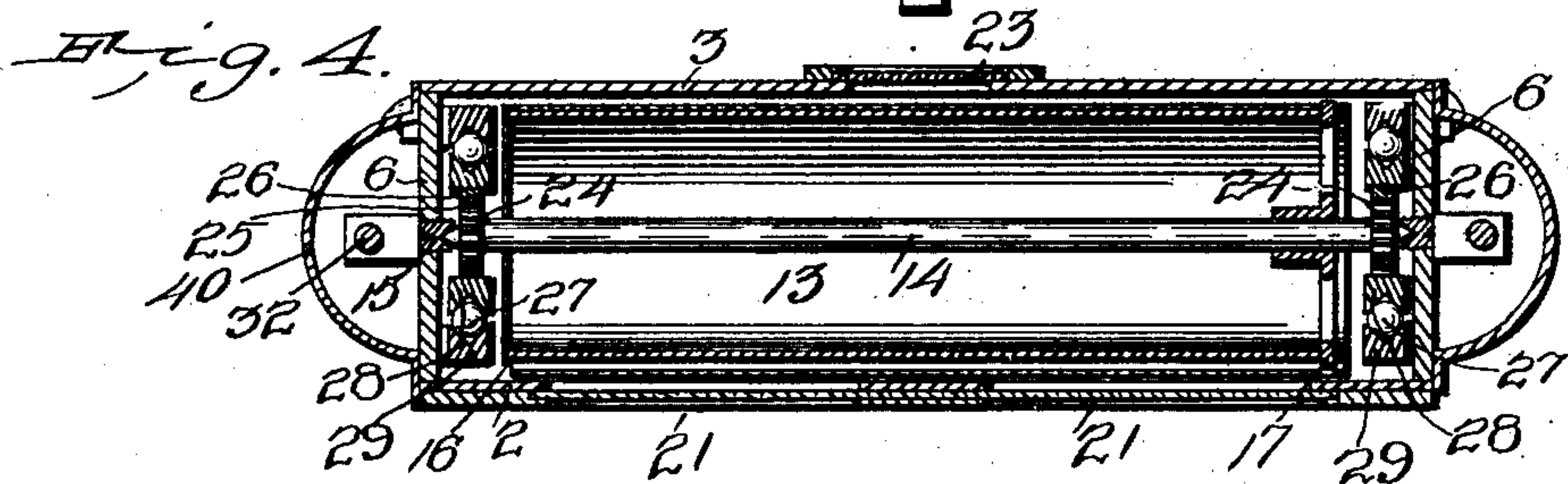
