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(54) Title: REPAIRABLE VALVE

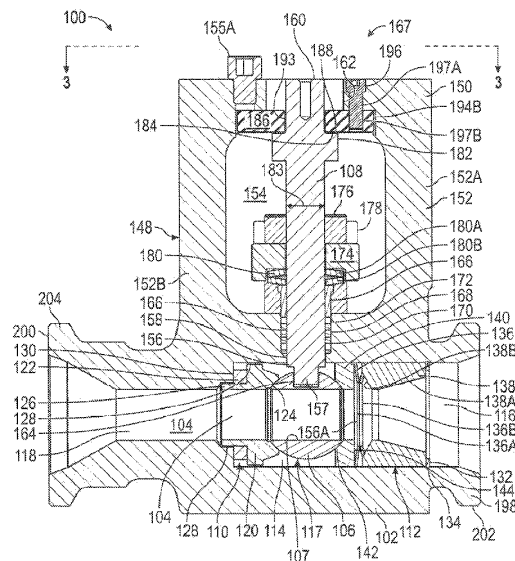


FIG. 1

(57) Abstract: Repairable valve with in-line replaceable stem. A bracket fixedly supported from the valve body has a stem opening aligned with the stem bore. A shear bushing rotatably receives a first end of the stem and a second end of the stem engages the flow control element. The bushing is rotatably disposable axially between the bracket and a stem shoulder. The bushing has a profile cooperating with a profile of the stem opening for selective retention of the valve stem by the bracket or release of the shear bushing and valve stem for axial passage through the stem opening. Also, repairable trim with downstream seats removable by a tool inserted through the inlet end; trim insertable as a cartridge; trim with a lapped downstream seat land; hub end connectors; bi-directional valves; and methods and tools for assembling and servicing the valves.

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