

G. WALKER.

SPRING SCALE.

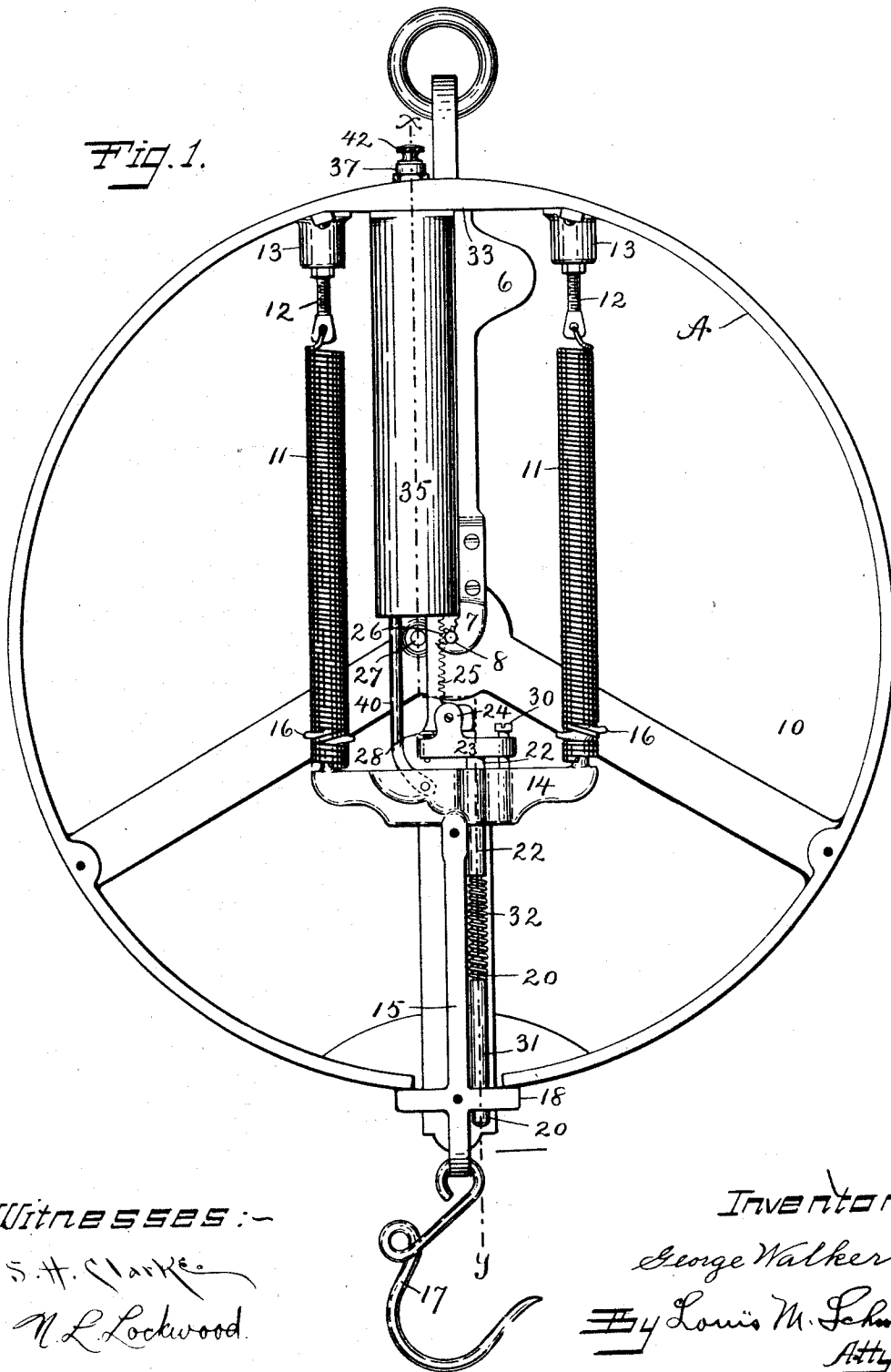
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2 SHEETS—SHEET 1.

979,611.

Fig. 1.



Witnesses:—

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2 SHEETS-SHEET 2

Fig. 2.