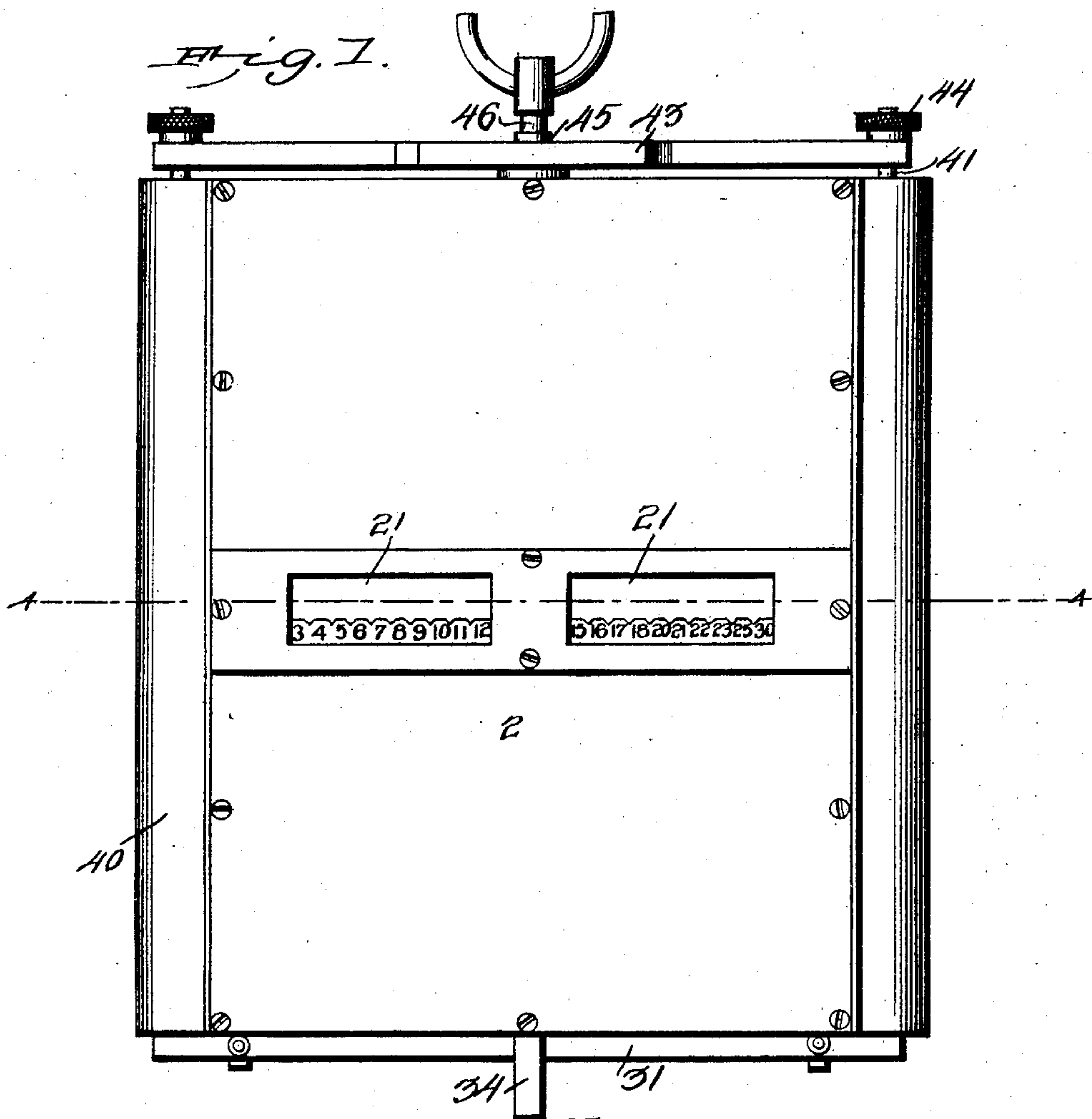


