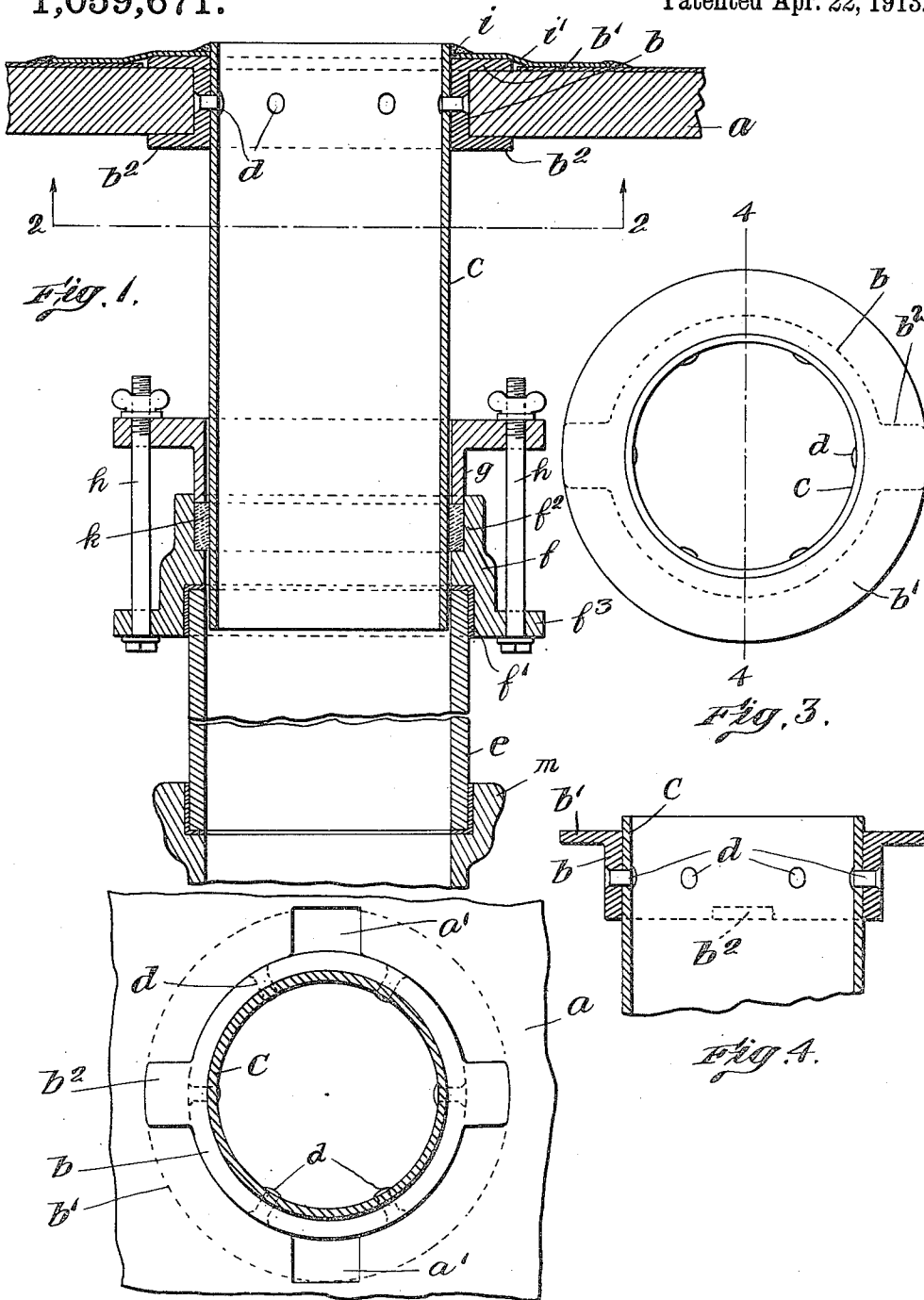


C. L. HOLT.
 ROOF PIPE CONNECTION.
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Witnesses:
 H. B. Davis.
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Fig. 2.

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UNITED STATES PATENT OFFICE.

CHARLES L. HOLT, OF LAWRENCE, MASSACHUSETTS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES L. HOLT, a citizen of the United States, residing at Lawrence, in the county of Essex and State of Massachusetts, have invented an Improvement in Roof-Pipe Connections, of which the following is a specification.

