A. WINTON.

SELF STARTER.

APPLICATION FILED SEPT. 11, 1912.

1,113,852.

Patented Oct. 13, 1914.

2 SHEETS—SHEET 1.

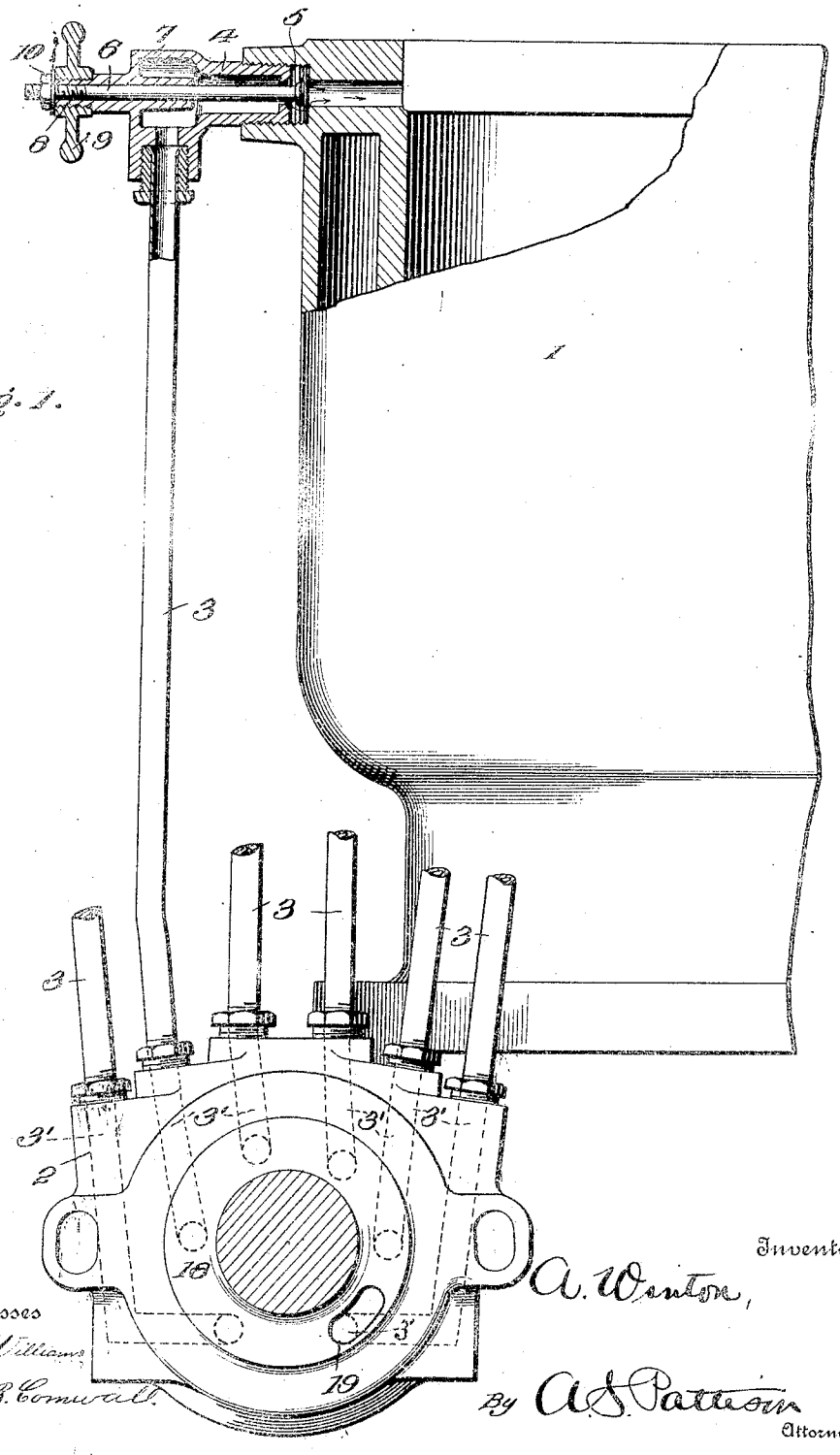

Fig. 1.

