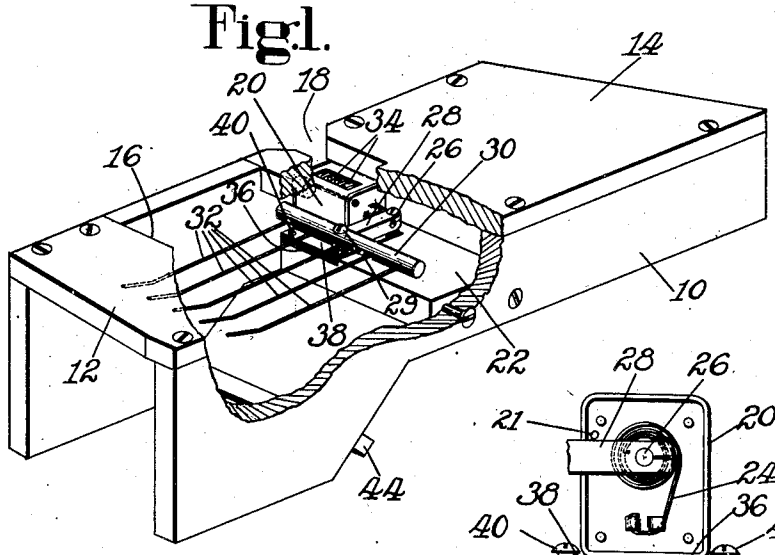
Sept. 24, 1935. R. F. KNIGHT 2,015,147

COUNTING DEVICE

Filed March 15, 1933

Fig.1.



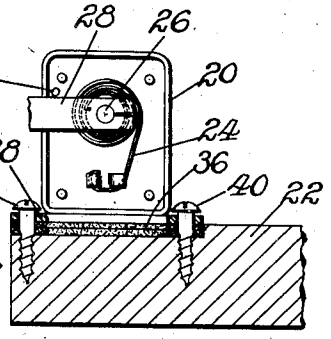
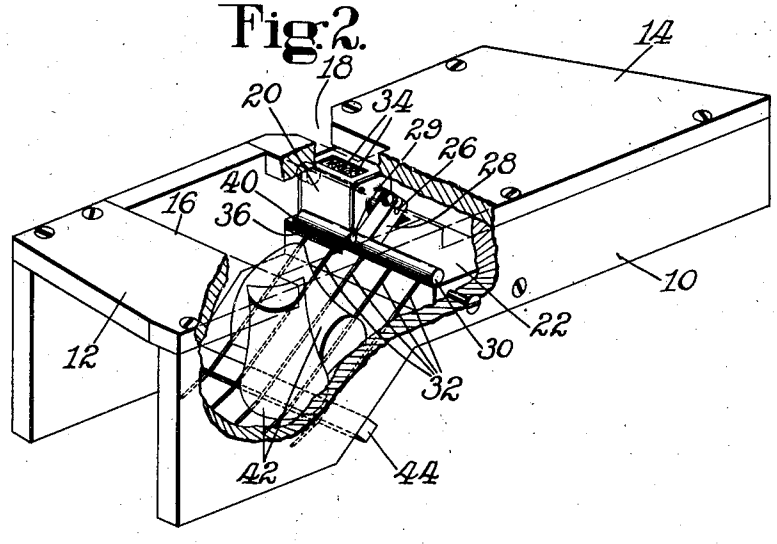


Fig.3.

Fig.2.



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COUNTING DEVICE

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Application March 15, 1933, Serial No. 660,895

2 Claims. (Cl. 235—98)

This invention relates to counting devices and is illustrated herein as embodied in a device particularly adapted for counting wood heels.

In counting articles such as heels to be placed in shipping containers it is important that such articles be accurately counted. This is important in the manufacture of wood heels where the heels are ordinarily finally inspected and counted as they are packed. The heels are ordinarily inspected and counted by the same person and the resulting division of attention often results in inaccurate counting and prevents, to a certain extent, careful inspection of the heels, with the result that the containers do not always hold the specified number of heels and also certain of the heels may not be of the required quality. This condition often results in loss and annoyance to the manufacturer.

An object of this invention, accordingly, is to provide a novel device for counting articles such as heels by the use of which accurate counting is insured. To this end the invention provides a novel counting device having a counter provided with a plurality of fingers arranged to receive an article or articles to be counted, the counter being yieldably mounted on the frame of the device to prevent undesired oscillatory movement of the fingers when they are returned to their original position after being depressed by the weight of the articles to be counted, thus insuring that the counter will register only the number of articles actually received by the device.

These and other features of the invention comprising certain combinations and arrangement of parts will be apparent from the following description of a preferred embodiment of the invention shown in the drawing.

In the drawing,

Fig. 1 is a perspective view of one embodiment of the invention, partly broken away to show the parts of the device in position to receive an article to be counted;

Fig. 2 is a view similar to Fig. 1 showing the parts of the device in discharging position; and

Fig. 3 is a view partly in section illustrating a preferred form of mounting a counter on a support.

The illustrated device embodying a preferred form of the invention is mounted in a frame 10 which may be secured by screws, or the like, to any suitable support, such as a work bench. The frame is illustrated as composed of wood but it is evident that it may be made of any other suitable material. The frame 10 is provided with cover portions 12 and 14 spaced from each other to provide an opening 16 through which articles to be counted are dropped. The cover portion 14 is provided with an opening 18 below which is mounted a rotary counter 20 of the type disclosed in United States Letters Patent No. 1,471,306, granted October 16, 1923, on an application filed in the name of Henry A. Chase. In counters of this type the numbering disks are rotated by a pawl and ratchet mechanism.

