

No. 695,688.

Patented Mar. 18, 1902.

J. A. KELLER.
EQUABLE SAFETY PACKING BOX.

(Application filed Nov. 23, 1901.)

(No Model.)

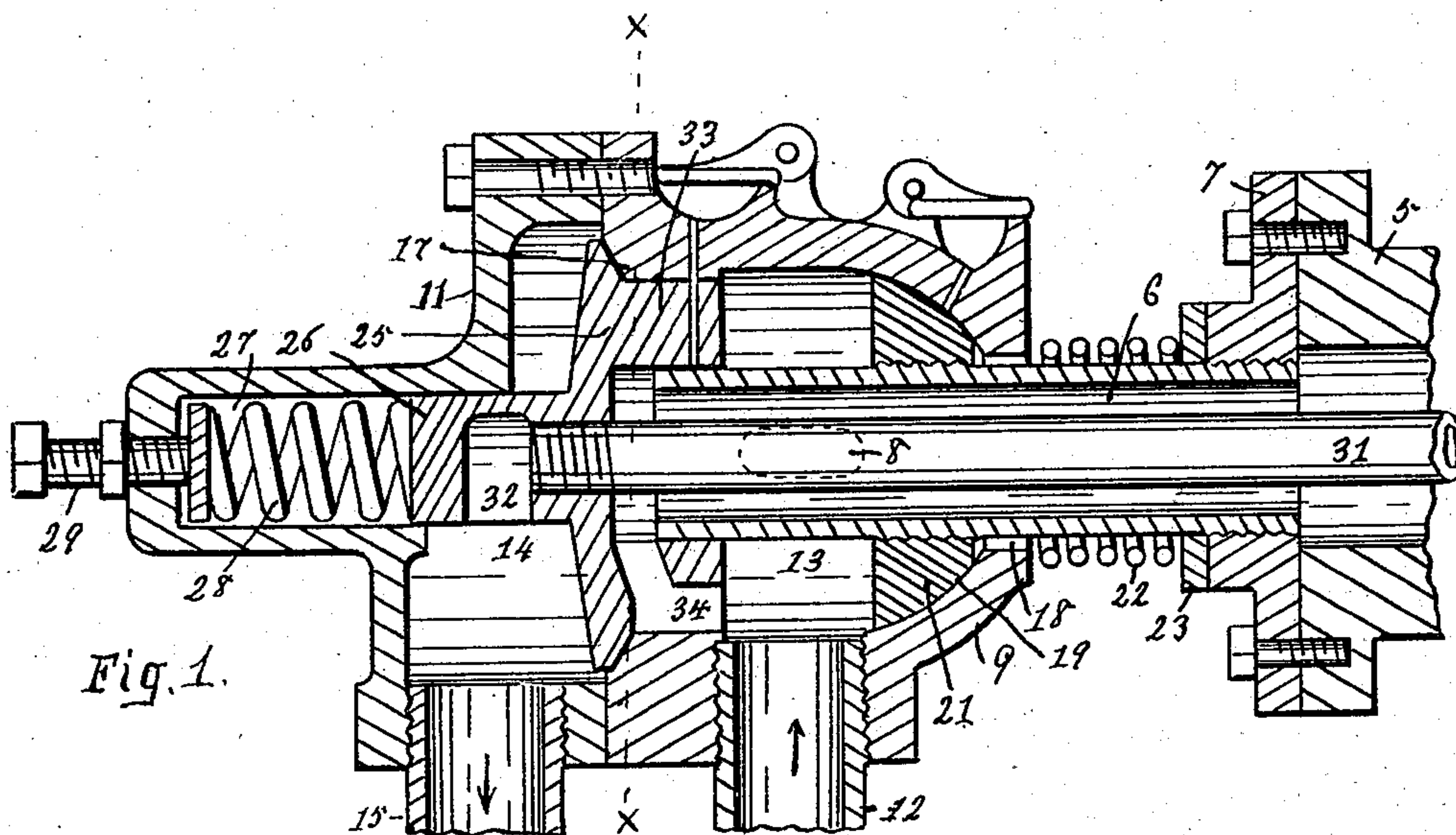


Fig. 1.

