

March 13, 1956

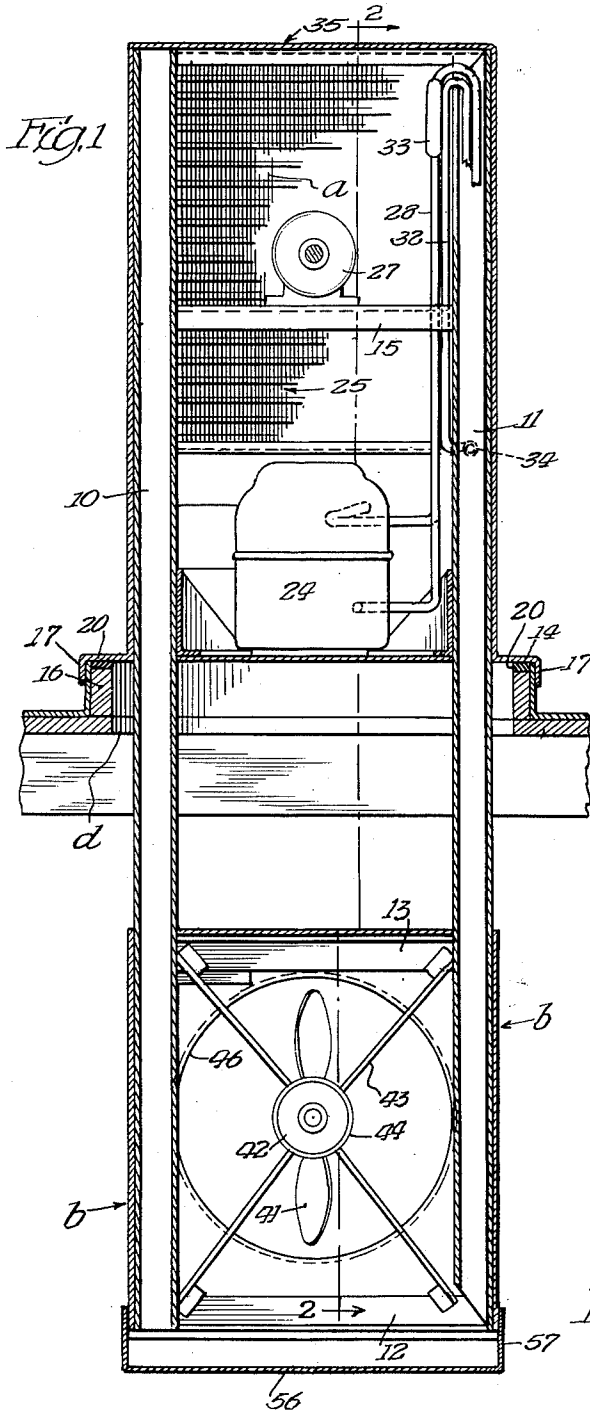
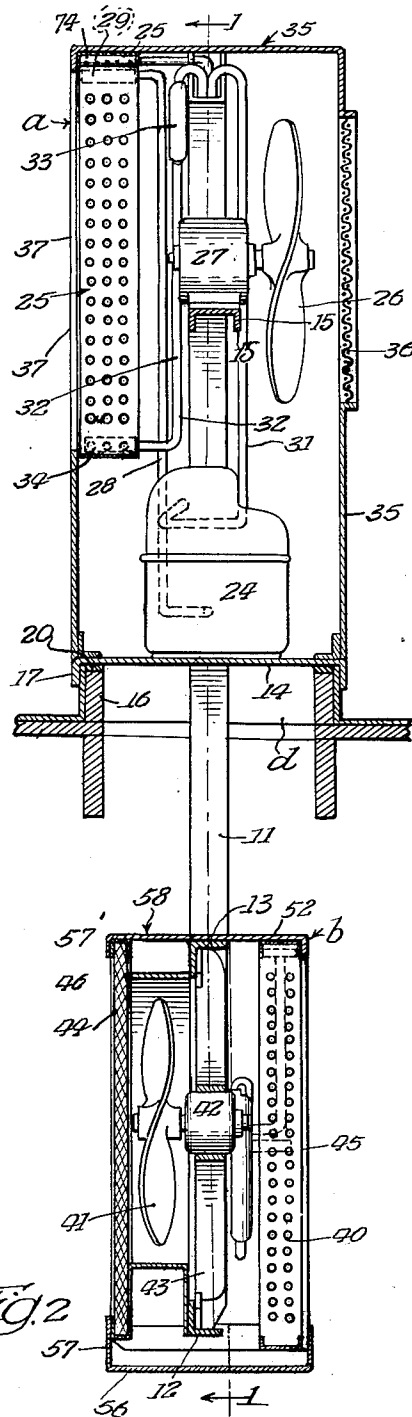
R. W. KRITZER

