

No. 711,176.

Patented Oct. 14, 1902.

J. PRŮSEK.

STUFFING BOX WITH METALLIC PACKING.

(Application filed Feb. 17, 1902.)

(No Model.)

Fig. 1.

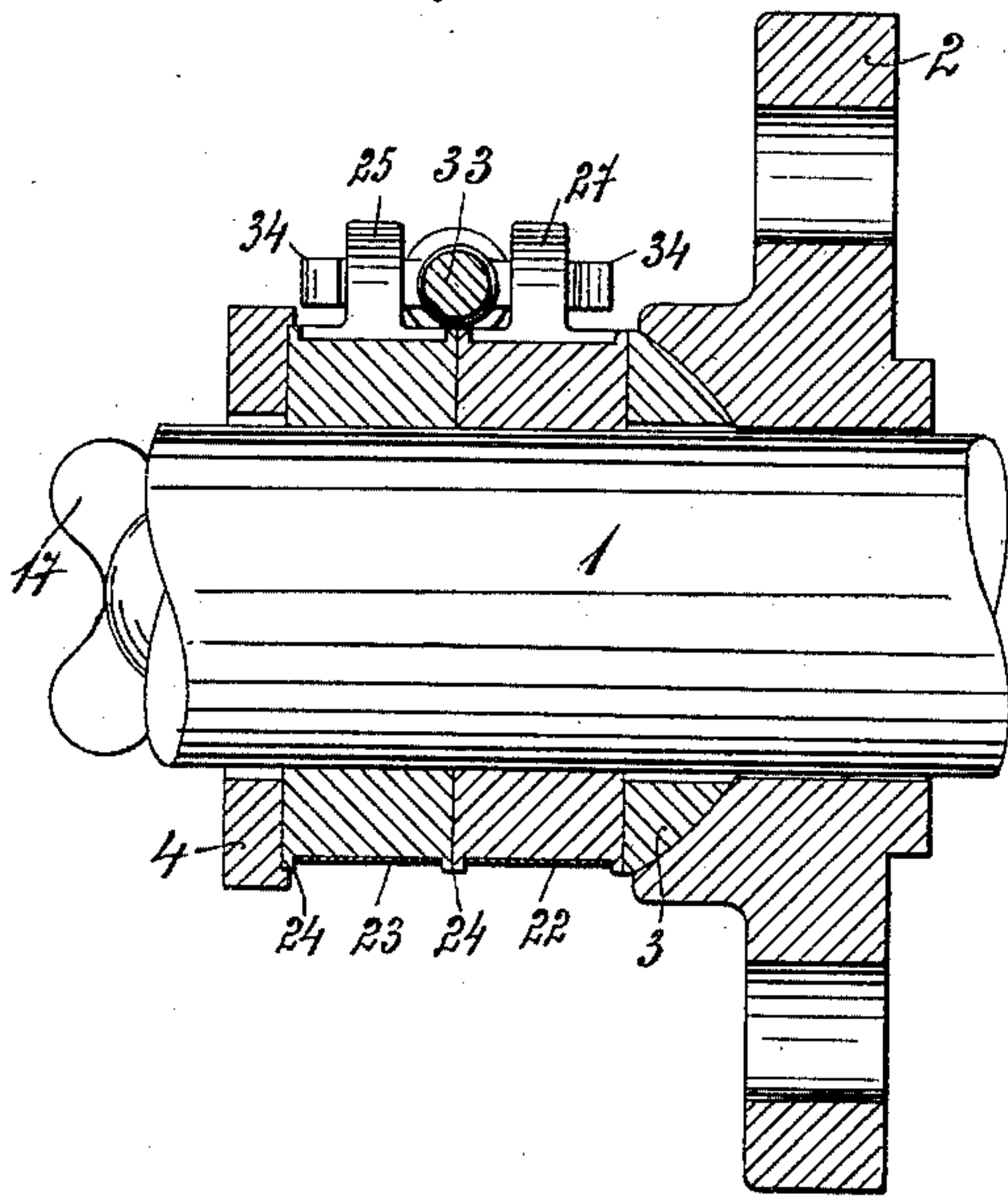


Fig. 2.

