

May 23, 1967

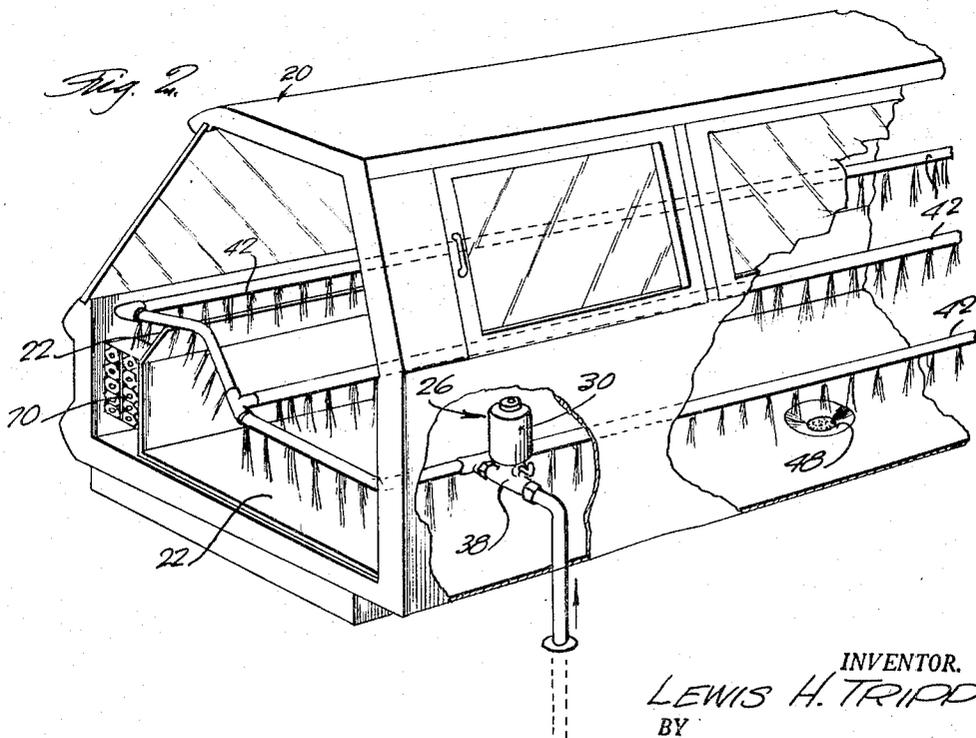
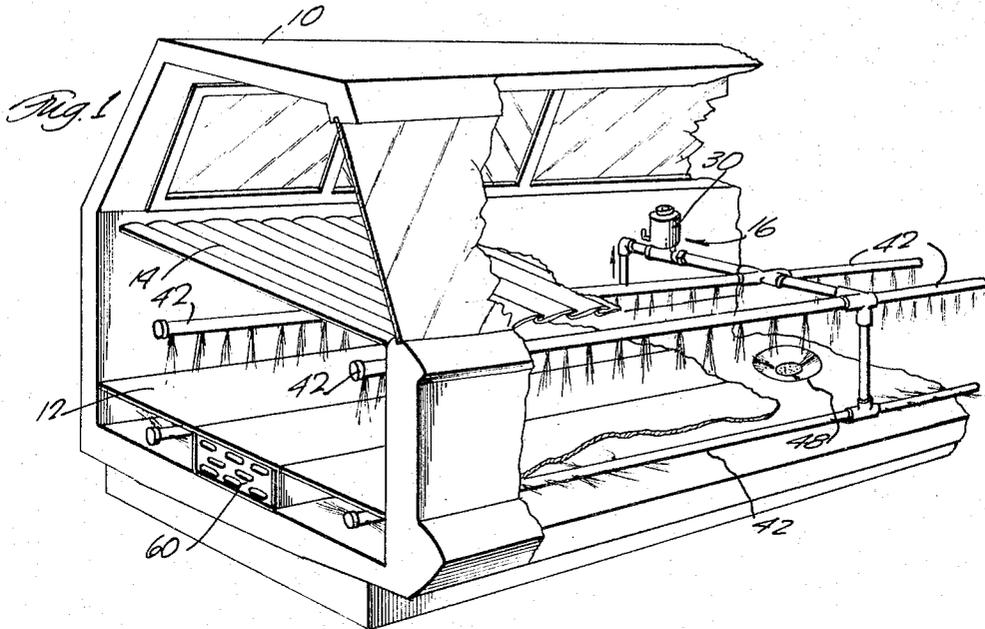
L. H. TRIPP

