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AIR INTAKE DEVICE

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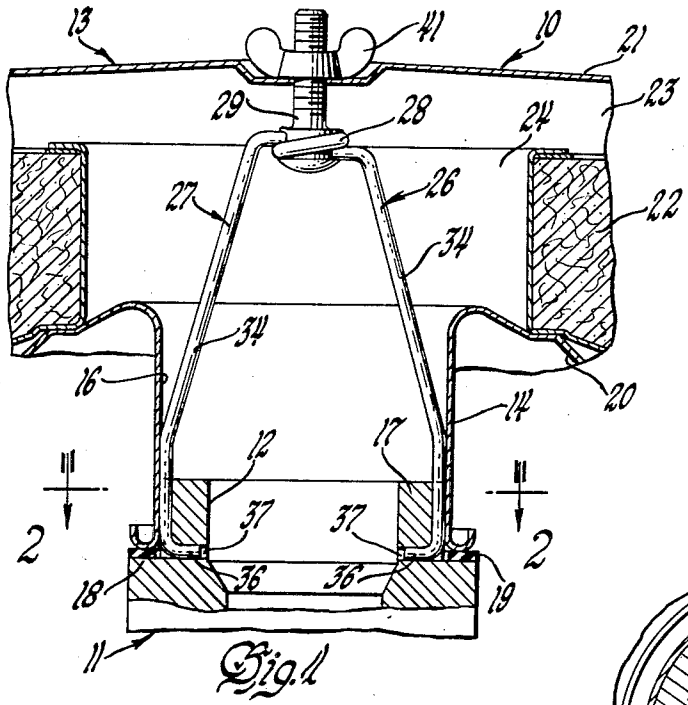


Fig. 1

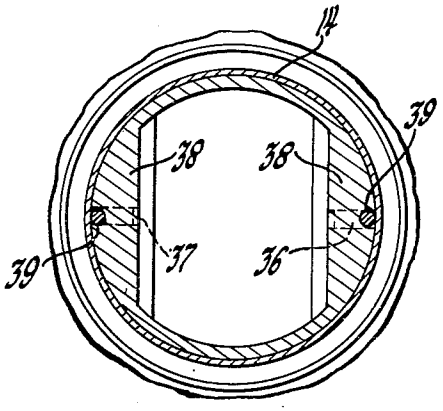


Fig. 2

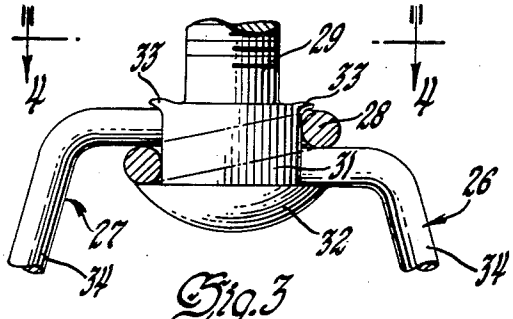


Fig. 3

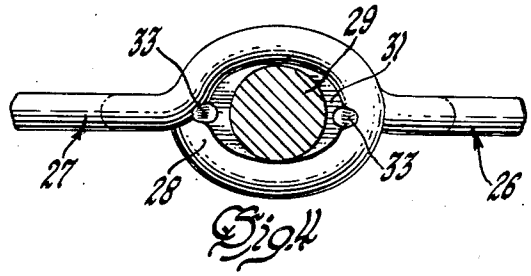


Fig. 4

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AIR INTAKE DEVICE

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8 Claims. (Cl. 183—43)

This invention relates to air intake devices for use with internal combustion engines for automotive and other purposes.

It has been customary heretofore to assemble the upper and lower separable parts of air cleaner, silencer and other intake devices, by employing a bridge across the outlet leading from one part and into which a wing bolt is secured that projects through the other part. A wing nut engages the threaded end of the bolt to secure the parts together. The structure then is secured to the carburetor inlet by other fastening or clamping means. Also, sometimes the bridge is formed in the carburetor or other inlet, thereby eliminating the additional fastening means. The bolt and wing nut employed, then secures the parts of the structure together and to the carburetor inlet. The bridges provided in these structures are located either in or near the inlet leading to the engine, where the velocity of the air is relatively high. This location of bridges results in a substantial and measurable power loss in the engine. Such bridge type fastening means, whether located in the carburetor or the cleaner or the cleaner silencer or other structure are somewhat expensive and difficult to operate and are unsatisfactory in other respects.

