E. PANNENBORG.

MEANS FOR FACILITATING THE REMOVAL OF ACCUMULATIONS IN THE PIPES AND ELBOWS OF FURNACES.

APPLICATION FILED MAR. 8, 1909.

952,938. Patented Mar. 22, 1910.

Fig. 1.

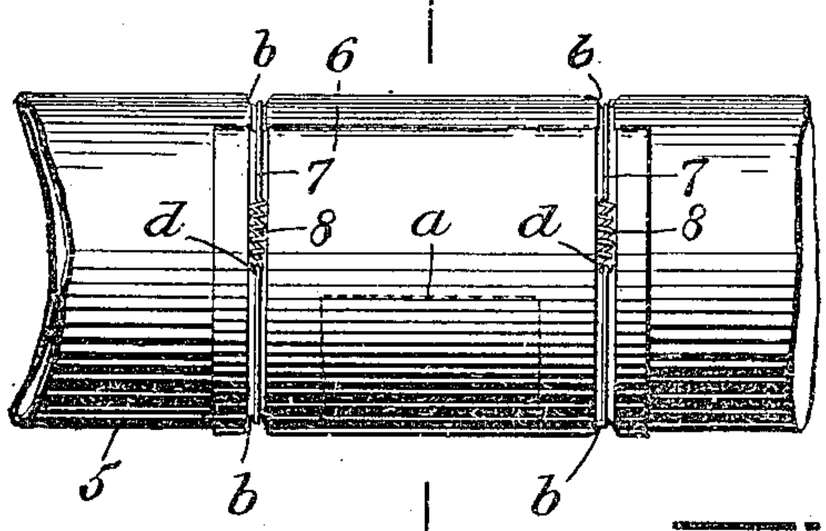


Fig. 3.

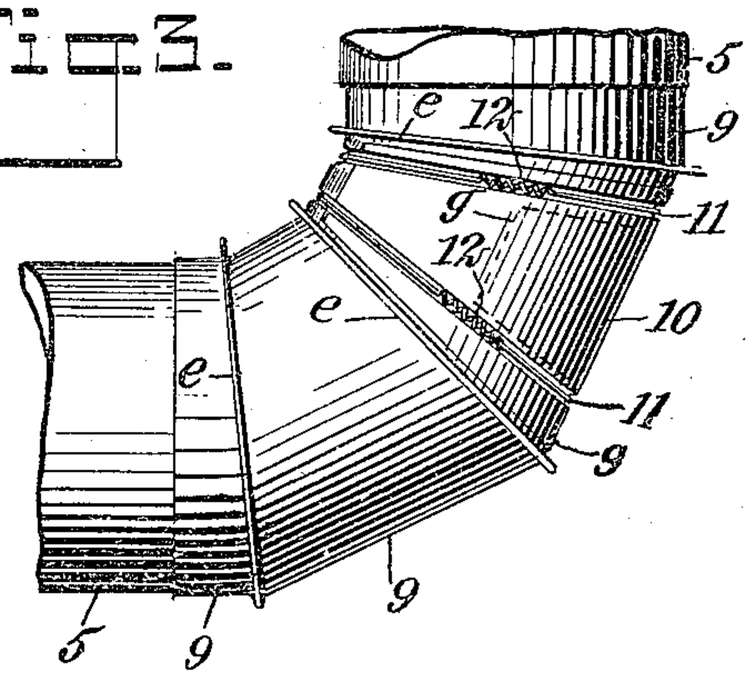


Fig. 2.

