Oct. 21, 1924. 1,512,063

J. C. SPROULL

METHOD AND APPARATUS FOR TESTING HOSE

Filed Sept. 3, 1921

Fig. 1.

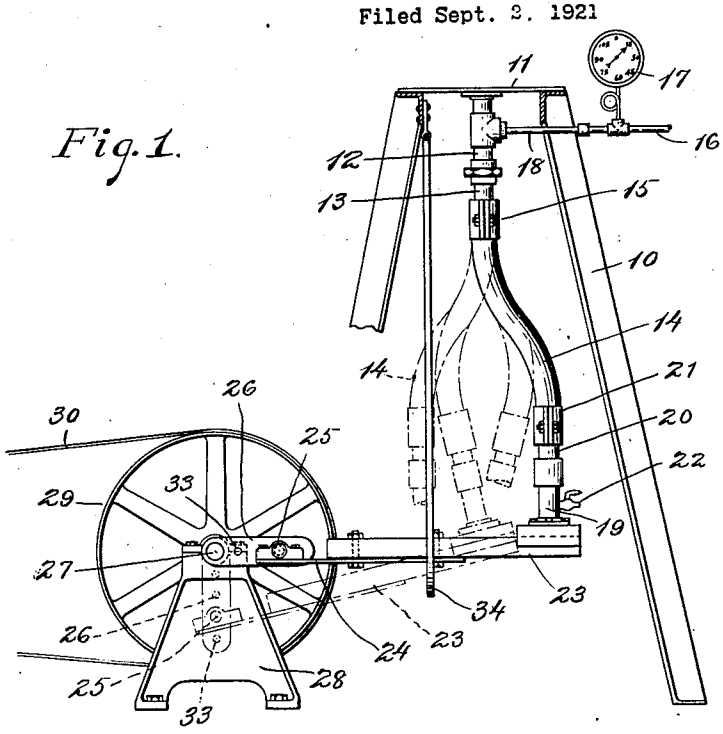


Fig. 2

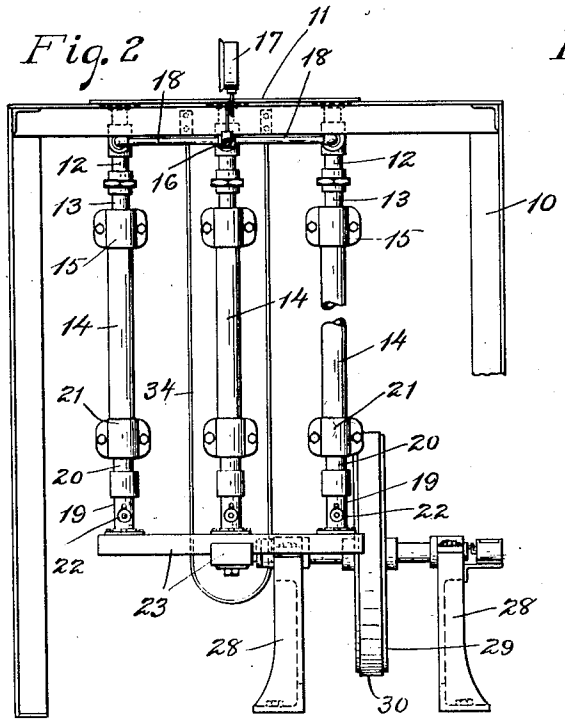
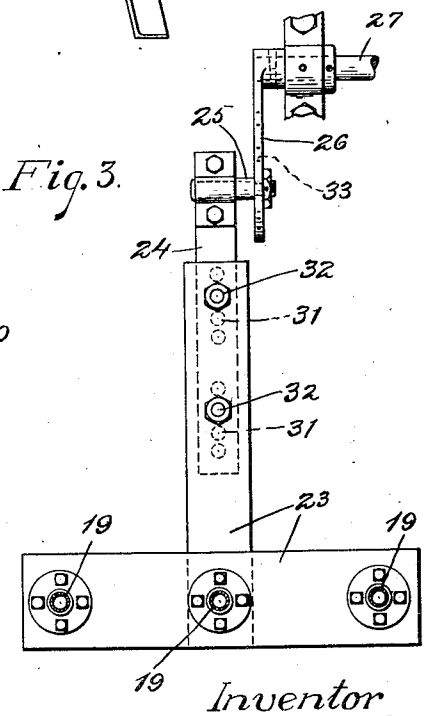


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN C. SPROULL, OF AKRON, OHIO, ASSIGNOR TO THE B. F. GOODRICH COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

METHOD AND APPARATUS FOR TESTING HOSE.

Application filed September 2, 1921. Serial No. 497,876.

To all whom it may concern:

Be it known that I, JOHN C. SPROULL, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Method and Apparatus for Testing Hose, of which the following is a specification.

