May 3, 1949. T. L. NASH 2,468,834

TOW FOLDING DEVICE FOR SHIPPING CARTONS

Filed Dec. 7, 1946 2 Sheets-Sheet 1

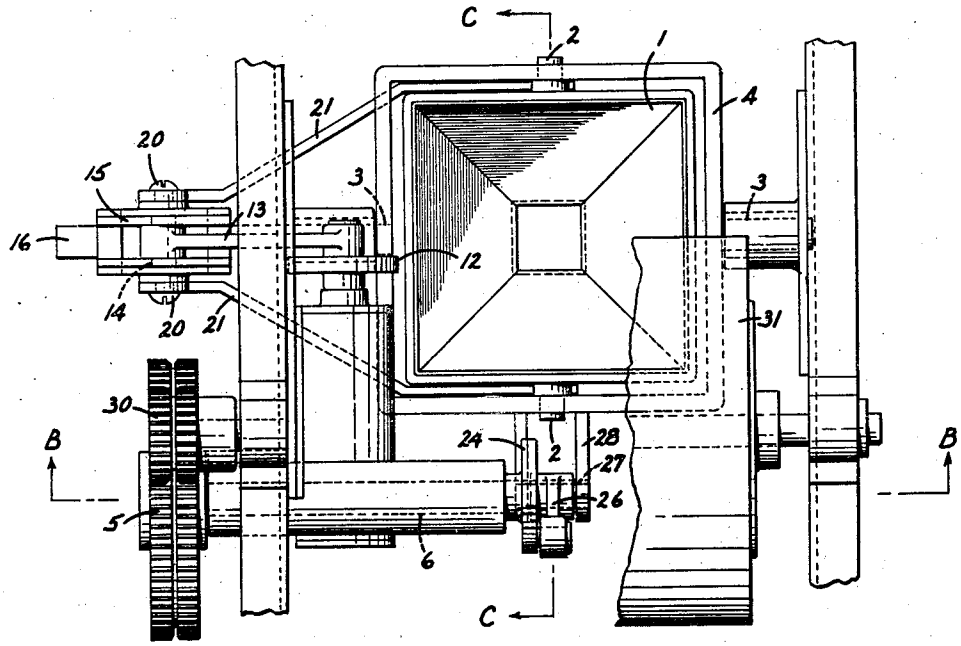

Fig. 1

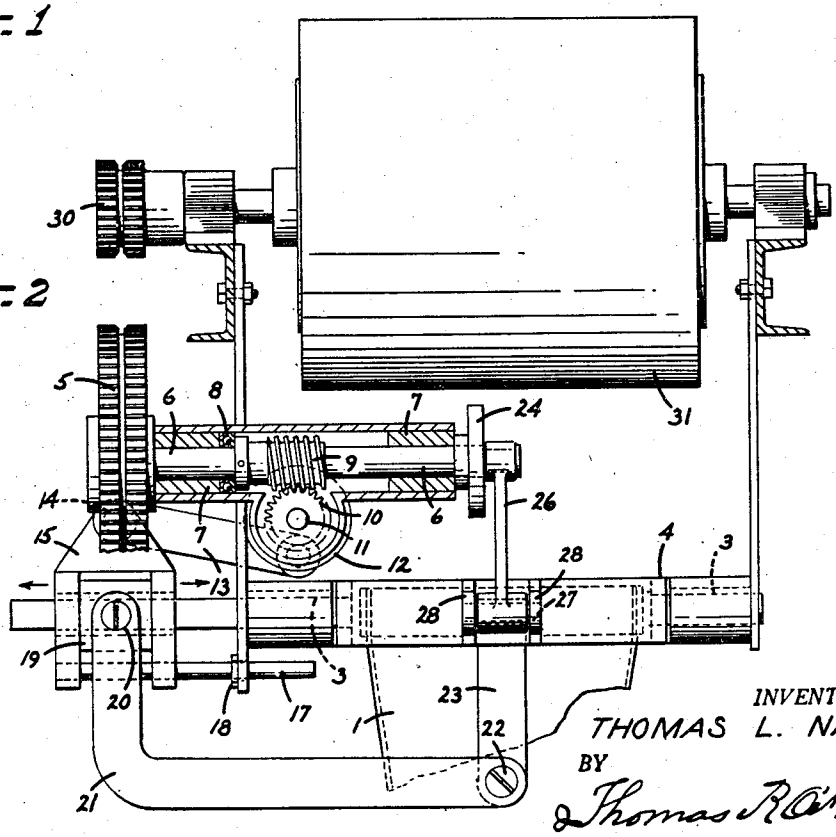

Fig. 2

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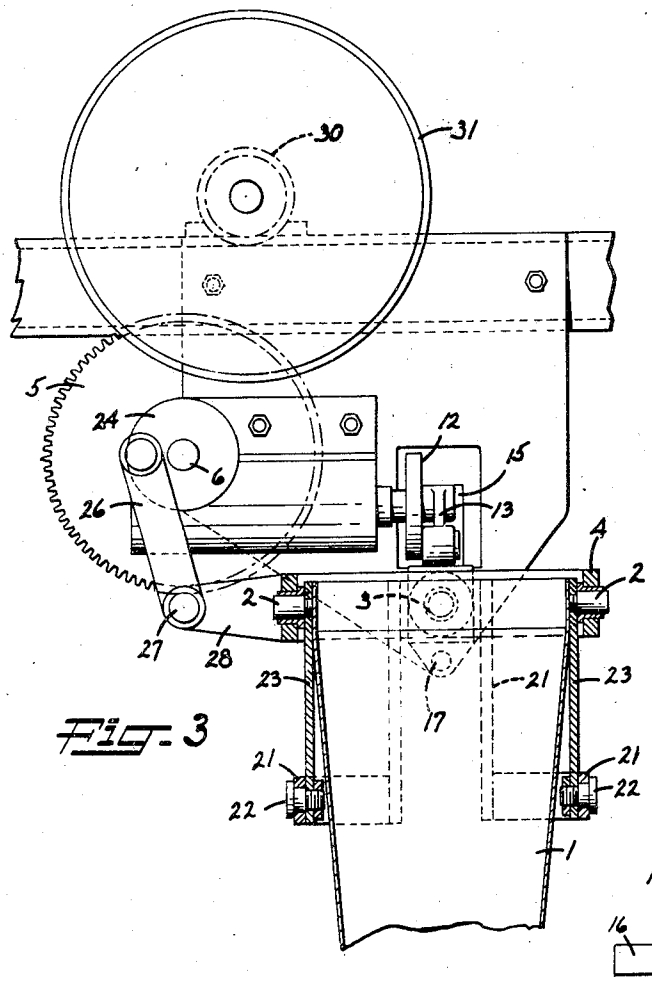

Fig. 3

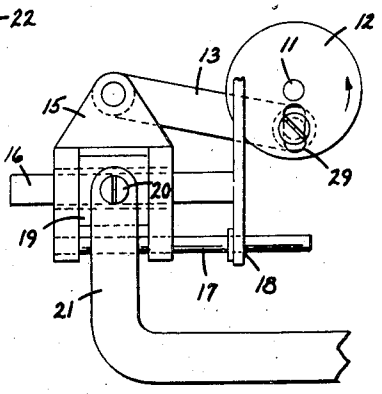

Fig. 4

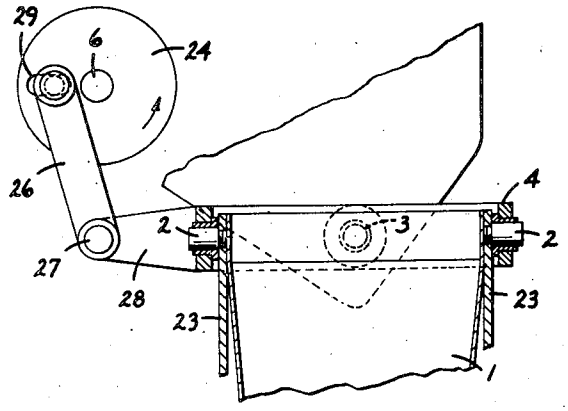

Fig. 5

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Patented May 3, 1949 2,468,834

UNITED STATES PATENT OFFICE

2,468,834

TOW FOLDING DEVICE FOR SHIPPING CARTONS

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Application December 7, 1946, Serial No. 714,752

1 Claim. (Cl. 28—21)

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This invention relates to devices used for folding yarn, strands, tow, threads or other filamentary material into cartons or receptacles for future use or shipment.

The main object of the present invention is to provide an improved device for piling strand, yarn, thread or other filamentary material on a moving belt or evenly in layers throughout a carton receptacle.

