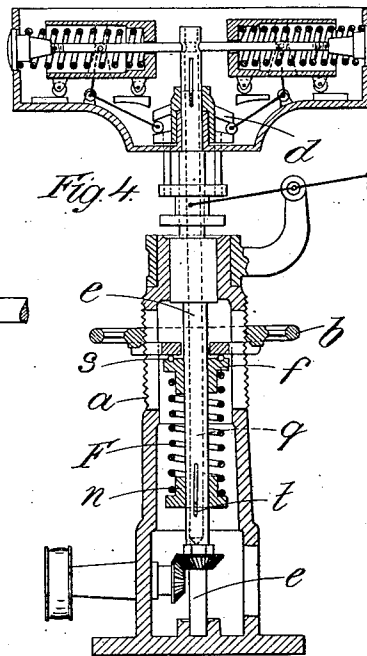
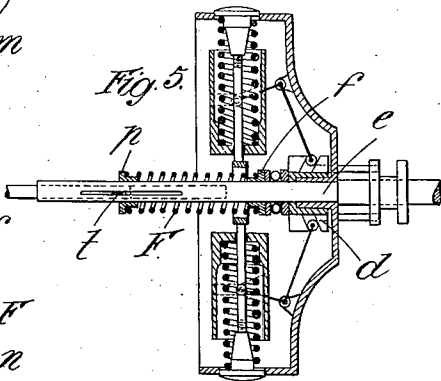
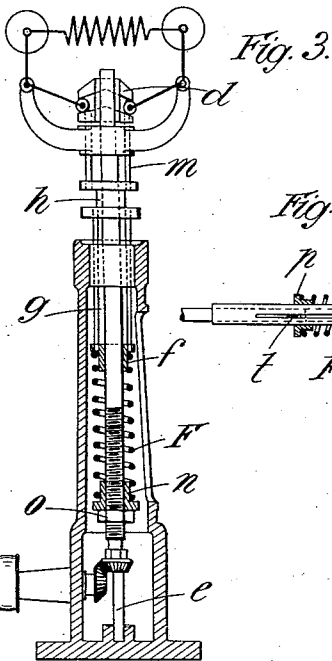
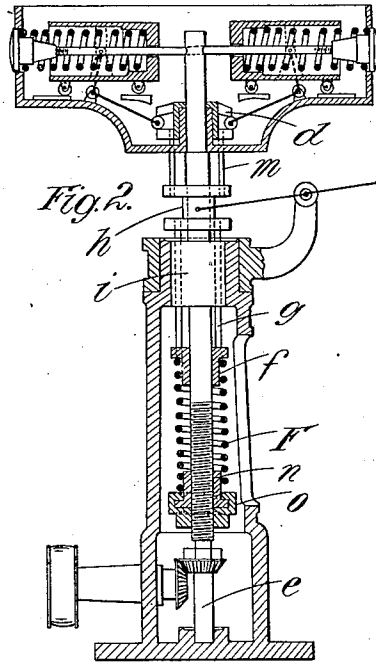
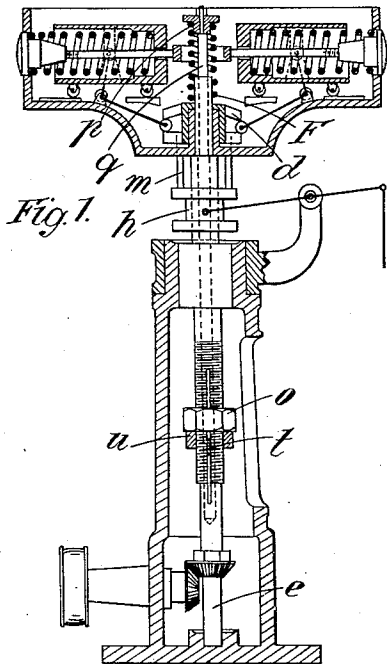


W. JAHNS.
CENTRIFUGAL REGULATOR.
APPLICATION FILED OCT. 12, 1908.

943,600.

Patented Dec. 14, 1909.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILHELM JAHNS, OF OFFENBACH-ON-THE-MAIN, GERMANY.

CENTRIFUGAL REGULATOR.

943,600.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed October 12, 1906. Serial No. 338,649.

To all whom it may concern:

Be it known that I, WILHELM JAHNS, a subject of the German Emperor, residing at Offenbach-on-the-Main, German Empire, have invented new and useful Improvements in Centrifugal Regulators, of which the following is a specification.

This invention relates to centrifugal regulators of that type embodying a regulator shaft, a slide collar and the usual angle lever connections with said slide collar and the operative parts of the regulator, and it has in view associating with this construction of regulator an auxiliary spring adapted to be so arranged to act as a load or reliever.

The principal object of the invention is to provide means for connecting the spring with the slide socket so that it will act either as a load or a reliever.

Other and further objects will be apparent from the following description when taken in connection with the accompanying drawings.

In the accompanying drawings—Figure 1 is a sectional view of a centrifugal regulator provided with my improvements. Figs. 2, 3 and 4 are similar views of a modified arrangement. Fig. 5 is a sectional view showing the invention applied to a horizontal regulator.

Like characters of reference refer to corresponding parts.

In the accompanying drawings I have illustrated the type of centrifugal machines in common use and which are well known, but in the following description I only refer to the parts of the machine to which my invention is directly connected.

