

(No Model.)

3 Sheets—Sheet 1.

C. SPENCER.
SPRING SCALE.

No. 530,362.

Patented Dec. 4, 1894

Fig. 2.

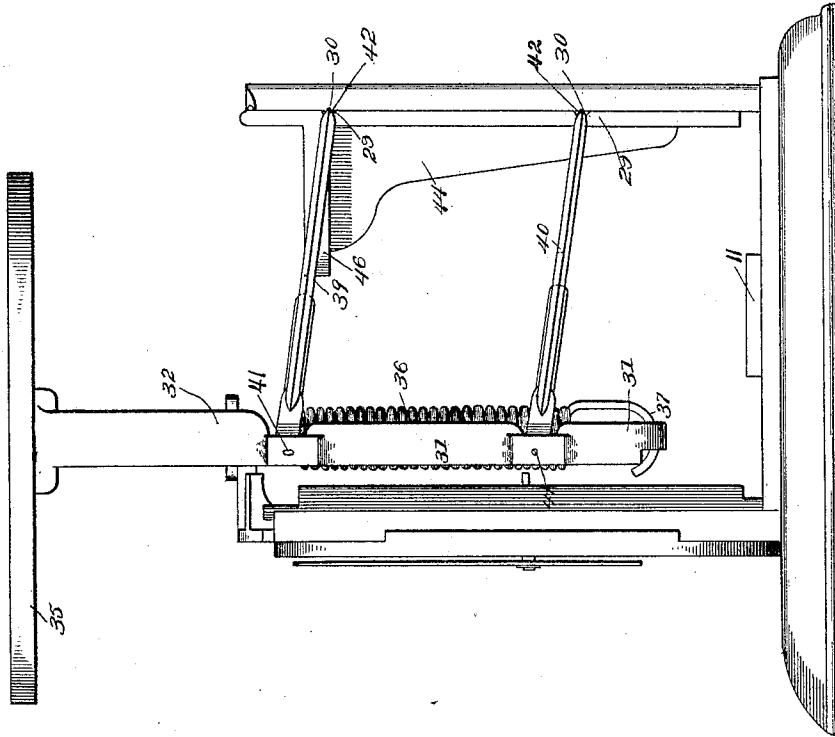
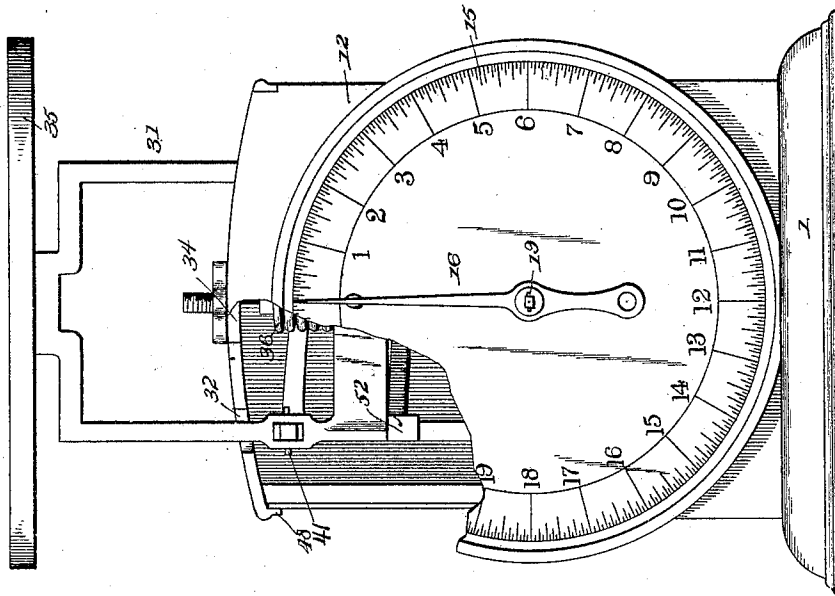


Fig. 1.



