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COUNTING DEVICE

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5 Claims. (Cl. 214—1)

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This invention relates to devices for counting, by numerical measurement, articles such as seeds and the like.

More particularly, the device of the present invention is especially designed to count large seeds such as peas, beans and corn kernels, but it also is very satisfactory for counting out elements such as pills, ball bearings and the like.

My invention preferably is embodied in the form of a counting board comprising two or more apertured panels superposed upon each other and at least one of which is slidable to cause alignment of the groups of apertures.

It is the primary object of the present invention to construct a novel counting board designed to receive and retain a definite, predetermined number of articles to be counted, and operable with facility to discharge the groups of articles either loosely into a receptacle or in a definite pattern onto a receiving surface.

Other important objects reside in the features and details of construction of the board such as a means for manually actuating the sliding panel to discharge position and a means for automatically returning the panel to its initial receptive position.

A clear understanding of the invention may be had from a study of the following description, taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a top plan view, in partial section, of a preferred embodiment of the present invention, the device being shown in its receptive position.

Fig. 2 represents a substantially complete vertical section taken along the line 2—2, Fig. 1.

Fig. 3 is a fragmentary view, in plan as seen along the plane of line 3 in Fig. 2, of the spouted corner of the receptacle.

Fig. 4 represents a vertical section taken on the plane of line 4—4, Fig. 1.

Fig. 5, in a fragmentary view similar to Fig. 1, shows one of the panels moved toward the right to bring the groups of apertures into registry.

Fig. 6 is a vertical section taken along line 6—6, Fig. 5.

Fig. 7 is a side view of the spouted corner of the device, as seen looking upwardly into the lower end of Fig. 6.

With continued reference to the drawings, the base structure of the counting device comprises a panel 8, preferably rectangular and formed from a flat sheet of pressed fiber composition or the like. This panel is perforated with a multiplicity of holes 10, arranged in vertical and horizontal rows, the vertical rows necessarily being

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equally spaced apart for a purpose presently to be seen. In the illustration there are seven holes to each row, giving a total of forty nine. Hence, for convenience in counting (addition), an extra single offset hole 11 is provided to make a total of fifty.

Mounted upon the panel 8 is a three-sided frame comprising top and bottom strips 12 and 13 and a left hand side strip 14, in mitered joinder at two corners, these strips being secured to the panel by screws 15 which also serve to attach a catch pan in the form of a receptacle yet to be described. At their inside bottom surfaces the top and bottom strips 12 and 13 are grooved to afford two straight and parallel channels 16, each preferably rectangular in cross section and each extending from the right hand side of the device to the inner edge of the strip 14, thus affording a slideway for a second movable panel now to be described.

The movable panel 17, of rectangular shape is of such size and thickness that it slides readily into the channels 16 and rests upon the panel 8. In its extreme left hand position (Fig. 1) it abuts the frame strip 14. It has a multiplicity of holes 18, arranged in rows as in the panel 8 and which, in this position, are out of alignment with the holes 10. There also is a fiftieth hole 20, offset just to the left of the extra hole 11 of the panel 8. The two panels normally are maintained in the relative positions just described, as follows.

The outer (right hand) positions of the top and bottom of the panel 17 are incised at their lower edges so that they form, together with the frame strips 12 and 13 and the base panel 8, a pair of parallel sockets 21. Each socket contains a coil spring 22, partially compressed as illustrated in Fig. 1, so that the two springs yieldingly urge the panel 17 in balanced fashion into abutment with the frame strip 14. The reaction is caused by a pair of pins 23 (or screws or the like) correlated with the springs to abut the free ends of the latter so that they (the springs) will press against the inner ends of the sockets 21 to urge the panel 17 leftward.

For the purpose of forcing the slidable panel 17 into discharging position there is provided a vertical (in practice, substantially horizontal) kicker bar 24, secured to the top of the panel 17 as by screws 25. This bar is so short as to allow space below it for one or more pairs of apertures 11, 20; and it is set at the right hand edge of the slidable panel 17 which, as shown in Fig. 1, is shorter from left to right than the stationary base panel 8 by a distance approximately equal to the diameter of

the apertures. Thus, with properly designed and selected compression springs 22, the latter are fully compressed (Figs. 5 and 6) when the bar 24 and its supporting panel 17 are flush with the right hand edge of the base panel 8.

The operation of this device which should be fairly obvious, is as follows. A quantity of seeds or other articles, suitable to the size of the apertures 10 and 18, is thrown or dumped onto the upper panel 17, the entire device being in approximately horizontal position. Then, by tilting the board to roll excess seeds or other articles downwardly, or by brushing off those seeds or articles that have not deposited themselves in the upper holes 18 (and 20), no excess seeds or particles above the number fifty are retained by the panel 17. The excess, unless the articles are carefully laid into the fifty holes, can be tossed off readily to the right by way of the flat space between the frame strip 13 and the lower end of the bar 24.

