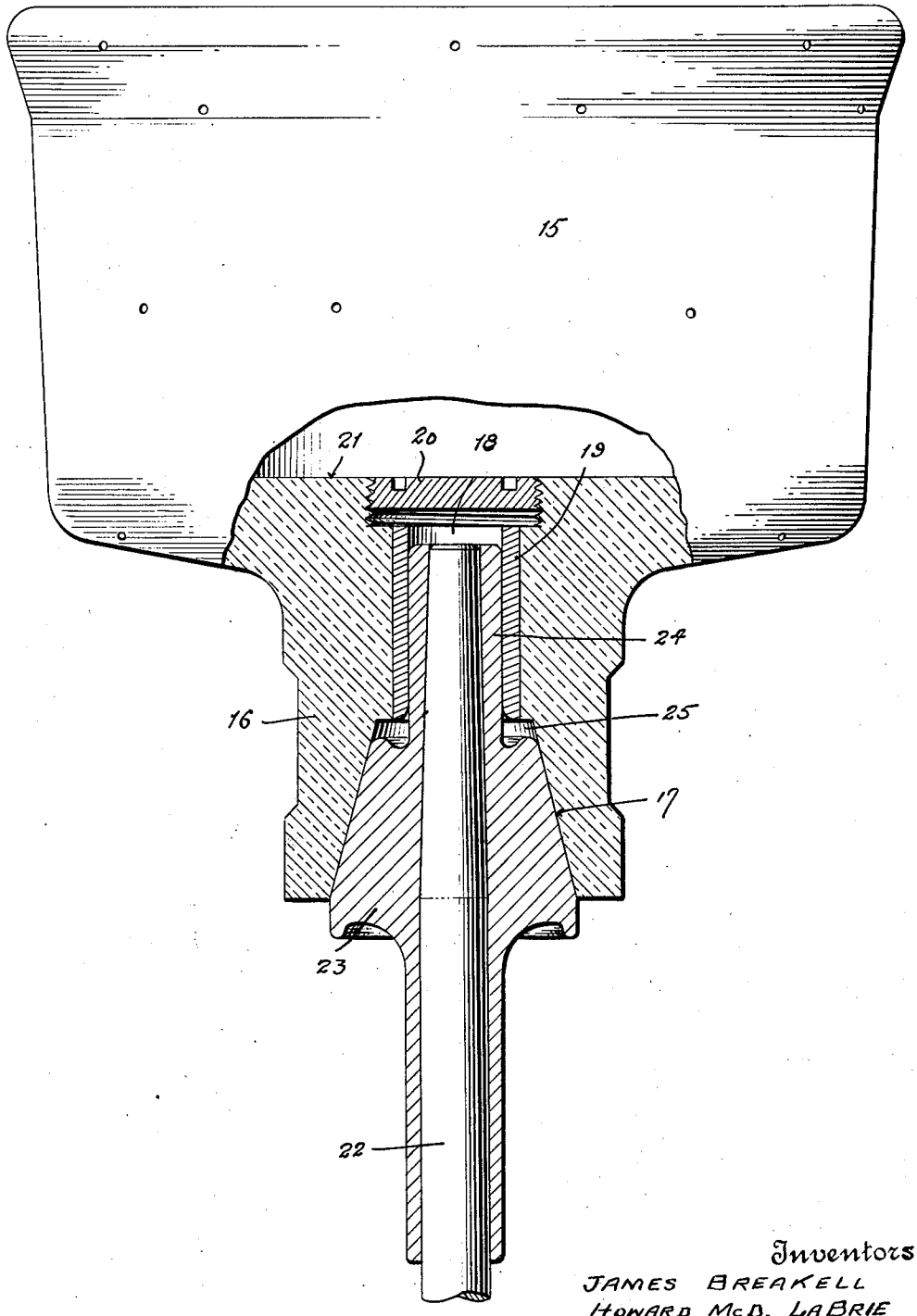
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DRIVE CONNECTION FOR ARTIFICIAL SILK SPINNING BOXES

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DRIVE CONNECTION FOR ARTIFICIAL-SILK-SPINNING BOXES

Application filed June 10, 1927. Serial No. 197,867.

Our invention contemplates a readily detachable supporting and driving connection between the spinning box and its driving spindle. Our invention secures (1) greater surface area in the frictional drive connection; (2) a more secure engagement between the cooperating surfaces; (3) greater facility in centering the box on the spindle; (4) automatic take-up of wear between the engaging surfaces; and (5) reduced construction and up-keep costs.

