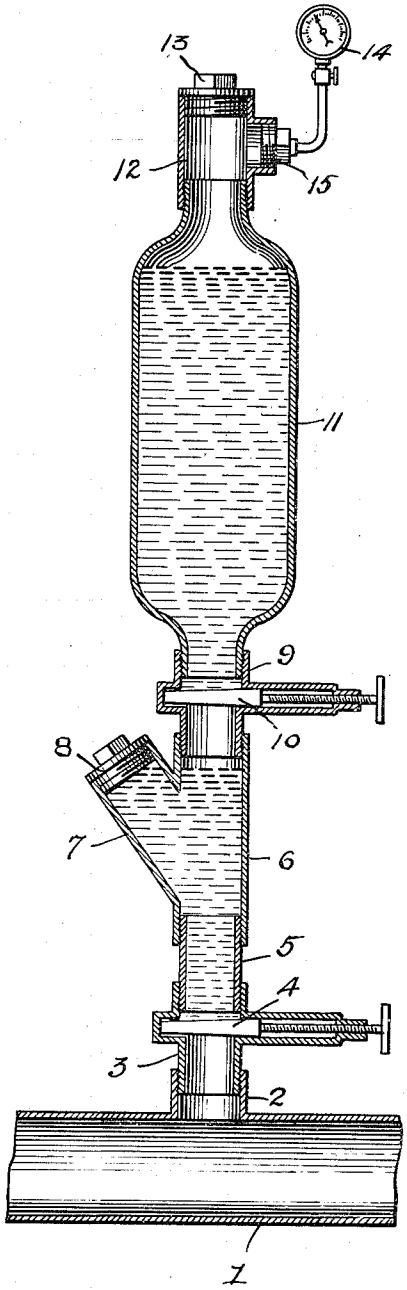
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METHOD FOR CLEANING OIL PIPE LINES

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METHOD FOR CLEANING OIL-PIPE LINES

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The invention relates to a novel and efficient method of cleaning tubing, lead lines and transport pipe lines for oil and the like of accumulations of congealed oil, paraffin, bitumen, or similar materials tending to collect in and clog up the pipe lines, the method involving the admixing of certain ingredients, preferably caustic soda and comminuted aluminum, in a suitable container, thereby developing heat and pressure in the products of the reaction, and admitting the heated products to the pipe line, so that the applied heat will melt the congealed oil, paraffin, bitumen, or other obstructing material, and cause the same to be carried along with the oil stream, or, if desired, to be drained out of the pipe line, the apparatus for carrying out the method involving connecting receptacles for receiving the respective ingredients, with a gate valve to keep the ingredients separate until the time for mixing the same arrives, and a valved connection between the receptacles and the pipe line to be cleaned to admit the heated and pressure producing products of the reaction to the pipe line.

A simple form of apparatus for carrying out the method aforesaid is illustrated in the accompanying drawing, which is a sectional elevation of said apparatus applied to a pipe line.

Referring to the drawing, 1 indicates a section of a typical transport pipe line for oil, which is provided, at suitable intervals, with nipples 2, which are normally closed by a plug or gate valve. In transporting oil, either from wells to storage tanks or reservoirs at the wells or between stations, difficulty is frequently encountered in keeping the pipe lines free from deposits of congealed oil, paraffin, bitumen, or other solid or semi-solid constituents of the oil, which obstruct the flow of oil and, in some instances, clog up the pipe lines. Various expedients have been proposed for preventing the accumulation of these materials in the pipe lines, which expedients have been indifferently effective or have been exceptionally difficult and expensive to maintain. The present invention provides an exceedingly simple form of apparatus for effectively applying an equally simple and effective method to accomplish the desired object, the apparatus involving two containers to receive separate charges of the ingredients, which, when admixed, will develop a high degree of heat and a relatively high degree of gaseous pressure, the connection between the receptacles being provided with a valve, which, when opened, permits the ingredients to mix to bring about the stated reaction, the receptacle adjacent the pipe line also being provided with a valved connection by means of which the products of the reaction are forced into the pipe line by the developed gaseous pressure.

In the exemplary apparatus disclosed in the drawing, 3 is a valve casing provided with a gate valve 4, which casing is adapted to be screwed into the nipple 2 of the pipe line, which is located in the vicinity of the accumulated paraffin, bitumen, or the like. The valve casing 4 is connected by a nipple 5 to a lower receptacle 6 having a lateral offset or elbow 7, the end of which is closed by a screw plug 8, or other suitable closure. The top of the receptacle 6 is connected to a second valve casing 9 containing a slide valve 10 and the upper end of the valve casing 9 is connected to the outlet of an upper container 11, the top of which is provided with an elbow, or T-coupling, 12, one end of which is closed by a screw plug 13 and the other opening receiving a plug 15 to which is attached a pressure gauge 14.

In carrying out the invention, the apparatus is connected to the pipe line 1, as shown, with the valves 4 and 10 closed. The lower receptacle 6 is then supplied with a charge of comminuted aluminum, preferably in the form of shavings, through the nipple 7 and the plug 8 screwed in place. The upper receptacle is similarly filled with a charge of caustic soda and water through the top opening in the T-connection 12 and the plug 13 screwed in place. The relative proportions of the charges of comminuted aluminum and caustic soda will vary according to the conditions to be met. After the charges have been supplied to the respective receptacles, the valve 10 is opened to permit the caustic soda in the upper receptacle to mix with the com-

minuted aluminum in the lower receptacle, which sets up an exothermic action developing a relatively high degree of heat and a high gaseous pressure. After the reaction has proceeded for a sufficient time, which will be indicated by the pressure developed and indicated by the gauge 14, the valve 4 will be opened to permit the gaseous pressure to force the products of reaction into the pipe line and the high degree of heat developed in said products will be effective in melting the paraffin, bitumen, or the like, to a sufficient degree to permit the same to be taken up by the oil flowing in the pipe line, or, if desired, to be discharged by a suitable outlet in the pipe line, if the latter is not transporting oil at the time the cleaning operation is carried out.

As indicated, the pipe line will be provided at suitable intervals with nipples 2 by means of which the apparatus can be connected thereto in the vicinity of the accumulated obstructions, so that the apparatus may be transported readily from place to place wherever the obstructing accumulations occur, and the latter may be removed at a minimum of labor, time and expense.

What I claim is:

1. The method of cleaning oil well tubing, lead lines and transport pipe lines of accumulated paraffin, bitumen and the like, which comprises admixing caustic soda and aluminum in a closed receptacle, and forcing the resultant heated products into the pipe line by the pressure developed.

2. The method of cleaning oil well tubing, lead lines and transport pipe lines of accumulated paraffin, bitumen and the like, which comprises preliminarily admixing the ingredients the reaction of which produces heat and pressure in a closed receptacle, and forcing the heated products into the pipe line by the induced pressure.

In testimony whereof I affix my signature.

CLAUD R. HALL.