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DUCT HOLDER.

APPLICATION FILED MAY 21, 1917. RENEWED AUG. 31, 1918.

1,284,422. Patented Nov. 12, 1918.

Fig. 1.

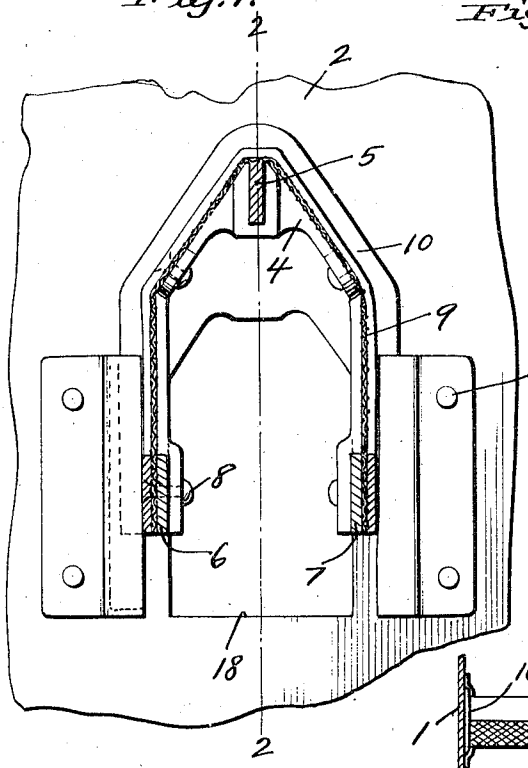


Fig. 2.

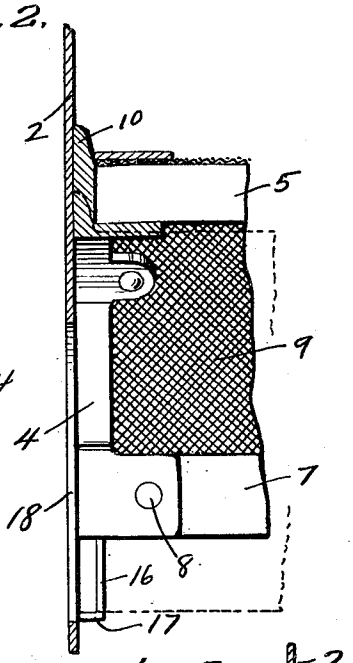


Fig. 5.

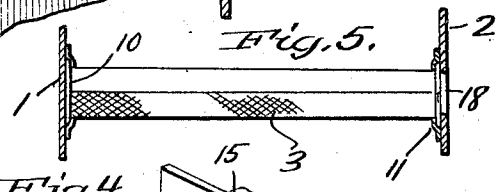


Fig. 4.

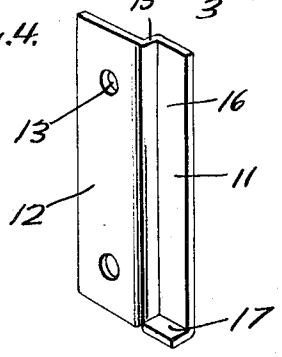
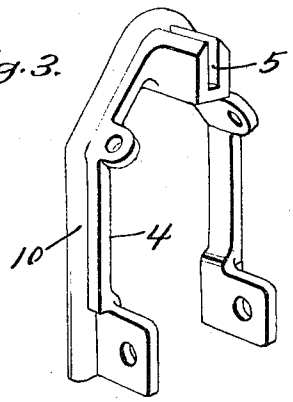


Fig. 3.



WITNESSES

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DUCT-HOLDER.

1,284,422. Specification of Letters Patent. Patented Nov. 12, 1918.

Application filed May 21, 1917, Serial No. 170,004. Renewed August 31, 1918. Serial No. 252,261.

To all whom it may concern:

Be it known that I, FULTON R. MORRIS, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Duct-Holders, of which the following is a specification.

This invention relates to an improvement in duct holders, and more particularly to a structure of this character adapted to be embodied in the construction of grain driers and coolers or other like apparatus, and for holding air ducts in place.

