No. 641,580. Patented Jan. 16, 1900.

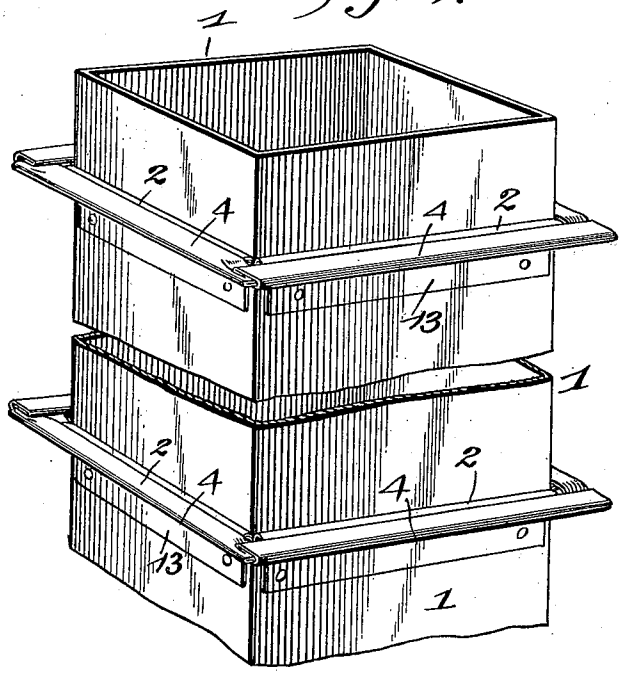
M. CUMMINS.

FLUE OR PIPE COUPLING.

(Application filed Apr. 24, 1899.)

(No Model.)

Fig. 1.



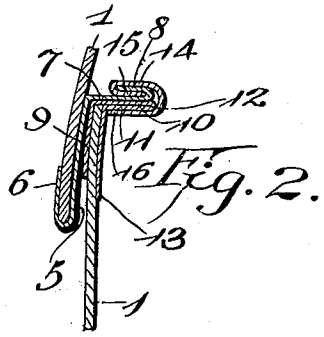


Fig. 2.

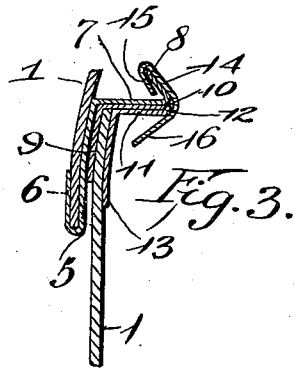


Fig. 3.

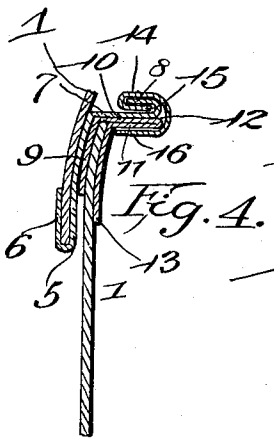


Fig. 4.

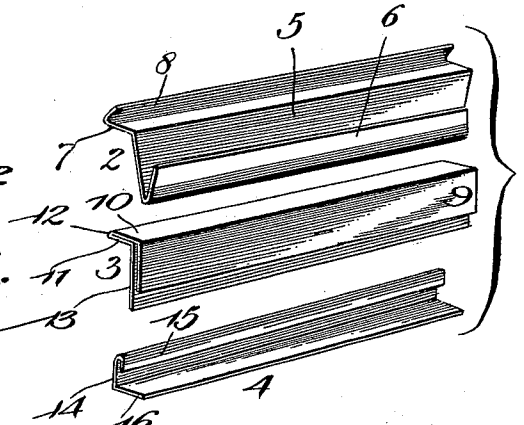


Fig. 5.

Fig. 6.



Witnesses:-

A. Roy Appleman

D. P. Wallace Tate

Inventor;

Michael Cummins.

By his Attorneys,

C. A. Snow & Co.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

MICHAEL CUMMINS, OF NEW YORK, N. Y.

FLUE OR PIPE COUPLING.

SPECIFICATION forming part of Letters Patent No. 641,580, dated January 16, 1900.

Application filed April 24, 1899. Serial No. 714,204. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL CUMMINS, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Flue or Pipe Coupling, of which the following is a specification.

This invention relates to flue or pipe couplings of that form particularly adapted for and applicable to square or rectangular flues or pipes utilized as conduits for heating and ventilating systems or other purposes where it is of essential import that a non-leakable articulation exist and a general structural rigidity be constantly maintained to counteract warping or distortion.

It is an exceptionally desirable characteristic in couplings or joints of the character specified that they be of such nature as to confine the cost of manufacture fully within a minimum equal to that necessary in producing ordinary devices in order to enter into competitive market or commercial introduction, and thereby also it is required that the mechanism employed in manufacture of the same be simple and similar to that usually found in sheet-metal-working shops or factories wherein are made this class of structures. It is, further, a very material advantage to put out the flues or pipes in substantially raw condition to avoid shop or factory extension or increased space, and ship, transport, or convey the parts in separated and nested form, for after assemblage, to dealers or the places of erection, to reduce the cost of conveyance, and also to construct the members of the couplings or joints in such manner that they may be readily and quickly united by a simple manipulation.