This invention particularly relates to a form of connection between a drain-pipe and the surface of a flat, or nearly flat roof, where the pipe receives the rain-water from the roof.

In making the connection for a roof drain, a roof-plate, having a water-tight connection with the roof, is connected by a soldered joint to the end of the pipe, which terminates at the level of the roof. It frequently happens that this soldered joint is broken, by relative movement of the pipe and roof, either due to the settling of the roof with relation to the pipe or the settling of the pipe with relation to the roof. In the device of my prior Patent #760,790, I attempted to obviate this difficulty by providing an expansion joint between the roof connection and the pipe below, the purpose of which was to relieve the strain on the soldered joint in case of relative movement of the roof and the pipe. In practice, however, it was found that the frictional engagement between the parts of the expansion joint was, frequently, so great, in case of such movement, that an undue strain was placed on the soldered joint, causing it to be opened and leakage to occur.

The object of my invention is to provide a form of roof connection in which the application of an appreciable strain upon the soldered joint between the pipe and the roof-plate is prevented, in case of relative movement of the roof and the pipe, and in case considerable force is required to cause relative movement of the members of the expansion joint.

A further object of my invention is to provide an improved form of expansion joint for use in this connection.

I accomplish these objects by the means shown in the accompanying drawing, in which,

Figure 1 is a central vertical cross-section of a roof connection and expansion joint made according to my invention. Fig. 2 is a sectional view on the line 2—2 of Fig. 1, looking in the direction of the arrows. Fig. 3 is a top plan view of the roof collar and

pipe. Fig. 4 is a section on the line 4—4, of Fig. 3.

In the drawing, *a* indicates the roof of a building to which the drain-pipe is to be connected. According to my invention I provide a roof collar *b* which is of sufficient length to extend through the roof and is provided with an outwardly extending flange *b'* at its upper end, and two oppositely disposed lugs *b²*, which extend in a similar manner to the flange *b'*, at its lower end. A roof-pipe *c* is provided which is preferably of brass, so that a soldered connection may be made therewith. This pipe is fitted in the collar *b*, and is rigidly secured thereto by means of rivets *d* which extend through the middle portion of the collar. Said pipe terminates, at its upper end, a short distance above the level of the flange *b'* and extends some distance below the collar at its lower end. Said pipe *c* is adapted to be connected at its lower end to the soil-pipe by an expansion joint, which may be described as follows. A section *e* of the soil-pipe from which the hub has been removed, is connected to a coupling-ring *f*, by inserting one end of the pipe *e* into an annular recess *f'*, formed in the lower end thereof and making a rigid, tight connection therewith by driving in lead or oakum in the usual manner. The upper end of the ring *f* is provided with an annular packing recess *f²*, in which a packing *h* is placed, and a gland *g* is provided, which is adapted to compress the packing therein, clamping bolts *k* being provided which engage said gland and a flange *f³* on the ring. The pipe *c* is adapted to slide telescopically in the ring *f* and pipe *e*, a stuffing-box connection being thus provided therebetween.

In practice the carpenter-work of placing the roof on a building which is in process of construction is usually done some time before the plumbing-work is done, so that the carpenter is supplied with a pipe *c*, to which a collar *b* has been attached, and cuts a circular hole through the roof, at the proper point, the diameter of which is approximately equal to the external diameter of the collar *b* between the flange *b'* and lugs *b²*. He also cuts a pair of notches *a'* in the roof which lead from this hole at diametrically opposite points, said notches being sufficiently large to permit the lugs *b'* to be passed therethrough. The pipe *c* is then passed down through the hole which

has been cut in such a position that the lugs b^2 pass through the notches a' , and the upper flange b' rests on the upper surface of the roof. The collar is then turned quarter way around as indicated in Fig. 2, so that the lugs b^2 are out of alinement with the notches a' . The roofer then connects an ordinary roof-plate i' to the protruding upper end of the pipe c by means of a soldered joint i , as indicated in Fig. 1, said plate being also connected by a water-tight joint to the surface of the roof by suitable means according to the form of roof covering used.

When the drain-pipe is installed, the plumber cuts off the pipe c to a suitable length and connects one end to the ring f by a calked joint, as before described. The gland g is then placed on the pipe c and the ring f and pipe e are slid up on the pipe c and then the pipe e is seated in the hub of the drain-pipe section m , next below and connected thereto by a calked joint in the usual manner. The gland g is then drawn down by the nuts on the bolts k , so that a water-tight joint is formed between the pipe c and the pipe e .

