

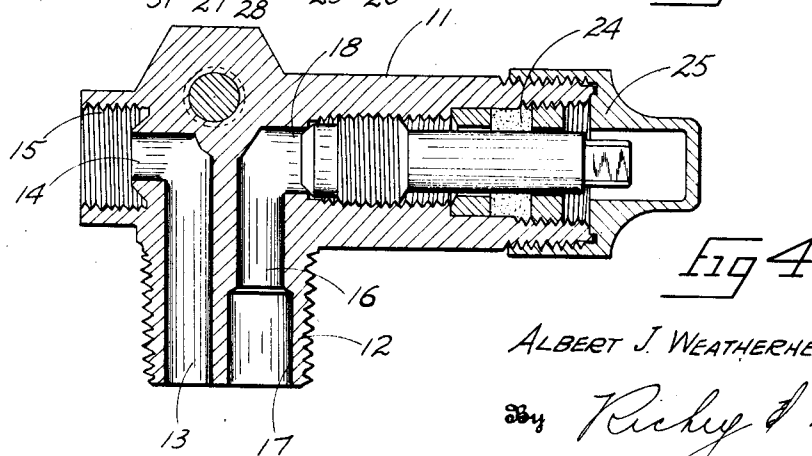
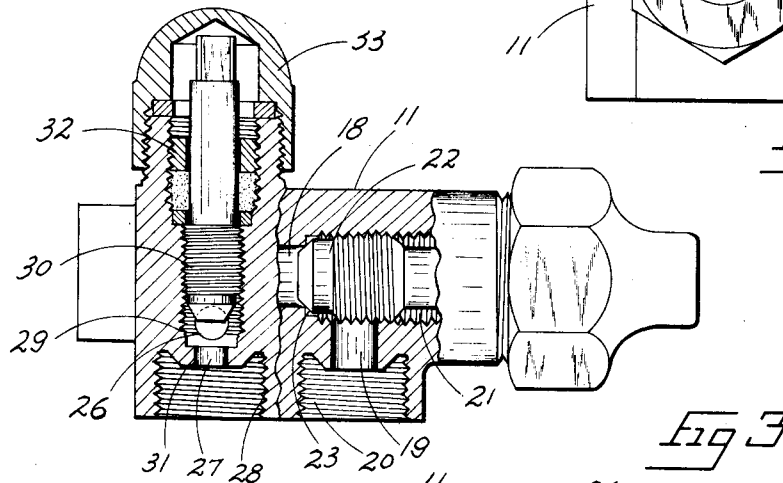
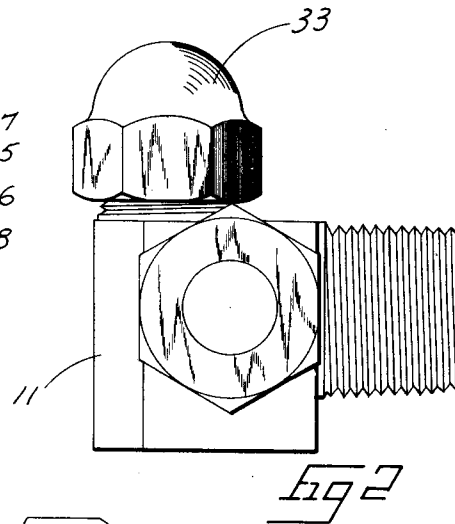
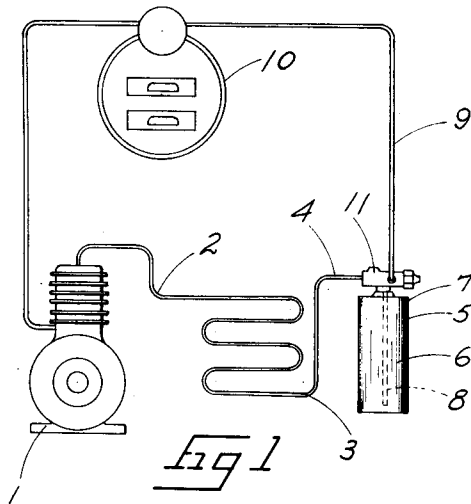
Aug. 22, 1933.

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1,924,007

FITTING

Filed Jan. 18, 1932



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1,924,007

FITTING

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Application January 18, 1932. Serial No. 587,307

4 Claims. (Cl. 62-115)

This invention relates to an improved fitting of the type employed for joining fluid conducting conduits and passages. More particularly this invention relates to an improved form of fitting adapted to be used in combination with a mechanical refrigerating system.