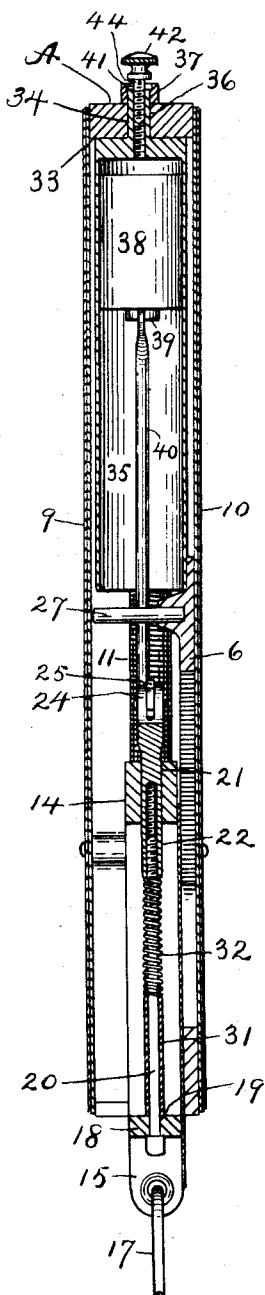


Fig. 3.

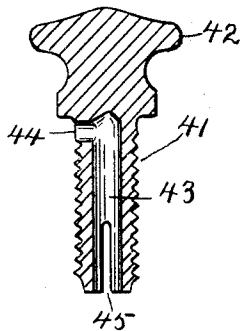


Fig. 4.

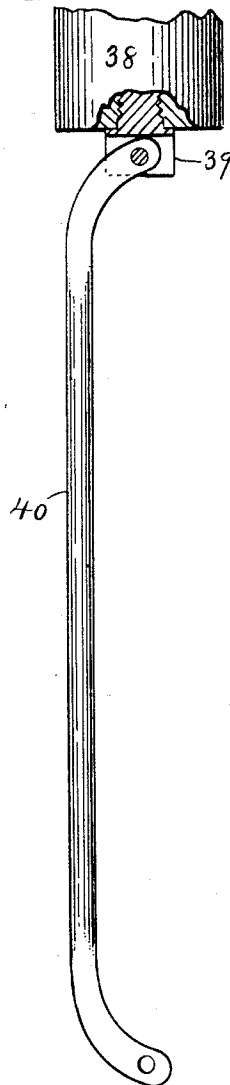
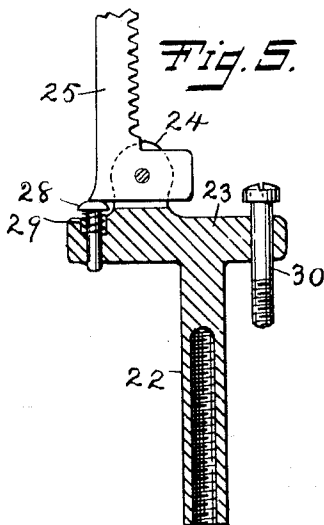


Fig. 5.



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UNITED STATES PATENT OFFICE.

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SPRING-SCALE.

979,611.

Specification of Letters Patent.

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To all whom it may concern.

Be it known that I, GEORGE WALKER, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have made certain new and useful Improvements in Spring-Scales, of which the following is a specification.

My invention relates to improvements in spring scales, and the objects of my improvements are simplicity and economy in construction and convenience and efficiency in use, particularly with reference to the tare adjustment and to the indicator checking device.

In the accompanying drawing, Figure 1 is a rear elevation of a scale embodying my improvements, the sashes for the dial glasses being removed. Fig. 2 is a vertical section of the same with the front dial in place, the upper portion being on the line *x* and the lower portion being on the line *y* of Fig. 1, some of the parts being shown in elevation. Fig. 3 is an enlarged central vertical section of the regulating screw of the pneumatic indicator checking device. Fig. 4 is a side elevation of a portion of the piston of the pneumatic check, partly in broken out section, together with the piston rod connected thereto, and Fig. 5 is a vertical section of the tare adjusting slide with connected parts in side elevation.

A designates the frame of the case having the partial back 6 upon which to place different parts including the bracket 7 for supporting the ordinary pinion shaft 8 to the opposite ends of which shaft ordinary pointers, not shown, may be mounted for the front and rear dials 9 and 10 respectively. Ordinary counterbalancing springs 11 are hung upon the adjustable studs 12, which studs are screwed into the bosses 13 on the upper part of the frame A. The lower ends of the springs are connected with the cross head 14 of the draw bar 15 in any ordinary manner as for example by means of flanged studs 16 upon which the lower ends of the springs are screwed. The draw bar 15 is provided at its lower end with any ordinary means for supporting a load, as for example the hook 17. A wing or lateral projection 18 near the lower end of the draw bar 15 and the cross head 14 are both vertically perforated, the perforation 19 in the wing 18 being for the reception of the tare adjusting screw 20 while the perforation 21

in the cross head is to receive the hollow and internally threaded stem 22 of the tare adjusting slide 23. The body of the said slide extends horizontally across the upper end of the said stem and is provided on the top with lugs 24 in which to pivot the ordinary rack 25 for engagement with an ordinary pinion 26 on the pinion shaft 8.

