March 21, 1961 O. BELIVEAU ET AL 2,975,873

CORNER LIFTING SECTION FOR HOOD

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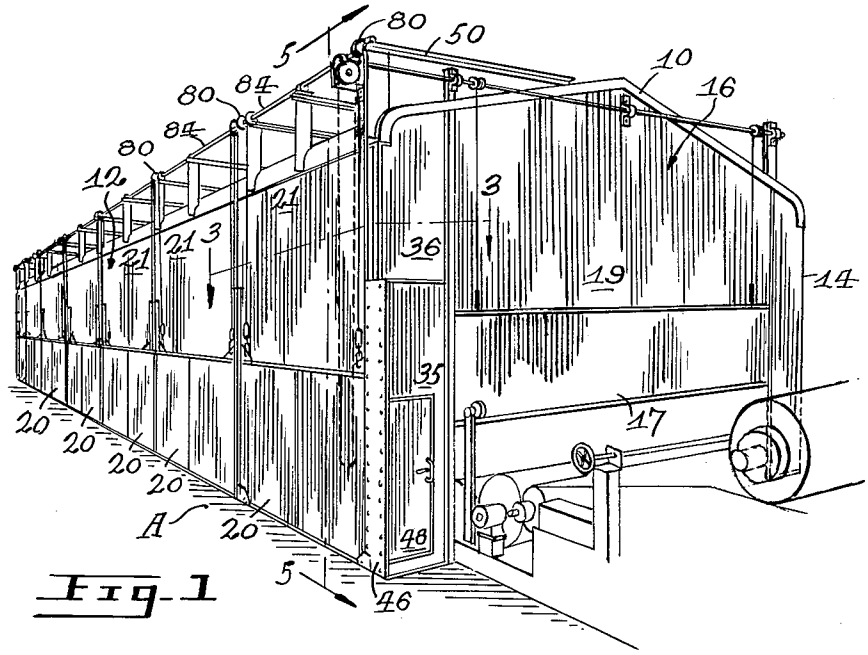


