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Myerley et al.

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(54) **LOCK OPEN AND CONTROL SYSTEM
ACCESS APPARATUS AND METHOD FOR A
DOWNHOLE SAFETY VALVE**

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patent is extended or adjusted under 35
U.S.C. 154(b) by 58 days.

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(51) **Int. Cl.**⁷ **E21B 43/12**

(52) **U.S. Cl.** **166/373; 166/332.8**

(58) **Field of Search** 166/332.8, 332.4,
166/318, 323, 373, 374, 375

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Primary Examiner—David Bagnell

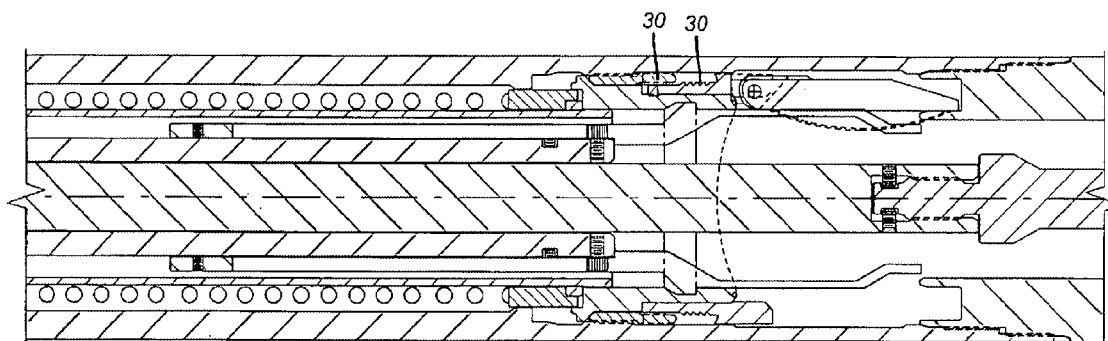
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(57) **ABSTRACT**

A lock open device for a flapper is disclosed. The tool
engages in the sub-surface safety valve (SSSV) body and
rotates the flapper to the open position, without shifting the
flow tube. The flapper base is preferably held by a shearable
thread and has a groove for engagement by the tool. The tool
jars down on the flapper base to shear the thread and force
the held open flapper into a retaining groove. Optionally, a
penetrating tool can be connected so that, in a single trip, the
flapper can be locked open and the pressurized control
system can be accessed. Shearing the thread allows the flow
tube spring to bias the held open flapper into its retaining
groove.