Witnesses

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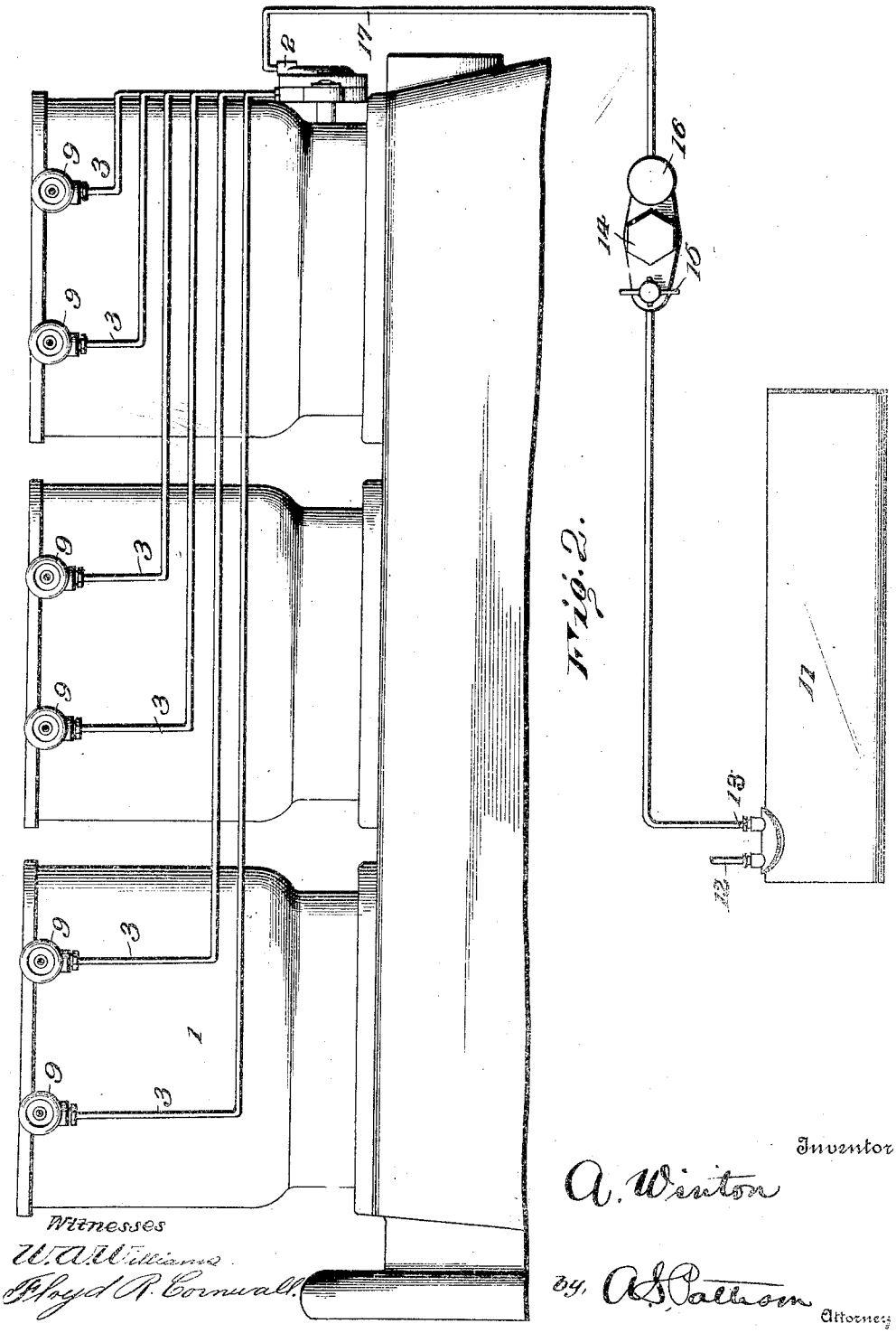

Fig. 2.

Witnesses

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UNITED STATES PATENT OFFICE.

ALEXANDER WINTON, OF CLEVELAND, OHIO, ASSIGNOR TO WINTON GAS ENGINE AND MANUFACTURING COMPANY, OF CLEVELAND, OHIO.

SELF-STARTER.

1,113,852. Specification of Letters Patent. Patented Oct. 13, 1914.

Application filed September 11, 1912. Serial No. 719,846.

To all whom it may concern:

Be it known that I, ALEXANDER WINTON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Self-Starters, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in self-starters, for explosion engines, and is particularly intended for use in connection with stationary and marine engines.

The type of self-starter involved herein, is that in which there is a supply of compressed air in a tank, which is in communication with a distributing valve geared to the engine to rotate in unison with the engine crank-shaft to permit the compressed air to pass to the cylinders in the order in which they are fired, and when they are on the explosion stroke.

The object of the present improvement is to provide means for locking and unlocking the check valves past which the compressed air flows, whereby the valves can be locked tightly to their seat after the engine is in operation to prevent any leakage thereby, and the noise consequent to the operation of such valves when opening and closing under the action of the engine pistons.