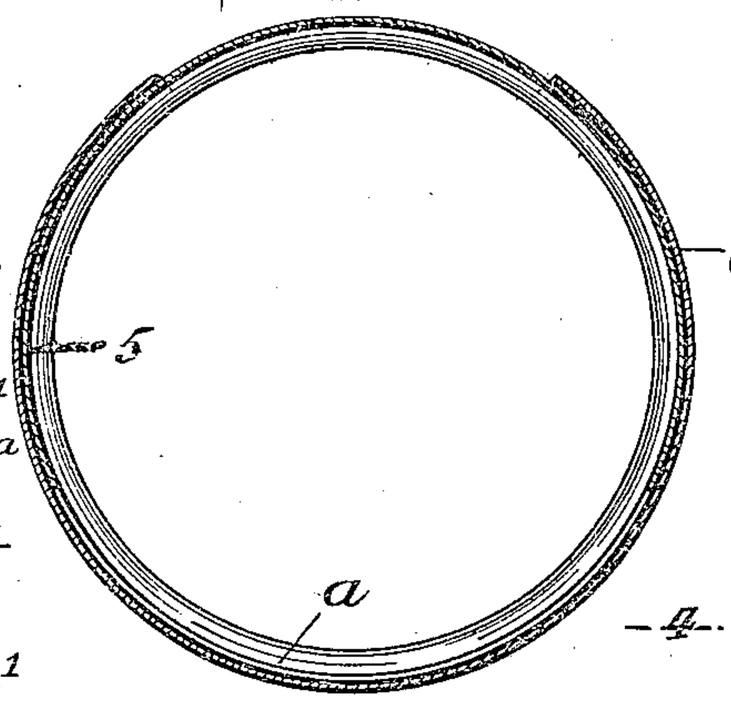


Fig. 4.

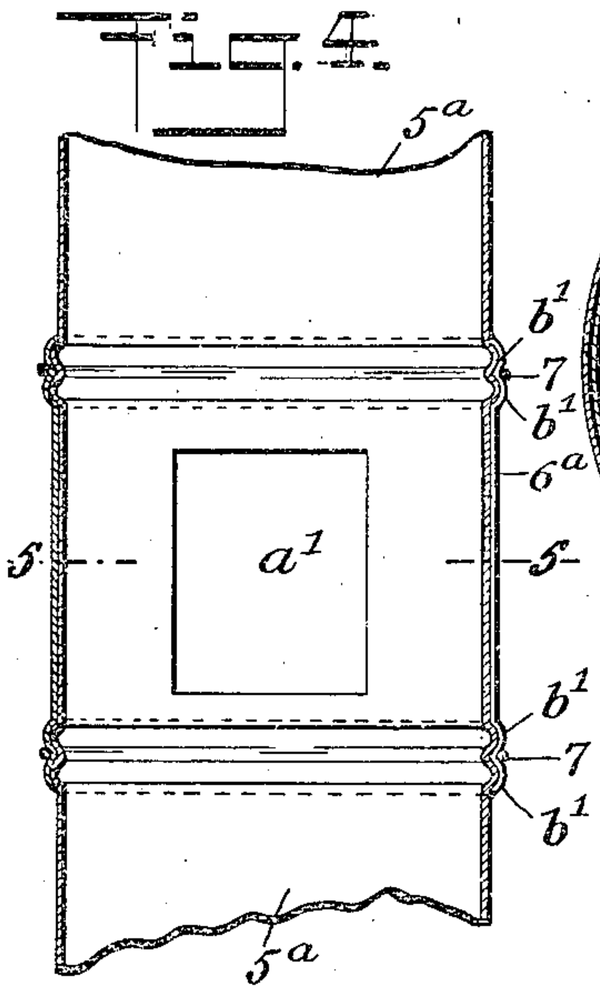
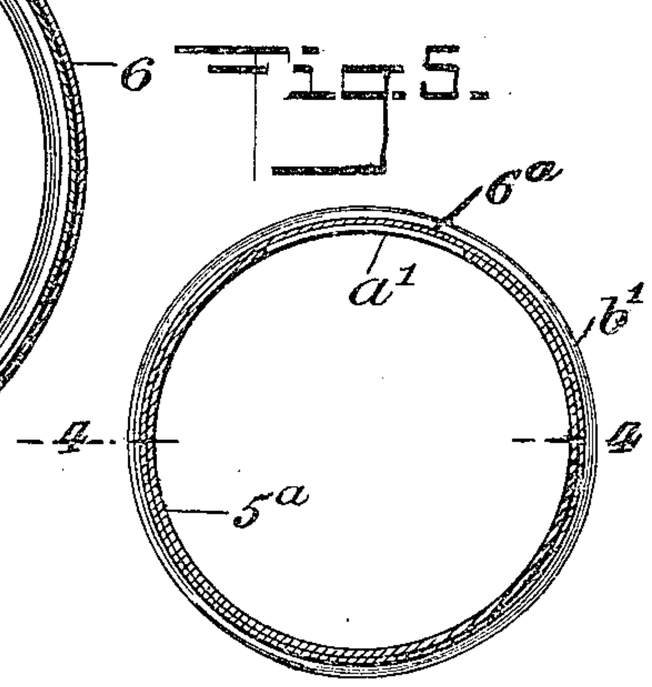


Fig. 5.