In fluid conducting systems of the type exemplified by the mechanical refrigerating systems it is desirable to conduct fluid to and from various units and to provide for introducing fluid within the system. Where objectionable gases sometimes accumulate in the fluid system it is desirable to provide means for venting the system to remove such gases. In mechanical refrigerating systems, for example, employing a closed fluid system involving a compressing unit, a condensing unit and a cooling unit, where fluids such as SO₂ are used as the refrigerant, air sometimes accumulates in the system thereby interfering with its operation as a refrigerating system. Heretofore it has been common practice to provide separate fittings for joining the conduits to the various parts of the refrigerating system and to provide separate fittings for introducing fluid into the system and also for venting the system to remove air and like gases.

It is an object of my invention to provide, in combination, with a refrigerating system, an improved form of fitting adapted to provide for joining certain parts of the refrigerating system by fluid conducting paths and also to provide for introducing refrigerant into the system and for venting the system.

It is an object of my invention to provide such a fitting in simplified form involving an economy of manufacture and materials and a minimum of servicing attention.

Another object of my invention is to provide a novel fitting providing a plurality of fluid conducting passages controlled by valves formed in the fitting with a minimum number of separate parts and of a design affording a maximum efficiency in manufacture.

Other objects and advantages of the invention will appear in the following detailed description taken in connection with the accompanying drawing in which:

Figure 1 is a diagrammatic view of a mechanical refrigerating system embodying my invention.

Figure 2 is a side elevation of the fitting of my invention.

Figure 3 is a cross sectional view of my fitting in two planes.

Figure 4 is a cross sectional view of my fitting

taken at right angles relative to the plane of the section in Figure 3.

Referring to Figure 1, which shows the refrigerating system of conventional design employing a compressor 1 connected by conduit 2 to a condensing coil 3 where compressed fluid is brought to atmospheric temperature and condensed. The condensed fluid is conducted from coil 3 through conduit 4 into receiver or container 5. The coil 3 and receiver 5 constitute the condensing unit. Container 5 is partially filled with the condensed fluid 6, the vapor of the fluid filling the remainder of the condenser 5 in the space indicated at 7. A tube 8 extends vertically into the receiver 5 being open at its lower end adjacent the bottom of the receiver for conducting liquid from the receiver through conduit 9 to the cooling unit 10 under the pressure of the vapor in space 7 of the receiver 5.

Inasmuch as the container 5 receives the condensed liquid from which the vapor and any gases contained therein escape into the top portion of the container, it is convenient, when introducing refrigerant into the system, to introduce the same into the container 5. Likewise when removing objectionable gases accumulating in the system it is most convenient to vent the container 5 at the top thereof. Inasmuch as the conduits 4 and 9 from the condensing coil 3 and to the cooling unit 10 lead to the container 5, it is desirable to combine the various means for connecting the conduits 4 and 9 to the container 5 and for venting the system and for introducing refrigerant into the system into a single unit.

Accordingly, I provide a fitting 11 having a screw threaded nipple 12 adapted to be threaded into the head of the container 5. In order to conduct the fluid from conduit 4 into container 5, a passage 13 is formed in the body of the fitting 11, extending through the nipple 12, and a passage 14, intersecting passage 13, opens into the threaded aperture 15 formed in the body of the fitting. The threaded aperture 15 is adapted to receive a coupling joining the end of the conduit 4 to the fitting 11. In order to conduct liquid from the bottom of the container 5 into the conduit 9, a passage 16 is formed in the fitting 11 extending through the nipple 12. The passage 16 is provided with the enlarged chamber 17 adapted to receive and support the end of the tube 8 extending to a point adjacent the bottom of the container 5. The passage 16 joins passage 18 which leads to passage 19 opening into the threaded aperture 20 formed in the body of the fitting 11. The threaded aperture 20 receives the coupling for joining the conduit 9 to the fitting.

In order to provide for the control of the flow of liquid to the cooling unit 10, a valve chamber 21 is formed in the fitting at a point intersecting the passages 18 and 19, as illustrated in Figure 3.

