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 (71) **Demandeur/Applicant:**
 HALLIBURTON ENERGY SERVICES, INC., US
 (72) **Inventeurs/Inventors:**
 LEAST, BRANDON T., US;
 GANO, JOHN C., US;
 LOPEZ, JEAN MARC, US
 (74) **Agent:** NORTON ROSE FULBRIGHT CANADA
 LLP/S.E.N.C.R.L., S.R.L.

(54) **Titre : ENSEMBLE ET PROCEDE DE VERROUILLAGE DE TUBE DE RACCORDEMENT**
 (54) **Title: JUMPER TUBE LOCKING ASSEMBLY AND METHOD**

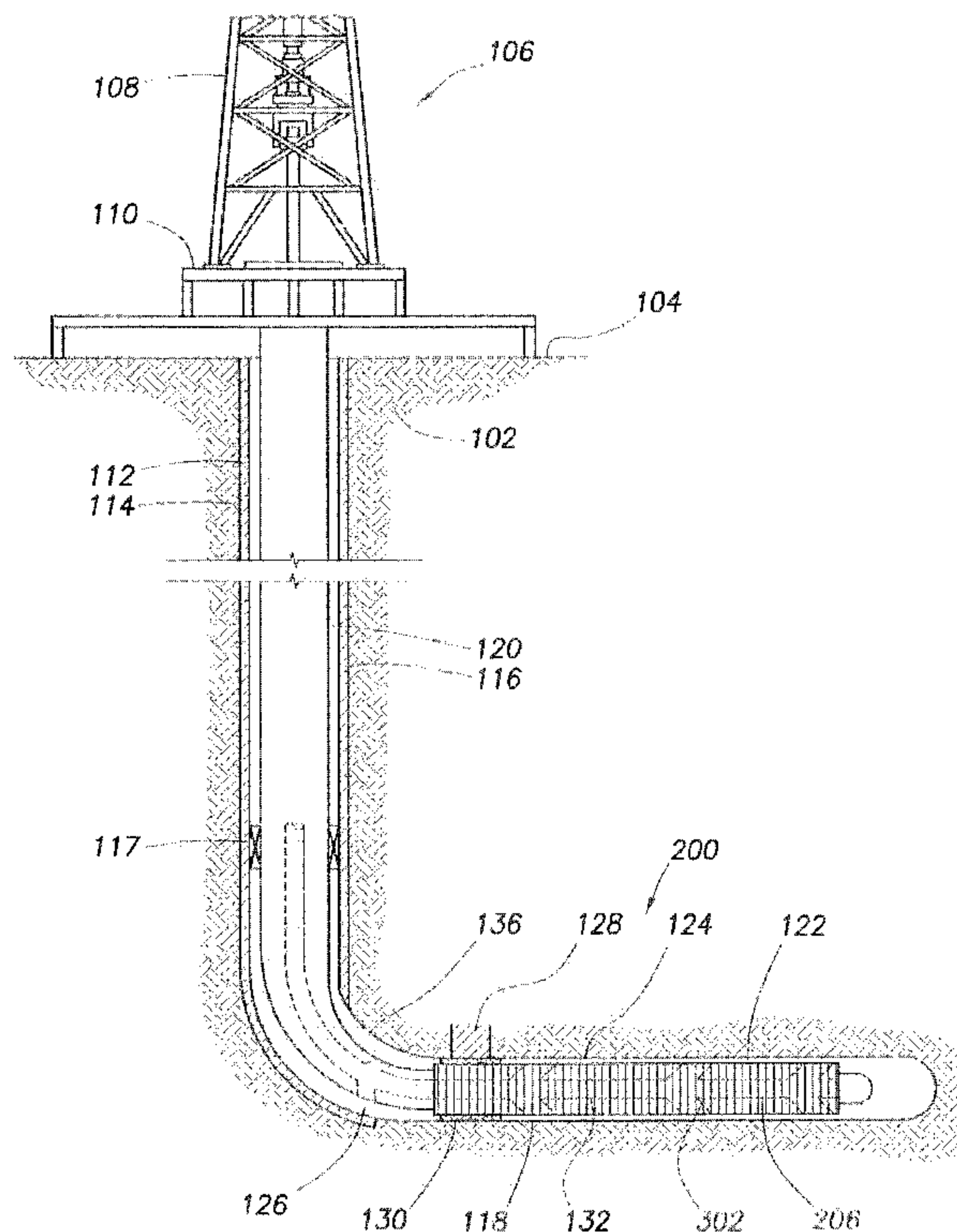


FIG. 1

(57) **Abrégé/Abstract:**

A jumper tube for use with a shunt tube assembly comprises a first tubular member configured to engage a first shunt tube, a second tubular member axially disposed within the first tubular member, and a locking member configured to prevent the second tubular member from axially displacing into the first tubular member. The second tubular member is configured to slidingly engage within the first tubular member, and the second tubular member is configured to engage a second shunt tube.



