May 3, 1932. P. S. MARTIN 1,856,963

MANIFOLD

Filed Jan. 14, 1928

Fig. 1.

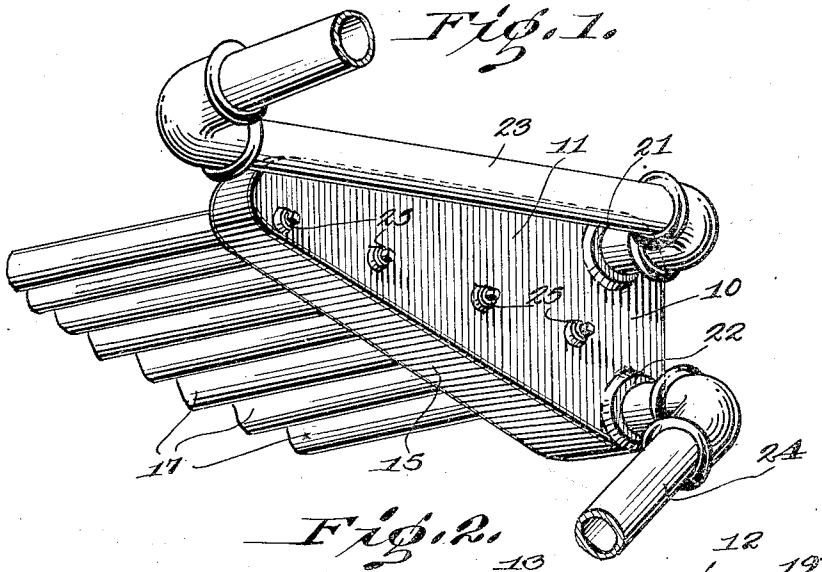


Fig. 2.

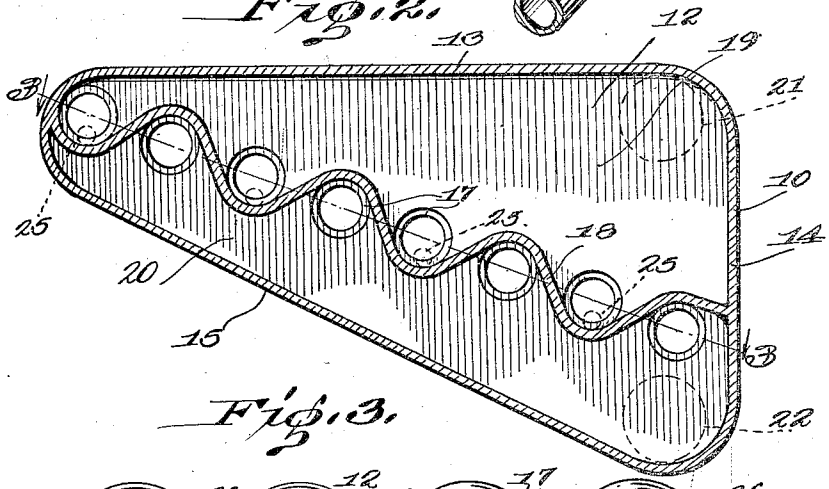
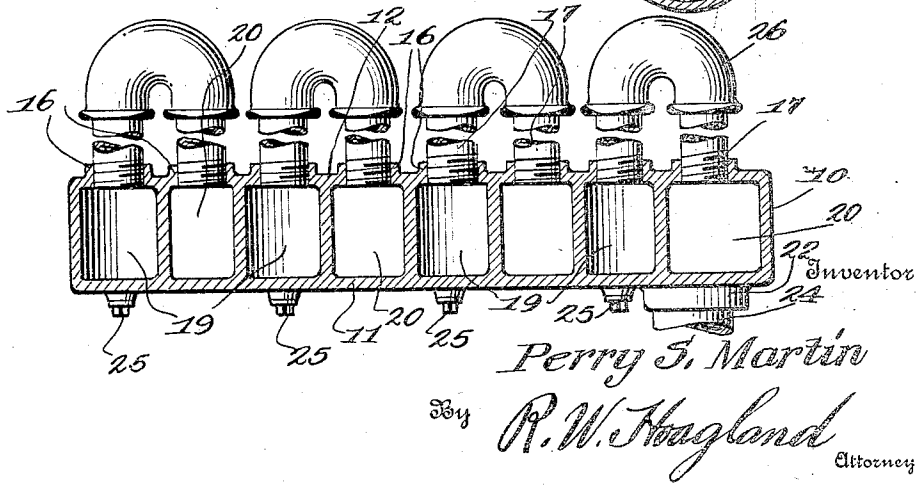


Fig. 3.



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UNITED STATES PATENT OFFICE

PERRY S. MARTIN, OF HARRISONBURG, VIRGINIA

MANIFOLD

Application filed January 14, 1928. Serial No. 246,801.

