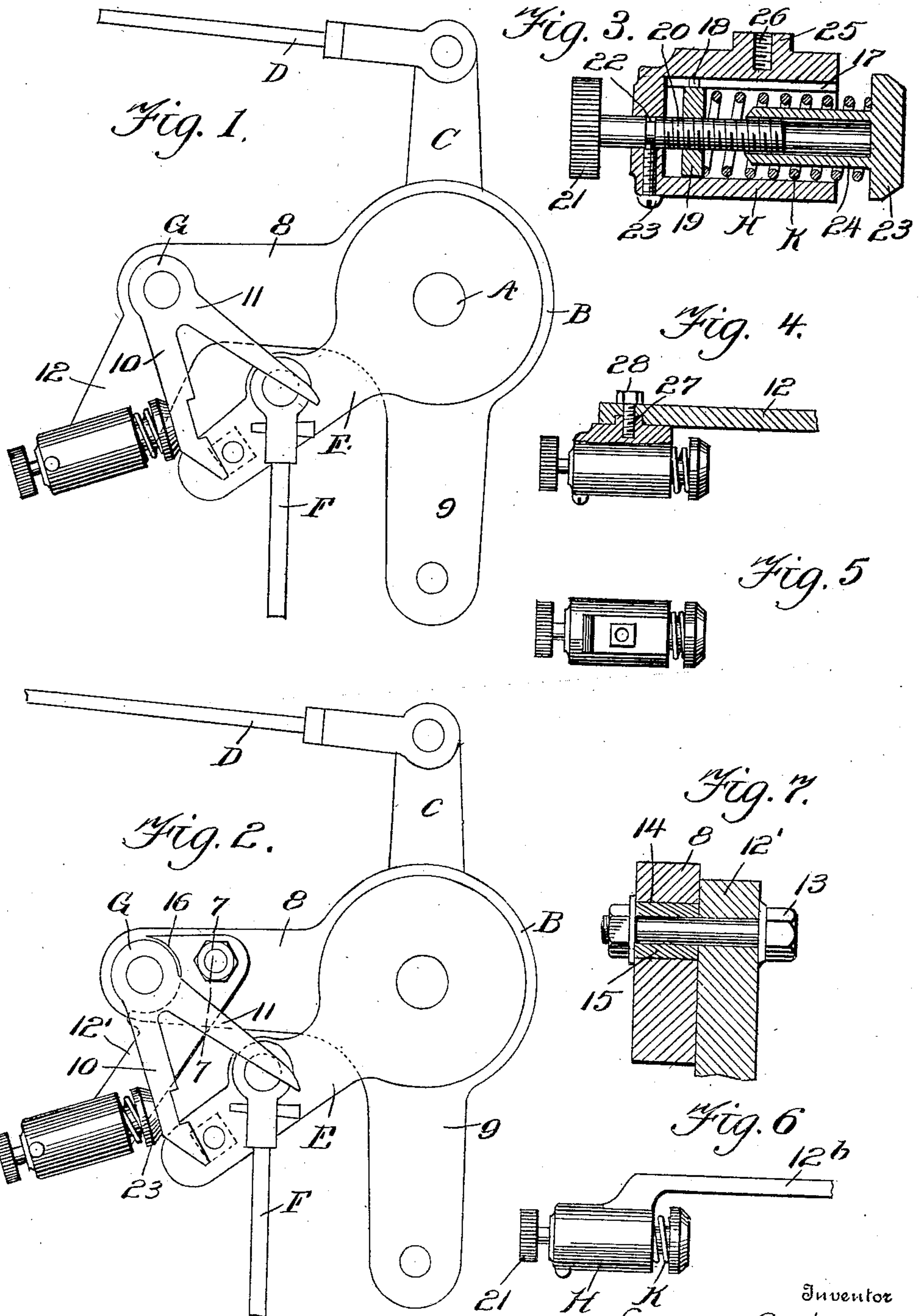


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 SPRING HOLDER FOR VALVE GEAR.
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Patented June 28, 1910.



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UNITED STATES PATENT OFFICE.

GEORGE GRAHAM, OF ST. LOUIS, MISSOURI.

SPRING-HOLDER FOR VALVE-GEAR.

962,953.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE GRAHAM, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented new and useful Improvements in Spring-Holders for Valve-Gear, of which the following is a specification.

This invention relates to the valve gear of certain types of engines; and it has particular reference to the spring whereby the crab claw mounted upon the bell crank is actuated.

Actuating springs of this character, as heretofore generally constructed, have been in the nature of leaf springs held in position by means of a stud, and such springs have been open to several objections in that they are liable to break under unusual strain, and in that adjustment of the tension of such springs while the parts of the device are in motion has been practically impossible.

The present invention therefore, has for its objects to produce an improved spring and a casing or supporting means for the same which shall be of such nature that breakage or rupture will be practically impossible.

A further object of the invention is to provide a construction whereby the tension of the spring may be easily and accurately adjusted while the parts are in motion.

Still further objects of the invention are to simplify and improve the construction and operation of a device of the character described.

With these and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawing has been illustrated a simple and preferred form of the invention; it being however understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the invention may be resorted to when desired.

