My invention relates to fuel burning devices and more particularly to a combined primer and strainer in the fuel line between said burning device and the supply tank therefor.

The object of my invention is in the provision of a combined primer and strainer between a fuel burning device and a supply tank, that not only provides an enlarged screen surface to strain the fuel, but also insures the priming of the pump which draws the fuel into the burner.

Another object of my invention is in the provision of a priming apparatus, between the fuel pump in a fuel burning device and the supply tank, which automatically insures the flow of fuel to the burner at all times during the operation thereof.

A further object of my invention is in the provision of a combined primer and strainer mechanism in the fuel line of an oil burning device whereby said device is insured of an immediate and continuous flow of fuel thereto.

Yet another object of my invention is in the provision of a combined primer and strainer apparatus inserted in the fuel line of a fuel burning device that is adapted to insure an immediate and continuous flow to the fuel pump thereof in spite of any air leaks in said line.

Other objects of my invention will appear in the following specification taken in connection with the annexed drawings, in which:

Figure 1 is a cross sectional view of my primer and strainer.

Figure 2 is a detailed plan of Figure 3.

Figure 3 is a sectional view taken on the line 5—5 of Figure 3.

Figure 4 illustrates a modification of the primer and strainer mechanism shown in the other views.

Referring to the drawings:

The fuel burning device designated generally as 10 has been illustrated and described in my co-pending application Serial No. 633,272 filed April 19th 1923. Briefly, the operation of said burner comprises the atomizing of a fuel by means of air under pressure and the consequent ignition thereof by a pilot light.

The present application is directed wholly to an apparatus that is inserted in the fuel line of a fuel burning device between said device, or rather the fuel pump thereof, and a supply tank.

My fuel burning device must necessarily have a supply tank. The conventional installation, especially those for the heating of houses, usually includes a large container located at some distance from the burner and usually under ground. Inasmuch as the containers are usually mounted at a point below the device, it is necessary to have a pump for inducing the fuel flow to the burner. Again, the quality of oil utilized for burning purposes is of low grade, and contains much foreign matter, hence it is necessary to strain the oil prior to its entrance to the burner. To accomplish the above, formal strainers have been inserted in the fuel line. In my present structure, I have provided not only an enlarged straining device, but in connection therewith, a means for insuring the priming of the fuel pump in the fuel device and also a continuous flow of fuel thereto in spite of any air leaks that may occur in the extended fuel line. The type of pump that is conventional in the present class of fuel burning devices for inducing the flow of oil to the burner is of the liquid seal type. In other words, the pump requires an oil seal to permit its operation as a pump, hence means for priming the pump to insure its operation is necessary to insure at all times a flow of fuel from the container of the burner.

At 10° I have shown generally a rotary pump adapted to induce a flow of fuel from a container, not shown. My combined primer and strainer mechanism as shown in Figures 1 and 2 is located adjacent said pump and between the supply tank, not shown, and the burner, or rather, the pump thereof. The particular location of my apparatus adjacent the pump, or rather the burner, is not necessary, and as a matter of fact, might be placed at any point in the fuel line.

Referring to Figure 1, there is shown perhaps in the clearest manner, my combined primer and strainer, said apparatus being formed of the following portions:

A jar, or container 11, is suitably supported by means of the leg portions 12 upon the base 13 which also supports the fuel burning device. This jar has a removable cap portion 14 attached thereto by means of the screw members 15. A fuel pipe 16 is
shown entering the upper portions of the jar, this fuel pipe leading from a fuel supply tank, not shown. A vertical pipe 17 is positioned within the chamber and has connection with a fuel outlet pipe 18 leading to the fuel pump in the fuel burning device. The vertically positioned fuel pipe 17 has an inlet port 19 near the bottom of the container. Surrounding the vertical pipe 17 is a cylindrical screen having slightly less diameter than the strainer casing. This screen is made of a very fine mesh and is provided for the purpose of preventing foreign elements in the fuel from being drawn, due to the action of the fuel pump, up thru the vertical pipe 17, thru the longitudinal fuel pipe 18, to the burner. The longitudinally disposed fuel pipe 18 which has a right-angle engagement with the fuel pipe 17, has a small air vent 20 positioned therein, said vent opening into the upper portion of the container.

In Figure 4 of the drawings there is shown a modification of my primer and strainer apparatus, mainly for the purpose of more effectually describing the operation thereof. This figure contains every element designated by the numerals on Figure 1 and consequently has been numbered in a similar manner with the exception of the addition of the primes. As a matter of fact, for the purpose of manufacture, it was found necessary to construct my apparatus as shown in Figure 3, but for the purpose of description of the operation of the device, it will perhaps be clearer to describe said operation, keeping in mind Figure 4.

