S. J. MASON.

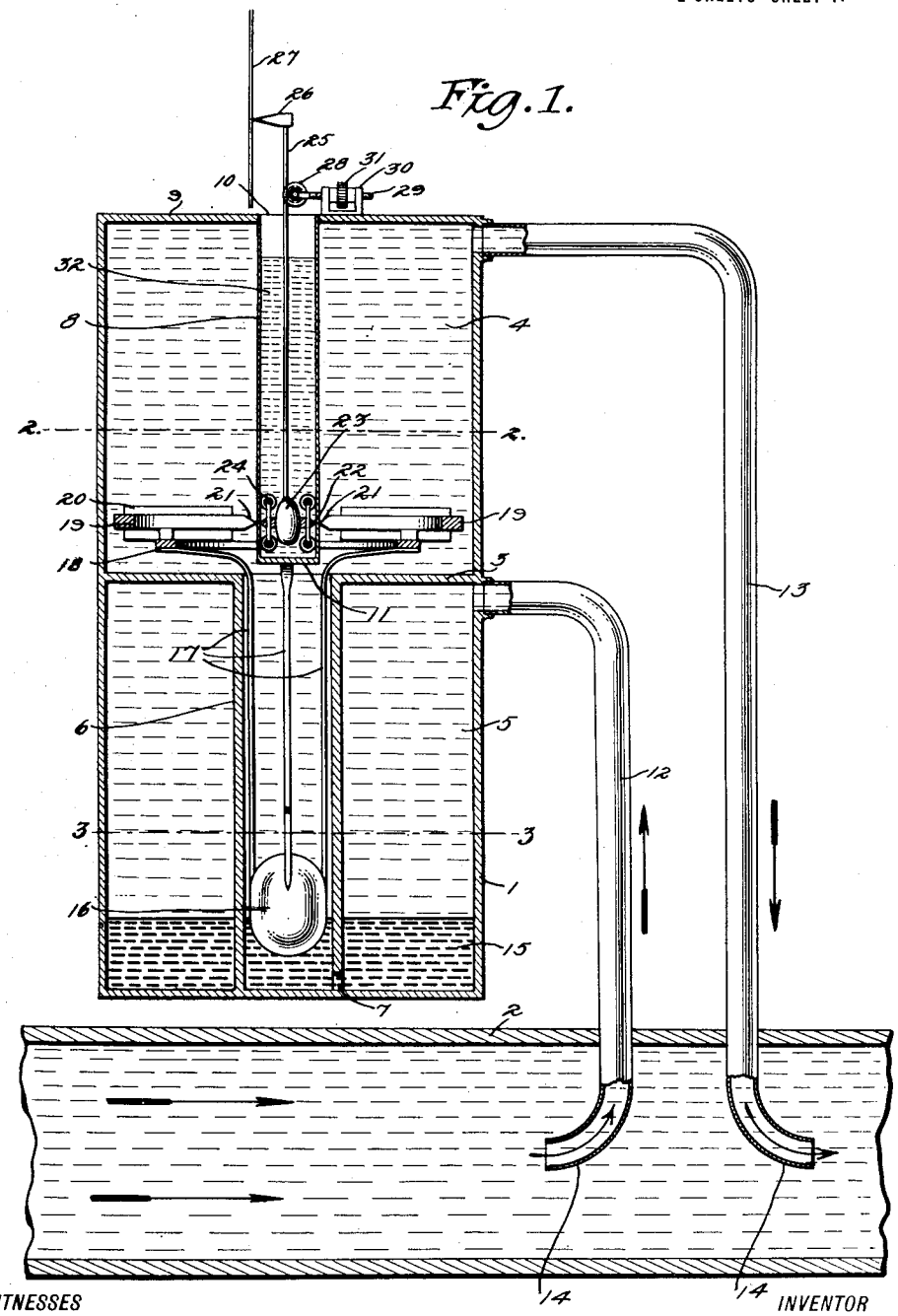
RECORDING MECHANISM.

APPLICATION FILED OCT. 29, 1919.