Thus, by filling the fifty holes 18 (more or less) with articles to be counted, while holding the board between the two hands a person can put his fingers against the panel 8 to hold the latter against movement and simultaneously use his thumb to force the bar 24 and its attached panel 17 to the right (from position of Fig. 1 to that of Figs. 5 and 6), so that all seeds or other counted articles will be discharged in predetermined number through the aligned groups of apertures 18, 10 and the associated holes 20, 11.

The above described counter is designed primarily for seed tests. Hence, without its catch pan about to be described, it may be utilized to deposit seeds in a definite pattern of cross rows upon any suitable sub-stratum such as soil, wet toweling or the like, to afford proper spacing of seeds for germination tests. This device is particularly adaptable to such tests, since the seeds may be tossed upon the panel 17 at random to avoid a biased or prejudiced test such as might otherwise be obtained were the operator to select seeds from a pile and place them individually into the holes.

The lower holes in the base panel 8 preferably are very slightly larger than those in the slidable panel 17, to ensure that any seeds or other articles received by the latter without substantial clearance can readily drop downwardly when the panel is reciprocated. The materials utilized preferably are seasoned wood or compositions of wood fiber, the chief requisite being that they do not warp or bend so as to hinder free relative movement between the two panels.

As previously suggested, a catch pan may be attached to the device to form a receptacle for the articles being counted. This receptacle, preferably formed in one piece from a blank of aluminum or other workable metal, comprises a pan proper, 27, having a flat bottom with side walls struck out and bent vertically upwardly therefrom. Three of the side walls are of sufficient depth to permit flanges 28, 30 and 31 to be bent at right angles thereto and to be attached to three edges of the panel 8 by the same screws 15 which are utilized to secure the panel to the strips 12, 13 and 14.

One corner, preferably the lower left hand corner of the pan, is cut and bent to provide a discharge spout 33, this spout having a triangularly shaped tab 34 bent at an angle upwardly to guide the counted articles leftward in the illustrations as they are discharged through the spout. It should be apparent that, when the pan 27 is attached, after discharging one or more groups

of articles to be counted into the pan, the entire device is held upright and tilted to the left to discharge the entire contents of the pan through the spout 33 into another larger container, not shown.

Obviously, numerous changes in detail and general design may be made without departing from the spirit of the present invention. Therefore, as is customary, I wish to be limited only by a reasonably liberal interpretation of the appended claims, which follow.

What is claimed is:

1. In combination, in a counting device, an apertured base panel, a rectangularly shaped framework attached to said panel and comprising two parallel sides interconnected by a third side to thus leave one end open, an apertured upper panel confined by and slidable between said parallel sides, a pair of compression springs of equal strength nested into the parallel sides and reacting between said parallel sides and said upper panel to yieldingly urge the latter into abutment with said third side, and means on said upper panel usable to force it in a direction away from said third side, said means comprising a bar partially closing said open end from one of said parallel sides towards the other.

2. In the combination defined in claim 1, said parallel sides of said framework being grooved to form guiding channels for two of the edges of said upper panel, said edges having relieved portions adjacent the open end of the framework and said springs being concealed within portions of said channels and fitting into said relieved portions.

3. A counting device comprising a base panel having its top, bottom and left hand edges secured to a three-sided framework, a simple flat and unframed upper panel slidable to right and left in direct contact with said base panel, said panels being apertured with staggered sets of holes that can be brought into and out of registry, means resiliently urging said upper panel toward the left, said upper panel being shorter from right to left than said base panel by a distance substantially equal to that between associated sets of staggered holes and having a member attached to its right hand edge for actuation by the thumb of an operator when some fingers of the same hand are held against the right hand edge of said base panel.

4. In a counting device of the class described, a three-sided framework and a pair of relatively slidable panels partially encompassed thereby so that one panel may move towards and from the open side of the framework, said panels having multiple sets of apertures arranged to be brought into and out of registry, a manipulating bar secured to one of said panels to partially close said open side of said framework, and at least one mated pair of additional apertures provided in said panels approximately in line with said bar to afford any desired count upon each relative reciprocation of the panels.

5. In a device for handling articles of substantially uniform size and of the class described, a generally rectangular framework having three closed sides and an open side; a pair of relatively slideable panels fitted to said three sides so that one panel may move towards and from said open side of the framework, said panels having multiple sets of apertures arranged to be brought into and out of registry; resilient means associated with said framework to constantly urge the movable panel towards that side of said frame-

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work which is opposite to said open side; and a hand-operable bar secured to said moveable panel in proximity to and in substantial parallelism with said open side, said bar terminating at one end close to a side of said framework and extending towards the parallel side of the latter to such extent as to form a spill-off gap for the articles placed in excess upon the top panel for the purpose specified.

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