

(No Model.)

H. HAERTER.

SPRING BALANCE.

No. 294,227.

Patented Feb. 26, 1884.

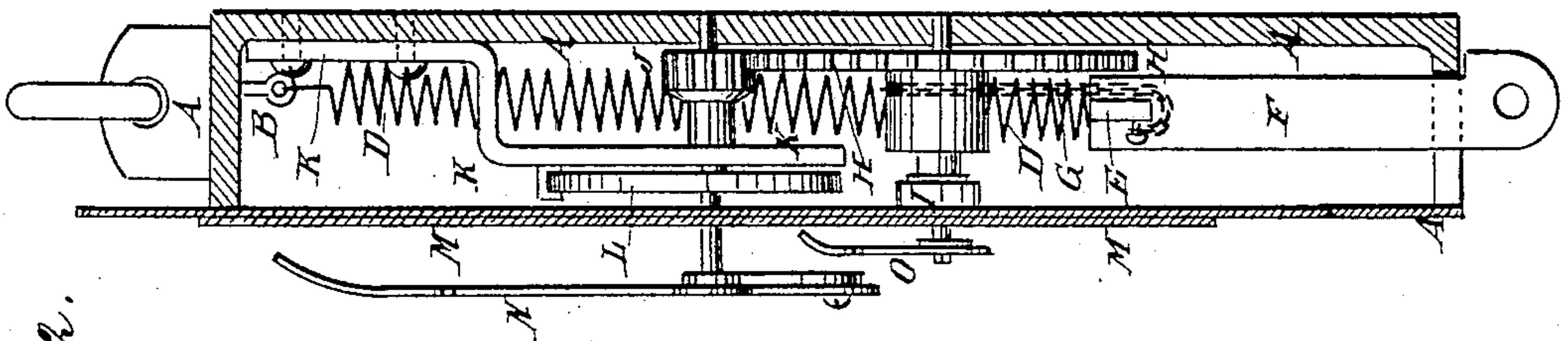


Fig. 2.