This invention relates to means for testing short lengths of hose, and particularly hose which is subjected to a considerable fluid pressure or heat and pressure when in use, such as air-brake and steam hose for railway trains. My object is to provide a means for imparting bending movements to the test pieces, preferably while under fluid pressure, of a character more or less simulating the bending movements in actual service, but rapidly repeated so as to obtain an accelerated break-down test whereby the life of different constructions and qualities may be compared.

Of the accompanying drawings:

Fig. 1 is a side elevation of a hose-testing apparatus constructed according to and adapted to carry out my invention.

Fig. 2 is a front elevation thereof.

Fig. 3 is a plan view of the crank and pitman structure.

In the drawings, 10 is a frame composed of side standards and a top structure including a horizontal plate 11, to the under side of which are secured a series (three in this instance) of depending pipe sections 12, terminating in hose-receiving nipples 13, to which the upper ends of the test pieces of hose 14 are secured by clamps or couplings 15. 16 is a fluid-pressure supply-pipe, such as a compressed-air or steam pipe, having a pressure gauge 17 and connected by branches 18 to the respective pipe sections 12.

19, 19 are lower pipe sections provided with upwardly-projecting hose-receiving nipples 20, adapted to enter the lower ends of the testing pieces 14 and to be secured upon the latter by means of clamps or couplings 21. These lower pipe sections are provided with valved outlets or drain-cocks 22, adapted to be left slightly open to discharge water of condensation when steam hose is under test.

The lower pipe sections are mounted upon the cross-bar of a T-shaped pitman 23, the stem of which is provided with a plate 24 having a bearing at its rear end which surrounds a crank-pin 25, mounted upon a crank 26. Said crank is secured to a shaft 27 mounted in bearings upon a pair of standards 28 and the shaft is provided with a pulley-wheel 29 driven by a belt 30. The pitman is made adjustable in length by providing the plate 24 with two series of bolt-holes 31, adapted to receive a pair of bolts 32. The crank 26 is also provided with a series of holes 33 in different radial positions for varying the stroke of the crank-pin 25. 34 is a sling adapted to support the pitman 23 when there is no test piece of hose connecting it with the overhead structure.

In the operation of this apparatus one or more short lengths 14 of the hose to be tested is mounted between the upper and lower pipe nipples 13 and 20, and the shaft 27 is rotated to reciprocate the pitman 23 in a generally horizontal direction and at the same time to move it into different angular positions as its rear end follows the crank-pin 25. The combined lateral reciprocating and angular movement imparted to the pipe sections 19 at the forward end of the pitman is communicated to the test pieces of hose 14 and serves to bend the same into the several positions represented in full and broken lines in Fig. 1, thereby imparting repeated compound flexures to the hose which serve as an efficient test of its durability, especially in the vicinity of the couplings 15 and 21. The interior of the test pieces is preferably maintained under fluid pressure, such as compressed air or steam, during this test in order to burst the hose or give evidence of its leaking when the walls break down.

Various modifications may be made without departing from the scope of my invention.

I claim:

1. The method of testing hose which comprises maintaining superatmospheric fluid pressure within a test piece of the hose while repeatedly and rapidly imparting to one end thereof combined laterally reciprocating and angular movements.

2. The method of testing hose which comprises maintaining the ends of a test piece thereof in normal, circular form while re-

peatedly and rapidly flexing said piece into oppositely disposed, reverse-curve positions.

3. The method of testing hose which comprises suspending a short length thereof by one end, substantially closing the other end, filling the hose with pressure fluid, and swinging the face end angularly back and forth while maintaining the fluid pressure within the hose.

4. Hose-testing apparatus comprising means for fixing the test-piece at one end, and means for imparting to the other end a combined lateral reciprocating and angular movement whereby the hose is flexed into oppositely disposed, reverse-curve positions in the same plane.

5. Hose testing apparatus comprising respective means for holding the ends of a test piece thereof in normal, circular form and power operated mechanism for so relatively moving one of said holding means with relation to the other as to flex said piece repeatedly and rapidly into oppositely disposed, reverse-curve positions.

6. Hose testing apparatus comprising a fluid pressure conduit, a fluid coupling thereon adapted to be connected to and to support one end of a test piece of hose, means for engaging and substantially closing the other end of said test piece while maintaining it substantially circular, and power operated mechanism for rapidly and repeatedly imparting to the last said means combined laterally reciprocating and angular movements.

7. Hose-testing apparatus comprising a fixed pipe nipple adapted for connection with one end of the test-piece, a rotary shaft having a crank, a pitman connected with said crank, and a pipe-nipple on said pitman adapted for connection with the opposite end of the test-piece.

8. Hose-testing apparatus comprising a support having a depending hose-receiving nipple, a pitman adapted to reciprocate in a generally horizontal direction and provided at one end with an upwardly-projecting hose-receiving nipple located under the first-said nipple, a rotary shaft having a crank connected with the other end of said pitman, a fluid-pressure inlet to the upper nipple, and a valved outlet from the lower nipple.

In witness whereof I have hereunto set my hand this 29th day of August, 1921.

JOHN C. SPROULL.