

E. C. POOL.
SCALE.

APPLICATION FILED FEB. 7, 1907.

982,865.

Patented Jan. 31, 1911.

3 SHEETS—SHEET 1.

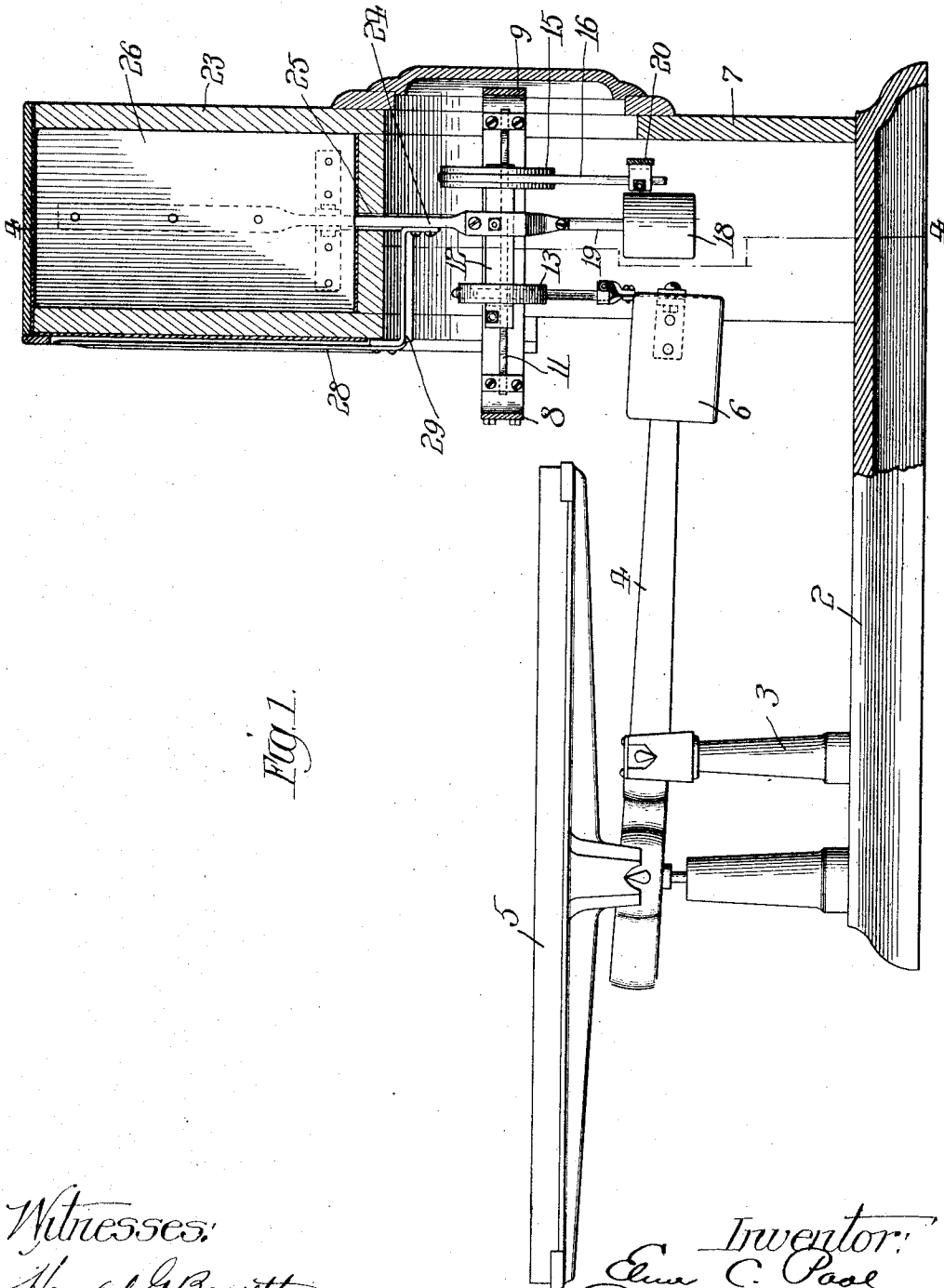


Fig. 1.

