

H. C. KINNISON.

VALVE.

APPLICATION FILED JUNE 2, 1909.

956,365.

Patented Apr. 26, 1910.

Fig. 1.

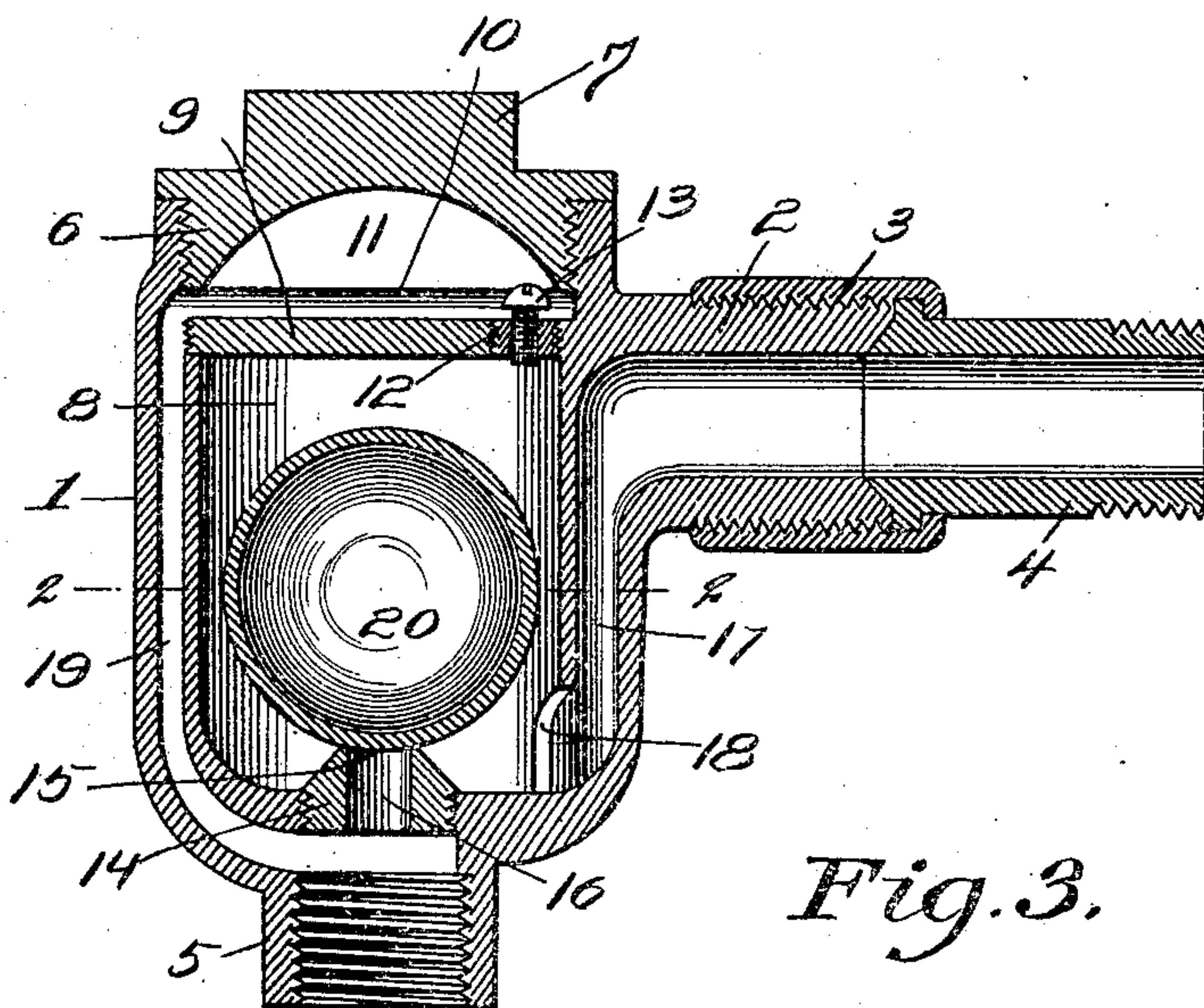
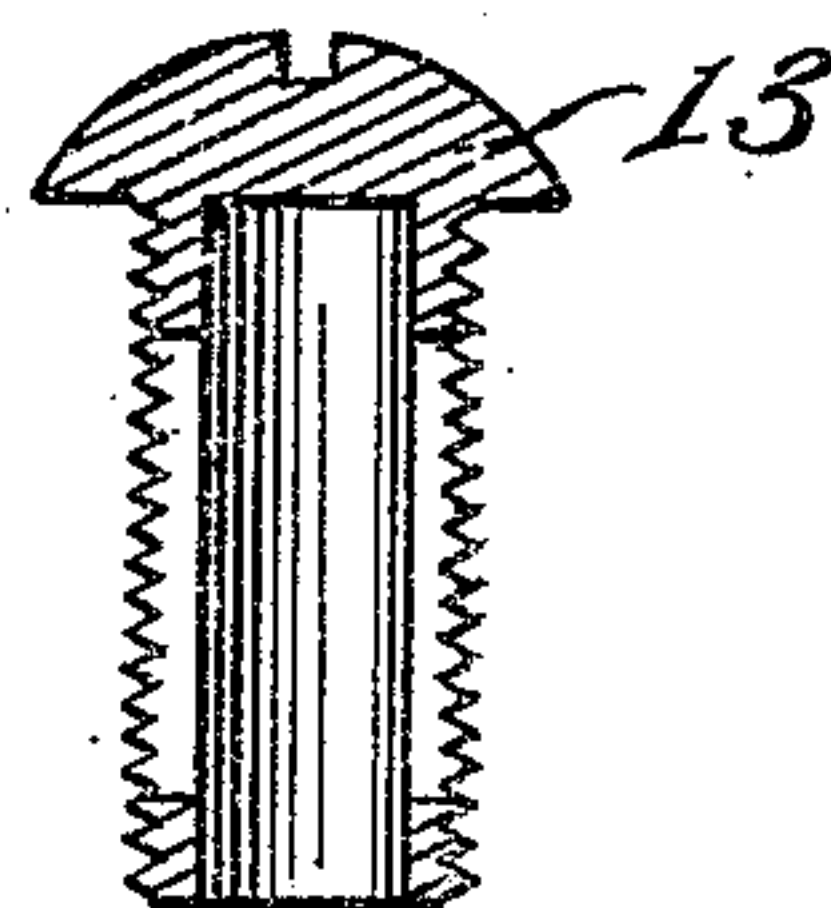
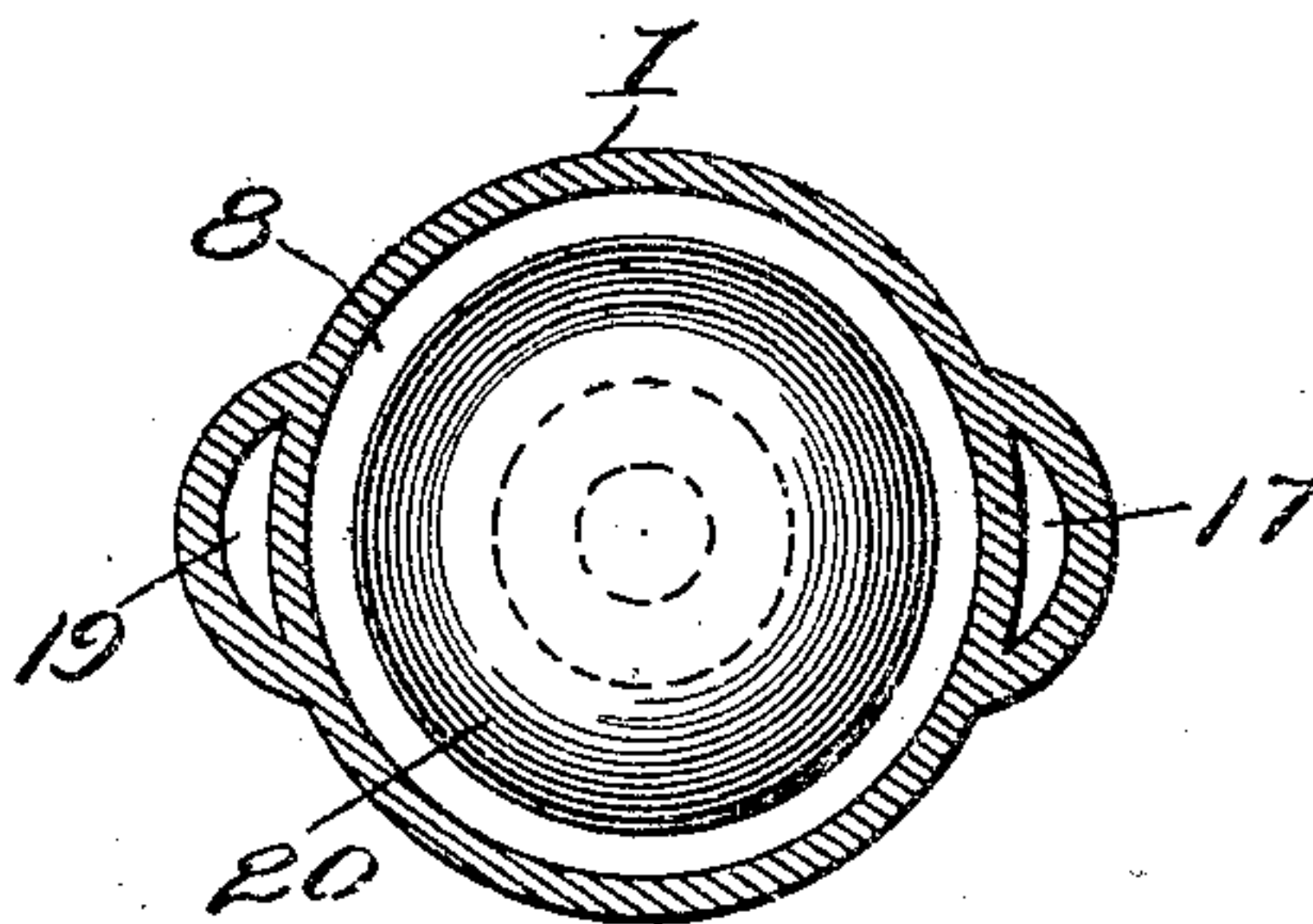


Fig. 3.