1,363,139. **Patented Dec. 21, 1920.**

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

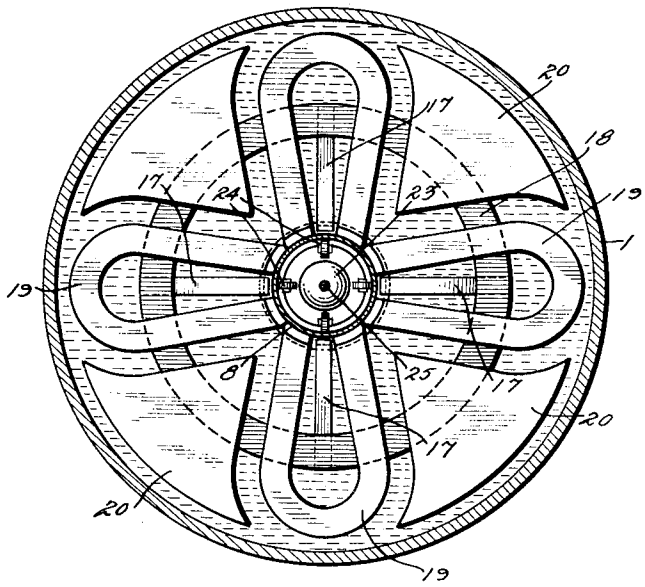
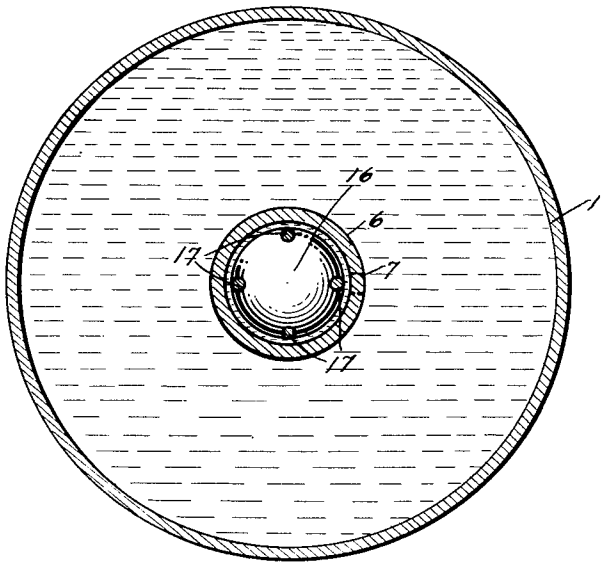


Fig. 3.



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UNITED STATES PATENT OFFICE.

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RECORDING MECHANISM.

1,363,139. Specification of Letters Patent. Patented Dec. 21, 1920.

Application filed October 29, 1919. Serial No. 334,177.

To all whom it may concern:

Be it known that I, SAMUEL J. MASON, a citizen of the United States, and a resident of Perth Amboy, in the county of Middlesex and State of New Jersey, have invented a new and Improved Recording Mechanism, of which the following is a full, clear, and exact description.

This invention relates to improvements in recording mechanisms, and more particularly to a device for recording the velocity of water, an object of the invention being to provide a marking device engaging a movable record and operated by means of magnets which are caused to move by the variation in velocity of water in a main or other conveyer.

A further object is to provide improved means for mounting magnets within a casing operated by a float controlled by variations in pressure due to variations in velocity, said magnets operating to move an armature which controls the movement of a marking device, the latter adapted to record such movement upon a record sheet or disk.

With these and other objects in view the invention consists in certain novel features of construction, and combinations and arrangements of parts, as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings—

Figure 1 is a view in longitudinal section illustrating my improvements;

Fig. 2 is an enlarged view in transverse section on the line 2—2 of Fig. 1; and

Fig. 3 is a view in transverse section on the line 3—3 of Fig. 1.

1 represents a casing and 2 a water main, the velocity of the water in which latter is to be recorded. The casing 1 is divided by a horizontal partition 3 into upper and lower chambers 4 and 5 respectively. In the center of the lower chamber 5 a cylindrical barrel 6 is located and communicates at its upper end with the chamber 4 and at its lower end has a communicating opening 7 connecting the lower end of the barrel 6 with chamber 5.

A tube 8 of relatively thin metal is secured in the top 9 of casing 1 and is made with an open upper end 10 and a lower closed end 11. The tube 8 is located centrally relative to the barrel 6, but is of appreciably less diameter than the barrel and terminates at a point above the upper end of the barrel, although these details may, of course, be varied without departing from the invention.

A pipe 12 connects the upper portion of chamber 5 with the main tube and a pipe 13 connects the upper portion of chamber 4 with the main tube. These pipes 12 and 13 are flared apart at their free ends, as shown at 14, and are positioned in the main and in accordance with the flow of water as indicated by the arrows. In the lower portion of chamber 5 and barrel 6 the desired quantity of carbon-tetrachlorid 15 or other liquid of greater specific gravity than water is provided, while the other space in the casing is filled with water as indicated.

A float 16 is provided in barrel 6 and is provided with a plurality of upwardly projecting rods 17 which extend into the chamber 4 and are connected to a ring 18. This ring 18 supports a series of horseshoe magnets 19 and a series of floats 20. The ends of the magnets 19 are preferably beveled, as shown at 21, and are located in proximity to the wall of the pipe 8.

A circular armature 22 is located in the pipe 8 and is attracted by the magnets 19. This armature 22 is preferably made with beveled edges corresponding to the beveled ends of the magnets and is connected to a central float 23 and provided with rollers 24 to engage the inner wall of pipe 8 and reduce friction to a minimum. A pen carrying rod 25 projects upwardly from the float 23 and carries a pen or marking device 26 of any desired character at its upper end which is normally in engagement with a movable record 27 of any desired form. To maintain the marking device 26 in proper relation to the record 27 a roller 28 is held against the rod 25 by means of a screw 29. The screw 29 is mounted in a bracket 30 and has an adjusting nut 31 thereon to regulate the position of the roller 28.

