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H. SCHNEIDER
DRAG ARRANGEMENT FOR THE BOBBINS OF SPINNING,
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Fig. 1

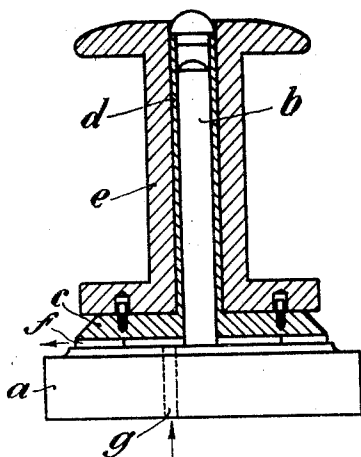


Fig. 2

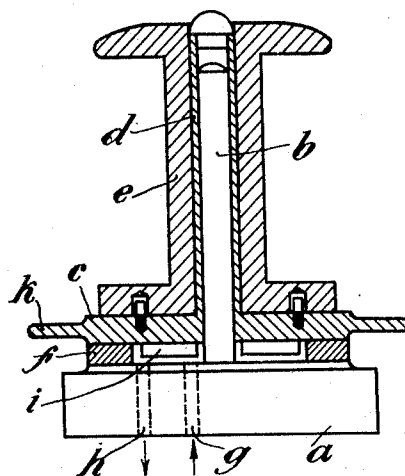
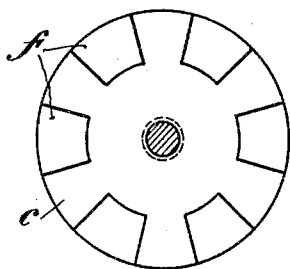


Fig. 3



Inventor
Henry Schneider
by Knight Bay
attorneys

UNITED STATES PATENT OFFICE

HENRY SCHNEIDER, OF LENZBURG, SWITZERLAND

DRAG ARRANGEMENT FOR THE BOBBINS OF SPINNING, DOUBLING, AND LIKE MACHINES

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In spinning and doubling machines use is made, as is already known, of partly automatically braked bobbins, in which consequently special brake cords and brake weights are dispensed with. Now the latter arrangement possesses the disadvantage that the cords are subject to wear and tear, and necessitate special attention, particularly when changing the bobbins, so that the use of automatic bobbin changing devices gives rise to difficulties, or is even impossible. On the other hand the use of brake cords has the advantage that the braking can be increased as the bobbin filling increases; as, otherwise, if the braking were to remain the same then the thread pull would be diminished because, with an increase in the winding diameter, the thread pulling the bobbin works with a greater leverage.

According to the present invention I obtain also with an automatic bobbin braking an adaptation of the brake momentum to the changing bobbin diameter due to the fact that fibrous materials are used for forming the braking surfaces, such as cotton or asbestos or a mixture of such materials, which are made up into a tissue or fabric either alone or in combination with metal wire, in particular brass wire. The fibrous materials may be saturated with a binding medium, or they may be compressed, or both saturated and compressed.

Materials of this kind have for a long time past been successfully used for power brakes, and in such cases use is made of the property that at a great specific pressure (1-2kg/cm²) they possess a high friction coefficient. In the present case less use is made of this, greater utilization being made in particular rather of the property that, at low and medium loads (for example up to about 0.9 kg/cm²), the friction coefficient increases with the specific pressure. Consequently a substantial increase in the braking moment is effected by the increase in weight due to the increasing filling of bobbin (in spite of the relatively great weight of the brake plate, the hollow shaft and the body of the bobbin), and as on the other hand, with the increasing filling, the thread pull acting in opposition to the

brake moment engages with a greater leverage, consequently this pull, which is of decisive importance for the good quality of the production, can be maintained constant or can even be increased.