As said before, fuel from the supply tank is drawn into the burner by the action of a liquid seal pump, hence the fuel is drawn thru the lead 16 into the container, passing thru the port 19 up the vertical tube 17 to the longitudinally disposed pipe 18 then, into the fuel pump and hence to the burner. The course of the fuel is indicated by the arrows in Figure 4.

In view of the fact that the conventional pump is of the liquid seal type, it is necessary to have a supply of fuel in the container at all times and for this reason the fuel outlet port is disposed in the lower portion of the container, there being normally a considerable quantity of fuel in said container capable of being immediately drawn into the burner by the action of the pump. The positioning of the fuel inlet, fuel outlet port, and fuel outlet pipe in their respective high and low positions is to prevent any possibility of the siphoning of the fuel out of the container.

However, considering the air vent 20 in the fuel lead 18 to be closed, and that there should be a slight air leak in the fuel line, it may be seen that a quantity of air would be trapped in the upper portion of the container, there being, however, a sufficient quantity of fuel in the container to prime the fuel pump upon its next operation. It may be seen upon the succeeding action of the fuel pump that the volume of air within the container would be enlarged with the result that after each successive operation of the fuel pump there would be a smaller quantity of fuel within the container than before. Likewise, continued starting and stop ping of the fuel pump would enlarge the volume of air within the container until a time would come when the efficiency of the fuel pump would be lost, due to the fact that the fuel supply in the container would be so low, that only air would be drawn thru the vertical pipe 17 and lead 18. It must be remembered that the fuel pump is of the liquid seal type and there being no fuel for priming, hence, its capacity as a pump to withdraw fuel from the container ceases.

The above description of a priming device without the air port 20 has been given to bring out the advantages of the present combined primer and strainer device which is adapted to act automatically even in case of leaky connections, which are all too common.

In the present structure, there is inserted a small air vent in the longitudinal pipe 18 disposed in the upper portion of the container. Even if there is a certain quantity of air trapped in the upper portion of the container, a subsequent movement of the fuel pump will draw the fuel in the lower portion of the container up thru the vertical pipe and outlet 18 and at the same time draw the air from the upper portion of the container thru the vent 20 along with the fuel. The vent 20 is reduced in size sufficiently below the capacity of the pump so that it will lift the fuel from the bottom of the strainer casing, said vent, however, being large enough that it will take a small flow of air from the top of said casing simultaneously with the flow of fuel from the bottom, hence, said fuel from the bottom of the casing is keeping the pump sealed, while the trapped air from the top of the casing is being exhausted. When the fuel pump has exhausted the air from the top of the casing, the incoming fuel from the supply tank coming thru the inlet port 16 eventually fills the entire casing with fuel so that when the pump is stopped it will have a sufficient supply in the container to insure the operation of the pump when the outfit is again started.

What I claim is:

1. A combined primer and strainer mechanism, including a closed container, a fuel inlet pipe entering at the upper portion of the container, a fuel outlet pipe disposed within the container in such manner that it has a fuel inlet opening into the lower portion of the container and a fuel outlet in the upper portion of the container, a strainer...
surrounding said fuel outlet pipe, and an air vent in the outlet pipe opening into the upper portion of the container.

2. A combined primer and strainer mechanism including a closed container, a fuel inlet pipe and a fuel outlet pipe disposed within the container in such manner that the fuel therein is drawn from the lower portion of the container, said fuel outlet pipe having an air vent in connection therewith whereby any air in the container will be withdrawn therefrom along with the fuel.

3. A combined primer and strainer mechanism including a closed container, a fuel inlet pipe leading thereto, a fuel outlet pipe disposed within the container in such manner as to withdraw the fuel from the lower portion of the container, said fuel outlet pipe having an air vent disposed therein in such manner as to withdraw air from the upper portion of the container, and a strainer between the fuel inlet pipe and the fuel outlet pipe.

4. A primer mechanism including a closed container, a fuel inlet pipe, a fuel outlet pipe disposed in such manner within the container as to prevent the siphoning of the fuel thereto, said fuel outlet pipe having an air vent therein adapted to withdraw air from the upper portion of the container.

5. A primer mechanism adapted to insure an immediate supply of fuel, said mechanism including a closed container, a fuel inlet pipe and a fuel outlet pipe disposed therein in such manner as to withdraw a small quantity of air from the container as well as the fuel.

In testimony whereof I affix my signature.

LOYD I. ALDRICH.