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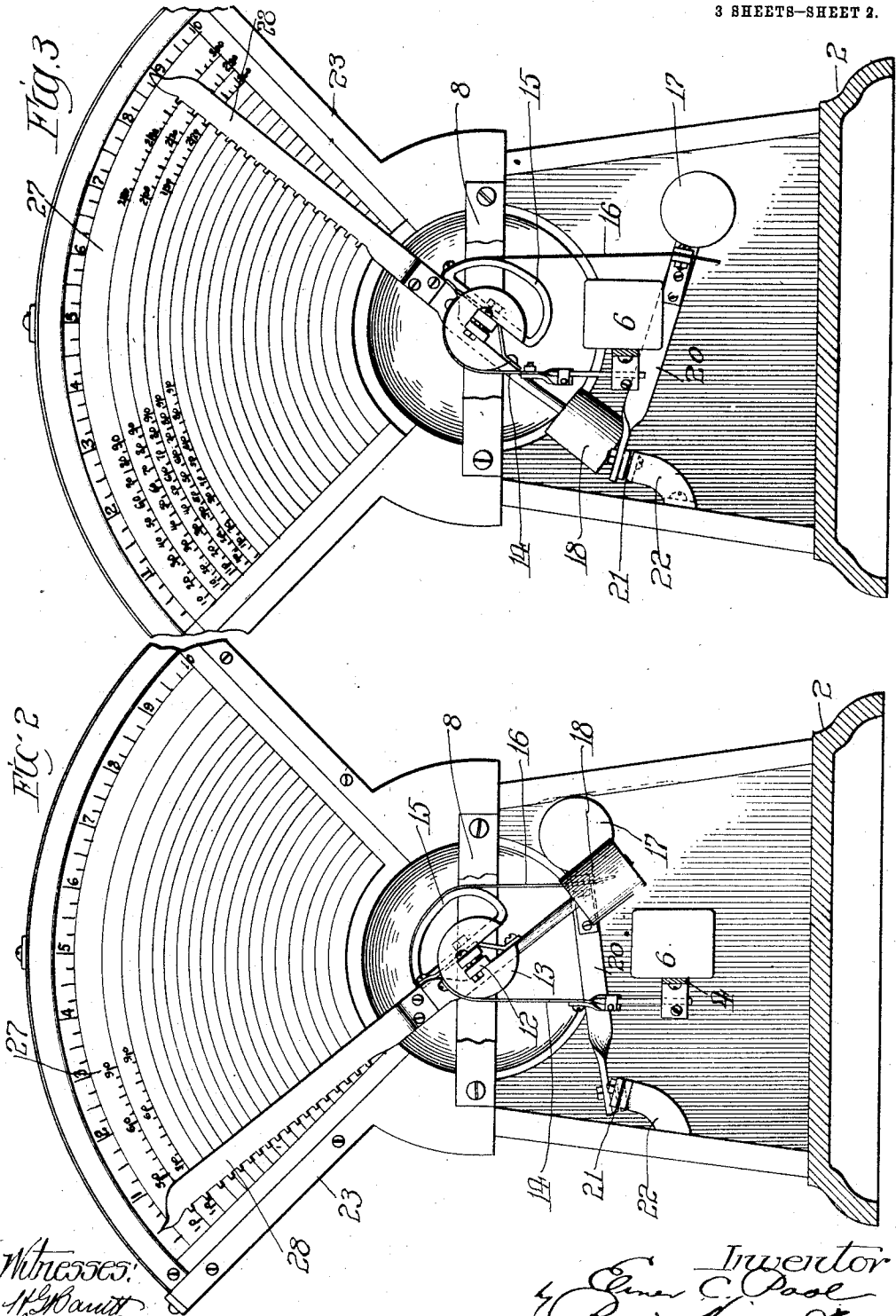
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3 SHEETS—SHEET 2.



