April 29, 1924. 1,492,449

C. U. GRAMELSPACHER

CHOKE OPERATING DEVICE

Filed Nov. 10, 1922

Fig. 1.

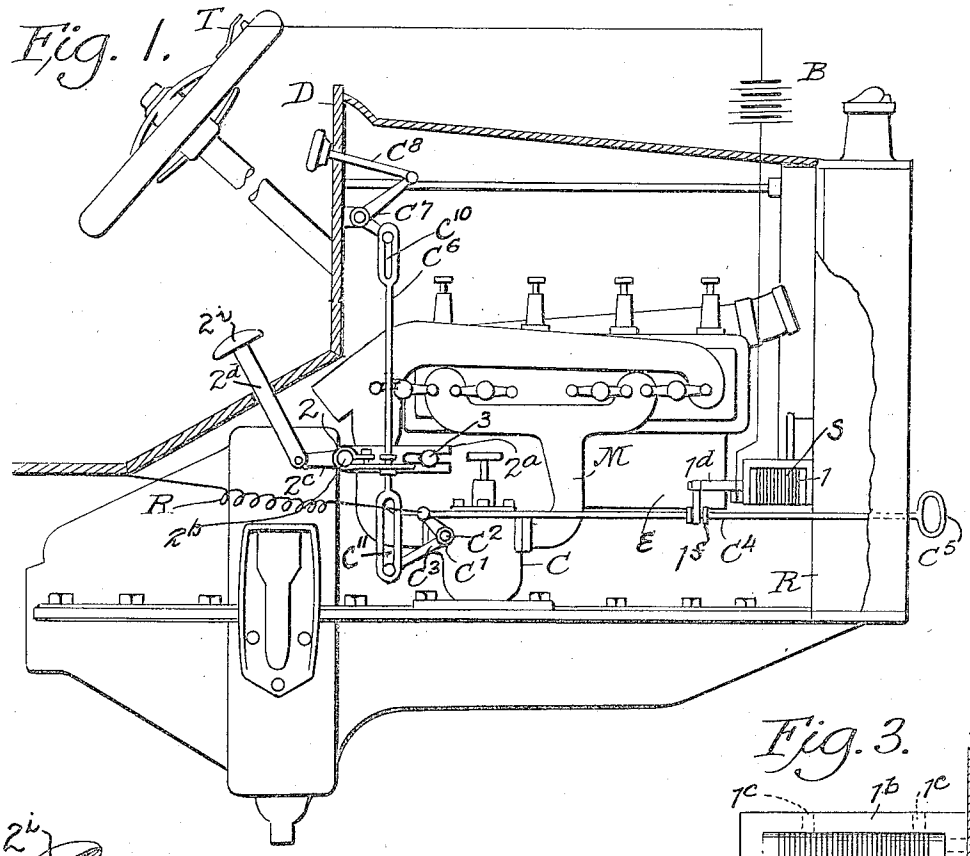


Fig. 3.

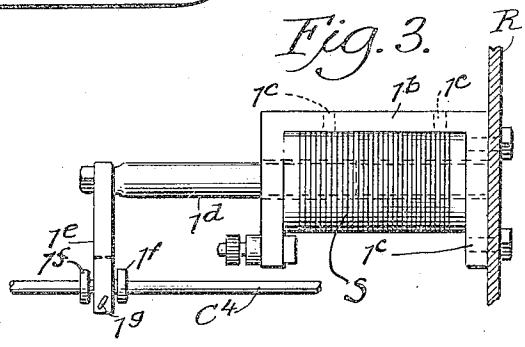
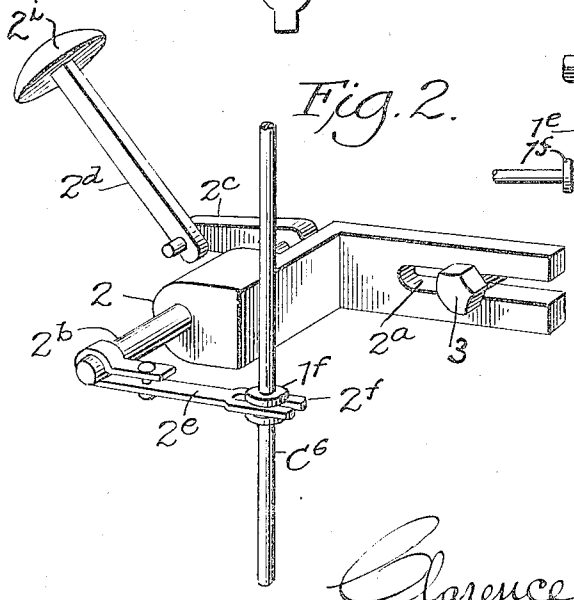


Fig. 2.



