Dec. 12, 1933. O. E. MICHAUD 1,938,968

AUXILIARY AIR INLET DEVICE FOR INTERNAL COMBUSTION ENGINES

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Fig. 1.

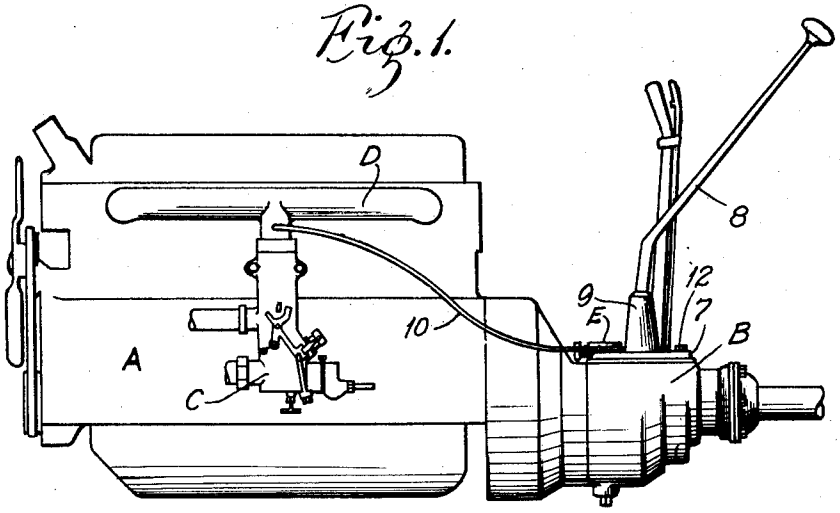
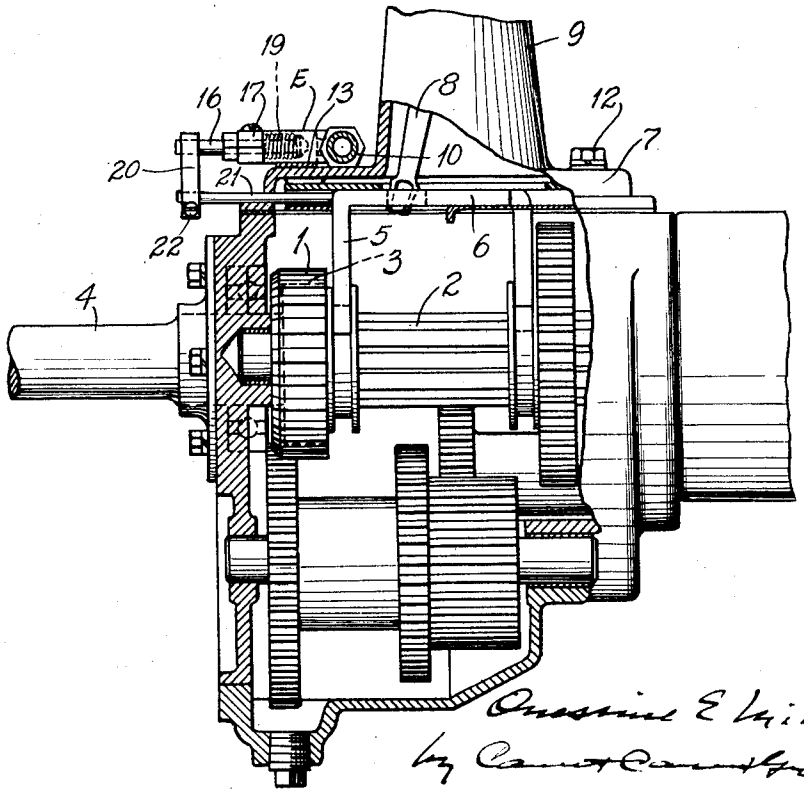


Fig. 2.



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Fig. 3.