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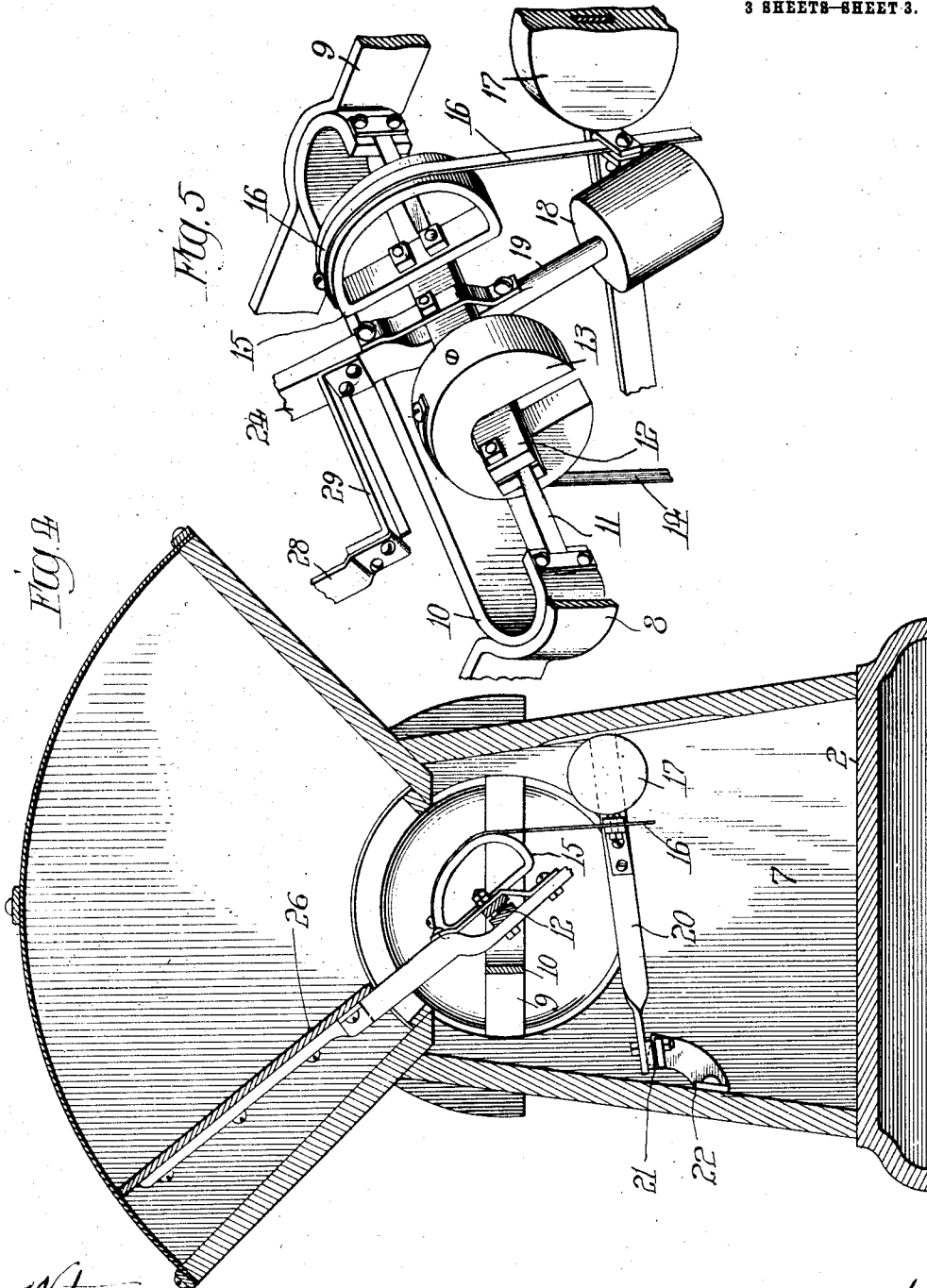
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

ELMER C. POOL, OF NEW CASTLE, PENNSYLVANIA, ASSIGNOR TO TOLEDO COMPUTING SCALE COMPANY, OF NEWARK, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SCALE.

982,865.

Specification of Letters Patent.

Patented Jan. 31, 1911.

Application filed February 7, 1907. Serial No. 356,225.

To all whom it may concern:

Be it known that I, ELMER C. POOL, a citizen of the United States, residing at New Castle, in the county of Lawrence and State of Pennsylvania, have invented certain new and useful Improvements in Scales, of which the following is a specification.

One object of the present invention is to provide for an increased range of movement of the index hand in that class of computing scales where such hand sweeps over the face of a chart containing weight and price numerals.

Another object of the invention is to provide improved means for steadying an index hand of the above-mentioned type so that it will come to rest without undue vibration, such means doing away with the employment of a dash-pot for such purpose.

With these and incidental objects in view the invention consists in certain novel features of construction and combinations of parts the essential elements whereof are recited in the appended claims and a preferred form of embodiment of which is illustrated in the accompanying drawings and described in detail hereinafter.

Of said drawings Figure 1 represents partly in side elevation and partly in vertical section scales having the improvements of the present invention; Figs. 2 and 3 represent front elevations of the rear part of said scales illustrating relative positions of parts under different conditions; Fig. 4 represents a vertical cross-section of such rear portion of the scales; and Fig. 5 represents in perspective the weighing weights and their immediate connections.

