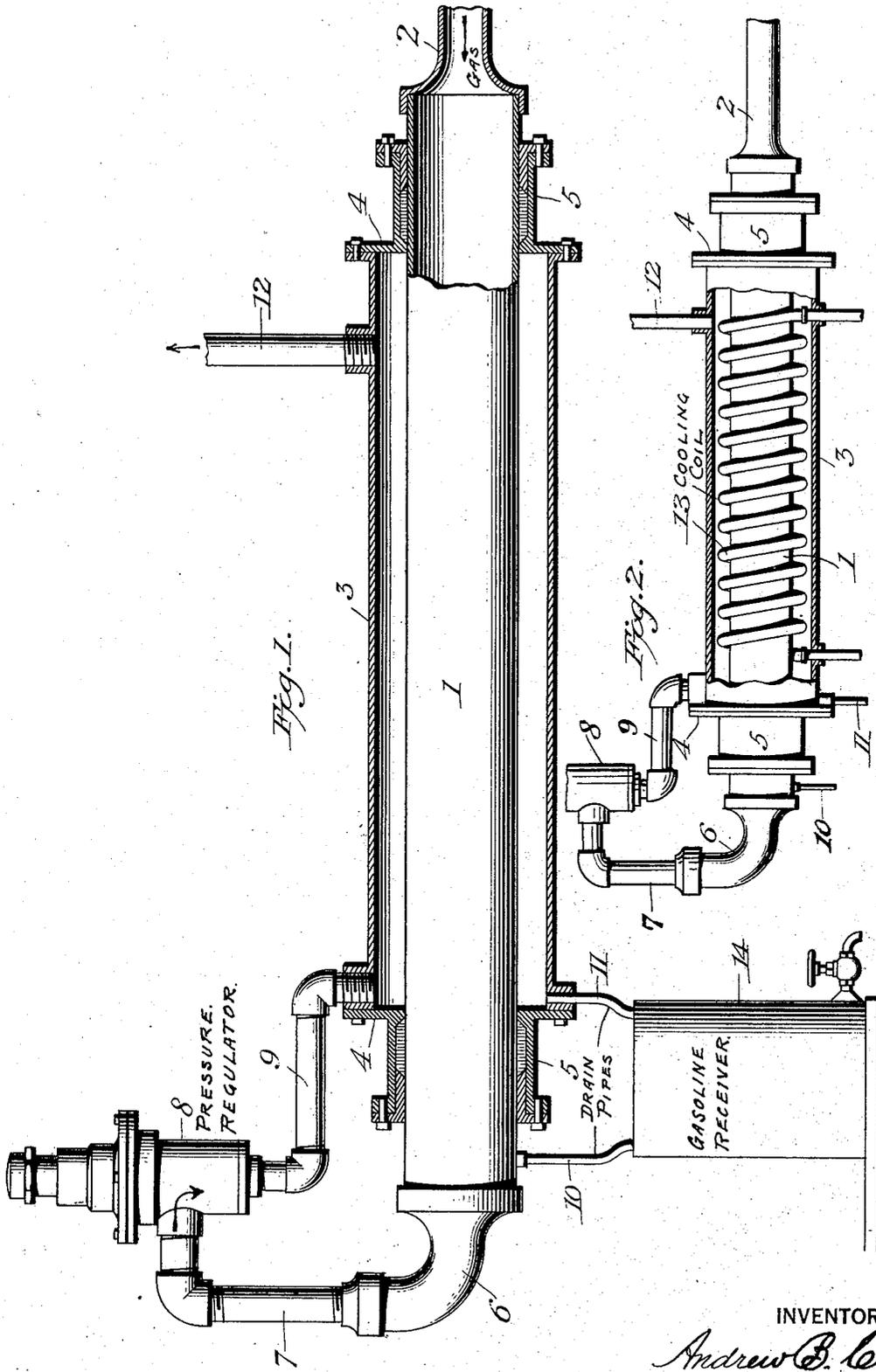


A. B. CROSS.  
 APPARATUS FOR RECOVERING GASOLINE FROM NATURAL GASES.  
 APPLICATION FILED MAR. 5, 1918.

1,327,906.

Patented Jan. 13, 1920.



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# UNITED STATES PATENT OFFICE.

ANDREW B. CROSS, OF DENVER, COLORADO.

APPARATUS FOR RECOVERING GASOLENE FROM NATURAL GASES.

1,327,906.

Specification of Letters Patent.

Patented Jan. 13, 1920.

Application filed March 5, 1918. Serial No. 220,502.

