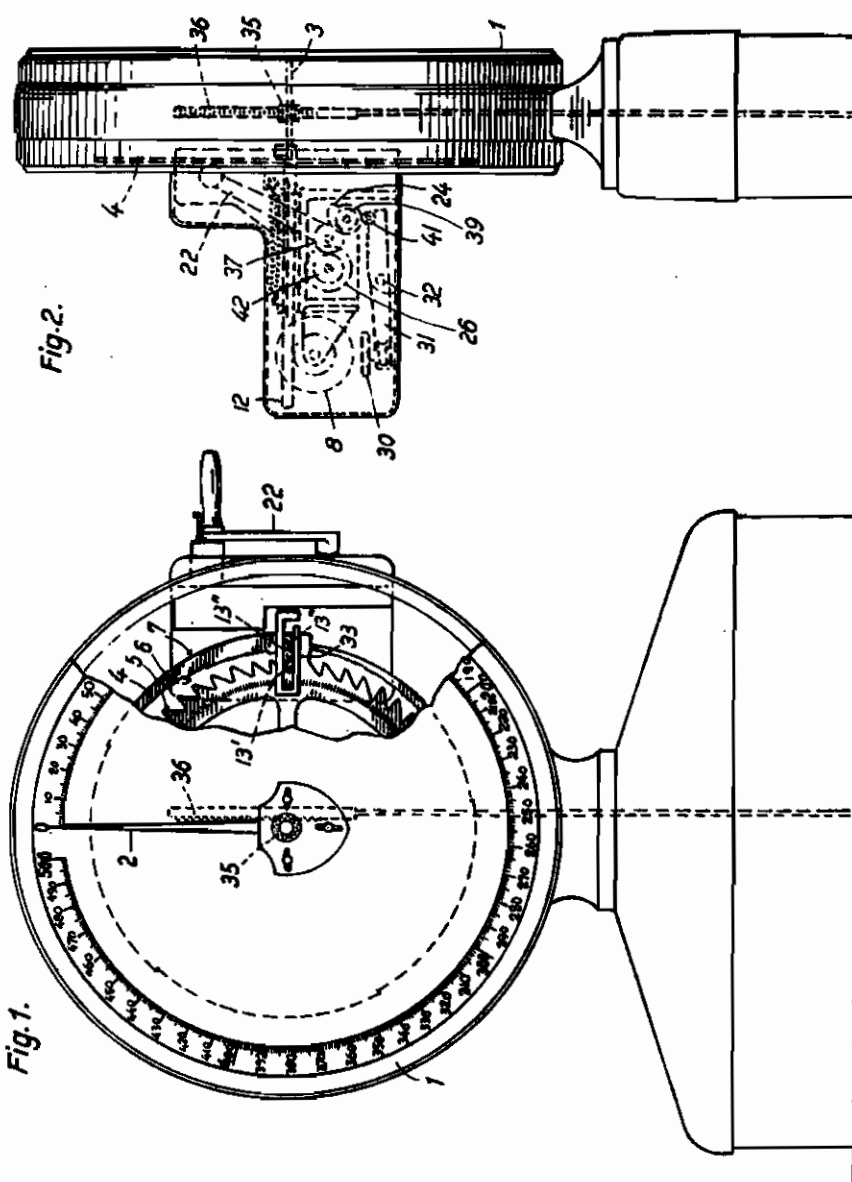


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PRINTING DEVICE FOR SCALES  
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306,027  
3 Sheets-Sheet 1