Fig. 1

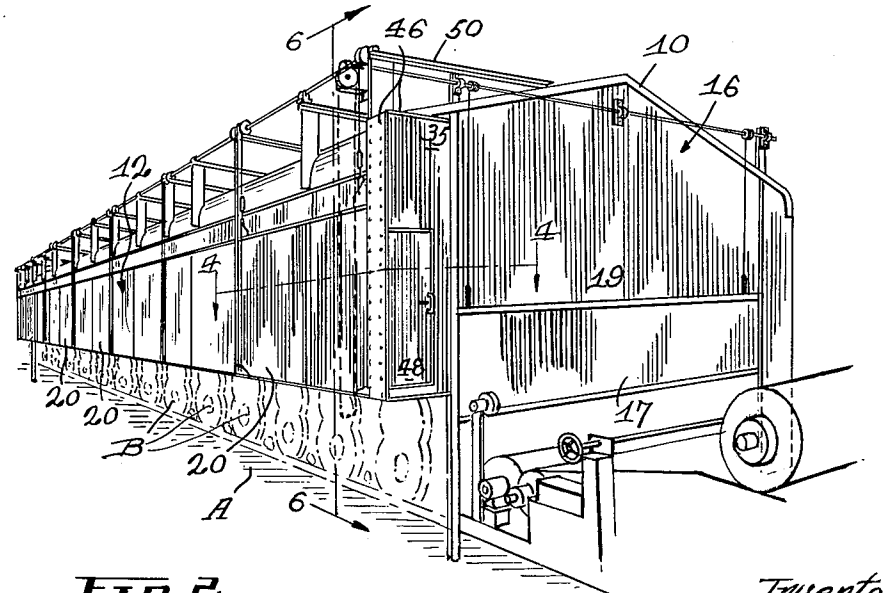


Fig. 2

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Fig. 3

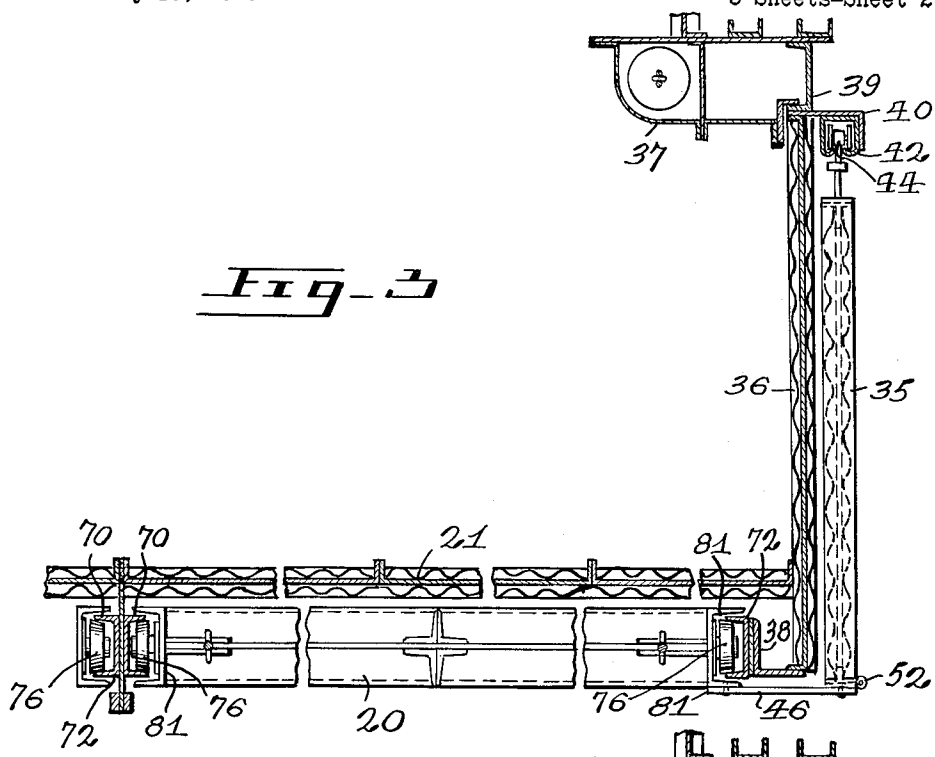
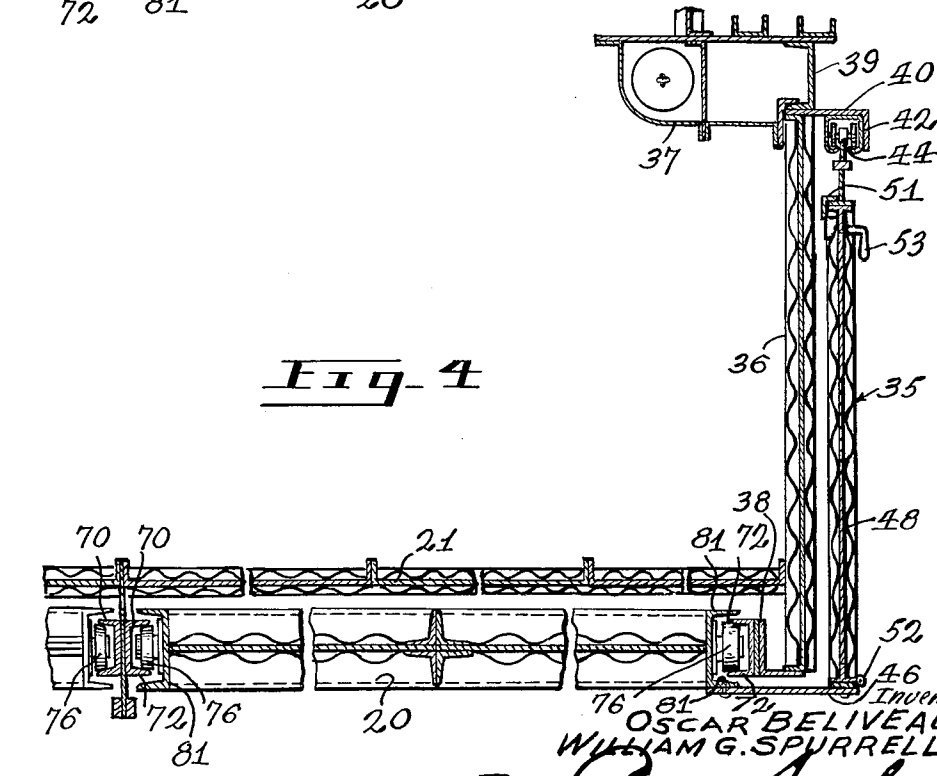