T. L. TINCHER.
COMPUTING SCALE.

APPLICATION FILED JUNE 30, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
E. H. Stewart
J. J. Pily

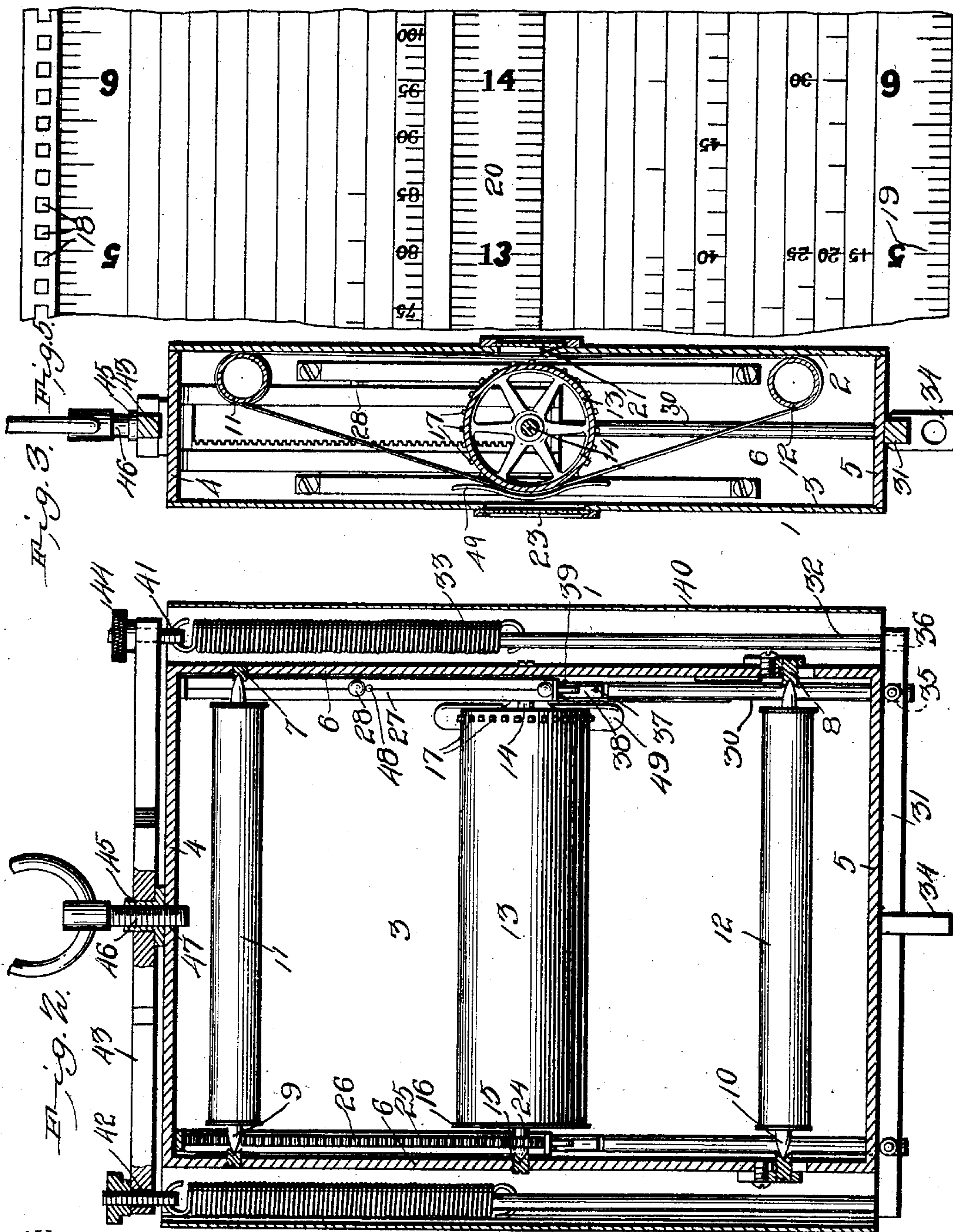
T. L. Tinchet, Inventor.
by *C. A. Snow & Co.*
Attorneys

T. L. TINCHER.
COMPUTING SCALE.

APPLICATION FILED JUNE 30, 1902.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses

Witnesses
C. J. Stewart
J. F. P. King

by

T.L. Tinker, Inventor.

C. Snow & Co.
Attorneys

UNITED STATES PATENT OFFICE.

THOMAS L. TINCHER, OF CHICAGO, ILLINOIS, ASSIGNOR TO ARTHUR G. WILMORE, OF CHICAGO, ILLINOIS.

COMPUTING-SCALE.

SPECIFICATION forming part of Letters Patent No. 720,756, dated February 17, 1903.

Application filed June 30, 1902. Serial No. 113,831. (No model.)

To all whom it may concern:

Be it known that I, THOMAS L. TINCHER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Computing-Scale, of which the following is a specification.

The invention relates to improvements in computing-scales.

10 The object of the present invention is to improve the construction of computing-scales and to provide an exceedingly simple and inexpensive one of great strength and durability capable of simultaneously indicating the weight and price of an article and adapted to be readily adjusted to correct any inaccuracy.

15 The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

20 In the drawings, Figure 1 is an elevation of a computing-scale constructed in accordance with this invention. Fig. 2 is a vertical sectional view of the same, the rolls being shown in side elevation. Fig. 3 is a vertical sectional view taken transversely of the rolls. Fig. 4 is a horizontal sectional view on the line 4-4 of Fig. 1. Fig. 5 is a detail view of a portion of the chart.