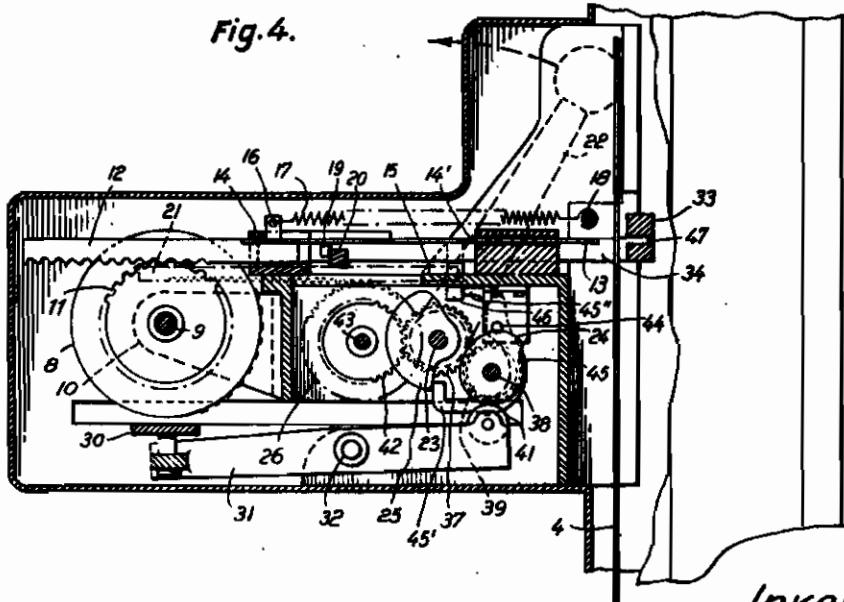
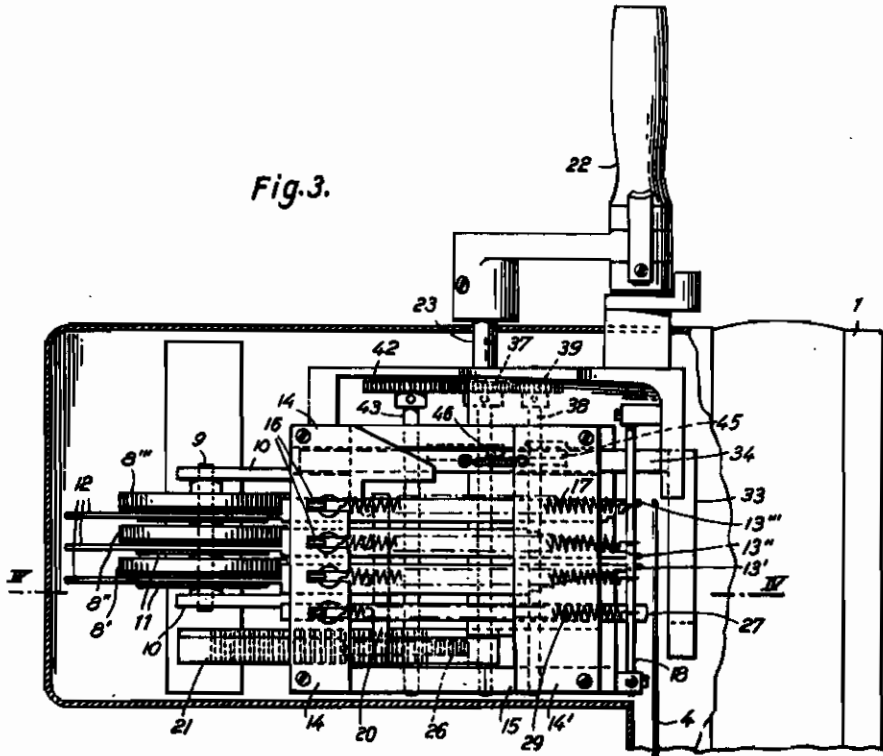


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Fig. 5.

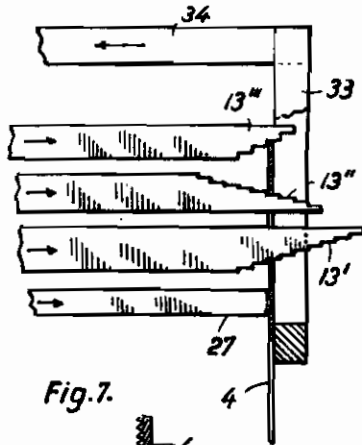


Fig. 6.

