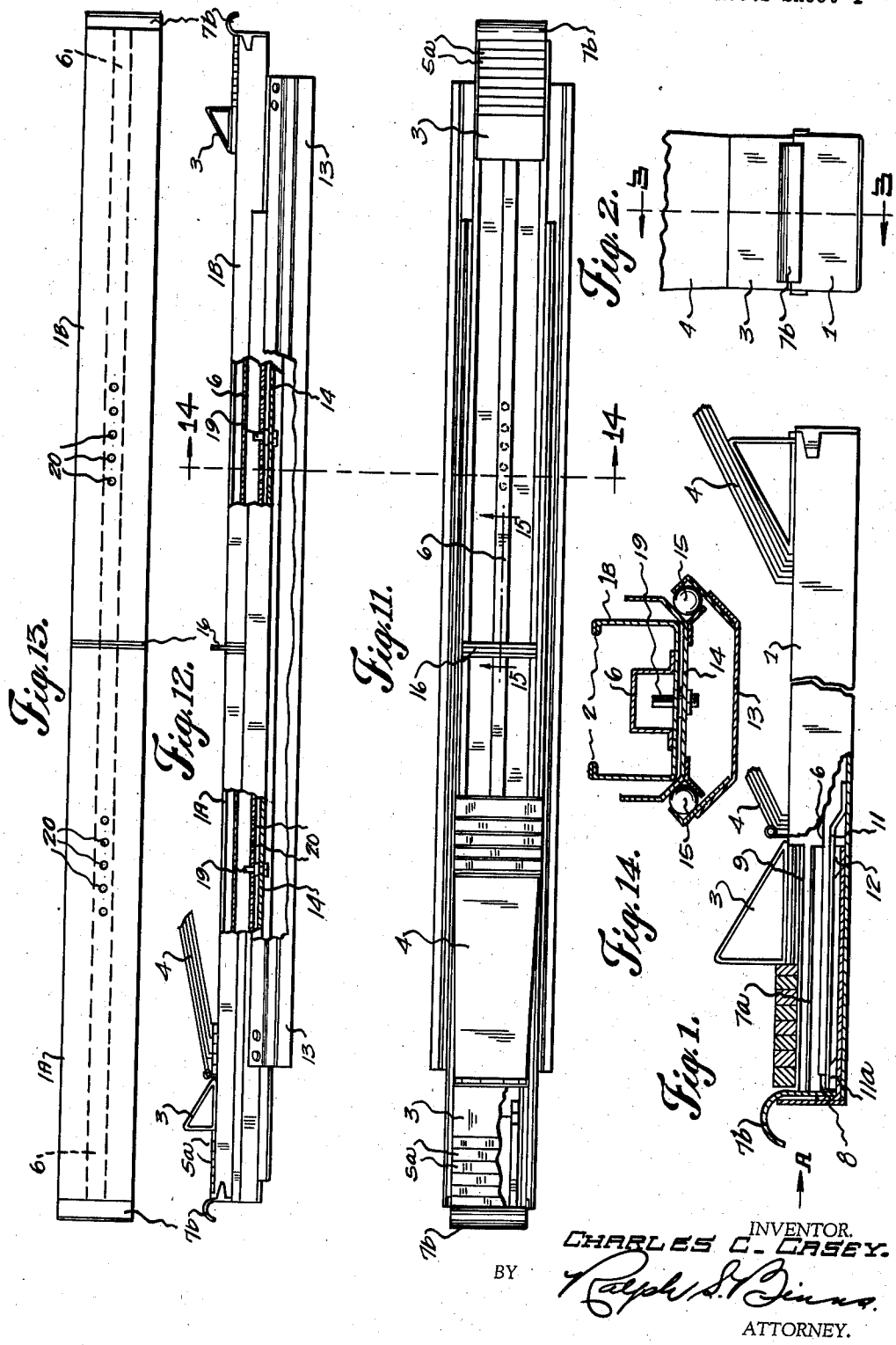
Feb. 25, 1941. C. C. CASEY 2,233,094

CLASSIFYING AND SORTING DEVICE