2,737,787

ROOF SUSPENDED AIR CONDITIONER

Filed June 23, 1954

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

Fig. 3

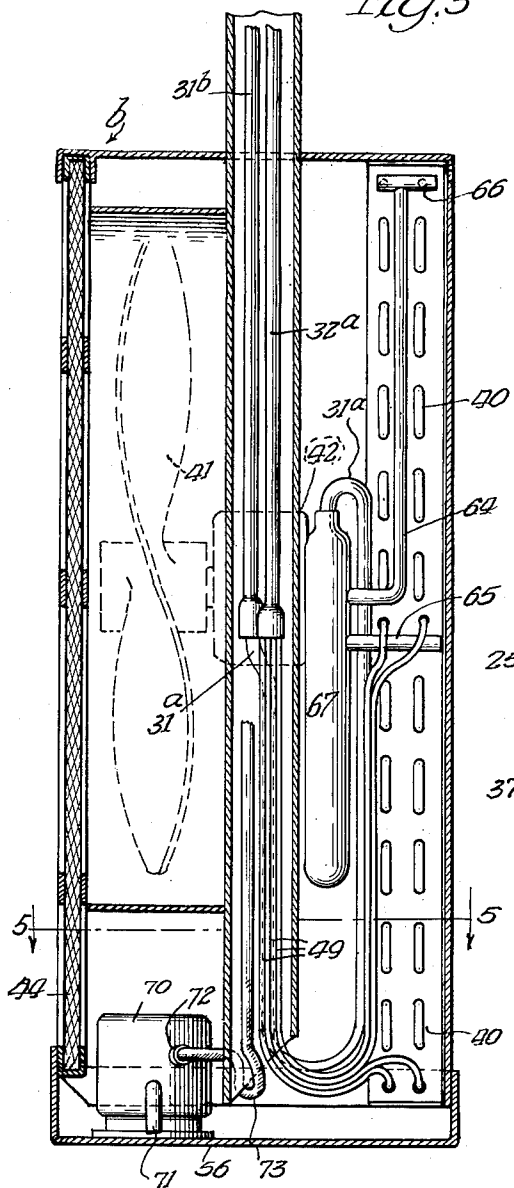
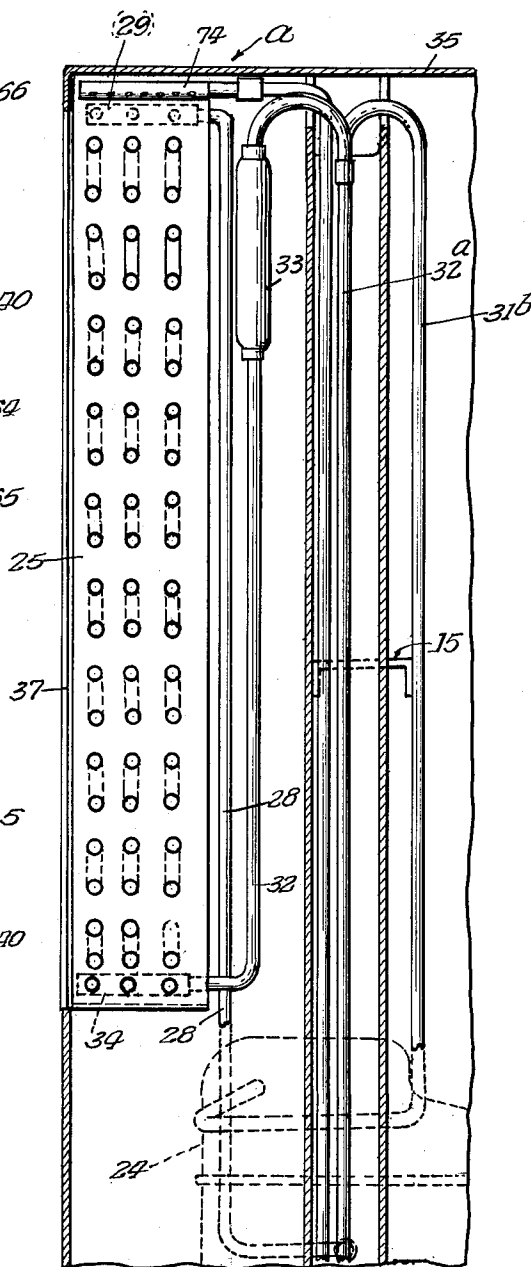


