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GODET WHEEL FOR ARTIFICIAL SILK SPINNING MACHINES

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FIG. I.

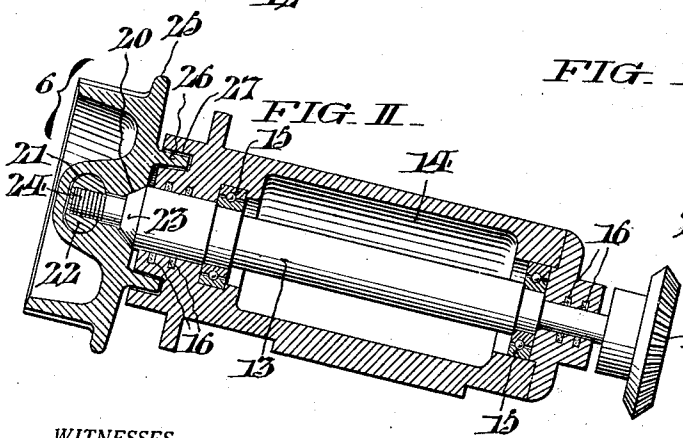
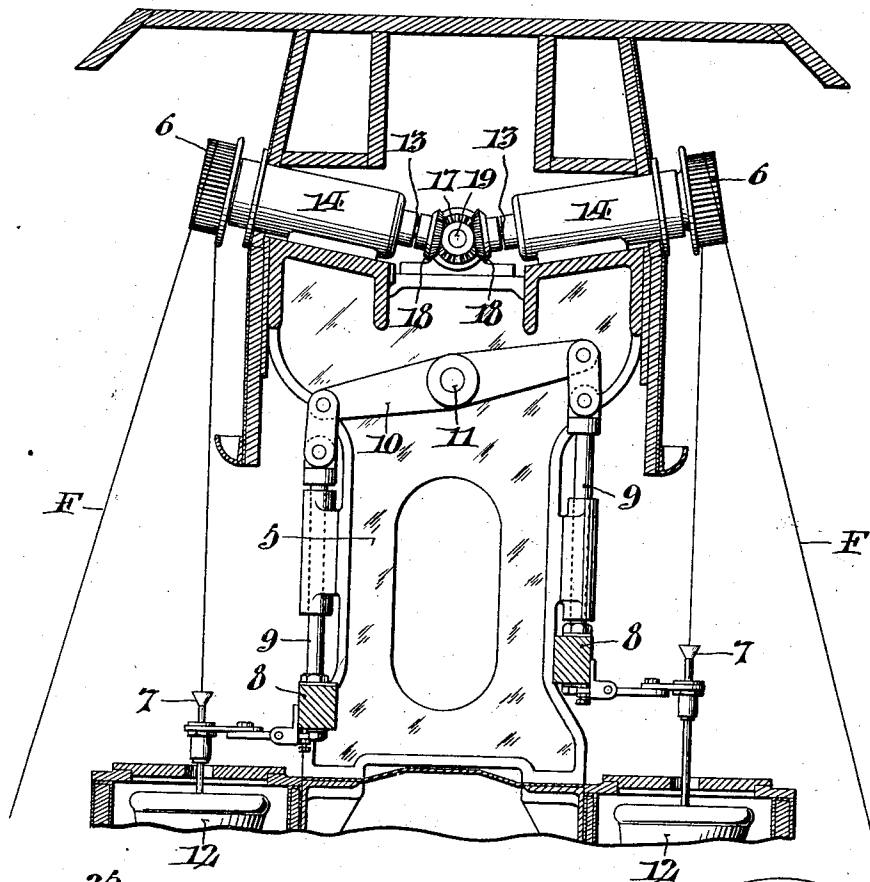
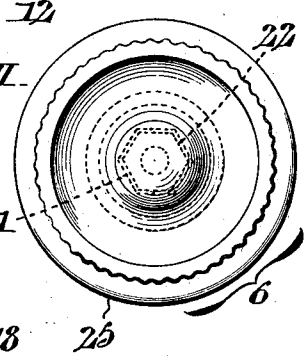


FIG. III.



WITNESSES
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GODET WHEEL FOR ARTIFICIAL SILK SPINNING MACHINES

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This invention relates to "godet" wheels such as are used in artificial silk (rayon) spinning machines to draw upon the filaments of the cellulose as they issue from the capillaries of the spinnerettes, and to deliver the bunched filaments, so formed to the funnel guides serving the rotating "pots" by action of which said filaments are twisted into yarns, and the yarns concurrently would under centrifugal action, into the form of annular "cakes".

Such wheels are customarily made from glass; and, as heretofore constructed, their center holes were invariably larger than actually required due to shrinkage in the process of molding. Accordingly, in mounting the wheels on their driving spindles, they had to be individually centralized to prevent wobble and attendant harmful stretching of the cellulose filaments at high speeds. The operation of properly mounting the wheels under this condition was not only tedious, but consumed considerable time in its accomplishment, and was therefore expensive from the standpoint of economic operation and maintenance of the spinning machines.

My invention is directed in part toward overcoming the above indicated handicaps of previous practice in this art; that is to say: I aim, through novel construction of the wheels, to dispense with the necessity for the individual centralizing operation heretofore required, and to attain this desideratum without added expense in the cost of manufacturing the wheels.

My invention is also in part directed toward preventing—likewise through novel construction of the godet wheels—entry of fluid drip or splash into the journal boxes supporting the wheel spindles.

Still other objects and attendant advantages inherent in this invention will be manifest from the detailed description following when taken in connection with the attached drawings.

Fig. I shows a fragmentary cross section through a rayon spinning machine equipped with my improved godet wheels.

