

CLAIMS

We claim:

1. A vibrating meter (5), comprising:
 - one or more conduits (103A, 103B) including a vibrating portion (471) and a
5 non-vibrating portion (472);
 - a driver (104) coupled to a conduit of the one or more conduits (103A, 103B) and
configured to vibrate the vibrating portion (471) of the conduit at one or
more drive frequencies;
 - one or more pick-offs (105, 105') coupled to a conduit of the one or more
10 conduits (103A, 103B) and configured to detect a motion of the vibrating
portion (471) of the conduit;
 - one or more meter components exclusive of the vibrating portion (471) of the
conduits (103A, 103B), the driver (104), and the pick-offs (105, 105');
and
 - 15 a damping material (310) applied to at least a portion of a surface of a meter
component of the one or more meter components that reduces one or
more vibrational resonant frequencies of the meter component below the
one or more drive frequencies.
- 20 2. The vibrating meter (5) of claim 1, wherein the meter component has a first
thickness, T_1 and the damping material (310) has a second thickness, T_2 less than the
first thickness, T_1 .
3. The vibrating meter (5) of claim 1, wherein a meter component of the one or
25 more meter components comprises a case (200) that substantially surrounds the one or
more conduits (103A, 103B), the driver (104), and the one or more pick-offs (105,
105').
4. The vibrating meter (5) of claim 3, further comprising a base (440) coupled to
30 the case (200) and a sealing member (450) providing a substantially fluid-tight seal
between the case (200) and the base (440).

5. The vibrating meter (5) of claim 3, further comprising one or more detents (460) formed in the case (200) and adapted to receive mechanical fasteners.

6. The vibrating meter (5) of claim 1, wherein a meter component of the one or more meter components comprises a base (440) coupled to the one or more conduits (103A, 103B).

7. The vibrating meter (5) of claim 6, wherein another meter component of the one or more meter components comprises a mounting block (441A, 441B) coupled to the base (440).

8. The vibrating meter (5) of claim 1, wherein a meter component of the one or more meter components comprises a non-vibrating portion of a conduit of the one or more conduits (103A, 103B).

9. A method of forming a vibrating meter including one or more conduits including a vibrating portion and a non-vibrating portion, comprising steps of:

coupling a driver to a conduit of the one or more conduits, the driver being configured to vibrate the vibrating portion of the conduit at one or more drive frequencies;

coupling one or more pick-offs to a conduit of the one or more conduits, the one or more pick-offs being configured to detect a motion of the vibrating portion of the conduit;

providing one or more meter components exclusive of the vibrating portion of the conduits, the driver, and the pick-offs; and

applying a damping material to at least a portion of a surface of a meter component of the one or more meter components that reduces one or more vibrational resonant frequencies of the meter component below the one or more drive frequencies.

10. The method of claim 9, wherein the meter component comprises a first thickness T_1 and wherein the step of applying the damping material comprises applying the damping material with a second thickness, T_2 less than the first thickness, T_1 .

5 11. The method of claim 9, wherein a meter component of the one or more meter components comprises a case and wherein the method further comprises a step of substantially surrounding the one or more conduits, the driver, and the one or more pick-offs with the case.

10 12. The method of claim 11, further comprising steps of coupling a base to the case and positioning a substantially fluid-tight seal between the case and the base.

13. The method of claim 11, further comprising a step of forming one or more detents in the case that are adapted to receive mechanical fasteners.

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14. The method of claim 9, wherein a meter component of the one or more meter components comprises a base and wherein the method further comprises a step of coupling the base to the one or more conduits.

20 15. The method of claim 14, wherein another meter component of the one or more meter components comprises a mounting block and wherein the method further comprises a step of coupling the mounting block to the base.

25 16. The method of claim 9, wherein a meter component of the one or more meter components comprises the non-vibrating portion of a conduit of the one or more conduits.

