This invention relates to machines for seed-celling and slicing apples and similar fruits and particularly to novel transmission and supporting means for the main spindles of such machines.

In preparing apples for cooking, canning, drying or deep freezing, it is customary, in commercial operation, to first pare and core the apples and then feed them into a machine where their seed-cells are removed and the apples are sliced radially into any desired number of segments. A common type of seed-celling and slicing machine consists of a spindle for receiving a succession of cored apples which move along the spindle to be successively seed-celled and sliced.

In the general type of seed-celling and slicing machine, the seed-cells are removed from each apple as it moves along the spindle by a ring or spider disposed axially to the spindle and in such manner that it is disposed co-circularly about the spindle and is supported at its lower end by a transmission mechanism to which it is attached and is supported at its lower end by a transmission mechanism.

The manner in which spindle 11 is mounted and supported for driving rotation at its lower end by the transmission means will now be described, reference being had particularly to Fig. 2. Transmission casing 30 is provided with a hub 20 which is coaxial with spindle 11 and serves as a support for a removable upper spindle bearing assembly.

A bearing cap 21 has a lower skirt portion 22 which clamps about hub 20 by means of a split portion 23 and a bolt and nut clamp 24. A bushing 25 is pressed tightly into cap 21, and its lower portion projects downwardly into the annular space defined by skirt portion 22 of cap 21.

A bushing 28 is pressed tightly into the interior of hub 20 and the upper end of a sleeve shaft element 30 has rotatable bearing in bushing 28. A combined axially and radial thrust ball bearing 31 is mounted in the lower wall of transmission casing 30 coaxially with bushings 25 and 28, and the lower end of sleeve shaft 30 has bearing therein.

A driven bevel gear 33 is fixed to sleeve shaft 30 in any desired manner for rotation jointly therewith. A drive pin 35 is pressed transversely into sleeve shaft 30, and spindle 11 is notched to receive it as shown in Fig. 2. Spindle 11 may be freely assembled from above by projecting it downwardly through bushing 25 and into sleeve shaft 30 to the position shown in Fig. 2, whereupon drive pin 35 causes joint rotation of sleeve shaft 30 and spindle 11.

Bevel gear 36 meshes with a bevel drive pinion 37 whose supporting shaft, indicated at 38 in Fig. 1, is journaled in transmission casing 12. Any suitable external drive means for shaft 38 may be provided.

It will be noted that the upper end of sleeve shaft 30 has an enlarged bore 40 which loosely receives the downward projecting portion of bushing 31. Further, spindle 11 is flattened as at 41 from a point above the bottom of bore 40 downwardly to the end of the spindle.

The graduated designations of the present invention are for the sake of convenience only and are not to be construed as limiting the invention in any other respect.

In constructions generally like the one hereunder consideration the juicer would receive between the walls of sleeve shaft 30 and the bore of bushing 28, this being a running bearing fit, and past experience has shown that packings and fluid seals have been of little help in preventing such seepage. Even if the initial efficiency of such a seal be fairly good, continued rotation wears the seal sufficiently to permit objectionable seepage. The harm which these juicer cause to the drive means, particularly when they harden, is too well-known to require discussion.

It is obvious from a consideration of Fig. 2 that such juicer as set past the running fit between bushing 25 and spindle 11 fall freely through the interior of sleeve shaft 30, especially along the flattened portion of spindle 11 as indicated by the arrows in Fig. 2, and fail clear of the transmission casing beneath sleeve shaft 30.

A seal is interposed between the upper end of sleeve shaft 30 and hub 30 of casing 12 of seed-celling and slicing machine 11 and is supported at its lower end by a transmission mechanism, the casing of which is designated 12 in Figs. 1 and 2.
1. In a seed-celling and slicing machine, a vertically extending rotary spindle, a seed-celling knife carried by said spindle, transmission means at the lower end of said spindle for supporting and rotating the same, a slicing knife concentric with said spindle, means for moving cored fruit downwardly along said spindle toward and past said seed-celling knife, said transmission means including a fixed casing and a vertical power driven hollow shaft journaled therein and adapted to receive the lower portion of said spindle and engage the same in rotary driving relationship, said transmission casing including a bushing at its upper end for bearing engagement with said spindle generally above said hollow shaft, the hollow interior of said shaft being enlarged at its upper end to receive the lower end of said bushing, said hollow shaft interior comprising a discharge opening at the bottom of said transmission means, said spindle having a longitudinal formation in its periphery extending from the vicinity of said hollow shaft interior enlargement to the lower end of the spindle to provide a free passageway for fruit juices.