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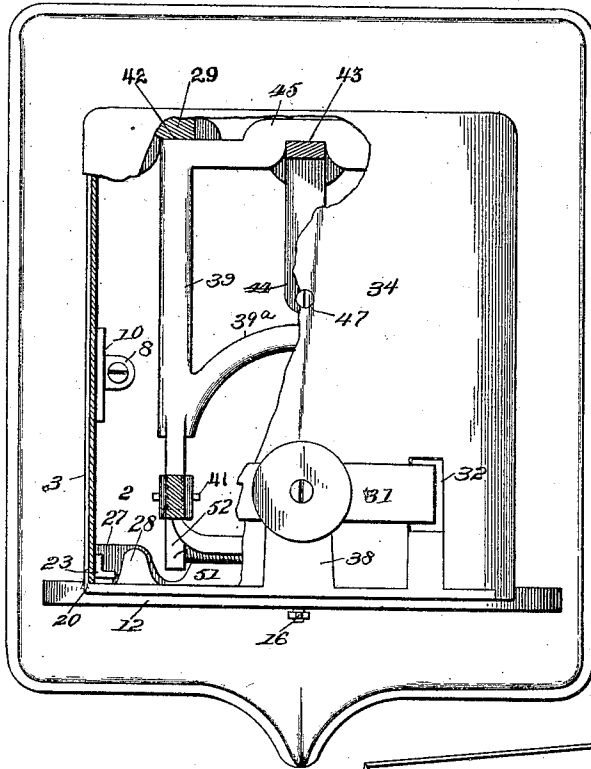
C. SPENCER.
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Fig. 3.



1

Fig. 5.

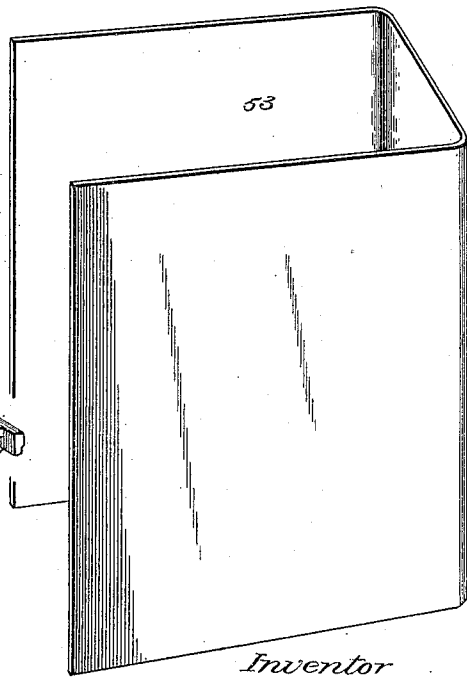
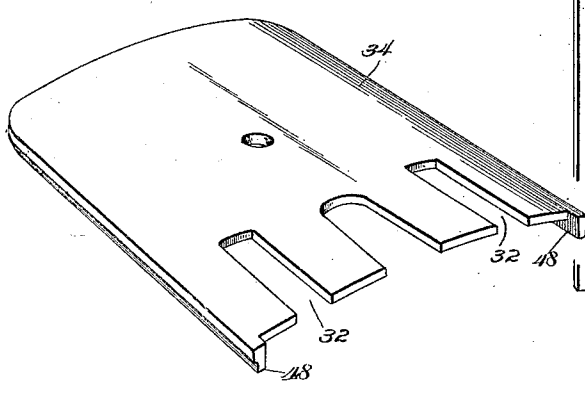


Fig. 4.



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Fig. 7.