30 Like numerals of reference designate corresponding parts in all the figures of the drawings.

35 1 designates an approximately rectangular casing composed of front and rear plates 2 and 3 and a rectangular frame, which is provided with a top 4, a bottom 5, and vertical sides 6, which connect the top and bottom of the frame and which form the top and bottom of the casing. The frame of the casing is provided with upper and lower adjustable bearings 7 and 8, consisting, preferably, of threaded plugs mounted in threaded openings of the sides of the frame and provided at their inner ends with conical recesses for the reception of tapering journals 9 and 10 of upper and lower rolls 11 and 12. The upper and lower rolls carry an endless chart, which is actuated by an intermediate roll or drum 13, having tapering journals formed by a horizontal shaft 14. The tapering journals of the intermedi-

ate roll or drum 13 are arranged in adjustable bearings 15, constructed similar to those heretofore described, and the adjustable bearings are all provided with grooves or other suitable means for enabling them to be engaged by a screw-driver or other tool.

55 The intermediate drum or roll 13, which actuates the endless chart, is provided at one end with a flange 16, and it has a series of teeth 17, forming a gear and adapted to engage or mesh with slots or openings 18 of the endless chart, whereby the latter will be actuated when the intermediate roll or drum is rotated. The teeth of the drum may be conveniently formed by means of a gear-wheel secured to the shaft and projecting beyond the drum or roll, as shown; but the teeth may be formed in any other suitable manner, as will be readily apparent.

60 The upper and lower rolls are located near the top and bottom of the casing, and the chart is provided at opposite sides with pound graduations 19, and it has a reversely-arranged central column 20, bearing pound graduations. The spaces between the side and central pound graduations are divided into columns and are designed to bear various numbers indicating the price of an article, and any number of price-columns may be provided to produce a scale of the desired capacity, and the scale may be varied in size to adapt it for the character of business in which it is to be employed. The front of the scale, which is designed to be arranged toward the operator, is provided with opposite apertures 21, arranged to expose the numbers of the intermediate columns and the side columns, and the rear plate, which is turned toward the purchaser, is provided with a central aperture 23, arranged to expose the central pound graduations to enable the purchaser to see the weight of the goods sold. The apertures are provided with transparent plates of glass or other suitable material to exclude dust from the interior of the casing.

65 The shaft of the central roll or drum 13 has keyed or otherwise secured to each end a pinion 24, and these pinions mesh with teeth 25 of vertically-reciprocating rack-bars 26, located within the casing and arranged in suitable ways thereof. The rack-bars are pro-

vided with longitudinal openings to receive the pinions, and they are provided in the outer edges of the sides formed by the openings with approximately V-shaped grooves or gutters 27, which receive antifriction-balls 28. The antifriction-balls are also arranged within similar grooves or gutters of vertical bars 29, arranged in pairs and forming the ways for the vertically-reciprocating rack-bars. The antifriction-balls by being arranged in the grooves or gutters of the bars, as shown in Fig. 4 of the drawings, enable the rack-bars to move frictionlessly and at the same time prevent any lateral movement of such bars and retain the same in proper position.

The lower ends of the rack-bars are connected by inner rods 30 with a lower cross-bar 31, which is arranged on the exterior of the scale, at the bottom thereof, and which projects laterally beyond the inner rods and is secured to the lower ends of outer rods 32. The outer rods 32 are connected at their upper ends with counterbalancing-springs 33, which resist the downward movement of the lower cross-bar in the usual manner. The lower cross-bar is provided with a central depending arm 34, which is designed to receive a scale-pan or other suitable receptacle to receive the goods to be weighed, and the end portions of the bottom bar are provided with inner and outer perforations 35 and 36 to receive the lower ends of the inner and outer rods. The upper ends of the inner rods are reduced and pivoted by pins 37 or other suitable fastening devices to coupling-pieces 38, which are similarly pivoted by pins 39 to the lower ends of the rack-bars, and the latter are provided with depending lugs or ears to fit in the upper bifurcations of the coupling-pieces, as clearly shown in Fig. 2 of the drawings. The springs and the outer rods are housed within semitubular bars 40, which are secured to the side bars of the rectangular frame, the said tubular bars being provided at their side edges with flanges, which are perforated for the reception of screws or other suitable fastening devices.