Fig. 4



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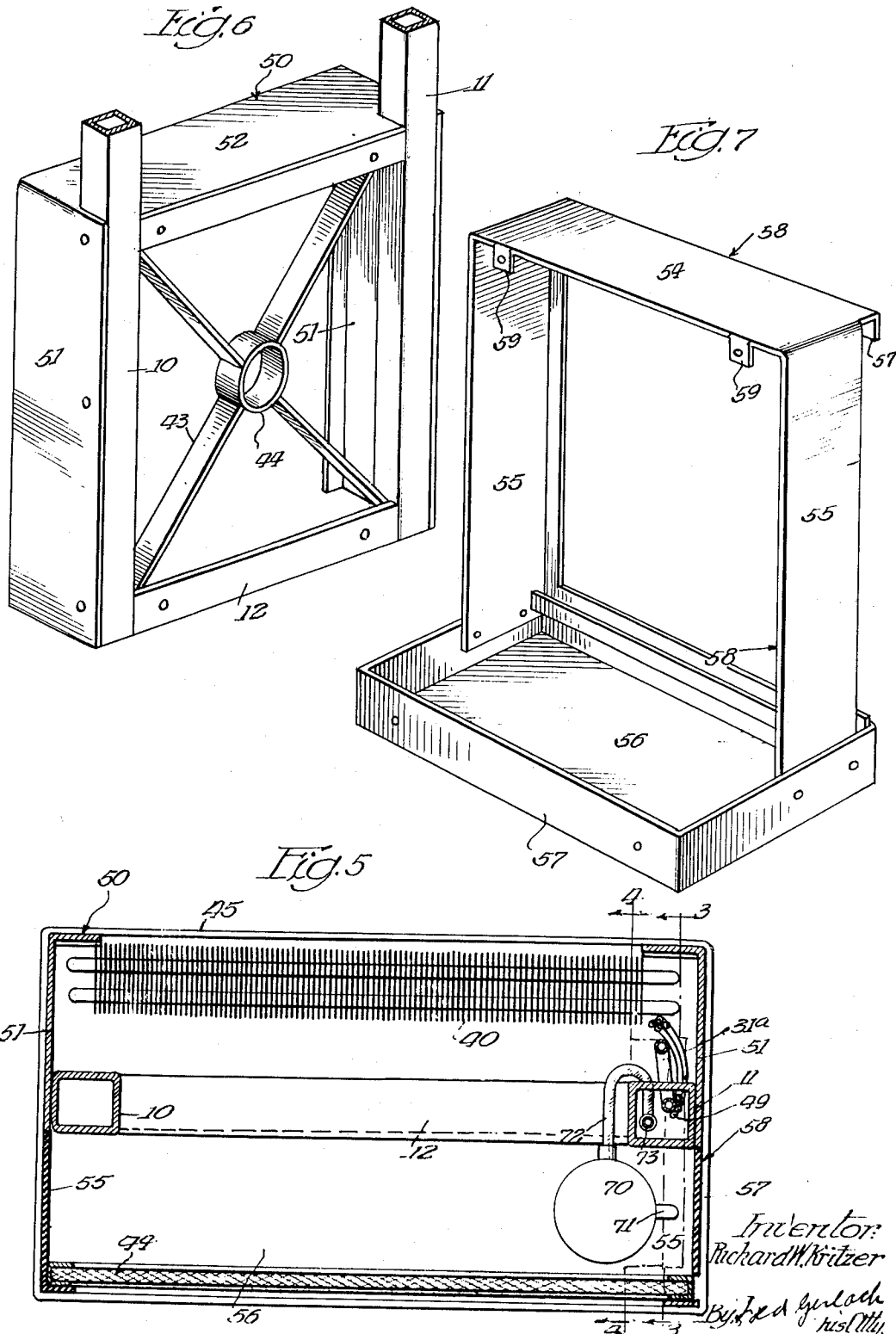
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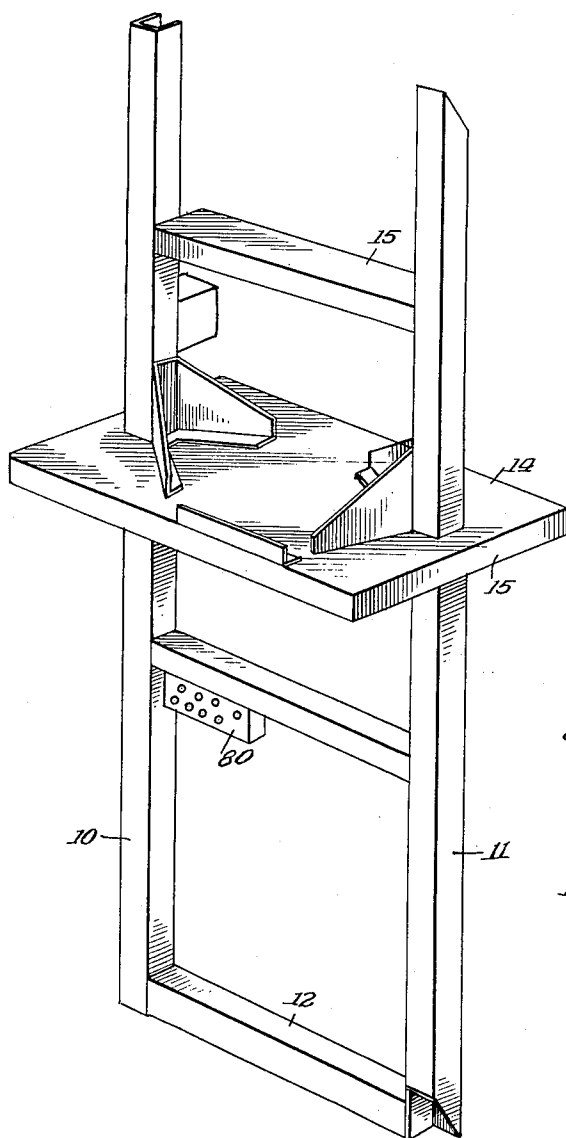