My invention relates to manifolds, and more particularly to a manifold for use in connection with heating systems of incubators, brooders, etc., whereby hot water or steam is circulated through heat radiating pipes, said manifold having separable compartments and constructed and arranged for properly supporting one end of each pipe of a plurality of flow and return heat radiating pipes, said flow and return pipes communicating with separate compartments of the manifold and with the outer ends of the flow pipes communicating with the outer ends of the return pipes.

Another object of the invention is to provide a manifold of the above mentioned character constructed in a single piece, having a plurality of pipe tappings thereon in line with one another and arranged on an angle, and a partition extending longitudinally of the manifold dividing the same in two separate compartments, and with alternate tappings communicating with the same compartment so that hot water to the flow pipes and cool water from the return pipes are kept entirely separate.

A further object of the invention is the provision of a two-compartment single-piece manifold for not only reducing the cost of manufacture thereof, but for providing positive or fixed positions for both the flow and return pipes so as to eliminate difficulty in properly assembling the different units of a heating system, this being an improvement over the use of separate manifolds, as it is an easy matter to get the manifolds out of alignment and thus experience trouble when assembling the units in a long incubator or brooder where several lengths of pipes are used for forming a single flow or return pipe.

It is also an object of the invention to provide a device of the above indicated character, which is simple and substantial in construction, which can be manufactured economically, and which will be thoroughly efficient and practical in use.

With the foregoing and other objects in view, which will be apparent as the description proceeds, the invention resides in the construction and arrangement of parts, as hereinafter described and claimed, it being understood that changes can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a perspective view of my improved manifold, showing portions of pipes connected therewith,

Figure 2 is a longitudinal vertical section through the same, and

Figure 3 is a longitudinal section taken on line 3—3 of Figure 2.

In carrying out the invention, the numeral 10 designates my improved manifold generally, which has a pair of side walls 11 and 12, a top wall 13, an end wall 14, and an angled bottom wall 15, which extends from the lower portion of the end wall 14 in an inclined direction to one end of the top wall 13. Arranged in alignment on the side wall 12 and at an angle slightly less than the angle of the bottom wall 15, is a plurality of pipe tappings 16, which are threaded and adapted to receive the threaded ends of a plurality of heat radiating pipes 17 for forming connections between the heat radiating pipes and the manifold and for supporting the ends of said heat radiating pipes.

Extending longitudinally of the casing of the manifold is a partition 18 which is attached to the opposite side walls 11 and 12 and is of a corrugated construction so as to lie upon opposite sides of adjacently arranged tappings 16, said partition being clearly illustrated in Figure 2 of the drawings. The ends of the partition 18 are attached to the end wall 14 and the point of connection of the inclined bottom wall 15 with the top 13 so as to divide the interior of the manifold into two compartments, namely a heat flow compartment 19 and a return compartment 20. By this arrangement it can be seen that every other one of the heat radiating pipes will be in communication with the same compartment and that the heat radiating pipes which lie adjacent one another are in communication with the separate compartments.

On the side wall 11 of the manifold adjacent the end wall 14 is arranged a pair of

pipe tappings 21 and 22, the tapping 21 communicating with the inlet compartment while the tapping 22 communicates with the outlet compartment. In the tapping 21 is connected by means of screw threads or the like a hot water supply pipe 23, while in the tapping 22 in a like manner is connected the cool water return pipe 24. It thus can be seen that each of the compartments 19 and 20 have either an inlet or outlet pipe connected therewith. The tapping 22 is arranged at the lowermost point of the compartment 20 so as to assure complete drainage of the compartment when desired.

As the partition 18 is of a corrugated construction, I have provided a series of taps 25 at the lowermost points of the compartment 19 so that said compartment may be tapped in order to drain same when desired.

As the pipe tappings are arranged alternately with respect to communication with the compartments, it can be seen that every other one of the heat radiating pipes 17 will be heat flow pipes and the other heat radiating pipes will be cool water return pipes, due to the fact that the outer end of each flow pipe is connected by means of a return bend 26 to a return pipe adjacent thereto.