CLAIMS

We claim:

1. A vibrating meter (5), comprising:
 - one or more conduits (103A, 103B) including a vibrating portion (471) and a
5 non-vibrating portion (472);
 - a driver (104) coupled to a conduit of the one or more conduits (103A, 103B) and
configured to vibrate the vibrating portion (471) of the conduit at one or
more drive frequencies;
 - one or more pick-offs (105, 105') coupled to a conduit of the one or more
10 conduits (103A, 103B) and configured to detect a motion of the vibrating
portion (471) of the conduit;
 - one or more meter components exclusive of the vibrating portion (471) of the
conduits (103A, 103B), the driver (104), and the pick-offs (105, 105');
and
 - 15 a damping material (310) applied to at least a portion of a surface of a meter
component of the one or more meter components that reduces one or
more vibrational resonant frequencies of the meter component below the
one or more drive frequencies, wherein the damping material becomes an
integral part of the meter component.
- 20 2. The vibrating meter (5) of claim 1, wherein the meter component has a first
thickness, T_1 and the damping material (310) has a second thickness, T_2 less than the
first thickness, T_1 .
- 25 3. The vibrating meter (5) of claim 1, wherein a meter component of the one or
more meter components comprises a case (200) that substantially surrounds the one or
more conduits (103A, 103B), the driver (104), and the one or more pick-offs (105,
105').
- 30 4. The vibrating meter (5) of claim 3, further comprising a base (440) coupled to
the case (200) and a sealing member (450) providing a substantially fluid-tight seal
between the case (200) and the base (440).

5. The vibrating meter (5) of claim 3, further comprising one or more detents (460) formed in the case (200) and adapted to receive mechanical fasteners.

5 6. The vibrating meter (5) of claim 1, wherein a meter component of the one or more meter components comprises a base (440) coupled to the one or more conduits (103A, 103B).

7. The vibrating meter (5) of claim 6, wherein another meter component of the one
10 or more meter components comprises a mounting block (441A, 441B) coupled to the base (440).

8. The vibrating meter (5) of claim 1, wherein a meter component of the one or more meter components comprises a non-vibrating portion of a conduit of the one or
15 more conduits (103A, 103B).

9. A method of forming a vibrating meter including one or more conduits including a vibrating portion and a non-vibrating portion, comprising steps of:

20 coupling a driver to a conduit of the one or more conduits, the driver being configured to vibrate the vibrating portion of the conduit at one or more drive frequencies;

coupling one or more pick-offs to a conduit of the one or more conduits, the one or more pick-offs being configured to detect a motion of the vibrating portion of the conduit;

25 providing one or more meter components exclusive of the vibrating portion of the conduits, the driver, and the pick-offs; and

applying a damping material to at least a portion of a surface of a meter component of the one or more meter components that reduces one or more vibrational resonant frequencies of the meter component below the
30 one or more drive frequencies, wherein the damping material becomes an integral part of the meter component.

10. The method of claim 9, wherein the meter component comprises a first thickness T_1 and wherein the step of applying the damping material comprises applying the damping material with a second thickness, T_2 less than the first thickness, T_1 .
- 5 11. The method of claim 9, wherein a meter component of the one or more meter components comprises a case and wherein the method further comprises a step of substantially surrounding the one or more conduits, the driver, and the one or more pick-offs with the case.
- 10 12. The method of claim 11, further comprising steps of coupling a base to the case and positioning a substantially fluid-tight seal between the case and the base.
13. The method of claim 11, further comprising a step of forming one or more detents in the case that are adapted to receive mechanical fasteners.
- 15 14. The method of claim 9, wherein a meter component of the one or more meter components comprises a base and wherein the method further comprises a step of coupling the base to the one or more conduits.
- 20 15. The method of claim 14, wherein another meter component of the one or more meter components comprises a mounting block and wherein the method further comprises a step of coupling the mounting block to the base.
- 25 16. The method of claim 9, wherein a meter component of the one or more meter components comprises the non-vibrating portion of a conduit of the one or more conduits.