Jan. 24, 1933. C. A. THRESHER 1,895,179

FLUE COUPLING

Filed Oct. 24, 1930

Fig. 1

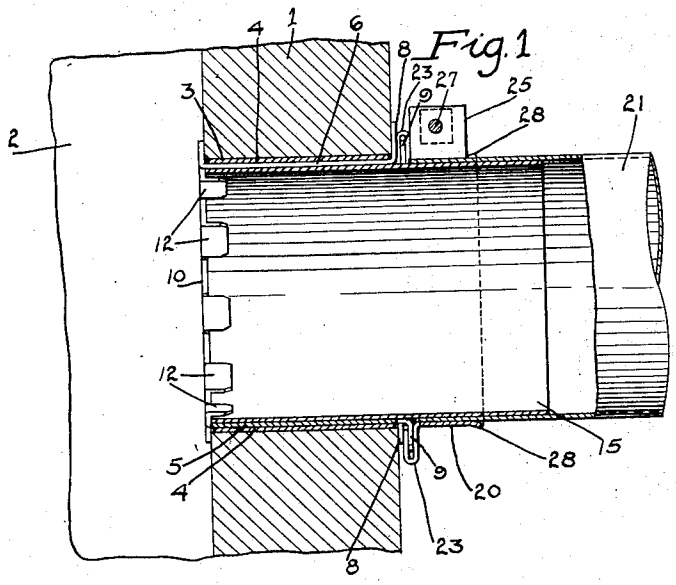


Fig. 2

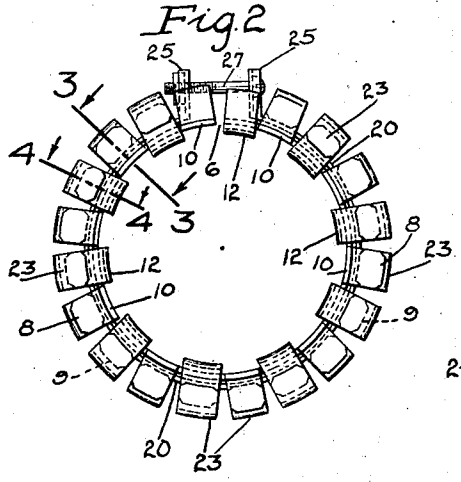


Fig. 3

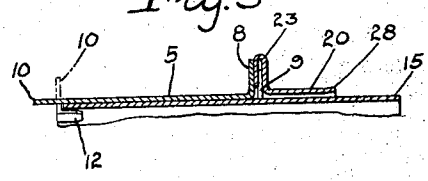
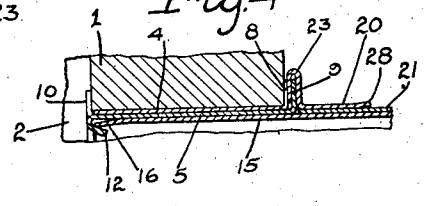


Fig. 4



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UNITED STATES PATENT OFFICE

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FLUE COUPLING

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This invention relates to means for coupling and sealingly securing a stove pipe in the flue opening of a chimney. Among the objects of the invention are: to provide a device which can be very cheaply manufactured by stamping the parts from sheet metal; to provide a constrictable liner and a constrictible collar cooperable with the liner to secure the pipe; to provide liner and collar with means cooperable to detachably connect them and prevent their separation in axial direction, but permit constricting action of the collar to secure the pipe against translation; to provide tab-like means which are bendable to form stops for limiting motion of the liner in opposite directions after introduction into an opening; and to further provide tab elements which can be readily bent to form a circumscribing flange, with which other tabs on the collar bent to form hooks are engageable, to prevent separation but permit constricting action of the collar.

Features of the invention include the broader ideas of means, as well as all details of construction.

Features and advantages of the invention will be set forth in the description of the drawing forming a part of this application, and in said drawing

Figure 1 is a vertical axial section of the device applied to a flue opening, which leads into a chimney;

Figure 2 is an end view of only the expansible liner, and the constrictable collar connected thereto, viewed from the inner or chimney end of the liner;

Figure 3 is a longitudinal section on line 3—3 of Figure 2; and

Figure 4 is a longitudinal section on line 4—4 of Figure 2.