On a suitable base 2 is erected a standard 3 on which is fulcrumed intermediate its ends a scale-beam 4, the latter supporting on suitable bearings outwardly beyond the fulcrum a platform 5 and carrying on the opposite side of the fulcrum a weight 6. From the rear part of the base 2 rises a housing 7 in which is secured a rigid frame-work comprising front and rear bars 8 and 9 and a central cross-bar 10. The ends of the latter are turned toward each other and a torsion strap 11 extends between them being securely clamped thereto at each end as clearly shown in Fig. 5. This torsion strap takes the place of the usual knife-edged bearings for the oscillating weighing and indicating devices, these in the present instance being

simply clamped to said torsion strap which supplies all requisites in the matter of a pivotal support for such devices. For convenience in the matter of mounting the latter on the torsion strap there are clamped to the strap a pair of bars 12 one at each side and holding the strap tightly between them. Near the front end of these bars they support a disk 13 whose periphery is concentric with the axis on which the torsion strap twists while a strap 14 secured to the periphery of said disk is connected at its lower end with the rear end of the scale-beam 4. Near the rear end of the bars 12 they carry a cam-piece or eccentric 15 having a generally semi-circular form but whose periphery is concentric with the axis of the torsion strap only throughout approximately ninety degrees, the periphery then becoming eccentric in gradual increase of distance from said axis. A strap 16 is secured to the periphery of this cam-piece or eccentric and from this strap is suspended a weight 17. It will be seen that such weight will through the eccentricity of the cam-piece operate with varying leverage in oscillation of the latter when the strap overlies the eccentric part of its periphery.

Normally the platform 5 is of course elevated and the weight 6 correspondingly depressed so that the torsion strap is twisted to one extreme of its movement and the weight 17 elevated, the strap 16 overlying the highest part of the cam-piece 15 about as shown in Fig. 2 though this view represents the parts as they would appear when a half-pound of goods rested on the platform. When weight is thus imposed upon the platform the rear end of the scale-beam rises by reason of the normal counter-balance being disturbed, the weight 17 of course lowering. As the latter lowers, however, its leverage with reference to the axis of oscillation lessens and thus a proper measure of weight is arrived at.

In the present instance the weight 17 alone does not do the weighing as there is secured to the bars 12 a pendulum comprising a weight 18 and a stem or rod 19 and normally this pendulum is at the limit of an upward swing on the same side of the axis of oscillation as that on which the weight 17 is located. Hence of course the pendulum coöperates with the latter weight when goods are placed upon the platform acting

with decreasing effect to turn the torsion strap. When the weight 17 has so far lowered that the strap 16 is overlying the concentric portion of the periphery of the cam 15 its continued lowering will not be accompanied by any variation in leverage. However, the parts are so related that as the concentric part of the cam's periphery is reached the pendulum swings past the center and will thereupon as it rises supply the necessary varying resistance to effect the proper measure of weight.

In order to keep the weight 17 in a true path of movement it is mounted upon one end of an arm 20 pivotally supported at its opposite end by clamping upon a torsion strap 21 held in a suitable bracket 22. Of course the arc through which this arm causes the weight to swing is properly calculated with reference to the necessary co-action between the weight and the eccentric or cam and it will be seen that this arrangement insures regular excursions of the weight without any possible variation from a true line of travel.

The indicating devices are mounted at the upper part of the housing 7 which takes the form of a segmental or fan-shaped casing 23 constituting a virtually air-tight inclosure. An arm 24 which is practically a continuation of the stem of the pendulum projects in line with the latter on the upper side of the pivotal bars 12 and through a slot 25 in the lower side of the casing 23. Within said casing this arm is securely fastened to a blade or paddle 26 which closely conforms with the interior cross-section of the casing as shown in Fig. 1. The object of this construction is to provide for steadying the arm 24 in oscillations by reason of the resistance of the air within the casing to the movements of the paddle or blade 26.

On the exterior of the front side of the casing 23 there is placed a chart 27 marked off into a series of concentric rows of computation numerals and an outer row of weight numerals. An index hand 28 of familiar form is arranged to sweep over this chart said hand being secured to an arm or bracket 29 which is in turn secured to the arm 24 as shown in Figs. 1 and 5. It will be of course obvious that the effect of the varying actions of the weighing devices hereinbefore described will be to move the index hand 28 to varying degrees over the chart thus properly positioning it for indicating weight and price in a well-known manner.

