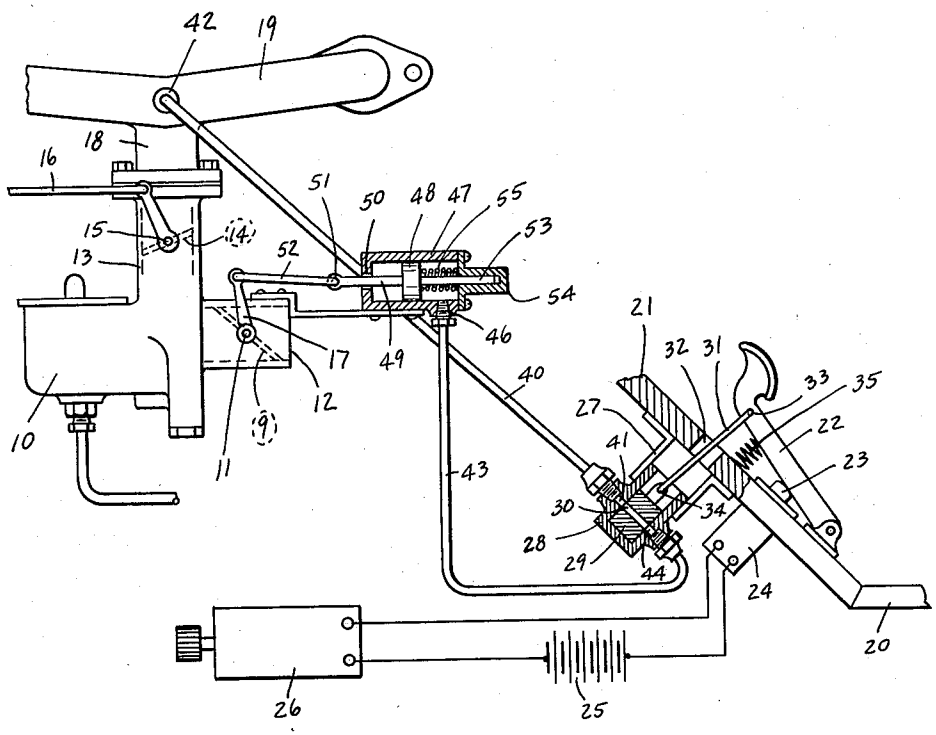
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AUTOMATIC SUCTION CHOKING FOR STARTING INTERNAL COMBUSTION ENGINES

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AUTOMATIC SUCTION CHOKING FOR STARTING INTERNAL COMBUSTION ENGINES

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2 Claims. (Cl. 123—179)

This invention relates to an automatic choking device.

The chief object of this invention is to provide a device which automatically chokes the carburetor when engine is cranked for starting.

The chief feature of the invention consists in the association of the automatic choking means with the starting operation and the employment of the suction created in the starting of the engine for automatically choking the carburetor. The normal or non-operative position of the starting mechanism automatically discontinues the choking operation.

Other objects and features of the invention will be understood from the accompanying drawing and the following description and claims:

In the drawing the figure is a side elevation of a portion of an engine illustrating the intake manifold, the carburetor, starting motor, control switch therefor, starting pedal and the suction operable means associated therewith, parts thereof being broken away and shown in section,

In the drawing 10 indicates a carburetor including an air intake 12. The carburetor includes the supply pipe 13 controlled by the butterfly valve 14 carried by shaft 15. Lever arm 16 is the usual actuating arm for controlling the throttle. An additional arm 17 is associated with the shaft 11 of the choke valve 9 and the mechanism for automatically operating the choking valve is associated therewith.

The passage 13 communicates with the intake portion 18 of the manifold 19. As the engine is turned over and starts to run, suction is created in the intake manifold and the carburetor and it is by means of such suction that fuel vapor is supplied to the engine.

The automobile parts associated with the aforesaid include the floor 20, the toe board 21 upon which is pivotally mounted the starting lever 22 that depresses the starting button 23 of a starter controlling switch 24, one terminal thereof being connected to the battery 25 and the other terminal being connected to the starting motor 26 herein represented as being of the electric type. The other terminal of the starting motor is connected to the battery as shown. Any other form of starting construction and manual control therefor may be substituted.

Herein illustrated as mounted upon the toe board is a bracket or base member 27 for supporting the valve casing 28 in which is slidably mounted a piston valve 29 having a passage 30 therethrough. A piston 29 is connected by link 31 which passes through slot 32 of the toe board to the lever 32 as at 33. Link 31 has a detachable connection as at 34 with said piston. A compression spring 35 is illustrated as associated with the starting lever 22 to normally position the same in the inoperative position. The operative position is shown in the drawing. The spring 35 is adapted to normally position the piston valve at the upper and right hand end of the cylinder or valve casing 28. If desired, an additional spring may be supplied therefor. A conduit 40 connects to a port 41 in the valve casing 28 and has open communication through the fixture 42 mounted upon the intake manifold which has free communication with the interior thereof. Pipe or conduit 43 communicates at one end with port 44 formed in the valve casing and at its opposite end with port 46 or a power cylinder 47.

Power cylinder 47 slidably mounts a piston 48, the piston rod 49 extending through opening 50 thereof and being pivotally connected as at 51 to a link 52 connected at its opposite end to lever arm 17 of the choke valve 9. Piston 48 has an opposite stem extension 53 slidably supported in the cylinder head 54 and interposed between the head and the piston 48 is a coil spring 55. Coil spring 55 normally projects the piston 48 so that it abuts the end wall of the cylinder adjacent the opening 50.

The operation of the device is as follows:

When the engine is to be started, lever 22 is depressed in the usual manner which closes the circuit in switch 24 through the button 23 and thus energizes the starting motor 26. The starting motor rotates the fly-wheel of the engine (not shown) for cranking the same. Immediately upon depressing the starting lever 22 and the turning over of the engine, a partial vacuum is created in the intake 19 which is communicated to line 40 and while lever 22 is held in its depressed position as shown in the figure, the passage 30 in piston valve 29 connects ports 41 and 44 thereby subjecting the line 43 to the said suction or vacuum. This suction or vacuum is applied to the face of piston 48 and serves to draw the piston toward the right in opposition to spring 55 which movement actuates the choke valve 9 and tends to close the same for choking purposes. As soon as the engine fires and has rotated under its own power one or more times, the operator releases his foot from the pedal 22, or releases his manual control from the starting motor switch mechanism if a hand control is employed, and thereupon the ports 41 and 44 are automatically cut off from communication with each other by the return of the piston 29 to its normal and

inoperative position. This permits spring 55 to become effective to return the choke valve to non-choking position.

The invention claimed is:

1. The combination with a carburetor having a choke valve, an engine intake connected thereto, a starting device for the engine, and a manually-operable control for the device, of suction operable means connected to the engine intake and the choke valve for actuating the latter, and a suction controlling valve interposed in said suction operable means for controlling the suction from the intake and automatically operable when the control for said device is actuated.

2. A device as defined by claim 1 characterized by the suction operable means including a suction operable piston, a cylinder therefor, spring means normally constraining the choking valve to open position, and further characterized by the suction controlling valve including a ported cylinder communicating with the intake, and a piston valve in the ported cylinder arranged to connect the cylinder port thereof to the suction operable means for suction operation.

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