In operation the attraction of the magnets 19 maintains the armature 22 in alinement therewith and the magnets are moved vertically by the float 16. The movement of the float 16 is caused by the variation in pressure within chamber 5 which depresses the carbon-tetrachlorid in said chamber and forces the carbon-tetrachlorid longitudinally of the barrel 6.

The proportion of movement can be varied by variation in the surface areas of the chamber 5 and the barrel 6 and the move-

ment imparted to the float 16 is likewise imparted to the magnets 19 and the armature 22 so that the marking device 26 is moved vertically and this variation in movement is recorded on the disk, strip, or sheet 27 so that a careful accurate record can be kept of the velocity of the water in the main.

I have illustrated the pipe 8 as containing liquid 32 which may be in the form of a light oil or any other desired liquid so that the float 23 can operate to counterbalance the weight of the armature and the other parts connected thereto, and hence render the device extremely sensitive to the movement of the magnets.

While I have illustrated what I believe to be a preferred form of my invention, it is obvious that the general ideas illustrated may be incorporated in other forms of device, and hence I do not wish to be limited to the precise details of construction set forth, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

I claim:

1. A recording mechanism of the character stated, comprising a casing containing water and a liquid of heavier specific gravity than water, a float in the casing, a magnet supported upon and movable vertically with the float, an armature spaced from the magnet by metal walls, and a recording device connected to the armature.

2. A recording mechanism of the character stated, comprising a casing containing water and a liquid of heavier specific gravity than water, a float operated by the last-named liquid, a magnet supported upon and movable vertically with the float, an armature separated from the liquid in the casing and movable with the magnet, and a recording device operated by the armature.

3. A recording mechanism of the character described, comprising a float, a magnet supported upon and vertically movable with the float, an armature movable with the magnet, a metal wall located between the magnet and the armature, and a recording device movable with the armature.

4. A recording mechanism of the character described, comprising a casing, a pipe projecting into the casing and having a closed end, an armature in said pipe, a float in the casing, a magnet carried by the float and controlling the position of the armature in the pipe, and a recording device connected to the armature.

5. A recording mechanism of the character described, comprising a casing, a pipe projecting into the casing and having a closed inner end, said casing having a float of greater specific gravity than water in the lower portion of the casing, said casing filled with water and communicating with a stream to be measured, an armature in the pipe, a float in the casing movable by the pressure upon the liquid of heavier specific gravity, a magnet connected to the float and controlling the position of the armature, and a recording device connected to the armature.

6. A recording mechanism of the character stated, comprising a casing, a horizontal partition dividing the casing into upper and lower chambers, pipes connecting said chambers with a water main, a barrel located centrally in the lower chamber and communicating at its respective ends with the said chambers, a liquid of greater specific gravity than water located in the lower end of the lower chamber and the barrel, a pipe projecting into the upper chamber and having a closed lower end, a float in the barrel, a series of magnets located in the upper chamber around the pipe, floats between the magnets, rods connecting the floats with the first-mentioned float, an armature in the pipe, and a recording device connected to the armature.

7. A recording mechanism of the character stated, comprising a casing, a horizontal partition dividing the casing into upper and lower chambers, pipes connecting said chambers with a water main, a barrel located centrally in the lower chamber and communicating at its respective ends with the said chambers, a liquid of greater specific gravity than water located in the lower end of the lower chamber and the barrel, a pipe projecting into the upper chamber and having a closed lower end, a float in the barrel, a series of magnets located in the upper chamber around the pipe, floats between the magnets, rods connecting the floats with the first-mentioned float, an armature in the pipe, rollers connected to the armature and movable against the wall of the pipe, a float connected to the armature, and a recording device connected to the float.

8. A recording mechanism of the character stated, comprising a casing, a horizontal partition dividing the casing into upper and lower chambers, pipes connecting said chambers with a water main, a barrel located centrally in the lower chamber and communicating at its respective ends with the said chambers, a liquid of greater specific gravity than water located in the lower end of the lower chamber and the barrel, a pipe projecting into the upper chamber and having a closed lower end, a float in the barrel, a series of magnets located in the upper chamber around the pipe, floats between the magnets, rods connecting the floats with the first-mentioned float, an armature in the pipe, a float connected to the armature, a rod connected to the float and projecting

above the casing, a recording device on the rod, and a record against which the recording device engages.

9. A recording mechanism of the character stated, comprising a casing, a horizontal partition dividing the casing into upper and lower chambers, pipes connecting said chambers with a water main, a barrel located centrally in the lower chamber and communicating at its respective ends with the said chambers, a liquid of greater specific gravity than water located in the lower end of the lower chamber and the barrel, a pipe projecting into the upper chamber and having a closed lower end, a float in the barrel, a series of magnets located in the upper chamber around the pipe, floats between the magnets, rods connecting the floats with the first-mentioned float, an armature in the pipe, a float connected to the armature, a rod connected to the float and projecting above the casing, a recording device on the rod, a record against which the recording device engages, and means on the casing for holding the recording device against the record.

SAMUEL J. MASON.