The parts having been connected as above described, in case the roof should settle with relation to the soil-pipe e , it will press upon the lugs b^2 and will force the pipe c downwardly through the stuffing-box of ring f , and even if there is a strong frictional engagement between the pipe e and the stuffing-box packing, the application of the force necessary to force down the pipe will not in any way strain the joint i on account of the rigid connection between the collar b and both the roof and the pipe e . In case the pipe e should settle with relation to the roof, there would be a downward pull on the pipe c through the stuffing-box ring f and the strain of the pull necessary to cause the ring f to be slid on pipe e will all be placed on the upper flange b' of the collar b , and no strain whatever would be placed upon the soldered joint i . It therefore follows that under no conditions can relative movement of the roof and soil-pipe place any strain on the joint i , and all probability that this joint will be opened from this cause is obviated. By providing the stuffing-box ring f with a packing recess to receive the pipe e , a tight, rigid connection may be provided therebetween which can be readily made.

While this form of connection is especially advantageous where the roof-plate is connected to the pipe at a level with its upper end, as above described, it is also advantageous when the pipe c is extended some distance above the level of the roof when the pipe is used as a vent pipe, as will be obvious.

While I prefer to provide the roof collar

with the particular means disclosed to hold the same against vertical movement in the roof, other means may be provided which will perform the same function.

The particular form of coupling collar f disclosed forms a convenient and effective means for connecting the roof pipe with the pipe below and providing a slidable connection therebetween.

I claim:—

1. A roof connection comprising a roof collar, adapted to extend through the roof, means to hold said collar against vertical movement in either direction in the roof, a pipe rigidly connected to said collar, means to provide a water-tight connection between said pipe and the surface of the roof and a yieldable connection for the lower end of said pipe, substantially as described.

2. In combination with the roof of a building, a roof-pipe passing therethrough and terminating adjacent the surface of the roof, means for rigidly connecting said pipe to the roof to hold the same against vertical movement in either direction with relation to the roof, a roof-plate having a water-tight connection with the upper end of said pipe, and a drain-pipe having a yieldable connection with the lower end thereof, substantially as described.

3. A roof connection comprising a collar adapted to extend through the roof and having means for holding the same from vertical movement in either direction therein, a pipe extending through said collar and having a rigid connection therewith, a roof-plate having a soldered connection with the upper end of said pipe and a drain pipe having a yieldable connection for the lower end of said pipe, substantially as described.

4. A roof connection comprising a collar adapted to extend through the roof, and having transverse projections arranged to engage the upper and under sides thereof to hold the collar from vertical movement in either direction therein, a soil-pipe extending through said collar and rigidly secured thereto, a roof-plate having a soldered connection with the upper end of said pipe above said collar, and a drain-pipe having a yieldable connection with said roof-pipe, substantially as described.

5. A roof connection comprising a collar adapted to extend through a roof and having a flange at its upper end arranged to rest on the surface of the roof, a pair of projecting lugs at its lower end and arranged to engage the under surface of the roof, a pipe extending through said collar and rigidly secured therein, a roof-plate having a water-tight connection with said pipe at its upper end and extending over said flange, and a drain pipe having a yieldable connection with the lower end of said pipe, substantially as described.

6. In combination with a roof having a circular aperture therethrough and notches leading from said aperture, a collar arranged in said aperture and having a supporting flange at its upper end resting on the roof and lugs at its lower end adapted to pass through said notches and to be moved out of register therewith to hold the collar from vertical movement in either direction, a pipe extending through said collar and having a rigid connection therewith, a roof-plate having a water-tight connection with the upper end of said pipe and with the roof and extending over said flange, and a yieldable connection with the lower end of said pipe, substantially as described.

7. In combination with a roof, a roof-pipe extending therethrough means to hold said pipe rigidly against vertical movement in either direction with relation to the roof, a

roof-plate having a water-tight connection with said pipe and with the surface of the roof, a coupling ring on the lower end of said pipe having a stuffing-box connection therewith at its upper side and having a drain-pipe receiving recess in its under side, and a drain-pipe seated in said recess and having a rigidly packed connection therewith, said roof pipe being adapted to slide telescopically in said ring and said drain-pipe, substantially as described.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

CHARLES L. HOLT.

Witnesses:

HARRY R. LAWRENCE,
JOHN J. BUNTING.