It will be seen that by reason of the particular arrangement of weighing devices as described much greater range of movement of the index arm is provided for than if the same simply relied upon the swinging of a pendulum on one side only of the center. In fact a double capacity in this regard is at-

tained by the arrangement hereinbefore described as will be obvious. Thus one object primarily stated is effectually fulfilled and it will be equally apparent that the other object stated is attained by the construction 70 and arrangement of parts here shown.

It will be understood that in so far as concerns weighing over a large arc involving oscillation of the pendulum on both sides of its neutral position, it is not essential that there be eccentricity of the member 15. It has already been pointed out that when the pendulum is swinging upward to measure weight in excess of five pounds, the strap 16 overlies a concentric portion of said member. It will be obvious that measuring of weight by descent of the pendulum on the other side of its neutral position could equally well be done with the strap engaging a concentric portion of the said member 15. The eccentricity of the latter is useful for offsetting the variable decrease in leverage of the pendulum when descending so as to thereby permit uniform graduation of the chart up to five pounds. This is a familiar expedient in the art and no novelty is claimed for it. Thus it is common to have the strap which connects the main beam or lever to the pendulum journal overlie an eccentric portion of the latter: *e. g.*, eccentricity of the disk 13 in the present construction where the strap 14 would engage it during the upward swing of the pendulum when weighing in excess of five pounds, would obviously provide for uniform graduations on the chart beyond five pounds.

What is claimed is:

1. In weighing scales the combination of a pendulum normally elevated and adapted to descend and swing on past a neutral position; a goods receiver connected to said pendulum to act in concert therewith under an applied load during descent of the pendulum from its normally elevated position to the neutral position and in opposition to the pendulum beyond said neutral position; and a constant counter-poise connected to the pendulum and the goods receiver and acting in opposition to the pendulum normally elevating the same and the goods receiver, with provisions for continuing the swing of the pendulum beyond the neutral position when the applied load exceeds in weight that sufficient to raise the constant counter-poise far enough to bring the pendulum to the neutral position when acting with the load.

2. In weighing scales the combination of a pendulum normally elevated and adapted to descend and swing on past a neutral position; a lever weighted on one side of its pivot and having a goods receiver on the other, said lever connected to the pendulum to normally elevate the same, and an additional counterpoise connected to the pendu-

lum to swing the same past the neutral position when the applied load exceeds that sufficient to raise the weighted arm of the lever far enough to bring the pendulum down to the neutral position.

3. In a weighing scale the combination of an oscillatory journal member, a pendulum affixed thereto; a weight suspended from said journal member off center thereof tending to rotate it one way; a lever weighted at one end and connected to the said journal member off-center thereof opposed to the aforesaid weight tending to rotate said member the other way and normally holding the latter so rotated elevating the pendulum and the said weight; and a goods receiver on the other end of the lever whereby an applied load acts in opposition to the weighted end of the lever and in concert with the aforesaid weight and with the pendulum until the latter descends to a neutral position and thereafter in opposition to the pendulum.

4. In weighing scales the combination of a pendulum normally elevated and adapted to descend and swing on past a neutral position; a goods receiver connected to said pendulum to act in concert therewith under an applied load during descent of the pendulum from its normally elevated position to the neutral position and in opposition to the pendulum beyond said neutral position; a constant counterpoise connected to the pendulum and the goods receiver and acting in opposition to the pendulum normally elevating the same and the goods receiver, with provisions for continuing the swing of the pendulum beyond the neutral position when the applied load exceeds in weight

that sufficient to raise the constant counterpoise far enough to bring the pendulum to the neutral position when acting with the load; and indicating means comprising a fixed member and a member connected to the pendulum.

5. In a weighing scale the combination of an oscillatory journal member, a pendulum affixed thereto; a weight suspended from said journal member off-center thereof tending to rotate it one way; a lever weighted at one end and connected to the said journal member off-center thereof opposed to the aforesaid weight tending to rotate said member the other way and normally holding the latter so rotated elevating the pendulum and the said weight; a goods receiver on the other end of the lever whereby an applied load acts in opposition to the weighted end of the lever and in concert with the aforesaid weight and with the pendulum until the latter descends to a neutral position and thereafter in opposition to the pendulum; and indicating means comprising a dial and hand, one fixed and the other secured to the journal member.

6. In weighing scales, the combination of a substantially air-tight inclosure, a chart on the exterior of one side of the same, an oscillating index hand arranged to sweep over said chart, and a blade or paddle compounded with said index hand and arranged to traverse the interior of said air-tight inclosure.

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Witnesses:

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