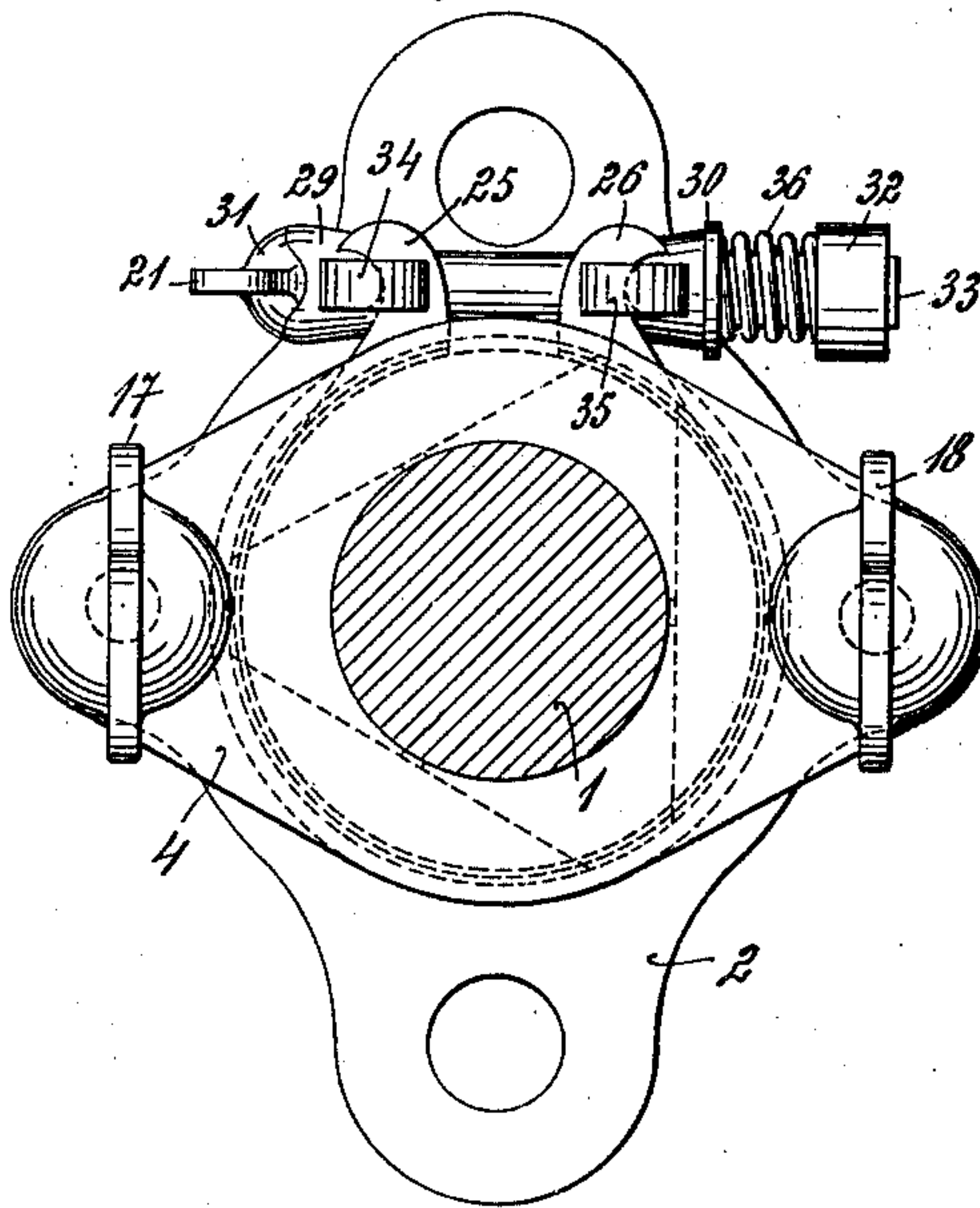


Fig. 3.