An ordinary post 27 mounted on the partial back 6 of the frame prevents the complete disengagement of the rack from the pinion while any ordinary means may be provided to constantly press the rack toward the pinion, as for example the plunger 28 and its spring 29. The stem 22 of the slide 23 is fitted in the vertical perforation 21 of the cross head as a partial guide, the slide being additionally guided by the stud or post 30 that is fixed in the cross head. The adjusting screw 20 passes from below up through the perforation in the wing 18 of the draw bar into the lower end of the stem 22 of the slide. A tube 31 is placed on the screw 20 above the wing 18 and a spring 32 is placed on the screw above the tube so that the upper end of the tube serves as a shoulder upon which to seat the lower end of the spring, while the upper end of the spring bears on the lower part of the slide body with a constant tendency to force the slide upwardly. The wing 18 of the draw bar is on the outside of the frame A.

I am aware that many different devices have been made for adjusting the rack relatively to the draw bar and connected springs for what is called the tare adjustment and broadly speaking the general operation of the devices are the same. By my improvement the construction is simple and inexpensive, and the operation is simple, convenient and efficient. The head of the adjusting screw is at the lower end of the draw bar where it is always accessible from the outside. When the screw is turned inwardly it pulls the slide 23 downwardly on the draw bar and against the spring 32. When turned outwardly it permits the spring to force the slide upwardly relatively to the draw bar.

The scale thus far described is complete and operative; but in some cases, especially for large scales, it is desirable to check the action of the springs 11 so as to bring the pointer on the indicator quickly to rest. To this end I form a flat horizontal seat 33 on

the inside of the frame A at its upper part and provide the rim of the frame with a perforation 34 through the said seat and rim to the outside of the frame. This perforation is between the springs 11 and a little to one side of the center pinion and its rack. A pneumatic cylinder 35 is provided at its upper end with an internally and externally threaded boss 36 that passes through the perforation 34 and receives a nut 37 to secure the said cylinder rigidly upon the inside of the case in a position to have the upper end of the rack 25 pass upwardly within the cylinder a little to one side of its center. The cylinder is provided with a piston 38, which I prefer to construct mainly of graphite, the same being connected by the screw 39 and offset piston rod 40 to the cross head of the draw bar, whereby the piston moves vertically with the draw bar so as to check the springs and bring the pointer quickly and gently to rest. In order to compensate for the wear of the piston and to regulate the action of the pneumatic check I provide the adjusting screw 41 and place the same in the centrally threaded hole of the boss 36. This screw is provided with a knurled head 42 for convenience of turning the same, the lower end of which head forms a shoulder at the junction of the head and screw body. The body of the screw is provided with a central perforation 43 at or near the upper end of which is a cross bore 44 that opens out just under the head of the screw. The lower end of the screw is also split longitudinally as at 45 to make it slightly yielding so that the screw may be fitted spring friction tight to prevent accidental disarrangement and at the same time it may be easily turned by hand when desired. I prefer to counter-bore or recess the upper end of the nut 37 of a size to substantially fit the lower end of the head.

When the adjusting screw is unscrewed far enough to wholly uncover the cross bore 44, the cylinder and piston will have the least checking action on the indicator that is possible with a given fit of piston within the cylinder. By turning the adjusting screw, at the top of the scales (where it is exposed so as to always be readily accessible) inwardly far enough to cover the mouth of the cross bore to a greater or less extent

the checking action may be regulated so as to check the movement of the indicator or indicators quickly as may be desired and without any shock to the parts. By my improvement the cylinder may be cheaply and quickly fixed in place and rigidly held while at the same time the mechanism by which it is so held provides for the application of the regulating screw at a convenient point. As before stated, the screw is held with a yielding friction so that it may be turned easily and at the same time is not liable to accidentally loosen or change the adjustment.

It is apparent that some changes from the specific construction herein disclosed may be made and therefore I do not wish to be understood as limiting myself to the precise form of construction shown and described, but desire the liberty to make such changes, in working my invention, as may fairly come within the spirit and scope of the same.

I claim as my invention:—

1. In spring scales the combination of the draw bar, its cross head and wing the tare adjusting slide having the internally threaded hollow stem mounted within the said cross head, an adjusting screw passing upwardly through the said wing into the said stem for drawing the slide downwardly, and a spring on the said screw for moving the slide when the screw is moved in the reverse direction.

2. In spring scales the combination of the draw bar, its cross head and wing the tare adjusting slide having the internally threaded hollow stem mounted within the said cross head, an adjusting screw passing upwardly through the said wing into the said stem for moving the said slide.

3. In spring scales, the combination of the case frame having a vertically perforated and internal flat seat at its upper part with a pneumatic cylinder having a hollow and internally threaded boss at its upper end, for passing through the said perforation, a nut on the outer end of the said boss for holding the cylinder in place and an air adjusting screw fitted within the said boss.

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Witnesses:

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