The present invention relates to a gas jet coupling including an injector jet, the effective cross-section of which can be regulated by means of an axially slideable needle valve member positioned directly behind the injector jet.

According to the present invention, in addition to being guided immediately behind the injector jet, the needle valve member is also guided at the end opposite to its needle point by a cylindrical enlargement cooperating with a bore in the housing of the jet coupling. The axial movement of the needle valve member is controlled in one direction by a spring, and in the other direction by an independent screw which can be adjusted in a threaded bore of the housing.

The cross-section of the jet aperture, of the needle valve guide positioned immediately behind the injector jet, and of the bore in the housing cooperating with the cylindrical enlargement of the needle valve are progressively enlarged in that order. In accordance with this feature of the invention, the jet coupling can be assembled before the final operation of drilling these bores, and they can all three be drilled and finished in a single operation, whereby it is possible for the three bores to be very accurately aligned and for the needle valve member and the independent adjustment screw to be properly centered with respect to the jet aperture.

According to another feature of the invention, the separate and independent relationship of the adjustment screw and of the needle valve member makes it possible for the needle valve member to be independent of inaccuracies in the machining of the thread cooperating with the screw.

Return movement of the needle valve member in a direction away from the jet aperture is occasioned under spring pressure independently of any eccentric forces which might otherwise act upon the needle valve member and cause jamming thereof in the guides. The needle valve member is of simple and accurate construction.

The invention having been briefly described will now be described in greater detail, reference being made to the accompanying drawing illustrating an axial section through one embodiment of the invention given by way of example.

The jet coupling, according to the present invention, is intended, primarily, for use in gas burners. The gaseous fuel enters through bore 1 into the chamber 2 of the housing 3. The injector jet 4, having a jet aperture 5, is threaded at 6 into the housing 3. The effective cross-section of the jet aperture 5 can be adjusted by axial sliding movement of the needle valve member 7. The needle valve member 7 is guided in the bore 8 of a disc member 9 immediately behind the injector jet 4. The disc member 9 is firmly held in the housing 3 by the injector jet 4, and it is provided with apertures 10 for the fuel flowing therethrough. At the end thereof opposite to the needle point, the needle valve member 7 is provided with a simple cylindrical enlargement 11, by means of which it is guided in the bore 12 of the housing 3. Axial movement of the needle valve member 7 in a direction to decrease the effective cross-section of the jet aperture 5 occurs in response to the thrust exerted by a regulating screw 13 threaded into a threaded bore 14 of the housing 3. The screw 13 is preferably provided with a small pin member 15 abutting against the enlargement 11 of the needle valve member 7. The needle valve member 7 is spring urged by a spring 16, seating against the disc member 9 and the enlargement 11. Thus, the needle valve member 7 is at all times positively engaged against the pin member 15. When the screw 13 is unscrewed from the threaded bore 14, the needle valve member 7 is urged by the spring 16 in a direction to increase the cross-section of the jet aperture 5.

As clearly shown in the drawing, the cross-section of the bore 12 in the housing 3 is greater than that of the bore 8 in the disc member 9, and the cross-section of the bore 8 is, in turn, greater than that of the jet aperture 5.

Furthermore, the axis of the screw 13 coincides with that of the threaded bore 14 and also with that of the needle valve member 7. Hence, the screw 13 is displaceable in the same direction as the needle valve member 7. This feature, which can be achieved by machining the bore of the needle valve member 7 and the bores 8 and 12 in a same final operation, is possible only if these three bores are accessible from the tool side of the work-piece, i.e. through the bore 14. The positioning of the needle valve member 7, after the final operation, is possible only if it can be inserted from the right through an opening such as bore 14, and the same may be said for removal or replacement of the needle valve member 7.

The present invention is not limited to the embodiment illustrated in the accompanying drawing and described herein, modifications thereof being possible within the scope of the appended claims.

What is claimed is:

1. A gas jet coupling, comprising a housing having a fuel chamber and an inlet port in fluid communication with said chamber, an injection nozzle having a jet aperture and threadedly engaged in said housing at one end thereof, a needle valve member coaxial of said jet aperture and axially movable in said housing relative to said jet aperture to vary the fuel flow therethrough, a member for guiding one end portion of said valve member secured in position in said housing, the latter having a peripheral shoulder and said guide member being clamped in position against said shoulder by said injector nozzle, said guide member having a coaxial central aperture through which said valve member extends with a sliding fit, said guide member being further apertured to provide fluid communication between said chamber and said nozzle, said housing having a bore in axial spaced relation to and coaxial with the aperture in said guide member and said valve member having a part extending through said bore and having a sliding fit therewith and guided thereby, spring means surrounding said valve member and seated against said guide member and said valve member part to resiliently urge said valve member in a direction away from said jet aperture, a threaded bore at the opposite end of said housing extending to said said bore co-axial therewith, and an adjustment screw threadedly engaged in said threaded bore for adjusting the axial position of said valve member, said spring means being effective to resiliently urge said valve member into engagement with said adjustment screw, the latter limiting the axial movement of said valve member in said direction.
2. A gas jet coupling as defined in claim 1 in which said jet aperture, said central aperture, said first mentioned bore and said threaded bore are progressively larger in that order whereby to provide accessibility for a tool inserted through said threaded bore so that said jet aperture, central aperture and first bore may be machined with accurate alignment in the same final operation.

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