Fig. 8

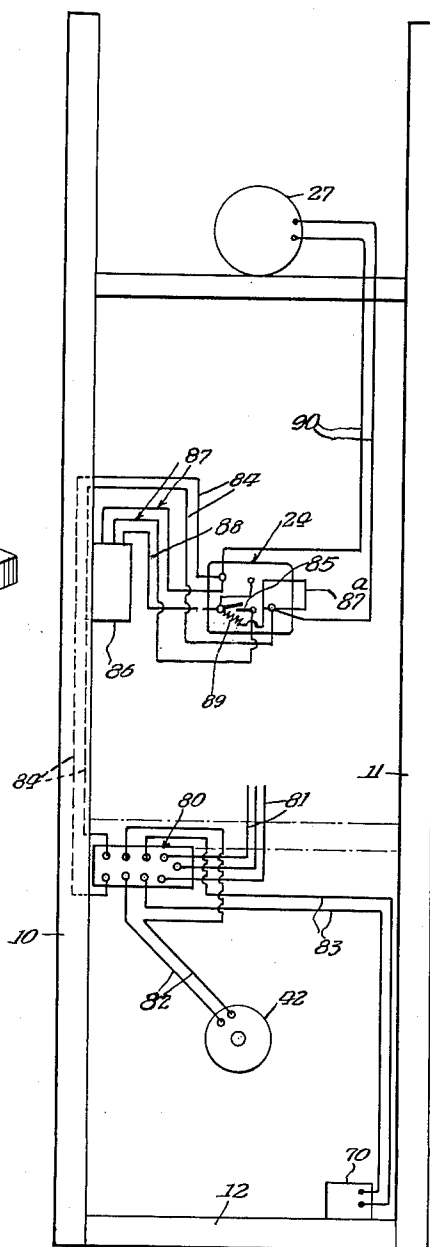


Fig. 9

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1

2,737,787

ROOF SUSPENDED AIR CONDITIONER

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Application June 23, 1954, Serial No. 440,407

16 Claims. (Cl. 62-129)

The invention relates to air conditioning apparatus. One object of the invention is to provide air conditioning apparatus which includes an assembly of refrigerating apparatus, and an assembly of cooling apparatus, and a structure for supporting the refrigerating assembly above the roof or outside of the building, the cooling assembly inside of the building, and refrigerating connections between the assemblies in posts between the assemblies.

Another object is to provide air conditioning apparatus of this type with a supporting structure including a plate mounted over an opening in a wall or roof of the building and posts having members extending inside and outside of the building for supporting the assemblies.

Another object of the invention is to provide air conditioning apparatus for this type, which can be readily installed for use.

Other objects will appear from the detailed description.

The invention consists in the several novel features which are hereinafter described and more particularly defined by the claims at the conclusion hereof.

In the drawings:

Fig. 1 is a section taken on line 1-1 of Fig. 2 of the apparatus embodying the invention;

Fig. 2 is a vertical section taken on line 2-2 of Fig. 1;

Fig. 3 is a vertical section of the air cooling unit taken on line 3-3 of Fig. 5;

Fig. 4 is a section of the refrigerating unit taken on line 4-4 of Fig. 5;

Fig. 5 is a section taken on line 5-5 of Fig. 3;

Fig. 6 is a perspective of the section of the casing for the air cooling unit which is attached to the supporting posts;

Fig. 7 is a perspective of the removable section of the casing of the air cooling unit;

Fig. 8 is a perspective of the supporting structure including the posts between the refrigerating and the air cooling assemblies;

Fig. 9 is a diagrammatic view of the electrical connections and apparatus.

The invention is exemplified in apparatus which comprises generally a supporting structure which extends above and below the roof of a building, an assembly of refrigerating apparatus, generally designated *a*, supported by said structure over the roof, an assembly of air conditioning or cooling apparatus, generally designated *b*, supported by said structure inside of the building; and posts through which extend the refrigerant and electric connections between the refrigerating apparatus and the cooling assemblies.

The supporting structure comprises: a plate 14, which fits over a curb 16 around an opening *d* in the roof of the building and has a marginal depending flange 17 around said curb; a pair of hollow posts 10 and 11 fixed to plate 14 with depending members below plate 14 which are rigidly cross-connected by a bar 12 of angular cross section at the lower ends of said posts and a bar

2

13 of angular cross section above bar 12; and upstanding members above plate 14 which are rigidly cross-connected by a channel bar 15. A gasket 20 forms a seal between the curb 16 and the plate 14. The posts 10 and 11 are hollow and rectangular in cross section.

The assembly of refrigerating apparatus *a* which is mounted on the supporting structure above the roof of the building, comprises: a unit 24 which includes a sealed compressor or pump and an electric motor for driving the compressor and is mounted on the plate 14 of the supporting structure; a condenser for the refrigerant which includes a coil 25 with the usual fins and is mounted on and at one side of the upstanding members of posts 10 and 11, an air impeller 26 on the shaft of an electric motor 27 which is mounted on the top of the cross bar 15 of the supporting structure; and a casing 35 which surrounds the unit 24, impeller 26, motor 27 and coil 25 and is provided with a screened inlet opening 36 in one side and an outlet 37 across which the coil 25 extends in the opposite side.

The assembly of cooling apparatus *b* is disposed inside of the building and supported by the depending members of posts 10 and 11, and comprises: an evaporator 40 which includes a coil of finned tubing disposed at one side of posts 10 and 11; an air impeller 41 on the shaft of an electric motor 42 which is demountably supported in a ring 44 which is supported by a spider 43 with arms which are fixed to one side of cross bars 12 and 13; and a sectional casing or housing enclosing the cooling apparatus. This casing or housing has an inlet 45 in one side across which the evaporator extends and an outlet in the opposite side across which an air filter 44 is slidably supported and surrounds impeller 41, motor 42 and evaporator 40. The impeller 41 draws air from the inside of the building around the evaporator 40 and discharges it through the filter 44 inside of the building. The casing or housing for the cooling apparatus *b* is formed of sections 50 and 58. Section 50 is fixedly mounted on one side of posts 10 and 11 and cross bars 12 and 13 and includes sides 51 which lap and terminate at one side of said posts; and a top wall 52. The evaporator 40 is mounted in fixed section 50 across the inlet 45. The arms of spider 23 are fixed in section 50. The casing section 58 is removably secured to posts 10 and 11; mates with the inner side of casing section 50, and comprises: a top wall 54, side walls 55, a bottom 56 with an upstanding marginal rim 57 which form a pan for collecting condensate, and flanges 57 which form a slideway for filter 44. The top 54 has flanges 59 with holes for screws to secure section 58 on section 50. The sectional formation of the casing of the cooling apparatus permits the cooling unit to be narrowed by removal of section 58 and the impeller 41, if necessary, so that the remainder of the unit can be lowered through a narrow opening between the joists of a roof. The compressor of unit 24 is connected by a conduit 28 in casing 35 to conduct refrigerant to the inlet header 29 on the condenser coil 25.