The latter is of advantage inasmuch as the winding angle of the thread pull or of the thread guide, and the consequent increase in the friction and reduction of the pull, can be compensated for. Consequently the thread pull can be maintained constant even up to the point at which the sliver leaves the feed cylinders, whereby the greatest possible strength of the thread produced is obtained.

In the accompanying drawings a few constructional examples of the invention are given, which embody still further improvements, to be referred to later in detail.

In these drawings:

Fig. 1 represents a central vertical section through a bobbin and brake.

Fig. 2 represents a similar section of a modified form of brake, and

Fig. 3 represents a bottom view of the brake disc of Fig. 1.

In Figures 1 and 2 are shown in section two bobbin bearings for automatic braking. *a* is the bobbin rail with the dead spindle *b*, *c* is the brake plate to which is fixed a hollow shaft *d* which carries the bobbin *e*. To the under side of the brake plate *c* is attached the braking material *f*. The latter may have the form of a complete ring (Figure 2), or, as shown in Fig. 1, consists of a plurality of circularly arranged segments. This latter feature is shown more clearly in Figure 3 which also shows the brake plate *c* in bottom view.

Of course the brake material may also be fastened to the bobbin rail *a*. The arrangement shown, however, is more advantageous as then by a simple exchange of the brake plate for one of a different weight and with differently dimensioned brake surfaces, the spinning machine can be used for the manufacture of a different count of yarn.

It is essential that the new braking material shall enable work to be done with greater brake pressures than heretofore. The consequence of this is, of course, that more work

will be converted into heat. The carrying off of this heat from the frictional surface is facilitated by dividing the brake ring into segments, as in this case an extraordinary effective eddy current cooling takes place, which acts both upon the bobbin rail and in particular upon the brake plate. This cooling effect can be still further increased by means of borings *g* made close to the spindle, through which air is drawn in from below through the bobbin rail, and is then forced radially towards the outside.

For a solid friction ring *f*, as shown in Figure 2, in addition to the borings *g* close to the spindle, borings *h* may also be provided close to the inner edge of the friction ring *f* and, if necessary, ribs *i* may be applied to the underside of the brake plate. The air cooling then works in a similar manner to a centrifugal pump. Through the borings *g* air is aspired, and forced out through the borings *h*. In this arrangement radiation of the heat into the air at the periphery of the bobbin does not occur to an appreciable extent. Considerable radiation may however be brought about if, as shown in Figure 2, a disc-shaped edge *k* is provided at the brake plate *c*, which sets the surrounding air in motion and radiates large quantities of heat to the air moved by it.

In the case of cooling, which does not act upon the friction surface directly as in the arrangement according to Figures 1 and 3, it is of great advantage to use fibrous material with embedded metal wire, because this wire rapidly transmits the heat generated through the brake material to the brake plate, and in this way the temperature of the friction surface is reduced.

The transmission of air effected by the brake plate can finally also be utilized for aspiring air, through an axial boring in the dead spindle which is in communication through radial borings at its foot with the hollow space beneath the brake plate, or through longitudinal grooves on the outer surface of the dead spindle *b* or on the inner surface of the hollow shaft *d*, and in this way to cool the spindle.

What I claim is:

1. In spinning, doubling or similar machines with automatically braked bobbins, in combination, a bobbin rail, a spindle mounted vertically upon said rail, a bobbin on said spindle, braking members located between said bobbin and said bobbin rail, said braking members consisting of a plurality of separate ring segments arranged in a circle, and borings serving as air ducts, terminating within the circle formed by said segments, whereby said segments act as vanes to convey air through the circular space within said segments.

2. In spinning, doubling or similar machines with automatically braked bobbins, in

combination, a bobbin rail, a spindle mounted vertically upon said rail, a bobbin on said spindle, braking material arranged between said bobbin and said rail within an annulus around the bobbin axis, means for supplying air to the space within said annulus, and means for ventilating said space by the rotation of said bobbin.

In testimony whereof I affix my signature.
HENRY SCHNEIDER.

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