The counter 20 is secured to a support 22 which is securely fastened to the side walls of the frame 10. The counter may be of any well-known type but preferably is of the type which is provided with a spring 24 secured at one end to the counter and surrounding a shaft 26 to which an arm 28 is secured. The spring 24 operates to return the arm 28 to the horizontal position shown in Fig. 1 after the arm has been depressed to count an article. The forward end of the arm 28 has secured thereto, by a screw 29, a cross bar 30 which carries a number of fingers 32 (hereinafter referred to as a fork) formed of wire or other suitable resilient material. It is to be noted that the fingers 32 are upturned at their forward ends to prevent the article to be counted from sliding off of the fingers 32 before the arm 28 has been depressed a distance sufficient to operate the counting mechanism. The weight of the arm 28, the cross piece 30, and the fingers 32, as illustrated, is approximately sixteen grams and is counterbalanced by the spring 24. In other words, the spring 24 is so tensioned that it operates to return the arm 28 and the members connected thereto to horizontal position to receive another article to be counted. The counter 20 is provided with a stop 21 which engages the arm 28 on the shaft 26 to prevent the arm 28 from moving above horizontal position. The weight of the counter is substantially greater than the weight of the fork and, as illustrated, weighs approximately 130 grams.

If the counter 20 is rigidly secured to the support or cross piece 22, the momentum of the fork, when it strikes the stop 21, may be sufficient to cause the fork to bounce away from the stop 20 and oscillate. This oscillation, of course, is transmitted to the counting device thereby causing numbering disks 34 to be rotated slightly. It is apparent that repeated oscillations will cause the numbering disks to register more than the actual number of the articles counted. In order to prevent such false counting, the counter 20 is loosely and yieldably mounted upon the support 22. Referring now to Fig. 3, it will be noted that the support 22 is cut away in its

upper surface to receive a pad 36 of some relatively soft, yielding material, such as leather. The counter 20 is provided with a flanged base 38 having four screw receiving holes therein. The base of the counter 20 is placed on the pad 36 and screws 40 are driven through the holes in the base 38 and through the pad 36 into the cross piece or support 22. The screws 40 are not driven tightly against the upper surface of the base 38 but are driven with the heads of the screws 40 just out of contact with the top surface of the base 38. In other words, the counter 20 is free to move slightly relatively to the support 22. By the use of such a mounting undesired operation of the counter is prevented and accurate counting is insured. The mass of the counter 20 is substantially greater than the mass of the arm 28, the cross piece 30 and the fingers 32. When the fork, comprising the arm 28, the cross piece 30 and the fingers 32, swings back to its original position, the arm 28 strikes the stop 21 on the counter 20. The momentum of the fork causes the counter 20 to be slightly moved. Since the mass of the counter 20 is substantially greater than the mass of the fork, the velocity of the counter 20 and the fork moving together is proportionately less than the velocity of the fork before it strikes the stop 21. The fork and the counter 20 move together a small distance until substantially all of the momentum of the fork has been absorbed but at the end of this movement the parts are in an unbalanced condition and the parts then move together in the opposite direction. During this movement, the velocity of the parts is small and the momentum proportionately small. The spring 24 is sufficiently strong during this latter movement to hold the arm 28 against the stop 21 so that there is substantially no relative movement between the fork and the counter 20. At the end of the return movement the parts swing below the normal position of the fork but the parts return to normal position partly because of the yielding pad 21 and also because there is some slight rebound of the parts when the lowest point of the return movement is reached. The counting mechanism, therefore, can not be operated by the oscillation of the fork.

Although the parts of the device have been described in detail the operation of the device will now be briefly summarized. For example, if heels 42 are to be counted the operator may place a single heel or a pair of heels upon the fingers 32. The weight of the heel or heels will depress the fingers into the position shown in Fig. 2 until they engage a stop 44 secured to the under side of the frame 10. When the fingers 32 are in this position the heels 42 will slide off into a box or other container. The fingers 32 will then be returned to horizontal position by the spring 24. As previously stated, the arm 28 strikes the stop 21 on the counter 20 and the fork and counter 20 move together upwardly until the momentum of the parts is absorbed or dissipated. At the end of this movement the parts move in the opposite direction and finally come to rest. There is, therefore, substantially no relative movement between the parts after the fingers have been returned to horizontal position and false counting is thereby prevented. The parts of the device are now in position to count another article or articles.

Although the illustrated device has been described, particularly in connection with counting heels, it is to be understood that the invention is not limited to counting such articles but may be utilized for counting other kinds of articles, if desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A counting device having, in combination, an open bottomed supporting frame, a counter yieldably mounted on said frame, said counter being provided with counting disks mounted for rotation in said counter and a shaft arranged to be rotated to operate the counting disks, an arm secured to said shaft, a plurality of relatively resilient fingers connected to said arm, said arm and said fingers being normally disposed in a substantially horizontal position and arranged to be depressed by the weight of the article to be counted a distance sufficient to rotate said shaft to operate the counting disks and to permit the article to slide off of said fingers and into a receptacle, and a spring operatively connected to the shaft to return said arms and said fingers into substantially horizontal position.

2. A counting device having, in combination, an open bottomed supporting frame, a counter loosely secured to said frame, said counter being provided with counting disks mounted for rotation in said counter and a shaft arranged to be rotated to operate the counting disks, a yieldable pad interposed between said frame and said counter, an arm secured to said shaft, a cross bar secured to said arm, a plurality of resilient fingers secured to said cross bar, said arm and said fingers being normally disposed in a substantially horizontal position to receive articles to be counted and arranged to be depressed by the weight of the articles a distance sufficient to rotate said shaft to operate the counting disks and to permit the articles to slide off of said fingers and into a receptacle, and a spring secured to said counter and to said shaft to return said arm and said fingers into substantially horizontal position.

RALPH F. KNIGHT.