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RADIOSONDE BOX

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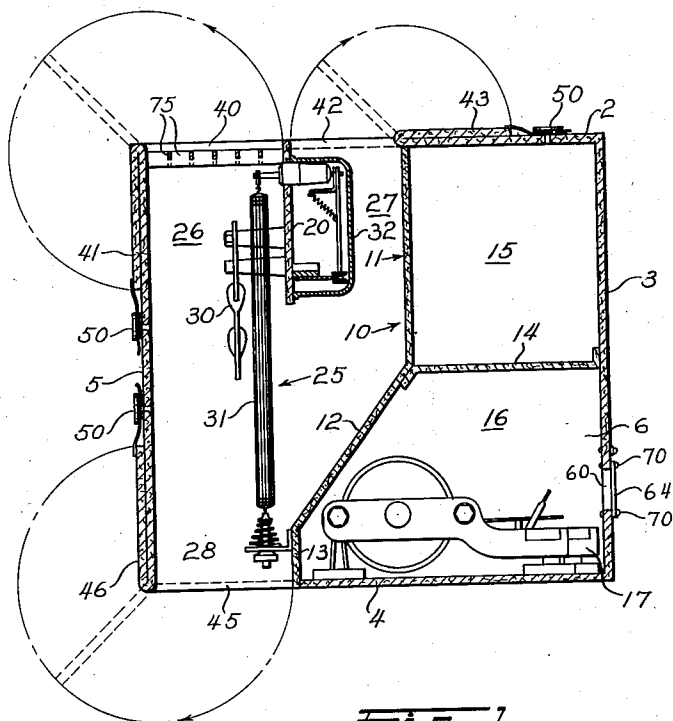


Fig. 1

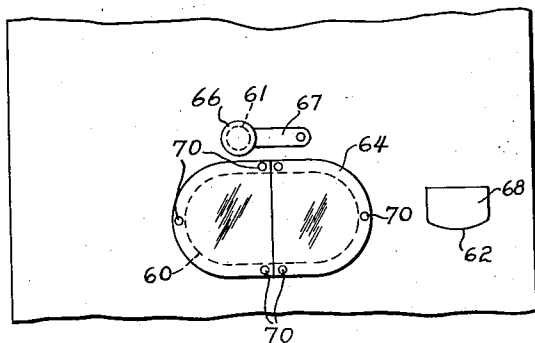


Fig. 2

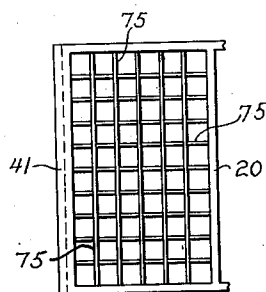


Fig. 3

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RADIOSONDE BOX

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This invention relates broadly to box constructions and, more particularly, to boxes in which the various elements of radiometeorographs are contained.

The purpose of a radiometeorograph is to measure weather conditions at high altitudes by means of balloon carried devices which are operated by changes in temperature, humidity and atmospheric pressure and to transmit the measurements to earth by causing variations of the measured conditions to vary the radiations of a radio transmitter which is also carried by the balloon. In the past the boxes in which the various elements of the meteorograph were placed were not constructed in such a manner as to insure the best possible results. In such prior boxes there was no provision of adequate means to insure proper circulation of a large volume of air around the elements of the device, without which proper circulation of air the most accurate measurements could not be secured. By my invention a box is provided which not only causes better circulation of the air than was provided by prior art boxes but allows a greater volume of air to come into contact with the elements of the meteorograph. Therefore, by means of this invention more accurate results can be obtained than could be obtained through the use of boxes constructed according to prior art practices.

Another problem involved in the construction and operation of radiometeorographs arises from the fact that during the shipment of the devices the instruments are jarred and the fine adjustments made at the factory are disturbed. The boxes of the prior art were so constructed that adjustments could thereafter be made only with great difficulty. No means were provided in such prior boxes by which the elements of the meteorograph could be clearly seen and, even when they could be seen, it was very difficult to insure that the proper adjustments were being made. Therefore, a further object of my invention is to provide a box in which there are provided better facilities for both looking into the box and, while looking into the box, making proper adjustment of the meteorograph elements therein without opening the box.

Other objects and features of novelty of my invention will be apparent from the following description and the annexed drawing, it being expressly understood, however, that such description and drawing are only illustrative of the invention and that the invention is not limited

thereby or otherwise than by the appended claims.

Referring to the drawing in which similar reference numerals refer to like parts:

Fig. 1 is a sectional view of a box constructed according to my invention;

Fig. 2 is an enlarged view of a part of an end wall of the box of Fig. 1, and

Fig. 3 is a top plan view of part of the box, showing the grid disclosed in Fig. 1.