It is to be noted that by arranging pipe tappings 16 in alignment and having the partition 18 of corrugated construction heat radiating pipes will be in aligned parallel position and that the aligned heat radiating pipes are at a slight angle, which makes this manifold particularly adapted for use in connection with brooders such as that shown in my Patent No. 1,592,377 and my pending application entitled "Colony brooder", filed January 21, 1927, Serial No. 162,527. Furthermore, it is to be noted that by constructing a two-compartment single-piece manifold the desired angle of all the pipes as well as the proper positioning of the pipes is easily had, as well as providing a structure whereby the pipes forming the heat radiators may be cut the desired length and all the same so the equipment can easily be knocked down for shipment and can be readily assembled and erected by inexperienced parties. As previously mentioned, two-piece manifolds have been used, but quite a little trouble has been experienced in properly assembling a heating unit using such manifolds. In my device all points of connection with the manifold are fixed. Thus when the pipes are connected to the manifold they will be in proper position. In a two manifold system having a flow manifold and a return manifold used in connection with long incubators or brooders where there may be several lengths of pipes in a single flow or return pipe, it is customary to first connect the pipes to the return manifold and then later connect the pipes to the flow manifold, and when this is accomplished to connect the fittings from the heater to the manifold. In doing this, it is an easy matter to get the two separate manifolds, namely the flow manifold and return manifold, out of alignment so that trouble is experienced in assembling the fittings to the heater.

As the hot water supply pipe 23 is connected to the flow compartment 19, hot water will enter said flow compartment and flow through every other one of the heat radiating pipes, due to the fact that every other one of the heat radiator pipes are in communication with the flow compartment. As the outer ends of the heat flow pipes are connected by means of return bends to return pipes, the water will return in every other one of the heat radiating pipes and flow into the return compartment 20 of the manifold. From the return compartment 20, the water flows through the return pipe 24 to the heater and thus complete circulation is had.

Having thus described my invention, what I claim as new is:

1. A single-piece manifold having a pair of compartments therein, and a plurality of pipe tappings aligned in a single series in which alternate tappings communicate with one compartment while the others communicate with the other compartment.

2. A manifold having a corrugated partition therein dividing the interior into a pair of compartments, and a plurality of pipe tappings arranged on said manifold every other one of which communicate with one compartment while the others communicate with the other compartment, the axes of all the pipe tappings lying in a single plane.

3. A manifold comprising a hollow casing, a partition in said casing dividing the interior thereof into a pair of compartments, and a plurality of pipe tappings arranged on said casing at an angle, certain of said pipe tappings communicating with one compartment while the other pipe tappings communicate with the other compartment.

4. A manifold comprising a casing of hollow construction, a plurality of pipe tappings arranged on said casing and communicating with the interior thereof, a partition arranged in said casing and being of a corrugated formation for dividing the casing in two compartments with every other one of the pipe tappings communicating with one compartment while the other pipe tappings communicate with the other compartment.

5. A manifold comprising a casing of hollow construction, a plurality of pipe tappings arranged on said casing and communicating with the interior thereof, a partition arranged in said casing and being of a corrugated formation for dividing the casing in two compartments with every other one of the pipe tappings communicating with one compartment while the other pipe tappings communicate with the other compartment, said pipe tappings and partition being ar-

ranged at an angle with respect to the casing.

6. A manifold comprising a casing of hollow construction, a plurality of pipe tappings arranged on said casing and communicating with the interior thereof, a partition arranged in said casing for dividing the interior thereof in two compartments, said partition being of a corrugated formation so as to alternately communicate said tappings with said compartments, and taps arranged in the lowermost portions of the compartment having for its bottom said corrugated partition.

7. A manifold comprising a casing, a plurality of pipe tappings arranged on one side of said casing and at an angle with relation to the casing, a partition arranged in the casing for dividing the same into compartments, said partition being of a corrugated formation so as to alternately communicate the tappings with the compartments, and other pipe tappings arranged on said casing one communicating with each of said compartments.

8. A manifold comprising a casing of elongated formation, a plurality of pipe tappings arranged on said casing at one side and communicating therewith, said pipe tappings arranged longitudinally of the casing, and a longitudinally arranged corrugated partition for dividing the casing into a pair of compartments, said corrugated partition being arranged so that certain of the pipe tappings communicate with one compartment while the other pipe tappings communicate with the other compartment, a plurality of taps in one side of the casing at the lowermost portions of the bottom of said casing formed by said corrugated partition.

9. A manifold comprising a casing having opposite side walls, a top wall, an end wall, an inclined bottom wall extending from the lower portion of the end wall to the top wall, a plurality of pipe tappings arranged in one side wall of the casing, a partition arranged in said casing for dividing the interior thereof into a pair of compartments, said partition being of a configuration for alternately communicating said pipe tappings with said compartments, and other pipe tappings one communicating with each of said compartments, said pipe tapping in the lowermost compartment having the inclined bottom, communicating at the lowest point of said compartment.

10. In a heat radiator, a one piece manifold having an inlet and an outlet, a plurality of looped pipes connected to the manifold and having the axes of their straight portions as well as the portions joining the manifold in a single plane, and means within the manifold for directing the inflowing fluid through one leg only of each looped pipe the legs carrying the inflowing fluid alternating with those carrying the outflowing fluid.

11. The device of claim 10 in which the means is a wavy wall integral with other portions of the manifold.

PERRY S. MARTIN.