In the accompanying drawings—Figure 1 is a side elevation of a portion of a multiple cylinder engine showing my improvement applied thereto. Fig. 2 is a side elevation of a multiple cylinder engine with my improvement applied thereto.

Referring now to the drawings, 1 indicates the cylinders and 2 a distributing valve case, which is in communication with the tubes 3. These tubes 3 are in communication with the cylinders 1 through a valve passageway 4. These passageways are controlled by check valves 5, the stems 6 of which pass loosely through the valve casing 7. The outer ends of the valve casings 7 are externally screw-threaded at 8, which receive internally screw-threaded hand wheels 9. With the valves and hand wheels in the positions shown in Fig. 1, the valves 5 will be opened by the suction of the pistons (not shown) within the cylinders and are closed by the compression movement of the pistons. This is the position and action of the valves when the engine is being started. After the engine picks up its own explosions and is running, the hand wheels 9 are turned outward on the screw-threaded extension of the valve casings 7 and engage the adjustable nut washers on the valve stems and tightly close the valves. This enables the valves to be tightly closed to prevent any escape thereby from the engine cylinder, and prevents it from working back and forth, making an undesirable tapping noise.

The type of self-starter here shown is well known in the trade, and to those skilled in the art, and need not be elaborately described or illustrated. For the purposes of this case it is deemed sufficient to generally describe and generally show the type of starter. In this type of starter a suitable pressure storage tank 11 is provided, and this tank may be stored with a fluid pressure in any desirable manner (not shown) through the inlet 12. The tank has an outlet 13 which communicates with a casing 14. This casing has a screw-valve 15 to close the said passageway and a reciprocating valve 16, which may be opened by the foot of the operator. A pipe 17 establishes communication between the casing 14 and the timing valve casing 2. As previously stated, this valve-casing has a separate communication 3 with each of the engine cylinders, and these pipes 3 communicate with separate passages 3′ within the said casing, and the valve 18 is provided with a passage-way 19 adapted to register successively with the passage-ways 3′ and to thereby admit the pressure from the tank 11 to the engine cylinders in proper sequence to cause the engine to rotate.

To start the engine the valves and hand wheels are put in the position shown in Fig. 1; the valve 15 is open. A pressure on the valve 16 will then establish communication between the tank and the casing 2, the pressure passing through the opening 19 of the valve into the registering passage-way 3′, causing the pressure to pass into the cylinder in communication with that particular passage, causing the engine to move and the valve 18 to correspondingly rotate, until the opening 19 of the valve has first cut off communication with the passage-way 3′ and is in communication with the succeeding passage-way 3′ to carry the pressure to the next cylinder in the sequence of the normal operation of the engine. As soon as the engine

has picked up its normal operation the valve 16 is released and thereby closed.

The object of the screw valve 15 is to permit the communication between the tank 11 and the valve 16 to be tightly closed when the motor is left for any considerable length of time and thus prevent the loss of pressure which might occur past the reciprocating valve 16, timing valve 18 and the piping system.

Preferably the tank 11 is automatically charged by the engine when it is running through the intervention of any desired form of pressure creating mechanism (not shown) which does not form any part of my present improvement.

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

1. In a self-starter for explosive engines, the combination with an explosive cylinder, of a pressure supply, a communication between the supply and said cylinder, a normally freely opening and closing check valve within said supply and outwardly closing in respect to the cylinder, and means for locking said valve in its closed position, for the purpose described.

2. In a self-starter for explosive engines, the combination with the cylinder thereof, of a pressure supply, a valve casing in communication with the supply and with the said cylinder, a check valve in said communication and outwardly closing, a valve stem rigidly carried by the valve and normally freely movable back and forth through the casing and projecting beyond its outer end, a shoulder on the projecting end of the valve stem, a longitudinally movable member on the end of the casing and adapted to engage the valve stem shoulder for locking and releasing the valve in respect to its seat, for the purpose described.

3. In a self-starter for explosion engines, the combination with the cylinder thereof, of a pressure supply, a valve casing in communication with the supply and with the said cylinder, a check valve in said communication and outwardly closing, a valve stem rigidly carried by the valve normally freely movable back and forth through the casing and projecting beyond its outer end, a shoulder adjustable on the projecting end of the valve stem, the casing surrounding the valve stem having a screw threaded projection and a thumb nut on said screw-threaded portion of the casing and adapted to engage the valve stem for forcing the valve stem outwardly for locking the valve in its closed position and releasing it so that it can be automatically opened by the pressure.

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

ALEXANDER WINTON.

Witnesses:

HAROLD B. ANDERSON,

BYRON B. BROCKWAY.