Fig. 4



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Fig. 6

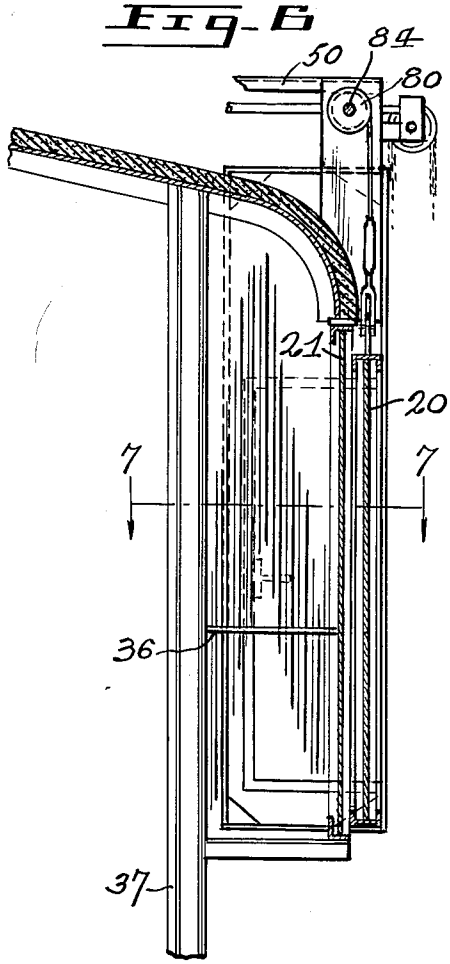
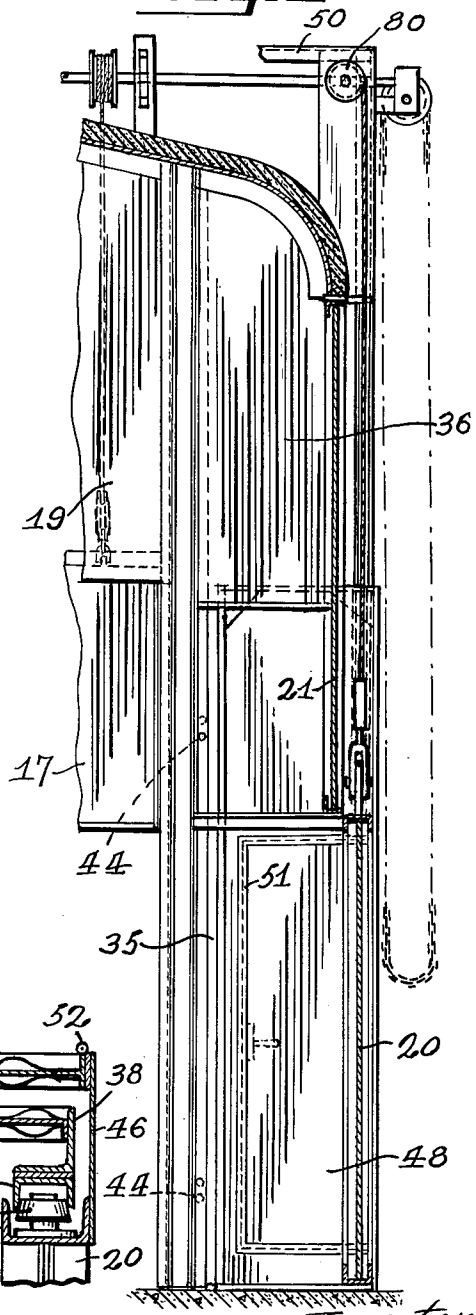