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(71) Applicant (for all designated States except US): **HAL-LIBURTON ENERGY SERVICES, INC.** [US/US];
10200 Bellaire Boulevard, Houston, Texas 77072 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LEAST, Brandon, T.** [US/US]; 3218 Jubilee Trail, Dallas, Texas 75229 (US).
GANO, John, C. [US/US]; 2015 White Ash Road, Carrollton, Texas 75007 (US). **LOPEZ, Jean Marc** [FR/US];
7308 Stoddard Lane, Plano, Texas 75025 (US).(74) Agents: **CONLEY ROSE, P.C.** et al.; 5601 Granite Parkway, Ste. 750, Plano, TX 75024 (US).

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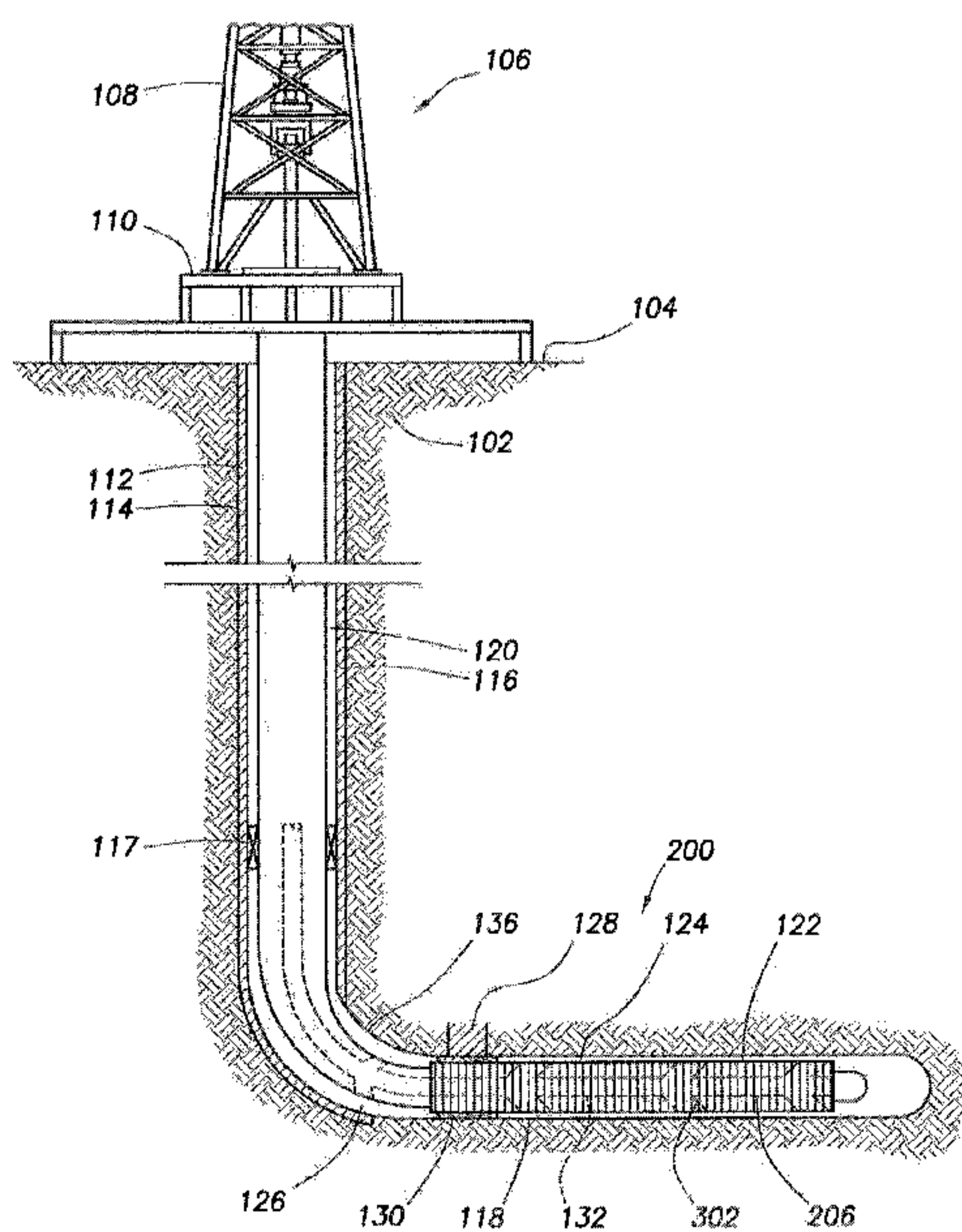


FIG. 1

(57) Abstract: A jumper tube for use with a shunt tube assembly comprises a first tubular member configured to engage a first shunt tube, a second tubular member axially disposed within the first tubular member, and a locking member configured to prevent the second tubular member from axially displacing into the first tubular member. The second tubular member is configured to slidingly engage within the first tubular member, and the second tubular member is configured to engage a second shunt tube.