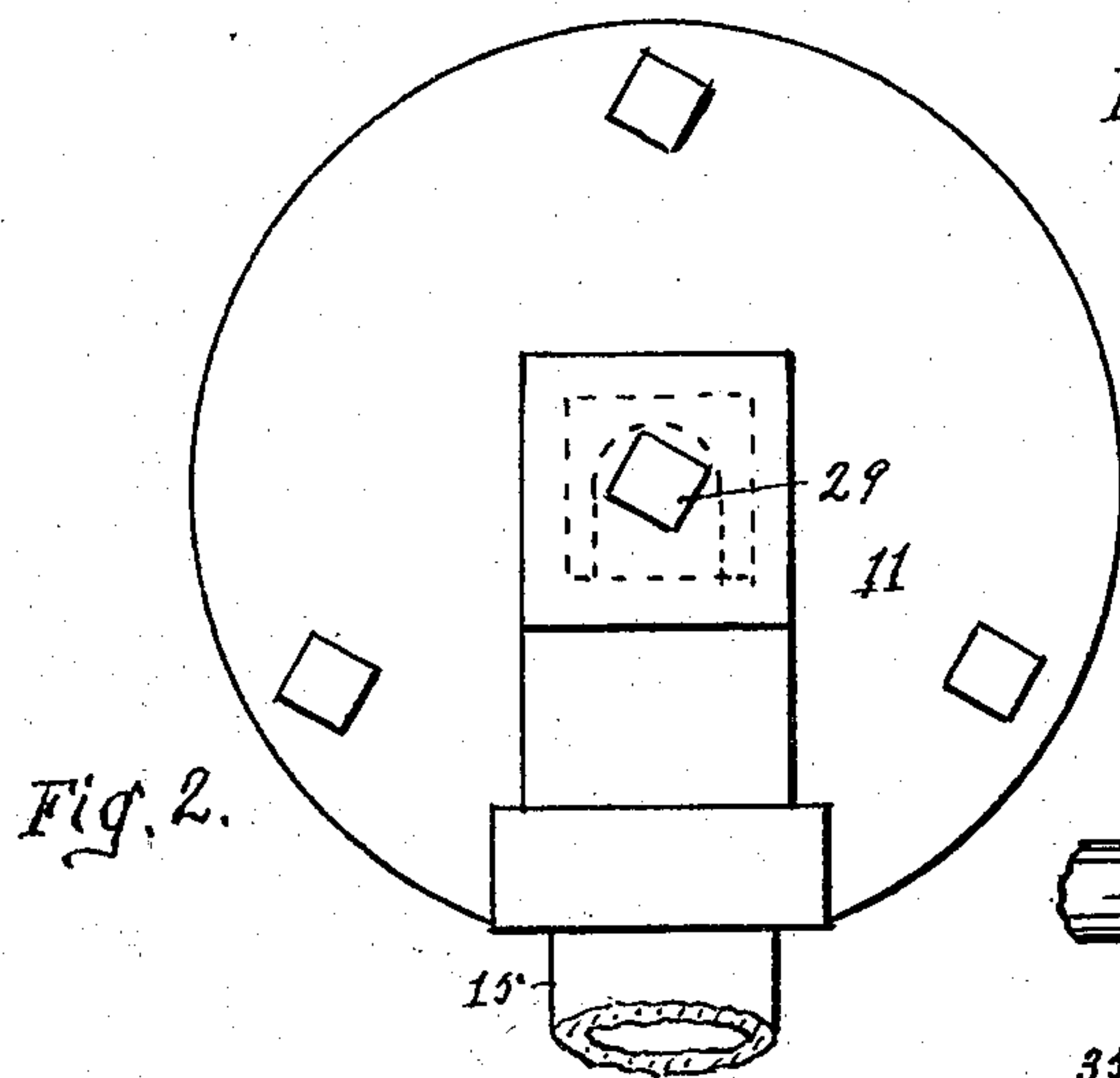


Fig. 2.