Filed Feb. 20, 1939 2 Sheets-Sheet 1

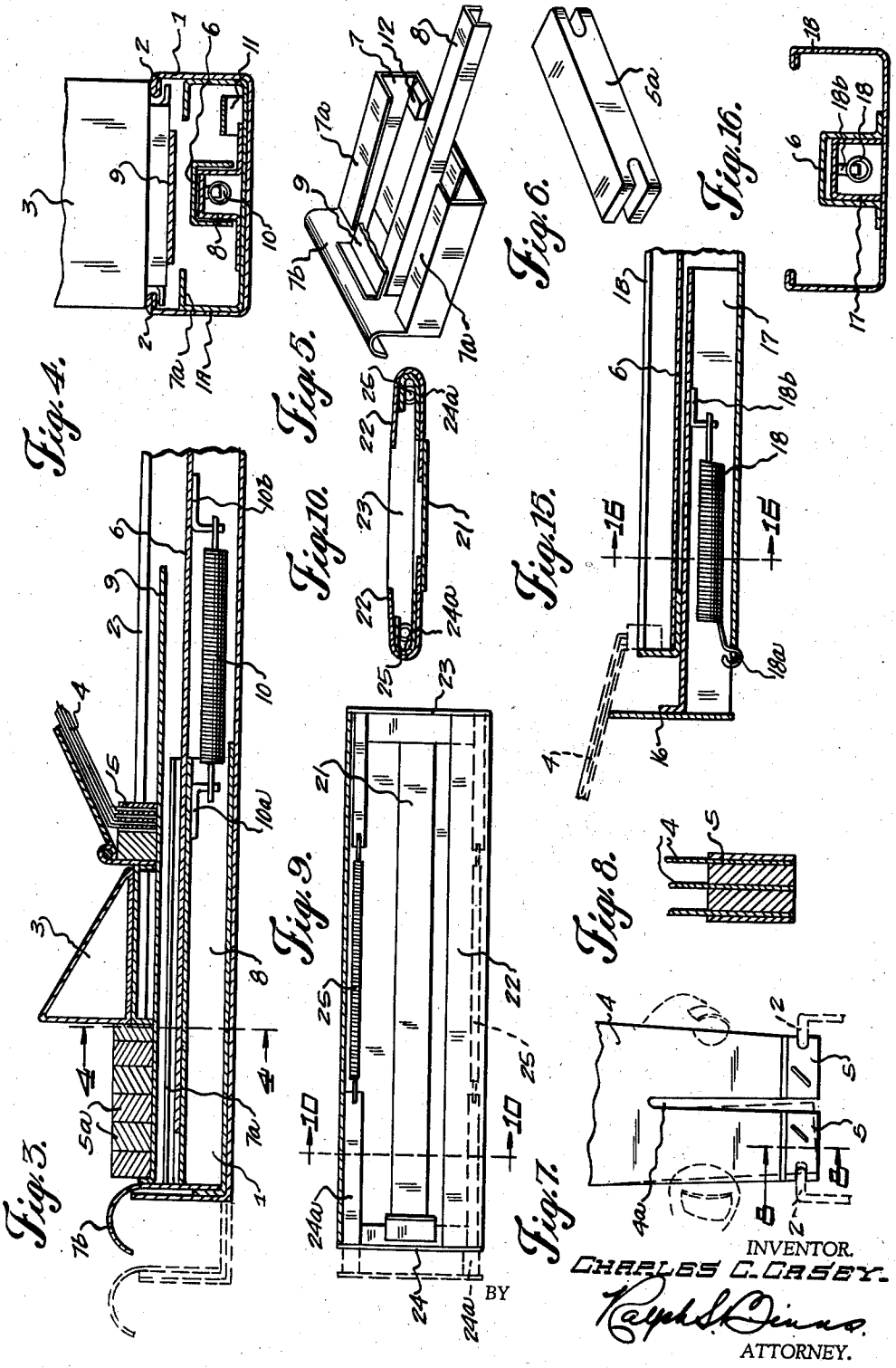


INVENTOR.
CHARLES C. CASEY.
BY Ralph S. Dinnan
ATTORNEY.