A conduit 32 for refrigerant in which a strainer 33 is included, extends from the outlet header 34 of coil 25 into the upper end of post 11 and thence downwardly to a member 32a in said post. A series of capillary tubes 49 are connected in post 11 to the lower end of member 32a of conduit 32 and extend downwardly in post 11 through an opening in its lower end. Two of the tubes 49 are connected to the inlet ends of the coils in the upper section of evaporator 41, and the other two are connected to the inlet ends of the coils of the lower section of said evaporator 41 for conducting refrigerant from the condenser to the evaporator 41.

A suction line between the compressor and the evapo-

rator 41, comprises: a conduit 64 connected to the outlet header 66 for the upper section of evaporator 41; an outlet header 65 for the lower section of said evaporator; a strainer 67 to which conduit 64 and header 66 are connected; a conduit member 31a connected to the outlet of strainer 67, extending through an opening in the lower end of post 11, and thence upwardly in said post; a conduit member 31b communicatively connected with member 31a and extending upwardly through post 11 to the upper end thereof and to the compressor. The portions of the capillary tubes 49 and portions of conduit member 31a in post 11 are parallel and soldered together for heat interchange to render the refrigerant in the capillary tubes responsive to the temperature in member 31a through which the refrigerant flows from the evaporator to the compressor. This varies the rate of flow of the refrigerant to the evaporator responsively to the temperature to the refrigerant in the suction line.

The condensate from the cooling unit gravitates into the pan formed by bottom 56 and rim 57 of the removable casing section 58. A unit 70 includes an electric motor and pump and is mounted on the bottom 56 of casing section 58. The pump of said unit has an inlet 71 for liquid on the bottom 56 and an outlet 72, which is connected by a hose 73 which extends into the lower end of post 11 and upwardly through the post to a spray pipe 74 in the casing 35 to discharge the condensate onto the coil and fins of condenser 25 and utilize the condensate for cooling the condenser coil.

In this construction, the conduits for refrigerant between the refrigerating and cooling units, both of which are carried by the supporting structure which includes posts 10 and 11, pass through said posts, and are connected to elements mounted in casing 35, and the casing section 50 which is fixedly secured to said posts. As a result, the conduits for the refrigerant between the refrigerating and cooling units remain connected when it is necessary to remove casing section 58 for the installation of the apparatus. The hose 73 through which condensate is pumped to the condenser coil 25, extends through post 11, is detachably coupled to unit 70 so it can remain in said post during the separation of casing sections 50 and 58.

The electrical connections and apparatus for the operation of the several motors are diagrammatically shown in Fig. 9 and comprise: a terminal block 80 mounted on cross bar 13; line conductors 81 from a source of potential to terminals on block 80, conductors 82 between terminals on block 80, and motor 42 which drives the impeller 41; conductors 83 between the terminals on block 80 and the motor in unit 70 which drives the condensate pump; conductors 84 which are connected to terminals on block 80 and extend through a portion of post 10 to terminals for the windings of the motor of unit 24; a device 86 for controlling current for starting and running motor 24; conductors 87 which are connected to the terminals for the windings of motor of unit 24 and device 86 for supplying current for starting said motor; a conductor 88 connected to a terminal connected to motor of unit 24 and to device 86 which includes a switch 85 for controlling the current of a predetermined capacity to motor of unit 24; a magnetic relay 89 for controlling switch 85; and conductors 90 between the terminals to which conductors 84 and motor 27 are connected, for supplying current to said motor 27 for driving the impeller 26.

These electrical connections and devices are all mounted on the supporting structure on which the casing 35 and the casing section 50 are mounted. The terminals of conductors 62 for motor 42 are disconnectable from block 80 so that said motor and impeller 41 can be removed from casing section 50. The terminals of conductors 83 for the motor of unit 70 are disconnectable

from block 80 to permit removal of the unit 70 with the casing section 58.

In the installation of the apparatus, an opening is cut in the roof of the building, usually between joists, and a curb built around the opening. If the opening *d* is of sufficient width to permit the assembled casing sections 50 and 58 with the impeller 41 therein, to pass there-through, the complete cooling assembly *b* depending from posts 10 and 11 is lowered through the opening *d* until the plate 14 is supported on the curb 16. The refrigerating apparatus will then be supported over the roof for cooling the condenser by outside air. The cooling apparatus will then be mounted for conditioning air inside of the building.