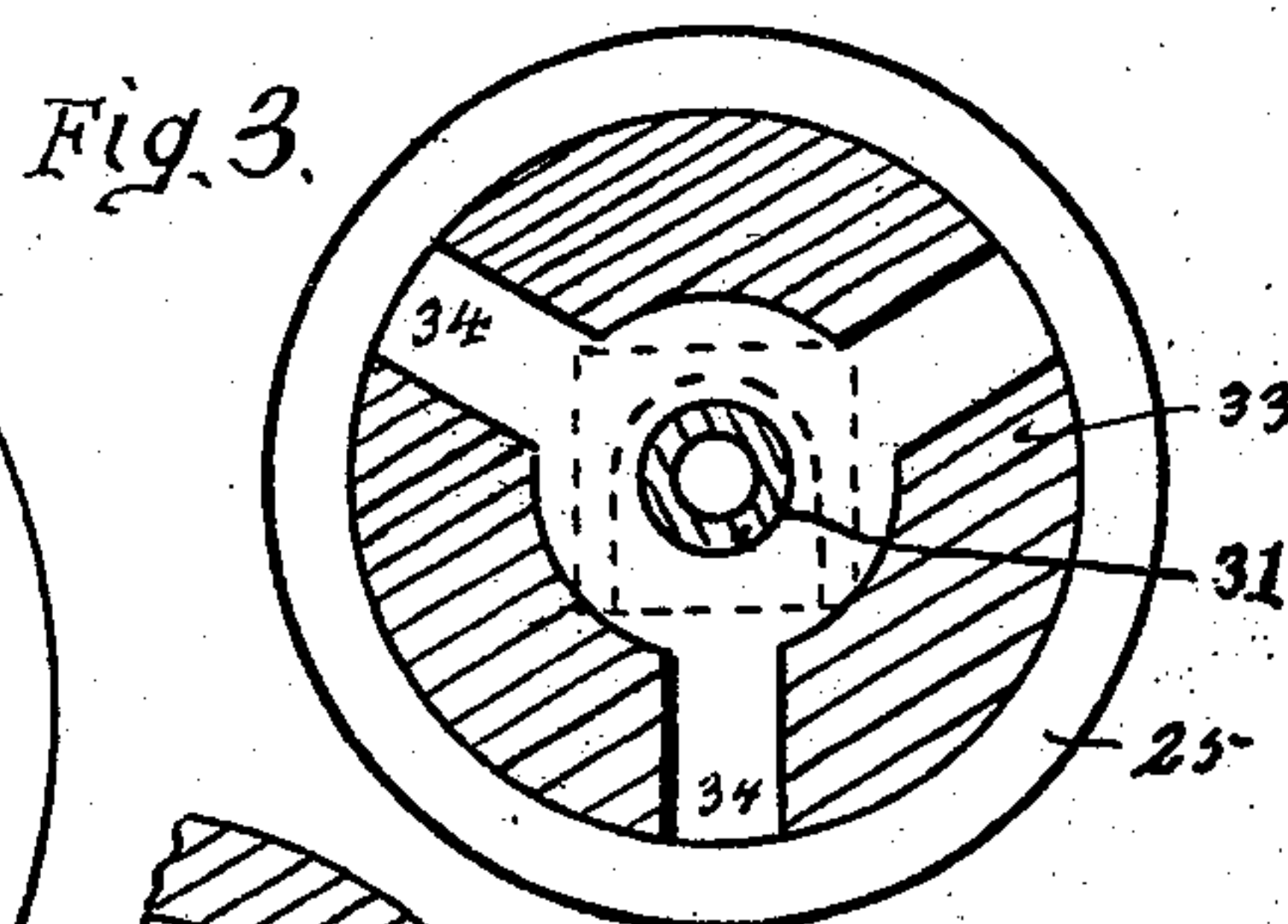


Fig. 3.