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INVENTOR.
CHARLES C. CASEY.
BY
Ralph S. Dinnes
ATTORNEY.

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UNITED STATES PATENT OFFICE

2,233,094

CLASSIFYING AND SORTING DEVICE

Charles C. Casey, Detroit, Mich.

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6 Claims. (Cl. 129—15)

My invention relates to sorting devices, and has a special reference to that kind in which superimposed swinging, separating tabs, attached to a base member, are employed, and its object is to improve the operation and increase the convenience of the apparatus as a whole and as contributory to this end to automatically hold the tabs, either as single, or collective units, firmly in position while permitting their quick free insertion, removal, or adjustment with reference to the supporting portion, and to provide for altering the capacity of the tray, or container of the tabs.

I secure this object in the apparatus shown in the accompanying drawings in which:

Fig. 1 is a side elevation of a single unit tray partly broken away to show the interior construction and to economize room, and to show the interior construction. A few tabs are indicated at each end of the tab-containing space;

Fig. 2 is an elevation looking from the position indicated by the arrow "A" Fig. 1;

Fig. 3 is a longitudinal section taken at the left hand end of Fig. 1 and in the plane indicated by the line 3—3, Fig. 2 on an enlarged scale;

Fig. 4 is a section on the line 4—4, Fig. 3;

Fig. 5 is a detail perspective view of the presser-slide;

Fig. 6 is a perspective view of one of the filler blocks;

Fig. 7 shows the lower end of one of the tabs and illustrates the method of removing and replacing the same in the tray;

Fig. 8 is a detail section on the line 8—8, Fig. 7;

Fig. 9 is a plan view partly broken away of a modified construction;

Fig. 10 is a section in the plane indicated by the line 10—10 Fig. 9;

Fig. 11 is a plan view of a multiple unit tray form, in which two trays are shown mounted upon a carrier shiftable longitudinally of the trays;

Fig. 12 is a side elevation of the same, the supporting apparatus being partly broken away to the center line toward the observer and the trays being broken away to a center line toward the observer for short distances upon both sides of the center;

Fig. 13 is a plan view of the inverted trays of Fig. 12;

Fig. 14 is a section in the plane indicated by the line 14—14, Figs. 11 and 12;

Fig. 15 is a detail section to an enlarged scale of the inner end of the right hand tray in the plane indicated by the line 15—15, Fig. 11; and

Fig. 16 is a section on the line 16—16, Fig. 15.

Where only a moderate amount of material is to be sorted, a single unit tray 1 having parts as shown in Figs. 1 to 8, may be used, preferably in a carrier or slide, such as the carrier and track shown in Figs. 12, 13, 14 and 16, although it also may be placed by itself directly upon the table or desk of the operator.

In this preferred form there is a trough with an integral bottom and open top and having the upper edges of its vertical sides turned inward at right angles to form opposite parallel tracks 2—2. 3—3, are rests for the tabs adapted to slide upon the tracks 2—2 and having their upper edges inclined inward. A rest 3 is located at each end of the tray 1.

4 are flexible tabs secured at their lower edges to cross blocks 5 notched at their outer ends to engage the tracks 2—2. The space between said rests is understood to be filled with said tabs and blocks though only a few are indicated at each end in Fig. 1.

The blocks 5 are divided at their centers and the lower ends of the tabs are bifurcated by a central slot 4a, one branch being secured to each portion of the block as shown in Fig. 7. When it is desired to remove or insert a tab the two branches are forced together by the operator's hand until a flange 2 clears the notch in the block 5 as shown in dotted lines in Fig. 7.

There is a sheet metal ridge 6, inverted U-shape in cross section, extending longitudinally and centrally along the inner surface of the bottom of the tray 1.

