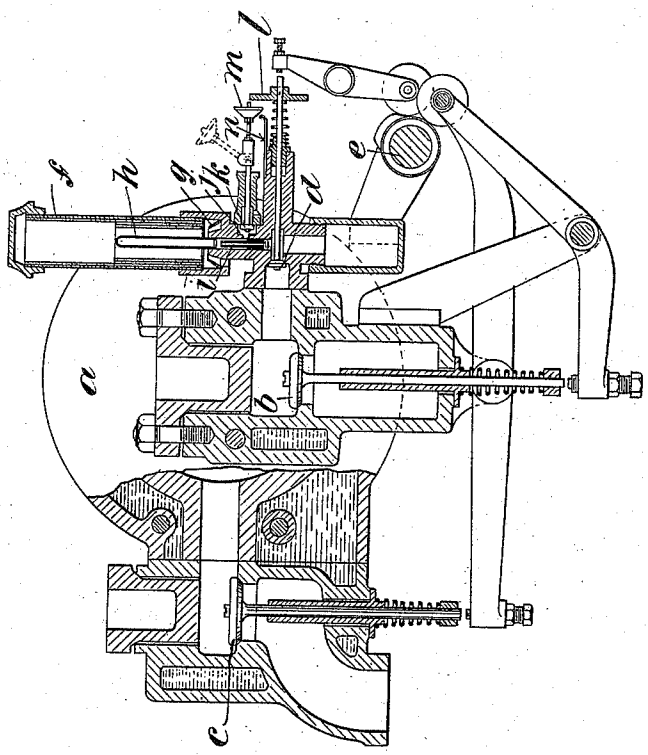
(No Model.)

H. H. ANDREW & A. R. BELLAMY.

GAS, OIL, OR SIMILAR MOTOR ENGINE.

No. 526,369. Patented Sept. 25, 1894.



Witnesses
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UNITED STATES PATENT OFFICE.

HENRY HERBERT ANDREW AND ALFRED ROWE BELLAMY, OF REDDISH, NEAR STOCKPORT, ENGLAND.

GAS, OIL, OR SIMILAR MOTOR-ENGINE.

SPECIFICATION forming part of Letters Patent No. 526,369, dated September 25, 1894.

Application filed March 13, 1894. Serial No. 503,505. (No model.) Patented in England November 17, 1892, No. 208,031.

To all whom it may concern:

Be it known that we, HENRY HERBERT ANDREW and ALFRED ROWE BELLAMY, subjects of the Queen of Great Britain, and residents of Reddish, near Stockport, in the county of Chester, England, have invented certain new and useful Improvements in Gas, Oil, or Similar Motor Engines, of which the following is a specification.

The invention has been patented in Great Britain, dated November 17, 1892, No. 208,031.

Our invention relates to improvements in gas, oil and similar motors and relates particularly to improved means for firing such engines. In several types of gas engine a snifting valve has been placed on the upper end of the igniting tube to allow the surplus of air to escape at starting and to snift away the products of combustion confined in the tube after the firing of each charge. One drawback to this arrangement is that when the tube is changed the snifting valve and its connections have also to be displaced. One of the objects of our invention is to obviate this disadvantage by placing the snifting valve in close proximity to, but not in immediate connection with the ignition tube, so that this latter can be removed and changed as often as necessary without disturbing the valve and connections.

To render our invention perfectly clear we will now refer to the accompanying drawing which is mainly a sectional view of the parts to which our invention more particularly relates.

The end of the cylinder is indicated by *a*. The valve for admitting the explosive mixture is marked *b;* the exhaust valve *c;* and the timing or ignition valve *d*. All of these valves are operated by levers and cams from the side shaft *e* in the usual manner, that being no part of our present invention.

Within the chimney *f* is the burner *g*, and the ignition tube *h*, below which is a short tube *i* in communication with a small chamber *j*, the exit from which into the atmosphere is controlled by a snifting valve *k*. This valve *k*, which may be a mushroom valve as shown or any other suitable type of valve, is opened at or about the same time as the ignition valve *d* by means of a washer or projection *l* carried by the spindle of the ignition valve *d* which comes in contact with a tumbler catch *m* pivoted to the end of the spindle of the snifting valve *k*. The edge of the tumbler catch *m* is beveled and a kicking plate *n* is fixed to the frame so that when the spindle of the valve *k* has been moved a certain distance, the catch *m* is tilted by the plate *n* and the valve *k* is left free to be closed.

When the timing or ignition valve *d* is opened, the explosive fluid mixture flows through the short tube *i*, ignition tube *h* and chamber *j*, and as the snifting valve *k* is also opened at this time by means of the washer *l* and tumbler catch *m* as described, some of the gases escape through into the atmosphere until the explosive fluid mixture becomes ignited and the consequent increase of pressure caused by the expansion of gases closes the snifting valve *k*. When the ignition valve *d* is again opened the washer or projection *l* on its spindle will open the snifting valve *k* and allow some of the fluid mixture or products of combustion to escape through it into the atmosphere. In certain cases it may be found advantageous to allow the snifting valve *k* to remain constantly operative in combination with the ordinary timing or ignition valve *d* as described. When this is not the case the tumbler catch *m* can be turned back into the position indicated by dotted lines, after the engine has been properly started whereby the said valve remains closed and inoperative.

Instead of the washer or projection *l* and the pivoted tumbler catch *m*, any other suitable disengaging device may be employed which will allow the snifting valve *k* to be closed automatically at the proper moment by fluid pressure from the inside or by a spring or other means.

By the arrangement shown and described the ignition tube *h* can be readily removed and replaced by another tube without displacing any of the valves and connections.

We declare that what we claim is—

1. In combination in a gas or motor engine, the ignition tube *h*, the ignition valve, the snifting valve *k* arranged in proximity to and in communication with the ignition tube and opening at or about the same time as the ignition valve for the purpose of allowing the contents of the ignition tube to escape into

the atmosphere, and a disengaging device adapted to open the snifting valve, and allow it to be closed automatically, substantially as described.

2. In a gas or oil motor engine the combination of the snifting valve *k* having a pivoted tumbler catch *m;* the ignition tube *h*, the ignition valve and spindle kicker plate *n* and washer *l* on the spindle of the ignition valve, all arranged and operating substantially as described and as shown.

In witness whereof we have hereunto set our hands in presence of two witnesses.

HENRY HERBERT ANDREW.
ALFRED ROWE BELLAMY.

Witnesses:
JOSHUA ENTWISLE,
RICHARD IBBERSON.