Aug. 21, 1923. 1,465,613

M. M. MUNK

SCALE

Filed July 20, 1921 2 Sheets-Sheet 1

FIG. 1.

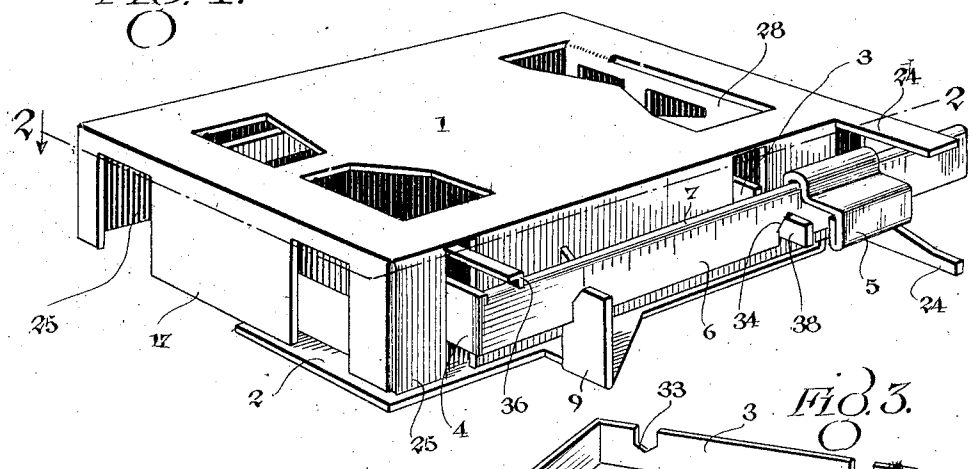


FIG. 3.

FIG. 2.

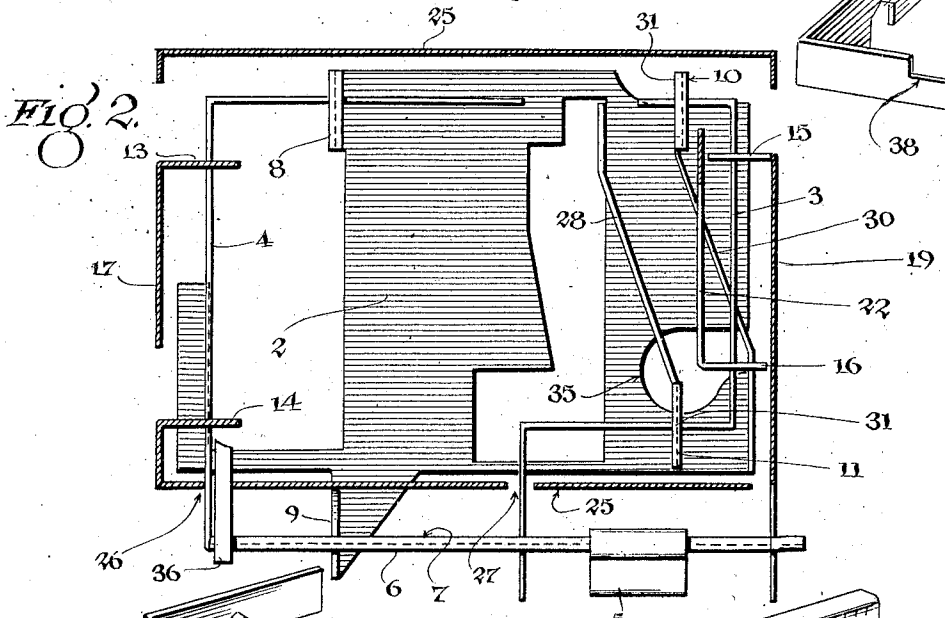
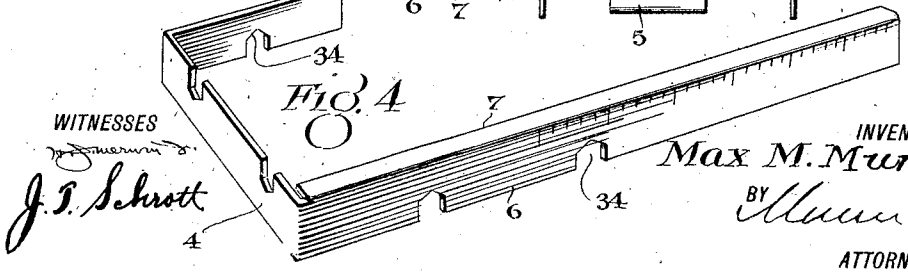


FIG. 4.



