

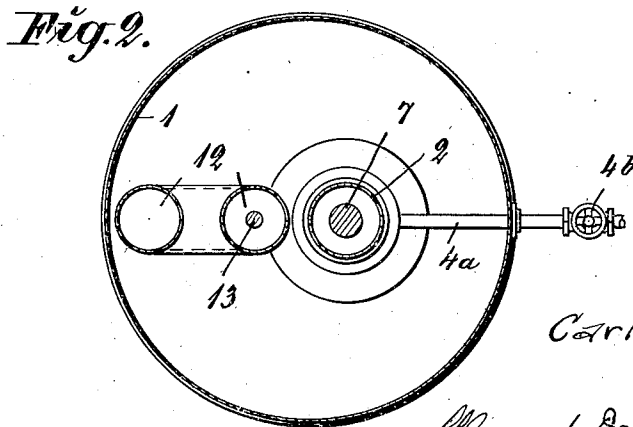
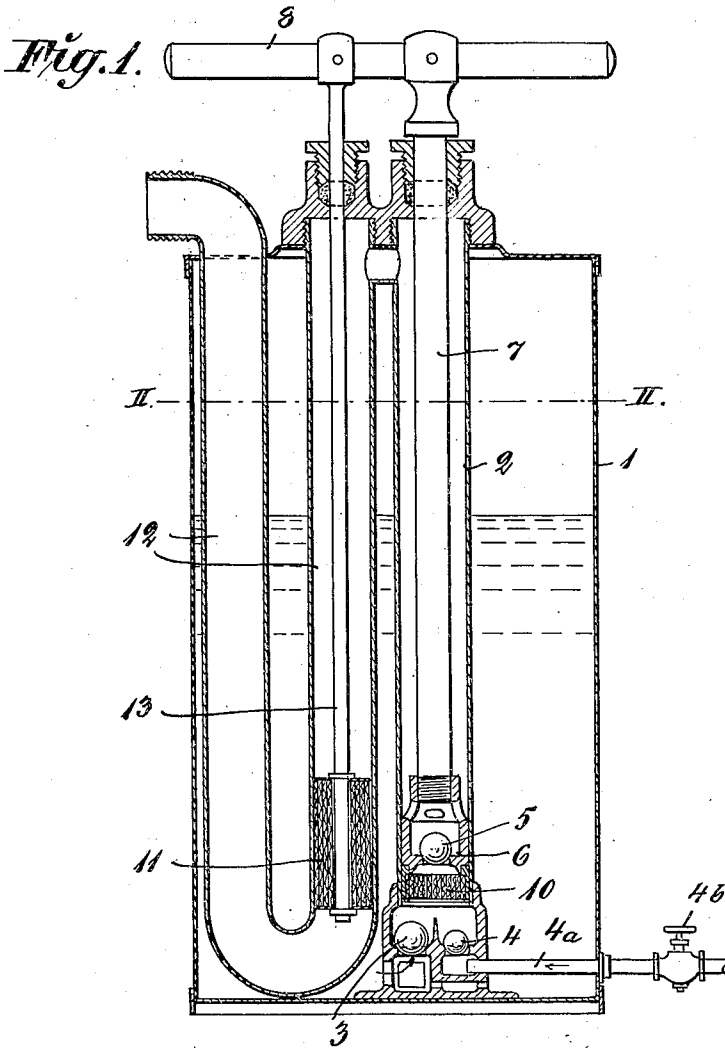
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FROTH PRODUCING APPARATUS

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FROTH-PRODUCING APPARATUS

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3 Claims. (Cl. 261—28)

The present invention relates to froth-producing apparatus of the kind in which the froth formation is produced by a mixing device. In conjunction with such apparatus it is previously known to draw in, by means of one or several movable plungers, water together with a froth-forming agent and air or other gas and to force these mediums through a stationary mixing means which may be a filter like body or a device equivalent thereto, said means mixing in such a manner that the air will be intimately intermingled with the water in form of minute air bubbles and a froth especially adapted to fire-extinguishing purposes will be obtained. Of course, the froth formation is largely dependent upon the structure of the mixing means, but also the condition of flow relative to said means is an important factor, a fact which the present invention has for its object to take advantage of. To this end the mixing means is not stationary, but is moved in opposition to the flow. For the purpose of putting the mixing means in motion, the same source of power as that utilized for putting the plunger or plungers in motion is advantageously utilized.