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MEANS FOR FACILITATING THE REMOVAL OF ACCUMULATIONS IN THE PIPES AND ELBOWS OF FURNACES.

952,938. Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed March 8, 1909. Serial No. 482,009.

To all whom it may concern:

Be it known that I, ERICH PANNENBORG, a subject of the Emperor of Germany, and a resident of Syracuse, in the county of Onondaga and State of New York, have invented a new and Improved Means for Facilitating the Removal of Accumulations in the Pipes and Elbows of Furnaces, of which the following is a full, clear, and exact description.

The purpose of this invention is to provide openings in the hot-air conveying pipes and draft pipes of hot-air furnaces, and novel means for conveniently and reliably closing such openings so as to prevent leakage; and a further object is to provide similar openings and closures for the elbows of the draft and hot-air pipes for air heating furnaces.

The invention consists in the novel construction and combination of parts, as is hereinafter described and defined in the appended claim.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side view of a portion of a furnace pipe, and of the improvement applied thereto for closure of an opening in said pipe that is indicated in dotted lines; Fig. 2 is a transverse sectional view of the applied improvement taken substantially on the line 2—2 in Fig. 1; Fig. 3 is a side view of an elbow of a draft pipe or hot-air pipe and of the improvement thereon, shown by dotted and full lines; Fig. 4 is a longitudinal sectional view of a slightly changed construction for the improvement as applied to a straight joint or section of a draft pipe, taken substantially on the line 4—4 in Fig. 5; and Fig. 5 is a transverse sectional view, substantially on the line 5—5 in Fig. 4.

In the draft pipe and hot-air conveying pipes of a hot-air generator, it is found that soot will accumulate in the draft pipe, and fine dust and ashes be carried with the heated air into the heat-distributing pipes and be deposited therein, such accumulations usually requiring the removal of the pipes from their normal positions, to permit the removal of the dust therefrom.

To facilitate the removal of soot and dust from the pipes mentioned, I have devised a simple, inexpensive and practical device that consists of the following details:

In the drawings, 5 indicates a tubular sheet metal pipe that may be a portion of a hot-air conveying pipe or the draft pipe of a stove or furnace. In a selected joint or section of a pipe such as 5, an opening *a* is formed as indicated by dotted lines in Fig. 1, said opening also appearing in Fig. 2. The opening *a* may be rectangular or have other marginal shape, and is of such relative size as will permit free access to the interior of the pipe for removal of fine ashes or the like therefrom. To normally close the opening *a*, a sheet metal cover plate 6 is provided of suitable dimensions, that will permit it to embrace the pipe when bent to fit thereon, and to cover the larger portion of the exterior surface of said pipe. The cover plate 6, is temporarily secured on the pipe 5 over the opening *a* by means of a wire band or the like, and near each end of said cover plate a circumferential groove *b* is formed at the same operation for each groove, which will form a corresponding rib on the inner surface of the cover plate by the depression of the material in the formation of the groove, and said ribs will be embedded in corresponding grooves in the pipe 5. It will be seen that these mating grooves in the pipe and plate prevent the latter from moving endwise on the pipe 5 when seated thereon, and greatly stiffen said pipe. To detachably secure the cover plate in proper position on the pipe 5 over the opening *a*, two wire bands 7, 7, are employed, these bands fitting into the grooves *b* and nearly encircling the same. A ring eye *c* is bent on one end of each band 7 and a spiral coil 8 of proper length is formed on the other end of the same, each of said coils terminating at its free end in a hood *d*. The length of the completed bands 7, 7, is so proportioned to the diameter of the pipe 5, that in effecting a hooked connection of the ends thereof after the bands are respectively seated in the grooves *b*, the spring coils 8 are stretched somewhat, and thus by their constriction cause the bands to closely embrace the cover plate 6 and the pipe 5. Obviously, if it is desired to have access to the interior of the pipe 5, the bands 7 may be readily removed and the cover plate 6 taken off of the pipe, thus exposing the opening *a*.