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WITNESSES

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SCALE

Filed July 20, 1921 2 Sheets-Sheet 2

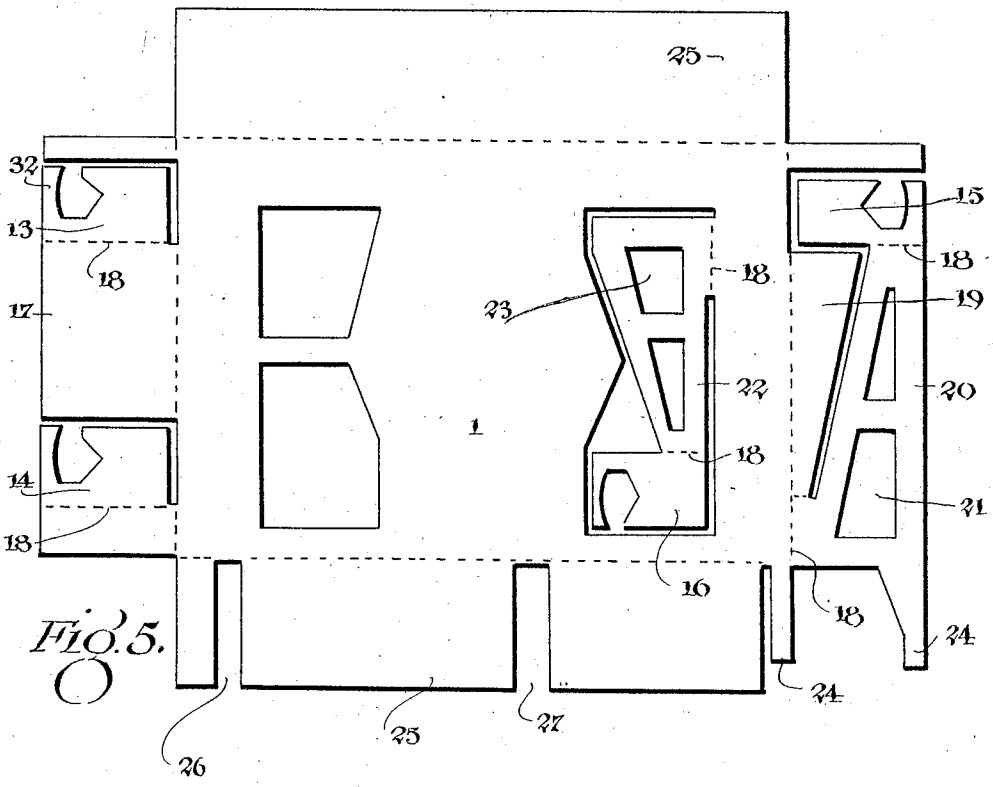


FIG. 5.

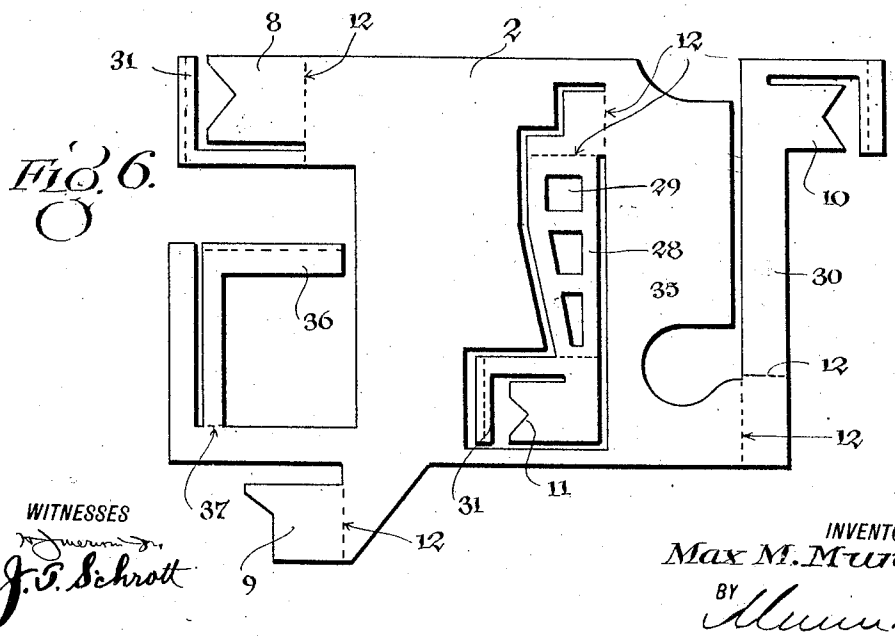


FIG. 6.

WITNESSES

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Patented Aug. 21, 1923. 1,465,613

UNITED STATES PATENT OFFICE.