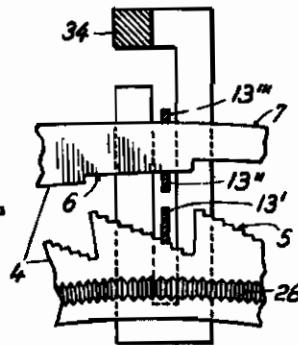


Fig. 7.

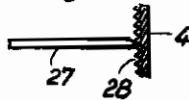
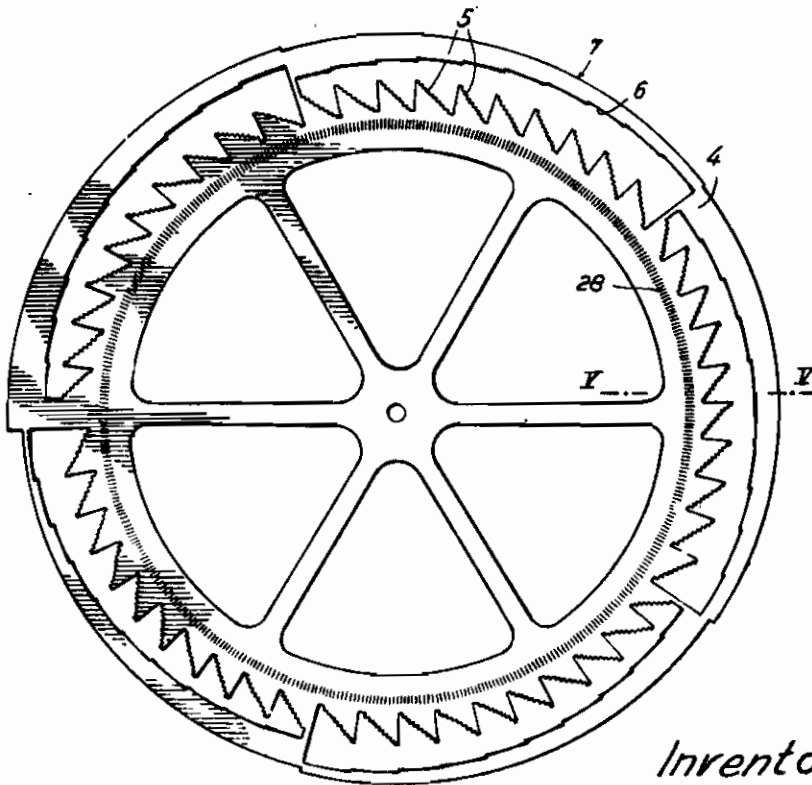


Fig. 8.



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# ALIEN PROPERTY CUSTODIAN

## PRINTING DEVICE FOR SCALES

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Application filed November 24, 1939

This invention relates to weighing scales and especially to such scales in which the result of every weighing operation is recorded by a printing mechanism.

A feature of the invention resides in the single disc or carrier which is provided in its flat surface with step-like cuts or stamped out portions at different radial distances corresponding to the different weights to cooperate with a plurality of feelers or setting members.

Another feature of the invention resides in the fact that the single disc is made of exceedingly thin material and a reinforcing member is provided to counteract the force of the feelers contacting the side of the disc, to prevent any bending of the disc.

A still further feature of the invention resides in the locking details to lock the disc in a specific weight position to prevent further rotation of the disc and thus ensure an accurate setting of the feelers to print the specific weight.

The invention also contemplates the feature providing the disc with cut-out steps corresponding to gradually increasing values (1, 10, 100 . . . ) arranged in radially increasing distances from the center of the disc and the highest values form the peripheral edge of the disc.