In the drawing: Figure 1 is a side elevation showing a portion of a valve gear equipped with the improved spring and

holder. Fig. 2 is a similar view illustrating a slightly modified form of the invention. Fig. 3 is a horizontal sectional view taken longitudinally through the spring casing, the spring and related parts. Fig. 4 is a sectional plan view, somewhat reduced, showing the spring containing casing and related parts. Fig. 5 is a rear view of the spring containing casing and related parts. Fig. 6 is a plan view of the spring containing casing illustrating a slight modification. Fig. 7 is a sectional detail view taken on the plane indicated by the line 7—7 in Fig. 2.

Corresponding parts in the several figures are denoted by like characters of reference.

A fulcrum A supports in the usual manner the bell crank B having arms 8 and 9, said fulcrum being connected by the crank arm C with the valve stem D. The fulcrum also supports an arm or crank E which is connected in the usual manner with the spring F of the dash-pot. The crab claw G having the arms 10—11 is pivotally supported upon the arm 8 of the bell crank.

Under the present invention the arm 8 of the bell crank is provided with an extension forming a bracket 12 upon which the actuating spring of the crab claw may be supported; said bracket may be formed integral with the arm 8; or it may be in the nature of a separate member, as illustrated in Fig. 2 of the drawings where said bracket member has been specially designated 12'; said bracket member being mounted upon the arm 8 by means of a bolt 13, and the aperture 14 of the arm 8 being provided with a bushing 15 for the passage of the bolt. The bracket member 12' is formed with an arcuate recess 16 engaging the hub of the crab claw, thereby causing said bracket member to be retained very securely in proper position.

H designates a cylindrical casing or housing, open at one end and having an interior longitudinal groove 17 engaged by a lug or projection 18 formed upon a nut 19 which is fitted for longitudinal movement in the cylinder but which is held against rotation within the cylinder by the groove engaging projection. A set screw 20 which is fitted for rotation in the closed head or end of the cylinder is provided with a handle 21 whereby it may be conveniently rotated; said set screw has an annular

groove 22 which receives the point of a fastening screw 23 that is threaded radially through the head of the cylinder, thus permitting the set screw to be freely rotated while it is held against longitudinal movement with relation to the cylinder. The set screw 20 is in threaded engagement with the nut 19 which latter may thus be moved longitudinally of the cylinder by rotating the adjusting screw. A spring K which is coiled within the cylinder engages at one end the nut 19 and at the opposite end an abutment 23 having a sleeve or tubular socket 24 that extends within the cylinder for the reception of the end of the screw 20 which is freely slidable in said sleeve or socket; the latter also affords a guide or supporting member for the spring which is coiled exteriorly of said socket.

The casing H is provided at one side with a non-circular boss or projection 25 having a threaded recess 26; the supporting bracket 12 or 12' as the case may be, is provided with a non-circular recess 27 for the reception of the boss 25 and with an aperture for the passage of a fastening member such as a screw 28 engaging the recess 26 and whereby the spring containing housing may be mounted very securely upon the supporting arm or bracket. In practice, the spring actuated abutment 23 engages the arm 10 of the crab claw which is thereby actuated in the usual manner, and it will be readily seen that the tension of the spring K may be very easily and conveniently adjusted by manipulating the adjusting screw 20 by its handle 21.

Under the construction illustrated in Fig. 6, the housing H is formed integral with the supporting arm, which in this instance has been specially designated 12^b.

From the foregoing description, taken in connection with the drawing hereto annexed the operation and advantages of this invention will be readily understood by those skilled in the art to which it appertains.

The housing containing the improved spring may be readily connected with the bell crank of existing machinery by using the detachably supported bracket member 12'; or the bell crank may be formed with an integral supporting bracket as shown at 12 in Fig. 1.

The improved spring device is simple in

construction and certain in operation; and it may be manufactured and installed at a very moderate expense.

Having thus described the invention, what is claimed is—

1. In a device of the character described, a cylindrical housing open at one end, a nut longitudinally movable in the housing, an adjusting screw engaging the nut, an abutment guided for longitudinal movement relatively to the housing and the adjusting screw, and an expansion spring interposed between the nut and the abutment.

2. In a device of the character described, a housing, a nut longitudinally movable in said housing and held against rotation therein, a nut engaging adjusting screw supported for rotation relatively to the cylinder and held against longitudinal movement therein, an abutment having a sleeve engaging and guided upon the screw, and an expansion spring coiled within the housing exteriorly of the sleeve, said spring being interposed between the nut and the abutment.

3. In a device of the character described, a cylindrical housing closed at one end and having an interior longitudinal groove, a nut longitudinally slidable in the housing and having a projection engaging the groove, an adjusting screw engaging the nut and fitted for rotation in the head of the housing, said screw having an annular groove, a stop member engaging said groove, an abutment having a tubular extension or sleeve guided upon the adjusting screw, and an expansion spring within the housing, said spring being interposed between the nut and the abutment.

4. In a device of the class described, the combination with a supporting arm or bracket having a non-circular recess, of a spring containing housing having a non-circular boss engaging the recess, fastening means such as a screw engaging a threaded recess in the boss, an abutment actuated by the spring contained in the housing, and means for regulating the tension of the spring.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE GRAHAM.

Witnesses:

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