Means are provided by this invention for causing greater circulation of air through a box containing a radiometeorograph and for distributing this increased circulation in an improved manner. Such means are disclosed in Fig. 1 of the drawing, in which there is disclosed a box having a top 2, right end wall 3, bottom 4, left end wall 5, and side wall 6. Between the end walls 3 and 5, and slightly nearer the end wall 3, the box is divided by a generally-vertical partition denoted by the numeral 10. This partition comprises an upper, vertical portion 11 which is parallel to the end walls of the box and is located somewhat nearer to the end wall 3 than to the end wall 5, and which extends from the top 2 downwardly approximately one-half the height of the box. The partition 10 is bent at approximately its mid-point to provide a center portion 12 which is inclined downwardly and toward the end wall 5 to a point spaced slightly above the bottom 4, from which point the partition is turned downwardly to the bottom of the box to provide the lower vertical part 13 of the partition. A horizontal partition 14 connects the partition 10 and the end wall 3, it being connected to partition 10 at approximately the upper end of the inclined part 12 thereof. The partitions 10 and 14 and the end wall 3 thus define an upper chamber 15 within which a radio transmitter may be placed and a lower chamber 16 within which a pressure-responsive apparatus 17 may be placed. The partition 10 and the end wall 5 also include between them approximately one-half of the box, which is wide at the upper part thereof, between the end wall 5 and the upper vertical part 11 of the partition and which is narrow at its lower part between the end wall 5 and the lower vertical part 13 of partition 10. The part of the box between partition 10 and end wall 5 is partially divided by a partition 20 which is parallel to the end walls of the box and approximately midway between the end wall 5 and the upper vertical part 11 of partition 10, extending downwardly from the top 2 a distance of approximately one-third the height of the box. The

partitions 13 and 20 are in the same plane and are separated by a considerable space 25, inasmuch as the lower end of partition 20 is substantially above the upper end of partition 13. Thus, the upper part of the space between the partition 10 and end wall 5 is divided into two vertical passages 26 and 27, the former being located between end wall 5 and partition 20 and the latter being located between partition 20 and the upper vertical part 11 of partition 10. The lower part of the space between end wall 5 and partition 10 forms a passage 28 which is equal in area to the space between end wall 5 and partition 20 because of the positioning of partition 13 in the plane of partition 20.

The partition 20 provides a support for a temperature-responsive device 30 which is disposed in passage 26 between the partition 20 and end wall 5. The partition 20 and partition part 13 form supports for the upper and lower ends, respectively, of a humidity-responsive device 31 which is disposed within the passages 26 and 28. Thus, the temperature and humidity devices 30, 31 are so disposed that they extend over or in front of the space 25 between the partition 20 and the co-planar partition part 13. The partition 20 also provides a support for a resistance-varying device 32 which is operated by the humidity responsive element 31, and which is disposed in the passage 27, being mounted on the side of partition 20 opposite to that on which the humidity and temperature-responsive devices are mounted.

Means are provided by the invention for causing an increased flow of air through the part of the box between the end wall 5 and the partition 10. Such means comprise three openings in the box, for each of which closures are provided, whereby the openings may be uncovered when the box is in use or may be covered otherwise. Opening 40 is located in the top 2 of the box and is defined by end wall 5, partition 20 and the side walls of the box, a cover 41 being provided for this opening and being hinged along one side thereof to the top of end wall 5. This opening communicates the passage 26 to the outside of the box. Passage 27, between partition 20 and upper vertical part 11 of partition 10 is communicated to the outside of the box by an opening 42 in the top of the box, a cover 43 being provided for this opening, the same being hinged along one side thereof to the top 2. The passage 28 is communicated to the outside of the box by an opening 45 in the bottom of the box, this opening being adapted to be closed by a flap 46 which is hinged along one side thereof to the bottom of the end wall 5. Each of the flaps or closures 41, 43, 46 is provided with a string whereby it may be tied in open or closed position, anchors 50 being provided in suitable places on the outside of the box to which the strings may be tied.

When the radiometeorograph is not in use the box will be completely closed by tying all of the flaps over the corresponding openings. When the device is to be used, all of the openings are uncovered by tying the flaps in open position. Air may now pass through the part of the box between end wall 5 and partition 10, passing over the temperature and humidity elements in two ways, first, directly through opening 40, passages 26 and 28 and through opening 45 during which passage the air will pass longitudinally along the humidity and temperature elements. Air will also pass through opening 42 and passage 27, being deflected therefrom by inclined part 12 of

partition 10 laterally through or across the temperature and humidity elements to passage 28 and opening 45. The temperature and humidity elements will therefore be subjected to two streams of air flowing in different directions. The amount of air will thus be increased and the quality of the circulation improved.