MAX MICHAEL MUNK, OF WASHINGTON, DISTRICT OF COLUMBIA.

SCALE.

Application filed July 20, 1921. Serial No. 486,091.

To all whom it may concern:

Be it known that I, MAX MICHAEL MUNK, a citizen of Germany, who have declared my intention of becoming a citizen of the United States, and a resident of Washington, in the District of Columbia, have invented certain new and useful Improvements in Scales, of which the following is a specification.

My invention relates to improvements in scales, and it consists in the construction, combination and mode of operation substantially as herein described and claimed.

One of the foremost objects of the invention is to provide a scales for weighing letters and other small objects.

Another object of the invention is to provide a cheaply manufactured letter scales which consists of a few parts stamped out of sheet metal and bent into proper shape.

A further object of the invention is to provide a letter scales of light yet strong construction, which is not unwieldly to handle and is so low and relatively broad that there is no possibility whatever of upsetting it.

A further and important object of the invention is to provide an arrangement of fulcrums stamped and bent from parts of the table and base and possessing a degree of yieldability which will prevent the scales lever from jamming.

A further object of the invention is to provide a scales of the construction described, some of the stamped fulcrums including tongues which prevent the various fulcrums of the scales from falling apart.

Other objects and advantages will appear in the following specification, reference being had to the accompanying drawing, in which:—

Figure 1 is a perspective view of the improved scales,

Figure 2 is a horizontal section thereof, taken substantially on the line 2—2 of Figure 1,

Figure 3 is a detail perspective view of the primary lever,

Figure 4 is a detail perspective view of the secondary lever,

Figure 5 is a plan view of the stamped top or table before the various supports are bent into position and

Figure 6 is a plan view of the stamped base, showing the various fulcrums before they are bent into position.

The scales comprises only five parts: the table 1, base 2, primary lever 3, secondary lever 4 and poise 5. The latter is slidable on the graduated beam 6 which in fact is a part of the secondary lever 4 (see Figures 1 and 4). The graduations of the beam may be in accordance with any desired plan, i. e. in ounces and fractions thereof, etc. The upper edge 7 of the beam 6 is bent over to impart strength thereto, it being observed that the primary and secondary levers (like the table and base) are formed of thin sheet metal.

Figure 2 illustrates the arrangement of fulcrums and supports. The fulcrums 8, 9, 10 and 11 are bent up from the base 2 along the lines 12 in figure 6. These fulcrums support the primary levers 3 and 4.

The table 1 has supports 13, 14, 15 and 16 which rests on the secondary and primary levers 4 and 3. These supports are stamped and bent from the table 1, according to the plan shown in Figure 5. The flange 17 at the left end is stamped to provide the supports 13 and 14, which supports are bent inwardly along the dotted line 18 so that they assume positions at right angles to the flange.

At the right end of the table 1 the flange 19 is stamped to provide the support 15 as a part of a relatively long arm 20. The length of the arm makes it resilient or yieldable, and the stamped voids 21 tend to aid either function. The arm 22, which is stamped from the table top proper, in continuation of the support 16, has voids 23 for a like purpose. The various arms and supports last mentioned are bent on the dotted lines 18 so that they assume the shape shown in Figure 2.

Lever stops 24 are provided on the end of the flange 19 nearest the observer in Figure 5. The lever 6 works between these stops as shown in Figure 1. Flanges 25 on the sides of the table 1, are bent down to conceal the mechanism within. The flange nearest the observer in Figure 5 has slots 26 and 27 which respectively make room for the extending parts of the levers 4 and 3.

A principle similar to that on which the supports 15 and 16 in Figure 5 are formed, is followed in respect to the formation of the fulcrums 10 and 11 in Figure 6. The former is part of an arm 28 which has voids 29, producing lightness and flexibility of the arm. The arm 30 of the fulcrum 10 has no

void but may be so provided if desirable or necessary. The bending lines are indicated at 12, and when the various fulcrums and arms are bent into final shape, they assume positions as shown in Figure 2.

It is necessary to hold the various parts of the scales together when once assembled, and for that purpose, both the fulcrums 8 etc. of the base 2 and supports 13 etc. of the table 1, have tongues 31 and 32 respectively, extending over the V-shaped recesses therebeneath. These tongues are bent aside to admit the levers 3 and 4, then bent back in place to retain the latter. The levers in turn are provided with recesses 33 and 34 at which places they rest against the fulcrums 8 etc. or supports 13 etc., as the case may be.

In order that the operator may insert an instrument for the proper bending of the tongues 31 and 32 and perhaps other parts of the table and base, especially at the right ends of the scales, the base 2 has a cut-out portion 35 which is sufficiently large to enable all of the necessary manipulations. The remaining openings in the base are sufficiently large to enable access to the remaining parts. Were it not for the various openings, the assembling of the scales would be very difficult, if not impossible.