There is a presser slide, shown most distinctly in the perspective of Fig. 5, which fits into one end of the tray 1 and acts to yieldingly clamp the rests 3 and tabs 4, with their blocks 5, together. Said slide consists of a body 7, U-shaped in cross-section with the upper edges of its vertical sides turned inward at right angles to form two opposite horizontal flanges 7a—7a. The inner end of the body 7 is open and the outer end is closed by a plate 7b that rises above the flanges 7a and then turns outward and downward to form a grip for the hand. 8 is a sheet metal ridge, U-shaped in cross-section, which is inverted and extends longitudinally and centrally along the inner surface of the body 7 and protrudes from the inner end thereof. The ridge 8 is adapted to fit and slide in the ridge 6 of the tray 1 and the side walls of the ridge 6 are under-cut to permit the passage of the bottom of the presser slide 7. 9 is a tongue extending horizontally inward from the center of the plate 7b. This tongue 9, as will hereafter be shown,

is not essential and is generally omitted in actual practice. This is broken away in Fig. 5 to show other parts more clearly but its relative size and location is shown in Figs. 3 and 4.

The presser slide 7 is inserted into the open end of the tray 1, its body fitting into said tray and the ridge 8 fitting within the ridge 6 to be guided thereby as shown in Fig. 3.

10 is a tension spring secured to a lug 10*a* on the slide 7 and a lug 10*b* on the tray and acting to draw said slide inward. 11, Figs. 1 and 4, is a metal strip secured at its inner end to the bottom of the tray 7, rising up and extending outwardly parallel to said bottom. 11*a* is a lug on the inner surface but at the unsecured end of the strip 11. 12 is a lug on the inner surface of the bottom of the body of the slide 7 adapted to engage the lug 11*a* to limit the outward movement of said slide.

5*a* are filler blocks, notched at their ends to engage the tracks 2—2.

The operation of the above described apparatus is as follows:

Referring to Figs. 1 and 3, the spaced rests 3—3, being adjusted to position at the ends of the tray 1, engage and are adapted to slide along the tracks 2—2 and the single presser-slide 7 being adjusted to position as above described, the spring 16 holds the plate 7*b* yieldingly against the end of the tray 1. The space between the rests 3—3 is filled with the separating tabs 4 and their blocks 5 engaging the tracks 2—2. Filler blocks 5*a* are now placed above the tongue 9 between a rest 3 and the end plate 7*b*, engaging the tracks 2—2, until said end plate is forced out of contact with the end of the tray 1. When the presser slide 7 is drawn away from the tray 1, the filler blocks 5*a* may either rest upon the tongue 9 or upon the flanges 7*a*. The force of the spring 10 is now exerted through the presser-slide 7, blocks 5*a* and rest 3 to hold the tab blocks 5 firmly but yieldingly in position.

Should it be desired to insert tabs, the tension may be removed by drawing out the presser-slide 7 by the grip at the top of the plate 7*b* and parting the tabs where it is desired to insert additional tabs by pressing the forked lower end thereof together as illustrated in Fig. 7. A considerable number of additional tabs may be inserted by drawing out the slide 7 and the filling blocks 5*a* will be supported by the tongue 9 which will engage under the rest 3. A compensating number of blocks 5*a* is then removed for the number of additional tab blocks 5 inserted, and vice versa.

Figs. 11 to 16 illustrate a construction including two trays and I have shown the carrier apparatus for such trays in my Patent No. 2,201,227 dated May 21, 1940, which was originally application Serial Number 256,126, filed February 13, 1939, and this apparatus is shown in cross-section in Fig. 14, in which 13 is a stationary base and 14 is a carrier. These parts are formed at their edges to constitute a track within which interposed balls 15 run and support said carrier. The trays, which I have designated as 1A and 1B for convenience of description, are placed on the carrier 14, and are of the same construction as described above with reference to the single unit of Figs. 1–5, and with the additional features described as follows:

At the inner end of the tray 1B there is placed a work-supporting plate 16 (Fig. 15) extending across the end of the tray and having a tubular stem 17 inverted-U in cross-sectional shape fitting and adapted to slide in the ridge 6 of the tray. 18 is a tension spring attached to the bottom of the tray at 18*a* and to the stem 17 at 18*b* and acting to yieldingly hold the plate 16 out from the inner end of the tray as shown in Fig. 15.

