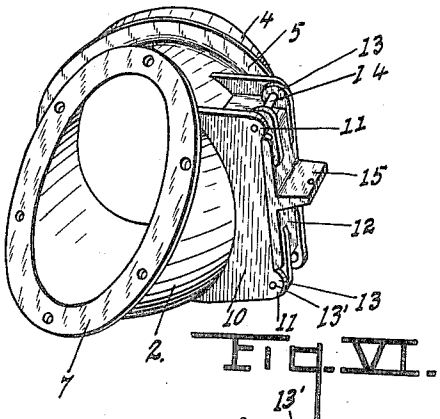


Fig. VI.

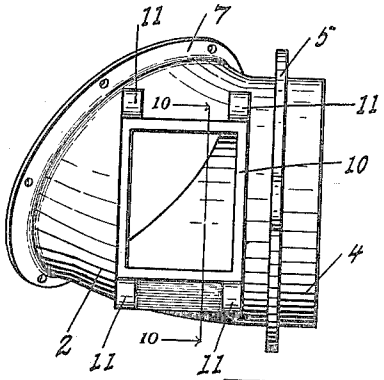


Fig. VIII.

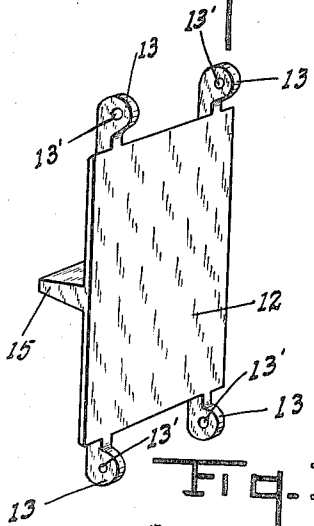


Fig. IX.

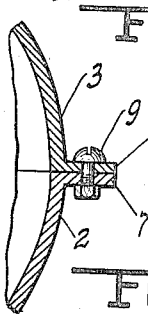


Fig. XI.

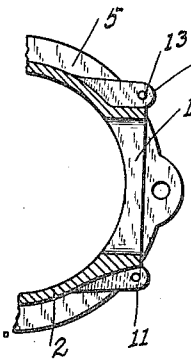


Fig. X.

Inventor

Witnesses

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UNITED STATES PATENT OFFICE.

ARTHUR K. BECKWITH, OF DOWAGIAC, MICHIGAN, ASSIGNOR TO ESTATE OF P. D. BECKWITH, INC., OF DOWAGIAC, MICHIGAN.

ADJUSTABLE FURNACE-ELBOW CONNECTION.

1,179,995. Specification of Letters Patent. Patented Apr. 18, 1916.

Application filed November 19, 1913. Serial No. 801,897.

To all whom it may concern:

Be it known that I, ARTHUR K. BECKWITH, a citizen of the United States, residing at Dowagiac, in the county of Cass and State of Michigan, have invented certain new and useful Improvements in Adjustable Furnace-Elbow Connections, of which the following is a specification.

This invention relates to improvements in furnace elbow connections.

The object of the invention is: to provide a furnace connection provided with a damper adapted to be hinged thereto at either of two positions, said connection being adjustable so as to insure complete adaptability to all conditions.

Further objects, and objects relating to details and economies of operation and construction will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claim.

A structure constituting a preferred embodiment of my invention is clearly illustrated in the accompanying drawing forming a part of this specification, in which:

Figure I is a side elevation view showing the sections secured together so as to make a straight connection. Fig. II is an end view of the same. Fig. III is a side elevation view showing the sections adjusted to make a right angle connection. Fig. IV is an end view of the same the dotted lines showing the sections adjusted so as to make acute angles and obtuse angles. Fig. V is an end view showing the two sections so adjusted as to make a second right angle connection. Fig. VI is a perspective view of one of the sections detached. Fig. VII is a perspective view of the other section detached. Fig. VIII is a side elevation view of one of the sections, showing the damper door frame thereon. Fig. IX is a perspective view of the damper door. Fig. X is a cross section on the line 10—10 of Fig. VIII, showing the details of the damper door frame. Fig. XI is a cross section on the line 11—11 of Fig. V, showing the method of connecting the elbow sections.