20 Claims, 22 Drawing Sheets



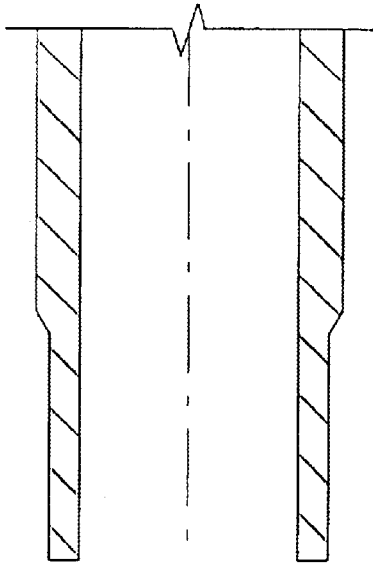


FIG. 1a

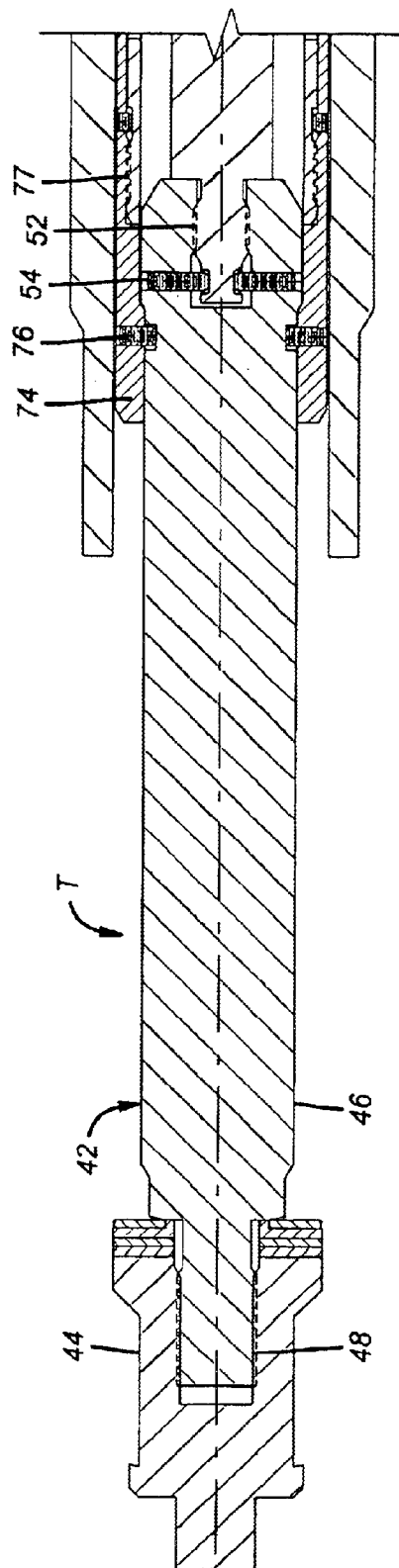


FIG. 2a

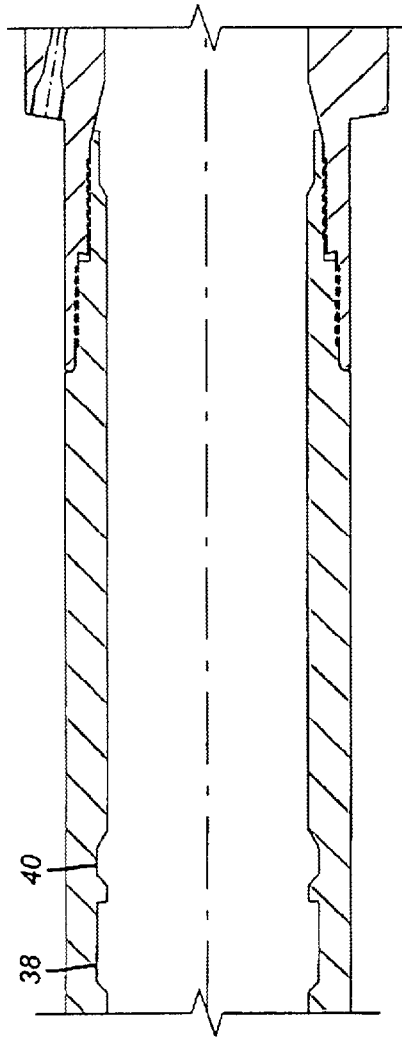