If the permissible opening in the roof is less in width than the entire casing of the cooling apparatus, the casing section 58 is detached from casing section 50 and the motor 42 with its impeller 41 is removed from ring 44 after the terminals of conductors 62 for motor 42 and the terminals of conductors 83 for the motor of unit 70 are disconnected from the block 80 and the hose 73 is uncoupled from unit 70. This narrows the width of the apparatus on the lower ends of posts 10 and 11 to the width of casing section 50 so that it can be lowered through opening *d* and plate 14 placed on the curb 16. The motor 42 and impeller 41 are then replaced and the terminals of conductors 62 and conductors 83 are connected to block 80. The hose 73 is connected to unit 70 and the casing section 58 is replaced on the side of posts 10 and 11. The refrigerating and cooling assemblies will then be restored to operative condition. The refrigerating assembly with casing 35 on the supporting structure will be mounted and operative over the roof, and the cooling assembly on said structure will be mounted and operative inside of the building. The refrigerant and condensate conduits between the assemblies will be enclosed in and extend through one of the hollow posts, and the electrical conductors 84 will extend through a portion of the other post.

The operation will be as follows: When current is supplied to the line conductors 81, the motor 42 will be operated by current through line conductors 81 and conductors 82; the motor of unit 70 will be operated by current through line conductors 81 and conductors 63; the circuit for the motor of the unit 24 in starting will be through one of the conductors 84, one of the conductors 87, device 86, the other conductor 87 in which switch 85 is included, the windings of the motor of unit 24 and the other conductor 84, and after starting, the circuit from the device 86 will be through conductor 87a to the windings of the motor of unit 24; and the circuit for the motor 27 which drives impeller 26 will be through conductors 84 and 89. The motor of unit 24 will operate the compressor to force refrigerant through conduit 28 to the condenser coil 25. From coil 25 it will flow via conduit members 32, 32a, capillary tubes 49, the upper and lower sections of the coils of the evaporator 40, outlet headers 65 and 66, strainer 67, conduit members 31a, and 31b, to the suction side of the compressor. The refrigerant will be condensed in coil 25. Tubes 49 are responsive to the temperature of the refrigerant in the suction line to vary the rate of flow of refrigerant to the evaporator. The impeller 41 will draw air at 45 into the casing section 50, force it into contact with the evaporator so it will be cooled, and then discharge the cooled air through the filter 44 into the space inside of the building. The impeller 26 will force outside air through casing 35 into contact with the coil 25 and its fins, to condense the refrigerant, and discharge the air above the roof of the building. The motor of unit 70 will operate the pump and force the condensate which collects on the bottom 56 through hose 73 and discharge it onto the condenser coil 25, to assist in cooling the refrigerant in said coil.

The invention exemplifies air conditioning apparatus which includes a casing around the refrigerating apparatus which has openings in its opposite sides for the forced flow of outside air across the heat exchanger coil of the condenser and through said casing, a separate casing around the air coiling apparatus having openings in its opposite sides for the flow of inside air around the evaporator and through its casing; unitary supporting structure and posts which extend between the separated casings for the refrigerating apparatus and the cooling apparatus which includes posts between the casing. The posts are hollow and are utilized to enclose the refrigerant and condensate conduits. The apparatus can be readily installed in the roof of a building at selected spots where air conditioning is desired.

The invention is not to be understood as restricted to the details set forth since these may be modified within the scope of the appended claims without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:

1. The combination with an assembly of refrigerating apparatus, comprising: an outside casing having openings for the passage of air therethrough, a motor-driven compressor in said casing, and a condenser including a heat exchanger connected to the compressor; and a motor-driven air impeller for forcing air through said casing; and an assembly for cooling air comprising an inside casing adapted for the passage of air therethrough, an evaporator in the inside casing, and a motor-driven impeller for forcing air in contact with the evaporator and through said inside casing; of a supporting structure including a plate fitting over an opening in the roof of a building and on which the outside casing is secured, and a hollow upright post depending linearly from said plate, and on which the inside casing is supporting under and vertically spaced from the plate and the roof, and refrigerant conduits extending through said post and between refrigerating apparatus and the evaporator.

2. The combination with an assembly of refrigerating apparatus, comprising: an outside casing having openings for the passage of air therethrough, a motor-driven compressor, and a condenser including a heat-exchanger connected to the compressor and a motor-driven air impeller for forcing air through said casing; and an assembly comprising an inside casing adapted for the passage of air therethrough, an evaporator in the inside casing and a motor-driven impeller for forcing air across the evaporator and through said inside casing; of a supporting structure for the assemblies including a pair of upright posts, adapted to extend through an opening in, and having members above and below, the roof of a building, means on which the posts are supported, mounted on the roof over said opening; means for supporting the heat-exchanger and the air impeller therefor on the upper members of the posts, and means for supporting the evaporator and the air impeller therefor on the lower members of said posts, and refrigerant conduits between the refrigerating apparatus and the evaporator.

3. The combination with an assembly of refrigerating apparatus, comprising: an outside casing having openings for the passage of air therethrough, a motor-driven compressor, and condenser including a heat-exchanger connected to the compressor and a motor-driven air impeller for forcing air through said casing; and an assembly comprising an inside casing adapted for the passage of air therethrough, an evaporator in the inside casing and a motor-driven impeller for forcing air across the evaporator and through said inside casing; of a supporting structure for the assemblies including a pair of upright posts, adapted to extend through an opening in, and having members above and below, the roof of a building, a plate on which the posts and the compressor are supported, mounted on the roof over said opening; means for supporting the heat-exchanger and the air impeller therefor

on the upper members of the posts above the plate, and means for supporting the evaporator and the air impeller therefor on the lower members of said posts, and refrigerant conduits between the refrigerating apparatus and the evaporator.