Fig. 5



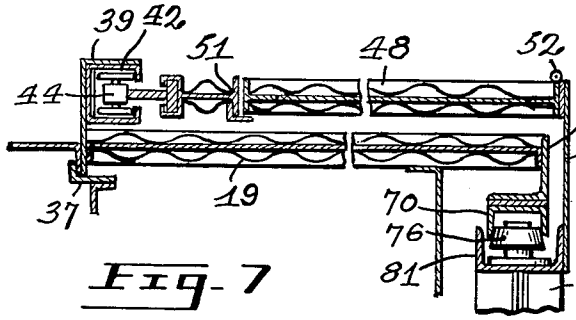


Fig. 7

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CORNER LIFTING SECTION FOR HOOD

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3 Claims. (Cl. 189—1)

The present invention relates to air processing systems and more particularly to enclosures or hood structures used in such systems.

In the pulp and paper industry it is common practice to provide some means of processing and recirculating the moist air which arises from a drying machine or the like. In order to at least partially confine and evacuate such air the usual procedure is to provide some type of hood or air enclosure over the top of the drying machine and also provide some means of exhausting the air so confined. Ideally such a hood or enclosure should totally enclose such machines, for example, high speed drying machines, providing means are provided whereby instant access may be had to the machine so that a break which may occur in the paper web, can be attended to before it piles up.

A hood structure of this type is illustrated in detail in United States Patent 2,825,430, to F. W. Hooper, issued March 4, 1958, and the present invention is directed to improvements in the hood shown and described in this patent.

As shown in U.S. Patent 2,825,430 the hood structure with which the invention is concerned consists of a self-supporting enclosure, mounted directly on the frame of the machine, which includes a roof portion of a length substantially equal to the machine to be enclosed and a width slightly greater than the machine so as to extend beyond the machine at each side. Side walls are provided which are co-extensive in length with the roof portion and extend from the mill floor to the roof portion. End walls are provided which connect the roof and side walls and each end wall includes side portions extending from the mill floor to the roof and central portions extending from the roof and terminating short of the mill floor to provide entry and exit passages for the feeding of material through the machine to be hooded. In this hood structure each of the enclosure side walls includes a plurality of movable segments and there are means provided for automatically moving the segments to provide access to the machine. In the preferred construction, on one side wall the lower panels are mounted for vertical sliding movement relative to the upper side walls and the upper panels may be fixed or mounted for horizontal sliding movement relative to each other. The preferred means for raising and lowering the vertically slidably mounted side wall panels or doors comprises essentially of a system of interconnected shafts and pulleys which are driven by suitable electric motors, the individual doors being provided with rollers fitting into and guided by vertical channels or tracks secured to the side wall framework. With this arrangement, the entire lower section of the hood side wall can be raised or lowered, either in sections as required, or all at once to provide clear unobstructed access to the machine along one side.

The present invention provides a further improvement to the hood structure described in that in addition to the vertically sliding panels on the side wall a lower corner section of at least one end wall is monuted for vertical sliding movement relative to the remainder of the end wall and is connected to the adjacent side wall panel and panel lifting means so that the lower end panel portion from the front face of the hood to the paper machine front frame rises with the side panels. In this manner the front of the paper machine is even more accessible than with the earlier hood structure.

Detailed description

Having thus generally described the nature of the invention, particular reference will be made to the accompanying drawings showing by way of illustration a preferred embodiment thereof, and in which:

Figure 1 is a diagrammatic view in perspective elevation of a complete hood structure embodying the improvement of the invention as it would appear in operative relationship over the drying section of a high-speed paper machine looking from the "wet" end of the machine, with the side panels and end corner section in normal lowered condition.

Figure 2 is a diagrammatic view corresponding to Figure 1 with the side panels and end corner section shown in raised condition providing complete unobstructed access to the entire front face of the machine.

