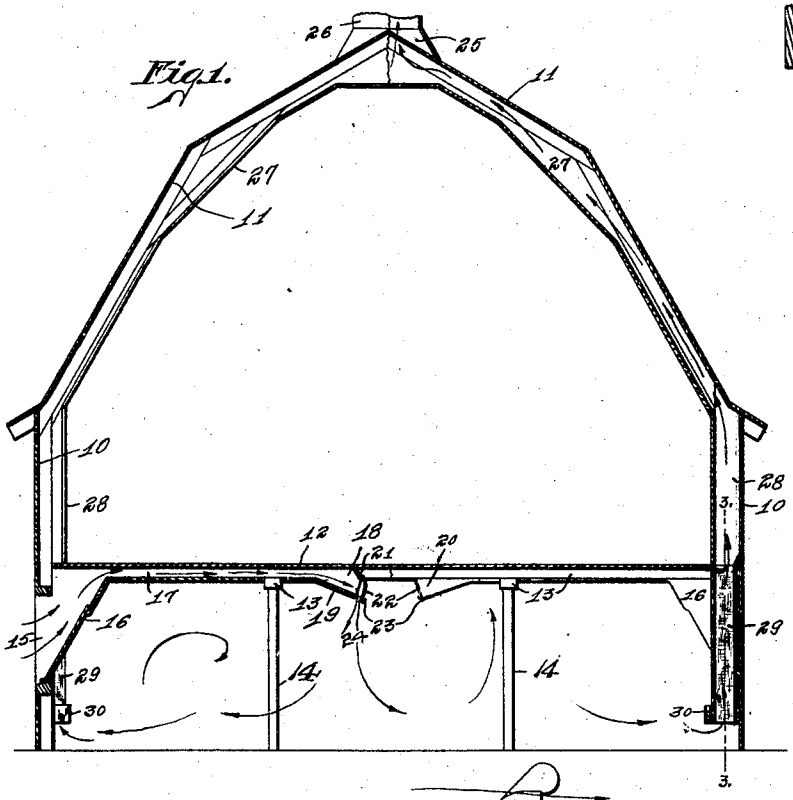
Feb. 1, 1927. 1,615,964

H. R. STRAIGHT

VENTILATING DEVICE FOR FARM BUILDINGS

Filed April 11, 1922

Fig. 1.



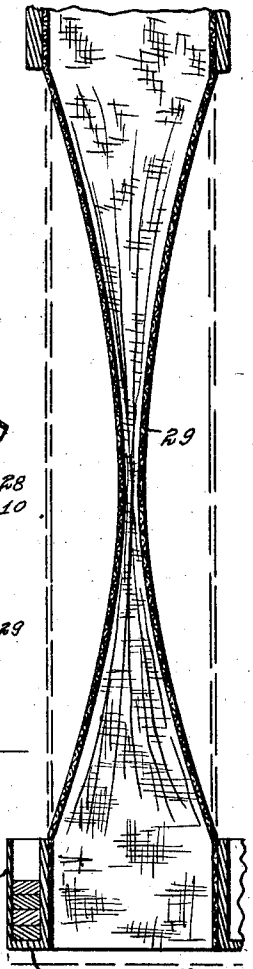
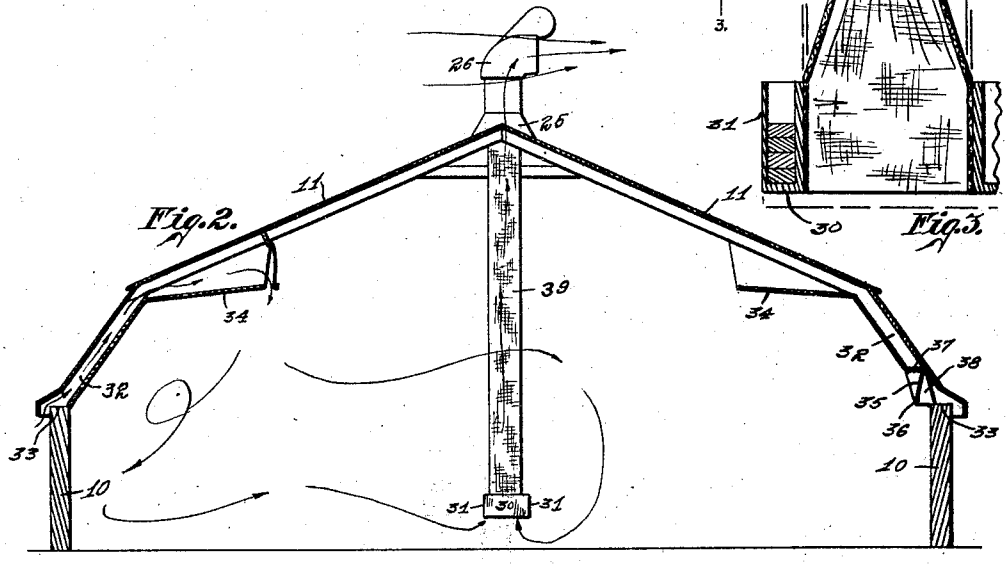