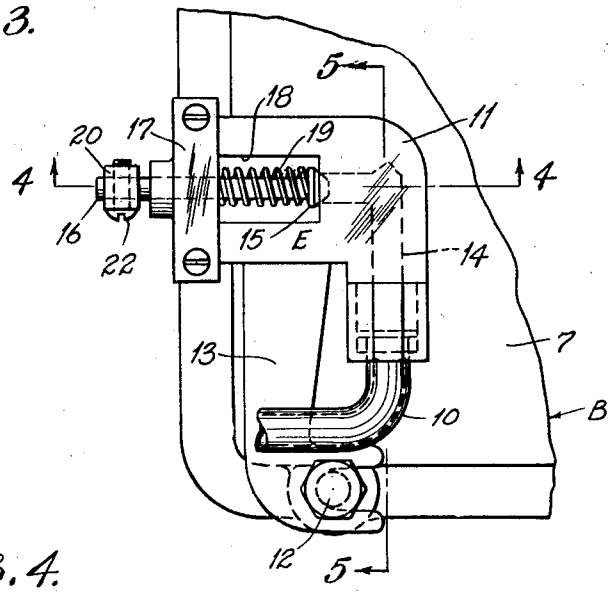


Fig. 4.

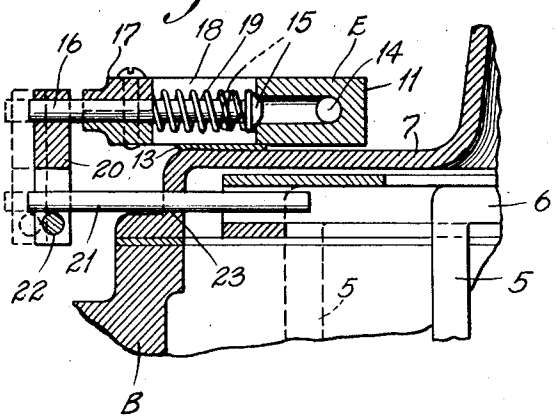
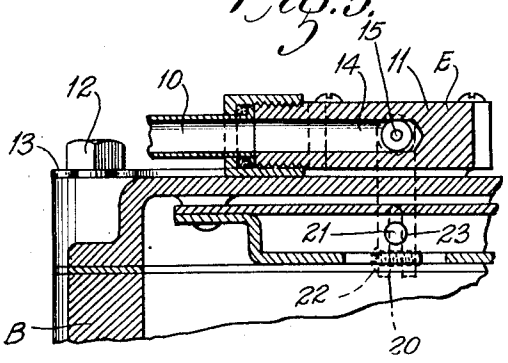


Fig. 5.



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AUXILIARY AIR INLET DEVICE FOR INTERNAL COMBUSTION ENGINES

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Application August 6, 1931. Serial No. 555,484

2 Claims. (Cl. 123—124)

This invention relates to auxiliary air inlet devices for increasing the efficiency of the combustible mixture of air and hydrocarbon supplied to internal combustion engines, particularly automotive engines equipped with change speed transmission mechanisms. The invention has for its principal object to provide for the control of the auxiliary air inlet device by the change speed transmission mechanism so that said device will operate to admit an additional quantity of air to the carbureting system of the engine when the change speed transmission mechanism is operating in high speed. Other objects are to provide a simple and inexpensive inlet valve mechanism and to enable said valve to be quickly and easily attached to the change speed transmission mechanism. The invention consists in the construction, arrangements and combinations of parts hereinafter described and claimed.

In the accompanying drawings, which form part of this specification and wherein like symbols refer to like parts wherever they occur,

Fig. 1 is a side elevation of the intake side of an internal combustion engine and its change speed transmission mechanism provided with auxiliary air inlet device embodying my invention,

Fig. 2 is a fragmentary side elevation, partly in vertical section, of a portion of the change speed transmission mechanism, showing the manner in which the air inlet device is controlled by said mechanism,

Fig. 3 is a fragmentary plan view of the transmission case, showing the air inlet device mounted thereon,

Fig. 4 is a vertical section on the line 4—4 in Fig. 3; and

Fig. 5 is a vertical section on the line 5—5 in Fig. 3.