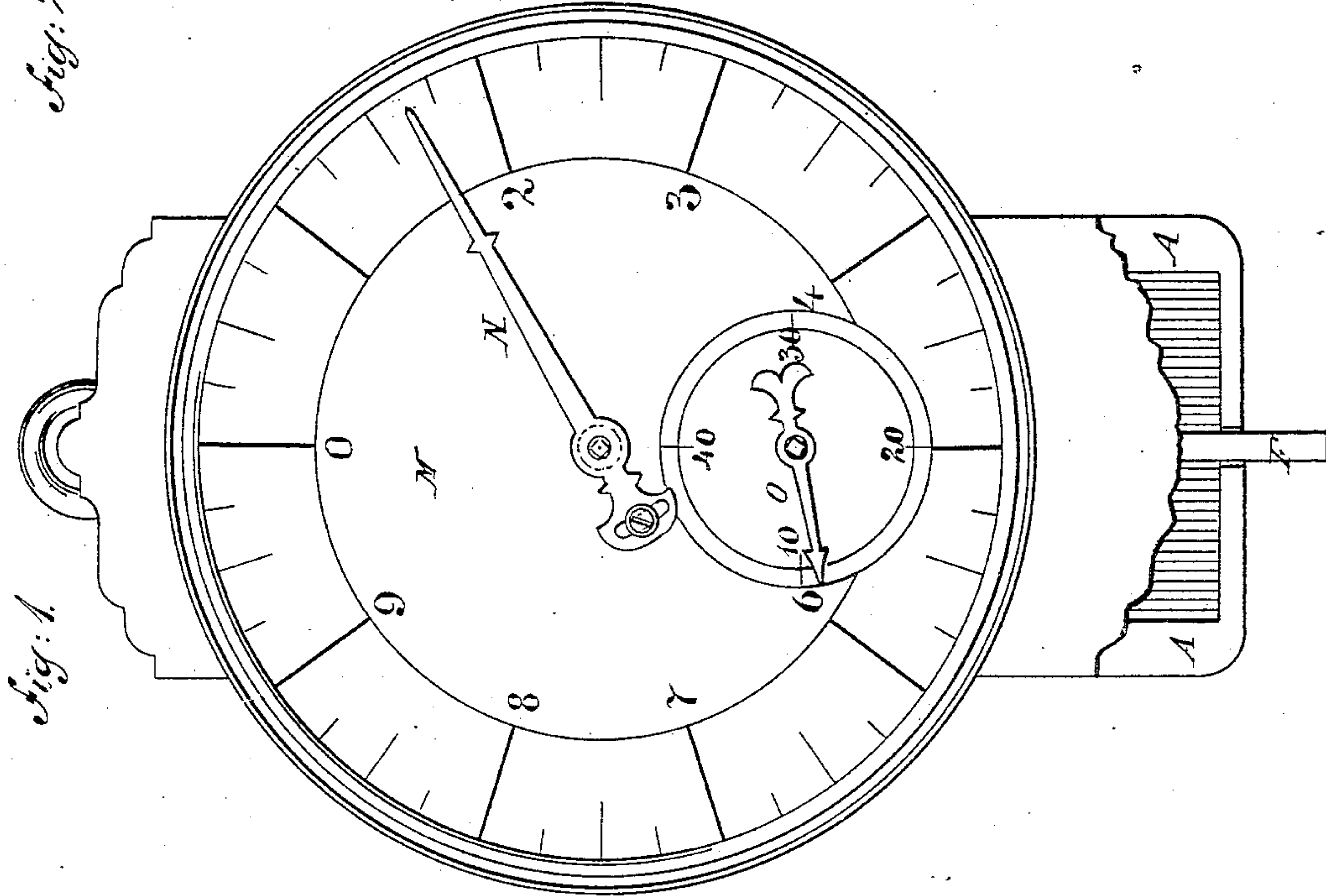


Fig. 1.

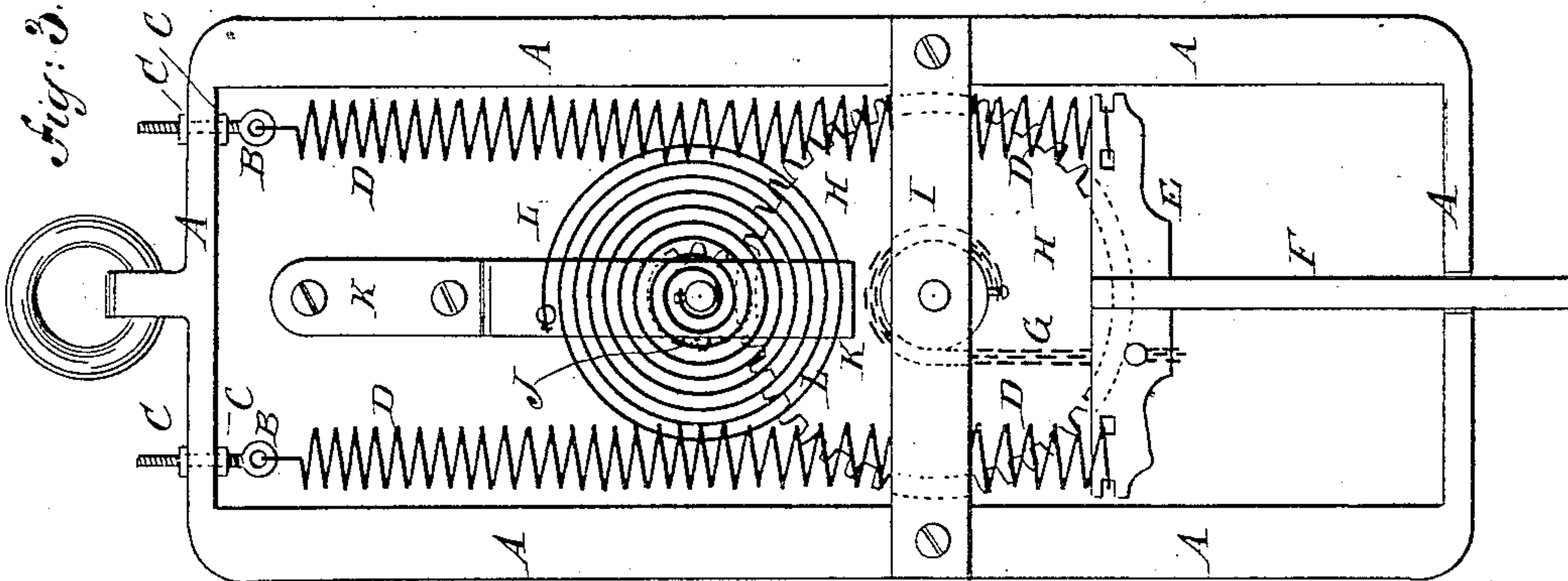


Fig. 3.