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UNITED STATES PATENT OFFICE.

CLARENCE U. GRAMELSPACHER, OF WEST LAFAYETTE, INDIANA.

CHOKE-OPERATING DEVICE.

Application filed November 10, 1922. Serial No. 600,144.

To all whom it may concern:

Be it known that I, CLARENCE U. GRAMELSPACHER, a citizen of the United States, residing at West Lafayette, in the county of Tippecanoe and State of Indiana, have invented certain new and useful Improvements in Choke-Operating Devices; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention relates to means for operating the choke valves of carburetors for internal-combustion engines, and is especially adapted for use in connection with Ford engines, but may be readily adapted for use with other makes of internal combustion engines in which a carburetor is used.

All automobiles of the internal combustion type employ some means whereby the driver may choke the carburetor whenever desired. These means are usually located on the dash board or steering column of the machine. The object of the present invention is to do away with the inconvenience of moving or bending the operator's body in manipulating the choke rod, and to eliminate the unsafe features of the present system, especially in dense city traffic, wherein the driver is obliged to take his eyes off the road to locate the position of the choke on the dash board, and wherein the driver is also obliged to take his hands off the steering wheel to operate said choke.

A further object is to provide means whereby the choke valve of the carburetor may be opened or closed, either separately or simultaneously with the feeding of the fuel, said means being so constructed and arranged that the choke valve may be operated without shifting the driver's body.

I will explain the invention with reference to the accompanying drawings which illustrate embodiments thereof, to enable others to adopt and use the same; and summarize in the claims the novel features of construction, and novel combinations of parts for which protection is desired.

In the drawings:

Fig. 1 is a diagrammatical view of a Ford engine equipped with my novel choke operating means.

Fig. 2 is an enlarged detail of the mechanical link motion.

Fig. 3 is an enlarged detail of the solenoid and core.

As shown in Fig. 1, the carburetor side of an automobile engine is diagrammatically illustrated showing the carburetor C attached to the intake manifold M of the engine E. Carburetor C is provided with the usual choke valve C^1 mounted in the air duct thereof on a shaft C^2, said shaft C^2 being provided on its outer end with a bell crank C^3. To one arm of the bell crank is attached a horizontal rod C^4 passing through the radiator R of the machine, said rod C^4 being provided on its outer end with a knob C^5 exterior to the radiator, so that when the operator is cranking the machine, by pulling the knob C^5 the choke valve of the carburetor will be manipulated to enrich the mixture of air and gas passing to the combustion spaces of the cylinders.

To the other arm of the bell crank C^3 is attached a substantially vertical rod C^6 the upper end of which is attached to one arm of a second bell crank C^7, pivotally mounted on the front side of the dask board D of the machine. To the other arm of bell crank C^7 is attached a short lever C^8 extending through the dash board D, and likewise provided with a suitable knob on its outer end, so that by pulling the lever C^8 the choke valve will be operated through the bell cranks C^3, C^7 and through rod C^6, to enrich the mixture of air and gas in the carburetor during the starting of the engine, all the foregoing construction being part of the usual engine equipment.

As shown in Figs. 1 and 3 the choke may be operated electrically. A solenoid S, comprising a coil 1 and a slidable core 1^d, is mounted in a suitable frame 1^b, preferably having bolt holes 1^c adapted to receive bolts for fastening the frame to the radiator R, of the machine as shown in Fig. 1. To the outer end of core 1^d is secured a forked arm 1^e adapted to straddle the choke rod C^4. When the solenoid is mounted in the position shown in Fig. 1, the outer forked end of said arm 1^e is adapted to engage collars or stops 1^f attached to the choke rod C^4, one collar being preferably mounted on each side of the forked arm 1^e as shown. In the forked end of the arm 1^e is a cotter pin 1^g to prevent disengagement of the choke-rod from the forked arm 1^e.