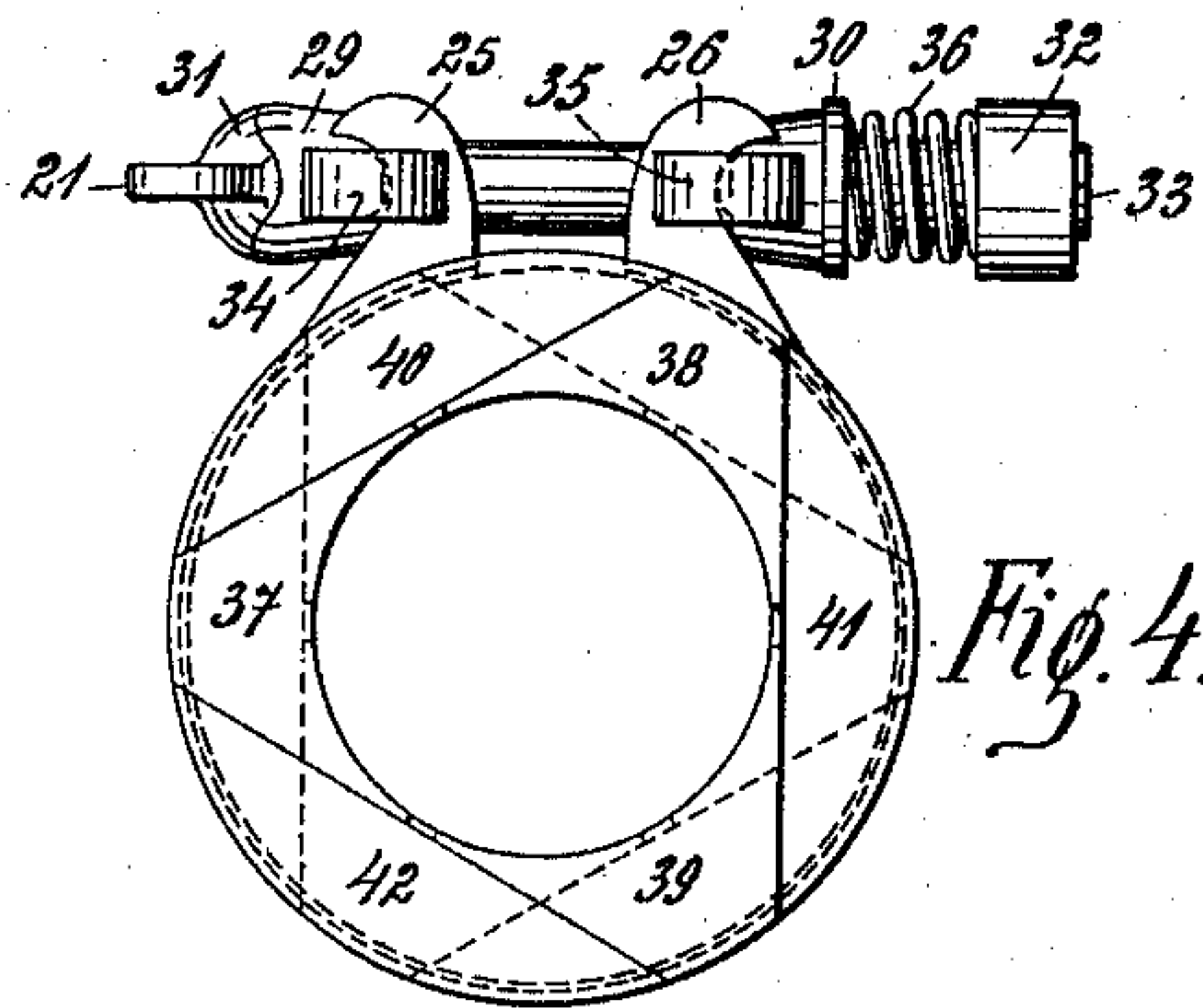