Figure 3 is a cross-sectional view of the construction of Figure 1 along the line 3—3.

Figure 4 is a cross-sectional view of the construction of Figure 2 along the line 4—4.

Figure 5 is a cross-sectional view of the construction of Figure 1 along the line 5—5 as viewed from the interior of the hood.

Figure 6 is a cross-sectional view of the construction of Figure 2 along the line 6—6 as viewed from the interior of the hood.

Figure 7 is a cross-sectional view of the construction of Figure 6 along the line 7—7 to illustrate the construction more clearly.

With particular reference to the drawings the hood structure wherein the present invention is embodied is shown generally with more detail concerning one side wall having a series of vertically lifting lower panels and the vertically movable end corner portion now added. The hood or enclosure structure itself including the roof, side walls and end walls are preferably made of panels of corrugated aluminum sheet mounted over a suitable steel framework. The roof is of two-ply insulated construction while the movable segments or sliding doors are of opposed double ply corrugated aluminum sheet construction to provide the maximum in strength, insulation and rigidity while being as light as possible. In the structure illustrated, the machine enclosed is represented as being a high-speed paper drying machine having drying rollers "B" with the lower portions of the bottom drying rollers descending below the mill floor into the machine pit (not shown).

The hood structure shown is mounted directly on upper frame members of the machine so that the portion of the machine extending above mill floor "A" is enclosed along each side and a major portion of both ends. The roof portion 10 is of substantially equal length to the machine and is greater in width so as to extend beyond the machine at each side. The side walls 12 and 14 are substantially co-extensive in length with the roof 10 and extend from the mill floor "A" to the roof at the eaves. The end walls connect the roof and side walls 12 and 14 at each end with the end wall 16 being disposed at the "wet" or entry end of the machine. Each of the end walls, end wall 16 only being shown in the present drawings, includes side panels at each side which extend from the mill floor "A"

to the roof 10 and each has a central portion which terminates short of the mill floor "A" to provide entry and discharge passages for the material passing through the machine. In the construction shown the end wall 16 is provided with a central panel 17 which is mounted for sliding vertical movement relative to the upper stationary part 19 so that the height of the opening at the "wet" end of the enclosure can be adjusted to suit the machine enclosed.

As previously described and as shown in detail in United States Patent 2,825,430 either or both of the longitudinal side walls, for example the side wall 12 as shown in Figures 1 and 2, is made up of a plurality of panels which are aligned in parallel upper and lower rows to form the enclosure walls. The lower segments or door panels 20 in the side wall 12 are mounted so as to be capable of vertical sliding movement towards and away from the mill floor "A." For this purpose, and as shown in cross section in Figures 3 and 4, each door 20 is mounted between guide channels 70 positioned in spaced-apart relationship on the upper half of the side wall. The guiding channels 70 each include outstanding flanges 72 wherein guiding rollers 76 mounted at each side of the door panels 20 are maintained in alignment during the travel of the doors. The rollers 76 are positioned adjacent the top portion only of the doors 20, the lower portion being guided through the contact of bordering channels 81 secured to each side of the doors 20 and which overlap the guiding channels 70 as shown.

The doors 20, in the construction illustrated, are raised and lowered relative to the mill floor "A" through the medium of a plurality of spaced apart winding drums 80. The drums 80 are mounted in opposed pairs on shafts 84 each of which are journalled in suitable bearings supported above the hood structure by frame members 50. Driving gears (not illustrated) are connected to certain of the shafts 84 and by suitable driving motors connected to the gears the shafts can be rotated automatically as desired. Since the shafts 84 are disposed in axial alignment and in interconnected groups, the action of a single motor can be used to raise more than one door panel at a time, for example in the construction shown in U.S. Patent No. 2,825,430 the panels 20 are interconnected and raised in sections of three.

Normally, the hood structure described would have a corner post located at the juncture of the end side wall panel 20 and the end wall 16 so as to support the side portion of the end wall and the last or end door guiding channel 70.