The invention is illustrated on the accompanying drawing, in which

Figure 1 shows a vertical section through the froth-producing apparatus, and

Figure 2 shows a section taken along line II—II of Figure 1.

The apparatus consists of a receptacle 1 which is intended to contain water and a froth-forming medium. In the receptacle there is disposed a vertical pump cylinder 2, at the lower end of which there is arranged, on the one hand, an inlet for liquid controlled by a valve 3 and, on the other hand, an air inlet controlled by a valve 4. The air is supplied through a conduit 4a which is provided with a special regulating valve 4b. Slidably inserted in the cylinder 2 is a pump plunger 6 fitted with a valve 5, which plunger is secured to the lower end of a plunger rod 7 the upper end of which is provided with a handle 8. In the lower end of the plunger 6 there may be disposed mixing means 10 of a kind known per se. Second mixing means 11 is inserted in an outlet pipe 12 parallel with and connected to the upper end of the cylinder 2. By a rod 13 the means 11 is secured to the handle 8, so that said means 11 will move up and down in synchronism with the plunger 6. When the plunger rod 7 is pulled upwards, liquid will be drawn in through the valve 3 and air through the valve 4 and then, upon the descending movement of the

plunger, the liquid and air will pass through the mixing means 10 and the valve 5. Upon the following ascending movement of the plunger 7 the mixture is forced out through the outflow pipe 12, in the direction opposite to the means 11 which moves upwards simultaneously with the plunger 7. With respect to the operation of the mixing means 10 and 11, the apparatus is, in a sense, double acting because the means 10 performs its mixing function during the downward stroke whereas the means 11 is operative to mix the fluids upon ascending stroke. The means 11 moves in opposition to the direction of flow of fluid effected by the plunger, with the result that a thorough mixing action is obtained. In order to prevent the pumping from being impeded by the creation of a vacuum in the receptacle 1 an opening is provided in the cover of the receptacle.

The apparatus may, of course, also be mechanically driven.

I claim:

1. A froth producing apparatus comprising a cylinder, a pump plunger movable in said cylinder and adapted to bring water together with a froth forming agent into contact with air or other gases, a passage conduit spaced from and communicating with said cylinder to form an outlet through which the product obtained is caused to flow by said plunger during its working stroke, and a mixing member movable in said passage conduit, and means connecting the mixing means with said plunger whereby during the working stroke of the latter the mixing means is moved in opposition to the flow of the fluid product passing through said passage conduit.

2. A froth-producing apparatus comprising a cylinder, a pump plunger movable in said cylinder and adapted to bring water together with a froth forming agent into contact with air or other gases, a passage conduit spaced from and communicating with said cylinder to form an outlet through which the product obtained is caused to flow by said plunger during its working stroke, and a mixing member movable in said passage conduit and connected with and operating in synchronism with the plunger, the volume of the space between said plunger and said member being varied and subjected to reduction as a result of movements of the same when said product is forced through the mixing member and the passage conduit by said plunger.

3. A froth producing apparatus comprising a cylinder, a pump plunger movable in said cylinder and adapted to bring water together with a froth forming agent into contact with air or other

gases, a passage conduit spaced from and communicating with said cylinder to form an outlet through which the product obtained is caused to flow by said plunger during its working stroke, and a mixing member movable in said passage conduit, and means connecting the mixing means with said plunger whereby during the working

stroke of the latter the mixing means is moved in opposition to the flow of the fluid product passing through said passage conduit, and a mixing member carried by the plunger and operative during the suction stroke of the latter.

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