The objects of this invention are to produce the flue or pipe sections in "raw" or "raw-edge" form and the parts of the coupling or joint separate, to be applied and connected at the time of erection of the flues or pipes; to employ only such tools or mechanism for the purpose of manufacture and after completion as are ordinarily used in sheet-metal-working shops and factories and by those who set up flues and pipes, and thereby avoid extra expense incident to procuring special tools and organizing mechanical plants to meet the demands of manufacture and application of the improved device; to reinforce the united flue or pipe sections by the interval disposition of surrounding seams of a strong and durable form and provide a stiff resistance that will prevent collapsing, buckling, or irregular distortion of the sides or ends of the flue or pipe sections; to facilitate joining the said sections adjacent ceiling or side walls or floors with equal surety and beneficial result as at an intermediate point; to conduct all work attending the completion of the improved coupling or joint from the exterior of the flues or pipes without the inconvenience arising from the insertion or entrance into the flue or pipe erected of auxiliary devices or an operator and as now commonly practiced, and to economize in the wearing qualities of flues or pipes by applying a coupling or joint thereto that will not demand constant repair or rearrangement after assemblage, and one which in some instances can be made to serve as a reliable support for holding the united erected sections in place.

The invention consists, essentially, of three parts, comprising a male and a female member and a binder or clasp, combined with the contiguous end portions of flue or pipe sections and partially in reverse positions, and adapted to be affixed and joined by simple tools.

The invention further consists of the details of construction and arrangement of the several parts hereinafter more fully described and claimed.

In the accompanying drawings, Figure 1 is a perspective view of flue or pipe sections broken through in parts and showing the improved coupling or joint applied thereto. Fig. 2 is an enlarged detail sectional view of the completed joint. Fig. 3 is an enlarged section of portions of the flue or pipe sections and the members of the coupling or joint, showing the manner of applying the binder or clasp. Fig. 4 is a similar view of a portion of the coupling or joint, showing the mode of arranging the parts near a ceiling or side wall. Fig. 5 shows the separate parts of the coupling or joint in detail perspective as they leave the shop or factory. Fig. 6 is a detail perspective view of the binder or clasp used on the coupling or joint near a ceiling or side wall.

Referring to the drawings, wherein similar numerals are employed to indicate corresponding parts in the several views, the numeral 1 designates flue or pipe sections, which are formed of galvanized sheet-iron or analogous non-corrosive sheet metal having their ends in alternation normally large and reduced by a well-known structural arrangement to receive and fit within the like ends of contiguous sections. The coupling or joint is composed of a male member 2, a female member 3, and a binder or clasp 4. These parts are slightly changed when a section coupling or joint is to be located close to a ceiling or side wall or adjacent a floor, as will be hereinafter set forth.

All the parts of the coupling are constructed of the same material as the flue or pipe sections, and the male member 2 is composed of a main body 5, an inturned retaining-bend 6, and a full-length lip 7, having a locking-flange 8, which is bent under at an angle. This is the form of said male member when delivered from the shop or factory, and variations in length will be made to fit the side and end edges of the several flue or pipe sections.

The female member 3 consists of an inturned retaining-bend 9, having an outward right-angular bend 10, and a rebend 11 close to said right-angular bend to form therewith a lip 12. A securing-flange 13 in a plane at a right angle to the lip 12 and in a direction parallel with the retaining-bend 9 is then formed, and this member is then complete for shipment or transportation. Like the male member the female member will be sized proportionately to the flue or pipe sections or portions of the latter to which it is to be applied.

The binder or clasp 4 for intermediate couplings or joints has a supporting-body 14, with a locking-flange 15 bent thereover a short distance and to serve as a companion for the flange 8 of the male member 2 and also has a closing-flange 16, preferably slightly less than a right angle to the supporting-body 14. The bends necessary in forming the flanges 15 and 16 are in curved lines to more readily facilitate the application of the binder or clasp, and in the complete form specified this latter device is also thus made for after use and corresponds in dimensions to the remaining members of the coupling or joint of which it is to form a part, and all of which are clearly illustrated by Fig. 5.

When it is necessary to apply the coupling or joint within limited confines, such as close to ceiling or side walls or near floors in case the flue or pipe is run through the same, the members are in part changed slightly, as shown more fully in Fig. 4 and one part in detail by Fig. 6. This change resides in bending the locking-flange 8 of the male member 2 closer to the body 5, leaving a space between said flange and body about the same as the thickness of the metal of which the parts are composed. The locking-flange 15 and the closing-flange 16 of the binder 4 are also in this instance bent over parallel with opposite sides of the body 14, but sufficiently distant from the latter to slide endwise over the lips 8 and 12, respectively, of the male and female members when brought together and also over the projecting ends of the end binders. When this form of binder is applied, the companion flanges 8 and 15 of the male member and binder interlock, and the united parts of the coupling can then be more closely secured by suitable tools or left in such condition as the initial construction permits and in accord with existing exigencies or space limitations.