3,320,964

CHEMICAL FLUSH SYSTEM

Filed June 21, 1965

2 Sheets-Sheet 1



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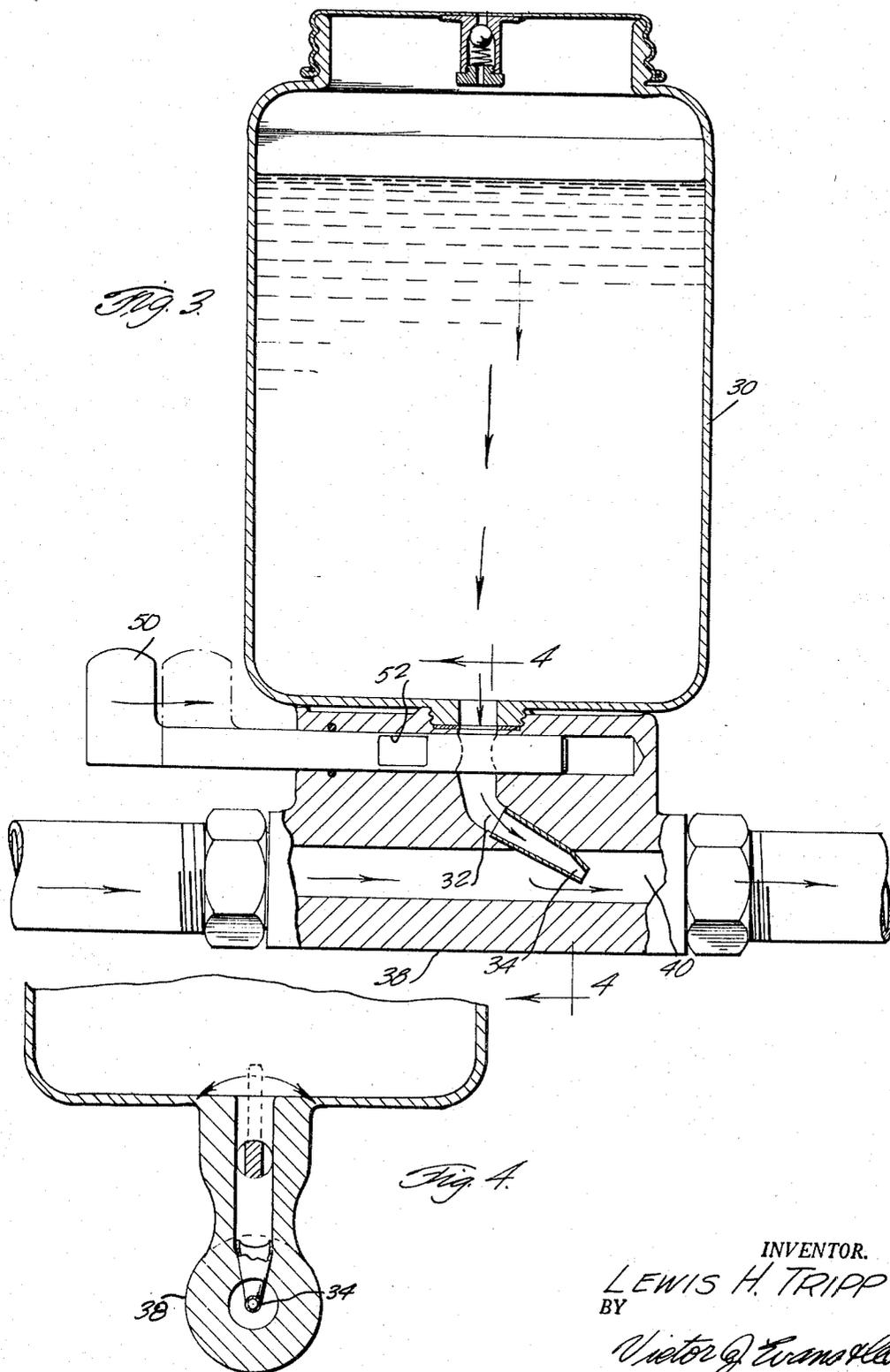
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CHEMICAL FLUSH SYSTEM
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3 Claims. (Cl. 134-100)

The present invention relates to a new and improved chemical flush system for use in cleaning and maintaining refrigeration equipment, and more particularly the invention relates to apparatus and a process for a quick, easy and efficient use of the apparatus for cleaning refrigerated cases, such as used commercially in retail food stores.

Further, the invention relates to automatic flush systems that dispense mixed liquids that are used to drain over surfaces of refrigeration equipment for providing a clean and sanitary result in commercially used refrigerated cases for displaying food in retail food stores.

An object of the invention sought to be accomplished in the preferred embodiment is to provide an automatic flush system adaptable to use in large retail food stores, including display units of plastic or like construction, with the possible use in the ultimate of automation in meat markets and the like.

The standard accepted method of cleaning display cases at present is to clean the cases once a week, and this often involves the use of 2-6 man hours, as well as the use of numerous cleaning materials including a hose, a scrub brush, cloths, and a pail of hot soapy water which often is spilled and renders saw dust unusable which may be about the floor. It is of course necessary that prior to such cleaning process, the display cases must be unloaded completely which takes a considerable amount of time.