In the drawing the sectional views are taken looking in the direction of the little arrows at the ends of the section lines, and similar numerals of reference refer to similar parts throughout the several views.

Considering the numbered parts of the drawing, 1 designates the pipe section which is adapted to be secured in the side of the furnace.

2 and 3 are the two sections of my elbow, which for convenience I will term the lower and upper sections. Both of these sections are in themselves complete elbows, and are of a type known as 55° elbows, that is, the planes in which the ends of the elbow lie intersect at an angle of approximately 55°. It is not necessary for the purposes of my invention that this angle should be exactly 55° but it should be substantially this angle in order to obtain the right angles and straight line. Section 2 is provided with coupling part 4 slightly less in diameter than pipe section 1 and extending into the same. Section 2 is also provided with the laterally extending flange 5. It is secured to the flange 1 by means of fastening devices 6 which pass through flange 5 and a corresponding flange 1′ on pipe section 1. The other end of lower section 2 is provided with the laterally extending flange 7, and upper section 3 is also provided with a corresponding flange 8. These flanges, and hence the sections, are secured together by means of bolts 9 which pass through perforations in the said flanges. One of these sections, preferably the lower section, is provided with the door frame 10. This door frame is provided with pintle receiving lugs 11 at both top and bottom thereof.

12 is the damper door, which is also provided with pintle receiving lugs 13 at both top and bottom. Both sets of lugs are provided with pintle openings 13′, which are adapted to be brought into alinement with each other. The door is hinged to the door frame 10 by means of the pintle 14, which is inserted through the openings 13′. As will be evident from the drawing, door frame 10 is provided with a set of pintle lugs at both top and bottom and the door is correspondingly equipped. Accordingly the door may be hinged by passing the pintle through the top lugs or the bottom lugs. The door 12 is also provided with a laterally projecting member 15, which serves as a handle for lifting the door.

It is evident that sections 2 and 3 may be secured together in a variety of positions

and that the result will be a great variety of angles.

Throughout the specification and claim, I will use the following terms which I will now define: By the term "end planes" I mean those planes in which the ends of the elbow sections lie. For example, if a flat plate were supported upon one end of one of the elbow sections, that plate would lie in what I term the "end plane." If the end planes of an elbow section are not parallel, they will intersect in a straight line. I term that part of the elbow section which is nearest to the line in which the end planes would intersect, if produced, "the apex." When I speak of the "angles" of the elbows, or of the elbow sections, I mean the angle at which lines run at right angles to the end planes would intersect. When the two sections are so connected together that the apex of one is diametrically opposite the apex of the other, there will be formed what is termed a straight connection, and the end planes of the elbow will be parallel to each other. This will give an angle of 180°. If section 3 is rotated with respect to section 2, while the latter is held fixed, the angle will gradually decrease from 180° to 90°, and if the sections are secured together at the latter position the result will be a right angle elbow. If they are secured together at any time between the first position and the second position they will form an obtuse angle. If, however, the rotation is continued the angle continues to grow less than a right angle and hence becomes an acute angle. If continued until a certain angle is reached it will then begin to grow larger until a second right angle is reached. Continued rotation of the parts will cause the angle to increase from 90° to 180°, when the parts will be in the starting position.

It will be readily seen that there is a great advantage in an adjustable elbow of this type, inasmuch as it will not be necessary to provide right and left hand elbows and elbows having different angles. All that is essential is to provide a pair of elbow sections of this type and they can then be adjusted to form any one of a series of desired angles.

The damper door is provided with means for hinging at either end so that if it is necessary to rotate the sections the damper may be just as readily operated from one side as the other. This arrangement of the damper in connection with the adjustable sections provides a furnace elbow connection which can be adapted to practically every situation in which such a connection is needed.

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

An adjustable furnace-elbow connection comprising two elbow sections, whose adjacent ends lie in planes, which intersect the axial line at substantially 55°, said elbows each having at their adjacent ends a laterally extending flange with perforations and bolts at regular intervals for adjustably connecting the sections together, one of said sections having a door opening, a check damper door connected to said section by reversible pivot connections, and a furnace smoke outlet section detachably connected to said damper door section.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

ARTHUR K. BECKWITH. [L. S.]

Witnesses:
S. O. BECROFT,
HARRY C. MOSHER.