It is now proposed to construct an air intake device for an engine that will not cause such a substantial loss in horsepower, that will be inexpensive to construct, and that will lend itself more readily to the problems of service and assembly, than the devices now employed.

In the drawing:

Figure 1 is a fragmentary cross sectional view of an intake device for an internal combustion engine and embracing the invention.

Figure 2 is a cross section view of the device taken substantially in the plane of line 2—2 on Figure 1, looking in the direction of the arrows thereon.

Figure 3 is an enlarged fragmentary view of the bail and securing means part of the intake device disclosed by Figure 1.

Figure 4 is an end view of the structure disclosed by Figure 3 and looking in the direction of arrows 4—4.

The intake device **10** includes an air inlet **11** which may form a part of a carburetor or other means included within the induction system of an internal combustion engine for any purpose. The inlet **11** is formed to provide an inlet passage **12** through which the air may flow through the induction system employed. The velocity of the air in the passage **12** is usually somewhat high and it is therefore not desirable to provide unnecessary obstructions in or near the passage entrance. Such obstructions will reduce the horsepower of the engine below the horsepower of a similar engine not provided with such obstructions.

In order to supply clean air to the passage **12** and to attenuate sounds resulting from the operation of the engine and that may emanate from the passage **12** it is sometimes considered desirable to employ air supplying devices such as that indicated at **13**. Such air supplying

devices may be constructed to attenuate sound or to clean air or to perform other functions. The air supplying device **13** is constructed to provide an air outlet **14** forming an outlet passage **16** adapted to be connected to the passage **12** in the inlet **11**. The outlet **14** is somewhat larger than the reduced end **17** of the inlet **11** so that the outlet **14** will telescope about and substantially fit the exterior surface of the reduced end **17**. Beyond the reduced end **17** the outlet **11** is formed to provide an outwardly projecting flange or shoulder means **18** against which the end of the outlet **14** may be disposed. A gasket **19** forming a part of the outlet **14** may be positioned against the shoulder means **18** to provide resilient support for the device **13** and for sealing the outlet **14** against the inlet **11**. The air supplying device **13** may be formed to provide a lower casing **20** and an upper casing **21**, with the two casings being separable so that the interior of the device **13** may be accessible for service and assembly purposes. An annular cleaner element indicated at **22** may be disposed on a support formed in the casing **20** and may be secured in position therein by securing the casing **21** with respect to the casing **20**. Air from the atmosphere may flow through the filter element **22** into a collecting chamber **23** formed in the upper part of the device **13** and between the casing **21** and the filter element **22**. The collecting chamber **23** at the central part thereof merges with an outlet chamber **24** formed within the filter element **22**, communicating with and forming a part of the outlet **14**. It is considered desirable to construct the outlet chamber **24** so that it will be somewhat larger in cross section than the cross section of the outlet passage **16**.

In order to secure the air intake device **10** to the inlet **11** and to secure the parts of the air supplying device together it is proposed to employ a bail device or fastening means indicated at **26**. In the present instance the device or means **26** is constructed by employing a wire bail **27** having a loop or eye **28** at the middle thereof and in which a shoulder bolt **29** may be rigidly secured. As is shown by Figures 3 and 4 it is considered preferable to make the loop **28** in elliptical form with the major axis of the ellipse substantially in the plane of the bail **27**. It is then proposed to provide an enlarged elliptically formed shoulder or shank **31** on the bolt **29** adjacent the head **32** thereof and about which the loop **28** is adapted to fit tightly enough so that there will be no relative rotation between the bail **27** and the bolt **29**. The opposite edges of the shank **31** remote from the head **32** are adapted to be staked or upset at **33** to prevent the loop **28** from becoming disengaged from the shank **31**. The ends **34** of the bail **27** are formed to spread away from the middle of the bail containing the loop **28** and to engage and follow along the interior surface of the outlet **14** when the ends **34** are compressed within the outlet **14**. The ends **34** terminate approximately within the outlet **14** in inwardly bent and aligned stirrups or abutments indicated at **36**. These are adapted to be inserted in aligned opening **37** or shoulder means formed in opposite sides of the reduced end **17** of the inlet **11**. The side walls of the reduced end **17** may be thickened and flattened as is indicated at **38** to provide the width of shoulder means that may be desirable in the opening **37**. Leading to the openings **37** on the exterior surface of the reduced end **17** are parallel grooves indicated at **39** for receiving the parts of the ends **34** that lead to the abutments **36**.