The flue or pipe sections and the parts or members of the coupling or joint can be shipped or transported in bulk and are capable of being nested or reduced to comparatively small compass in occupancy of space, thereby making it possible to take advantage of the lower rates of freightage by hundredweight of unfinished articles rather than be subjected to the higher rates by car-load, as would be necessary in the transportation of completed devices. Furthermore, this mode of incomplete or unattached manufacture makes it practically possible to establish a uniform gage in the several parts, so that duplicates either of a given or varying sizes can be quickly furnished by a shop or factory on demand of a retail dealer or builder handling and conducting the erection of such commodities or devices.

Just previous to the erection of the flue or pipe sections the side and end male members 2 are applied to the reduced ends of the said sections by slipping the inturned retaining-bends 6 over the edges of the sections. This will bring the bodies 5 to snugly bear against the exterior surface of the sections, and when in this position the said male members are secured to the sections by inserting rivets through the bodies 5 and adjacent end portions of the reduced section ends. The female members 3 are next fitted to the opposite enlarged ends of the sections by slipping the retaining-bends 9 thereof over the edges of said ends, and thus position the securing-flanges closely against the adjacent parts of the sections and fastened by likewise inserting rivets therethrough. The lips 7 and 12 of the respective male and female members now stand out from the sections in angular planes, and when the reduced ends of said sections are fully pushed into the enlarged ends of subjacent ones the said lips are caused to bear firmly on one another. The intermediate couplings or joints are then completed by first bringing the locking-flanges 15 of the binders 4 in hooked relation to the locking-flanges 8 of the male members. The binders are then gradually turned over until the bodies 14 are close to the exposed sides of the lips 7 of the male members and the closing-flanges 16 over the exposed sides of lips 12 of the female members. The intermediate binders

are all thus arranged in regular order one at a time, the end binders being first applied and secured by crushing the parts thereof against opposite sides of contiguous lips 7 and 12 by a suitable iron and hammer, thus closely locking all the flanges. The binders are all made longer than the lips, so that the ends will project out equally, and after the end ones are secured as set forth the side binders are in like manner fixed on the side lips and embrace the projecting ends of said end ones. Angular corners are formed by this mode of uniting the ends of the binders, and the general structure is reinforced against bending or warping, and also a neat external appearance results.

The couplings located near ceiling or side walls or floors are treated differently to a slight extent, owing to the cramped or limited working space, which will prohibit the proper delivery of a hammer-blow. The lips 7 and 12 are brought together as before and the end binders are slid thereon endwise. The side binders are next pushed over their relative lips and the projecting ends of the end binders and, if desired, can be left in this condition as complete. It is preferable, however, that the parts be more firmly connected to avoid any possible tendency toward displacement. To accomplish this, a suitable crushing or flanging tool can be run over the assembled devices and pinch them together.

In connecting the flue or pipe sections by the improved coupling or joint the work performed is exclusively exterior and after completion will have the appearance of a ridge or outstanding seam. This form of coupling or joint is particularly useful for outdoor purposes to prevent leaking in wet weather.

Many other advantages will appear to those making use of the improved coupling, and though the preferred form and arrangement of the several parts are shown and have been descriptively disclosed, yet the demands of certain applications might give rise to equivalent changes in the proportions, dimensions, and minor details of construction fully within the purview of the invention or scope of the claims, and it is intended that such variations be adopted whenever found necessary.

Having thus described the invention, what is claimed as new is—

1. A coupling or joint for flue or pipe sections, comprising a female member having opposite parallel portions to fit over the end of a section and an outwardly-extending angular projection, a male member on the adjacent section having a main body and inturned retaining-bend, and an outwardly-projecting lip provided with a locking-flange, and a binder having locking portions substantially opposite one another and adapted to embrace parts of the contiguously-arranged male and female members.

2. A coupling or joint for flue or pipe sections, comprising male and female members arranged on adjacent interlocking portions of contiguous section ends, the female member having opposite parallel portions to fit over the end of the one section and an outwardly-extending angular projection, the male member having a main body, a retaining-bend, an outwardly-projecting lip and a locking-flange on the latter, and a binder having the locking inclosing portions and adapted to embrace the said male and female members, a part of the binders surrounding the sections having the ends respectively overlapping the adjacent ends of other binders arranged at an angle thereto.

3. A coupling or joint for flue or pipe sections, comprising a female member having an inturned retaining-bend, an outward rectangular bend, a rebend on the latter to form an angular projection, and a securing-flange parallel with the retaining-bend, a male member having a main body, an inturned retaining-bend and a full-length lip having a locking-flange primarily bent at an oblique angle, and a binder for connecting said male and female members consisting of a supporting-body with a locking-flange bent thereover a short distance to serve as a companion to the flange of the male member and also provided with a closing-flange slightly less than a right angle to the supporting-body.

4. A coupling or joint for pipe or flue sections surrounding the latter in separate parts and having contiguously-arranged projections, and binders fitted over the separate parts and projections thereof, the ends of the binders being extended at the corners, the outer end portions of opposite binders being adapted to receive and hold the opposite ends of the remaining binders at an angle thereto.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

MICHAEL CUMMINS.

Witnesses:
JOHN GARRIGAN,
JULIUS STEHL.