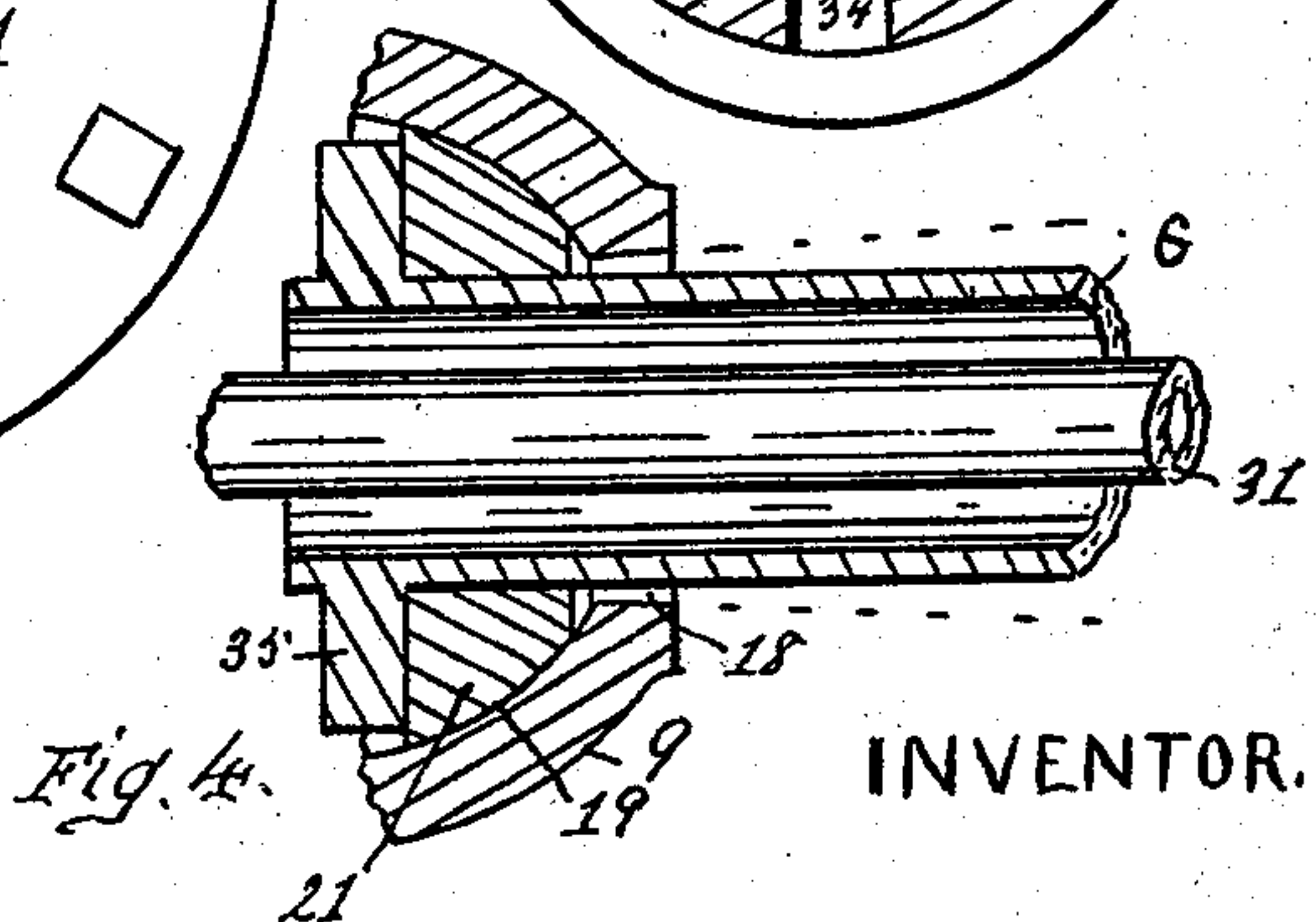


Fig. 4.

WITNESSES.

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EQUABLE SAFETY PACKING-BOX.

SPECIFICATION forming part of Letters Patent No. 695,688, dated March 18, 1902.

Application filed November 23, 1901. Serial No. 83,357. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. KELLER, a citizen of the United States, residing at Hamilton, Ohio, have invented a new and useful Improvement in Equable Safety Packing-Boxes, of which the following is a specification.

My invention relates to equable safety packing-boxes of the class adapted to use on rotative steam-driers and elsewhere; and the objects of my improvement are to provide a spherical metal packing-ring and seat therefor which will permit a limited variation in axial alinement without leaking, to provide an adjustable safety-valve adapted to automatically prevent the steam in the drier exceeding a predetermined pressure, and to provide means to retain the packing properly seated at all times and under varying steam-pressures. These objects are attained in the following-described manner, as illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section embodying my improvement; Fig. 2, an end elevation; Fig. 3, a transverse vertical section on the dotted line *xx* of Fig. 1, and Fig. 4 a modified form of construction in longitudinal section.

In the drawings, 5 represents one end of the hollow journal of a rotative steam-drier, and one end of steam-supply pipe 6 is secured thereon by means of cap 7. Said pipe is formed with steam-inlet ports 8 and forms an extension of the hollow journal.

A cylindrical casing formed of sections 9 and 11, secured together by cap-screws, is supported on steam-supply pipe 6 and contains steam-chamber 13, which communicates with inlet-pipe 12 and with the drier through supply-pipe 6 and the ports 8 therein and exhaust-chamber 14, which discharges through exhaust-pipe 15. Section 9 of the casing is formed with valve-seat 17 on its end adjacent to section 11 and with opening 18, adjacent to the drier, for the insertion therethrough without contact of supply-pipe 6. Valve-seat 19, preferably semispherical in form, is formed within section 9, concentric with opening 18 therein, and metal valve or packing-ring 21, corresponding in form with said seat, is secured on supply-pipe 6 within the casing and rotatively seated in seat 19 to prevent the escape of steam from chamber 13 through said

opening 18. The spherical form of packing 21 permits the rotation of the supply-pipe at different angles to the axis of the casing without permitting leakage. Coiled spring 22 encircles supply-pipe 6 between the casing and collar 23, which is loosely mounted on said pipe in contact with the end of cap 7 to maintain packing-ring 21 properly seated regardless of the steam-pressure within chamber 13.