Heretofore it has been customary to fit the air duct in place by inserting the same more or less loosely through openings provided in the walls of the chambers in which they are to be mounted, or to secure the ducts in place by the use of bolts; however, in the first mentioned adaptation the ducts are not ordinarily capable of being secured rigidly in place except by the use of set screws or other like fastenings which are at best somewhat of a make-shift, and in the use of the latter form of fastening or mounting, it has been necessary to employ three men to install the ducts in place, one man being required on the inside of the chamber, and two men on the outside, and even then it has been found a slow and laborious task to fit and secure the ducts in place. With the above in mind, it is a purpose of my invention to provide a holder structure which can be embodied with the duct and in the construction of the chamber, which is of such character that the ducts can be fitted in place by one man working within the chamber, and while properly held in place during use, can be readily removed and replaced when it is desired to do so.

A further object resides in providing a structure which can be embodied with the sides of the chamber and with the ducts as the same are manufactured, and which holder structure is of such construction that every part will fit into its exact place in the setting up of the drier or cooler, while at the same time the mounting of the ducts across between the sides of the chamber will give the parts considerable additional bracing in the entire structure.

With the above and other objects in view, which will be in part described and in part understood from the specification, drawings, and claims, my invention consists in certain novel features of construction and combinations of parts which will be hereinafter more fully set forth.

In the drawings:—

Figure 1 is a sectional view through a duct showing my improved holder structure embodied therewith;

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a view in perspective showing that portion of the structure which is fitted to the duct proper;

Fig. 4 shows in perspective one of the clips to be fitted upon the wall of the chamber in which the duct is to be mounted; and,

Fig. 5 is a somewhat diagrammatic view showing the manner in which a duct would be mounted between and in conjunction with the side walls of the chamber.

As has been stated, the structure of my invention is such that it is particularly adaptable for use in securing and holding air ducts within the drying and cooling chambers of grain driers, and in this connection the ducts are mounted much after the manner rather generally indicated in Fig. 5, where the side walls 1 and 2 which define the limit of the chambers of the apparatus in conjunction with which the ducts are to be supported and held are to have the ducts, generally indicated by the reference character 3, fitted across therebetween and held in, or substantially in a horizontal plane. The showing of the duct, in Fig. 5, is substantially in plan and it will be noted that at each end means is indicated for holding the duct in conjunction with the walls 1 and 2.

It is customary, as is perhaps better shown in Patent No. 1,028,899, granted June 11, 1912, upon an application filed by me, to provide the side walls of the grain chambers with openings to form air passages for circulation of drying and cooling air into and from the chambers, and the ducts, which consist of frames covered with a wire netting and forming tube like passage-ways are secured to extend entirely across the grain chambers from one side to the other and to

have their ends in communication with the openings formed through the sides. End pieces 4, of the shape of the cross section of the duct, that is with vertical side walls and an inverted V-shaped top wall, are constructed to be received in the netting and to form a frame and supporting structure therefor. The end pieces are provided with recesses 5′ for reception of a ridge strip 5 which is to form the apex of the duct, while base strips 6 and 7 are rigidly connected at their ends with the lower extremities of the end pieces, by means of rivets 8, or other suitable fastening means. A wire netting strip 9 or a strip of other pervious material, is mounted over the frame work formed by connecting the members together in the manner set forth and is stretched from one base strip to the other, over the ridge strip and around the shoulders of the end pieces, following which it is secured in place thereon to form an inverted trough-like guard for assuring a passage-way for air from one side wall to the other even though the chamber may be filled with grain. The end pieces 4 have the outstanding flange 10 formed to extend laterally along the side and top portions, substantially as shown in Fig. 1, and in this way the end pieces are made substantially rigid and are braced against being sprung through force exerted upon the outer sides of the netting strip 9, although under some circumstances the flange might be extended only along the two parallel extremities of the end pieces, as these parts only of the flange are provided with the distinct purpose of securing the duct in place, although it will of course be understood that additional bracing will be given to the end pieces by extension of the flange over the inverted V-shaped formation thereof and also a broader face is provided to be received against the inner face of the chamber wall upon which the end piece is to be held.