Numeral 1 indicates a chimney wall, 2 the chimney opening and 3 a flue through the wall leading to the opening. Numeral 4 indicates a liner ordinarily placed in the opening, but which may sometimes be omitted. Numeral 5 indicates a split liner which, because of its split condition, is circumferentially expansible, and contractible. The split is indicated at 6. The liner is cheaply formed from a single piece of sheet metal, and has at each opposite end two sets of tabs, all sets originally lying in the plane of the wall of the liner (after stamping), but adapted to be bent to radial position, the members of one set to form stops 8 for limiting axial motion of the liner during introduction into the flue opening or into the liner 4, and the members 9 of the other set at the same end spaced from the stops 8 in a direction axially of the liner to form part of the means by which a stove-pipe section is held in operative position. The members 10 of one of the sets at the opposite end of the liner are adapted to be bent outwardly as shown to form stops for limiting axial motion of the liner in withdrawal direction, so that the members 8 and 10 act to secure the liner against axial motion. The members 12 of the other set, at this same end, are adapted to be bent inwardly to form stops to limit introductory motion of a pipe section 15, and prevent its protrusion into the chimney. The parts are so proportioned that this section 15 is adapted to expand the liner 5 during insertion to cause the liner wall to engage more intimately with the wall of the element 4, or with the flue opening 3 to substantially form a seal. The section 15 has been shown as constricted at its inner end as at 16, and this constriction has been somewhat exaggerated in Figure 4, just as the angular position of the stop element 12 has been exaggerated, in practice the element 12 lies more nearly in parallel relation with the inner surface of the liner 5.

The pipe section 15 projects from the liner 5 and a split collar 20 is provided which is circumferentially contractible or constrictible, and this collar is adapted to surround a stove pipe section 21 which is telescopically engaged with the projecting end of the pipe section 15. The terminal of the pipe 21, therefore, lies between the pipe section 15 and the collar 20. It is conceivable that the pipe section may be dispensed with and that the end of the pipe 21 can be inserted directly into the liner 5 so that the collar will engage and clamp it directly. The split collar has a plurality of tabs bent to form radially arranged hooks 23 slidably cooperable with the circumferential flange-forming elements

9 by a constrictive motion, to detachably connect the expansible liner with the collar against separation in an axial direction, but permitting constricting action of the collar to clampingly secure the stove pipe against translation, on the pipe section 15. The collar is provided with radially arranged terminal extensions 25 which are traversed by a suitable fastening device 27 (in this instance a headed bolt having a screw-driver slot) acting to draw the ends of the collar together to obtain clamping or constricting action. The outer end of the collar 20 is flared as at 28, to facilitate introduction of the stove pipe 21.

The collar 20 can perform its function by the use of a single clamping means, to-wit, a bolt. By having the outer end of the liner double flanged and by having the collar connect with the outer flange or tabs, bolts, rivets, wires or other objectional fastening devices are not needed.

When the stove pipe 21 and the short pipe section 15 are removed, as well as the clamp, the flanges or tabs 9 provide means by which a cap can be attached over the end of the liner to close the opening, means on the cap being attached to the tabs or flanges.

The device has certain advantages, even when the clamping device is not used, in that the stop means is provided for preventing translation of the liner in either direction, and stop means is also provided for preventing over-insertion of the stove pipe section. In case an elbow or a stove pipe section is difficult to engage, the short stove pipe section can be taken out, fitted to the elbow or pipe section and can then be easily slipped into place and clamped. Inasmuch as the flue lock is arranged in a thimble 4, the thimble does not have to be removed, thus taking a chance of injuring the flue opening. Because of the split formation of the liner and clamping elements, these can be formed from a single sheet of metal by stamping and can be afterwards bent. This is a very cheap construction.

Features of the invention include the circumferentially expansible liner and the constrictible collar both as stampings, provided with bendable tabs for the purposes set forth, and usable either with or without the thimble 4; the arrangement whereby insertion of the pipe section in the liner expands the liner to cause the liner walls to engage more intimately with the walls of the element 4 to form a seal; the provision of tabs at one end some of which act to limit withdrawal of the liner and others which act as a stop to prevent over-insertion of the pipe section 15; the provision of hook-like means for securing the liner and collar and permitting constricting motion of the collar after the parts are engaged; and all details of construction shown.

