WHAT IS CLAIMED IS:

[Claim 1] A pressure reducing valve comprising: a valve body including a valve element that is provided so that a primary-side flow channel and a secondary-side flow channel communicate with each other through a valve opening and is attachable to and detachable from a valve seat provided on a secondary-side opening end face of the valve opening, and a lowermost-layer diaphragm that is joined to the valve element via a valve stem and is displaced by a pressure change of the secondary-side flow channel; a spring cover including a cover flange provided so as to be capable of press-contacting the peripheral edge of an upper-layer diaphragm having the same shape as the lowermost-layer diaphragm, an adjusting spring incorporated so as to bias the upper-layer diaphragm in a valve opening direction of the valve element, and an adjusting screw screwed-in movably up and down so as to press the adjusting spring in the valve opening direction; and at least one or more upper-layer diaphragm addition units interposed and joined between the spring cover and the valve body, wherein the upper-layer diaphragm addition unit is provided with a recessed pressure chamber an upper opening of which is closed by an upper-layer diaphragm and which is connectable to the secondary-side flow channel, and a diaphragm chamber which is partitioned by a bottom

plate of the recessed pressure chamber and covers the lowermost-layer diaphragm or another upper-layer diaphragm, and in which a valve spring to bias the lowermost-layer diaphragm or another upper-layer diaphragm in the valve opening direction of the valve element is incorporated, a connection valve stem is provided to penetrate through and project upward and downward from an upper-layer diaphragm, and a lower end of the connection valve stem is inserted slidably in a watertight manner through the center of the bottom plate so as to be joined to an upper end of the valve stem penetrating through and projecting from the lowermost-layer diaphragm or an upper end of a connection valve stem penetrating through and projecting from another upper-layer diaphragm.

[Claim 2] An upper-layer diaphragm addition unit configured so that a pressure reducing valve is configured by interposing and joining at least one or more upper-layer diaphragm addition units between a valve body including a valve element that is provided so that a primary-side flow channel and a secondary-side flow channel communicate with each other through a valve opening and is attachable to and detachable from a valve seat provided on a secondary-side opening end face of the valve opening, and a lowermost-layer diaphragm that is joined to the valve element via a valve stem and is displaced by a pressure change of the

secondary-side flow channel, and a spring cover including a cover flange provided so as to be capable of press-contacting the peripheral edge of an upper-layer diaphragm having the same shape as the lowermost-layer diaphragm, an adjusting spring incorporated so as to bias the upper-layer diaphragm in a valve opening direction of the valve element, and an adjusting screw screwed-in movably up and down so as to press the adjusting spring in the valve opening direction, wherein the upper-layer diaphragm addition unit is provided with a recessed pressure chamber an upper opening of which is closed by an upper-layer diaphragm and which is connectable to the secondary-side flow channel, and a diaphragm chamber which is partitioned by a bottom plate of the recessed pressure chamber and covers a lowermost-layer diaphragm or another upper-layer diaphragm, and in which a valve spring to bias the lowermost-layer diaphragm or another upper-layer diaphragm in the valve opening direction of the valve element is incorporated, a connection valve stem is provided to penetrate through and project upward and downward from an upper-layer diaphragm, and a lower end of the connection valve stem is inserted slidably in a watertight manner through the center of the bottom plate so as to be joined to an upper end of the valve stem penetrating through and projecting from the lowermost-layer diaphragm or an upper end of a connection

valve stem penetrating through and projecting from another upper-layer diaphragm.