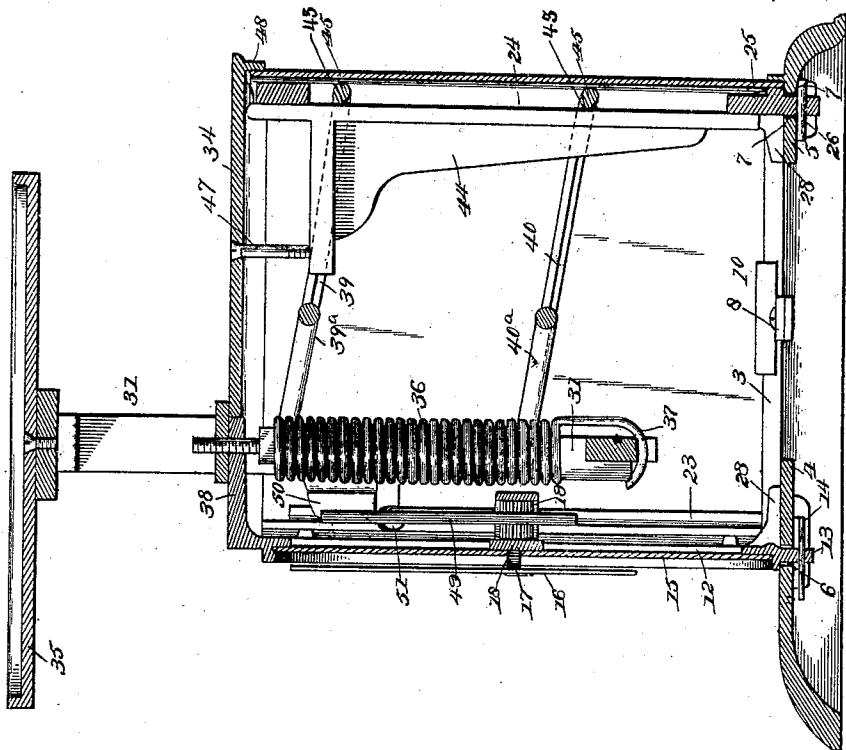
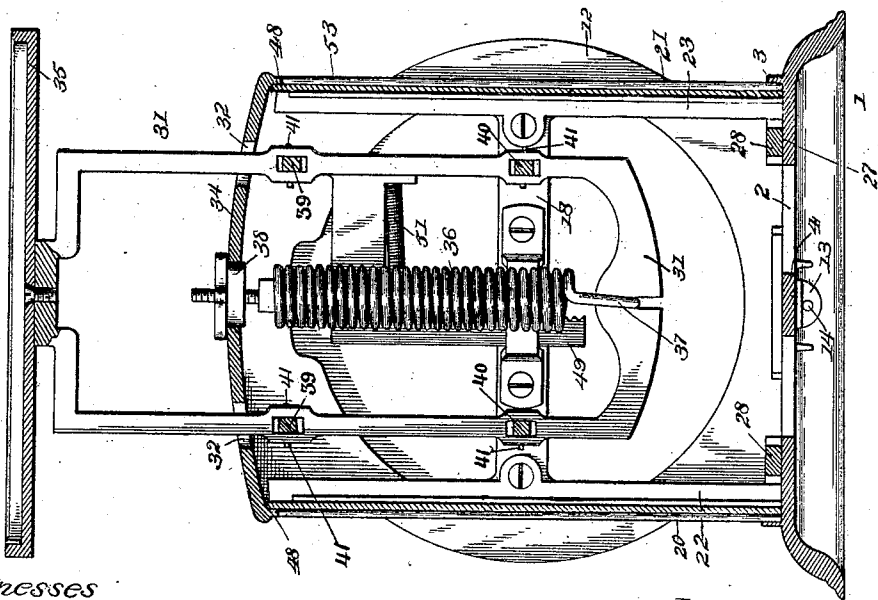


Fig. 6.



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UNITED STATES PATENT OFFICE.

CHRISTOPHER SPENCER, OF GUILFORD, CONNECTICUT, ASSIGNOR TO I. S. SPENCER'S SONS, OF SAME PLACE.

SPRING-SCALE.

SPECIFICATION forming part of Letters Patent No. 530,362, dated December 4, 1894.

Application filed January 17, 1894. Serial No. 497,157. (No model.)