Fig. II is a longitudinal sectional view of

one of the godet wheel mountings on a larger scale; and,

Fig. III is a frontal face view of my improved godet wheel.

The spinning machine chosen for the purpose of illustration herein is of conventional design in that it embodies spinning units arranged in series along opposite sides of its frame 5. After the manner common in this art, the cellulose filament F issuing from the capillaries of the spinnerettes (not shown) and after having passed through the setting bath (not shown), are drawn away by the circumferentially fluted godet wheels 6 at the top of the machine, and by said wheels redirected to pass downward into the funnel guides 7. These funnel guides 7 are mounted on longitudinal supporting rails 8 attached to vertical slide rods 9 which are pivotally connected at their tops to opposite extremities of a rocking beam 10 secured to a shaft 11, said shaft having journal support in central bearings of the machine frame 5 and being constantly oscillated by suitable means not shown. The parts just described constitute a motion by which the cellulose filaments F directed through the vertically reciprocating funnel guides 7 are built, layer by layer, into the form of cakes as they are twisted incident to being thrown by centrifugal action against the inside walls of the revolving receiving pots partly shown at 12. Also, after common practice, the godet wheels 6 are mounted on spindles 13 which extend through journal boxes 14 fitted at opposite ends with ball bearings 15, as well as with protective packing rings 16. As shown in Fig. I, the journal boxes 14 are supported on the top of the machine frame 5 at a slight inclination to the horizontal, and symmetrically grouped in pairs so that the spindles 13 may be driven, through the medium of bevel gears 17, 18, from a centrally disposed longitudinally-extending master shaft 19.

Although intended to function in the same manner, it will be observed that my improved godet wheel 6, as detailed in Figs. II and III, differs from those of customary construction in that it is provided at the in side with a

convergent central opening 20, which terminates in an axial hub cavity 21. This cavity is occupied by a round edged polygonal securing nut 22 which, while restrained against rotation, has freedom for a certain amount of lateral play for a purpose later on explained. It will also be noted that the spindle 13 is, in the present instance, formed with a tapered shoulder 23 to fit the convergent central opening 20 in the wheel 6, and beyond said shoulder, with a diametrically reduced threaded axial prolongation 24 adapted to engage the securing nut 22.

To prevent entry into the journal box 14 of corrosive fluid carried along by the filaments F and thrown off as drip or splash by the godet wheel 6 incident to rotation at high speeds, I provide said wheel, in addition to the usual peripheral flange 25, with a concentric annular flange 26 at the back arranged to project into a correspondingly configured recess 27 in the contiguous end of the journal box 14.

In practice, the threads 24 are made either right hand or left hand—depending on the direction of spindle rotation—so that the godet wheel 6 can be mounted simply by bringing it up to the end of the spindle 13 while the latter is revolving. As the nut 22 takes hold, the wheel 6 is obviously drawn upon, and automatically centralized through coaction of the tapered shoulder 23 and the convergent surface at 20, said nut adapting itself to the described coaction as permitted through the lateral freedom accorded it within the cavity 21 until final tightening takes place. This entire operation consumes but a moment, and dispenses with the tedious centering by repeated trials as required with godet wheels of previous designs. The securing nut 22 is of course incorporated in the wheel, i. e. placed during the process of moulding, and, by virtue of being enclosed in the hub cavity 21, is completely surrounded and therefore protected, like the bearings 15 in the journal box 14, against injury from drip or splash of the corrosive fluids cast off by the rapidly passing cellulose filaments F. Moulding of any improved godet wheels 6 presents no difficulties over the method of procedure ordinarily followed nor, is it attended by increase in the cost of their manufacture as compared to godet wheels of the usual construction.

Having thus described my invention, I claim:

1. A godet wheel, for rayon spinning machines, having an internal cavity with a convergent approach adapted to coact with a correspondingly tapered shoulder on a driving spindle in determining self-centralization of the wheel incident to mounting, an incorporated securing nut loosely mounted in the cavity to accommodate lateral movement and engaging a threaded axial prolongation of

the spindle, and means to prevent rotation of the nut.

2. A godet wheel, for rayon spinning machines, made from glass or the like having a central internal hub cavity with a convergent approach adapted to coact with a tapered shoulder on a driving spindle in determining self-centralization of the wheel incident to mounting, a molded-in securing nut loosely mounted in the cavity to accommodate lateral movement and engaging a threaded axial prolongation of the spindle, and means to prevent rotation of said nut in the hub cavity.

3. A godet wheel, for rayon spinning machines, having a central polygonal-section hub-cavity opening with a convergent approach adapted to coact with a tapered shoulder on a driving spindle in determining self-centralization of the wheel incident to mounting, and a securing nut protected within the hub cavity at the terminus of the wheel opening for engaging a threaded end prolongation of the driving spindle, said nut being of polygonal contour with rounded edges and loosely mounted in the cavity to respectively prevent its rotation and to accommodate lateral movement thereof.

4. As a new article of manufacture a godet wheel, for rayon spinning machines, having an internal shaft-end receiving angularly-shaped cavity with a convergent approach and an integral annular guard flange about said approach.

5. As a new article of manufacture a godet wheel of frangible material, for rayon spinning machines, having an internal axial shaft-end receiving polygonally-contoured hub cavity with a convergent approach and an integrally-formed annular laterally-projecting guard flange concentrically about said approach.

6. As a new article of manufacture a godet wheel of frangible material for rayon spinning machines, having an axial shaft-end receiving polygonally-contoured hub-cavity with an incorporated similarly shaped nut capable of lateral movement, said cavity having a convergent approach, and an integrally-formed annular laterally-projecting guard flange concentrically about said approach.

In testimony whereof I have hereunto signed my name at Philadelphia, Pennsylvania, this 28th day of February, 1929.

CHARLES W. LAWSER.