Means are also provided by the invention for shading the temperature and humidity-responsive elements 30, 31 from the sun when the closure 41 which normally covers the passage 26 is open, as is the case when the meteorograph is in use. Such means are disclosed in Figs. 1 and 3 of the drawing and comprise a grid of interfitted strips 75, which are preferably formed of cardboard or some other light material, and which is positioned within the passage 26 above the upper parts of the temperature and humidity-responsive elements. The strips forming the grid are preferably made of as great depth as is permitted by the spacing of the upper ends of the temperature and humidity elements from the top of the box and the grid is preferably made co-extensive with the passage 26. It will be seen that this grid will prevent the rays of the sun from reaching the temperature and humidity elements except in the rare case when the sun is in the exact prolongation of the center-lines of the passages 26 and 28.

There is also provided by the present invention improved means for examining the inside of the box and, while doing so, making adjustments of the meteorograph elements therein. Such means are disclosed in Fig. 2 of the drawing and comprise openings 60, 61 and 62 which are provided in that part of the end wall 3 of the box which encloses the lower chamber 16 within which the pressure element 17 is located. Opening 60 is preferably oval in shape with its major dimension transverse to the end of the box and is located in the center of the lower part of end wall 3. Opening 61 is preferably circular in shape and may be located a short distance above the opening 60. Opening 62 is preferably U-shaped and may be located a short distance to the side of opening 60. Means are provided for covering all of these openings. A transparent covering of glass or other material 64 is permanently placed over opening 60 and is held in place by rivets 70. One part, preferably a half, of this covering is magnifying in nature although the entire covering may be so, if desired. Means are provided for closing the opening 61 which is preferably located above the magnifying part of the viewing opening 60, such means comprising a button 66 which is formed on one end of a strip 67, the other end of which is attached to the box, as by a rivet about which the button 66 and strip 67 may be swung in order to uncover the opening 61. The opening 62 is defined by a score line in the material of the box and is normally closed, being opened by punching in the material defined by the bottom of the U-shaped score, which is then hinged to the box wall by the straight upper edge thereof.

When the box is in its normal use all of the openings are closed. If it is desired to view the pressure element which is inside the box it is only necessary to look through the glass 64. As one-half of the glass is magnifying in nature the smallest parts of the pressure element may be clearly viewed. If desired, a light may be caused to shine through the other side of the glass in order to illuminate the interior of the chamber. If it is desired to adjust the pressure element, it

is only necessary to remove the coverings from the openings 60 and 61 in order to insert the necessary instruments.

While I have described and illustrated only one embodiment of my invention, it will be apparent to those skilled in the art that other embodiments may be made without departing in any way from the spirit or scope of the invention, for the limits of which reference must be had to the appended claims.

What is claimed is:

1. A box having end walls, side walls, a top and a bottom, means within the box for supporting at least one device which is responsive to changes in atmospheric conditions and for directing air flowing through the box across said supported device, comprising a partition at least part of which is inclined to an end wall of the box and which extends from the top wall to the bottom wall of the box and provides means at its bottom wall end for supporting one end of a device responsive to changes in atmospheric conditions, a second partition extending from the top wall of the box toward the bottom wall thereof and lying substantially in the plane of the bottom wall end of the first partition and terminating short of the bottom wall end of the first partition whereby a passage is provided between the free end of the second partition and the bottom wall end of the first partition, said second partition providing supporting means for one end of a device responsive to changes in atmospheric conditions, whereby at least a part of such supported device overlies the passage between the two partitions, the top and bottom of the box each having at least one opening therein through which the passage between the two partitions communicates with the atmosphere.

2. A box according to claim 1 in which the first named partition comprises an upper section which is substantially at right angles to the top of the box and extends therefrom toward the bottom, and a middle section inclined from the first section toward the bottom and toward the

second partition, and a lower section which is substantially at right angles to the bottom and extends therefrom toward the top of the box.

3. A box according to claim 1 in which an additional partition extends from the first-named partition to the adjacent end wall in a direction away from the second-named partition.

4. A box according to claim 1 in which the top of the box is provided with an opening on each side of the second-named partition, one being between such partition and the top wall end of the first-named partition and the other being between such partition and an end wall of the box, and the bottom of the box being provided with an opening substantially aligned with the second-named opening in the top and lying between the bottom wall end of the first-named partition and such end wall of the box, and closure means for each of such openings.

5. A box according to claim 1 in which the top wall of the box is provided with two openings one of which is between the second-named partition and the top wall end of the first-named partition, the bottom of the box having an opening therein adjacent the bottom wall end of the first-named partition and on the same side thereof as said opening in the top wall, and closure means for each of the openings.

6. A box according to claim 1 in which the top wall of the box is provided with two openings one of which is between the second-named partition and the end wall on the opposite side of such partition from the top wall end of the first-named partition, the bottom of the box having an opening therein substantially aligned with said opening in the top of the box, and closure means for each of the openings.

7. A box according to claim 1, in which one of the openings in the top of the box has means disposed therein for shading the space beneath said opening, said means comprising a plurality of spaced interfitted strips which form a grid.

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