Fig. 3.

Fig. 2.



Inventor
Halver R. Straight
by Orwig and Hague Attys.

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UNITED STATES PATENT OFFICE.

HALVER R. STRAIGHT, OF ADEL, IOWA.

VENTILATING DEVICE FOR FARM BUILDINGS.

Application filed April 11, 1922. Serial No. 551,503.

This invention relates to ventilating systems for farm buildings, the object of which is to provide a ventilating system so arranged that a minimum amount of draft will be created in the building about the animals with a large amount of ventilation.

A further object is to provide in connection with the above, improved means for somewhat automatically regulating the flow of the exhaust air from the building to provide against heavy drafts through the building when strong winds are blowing.

A further object is to provide means for adjusting the openings in the pipes so that a predetermined amount of ventilation may be obtained.

These and other objects will be apparent to those skilled in the art.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 is a vertical transverse, sectional view through a barn showing the manner in which my improved device may be applied thereto.

Figure 2 is a vertical, transverse, sectional view of a hog house showing the manner in which my device is best applied to buildings of this type.

Figure 3 is a longitudinal, sectional view taken through a portion of the exhaust pipe on the line 3—3 of Figure 1.

In Figure 1 of the drawings, I have used the reference numeral 10 to indicate the side walls of the barn or similar building, and 11 the roof, and 12 the loft floor which is supported by means of joists 13 having their inner ends resting on posts 14.

The walls 10 are provided with window openings 15. A number of these openings are provided with ventilating devices 16 similar to the ventilating devices illustrated in my copending application on a combination window and ventilator, filed November 3, 1921, Serial Number 512,674 and which has matured into Patent Number 1,570,793, dated January 26, 1926.

The spaces between the joists 13, which are opposite the windows 15 are utilized as air conductors 17. The inner ends of these conductors 17 terminate near the central portion of the building.

At the inner ends of each of the conductors 17 I have provided an enlarged discharge opening 18 which is formed by downwardly and inwardly inclined boards 19 and side members 20.

The space between the joists 13 at the inner end of the members 20 is provided with blocks 21 of a width substantially equal to the width or height of the joist.

To the lower edge of the blocks 21 I have secured a piece of fabric 22 of sufficient size to cover the end of the opening 18, the lower edge of the fabric being provided with a light weight 23.

The ends of the members 20 are inclined downwardly and outwardly so that as the member 22 hangs vertically beneath the member 20 by the weight 23, a space 24 will be left between the end of the board 19 and the said fabric through which air may enter the building from the conductor 17.

If a wind should be blowing against the left hand end of the building, as illustrated in Figure 1, the air will enter through the window 15 and through the conductor 17 and through the left hand opening 18 but the member 22 of the right hand conductor will close and prevent the air from being blown directly through the building above the animals, thereby preventing warm dry air from being discharged.

If the wind ceased to blow from either side, then both of the members 22 will assume a vertical position and both left and right hand conductors will permit air to enter the building. I have illustrated these conductors only in the two sides of the building, but they may also be placed in the ends if so desired.

At the top of the roof 11 is provided a ventilating tube or pipe 25 upon which is mounted any of the commerical ventilators now in public use, such as illustrated by the numeral 26 in Figure 2.