4. The combination with an assembly of refrigerating apparatus, comprising: an outside casing having openings for the passage of air therethrough, a motor-driven compressor, and a condenser including a heat-exchanger connected to the compressor and a motor-driven air impeller for forcing air through said casing; and an assembly comprising an inside casing adapted for the passage of air therethrough, an evaporator in the inside casing and a motor-driven impeller for forcing air across the evaporator and through said inside casing; of a supporting structure for the assemblies including a pair of upright posts, adapted to extend through an opening in, and having members above and below, the roof of a building, a plate on which the posts are supported, mounted on the roof over said opening; means for supporting the heat-exchanger and the air-impeller therefor on the upper members of the posts above the plate, and means for supporting the evaporator and the air impeller therefor on the lower members of said posts, and refrigerant conduits between the refrigerating apparatus and the evaporator.

5. The combination with: an assembly of refrigerating apparatus, comprising: a casing for the refrigerating apparatus having openings in opposite sides for the passage of air therethrough, a motor-driven compressor, and a condenser including a heat-exchanger connected to the compressor and a motor-driven air impeller for forcing air through said casing; and an assembly of cooling apparatus comprising a casing for the cooling apparatus, having openings in opposite sides for the passage of air therethrough, an evaporator in the inside casing and a motor-driven impeller for forcing air across the evaporator and through said inside casing; of a supporting structure for the assemblies including a pair of upright hollow posts, adapted to extend through an opening in, and having members above and below, the roof of a building, a plate on which the posts are supported, mounted on the roof over said opening; means for supporting the heat-exchanger and the air impeller therefor on the upper members of the posts above the plate, and means for supporting the evaporator and the air impeller therefor on the lower members of said posts, and refrigerant conduits between the refrigerating apparatus and the evaporator having portions extending through one of the posts.

6. The combination with: an assembly of refrigerating apparatus, comprising: a casing for the refrigerating apparatus having openings in opposite sides for the passage of air therethrough, a motor-driven compressor, and a condenser including a heat-exchanger connected to the compressor and a motor-driven air impeller for forcing air through said casing; and an assembly comprising an inside casing having openings in opposite sides for the passage of air therethrough, an evaporator in the casing for the cooling apparatus, and a motor-driven impeller for forcing air across the evaporator and through said casing for the cooling apparatus; of a supporting structure for the assemblies including a pair of upright posts, adapted to extend through an opening in, and having members above and below the roof of a building, a plate on which the posts are supported, mounted on the roof over said opening; means for supporting the heat-exchanger and the air impeller therefor from the members of the posts above the plate, means for supporting the evaporator and the air impeller therefor from the lower members of said posts, and refrigerant conduits between the refrigerating apparatus and the evaporator having portions extending through one of the posts.

7. The combination with: an assembly of refrigerating apparatus, comprising: a casing for the refrigerating apparatus having openings for the passage of air therethrough, a motor-driven compressor, and a condenser

including a heat-exchanger connected to the compressor and a motor-driven air impeller for forcing air through said casing; and an assembly of cooling apparatus comprising a casing for the cooling apparatus having openings for the passage of air therethrough, an evaporator in the casing for the cooling apparatus, and a motor-driven impeller for forcing air across the evaporator and through said last-named casing; of a supporting structure for the assemblies including a pair of upright hollow posts, adapted to extend through an opening in and above and below the roof of a building, a plate on which the posts are supported, mounted on the roof around said opening; a cross bar between the posts on which the motor-driven impeller is mounted, the compressor being mounted on said plate, and means for supporting the evaporator and the air impeller therefor from lower members of said posts, the compressor being mounted on said plate; and refrigerant conduits between the refrigerating apparatus and the evaporator having portions extending through one of the posts.

8. The combination with an assembly of refrigerating apparatus, comprising; a casing for the refrigerating apparatus having openings in opposite sides for the passage of air therethrough, a motor-driven compressor, and a conductor connected to the compressor, including a heat-exchanger and a motor-driven air impeller for forcing air through said casing; and an assembly of cooling apparatus comprising a casing for the cooling apparatus having openings in opposite sides for the passage of air therethrough, a motor-driven impeller for forcing air across the evaporator and through said last named casing; of a supporting structure including posts between the assemblies, extending through an opening in, and outside and inside of a wall of, a building, a plate over said opening, to which the posts are secured, a cross bar between the posts on which the motor-driven impeller for the heat exchanger is mounted, cross bars between the posts on which the motor and impeller for the evaporator are secured, and refrigerant conduits between the evaporator and the refrigerating apparatus having portions thereof extending through one of said posts.

9. The combination with an assembly of refrigerating apparatus, comprising; a casing for the refrigerating apparatus having openings for the passage of air therethrough, a motor-driven compressor, and a condenser connected to the compressor, including a heat-exchanger and a motor-driven air impeller for cooling air through said casing; and an assembly comprising an inside casing, including separable mating sections, a motor-driven impeller for forcing air across the evaporator and through said inside casing; of a supporting structure, including posts between the assemblies, extending through an opening in, and outside and inside of the roof of, a building, means over said opening to which the posts are secured, refrigerant conduits between the evaporator and the refrigerating apparatus, one of the sections of the casing being fixedly mounted on the posts, and the other section being removably secured to the posts, the motor and impeller for the evaporator being removably mounted in the fixed casing section.