FIG. 1b

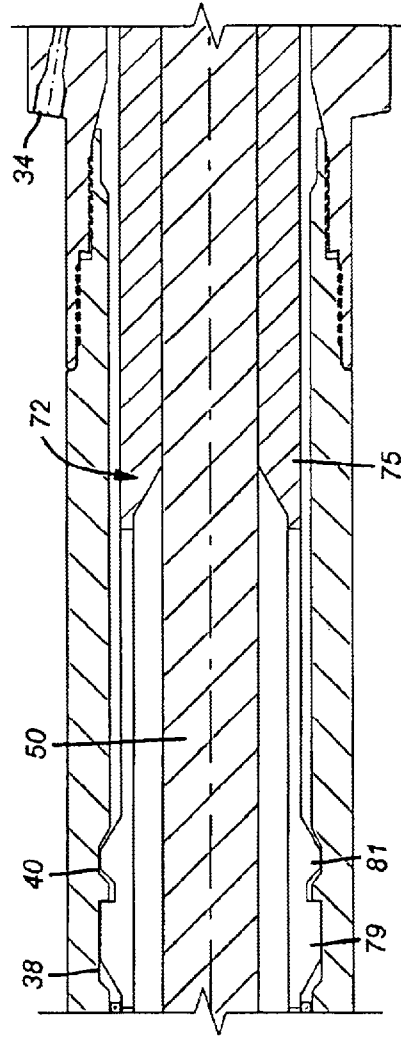


FIG. 2b

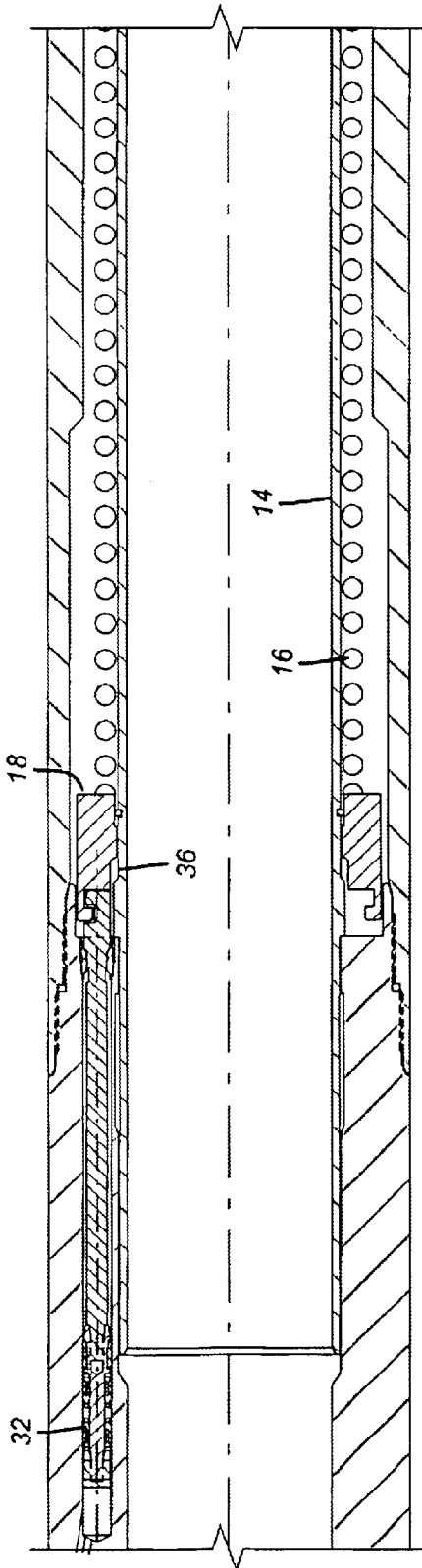


FIG. 1C

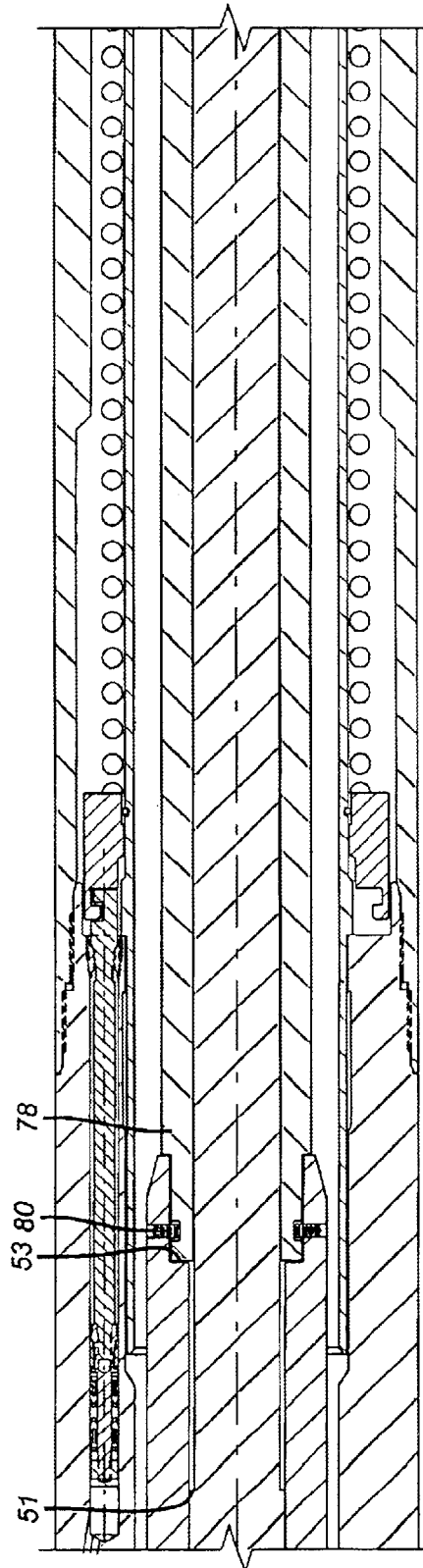