Solenoid S is preferably connected in series with the storage battery B of the

vehicle, and interposed in said series circuit in a switch or push button T, preferably mounted on the steering wheel, as shown. When switch T is closed the circuit through the solenoid will be closed and the core 1^d of the solenoid will be drawn inwardly, thereby acuating the choke rod by the forked arm 1^e engaging one of the collars 1^f on said choke rod, without the operator's having to take his eyes off the road, or move or bend his body, or to release the steering wheel, in order to operate the choke.

If desired, the upper and lower ends of choke rod C^6 may be slotted as shown at C^{10}, C^{11}, in Fig. 1, so that the operation of the solenoid S on the choke rod will not alter the adjustment of the choke lever C^8 mounted on the dash board. A suitable spring R is preferably utilized to tend to restore the choke valve C′ to normal position against the action of the choke rods and solenoid.

In the construction shown bracket 2 is bolted to the side of the motor (preferably to the valve plate cover when used in connection with a Ford automobile) by means of a bolt 3, engaging a slot 2^a, thereby permitting said bracket to be adjusted longitudinally of the motor. Mounted in the bracket is a rock shaft 2^b on one inner end of which is keyed, or otherwise secured, a short arm 2^c, the outer end of which is attached to a rod 2^d, extending up through the floor board of the machine, as shown in Fig. 1, preferably adjacent the gas accelerator pedal (not shown), and having a head 2^1 on its top for engagement by the foot of the operator. On the other end of rock shaft 2^b is secured an angularly adjustable arm 2^e having a forked outer end 2^f adapted to straddle the choke rod C^6 intermediate collars or stops 1^f mounted thereon By depressing the rod 2^d with the foot the outer end of arm 2^e will be raised and the choke rod C^6 elevated thereby actuating the choke valve C′ of the carburetor.

The pedal 2^d is preferably so placed adjacent the gas accelerator pedal of the automobile, that the two pedals may be operated by the driver either separately or simultaneously without requiring shifting of the driver's body, or removal of his eyes from the road, or removal of his hands from the steering wheel. By closing switch T on the steering wheel, the same results will be accomplished.

What I claim is:

1. In an internal combustion engine, the combination with a choke-valve; of means attached to the usual engine equipment without alteration whereby said choke valve may be operated by the operator separately from or simultaneously with the feeding of the fuel without the operator's having to bend his body, or take his eyes off the road, or his hands off the steering wheel, substantially as described.

2. In an internal combustion engine, the combination with a choke-valve, and a choke rod for operating said valve; of a solenoid mounted adjacent said choke-rod, a core, forked connections between said core, and rod whereby the core and rod are caused to move together in the same direction, a switch on the steering wheel for closing a circuit through the solenoid, whereby said choke valve may be operated by the operator without his having to bend his body, or take his eyes off the road, or his hands off the steering wheel, substantially as described and spring means for normally closing said valve.

3. In an internal combustion engine having a gas accelerator pedal, the combination with a choke-valve, and a choke-rod for operating said choke valve; of a rocker shaft, an arm on said shaft, operative forked connections between the arm and said choke rod, and a foot actuated member connected with said shaft, whereby when said member is depressed the rocker shaft will be rocked, and the choke rod actuated, whereby said choke valve may be operated by the operator without his having to bend his body, or take his eyes off the road, or his hands off the steering wheel, and spring means for normally closing said valve, said foot actuated pedal being disposed adjacent the gas accelerator pedal whereby the pedals may be operated simultaneously or separately.

4. In an internal combustion engine, as set forth in claim 1, the means comprising a solenoid adjacent and parallel to said choke rod, and having a core provided on its outer end with a forked arm, adapted to engage said choke rod and cause same to move therewith in the same direction, said solenoid being connected in circuit with the battery of the engine, a switch mounted on the steering wheel, and interposed in the solenoid circuit, and spring means for normally closing said valve against the action of said choke-rod, substantially as described.

5. In an internal combustion engine as set forth in claim 1, the means comprising a foot pedal, a rocker shaft mounted in bearings detachably attached to the engine casing, a forked arm on said rocker shaft engaging the choke rod, and connections between said rocker shaft and foot pedal whereby when said foot pedal is depressed the rocker shaft will be rocked, and the choke rod actuated, and spring means for normally closing said valve against the action of choke-rod, said foot pedal being mounted adjacent the gas accelerator pedal.

In testimony that I claim the foregoing as my own, I affix my signature.

CLARENCE U. GRAMELSPACHER.