Valve 25 is formed with rectangular stem 26, adapted to slide, but not rotate, in rectangular pocket 27, which is formed in section 11 of the casing and in the axial line thereof. Coiled spring 28 within the pocket may be regulated by means of adjusting-screw 29 to maintain said valve properly closed on seat 17 and permit it to open automatically and discharge from chamber 13 into chamber 14 any excess of steam in chamber 13 above a predetermined pressure. Siphon-pipe 31, secured at one end in the face of valve 25, is extended loosely through the interior of supply-pipe 6 and terminates within the drier in the usual manner. It serves to discharge the condensed steam from the drier into chamber 14 through an exhaust-port 32, formed in the valve-stem 26 and with which it communicates through said valve.

A cylindrical projection 33, formed on the face of valve 25 to slide within the end of section 9 of the casing, is counterbored to form a bearing for the rotation therein of the outer extremity of supply-pipe 6, whereon the valve is permitted to slide longitudinally in its opening and closing movements. Steam-ports 34, formed in projection 33 of said valve, communicate with the interior of supply-pipe 6 through said counterbore and with steam-chamber 13, whereby, in connection with ports 8, the live steam is admitted from chamber 13 through supply-pipe 6 to the interior of the drier. The pressure of the steam within chamber 13 in addition to or in the absence of spring 22 keeps packing-ring 21 snugly seated. Any excess of steam in chamber 13 above a predetermined pressure overcomes the resistance of spring 28, automatically opens valve 25, and discharges into exhaust-chamber 14, whereby any excessive pressure in the drier and danger of explosion are automatically prevented.

A modified form of construction is shown

in Fig. 4, wherein the plano-spherical packing 21 is loosely mounted on supply-pipe 6 to permit the pipe to rotate therein and maintained in seated position by means of collar 35, which is secured on the pipe and in rotative bearing contact with the plane end of the packing. In this form of construction, as also that shown in Fig. 1, the supply-pipe may be terminated at any point between the packing 21 and valve 25 to permit greater variation in the angle of the supply-pipe to the axis of the casing without permitting the escape of steam through opening 18 therein.

In the construction shown in Fig. 1, wherein the extremity of supply-pipe 6 terminates within the counterbore formed in the face of valve 25, the packing 21 and seat 19 may have plane, tapering, or other forms of contact-surfaces, as desired, instead of spherical.

Having fully described my improvement, what I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. The combination with a casing, a movable valve separating its interior into a steam and an exhaust chamber, a spring arranged to permit the valve to be opened by predetermined pressure within the steam-chamber, of a rotative pipe leading from the steam-chamber, a collar thereon arranged to rotate in a seat formed in the chamber, and a siphon-pipe within the rotative pipe and secured at one end to the movable valve, and communicating therethrough with the exhaust-chamber.

2. The combination with a casing containing a steam-chamber and an exhaust-chamber, a valve between said chambers, an adjustable spring arranged to permit said valve to be automatically opened by a predetermined pressure in the steam-chamber, of a rotative pipe extending from within the steam-chamber through an opening formed in the casing and without contact therewith, and a spherical packing-collar on the pipe arranged to be maintained in contact with a seat formed in the casing concentric to said opening, whereby the escape of steam through said opening is prevented during the rotation of the pipe in different angles to the casing.

3. The combination with a casing containing a steam and an exhaust chamber, a valve between the chambers, and a spring to close the valve, of a rotative pipe leading from the steam-chamber, a seat formed within the chamber, and a collar on the pipe and arranged to rotate in said seat.

4. The combination with a casing formed in two sections and removably secured together, a steam-chamber in one section, an exhaust-chamber in the other section, a non-rotative valve between the sections, an adjustable spring arranged to permit the valve to be automatically opened by different predetermined pressures within the steam-chamber, of a rotative pipe journaled at one end in a bearing formed in the face of the valve and extending through the steam-chamber and through an opening in the casing, said pipe containing ports within the steam-chamber, and a collar thereon arranged to rotate in a seat formed within the casing to prevent the escape of the steam through said opening.

5. The combination with a casing containing a steam-chamber, a safety-valve therein, and an adjustable spring arranged to control the pressure of the valve, of a rotative pipe communicating with the chamber through an opening in the casing, a collar on the pipe within the chamber and movable on a seat formed on the inside of the wall of the casing, and spring mechanism arranged to maintain the collar properly in contact with the seat.

6. The combination with a casing containing a steam-chamber, and a spring-actuated safety-valve in one end thereof and formed with a recess in its inner face and with ports leading therein from the chamber, of a rotative pipe communicating with the interior of the chamber through an opening formed in the opposite end thereof and terminating within said recess, and means to prevent the escape of steam from the chamber through the opening around the pipe.

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