In Fig. 1, F designates the auxiliary spring which is arranged concentrically around the upper part of the regulator shaft *e* and participates in the rotation of the said shaft. The lower end of the spring is connected with the slide-socket *d*, and rests with its upper part against a spring-plate *p*. The regulator shaft *e* has an opening bored through it lengthwise and in the inside of said opening a drawing rod *q* moves. To the upper end of the drawing rod the spring plate *p* is fastened. The regulator shaft *e* is moreover provided with a split of a length corresponding with the required variation in the tension of the auxiliary spring, in which a cross pin *t* moves. This pin is rigidly connected with the lower part of the drawing rod *q*.

U designates a press ring which acts upon the pin *t*, such press ring being actuated by means of a nut *o*. By shifting the nut *o* the position of the drawing rod *t* is changed, and thereby the tension of the auxiliary spring F. The regulator shaft might also be lengthened at the upper end and be provided with a thread, whereby a variation of the tension of the spring might be effected directly.

In Fig. 2 the auxiliary spring F is arranged around the lower part of the regulator shaft *e*, and turns with the same, and is rigidly connected with two rings *n* and *f* sliding on the shaft, of which the lower ring *n* is surrounded by a nut *o*, in which it can turn, which nut effects the variation of the tension of the spring. The upper ring *f* is rigidly connected, by means of rods *g*, with the bush *h* of the regulator, which bush is in turn rigidly connected with the slide socket by means of other rods *m*. In order to avoid any damaging of the upper bearing, the shaft of the regulator is strengthened by an enlargement *i* for the length of the upper bearing, and this enlargement is provided with holes through which the rods *g* slide. In this way there is attained a rigid connection of the upper end of the spring with the slide socket, and load on the slide ring, which always increases the degree of insensibility, is effectively avoided.

In Figs. 1 and 2 it will be seen that the auxiliary spring F acts in a downward direction, therefore as a load on the slide socket, pushing the slide socket down (see Fig. 1) and pulling it down (see Fig. 2), as the same is held fast on the nut *o* with its lower end through the ring *n*, by means of the ring *f*, the rods *g*, the bush *h* and the rods *m*. In Fig. 3, which in other respects is similar to Fig. 2, the auxiliary spring F rests with its lower end on the ring *n* carried by the nut *o*, and pushes the slide socket *d* upward by means of the ring *f*, the rods *g*, the bush *h*, and the rods *m*. Therefore it acts as a reliever. But also in Fig. 2, the auxiliary spring *aF* could push upward instead of pulling downward and thus act as a reliever, when it is fastened on the slide socket and to the plate *p*, and the drawing rod *q* is held fast at the bottom on the nut *o*.

In Fig. 4, the auxiliary spring is arranged around the lower part of the shaft *e* of the regulator with which it turns, and rests

with its lower end on the ring *n*. Said ring *n* can be shifted on the shaft *e* of the regulator, and by means of the cross pin *t* and the drawing rod *q* sliding in the hollow shaft *e*, transmit the tension of the spring to the slide socket *d*. The upper end of the spring *F* rests on the ring *f*, which turns with the shaft *e*. Upon this acts, preferably through a ball bearing *s*, the hand wheel *b*, which can be screwed on and off the regulator column *a*. The auxiliary spring *F* pushed down on the ring *n*, and thereby the slide socket *d*, and it therefore acts as a load, as can be seen from the drawing; but it might also draw up the ring *n* and thus act as a reliever, when fastened to the rings *f* and *n*; and the lower end of the drawing rod *q* is so connected with the ring *n* that the latter pulls it up with it. The auxiliary spring acts here through the ring *n* and the drawing-rod *q* upon the slide socket *d*.

In Fig. 5 I show a form of construction of the invention applied to axle-regulators, in which the auxiliary spring acts immediately upon the slide socket and as a load. *F* is the spring, which in the form shown in the drawing rests with one of its ends against a spring plate *p*, which can be shifted and adjusted in the same manner as in the construction shown in Fig. 1, that is, by means of a drawing rod arranged in the shaft *e*, and having a pin which passes through a slit in the shaft, while the other end of the spring pushes against a second spring plate *f* connected with the slide socket by means of a ring or the like and consequently against the slide socket itself.

As a modification of the described arrangement the auxiliary spring might, of

course, be arranged in a similar manner as in the above described forms and as represented in the other figures.

I claim as my invention:

1. In a centrifugal regulator, the combination with a hollow regulator shaft, a slide element, and the usual angle lever connections with the latter, of a drawing rod sliding within the shaft, a cross pin carried by the rod and slidably projecting through the shaft, an adjusting nut mounted on the shaft and coöperating with said pin, an abutment arranged at the upper end of the drawing rod, and an auxiliary spring arranged concentrically on the regulator shaft and turning therewith, said spring being interposed between said abutment and said slide element.

2. In a centrifugal regulator, the combination with a hollow regulator shaft provided with a slitted portion, a slide element, and the usual angle lever connections with the latter, of a drawing rod sliding within the shaft, a cross pin carried by the rod and slidably projecting through the slitted portion of said shaft below said slide element, a nut mounted on said shaft adjacent to said pin and coöperating therewith to adjust said slide element, an abutment arranged at the upper end of the drawing rod, and an auxiliary spring arranged concentrically on the regulator shaft and turning therewith, said spring being interposed between said abutment and said slide element.

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

WILHELM JAHNS.

Witnesses:

JEAN GRUND,
CARL GRUND.