Further details and features of the invention will be apparent from the following description taken in connection with the drawings illustrating an example of the invention and in which:

Figure 1 is a front view, partly broken away, of a weighing scale with printing mechanism, Fig. 2 is a side view of Fig. 1,

Fig. 3 is a plan view on a larger scale of the printing mechanism with the casing broken away,

Fig. 4 is a sectional view through the printing mechanism taken on line IV—IV of Fig. 3,

Fig. 5 is a plan view on an enlarged scale of the feelers and the locking bar in contact with the disc,

Fig. 6 is a side view of the structure of Fig. 5,

Fig. 7 is a detail view of the disc and locking bar, and

Fig. 8 is an elevation of the disc.

The weighing scale 1 has the usual indicating hand 2 mounted on a shaft 3, the latter being in operative connection with the usual mechanism to the pan or plate on which the article to be weighted is placed. In the example illustrated this connection includes a pinion 35 on the pointer shaft 3 and a toothed rack 36 controlled by the swinging weighing system of the scales. Also as usual the hand 2 cooperates

with a series of weight units to visibly indicate the article weighted but such details do not form any part of the present invention. The actual invention of this application resides in the printing mechanism and more particularly in the means for setting the actual printing mechanism to print the individual weight amount.

The setting mechanism for the printing device comprises a thin sheet metal disc 4 provided with cut-out portions forming stepped stop sections 5, 6 and 7. The disc 4 may be stamped out in any usual manner and in the form illustrated in Fig. 4 the stepped stop section 5 may indicate the units, the sections 6 the tens and the section 7 the hundreds. For instance, each unit section has ten groups of ten stops, that is, a stop for each unit, the tens section 6 has ten stops and the hundreds section 7 has five stops to a maximum of five hundred. Such a series of divisions and sub-divisions may be used for metric weight measures but for ounces and pounds the sections 5 be divided into fifteen stops, the sections 6 into nine stops and the section 7 into four stops.

The actual printing mechanism is composed of a plurality of type wheels 8 rotatably mounted on a shaft 6 of which the latter is mounted in a casing 10 provided adjacent the scale. Each type wheel 8 has a pinion 11 secured thereto to rotate therewith and each pinion meshes with a toothed rack 12. For units, tens and hundreds there are three type wheels of which wheel 6' has numeral types (0, 1, 2, 3, 4, 5, 6, 7, 8, 9), wheel 8' has numeral types (0, 1, 2, 3, 4, 5, 6, 7, 8, 9) and 8'' has numeral types (0, 1, 2, 3, 4). The foregoing is merely stated as an example since any scale of numbers can be used depending upon the specific weights which are used and the type of materials for which the scale is designed.

Each toothed rack 12 has a feeler or stepped bar 13 secured thereto of which feelers 13' and 13'' have 9 stepped notches for the units, 13''' has 9 stepped notches for the tens, and 13'''' has five stepped notches for the hundreds. These feelers 13 are adapted to slide in guide bars 14 and 14' mounted on plates 15 of the casing 10. Each feeler is provided with a pin 16 mounted thereon to which one end of a tension spring 17 is secured, the other end of the spring being secured to a bar 18 secured in the casing. Also each feeler 13 has a lug 19 secured on the under side thereof, Fig. 4, which abuts, and cooperates with a bar 20, on and secured to the setting rack 21, the bar 20 extending over all the feelers.

The operating device for printing a weight value includes an operating handle 22 mounted

on a shaft 23 rotatably mounted in the casing 10. On the shaft 23 there is securely mounted a gear 37 which meshes with a gear 39 mounted on the shaft 38. The shaft 38 is mounted in the casing 10 and a cam 24 is mounted on this shaft which cam is in contact with a roller 41 mounted on one end of a double-armed lever 31 pivoted at 32. The other end of the lever 31 carries a printing plate 30. The shaft 32 around which the double-armed lever 31 rotates is mounted in the casing 10.

The gear 37 on the shaft 23 is in mesh with a gear 42 which latter is securely mounted on the shaft 43 which is also mounted in the casing 10. On the other end of the shaft 43 there is mounted a gear 26 which is mesh with a gear rack 21.