In accordance with the present invention the corner post is eliminated and the lower panel portion 35 of the end wall 16 is connected to the side wall door panel 20 at the end of the enclosure and is guided along the opposite side for vertical sliding movement so that it can be raised or lowered together with the door panel 20. The construction making this possible is shown in cross section in Figures 3 and 4 wherein the sliding door panel 20 at the end of the enclosure side wall 12 is shown together with the guiding channels 70. Figures 3 and 4 also show the relative position of the upper panels 21 of the enclosure which in the construction shown are fixed.

In this construction the fixed upper panel portion 36 of the end wall 16 is secured between an inner corner post assembly 37 extending from the mill floor to the roof of the enclosure and an angle column 38 supported by the hood supporting framework extending from the machine (not illustrated) clear of the mill floor.

The outer door guiding channel 70 is secured to one face of the column 38 while one end of the end portion panels 36 is secured to the other face. The inner end of the end panel portion 36 is secured to a front column 39 of the assembly 37 together with an outwardly extending angle 40 which also extends from the mill floor "A" to the top of the hood enclosures.

A guiding channel or track 42 is secured to the inner face of the vertical angle 40 and spaced apart roller units 44 secured to the inner marginal edge of the movable panel portion 35 are engaged within the channel 42 to guide the vertical sliding movement. The opposite edge of the end panel portion 35 is connected throughout its length to the bordering channel 81 of the adjacent door panel 20 by a bridging and connecting plate 46. This attachment in effect makes the end panel portion 35 a continuation of the end door panel 20 as raising of the panel 20, through the drum and cable arrangement previously mentioned, will also raise the end panel portion 35 giving unobstructed access to the side and end of the machine as shown in Figure 2.

Since, for routine investigation and/or control of the machine it is not always necessary to raise the door panels 20 and/or end panel portion 35, an access door 48 is provided in the end panel portion 35. This door is of similar construction to the door panels 20 and is hingedly mounted as indicated at 52 so as to be adapted to swing outwardly from a bordering frame 51 mounted in the end panel section 35. As will be appreciated, suitable latching means are provided and controlled by the handles 53 and means (not illustrated) are also provided whereby the access door 48 cannot be opened unless the end panel section 35 is in lowered or normal position.

We claim:

1. In a hood structure adapted to totally enclose a paper machine or the like and having interconnected side and end walls extending from the roof of said hood structure to a mill floor with at least the lower portions of one of said side walls provided with vertically lifting doors and lifting means connected to said doors adapted to provide clear access to said machine along said side wall; an additional lifting portion comprising a lower corner portion of at least one of said end walls adjacent said side wall having said lifting doors, said end wall portion being mounted for vertical sliding movement parallel with and relative to the remainder of said end wall and being interconnected to one of said side wall lifting doors, whereby, in addition to and simultaneously with the raising of the side wall door adjacent thereto said end wall lower corner portion is raised providing additional access to said machine.

2. A hood structure as claimed in claim 1 wherein the outer marginal edge of said lifting end panel section is connected to the adjacent marginal edge of the end lifting door of said side wall lower portion and the other inner marginal edge is provided with guiding rollers engaging in a vertical guiding channel fixedly mounted on said end wall.

3. In a hood structure adapted to totally enclose a paper machine or the like and having interconnected side and end walls extending from a top roof with at least the lower portion of one of said side walls provided with lifting doors and lifting means connected to said doors adapted to provide clear access to the said machine along said side wall; an additional lifting portion comprising a lower corner section of at least one of said end walls adjacent said side wall having said lifting doors, said end wall portion being mounted for vertical sliding movement parallel with and relative to the remainder of said end wall and being interconnected to said side wall door lifting means, whereby in addition to and simultaneously with said side wall doors said end wall portion is adapted to be raised providing additional unobstructed access to said machine.

References Cited in the file of this patent

UNITED STATES PATENTS

2,759,226	McKee et al.	Aug. 21, 1956
2,825,430	Hooper	Mar. 4, 1958