Fig. 2.



Witnesses

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VALVE.

956,365.

Specification of Letters Patent. Patented Apr. 26, 1910.

Application filed June 2, 1909. Serial No. 499,693.

To all whom it may concern:

Be it known that I, HALLAH C. KINNISON, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented new and useful Improvements in Valves, of which the following is a specification.

This invention relates to a valve for vacuum heating systems, and its object is to provide a simple and efficient type of valve for discharging the air and water of condensation from a radiator or other portion of the heating system.

The invention consists of the features of construction, combination and arrangement of parts hereinafter fully described and claimed, reference being had to the accompanying drawing, in which:—

Figure 1 is a central vertical section through a relief valve embodying my invention. Fig. 2 is a horizontal section on the line 2—2 of Fig. 1. Fig. 3 is a detail view of the vent screw.

Referring to the drawing, 1 designates the valve casing or shell which is provided at one side near its top with an externally threaded inlet nipple 2 connected by a threaded union 3 with a short pipe section 4 which is designed for connection with the radiator or other portion of the heating system. The bottom of the valve casing is also provided with a nipple 5 which is internally threaded and designed for connection with a vacuum line or pipe leading to the vacuum pump. The upper end of the casing is open for insertion of the contained parts and permitting access to the interior thereof when occasion requires, such open end being closed by a screw cap 6 having an angular head 7 for the reception of a wrench.

Within the valve casing is formed a pressure chamber 8 closed at its upper end by a removable plate, diaphragm or partition 9 which is threaded into the casing, and which separates said pressure chamber from a vacuum chamber 10 formed by the upper portion of the casing and a cavity 11 in the cap 6. In the plate 9 is formed a threaded opening 12 receiving a screw 13, said screw being provided with a solid head having the usual screw driver nick for adjustment, the body portion of said screw being hollow and having longitudinal vent slots in its sides, by which the screw forms an air feed or vent connection between the pressure and vacuum chambers. The hollow body of the

screw is of greater length than the depth of the opening 12, whereby an always-open vent connection between said chambers is provided. The screw serves as a valve which may be adjusted to expose a greater or less portion of the length of the slots above the partition to regulate the size of the always-open vent connection, by which a constant variable restricted communication between the pressure chamber and vacuum chamber is established.

In the bottom of the valve casing is a hollow frusto-conical valve seat 14 having a concaved seat recess 15, and providing a discharge port 16 communicating with the outlet 5. The inlet 2 is in communication with the bottom of the pressure chamber through a vertical feed passage 17 and a lateral port 18, while the vacuum chamber is in communication with the outlet 5 through a vertical passage 19. A float valve 20 is arranged within the chamber 8 and normally rests by gravity on the seat 15 and closes communication between said chamber and the outlet 5.

It will be seen from the foregoing that the vacuum line is normally out of communication with the heating system and pressure chamber except through the restricted port formed by the screw 13, which port may be regulated in size by the adjustment of said screw. The air and water of condensation from the radiator or other portion of the system enter the chamber 8 through the inlet 2 and passage 18 and accumulate therein, the pressure of the air and weight of the valve 20 keeping the latter seated until a determined amount of water has accumulated. The accumulation of air beyond a determined pressure, however, is prevented by the escape of air through the restricted port 13. When a sufficient amount of water has accumulated the valve 20 floats off its seat, whereupon the air and water discharge by gravity and the suction from the vacuum line through the port 16 and outlet 5. The valve 20 then closes and the operation above described is automatically repeated at intervals, whereby the radiator is kept clear of air and water of condensation.

It will be apparent that my invention provides a valve for the purpose described which is simple and inexpensive of construction, adapted for an effective automatic discharge action, and is free from the use of parts liable to get out of order.

Having thus described the invention what is claimed as new is:—

5 A valve of the character described comprising a casing open at top and having its body portion forming a pressure chamber, said chamber terminating below said open top and being provided at its base with a lateral inlet port and in its bottom with a discharge port having a valve seat, a vertical inlet passage formed upon one side of
10 said casing and communicating at its lower end with said inlet port, an always-open outlet at the bottom of the casing below said discharge port, a partition threaded into the casing and closing the pressure chamber,
15 said partition being provided with a threaded opening, a plug closing the open top of the casing and provided with a concavity forming with the portion of the casing

above said partition a vacuum chamber, a
20 hollow screw valve adjustably mounted in said threaded opening and having longitudinal openings to afford constant variable restricted communication between the float chamber and vacuum chamber, a passage
25 formed vertically upon the side of the casing and leading from said vacuum chamber to a point between said discharge port and always-open outlet, and a float valve disposed in the pressure chamber and adapted
30 to engage said valve seat.

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

HALLAH C. KINNISON.

Witnesses:

H. A. KINNISON,
S. C. ALEXANDER.