In the construction of refrigeration coils, there are usually provided certain "air tunnels" that are necessary for cool air circulation, and the coil area is inaccessible for cleaning. Any coagulation of blood or grease that has dripped from the meat products onto the refrigeration coils forms a bacterial growth that continues to build up over a period of time and may impede or render useless and obstruct the airflow, and eventually will tend to contaminate the cool air that is continuously circulating over the food that is being displayed. Thus, the once a week cleaning generally eliminates only the visible effects of residue that collect on top of the coil covers, and contaminated air may continue to flow over the displayed food products.

With the flush system of the present invention, there are one or more perforated pipes running parallel to the refrigeration coils for the full length of the display case, as well as one or more of the same type of pipes above the coil covers which will tie in by use of a T connection to the control center. The control center can be located to suit the customer as well as the general layout of the individual area. The control center will contain the switch or valve to operate the system as well as the chemical detergent that is injected into the water line at a point to flow into the perforated pipes, thus washing away blood, grease, and odor breeding bacteria before they have time to coagulate or harden. Due to the relatively small effort involved in this procedure, the display cases may be cleaned several times a day. After each chemical wash-down, there is a clear water rinse to assure that all loosened matter is properly disposed.

These and other objects and advantages of the present invention will become apparent upon full consideration of the following detailed description and accompanying drawings in which:

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FIGURE 1 is a broken away perspective view showing the chemical flush system as applied to a meat display case;

FIGURE 2 is a perspective view taken on the opposite side of such counter case compared with that of FIGURE 1;

FIGURE 3 shows a cross-sectional view taken along a vertical section of a chemical flush tank and water pipe system; and

FIGURE 4 shows a cross-sectional view taken along lines 4-4 of FIGURE 3.

Referring now to the drawings, there is shown the food or meat counter cases 10, 20, in FIGURES 1 and 2, in which a refrigerating food supporting surface 12, 22 is provided together with a display surface 14, as shown in FIGURE 1. Beneath the display surface 14, there is a chemical flush system 16, 26 for use in the refrigerated food cases, and which contains a detergent supply container 30, as shown in FIGURE 3, said detergent supply container having a gravity discharge line 32 passing from the bottom of the container 30 and terminating in a nozzle 34.

Beneath the detergent supply container 30, there is a generally horizontally disposed water supply line 38 which is in communication with an externally provided source of water (not shown) and which has interposed therein the nozzle 34 disposed in a down-stream orientation and forming a mixing chamber for the detergent that is dispensed from the container 30 into the water supply line 38. As the mixing is accomplished in the mixing chamber 40, the water in mixed relation is passed along a series of laterally disposed spray lines 42, 42, that dispense the mixed solution from the spray lines, and thus terminate the flow of water along any directed path. The spray lines therefore terminate the flow of the supply line, and the spray therefrom is disposed to pass over the refrigerated food supporting surfaces 12, 22, 22, as shown in FIGURES 1 and 2.

The water is collected from a low position of the supporting surface by a drain 48, and the water is thus conducted away into a sewer line (not shown).

In the discharge line from the detergent supply container, there is provided a control level 50 to meter the amount of detergent that is dispensed or drawn off into the supply line through the nozzle 34. The control lever includes an apertured gate 52 that slideably traverses the gravity discharge line 32, as shown in FIGURE 3.

In accordance with the preferred embodiment of the invention, it is seen that the mixed water dispensed from the spray lines 42, 42, 42, which water contains the water from a supply line and the detergent as mixed in the mixing chamber 40 moves along and out of the small openings of the spray lines 42, 42, 42, so that as the solution is passed along the refrigerated support surfaces, all residue and other material that has collected upon the support surfaces is washed away leaving the surface substantially clean. It is contemplated that the piping system uses standard pipe fittings and may be made integral with the food or meat counter case, as illustrated.

The meat counter case also shows refrigeration coils 60, 70 in different locations in FIGURES 1 and 2, so that the spray lines 42, 42 are placed according to the manner in which the support surface is designed relative to the refrigeration coils.

Additional embodiments of the invention in this specification will occur to others and therefore it is intended that the scope of the invention be limited only by the appended claims and not by the embodiment described hereinabove. Accordingly, reference should be made to the following claims in determining the full scope of the invention.

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What is claimed is:

1. A chemical flush system for refrigerated food cases comprising a detergent supply container having a gravity discharge line extending therefrom and a detachable cover thereover for adding detergent thereto and for preventing a vacuum therein on the discharge of detergent from said discharge line, and water supply line passing beneath said container, said discharge line emptying into said supply line through a nozzle in communication with said discharge line and directed down-stream of said flow of water in said supply line for forming a mixing chamber, a control lever to meter the amount of detergent to be drawn by said supply line, spray lines terminating the flow of said supply line, said spray lines laterally disposed over a refrigerating food supporting surface, said supporting surface having disposed at a lower portion thereof a drain to run off water from said spray lines that collects thereon.

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2. The invention according to claim 1 wherein a meat counter contains the refrigerated food supporting surface, said detergent supply container and said spray lines.

3. The invention according to claim 2 wherein refrigeration coils are positioned adjacent to said food supporting surface.

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