In Figs. 4 and 5, the construction of the improvement shown is slightly changed from that already described, the essential feature of difference consisting in the formation of two circumferential projecting ribs b' in the pipe section 5^a and cover plate 6^a near each end of the latter. The cover plate 6^a in this example of the invention, is of sufficient length to completely encircle the pipe section 5^a, and has such width as will permit it to properly overlap an opening a' formed in the pipe section. The cover plate 6^a, after it is mounted in proper position upon the pipe section 5^a, is temporarily bound closely thereon by a wrapping of wire or the like, and then by suitable means, two circumferential ribs b' are formed adjacent to each other near each side edge of the cover plate. The provision of the two ribs b', near each end of the cover plate 6^a adds rigidity to the pipe section 5^a, and to the cover plate thereon; further, the two spaced ribs at each end of the cover plate provide a groove between each pair for the reception of bands such as 7, for removably securing the cover plate in position over the opening a', and as before explained with relation to the construction shown in Figs. 1 and 2, the springs 8 that are portions of the bands, enable their convenient removal when the cover plate is to be detached from the pipe section 5^a.

In Fig. 3, an elbow of a pipe that may be for draft purposes, or for the conveyance of hot-air from a furnace to a room or other place for its discharge, is shown, said elbow being of usual form, comprising a plurality of sheet metal sections 9 having ring shape, said sections having their side edges e converged so as to form a curved cylindric conduit, when corresponding edges e are securely connected together by hook joints, as shown in Fig. 3. In one of the sections 9 that has its side edges hooked to the side edges of two adjacent sections so as to join them together, an opening g is formed, said opening being located in the convexed outer side of the section it is formed in, as is indicated by dotted lines in Fig. 4. A cover plate 10, of sufficient dimensions to nearly encircle the section it is applied upon, is sloped on its side edges so as to converge said edges toward the ends of the plate, and the latter is given circular form of a diameter that adapts it to closely embrace the elbow sections it covers. The cover plate 10, is caused to embrace the apertured elbow section 9, and is held thereon temporarily by suitable means; then two similar grooves h are formed in the cover plate near its side edges, and at the same time in the elbow section 9 it covers, said mating grooves near each side edge of the cover plate greatly stiffening the elbow and said plate. Wire bands 11, similar to the bands 7, are provided for securing the cover plate in position on the elbow section 9, said bands each having a contractile spring 12 on one end thereof, and a hook or the like on the free end of the spring that will engage an eye or hook on the other end of the band. It will be seen that when the bands 11 are drawn taut on the elbow section 9, occupying the grooves therein, and have their ends connected together by the hooks or equivalent means, the cover plate 10 will be caused to closely encircle the section 9, of the elbow and effectively close the opening g therein.

It will be evident that the improvement is generally applicable for providing openings in hot-air or draft conduits and means for reliably closing said openings, that may be in straight or curved portions of the conduits.

It will be observed that the pipe is provided at each end of the lateral opening with an annular groove b, and that the ends of the cover are grooved also, the grooves of the cover fitting and registering with the grooves b of the pipe when the cover is in place, and that the bands fit within the registering grooves, thus preventing longitudinal movement of the cover, while the grooves prevent longitudinal movement of the bands.

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

The combination with a pipe having a lateral opening, and an annular groove encircling the pipe at each end of the opening, a cover curved to fit the pipe and whose edges extend beyond the opening, the ends of the cover being grooved transversely, said grooves registering and fitting the grooves of the pipe when the cover is in place, and bands encircling the cover and the pipe and fitting within the grooves whereby to prevent longitudinal movement of the cover, the grooves preventing longitudinal movement of the bands.

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

ERICH PANNENBORG.

Witnesses:
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