WITNESSES:

*Chas. Nida*  
*C. Padgwick*

INVENTOR:

*H. Haarter*  
BY *Munn & Co*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

HUGO HAERTER, OF NEW YORK, N. Y.

## SPRING-BALANCE.

SPECIFICATION forming part of Letters Patent No. 294,227, dated February 26, 1884.

Application filed January 4, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, HUGO HAERTER, of the city, county, and State of New York, have invented a new and useful Improvement in  
5 Spring-Balances, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate  
10 corresponding parts in all the figures.

Figure 1 is a front elevation of one of my improved spring-balances; Fig. 2, a sectional side elevation of the same. Fig. 3 is a front elevation of the same, the dial-plate being re-  
15 moved.

The object of this invention is to secure greater accuracy in the operation of spring-balances, and adapt said spring-balances to be made with shorter and stronger springs  
20 than is practicable when the balances are made in the ordinary manner.

The invention consists in a spring-balance constructed with a large and a small gear-wheel meshing into each other, connected with  
25 a cross-bar suspended from the graduated springs by a chain passing around the hub of the large gear-wheel, and provided with a coil-spring connected with the journal of the small gear-wheel, whereby great accuracy in  
30 weighing is secured, as will be hereinafter fully described.

A represents the frame of the balance, which is provided with a suspension-ring in the ordinary manner.

35 To the top bar of the frame A are secured, by eyebolts B and nuts C, the upper ends of two strong graduated spiral springs, D, the lower ends of which are attached to the ends of a short cross-bar, E.

40 To the center of the cross-bar E is attached the upper end of the bar F, from the lower end of which is suspended, in the ordinary manner, the article to be weighed.

To the cross-bar E is attached the end of a  
45 short chain, G, which is wound around, and its other end is attached to the hub of the large gear-wheel H. The gear-wheel H is journaled to the back plate of the frame A, and to a cross-bar, I, attached to the forward  
50 edges of the side bars of the said frame, which side bars are recessed to receive the said cross-bar, so that the forward side of the cross-bar

will be flush with the forward edges of the said side bars. The teeth of the large gear-wheel H mesh into the teeth of the small  
55 gear-wheel J, which is journaled to the back plate of the frame A, and to the bar K. The upper part of the bar K is bent inward and upward, and is secured to the back plate of the frame A by screws or other suitable means.  
60 The gear-wheel H has four times as many teeth as the gear-wheel J, so that one revolution of the said gear-wheel H will give the said gear-wheel J four revolutions.

To the journal of the small gear-wheel J is  
65 attached the inner end of a coiled spring, L, the outer end of which is secured to a stud or other support attached to the bar K. The spring L gives steadiness of movement to the gear-wheel J, and is made of sufficient strength  
70 to turn the gear-wheels J H back to their places when the article being weighed has been detached, and the cross-bar E is being raised by the springs D.

To the front of the frame A is attached the  
75 dial-plate M, through holes in which the journals of the gear-wheels J H project.

To the journal of the small gear-wheel J is attached a long index-finger, N, the outer end of which travels along a scale of division-  
80 marks formed around the edge of the dial-plate. The scale is divided into ten spaces, and each space is subdivided to indicate fractions of a pound.

To the journal of the large gear-wheel H is  
85 attached a short index-finger, O, the outer end of which travels along a scale of division-marks formed upon the dial-plate M around the journal of the said gear-wheel H. The scale is formed of four equidistant marks,  
90 which are numbered 10, 20, 30, 40, in the reverse order from the large scale. With this construction the large finger N will indicate the weight from one to ten, or the units of weight, and the index O will indicate the tens  
95 up to forty.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A spring-balance constructed substantially as herein shown and described, with a  
100 large and a small gear-wheel meshing into each other, and connected with a cross-bar suspended from the graduated springs by a chain passing around the hub of the large gear-

wheel, and provided with a coiled spring connected with the journals of the small gear-wheel, as set forth.

2. In a spring-balance, the combination, with  
5 the cross-bar E, suspended from the graduated spring D, and the large and small gear-wheels H J, of the chain G, and the coiled spring L,

substantially as herein shown and described, whereby great accuracy in weighing is secured, as set forth.

HUGO HAERTER.

Witnesses:

JAMES T. GRAHAM,  
EDGAR TATE.