The wing bolt **29** is adapted to project through an opening formed in the upper wall **21** of the device **13**. A wing nut **41** may be disposed on the threaded end of the bolt **29** for tightening the bail **26** to hold the upper and lower parts **21** and **20** together and to hold the device **13** securely upon the reduced end **17** and against the shoulder means **18**.

When installing the device **13** it is proposed to spread the bail **27** over the reduced end **17** of the inlet **11** until the abutment ends **36** are projected into the openings **37**. Thereafter the ends **34** will contract or may be contracted to project the abutments **36** into the openings **37** and the ends **34** into the parallel grooves **39**. The device **13** then may be held in assembled relation and the outlet **14** projected over the bail device **26** and the reduced end **17** until the lower end of the outlet **14** engages the outwardly disposed flange or shoulder means **18**. At this time the bolt **29** also may be projected through the opening in the wall **21**. Thereafter the air supplying device **13** may be secured rigidly in assembled relation to the inlet **11** and the parts of the device may be secured rigidly together, by tightening the wing nut **41** on the bolt **29**. Tightening of the wing nut will cause the abutment means **36** to tighten against the shoulder means formed by the openings **37** and to tighten the lower end of the outlet **14** against the shoulder means **18**. The device **13** may be taken off and serviced by reversing the assembling process previously described.

I claim:

1. An air intake for an internal combustion engine having an induction system for supplying air to said engine and comprising, an air inlet formed on said induction system, a separable device associated with said induction system for supplying air to said inlet, said air inlet being adapted to be received telescopically within said device, an outlet formed on said device for so receiving said inlet, said device being formed to provide a bail disposed in said outlet and having ends disposed between said inlet and said outlet, said ends being formed to provide abutment means adapted to engage shoulder means on said inlet to prevent the removal of said bail from between said inlet and said outlet when said outlet is projected over said inlet, said device being provided with means accessible from the exterior of said device for removably securing said bail to said device and said device to said inlet, and shoulder means formed on said inlet and engaging said abutment means and being engaged by said outlet when said securing means is operated to secure said device to said inlet, said ends of said bail being engaged by and clamped between said inlet and said outlet to prevent said ends from disengaging said shoulder means when said device is operatively disposed on said inlet.

2. An air intake as defined by claim 1 and in which said shoulder means formed on said inlet comprises a pair of oppositely disposed openings formed inwardly of the exterior surface of said inlet and in positions to be enclosed within said outlet when said device is operatively positioned on said inlet, said openings being adapted to receive said abutment means on said ends, and in which said intake is formed to provide a pair of parallel grooves leading to said openings and adapted to receive said ends.

3. An air intake as defined by claim 1 and in which said shoulder means formed on said inlet comprises an outwardly projecting flange disposed in position to be engaged by said outlet when said device is operatively positioned on said inlet.

4. An air intake for an internal combustion engine having an induction system including an air inlet for supplying air to said engine and comprising, a device adapted to be removably associated with said induction system for supplying said air to said inlet, said device being formed to provide an outlet adapted to extend telescopically over said inlet and to slidably engage said inlet, said device also being formed to provide a bail disposed in said outlet and having ends adapted to project between said inlet and said outlet, said ends being formed to provide abutment means, shoulder means on said inlet for engagement by said abutment means for preventing removal of said bail from between said inlet and said outlet when said outlet is projected over said inlet, said device being formed to provide means accessible from the exterior of said device for removably securing said bail to said device and said device to said air inlet, said outlet being adapted to engage said shoulder means on said inlet when said device is operatively positioned on said inlet.

5. An air intake as defined by claim 4 and in which said abutment means is formed by said ends, said ends being formed to project inwardly in aligned relation and within aligned openings in said inlet forming said shoulder means of said inlet.

6. An air intake as defined by claim 4 and in which the middle of said bail is formed to provide a loop through which said securing means is adapted to project and in which said securing means is secured against rotation.

7. An air intake as defined by claim 4 and in which the middle of said bail is formed to provide an elongated loop through which said securing means is adapted to project, said securing means being formed to provide a transversely elongated shank extending within and substantially fitting said loop, said shank being deformed and enlarged beyond said loop to prevent separation of said securing means from said bail.

8. An air intake as defined by claim 4 and in which said outlet formed in said device is formed to provide an enlarged outlet chamber in a part of said outlet somewhat remote from said inlet, said chamber being adapted to receive air from filter means formed in said device and disposed radially outwardly from said outlet chamber, said bail being positioned in said outlet and said outlet chamber so that said air from said filter means flows across the middle of said bail and into the space between said ends of said bail and into said inlet, thereby providing a reduced resistance to the flow of air from said filter means to said inlet.

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