10. The combination with an assembly of refrigerating apparatus, comprising; a casing for the refrigerating apparatus having openings for the passage of air therethrough, a motor-driven compressor, and a condenser connected to the compressor, including a heat-exchanger and a motor-driven air impeller for forcing air through said casing; and an assembly comprising an inside casing, including separable mating sections, a motor-driven impeller for forcing air across the evaporator and through said inside casing; of a supporting structure, including posts between the assemblies, extending through an opening in, and outside and inside of the roof of, a building, means over said openings to which the posts are secured, refrigerant conduits between the evaporator and the refrigerating apparatus, having portions extending through

one of the posts, one of the sections of the casing being fixedly mounted on the posts, and the other section being removably secured to the posts, the motor and impeller for the evaporator being removably mounted in the fixed casing section.

11. The combination with an assembly of refrigerating apparatus, comprising; a casing for the refrigerating apparatus having openings for the passage of air therethrough, a motor-driven compressor, and a condenser connected to the compressor, including a heat-exchanger and a motor-driven air impeller for forcing air through said casing; and an assembly comprising an inside casing, including separable mating sections, a motor-driven impeller for forcing air across the evaporator and through said inside casing; of a supporting structure, including posts between the assemblies, extending through an opening in, and outside and inside of the roof of, a building, means over said opening to which the posts are secured, refrigerant conduits between the evaporator and the refrigerating apparatus, one of the sections of the casing being fixedly mounted on the posts, and the other section being removably secured to the posts, the motor and impeller for the evaporator being removably mounted in the fixed casing section, the evaporator being mounted in the fixed section.

12. The combination with; an assembly of refrigerating apparatus comprising, a casing for the refrigerating apparatus having openings in opposite ends for the passage of air therethrough, a motor-driven compressor, and a condenser connected to the compressor including a heat-exchanger, and a motor-driven air impeller for forcing air through said casing; and an assembly of cooling apparatus comprising a casing therefor having openings in opposite sides for the passage of air therethrough, and means for collecting condensate, a motor-driven impeller for forcing air across the evaporator and through the casing of the cooling apparatus, and a pump for the condensate; of a supporting structure for said assemblies, including posts between the assemblies, extending through an opening in, and outside and inside of the roof of, a building, refrigerant conduits between the evaporator and the refrigerating apparatus, and a conduit between the pump and the heat-exchanger of the condenser.

13. The combination with; an assembly of refrigerating apparatus comprising, a casing for the refrigerating apparatus having openings in opposite ends for the passage of air therethrough, a motor-driven compressor, and a condenser connected to the compressor including a heat-exchanger, and a motor-driven air impeller for forcing air through said casing; and an assembly of cooling apparatus comprising a casing therefor, having openings in opposite sides for the passage of air therethrough, and means for collecting condensate, a motor-driven impeller for forcing air across the evaporator and through the casing of the cooling apparatus, and a pump for the condensate; of a supporting structure for said assemblies, including posts between the assemblies, extending through an opening in, and outside and inside of the roof of, a building, refrigerant conduits between the evaporator and the refrigerating apparatus, and a conduit between the pump and the heat-exchanger of the condenser, extending through one of said posts.

14. The combination with; an assembly of refrigerating apparatus comprising; a casing for the refrigerating apparatus having openings in opposite ends for the passage of air therethrough, a motor-driven compressor, and a condenser connected to the compressor including a heat-exchanger, and a motor-driven air impeller for forcing air through said casing; and an assembly of cooling apparatus comprising a casing therefor, having openings in opposite sides for the passage of air therethrough, a motor-driven impeller for forcing air across the evaporator and through its casing; of a supporting structure for said assemblies, including posts between the assemblies, extending through an opening in, and

outside and inside of the roof of, a building, a plate over said opening to which the posts are secured, a cross-bar between the posts on which the motor-driven impeller of the refrigerating apparatus is mounted, cross-bars between the posts on which the motor and impeller of the cooling apparatus are mounted, and refrigerant conduits between the evaporator and the refrigerating apparatus, extending through one of the posts.

15. The combination with; an assembly of refrigerating apparatus comprising, a casing for the refrigerating apparatus having openings in opposite ends for the passage of air therethrough, a motor-driven compressor, and a condenser connected to the compressor including a heat-exchanger, and a motor-driven air impeller for forcing air through said casing; and an assembly of cooling apparatus comprising a casing therefor, having openings in opposite sides for the passage of air therethrough, a motor-driven impeller for forcing air across the evaporator and through its casing; of a supporting structure for said assemblies, including posts between the assemblies, extending through an opening in, and outside and inside of the roof of, a building, a plate over said opening to which the posts are secured and on which the compressor is mounted, a cross-bar between the posts on which the motor-driven impeller of the refrigerating apparatus is mounted, cross-bars between the posts on which the motor and impeller of the cooling apparatus is mounted, refrigerant conduits between the evaporator and the refrigerating apparatus, extending through one of the posts.

16. The combination with; an assembly of refrigerating apparatus comprising, a casing for the refrigerating apparatus having openings for the passage of air therethrough, a motor-driven compressor, and a condenser connected to the compressor including a heat-exchanger, and a motor-driven air impeller for forcing air through said casing; and an assembly of cooling apparatus comprising a casing therefor, the cooling apparatus having openings for the passage of air therethrough, a motor-driven impeller for forcing air across the evaporator and through the last named casing; of a supporting structure for said assemblies, including posts between the assemblies, extending through an opening in, and outside and inside of the roof of, a building, means over said opening to which the posts are secured, refrigerant conduits between the evaporator and the refrigerating apparatus, and electrical connections for the compressor motor and the impeller motor of the refrigerating apparatus, extending through one of the posts.

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