I claim as my invention:

1. A device of the class described comprising a tubular section adapted to fit within a flue liner, and to receive within it a pipe section and having two terminal sets of tabs at each opposite end, inner and outer sets at one end both adapted to be bent radially, one set to form stops for limiting axial motion of the liner during introduction into the flue liner and the other set spaced from the first in a direction axially of the liner, and one of the sets at the other end adapted to be bent outwardly to form stops for limiting motion of the liner in withdrawal direction, the other set to be bent inwardly to form stops to limit introductory motion of a pipe section, and a split collar having tabs bent to form radially arranged hooks adapted to engage the outer set of tabs of the tubular section and means for constricting the clamping element after the hooks are engaged with tabs to cause said element to clampingly engage a stove pipe section telescopically engaged with a pipe section which is in the tubular section.

2. In combination with a chimney flue leading to and communicating with the chimney, a split tubular liner section in said flue having at each opposite end sets of tabs, at one end an inner set bent radially to engage the wall and limit motion of the liner in the flue and the other set spaced from the first in direction axially of the liner, said liner having at opposite ends sets of tabs one bent outwardly to form stops engaging the wall of the chimney to prevent withdrawal motion of the liner, and the other bent inwardly and forming stops, a chimney pipe entering the liner and engaging said stops to prevent protrusion thereof into the chimney, and a split clamping collar having tabs at one periphery forming radially arranged hook-like extensions cooperable by constrictive motion with the outer set of tabs of the liner section, and means for drawing the collar into clamping engagement with the pipe.

3. In combination, a tubular liner having portions adapted to be bent to prevent translative motion of the liner after insertion in a flue opening, and also having portions adapted to be bent inwardly to form stops to limit the insertion of a pipe within the liner, and further having bendable portions some of which are adapted to form a stop to limit insertion of the liner in an opening, and others of which are adapted to form a radial flange, and a constrictible collar having means cooperable by a constricting motion with said liner flange to prevent separation in an axial direction but permit constricting action to secure a pipe against translation in the liner.

4. In combination, a circumferentially expansible liner having tabs at one end to prevent motion of the liner in one direction, a

pipe section inserted in said liner and projecting from that end opposite the tabs, said liner having at the opposite end a double set of radial tabs spaced from one another in a direction axially of the liner, and a constrictible collar adapted to surround the pipe which is inserted in the liner, said collar having hooks adapted when the collar is constricted to engage one set of tabs to prevent separation of the parts in an axial direction, and a stove pipe fitted over the projecting portion of the first mentioned pipe and clamped to said pipe by said constrictible collar.

5. In combination a chimney opening having a standard thimble therein, a circumferentially expansible liner inserted in said thimble and having tabs at one end to prevent motion of the liner in one direction, a pipe section inserted in the liner and projecting from the opposite end of the liner, said liner having at this opposite end means for preventing axial movement of the liner in the opposite direction and also a flange spaced from said means, and a constrictible collar adapted to surround the pipe which is inserted in the liner, said collar having means cooperable with the flange when the collar is constricted to prevent separation of the parts in an axial direction, and a stove pipe fitted over the projecting portion of the first mentioned pipe and clamped to the said pipe by said constrictible collar.

6. In combination a tubular liner having integral means bent to form a flange, a first pipe inserted in said liner, a second pipe into which the first pipe is inserted, a constrictible collar surrounding the pipes and constrictibly engaging the second pipe, said collar having means cooperating with the flange, as a result of constriction of the collar, to prevent separation of the parts in an axial direction.

7. In combination a tubular liner having a flange, a first pipe inserted in said liner, a second pipe into which the first pipe is inserted, a constrictible collar surrounding the pipes and constrictibly engaging the second pipe, said collar having hooks cooperating with the flange, as a result of constriction of the collar, to prevent separation of the parts in an axial direction.

8. In combination a liner having means to secure it against axial motion in a chimney flue, and also having a flange, a pipe inserted in the liner and projecting therebeyond, and a collar adapted to constrictively engage the pipe and having hooks which engage the flange, as the result of constricting motion of the collar.

In witness whereof, I have hereunto set my hand this 20th day of October, 1930.

CHARLES A. THRESHER.