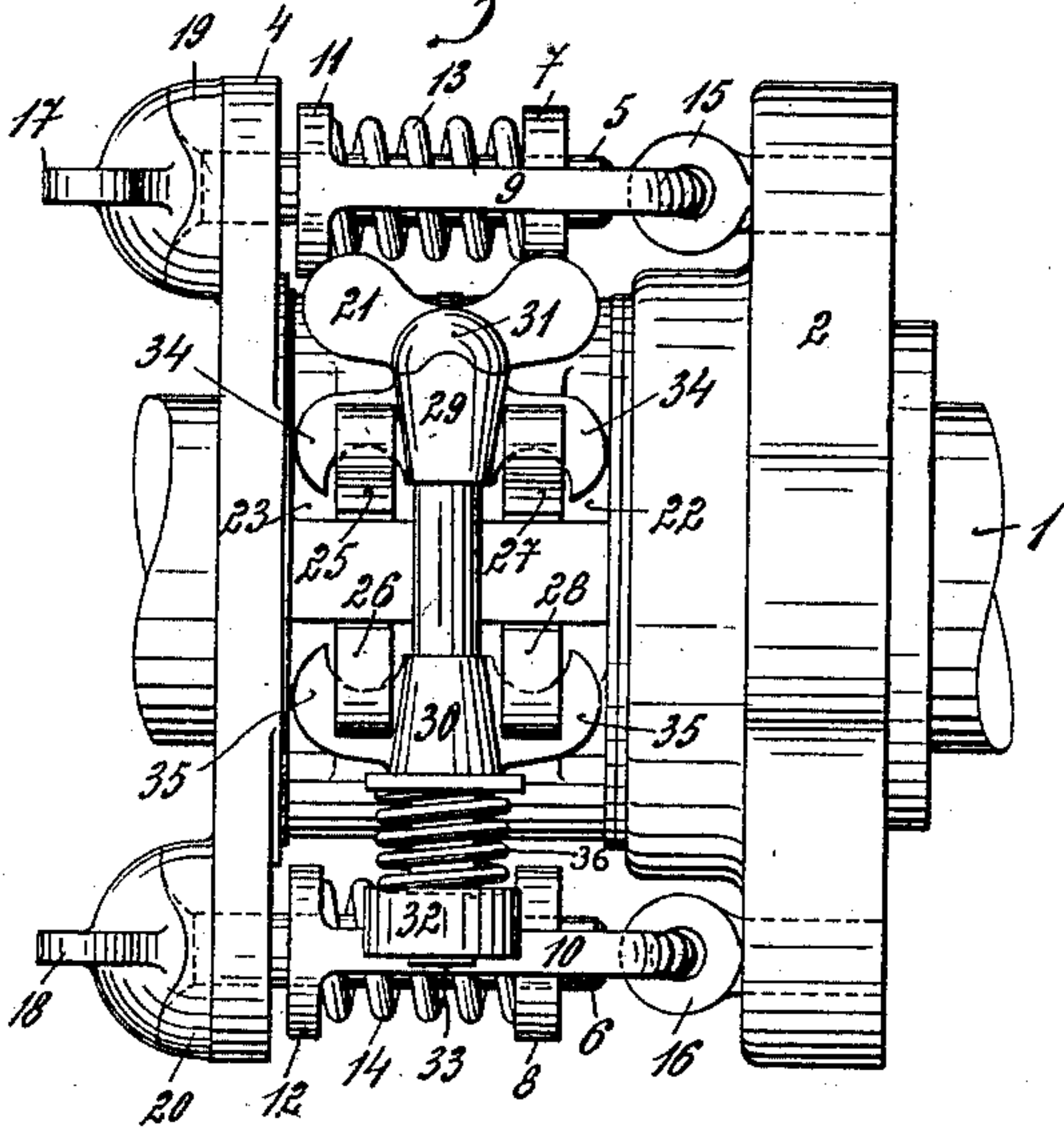