As has been stated, the ducts are constructed to be completed units and the mounting of the end pieces, the ridge strip, and the base strip, as well as the netting strip, is such that the structure will be substantially rigid in the connection of the parts and that the base strip by which the sides of the netting strip are mounted in place will be held against springing in as the weight of grain loaded into the chamber in which the ducts are used exerts crushing pressure against the duct, and if the duct proper be constructed in this way, it will of course be understood that it will not be necessary to give the same additional support or reinforcement by means of bolts, or other fastenings, from the walls of the chamber. Clips 11 are provided to mount the ducts and hold the same against displacement when fitted in the proper position between the side walls of the chamber, and these clips, which are here illustrated as being made of sheet metal cut or stamped and then bent up to the proper form, have the base portions 12 provided with openings 13 for reception of rivets or other fastenings 14, by which the clips are mounted and rigidly held upon the inner sides of the walls of the chamber, the clip structure from the base portion 12 being bent outwardly to form a shoulder 15, and then bent forwardly to provide a retaining flange 16. A tongue 17 is provided at the lower end of the retaining flange 16 and is bent up to extend substantially at right angles to form a stop at the lower end of the flange. These clips 11 are made to be right and left, and are mounted upon the side walls of the chamber substantially after the manner shown in Fig. 1, and then when the duct is to be mounted in place within the chamber, it is only necessary to register the flange 10 of the end piece with the spaces provided behind the retaining flanges 16 of the clips 11 and to exert downward force against the duct structure to bring the same to a position that further downward movement is prevented by the stop 17, and then the duct will be positively held against displacement through the pressure of grain loaded into the chamber, and will also act as a brace between the side walls 1 and 2.

In the patent above referred to, eventuating from the application filed by me, a drier is disclosed in which successive rows of ducts have the passages communicating therewith formed through the opposite walls, and it will of course be understood that where passages are provided through the side walls as shown at 18, the clips 11 will be mounted and secured in place adjacent thereto and then as the ducts are fitted in place, proper registry will be accomplished.

From the foregoing it will be seen that I have provided a duct holder for use in mounting and securing air ducts in place in grain driers and in other like connection, which is of such character that the ducts may be readily fitted in position for use and may with equal facility be removed and replaced, and that the formation of the parts is such that not only is the duct proper braced and strengthened, but also the ducts will act to brace and reinforce between the walls of a chamber in which they are mounted.

While in the foregoing I have intimated that the end pieces are castings and the clip members are made up of sheet metal, it will of course be understood that these parts might be made up in other ways than as described, also it will be apparent that the duct structure as an entirety might perhaps be varied in its form and manner of construction; and, to those skilled in the art, it will be apparent that other changes might

be resorted to, in view of which fact reference should be had to the claims for the points considered as novel in this invention.

I claim:—

1. A duct having flanges provided at the ends thereof, and means mounted on the part from which the duct is to be supported and shaped to engage over and embrace the flange to thus retain the duct in a fixed mounting.

2. A duct holder comprising a flanged member fitted within the duct, and means mounted on the part from which the duct is to be supported and shaped to engage over and embrace the flange to thus retain the duct in a fixed mounting.

3. In combination with a duct having outstanding flanges at the ends thereof, clips shaped to have the flanges received and held therein.

4. In combination with a duct adapted to be fitted substantially transversely and horizontally within a chamber between the side walls thereof, a member formed as a part of said duct having outstanding flanges, and clips carried by the side walls of the chamber to receive the flanges of the member and support the duct in its mounted position.

5. A duct holder including an end piece to be secured in the end of a duct and provided with outstanding flanges at the sides thereof, and clips provided with flanges behind which the flanges of the end member are received and having stops to limit movement of the end member when brought to a fitted position.

6. In combination with end pieces having outstanding flanges provided thereon, a duct structure built around said end pieces, and clips made to be right and left and to be secured upon a wall from which the duct is to extend in such relation that the flanges of the end members are received therein to mount and hold a duct in place.

In testimony whereof I affix my signature in presence of two witnesses.

FULTON R. MORRIS.

Witnesses:

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GEO. A. SCHROEDER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."