Referring to the accompanying drawings, my invention is shown in connection with an ordinary internal combustion engine A provided with a standard change speed mechanism located in a housing or casing B located adjacent to the rear end of said engine. The engine A is provided with the usual charge forming device or carburetor C and the usual intake manifold D leading from said carburetor to the engine cylinders.

The gear elements of the change speed transmission mechanism are not fully illustrated; but, for the purpose of illustrating the invention, there is shown the high speed sliding gear 1 which is slid forwardly along the spline shaft 2 into mesh with the main drive gear 3 on the main drive shaft 4 of the clutch mechanism (not shown) to effect a direct clutch engagement between said main drive shaft and said spline shaft, such intermeshed position of said gears being designated the third or high speed position. The slidable high speed gear 1 is intermeshed with and disengaged from the main drive shaft gear 3 by the usual shifting fork 5 that depends from one end of a plate 6 mounted for horizontal sliding movement in the cover 7 for the transmission gear case B. The slide plate 6 is actuated in the usual manner by means of a gear shifting lever 8, which is mounted for universal movement in the dome 9 of the transmission case cover 7, to permit said lever to be shifted both longitudinally and transversely to engage the proper slide plate. The construction thus far described is well known and it is considered unnecessary to illustrate it in detail.

Mounted on the cover of the transmission gear case B adjacent to the sidep late 6 that carries the shifting fork 5 for the high speed sliding gear 1, is an auxiliary air inlet valve E which communicates through a pipe or conduit 10 with the intake manifold D. Said valve comprises a casing which is preferably held in place on the transmission case cover 7 by one of the securing bolts 12 therefor, which bolt engages a notch in the outer end of a plate 13 that projects horizontally from one side of said valve casing. The valve casing 11 is provided with a passageway 14, one end of which communicates with the pipe 10 leading to the intake manifold D. Entry of atmospheric air into the other end of the passageway 14 in the valve casing 11 is controlled by means of a valve member comprising a disk 15 with a beveled edge fitting in a correspondingly shaped seat in said end of said passageway. The disk 15 is mounted on a stem 16 slidable in a cross member 17 that is removably secured to the valve casing and forms the outer wall of a vertical opening 18 formed in said casing at the inlet end of the passageway 14 thereon. The valve is normally held in closed position by means of a coil spring 19 sleeved on the stem 16 between the crosshead 17 and the disk 15 on the end of said stem. The valve stem 16 is provided at its outer end with a downwardly extending arm 20, which has a lower end portion that straddles the outer end of a pin 21 and is rigidly secured thereto by means of a clamping screw 22. The pin 21 is disposed parallel to and is movable with the valve stem 16 and extends through a horizontal opening 23 provided therefor in the front wall of the transmission case cover 7 with

its inner end in position to be engaged by the shifting form 5 for the high speed gear 1 when the latter is in high speed position.

By the arrangement described, the auxiliary air inlet valve remains closed in neutral, low and second speed positions of the gear shifting lever, but is automatically opened to supply an additional quantity of air to the engine when said lever is moved to high speed position by the pressure of the shifter fork plate on the rod carried by the valve stem.

Obviously the hereinbefore described arrangement admits of considerable modification without departing from the invention. Therefore, I do not wish to be limited to the precise details of construction shown and described.

What I claim is:

1. The combination with an internal combustion engine and its change speed mechanism including a casing and a high speed shifting fork of a normally closed auxiliary air inlet valve mounted on said casing and communicating with said engine, and means whereby said valve is adapted to be opened by the movement of said shifting fork to high speed position.

2. The combination with an internal combustion engine and its change speed mechanism including a casing and a high speed shifting fork of a normally closed auxiliary air inlet valve mounted on said casing and communicating with said engine, and means whereby said valve is adapted to be opened by the movement of said shifting fork to high speed position, said means comprising a rod carried by said valve and slidably supported in said casing in abutting relation to said shifting fork.

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