To all whom it may concern:

Be it known that I, CHRISTOPHER SPENCER, a citizen of the United States, residing at Guilford, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Spring-Scales, of which the following specification, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in the class of spring scales illustrated by Patent Reissue No. 2,341, reissued August 21, 1861, to Reuben Shaler, in which a vertically movable pan-supporting frame is connected to a stationary standard by means of cross frames, and is held in its uppermost position by means of a spiral spring. An indicator traverses a suitable dial by reason of the rack and pinion connection with the pan-supporting frame.

My present improvements tend to simplify the improvement of structure shown in the Shaler patent above referred to, and consist of certain features of novelty which will first be described with reference to the accompanying drawings and afterward more particularly pointed out in the claims.

In said drawings: Figure 1 is a front elevation of my improved scale, having part of the face plate broken away to show some of the interior mechanism. Fig. 2 is a side elevation of the same with the top and side casing removed. Fig. 3 is a top plan view of the same, part being broken away. Fig. 4 is a perspective view of the top removed from the scale, and Fig. 5 is a perspective view of the removable integral back and sides. Fig. 6 is a vertical sectional view taken on the line 6—6 of Fig. 2, and looking toward the front of the scale as indicated by the arrows. Fig. 7 is a vertical sectional view taken on the line 7—7 of Figs. 1, 3 and 6.

Like numerals of reference indicate the several parts through the several views.

1 is the base of the scale formed with the central open portion 2 and the rim or flange 3 surrounding the two sides and back of the central opening.

4 and 5 are inwardly projecting lugs at the

front and back respectively formed with openings 6 and 7 for the purpose presently to appear.

8 and 9 are perforated lugs extending from the sides, to which are secured the clamping plates 10 and 11. See Figs. 3 and 7.

12 is the front plate of the scale which is formed with the central depending lug 13 which passes through or is mortised in the opening 6 of the lug 4, and is keyed or otherwise secured therein by a pin 14 which passes through an opening in the projecting lug 13.

15 is the dial plate secured to the face of the front plate 12 and marked off in the customary manner.

16 is the indicator mounted upon the pin 17 which projects through the dial plate 15 and is journaled in the bracket 18 and provided with a pinion 19.

20 and 21 are vertical flanges on the front plate 12, and 22 and 23 are clamping plates secured to the front plate 12 inside of the flanges 20 and 21 for the purpose which will presently appear.

24 is the back frame or standard formed with the central lug 25 which extends through or is mortised in the opening 7 of the lug 5, and is secured therein by means of the pin 26.

27 are corner lugs formed integral with the base upon which rest the feet 28 of the front plate 12 and rear standard 24. The rear standard 24 is formed with inwardly projecting portions 29 adjacent to the top and center in the faces of which are cut angular grooves 30 for the reception of the knife edges of the cross frames. See Figs. 2 and 3.

31 is the vertically movable pan-carrying frame working in the slots 32 of the removable cover 34, and supporting upon its upper end the weighing pan 35. This frame 31 is yieldingly supported by means of the vertical spiral spring 36 which extends in a line directly below the center of the weighing pan and engages at its lower end 37 with the frame 31, and is adjustably supported at its upper end from the rearwardly extending lug 38 which is formed integral with the front plate 12.

39 and 40 are parallel cross frames, which

are connected at their forward ends with the vertical movable frame 31 by means of the pivot pins 41. Aside from being pivoted to the frame 31, the cross frames are mortised into said frames, as clearly shown in the drawings, and for the purpose of providing ample room for the spring 36 which extends directly below the center of the pan, each frame 39 and 40 is formed with a curved bracing arm 39^a or 40^a, which arms curve round the spring and do not interfere with it. The rear end of each of the cross frames 39 and 40 is formed with the outside knife edges 42 and the inner knife edges 43; the knife edges 42 of both frames resting in the angular grooves 30 of the rear frame 24, while the knife edges 43 of both frames engage the rear face of the removable upright bar 44 which is secured to the standard 24 by means of suitable screws.

It will be observed that the knife edges 43 are formed on the offset portions 45 of the cross frames, and that the vertical bar 44 engages said offset portions and holds the knife edges 42 of the cross frames in place in the angular grooves 30.