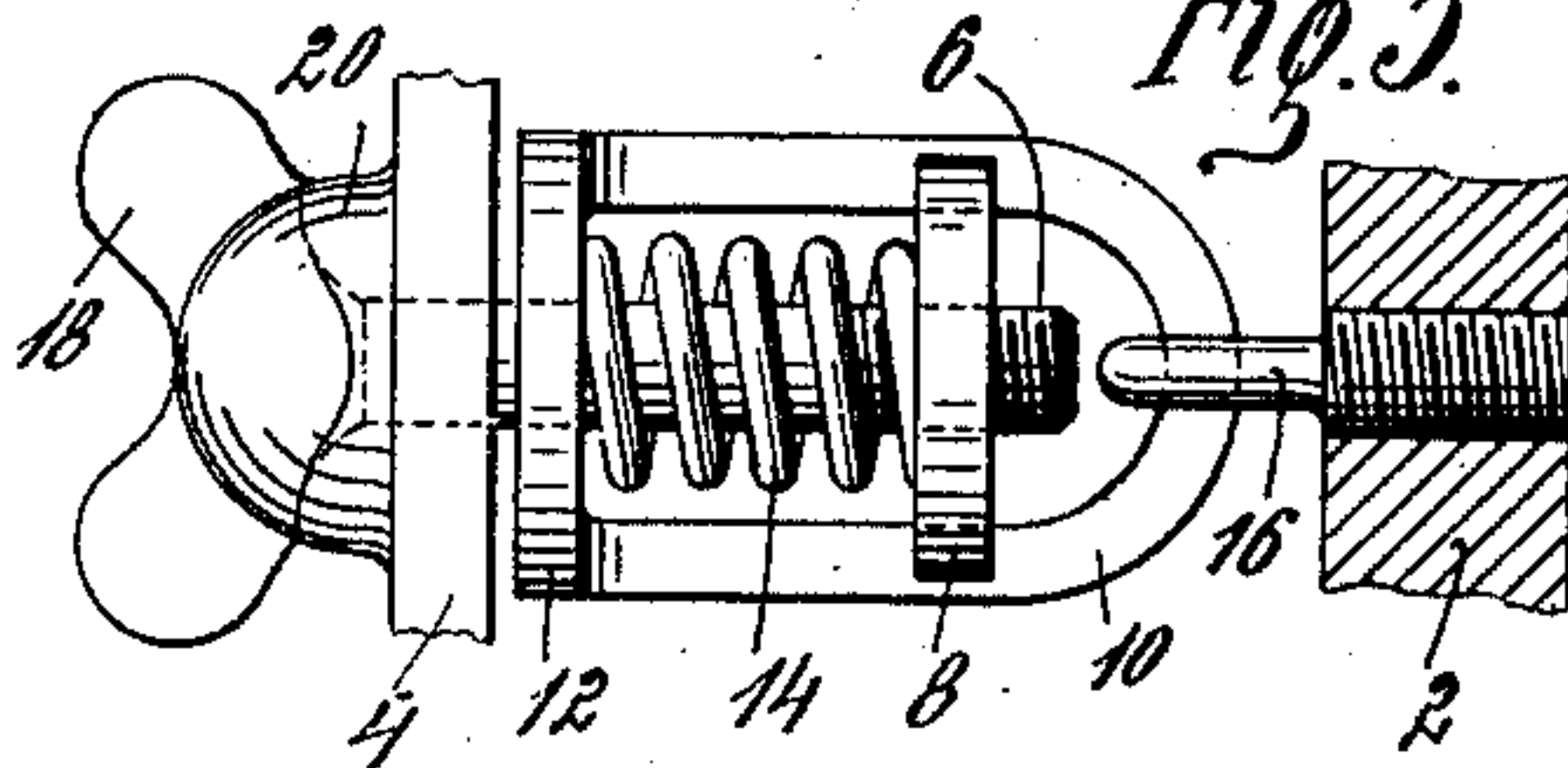