Communicating with the pipe 25, I have provided air conductors 27 which are formed preferably by boxings in the rafters of the roof 11, the lower end of which is in communication with the vertically arranged conductor 28 supported adjacent to the side wall and having its lower end communicating through the floor 12.

The lower end of the conductor 28 is provided with a tube or pipe 29 formed of fabric material such as canvas of substantially the same diameter as the pipe 28. The

lower end of this tube 29 is provided with a frame 30 which may be formed of wood or metal. The frame 30 is preferably the same shape as the cross section of the tube 29. The tube 29 may be either round or rectangular in cross section.

The weight of the frame 30 should be sufficient to hold the sides of the tube 29 in parallel relation with each other and while a normal draft is being created through the said tube, but light enough so that when an excessive draft is created, the sides of the tube 29 will be permitted to collapse, as shown in Figure 3 in solid lines, thereby cutting down the sectional area of the central portion of the tube, and consequently the amount of air which is permitted to travel through the tube.

By this arrangement, I have provided means whereby the strong winds will not cause an excessive draft through the building, as ventilators of the type which are common on the market and illustrated by the numeral 26 have a tendency to create a considerable vacuum in the exhaust pipe in high winds, and produce an excessive ventilation. If the ventilating tubes are closed to prevent the excessive draft, when the wind quiets down or ceases to blow, the building will not be sufficiently ventilated. The lower end of the tube 29 extends almost to the floor line so that the heavy and damp air may be removed from the building.

I have provided a small box 31 or conductor on the opposite sides of the frame 30, in which may be placed small stones or weights so that the amount which the tube 22 collapses may be varied at the will of the operator, as in winter time when the wind is strong and the temperature outside is cold, it is not desirable to have so much ventilation through the building as in the summer time when the weather is warm. I can regulate this to a considerable extent by placing more or less weight in the boxes 31.

The ventilators 16 are also provided with means, as described in my copending application, for adjusting the incoming air of the building.

In Figure 2 I have shown a slightly modified method of installing the ventilating system. This is particularly adapted to apply to building constructions such as illustrated in my Patent Number 1,470,298 issued October 9, 1923 on a building construction. In this construction, the inlet ventilators 32 communicate with the outside atmosphere above the plates 33 and between the outhanging rafters, the supporting joist being boxed in to form the conductors 32. An enlarged portion 34 is provided similar to the enlarged portion 18 of Figure 1.

Instead of placing the fabric member 22 over the ends of the enlarged portion 34, I provide a metallic plate 35 hinged at its lower edge by a pivot 36, so arranged that when the member 35 is in one position, the conductor 32 will be closed, and when in substantially a vertical position, the conductor will be open and so arranged that a slight draft will cause it to move to its open position. The amount which it may open is adjusted by means of pins 37 placed in the plate 38 mounted on each of the studdings in the conductor 32, as clearly shown in Figure 2.

Thus it will be seen that a partial vacuum is created on the inside of the building by the exhaust pipe 39, which is similar to the exhaust pipe 29, and the valve 35 will be moved to its open position as air enters the building. Any draft tending to move outwardly will cause the member 35 to close.

Thus it will be seen that I have provided a device of comparatively simple construction, and one which may be placed in a building economically, and when so placed will permit a steady and continuous movement of air in the building.

I claim as my invention:

1. An exhaust ventilating pipe for buildings comprising a vertically arranged fixed pipe, a tube connecting the lower end of said pipe formed of a pliable material capable of collapsing by partial vacuum being formed in said tube, a weighted frame on the lower end of said collapsible tube for yieldingly holding the sides of said tube in parallel relation with each other.

2. An exhaust ventilating pipe for buildings comprising a vertically arranged tube formed of pliable and collapsible material capable of collapsing by a partial vacuum being formed in said tube, means for supporting the upper end of said tube, and a weighted frame on the lower end of said collapsible tube for yieldingly holding the sides of said tube in parallel relation with each other, the weights of said weighted frame being capable of variation.

3. An exhaust ventilating pipe for buildings formed of pliable material capable of collapsing by a partial vacuum being formed in said tube, means for rigidly maintaining one end of said tube against longitudinal movement, and means for yieldingly maintaining the free end of said tube in a longitudinal direction from the fixed end.

HALVER R. STRAIGHT.