In the accompanying drawing—

Fig. 1 is a broken side elevation of a spinning box and driving spindle to which our invention is applied in one form.

In the manufacture of artificial silk it is common practice to spin the silk in cake form in a rapidly rotating spinning box. The latter is detachably supported on a driving spindle, and when sufficient silk has been wound or spun within the box to form the usual cake, the box is removed from the spindle and the cake doffed for further treatment of the silk; while the box is returned to the spindle for further service.

To effect the drive of the spinning box it has been customary heretofore to support the box upon a vertical spindle having an annular flange or mushroom, lying in a plane normal to the spindle and upon which the lower end of the box hub rests. The box drive results from the frictional engagement of the mushroom with the lower face of the box hub. The area of engagement between these surfaces is so limited, however, that considerable and uncertain slippage results. In order to insure as great an area of frictional engagement as possible, and to insure precise axial support of the box on the spindle, it has been the practice to machine the engaging surfaces to precise planity, and to exercise extreme care that the respective planes are exactly normal to the spindle axis. Failure to so exactly locate the planes of support results in an unbalanced load, which at the very high speed of rotation imparted to the box, results in a wobbling rotation of the box, which is injurious not only to the driving mechanism, but also to the finished product spun within the box.

According to the present invention, the spinning box 15, formed of "bakelite" or other phenol condensation product, has its integral hub 16 recessed to afford a taper recess 17. In extension thereof is an axial bore or well 18 of substantially uniform diameter, preferably fitted with a metal liner 19. The bore 18 may be closed by a spotter plug 20 of material similar to that of the box body, but of different color, and preferably screwed in flush with the bottom 21 of the box chamber.

To support and drive the box we provide the vertical spindle 22 with a drive head 23, tapered to the incline of the taper recess 17 of the box hub. The drive head 23 may be integral with the spindle, but we prefer to form it as an independent member integral with a projecting sleeve 24, which encases the spindle 22 above the drive head 23 and has an over-all diameter substantially equal to the inner diameter of the liner 19 of the bore 18 in the box hub to center and steady the box on the spindle. Any appropriate connection may be effected between the spindle 22 and the drive head member, so that they are solid with each other. We have indicated a drive fit between the parts.

It will be noted that the taper recess 17 is so extended that at its inner end its diameter is less than that of the adjacent end of the taper drive head 23. Consequently a space 25 is afforded between the inner end of the drive head and the bottom of the taper recess 17. This not only insures a snug engagement of the drive head in the taper recess, but affords room for take-up between the parts incident to wear.

The upper end of the sleeve 24 is rounded, and the lower end of the liner 19 is similarly rounded to facilitate the entry of the sleeve 24 into the liner 19 when the box is placed upon the spindle. The taper recess 17 itself affords a guide surface which leads the upper end of the spindle toward the axial bore 18 thereof, and thus facilitates the location of the box on the spindle when replaced after doffing.

The present construction not only centers and steadies the box on the spindle by the

engagement of the sleeve 24 in the liner 19, but affords a materially greater area of frictional engagement between the taper driving head 23 and the taper recess 25 of the box hub, than has been afforded by the mushroom flanges heretofore in common use. Moreover the taper connection between the parts affords a wedging grip of the box hub upon the driving head, which greatly reduces the slippage between the parts. Inasmuch as there is substantially no slippage, no lubrication of the drive connection is required. Exact machining of the frictionally engaged surfaces is not necessary to insure the axial location of the box, since this is accurately determined by the fit of the projection 24 in the liner 19. Longer service is assured, since the taper fit between the driving head and recess 25 automatically compensates for any wear.

The angle of the taper of drive head 23 and recess 25 may be varied, but we prefer an angle of from 10° to 15° as the most suitable.

We have found also that the uniformity of speed imparted to the spinning box by the present drive connection, has a beneficial effect upon the silk spun within the box.

While the construction illustrated in the drawing has proved excellent in service, various modifications will occur to those dealing with the matter, while still embodying the thoughts which underlie what we claim as our invention.

We claim:—

1. A readily detachable drive connection for artificial silk spinning boxes, comprising a vertical driving spindle having a taper drive head and a centering and steadying projection of substantially uniform diameter above the drive head, in combination with a box having a hub recessed to afford a taper seat to fit the taper drive head, and a well of substantially uniform diameter in extension of said recess to receive the centering and steadying projection.

2. An artificial silk spinning box having a supporting hub recessed from its lower face to afford a taper seat and driving surface, together with a well of substantially uniform diameter in extension of said taper seat.

In testimony whereof we have signed our names to this specification.

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