19—19 (Figs. 11 and 12) are pins or lugs, fixed centrally on the carrier 14 and extending upward therefrom at points intermediate the ends of said carrier. 20 indicates a series of holes through the bottoms of the trays extending longitudinally thereof and adapted to fit and pass over the pins 19. Similar holes 20 are also provided in the bottom of the tray shown in Figs. 1–4.

The functioning of the features just described is as follows:

The tray 1A is first placed upon the carrier 14, a pin 19 passing through a hole 20 to fix the tray in position, the tray 1B is then placed with the plate 16 engaging the inner end of the tray 1A and pressed forward pressing said plate toward the end of the tray 1B and tensioning the spring 18. The tray 1B is then laid down upon the carrier 14, a pin 19 engaging through a hole 20. The two trays are now held firmly in place by the tension of the spring 18 and their engagement with the pins 19. There being a considerable number of holes in each series 20, the position of the first tray placed in position may be selected and the position of the other tray may be adjusted to that of the first tray. When a single tray is used, two rests 3—3 are utilized in the tray. When two trays are used, only one rest 3 is used at the forward end of the first unit and one rest 3 is used at the rear end of the rear unit. When the rear tray is removed, the tabs will usually be in a forward position and the plate 16 will be forced out to support the tabs.

The carrier 14 enables the operator to easily reach the various tabs in a system where a large amount of material is to be sorted, as is contemplated where a plurality of trays are provided.

In Figs. 9 and 10 a modification of the single unit form of tray is shown. This is the preferred model for table use as contrasted to the others which are used on the slide carriers of my machines. It may be cheaply constructed, and may be used when there is little material to be sorted.

21 is a plate turned inward in U form at its edges to form track 22 corresponding to the tracks 2—2 of the form of Fig. 1. This plate so formed has one fixed end 23 and a movable end 24 having guiding stems 24*a* extending into the U-shaped formed at the edges of the plate 21. 25—25 are tension springs acting to draw the end 24 inward.

I claim:

1. In a sorting device the combination of a slidable carrier and a plurality of trays placed in line, having adjacent ends abutting one another, removably secured upon and carried by said carrier, one of said trays having a work supporting plate supported at its inner end upon a resiliently mounted member, said plate and resiliently mounted member being so constructed and arranged as to slide outwardly to work supporting position upon removing the adjacent tray.

2. A sorting device including a carrier, lugs upon said carrier, two trays for holding separating tabs upon said carrier, each of said trays being adapted to engage one of said lugs and resilient means acting between said trays to force them against said lugs.

3. A sorting device including a carrier, lugs upon said carrier, two trays for holding separating tabs upon said carrier, each of said trays being adapted to engage one of said lugs in a variety of positions, and resilient means acting between said trays to force them against said lugs.

4. A sorting device including a carrier, an engagement lug on said carrier, a tray for containing separating tabs, said tray having a series of holes extending longitudinally thereof through any one of which said lug is adapted to engage to position said tray on said carrier.

5. A sorting device including a carrier, a pair of engaging lugs longitudinally spaced from each other on said carrier, two trays for holding separating tabs upon said carrier, each of said trays having a series of holes extending longitudinally thereof through which said lugs are adapted to engage to position said trays and resilient means being adapted to yieldingly urge said trays apart when engaged by said lugs.

6. A sorting device including a tray, a series of separating tabs in said tray, a retractable resilient means pressing said tabs together to hold them in operative position, said tabs being severally removable at right angles to the action of said pressing means when the same is retracted and filling blocks for adjusting the action of said pressing means, said resilient means including a slidable member adapted to form an extension of said tray when pulled outwardly and having a portion adapted to support said filling blocks.

CHARLES C. CASEY.