*To all whom it may concern:*

Be it known that I, ANDREW B. CROSS, a citizen of the United States of America, residing at the city and county of Denver and State of Colorado, have invented a new and useful Apparatus for Recovering Gasolene from Natural Gases, of which the following is a specification.

This invention relates to improvements in apparatus for recovering gasolene from natural gases.

The object of the invention is to provide a simple apparatus, comprising receiving means adapted to be connected with a natural gas service, and a regulator for reducing the natural pressure under which the gas enters the receiving means, whereby the temperature of the gas is reduced to such a degree that the gasolene fraction therein is released.

Further, to provide a receiver, adapted to be connected with a natural gas service, a spaced casing surrounding the receiver, and piping connecting the receiver and casing, in which is interposed a regulator for reducing the natural pressure of the gas before it enters the casing surrounding the receiver, the reduction of pressure causing a reduction in the temperature of the gas in the casing, as well as that in the receiver, to approximately the freezing point, whereby a partial condensation of the gasolene fraction takes place in the receiver, and a further condensation in the casing, the gasolene being drawn off into a container, while the uncondensed gas in the casing is discharged or piped away for other uses.

These objects are accomplished by the apparatus illustrated in the accompanying drawings, in which:

Figure 1 is a sectional elevation of the improved apparatus; and

Fig. 2 is a sectional view illustrating a modification of the invention.

Referring to the accompanying drawings:

The numeral 1 designates a cylindrical receiver, which may be of any required length and diameter, and to one end of this receiver a pipe 2, is connected, which also connects with a natural gas source. The receiver is surrounded by a concentric jacket or casing 3, which is of greater diameter than the receiver, to provide a surrounding chamber, which is closed at both ends by caps 4. The receiver extends beyond the ends of the casing 3, and the caps 4 are provided with pack-

ing boxes 5, which surround the extended ends of the receiver and thus prevent leakage between the receiver and the casing. The outlet end of the receiver has secured thereon an elbow 6, to which is connected one end of a pipe 7, the other end of which connects with the inlet of a suitable pressure regulator 8, and the outlet of this regulator is connected by a pipe 9, with the jacket or casing 3. No further illustration of the regulator than what is shown in Fig. 1 is deemed necessary, as it may be of any type in common use.

Drip pipes 10 and 11 lead from the receiver and casing, respectively, and the lower ends of these pipes are connected with a vessel or container 14, which is otherwise closed to the atmosphere, this arrangement permitting the condensation from the receiver and jacket to enter the container, while at the same time preventing the escape of gas except through an outlet pipe 12, which is connected with the jacket, and which permits the escape of the uncondensed gas.

In Fig. 2, I have illustrated a slightly modified form of the invention, in which the receiver is surrounded by a cooling coil 13, in which anhydrous ammonia or other suitable liquid is expanded, thereby to insure a reduction of temperature in the receiver and casing, sufficient to condense the gasolene fraction in the gas.

The coil 13 may be used in connection with the apparatus shown in Fig. 1, including the regulator, but the regulator may, under some conditions, be dispensed with, and the gas run through the receiver only, the said coil being adapted to reduce the temperature of the gas sufficiently to release the gasolene fraction.

In practice, natural gas is admitted to the receiver 1, through the pipe 2, under natural high pressure, and passes through the elbow 6 and pipe 7 to the regulator 8, and thence, under greatly reduced pressure, it passes through the pipe 9 to the casing. The reduction of pressure and the consequent expansion of the gas causes a reduction of temperature in the casing approximately to the freezing point, while the temperature in the receiver is likewise reduced but not to the same degree as that of the casing, owing to the continuous inflow of high pressure gas. However, the temperature is sufficient to cause a partial condensation of the gasolene

fraction from the inflowing gas, while a further condensation is effected in the casing, and the gasoline thus produced passes out through the drip pipes 10 and 11, to the container 14.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is:

In an apparatus of the character described, a cylindrical receiver, a jacket surrounding the said receiver and spaced from the same, and caps on the ends of said jacket having packing boxes through which the ends of said receiver pass, a pipe on one end of the receiver adapted to connect with a gas supply, a pressure regulator, a pipe con-

necting the opposite end of the receiver with the inlet of said pressure regulator, a pipe connecting the outlet of the regulator with the jacket at one end thereof, an outlet pipe extending from the opposite end portion of the jacket, a tank, a drain pipe connecting the jacket and tank, and a drain pipe extending from the receiver adjacent its outlet end, and connecting with the said tank.

In testimony whereof I affix my signature in presence of two witnesses.

ANDREW B. CROSS.

Witnesses:

G. SARGENT ELLIOTT,  
ELIZABETH SMITH.