An auxiliary tongue 36 is stamped from the base (see Fig. 6) bent vertically along the line 37 then out through the slot 26 until it extends over the beam 6 of the lever 4. This serves to hold the beam on its fulcrum 9. Like all of the tongues 31 of the base 2, the upper edge of the auxiliary tongue 36 is bent over at right angles into an angle shape, so as to render the tongue more rigid. The exposed end of the primary lever 3 is cut away at 38 to more readily occupy the extreme recess 34 of the scale beam 6.

Although the operation of the scales is doubtless apparent from the drawing, a brief recitation thereof, in connection with Figure 2, will be of assistance. Assume that a weight (a letter for example) is laid on the table 1. The supports 13, 14, 15 and 16 will bear down on the transverse portions of the levers 4 and 3, causing the longitudinal portions to rock on the base fulcrums 8, 9, 10 and 11. The scale beam 6 will rise, and so will the exposed end of the primary lever 3 which engages beneath the scale beam. The poise 5 must be moved to the right or left until an equilibrium is reached, i. e. until the end of the beam 6 enters between the stops 24.

It cannot be emphasized too strongly that it is the manner of assembling the scales which involves one of the important features of the invention. In the first place, all of the parts are made of relatively thin metal, rendering the manufacture of the scales cheap and the article itself very light. The particular formation of the various supports, fulcrums and arms (16—22 and 11—28, for example,) insures a requisite amount of yieldability or resiliency which absolutely prevents jamming of the bearing parts when the scales is in use.

While the constructon and arrangement of the improved scales as herein described and claimed, is that of a generally preferred form, obviously modifications and changes may be made without departing from the spirit of the invention or the scope of the claims.

I claim:—

1. A scales, comprising a base and table of sheet metal, levers in bearing engagement with parts stamped and bent from the base and table, and means formed with certain of said stampings, bent out to admit the levers and bent back to retain them in bearing engagement and prevent the separation of the scale parts.

2. A scales, comprising a base and a table, of thin sheet metal, a system of balancing levers, parts stamped and bent from the base to provide yieldable fulcrums for the levers, and parts stamped and bent from the table to provide table-supports bearing on the levers.

3. A scales, comprising a base and a table of thin sheet metal, a system of balancing levers, parts stamped and bent from the base to provide yieldable fulcrums for the levers, parts stamped and bent from the table to provide table-supports bearing on the levers, and extensions included in said parts to retain the levers in bearing engagement therewith.

4. A scales, comprising a table, a base within the confines of the table, inward extensions on the table and base, one of the extensions of the base being outside of the confines of the table, and a system of levers largely within the confines of the base and in bearing engagement with inward extensions of the base and table but including members extending beyond the base and table to meet said outside extensions and have outside engagement themselves, the scales being low but broad to produce a stable structure.

5. A scales, comprising a table of sheet metal with supports stamped in one operation, a base with fulcrums stamped in one operation, and primary and secondary levers each stamped in one operation, occupying bearing engagement with the supports and fulcrums when bent into the final shape.

6. A scales, comprising a base of sheet metal with fulcrums on arms stamped therefrom, the latter being relatively long to render them resilient; a table having supports on arms stamped therefrom, the latter being relatively long to render them resilient; and a system of levers against which the fulcrums and supports have bearing when bent

upwardly and downwardly respectively into shape.

7. A scales, including a sheet metal plate, and a relatively long arm stamped and bent therefrom, including voids to render it light and yieldable, and a bearing portion with a tongue extending thereover but adapted to be bent aside to admit a companion bearing part.

8. A scales, including a base with a fulcrum stamped and bent up therefrom, a lever having a portion resting on the fulcrum, and an auxiliary tongue stamped, bent up from the base, and twisted over a portion of the lever to retain it on the fulcrum.

9. A scales, comprising a sheet metal table with suitable supports stamped and bent downwardly therefrom, a sheet metal base with fulcrums suitably stamped and bent upwardly therefrom, the supports and fulcrums including bendable tongues, the table and base having openings adjacent the stamping to admit a bending instrument in assembling the parts; and a pair of levers in bearing engagement with the supports and fulcrums, including portions extending from one side of the scales in engagement with each other, one carrying a slidable poise.

10. A scales, comprising a base with fulcrum means, primary and secondary levers journalled thereon, an arm of the secondary lever being exposed and carrying a slidable poise, the primary lever including a finger extending beneath the exposed arm; and a table covering the base and levers, with inward extensions resting on the levers.

MAX MICHAEL MUNK.