Other objects and advantages of this invention will become apparent from a study of the description of the following drawings.

In the drawings—

Figure 1 is a top view of an illustrated embodiment of the present invention,

Figure 2 is a sectional view of Figure 1, taken along section lines B—B,

Figure 3 is a sectional view of Figure 1, taken along section lines C—C, and

Figures 4 and 5 are modifications of the oscillatory mechanism of the present invention.

Hereafter, the term "strand" will be meant to include tow, thread, yarn or any other filamentary material.

As shown in Figure 1, reference character 1 indicates a funnel in which the strand passes therethrough for collection on a belt or receptacle placed thereunder. Funnel 1 is pivotally supported on carrier member 4 by trunnions 2. The carrier member 4 is pivotally mounted on a suitable supporting frame of the device by trunnions 3 spaced at right angles to the trunnions 2.

Means are provided to give the strand motion in a longitudinal and transverse direction with respect to the element on which it is supported. Motion in the longitudinal direction is more clearly shown by reference to Figure 2.

Drive pinion 30 mounted on the same shaft as the driving roll 31, imparts rotation by a chain drive to the drive wheel 5 mounted on and turning drive shaft 6 which is supported by bearings 7. Bearing 8 takes the thrust encountered from the worm 9. As the worm 9 turns, it imparts rotation to worm gear 10 mounted on the cross shaft 11, which, in turn, imparts rotation to crank disc 12 (shown in Figure 1) which has arm 13 eccentrically mounted thereon. The eccentric arm 13 is connected at its other end to the sliding yoke 15 by pin 14. The sliding yoke 15 is slidably and rotatably mounted on trunnion 3 and kept from rotating by rod 17 integrally mounted on the lower end of sliding yoke 15 and sliding in the side plate 18. The sliding block 19 is rotatably and slidably mounted on the trunnion 3 between the arms of sliding yoke

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15. Arms 21 are connected by suitable means to the sliding block 19 and are connected by pin 22 to the oscillating arms 23. The oscillating arms 23 are fixed to trunnions 2 holding funnel 1. Due to eccentric arm 13, oscillation of the path of the strand is caused in a longitudinal direction when it is deposited.

Motion in the transverse direction is more clearly shown in Figures 2 and 3. Reference charcter 24 indicates a crank disc mounted on the free end of the drive shaft 6 and connected so as to rotate with it. Eccentric arm 26 is connected eccentrically to the crank disc 24 on one end and on the other is connected to the lever arm 28 by pin 27. The lever arm 28 is integrally mounted on carrier member 4, which is mounted to the supporting frame by trunnion 3. Thus, when crank disc 24 rotates it imparts oscillatory motion to the path of the strand in a transverse direction when it is deposited.

There is a greater frequency of oscillation of the strand in the transverse direction than in the longitudinal direction. This will always be true in this invention because the crank disc 24, which governs transverse oscillation is driven directly off the drive shaft, whereas the crank disc 12, which governs longitudinal oscillation, is driven by a worm gear meshing with the worm on the drive shaft.

A modification of the present invention is illustrated in Figures 4 and 5. By cutting in a slot 29 in each of the crank discs 12 and 24, and slidably mounting the respective eccentric arms 13 and 26 in the slots 29, the respective strokes may be varied to conform to any size belt or container within the limits of the respective strokes.

Devices of the prior art were often large and cumbersome with many moving parts. As can be seen from study of the specification, this disadvantage is overcome in that the present invention has its moving parts minimized.

Although this invention has been described with reference to the improvements shown, it will readily be appreciated that numerous changes may be made without departing from the spirit and scope of the invention as described in the appended claim.

I claim:

An apparatus for depositing a strand comprising a frame member, a yoke pivotally mounted on the frame, guide means for the strand pivotally mounted on the yoke on an axis set at an angle to the pivotal axis of the yoke and to the path of the strand through the guide means, a

drive shaft, a worm on the shaft, a cross shaft, a worm gear on the cross shaft in mesh with the worm, a crank disc on the cross shaft, an eccentric arm connected to the crank disc for oscillating a sliding yoke and sliding block mounted on the axis of the yoke pivotally mounted on the frame, arms connected to the sliding block for oscillating the guide means, a crank disc mounted on the drive shaft and an eccentric arm connected to the last mentioned crank disc for oscillating the yoke.

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