Fig. 4.

Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

JAN PRŮSEK, OF PRAGUE, AUSTRIA-HUNGARY.

STUFFING-BOX WITH METALLIC PACKING.

SPECIFICATION forming part of Letters Patent No. 711,176, dated October 14, 1902.

Application filed February 17, 1902. Serial No. 94,525. (No model.)

To all whom it may concern:

Be it known that I, JAN PRŮSEK, a subject of the Emperor of Austria-Hungary, residing in Prague, Bohemia, Austria-Hungary, have
5 invented a new and useful Stuffing-Box with Metallic Packing, of which the following is a specification.

My invention relates to stuffing-boxes with metallic packing which are situated outside
10 the cylinder or valve-chest and are thoroughly accessible; and the objects of my invention are, first, to provide a stuffing-box with uncovered elastic packing-rings which can be regulated directly and during the work with-
15 out any key; second, to afford facilities for correcting any irregularity of the rod as long as its surface is regular; third, to provide a stuffing-box with metallic packing which consumes the least amount of work by friction
20 and which can be adjusted easily during the work and without any key or other implement and remains cool; fourth, to provide a metallic stuffing-box with inverse globular ring-seat on its bottom for the purpose of
25 avoiding damage by condensed water or the like. I attain these objects by the arrangement illustrated in the accompanying drawings, in which—

Figure 1 is an axial section of the stuffing-
30 box, and Fig. 2 a side view, and Fig. 3 a top view, of the same. Fig. 4 shows the arrangement of the elastic combined stuffing-rings, and Fig. 5 shows arrangement of the elastic bolt attachment of the upper plate of the
35 stuffing-box.

1 is the rod which transmits the rectilineal movement of the piston to the other parts of the motor or the movement of the crank or any other part of the machinery to the distributing-valve or the like and which has to
40 be provided with a stuffing-box. For this purpose a pillow 2 is fixed outside the cover of the cylinder or chest by means of two or more strong screws, said pillow having a central bore for the rod 1 and a globular seat 2^a
45 on its outer part into which fits a globular metallic collar 3, which serves as a support to the stuffing-rings and can yield in every direction to a certain degree, having a some-

what larger bore than the exact diameter of 50 the rod.

Upon the ring 3 reposes the first stuffing-ring 3^a and upon this the second stuffing-ring 3^b. There is usually no need of more than two such stuffing-rings. These stuffing-rings 55 are covered by an outer plate 4, having also a bore for the rod 1. Plate 4 is held by two or more thumb-screws 5 6 with elastic tension. The nuts of these screws 7 8 are provided with radial notches, by which they are 60 guided upon the two parallel arms of a yoke or link 9 10, which are united near the plate 4 by a bridge 11 12, which is provided with holes for the bolts 5 and 6. There are spiral springs 13 14 embracing these bolts and com- 65 pressed between the bridges and the nuts. The more the nuts approach to the bridges the more the tension of the springs increases. Yokes 9 and 10 are linked into eyes 15 and 16, which are firmly screwed into the pillow 2, as 70 shown in the drawings.

The thumb-pieces 17 and 18 of the thumb-bolts are provided with toothed or undulated seats, which gear into correspondingly toothed or undulated crowns 19 20, which are fixed 75 upon or made in one piece with the plate 4, so that the thumb-pieces fit into their crowns at each partial turning of the thumb-pieces. It will be understood that in turning the thumb-pieces 17 and 18 only partially to the 80 left or to the right the tension of the springs 13 and 14 will be increased or diminished. The thumb-pieces fall again into their seats, being held firmly in their undulations or teeth by the tension of said springs. In this 85 way the tension with which the stuffing-rings and the globular ring are pressed against their seat can be perfectly regulated at any time and without any key or the like implement, simply by the hand. 90

The stuffing-rings are composed of several parts, which can be pressed elastically against the rod by means of the thumb-screw 31 33, as will be explained immediately.

The stuffing-rings are composed, for in- 95 stance, each of three equal bearing parts 37 38 39, which inclose the whole circumference of the rod, leaving only small interstices be-

tween each other, as shown by Fig. 4. Their side faces are cut in a straight line, so as to leave room for three segments 40 41 42, which complete the three bearing parts 37 38 39 into a circular ring, which is kept together by means of an elastic steel band 22 or 23, which at its ends have two clutches with outside locking-hooks, the clutches 25 26 belonging to band 22 and the clutches 27 28 to band 23. In pressing the clutches 25 and 26 more or less together the bearings 37 38 39 are pressed against the rod 1 with more or less power, but equally from all sides, and tighten the whole circumference except in the interstices between the bearings, where steam or other liquid or gas under pressure could easily escape through if there would be no better tightening. To avoid this, the interstices of the next stuffing-ring are placed just between each two interstices of the first ring looking in the direction of the axis of the rod, as shown by the dotted lines in Fig. 4. Therefore the interstices of one stuffing-ring are covered by the bearings of the other stuffing-ring.