CLAIMS

What is claimed is:

1. A jumper tube for use with a shunt tube assembly comprising:
a first tubular member configured to engage a first shunt tube;
a second tubular member axially disposed within the first tubular member, wherein the second tubular member is configured to slidably engage within the first tubular member, and wherein the second tubular member is configured to engage a second shunt tube; and
a locking member configured to prevent the second tubular member from axially displacing into the first tubular member.
2. The jumper tube of claim 1, wherein the locking member is configured to engage at least a portion of the circumference of the second tubular member.
3. The jumper tube of claim 1, wherein the locking member is configured to engage the first tubular member and the second tubular member.
4. The jumper tube of claim 1, wherein the locking member is configured to prevent disengagement between the jumper tube and shunt tube assembly.
5. The jumper tube of claim 1, wherein the locking member is configured to maintain a sealing engagement between the jumper tube and the shunt tube assembly.
6. The jumper tube of claim 1, wherein the locking member comprises frictional grooves on at least one face, and wherein the frictional grooves are configured to prevent axial movement of the locking member along the longitudinal axis of the jumper tube.
7. The jumper tube of claim 1, wherein the second tubular member comprises grooves disposed on a surface of the second tubular member, and wherein the grooves are configured to prevent axial movement of the locking member along the longitudinal axis of the second tubular member.
8. The jumper tube of claim 1, further comprising at least one seal disposed between the first tubular member and the second tubular member, wherein the at least one seal is configured to sealingly engage the first tubular member and the second tubular member.

9. The jumper tube of claim 1, further comprising at least one seal disposed between at least one of the first tubular member and the first shunt tube or the second tubular member and the second shunt tube, and wherein the at least one seal is configured to form a sealing engagement between at least one of the first tubular member and the first shunt tube or the second tubular member and the second shunt tube.
10. The jumper tube of claim 1, wherein the first tubular member is configured to engage at least a portion of the locking member.
11. The jumper tube of claim 1, wherein the locking member is partially disposed between the first tubular member and the second tubular member.
12. The jumper tube of claim 1, wherein the first tubular member comprises frictional grooves disposed on an inside diameter of the first tubular member, and wherein the frictional grooves are configured to prevent axial movement of the locking member along the longitudinal axis of the second tubular member.
13. The jumper tube of claim 1, wherein at least one distal end of the first tubular member and at least one distal end of the second tubular member comprises an increased diameter portion, and wherein the increased diameter portion engages the first tubular member and the second tubular member with the shunt tube assembly.

14. A jumper tube for use with a shunt tube assembly comprising:
a first tubular member configured to engage a first shunt tube;
a second tubular member axially disposed within the first tubular member, wherein the second tubular member is configured to engage a second shunt tube; and
a locking member engaging the outside surface of the second tubular member.
15. The jumper tube of claim 14, wherein the locking member comprises a c-ring.
16. The jumper tube of claim 14, wherein the locking member comprises a tube clamp.
17. The jumper tube of claim 14, wherein an end of at least one of the first tubular member or second tubular member is round.
18. The jumper tube of claim 14, wherein the second tubular member has an outside diameter substantially equal to the inside diameter of the first tubular member.
19. The jumper tube of claim 14, wherein the inside diameter of at least a portion of the second tubular member increases towards at least one distal end of the second tubular member as the outside diameter of the second tubular member remains substantially constant.
20. The jumper tube of claim 14, wherein the inside diameter of at least a portion of the first tubular member increases towards at least one distal end of the first tubular member as the outside diameter of the first tubular member remain substantially constant.
21. The jumper tube of claim 14, wherein at least one seal is disposed between the first tubular member and the second tubular member.
22. The jumper tube of claim 14, wherein at least one seal is disposed between the second tubular member and the second shunt tube and at least one seal is disposed between the first tubular member and the first shunt tube.

23. A method of engaging a jumper tube to a shunt tube assembly, the method comprising:
disposing a jumper tube between open ends of two shunt tubes;
axially extending a second tubular member from a first tubular member to engage the open ends of the two shunt tubes;
coupling at least one of the distal ends of the first tubular member and at least one of the distal ends of the second tubular member to the open ends of the two shunt tubes;
and
locking the second tubular member relative to the first tubular member to prevent an axially decrease in length of the jumper tube.
24. The method of claim 23, wherein the locking further comprises engaging a locking member into a shoulder between the first tubular member and the second tubular member; and engaging the locking member with grooves displaced on the second tubular member.
25. The method of claim 24, wherein the locking further comprises engaging the locking member in the shoulder with shoulder grooves disposed on the first tubular member to secure the locking member within the grooves.