5 The valve 22 is threaded into the valve chamber 21 and co-operates with the valve seat 23 to control the flow of liquid therethrough. Suitable packing 24 is provided about the stem of the valve 22 and a cap 25 is threaded on to the fitting 11

10 in a position to cover and to protect and seal the end of the valve 22 extending from the fitting. In order to provide for introducing refrigerant into the container 5 and to permit venting of the container 5, a passage 26 is formed in the fitting

15 11 which passage extends parallel to passages 13 and 16 through the nipple 12 and opens into the top of the container 5. Passage 26 leads to a passage 27 opening into the threaded aperture 28 formed in the body of the fitting 11 which is

20 adapted to receive a coupling to join a venting pipe thereto. A valve chamber 29 intersects passages 26 and 27 and receives valve 30 threaded thereto which co-operates with valve seat 31 to open or close passage 27. The stem of the

25 valve 30 passes through suitable packing 32 and is protected by a cap 33 threaded on to the body of the fitting. It is evident that the passage 26 may be used either for venting the container 5 or for introducing refrigerant thereto.

30 The parallel passages 13, 16 and 26 extend through the nipple 12 and may readily be formed therein by boring in an automatic machine. Likewise the various passages associated with the first mentioned passages readily can be formed in

35 the body of the fitting by boring the same in an automatic machine. Similarly the various threaded openings adapted to receive couplings and the threaded valve chambers are all arranged in such fashion that they readily may be formed

40 by tapping directly into the body of the fitting in an automatic machine. It is evident, therefore, that the whole fitting can be formed in an automatic machine from a casting of suitable material, such as brass. The valves and protect-

45 ing caps associated therewith are also of such a construction as may be formed in an automatic screw cutting machine. While the invention is not limited to such a fitting all of the parts of which are made by automatic machines, it is evident

50 that by so designing the fitting substantial economies in materials and manufacturing methods are effected.

It will be evident from the foregoing description that a novel form of fitting has been provided which performs the various functions of

55 connecting the conduits 4 and 9 to the container 5 under valve control and provides for venting the system and for introducing refrigerant therein. It is also evident that the fitting for performing these various functions is of simplified form involving the use of a minimum of material and adapted to be manufactured efficiently and

60 inexpensively. It is also evident that the fitting provided is of a rugged, simple construction, adapted to perform its functions with a minimum of servicing attention. While the fitting has been

65 described in combination with a refrigerating system, it is obvious that the fitting is adapted for other uses within the scope of the invention.

70 While a specific embodiment of the invention

has been described by way of illustration, it will be evident to one skilled in the art that modifications in the construction and arrangement thereof may be made without departing from the scope of the invention as defined in

80 the following claims.

I claim:

1. In a refrigerating system, a compressor, a condensing unit, and a cooling unit, conduits from the compressor to the condensing unit and from the condensing unit to the cooling unit, a fitting carried by the condensing unit having a passage into the condensor connected to the conduit from the compressor, a second passage in the fitting leading into the condensing unit and connected to the conduit leading to the cooling unit, a venting passage in the fitting leading into the condenser, and a valve arranged in the fitting for controlling the venting passage.

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2. In combination with a refrigerating system having a compressor, a condensor, and a cooling unit, a fitting carried by the condensor, a plurality of passages formed in the fitting leading into the condensor, an opening in the fitting connected with one of the passages and adapted to receive a conduit from the compressor, a second opening in the fitting connected with a second passage and adapted to receive a conduit from the cooling unit, a third opening in the fitting connected with a third passage for venting gases from and for introducing refrigerant into a refrigerating system, a valve seat in the third passage and a valve arranged in the fitting to co-operate with the seat.

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3. In combination with a refrigerating system having a compressor, a condensor, and a cooling unit, a fitting carried by the condensor, a plurality of passages formed in the fitting leading into the condensor, an opening in the fitting connected with one of the passages and adapted to receive a conduit from the compressor, a second opening in the fitting connected with a second passage and adapted to receive a conduit to the cooling unit, a third opening in the fitting connected with a third passage for venting gases from and for introducing refrigerant into a refrigerating system, a valve seat in the third passage and a valve arranged in the fitting to co-operate with the seat, a valve seat in the second passage and a valve arranged in the fitting to co-operate therewith.

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4. In combination with a refrigerating system having a compressor, a condensor, and a cooling unit, a fitting carried by the condensor, a plurality of passages formed in the fitting leading into the condensor, an opening in the fitting connected with one of the passages and adapted to receive a conduit from the compressor, a second opening in the fitting connected with a second passage and adapted to receive a conduit to the cooling unit, a third opening in the fitting connected with a third passage for venting gases from and for introducing refrigerant into a refrigerating system, a valve seat in the third passage and a valve arranged in the fitting to co-operate with the seat, said second passage being arranged to receive and support a tube extending into the condensor.

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