The four clutches 25 26 and 27 28 are placed in the projection of each other looking in the direction of the axis of the rod, so as to be able to catch them by the clutch-heads 29 and 30, which are perforated to let through the bolt of a thumb-screw 21 31 33. The seat of the thumb-head 31 gears with its teeth or undulations into the teeth or undulations of the head 29, which with its two clutches 34 bears against the clutches 25 and 27 of the ring-bands and across them. In a similar way the head 30 bears with its clutches 35 against the clutches 26 and 28 and across them in the opposite direction. Between the nut 32 of the screw 33 and the seat of the head 30 is compressed and embraces the bolt 33 a spiral and oval spring 36, which presses by its tension the clutch-heads 29 and 30 toward the clutches 25 26 and 27 28 of the bands, and therefore presses the bearings of the stuffing-rings against the rod. The oval spring 36 sits in oval seats, which circumstance is sufficient to prevent turning of the nut 32 when the thumb-piece 21 is turned. This can be prevented in many other ways as well, and the one shown in the drawings is given only as an example.

It will be understood that in turning the thumb-piece 21 in one or the other direction the pressure of the spring 36 will be changed, and therefore the bands 22 and 23 will exercise more or less pressure upon the bearings 37 38 39 and the corresponding bearings of the other ring and will make the stuffing more or less tight. This tightening can therefore be easily regulated without any key or other implement at any time and during the working with utmost precision.

It is obvious that my system of tightening will require the least amount of lost energy by friction, because it yields to any irregu-

lar position of the axis of the rod, and it can be regulated at any moment even during the work simply by turning the thumb-screws with the fingers. It also remains comparatively cool, being cooled by the atmosphere.

All the pieces of the metallic stuffing-rings have circular rims 24 on both sides, which keep them from sliding out if free.

I am aware that many metallic packings have been invented and tried before my invention thereof and also support-rings with globular seats have been applied previously to this my invention; but it will be noticed that in my construction the pressure of the steam in the cylinder tends to push the globular ring off, while in former constructions it did the contrary. The consequence of this circumstance is not only a much easier working of the stuffing-box, but besides this a complete assurance against bursting of the cover by condensed water, which if pushed against the cover will escape by the annular interstice between rod and pillow and will lift the packing in compressing the springs enough to be able to escape without causing any damage, after which the packing falls instantly into its formal position and the work goes on as if completely undisturbed.

I do not claim the combination of metallic stuffing and elastic rings broadly; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In stuffing-boxes comprising metallic stuffing-rings, the combination with said rings, of a pillow secured to the cylinder or chest and having a central bore for the rod, two or more eyes fixedly secured to said pillow, yokes linked to said eyes, notched nuts guided between the parallel arms of said yokes, thumb-screws passing through the bridges of said yokes and taking into the nuts; springs coiled around the stems of said screws and bearing at one end against the nuts and at the other against said bridges, wave-faced hubs upon the screws, an outer plate forced against the packing-rings by said screws, wave-faced crowns upon the outer plate with which said hubs yieldingly engage, to lock the screws and nuts in position without positively preventing manipulations of the screws, and a metallic ring having a semi-universal connection with the pillow-block and forming the inner support of the stuffing-box rings.

2. In stuffing-boxes comprising sectional metallic packing-rings formed of packing-pieces and segments thereon, the combination with a pair of such rings applied side by side and breaking joints with each other, of metallic bands embracing the peripheries of each, and means for tightening said bands simultaneously.

3. In stuffing-boxes comprising sectional metallic packing-pieces and segments thereon, the combination with said rings of metallic bands terminating at each end in clutch-

hooks, claws engaging the hooks of two adjacent bands, a thumb-screw the shaft of which passes through said claws, an oval spring coiled around said screw outside the
5 farther claw, a nut beyond said spring and against which it bears, and oval seats for the spring in said nut and the adjacent claw.

In witness whereof I have hereunto set my hand in presence of two witnesses.

JAN PRŮSEK.

Witnesses:

L. VOJÁIEK,
ADOLPH FISCHER.