On the shaft 23 there is mounted a cam 25 which operates, together with the arm 45', a double-armed lever 45 which is rotatably mounted at 44 in the casing 10. The other end 45'' of this lever lies against a projection 46 on the underside of a toothed rack 34. The rod 34 is bent at 33 at an angle and the angular part 33, which forms a V-shaped counter holding device or reinforcing bar for the disc 4, is adapted to contact behind the disc. As shown on the drawing, particularly Fig. 6, the reinforcing bar 33 is provided with a slot 47 which makes it possible to permit the penetration therethrough of the feelers 13. To prevent the bending of the disc 4 when the feelers 13 are in contact therewith the reinforcing bar is moved into contact with the disc 4 shortly before the feelers actually contact the disc. The reinforcing bar thus takes up the pressure and force of the feelers so that the disc can be made of extremely thin metal, which has the advantage that the scales will quickly come to rest upon each weighing operation. Apart from this the reinforcing bar makes it possible to set a feeler accurately. The locking bar 27 is slidably mounted in the guide bars 14 and 14' and is adapted to contact in any one of a plurality of notches or V-shaped grooves 28 provided circumferentially around one side face of the disc 4. The bar 27 is also provided with a lug 19 and with a spring 28 secured at one end to the bar 27 and the other end on the rod 18.

The device operates as follows:

It is assumed that an object or material is weighed which has a weight of 247, the actual measure of weight being immaterial for purpose of illustration. Immediately upon placing the 247 weight object on the scales the hand 2 comes to rest to visibly indicate 247 at the same time that the disc 4 rotates with and comes to rest simultaneously with the indicating hand. Then

the operator of the scales rotates the hand crank 22 counter-clockwise, Fig. 4, which results in a rotation of the shaft 23. Thereby the cam 25 will press on the free end 45' of the double-armed lever 45, so that this lever will be rotated counter-clockwise around its shaft 44, Fig. 4. The free end 45'' of the lever 45 will press the lug 46, and therewith the toothed rack 34 against the tension of a spring 34', which has one end secured on the guide bar 14' and the other end on the rack 34, to the left, Fig. 4, so that the reinforcing member 33 will be likewise moved to the left, that is after the disc 4 has moved to its position. If the cam 25 has moved the double lever 45 so far that the free end 45' of this lever lies opposite the cam 25, then the reinforcing bar 33 will come to rest against the rear side of the disc 4.

Simultaneously with the rotation of the cam 25 a rotation of the gear 26 will also take place upon rotation of the hand crank 22 through the gears 37, 42, whereby the toothed rack 21 will be moved to the right, Fig. 4. Thereby the bar 20 mounted on the toothed rack 21 and the locking bar 27, will be released from the pins 18 mounted on the underside of the feelers 13', 13'', 13''', so that the feelers and the locking bar will be moved toward and into the disc under the influence of the springs 17 and 28.

The device operates in such a manner that the locking bar proceeds ahead of the feelers, and somewhat simultaneously comes in contact with the reinforcing bar of the disc. By means of the locking bar the disc will be arrested while the reinforcing bar prevents the bending of the thin disc. Then the feelers contact the respective stepped cut-out portions in which feeler 13''' for the hundreds contacts the "2" step, the feeler 13'' for the tens contacts the "4" step and the feeler 13' contacts the "7" step, as indicated in the position of the feelers in Fig. 5 which corresponds to the position on the disc on line V—V of Fig. 8. During the time that the feelers are setting each rack 12 secured to a feeler will properly set the type wheels. Immediately that the feelers are set the further rotation of the handle 22 will cause the cam 24 to rock the lever 31 to force the cord or paper sheet or strip against the type wheels 8 to thus print the weight 247 thereon. The parts are then returned to their initial positions by rotating the handle 22 in the clockwise direction back to the position of Fig. 1.

The present application is a continuation-in-part of my co-pending application Serial No. 165,982, filed September 27, 1937.

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