2. In a fruit treating machine, a vertically extending rotary spindle adapted to receive cored fruit, transmission means at the lower end of said spindle for supporting and rotating the same, means for moving cored fruit downwardly along said spindle, transmission means including a fixed casing and a vertical power driven hollow shaft journaled therein and adapted to receive the lower portion of said spindle and engage the same in rotary driving relationship, said transmission casing including a bushing at its upper end for bearing engagement with said spindle generally above said hollow shaft, the hollow interior of said shaft being enlarged at its upper end to receive the lower end of said bushing, said hollow shaft interior comprising a discharge opening at the bottom of said transmission means, said spindle having a longitudinal formation in its periphery extending from the vicinity of said hollow shaft interior enlargement to the lower end of the spindle to provide a free passageway for fruit juices.

3. In a seed-celling machine, a vertically extending rotary spindle, a seed-celling knife carried by said spindle, transmission means at the lower end of said spindle for supporting and rotating the same, means for moving cored fruit downwardly along said spindle to said seed-celling knife, said transmission means including a fixed casing and a vertical power driven hollow shaft journaled therein and adapted to receive the lower portion of said spindle and engage the same in rotary driving relationship, said transmission casing including a bushing at its upper end for bearing engagement with said spindle generally above said hollow shaft, the hollow interior of said shaft being enlarged at its upper end to receive the lower end of said bushing, said hollow shaft interior comprising a discharge opening at the bottom of said transmission means, said spindle having a longitudinal formation in its periphery extending from the vicinity of said hollow shaft interior enlargement to the lower end of the spindle to provide a free passageway for fruit juices.

4. In a seed-celling and slicing machine, a vertically extending rotary spindle, a seed-celling knife carried by said spindle, transmission means at the lower end of said spindle for supporting and rotating the same, a slicing knife concentric with said spindle, means for moving cored fruit downwardly along said spindle toward and past said seed-celling knife, said transmission means including a fixed casing and a vertical power driven hollow shaft journaled therein and adapted to receive the lower portion of said spindle and engage the same in rotary driving relationship, said transmission casing including a bushing at its upper end for bearing engagement with said spindle generally above said hollow shaft, the hollow interior of said shaft being enlarged at its upper end to receive the lower end of said bushing, and the bearing surfaces of said spindle and the hollow interior of said shaft having a longitudinal passage therebetween extending downwardly from said hollow shaft interior enlargement to provide a discharge opening at the bottom of said transmission means.

5. In a fruit treating machine, a vertically extending rotary spindle adapted to receive cored fruit, transmission means at the lower end of said spindle for supporting and rotating the same, means for moving cored fruit downwardly along said spindle, transmission means including a fixed casing and a vertical power driven hollow shaft journaled therein and adapted to receive the lower portion of said spindle and engage the same in rotary driving relationship, said transmission casing including a bushing at its upper end for bearing engagement with said spindle generally above said hollow shaft, the hollow interior of said shaft being enlarged at its upper end to receive the lower end of said bushing, and the bearing surfaces of said spindle and the hollow interior of said shaft having a longitudinal passage therebetween extending downwardly from said hollow shaft interior enlargement to provide a discharge opening at the bottom of said transmission means.

6. In a seed-celling machine, a vertically extending rotary spindle, a seed-celling knife carried by said spindle, transmission means at the lower end of said spindle for supporting and rotating the same, means for moving cored fruit downwardly along said spindle to said seed-celling knife, said transmission means including a fixed casing and a vertical power driven hollow shaft journaled therein and adapted to receive the lower portion of said spindle and engage the same in rotary driving relationship, said transmission casing including a bushing at its upper end for bearing engagement with said spindle generally above said hollow shaft, the hollow interior of said shaft being enlarged at its upper end to receive the lower end of said bushing, and the bearing surfaces of said spindle and the hollow interior of said shaft having a longitudinal passage therebetween extending downwardly from said hollow shaft interior enlargement to provide a discharge opening at the bottom of said transmission means.

References Cited in the file of this patent

UNITED STATES PATENTS

2,509,781 Pease ________________ May 30, 1950
2,575,584 Cohen ________________ Nov. 20, 1951