FIG. 2C

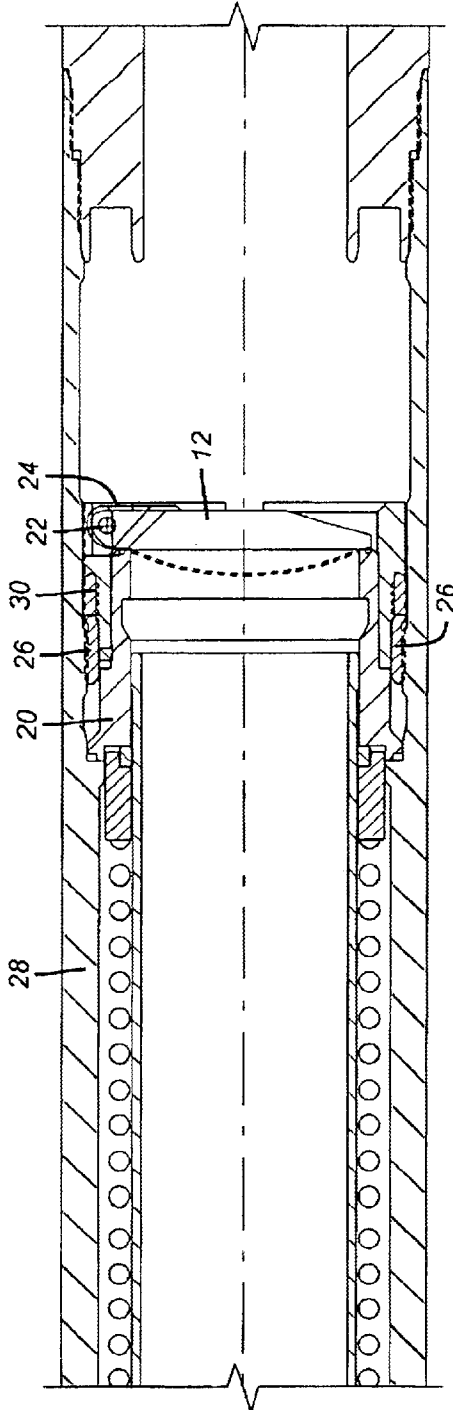


FIG. 1d

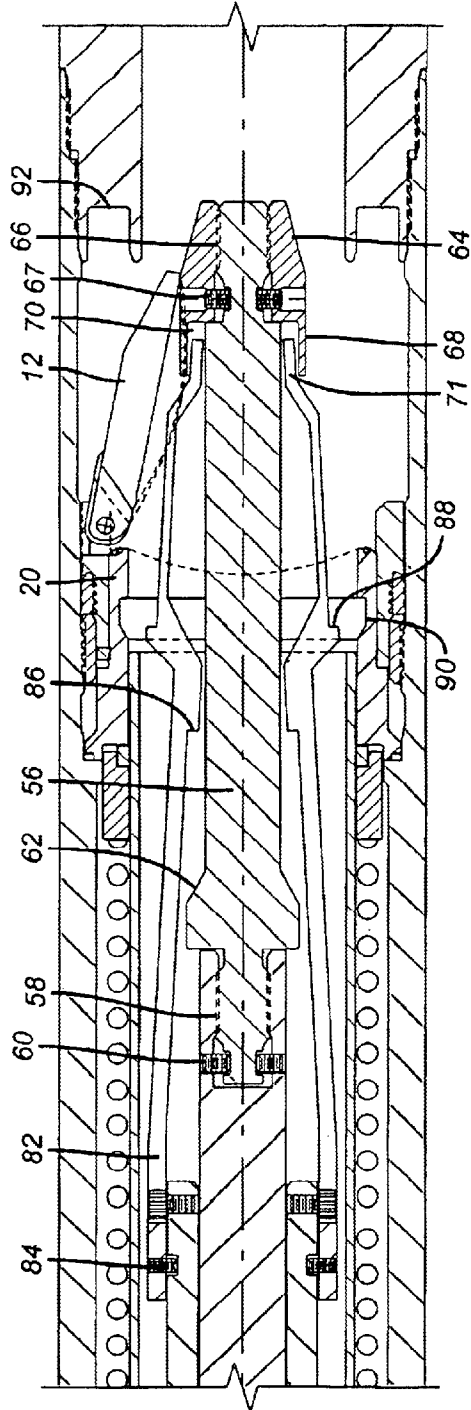


FIG. 2d

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