The upper ends of the springs are connected with adjusting-screws 41, extending through openings 42 of a top cross-bar 43 and engaged by thumb-nuts 44, arranged at the upper face of the top bar 43 and adapted to be adjusted to correct any inaccuracy in the scale. The cross-bar 43 is provided with a central opening to receive a nut 45, having a smooth tubular portion provided at the bottom with a flange. The tubular portion has a smooth exterior and is interiorly threaded to engage the screw 46, which also engages a threaded perforation 47 of the top of the rectangular frame. The screw is provided with a ring to enable the scale to be hung up.

Any number of antifriction-balls may be employed in the grooves or gutters of the ways and the rack-bars; but two balls have been found sufficient for the purpose, and they are

separated by a centrally-arranged pin or projection 48, as clearly shown in Fig. 2 of the drawings. The pin or projection, which is arranged at the center of the groove of the rack-bar, prevents both balls from getting to the same side of the center, and thereby maintains the rack-bar in proper position and prevents the same from binding.

It will be seen that the computing-scale is exceedingly simple and inexpensive in construction, that it may be made of any desired size and capacity, and that it may be readily adjusted to correct any inaccuracy.

The upper and lower rolls are of less diameter than the intermediate roll or drum, and the front flight or portion of the chart is arranged parallel with the front of the casing, and the rear flight or portion converges toward the intermediate roll or drum, and a curved guard or strip 49 is arranged at one end of the drum, adjacent to the teeth thereof, and is mounted on the adjacent guide-bar.

What I claim is—

1. In a scale, the combination of a frame, upper and lower rolls, an intermediate roll, an endless chart arranged on the upper and lower rolls and engaged by the intermediate roll, and spring-resisted means for actuating the intermediate roll, substantially as described.

2. In a scale, the combination of a frame, upper and lower rolls, an endless chart arranged on the rolls, an intermediate roll provided with teeth meshing with the chart and arranged to actuate the same, and spring-resisted means for rotating the intermediate roll, substantially as described.

3. In a scale, the combination of a frame, upper and lower rolls, an endless chart arranged on the upper and lower rolls and provided with slots or openings, an intermediate roll receiving the chart and provided with teeth engaging the slots or openings, and spring-resisted means connected with the intermediate roll for rotating the same, substantially as described.

4. In a scale, the combination of a frame, upper and lower rolls, a chart arranged on the rolls, an intermediate roll engaging the chart, a pinion connected with the intermediate roll, a rack-bar meshing with the pinion, a spring and connections between the spring and the rack-bar, substantially as described.

5. In a scale, the combination of a frame, longitudinal guide-bars arranged parallel and provided in their inner faces with longitudinal grooves, rack-bars provided with teeth and arranged in the space between the guide-bars and provided with longitudinal grooves, antifriction devices arranged in the said grooves and interlocked with the guide-bars and the rack-bars and retaining the latter in the spaces between the former, a roll meshing with the rack-bars, a spring, and yieldable means connected with the rack-bars for resisting the outward movement of the same, substantially as described.

6. In a scale, the combination of a frame, upper and lower rolls, a chart arranged on the rolls, an intermediate roll engaging the chart and provided with pinions, rack-bars
5 guided on the frame and meshing with the pinions, springs, a cross-bar, and inner and outer rods connecting the cross-bar with the rack-bar and with the springs, substantially as described.

10 7. In a scale, the combination of a casing, provided with apertures, upper and lower rolls mounted within the casing, an endless chart arranged on the rolls and exposed at the said apertures, an intermediate roll en-
15 gaging the chart and provided with pinions,

rack-bars mounted in suitable guides of the casing and meshing with the pinion, an upper cross-bar, springs adjustably connected with the upper cross-bar, a lower cross-bar, and inner and outer rods connecting the lower
20 cross-bar with the rack-bars and with the springs, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

THOMAS L. TINCHER.

Witnesses:

W. H. McCANNE,

JENNIE I. McDONALD.