46 is the arm projecting from the bar 44, to which the removable cover 34 is attached by means of the screw bolt 47.

It will be observed that the removable cover is formed with an inclosing flange 48 for the purpose presently to be explained.

49 is the rack bar pivoted to the arm 50 of the movable frame 31, and 51 is a small spiral spring attached at one end to said rack bar, and at the other end to the arm 52 of said frame 31, for the purpose of holding the rack bar into engagement with the pinion 19 of the indicator, whereby the movement of the frame 31 will be transferred to the indicator and indicated on the dial.

53 represents the removable sides and back formed in a single piece of sheet metal, and adapted to fit snugly around the stationary rear frame 24, and be held securely between said frame and the clamping plates 10 and 11 and the flange 3 of the base plate, the inclosing flanges 20 and 21 of the front plate and the clamping plates 22 and 23, and the flange 48 of the removable cover. This will be clear from the drawings.

The great advantage of my improved construction over what is already known is that the parts of the scale can be entirely assembled and adjusted upon the base plate before the sheet metal sides, back and cover are put in place. This is a very important feature.

I am aware that my improved scale is not broadly new, and have accordingly limited my claims to the exact construction shown and described which I have found to be very important.

The great objection to the structure shown in the Shaler reissue above referred to, is that the spring was set back from under the

weighing platform, and consequently it would not weigh correctly. I have overcome this difficulty by having the spring extend in a line directly beneath the center of the weighing platform, and mortising the cross frames into the pan-supporting frame.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a spring scale, the combination of the vertically movable pan-supporting frame, the spring for holding the said frame normally in elevated position, the toothed rack carried by said frame, the indicator, the actuating pinion which meshes with said rack, a stationary upright frame formed with angular cross grooves, and the parallel cross frames mortised into and pivotally attached to the pan-supporting frame, and formed with knife edges which bear in the cross grooves of the stationary upright frame, substantially as set forth.

2. In a spring scale, the combination of the base formed with an inclosing flange for the back and sides, the rear upright frame rigidly secured to the base, the front dial-supporting plate also rigidly secured to the base and formed with inclosing flanges for the sides, the vertically movable pan-supporting frame connected to the stationary upright frame by means of the parallel cross frames, the spring attached to the vertically movable frame, the indicator, the rack for actuating the indicator, the sides and back formed in a single piece of sheet metal and extending around the rear upright frame and fitting snugly within the inclosing flanges on the base and front plate, the clamping plates secured to the base and front plate for engaging the sides, the removable top plate formed with an inclosing flange which fits around the sheet metal back and sides, and means for securing the top to the upright frame, substantially as set forth.

3. In a spring scale, the combination of the base, the rear upright frame rigidly supported upon the base and mortised and keyed thereto, the front dial-supporting plate also rigidly supported upon the base and mortised and keyed thereto, the vertically movable pan-supporting frame connected to the stationary upright frame by means of the parallel cross frames, the spring attached to the pan-supporting frame for holding it normally in elevated position and extending vertically in a line directly beneath the weighing pan, the indicator, the rack for actuating the indicator, the sheet metal sides and back, and the removable cover, substantially as set forth.

4. In a spring scale, the combination of the base, the front and rear frames rigidly supported upon the base, the angular grooves formed in the rear frames, the vertically movable pan-supporting frame, the lug formed in-

tegral with the front plate or frame the spring
for supporting said pan-supporting frame ex-
tending directly below the weighing pan, and
attached at one end to the integral lug of the
5 front plate and at the other end to the mov-
able pan-supporting frame, the parallel cross
frames mortised into and pivotally connected
to the pan-supporting frame at their front
ends, and formed with curved bracing arms
o which curve around the spring and provide

ample room for it to work in, and knife edges
at the rear ends of the cross frames which
work in the angular cross grooves of the rear
frame, the indicator, the rack for actuating
the indicator, substantially as set forth.

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