Sept. 6, 1949. N. PHILIPPON 2,481,237

SPINDLE FOR BRAIDING LOOMS

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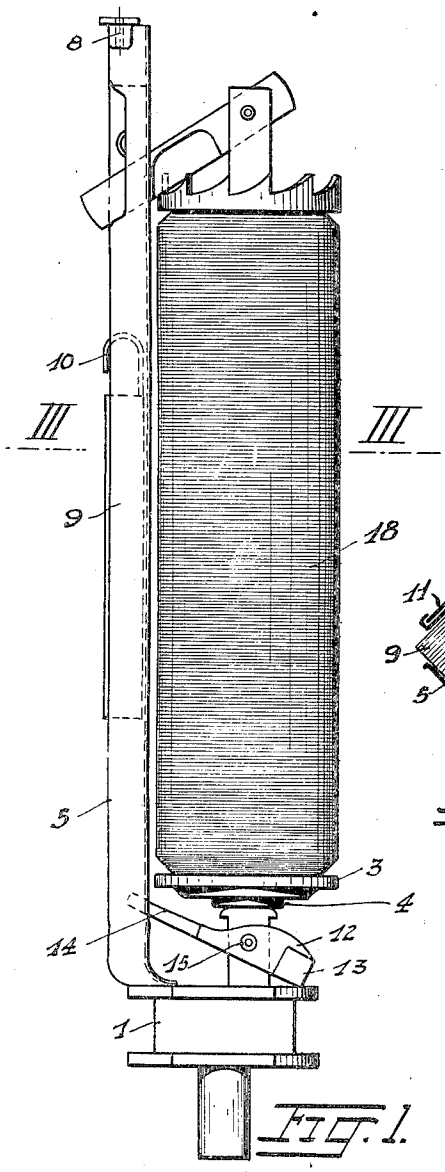

FIG. 1.

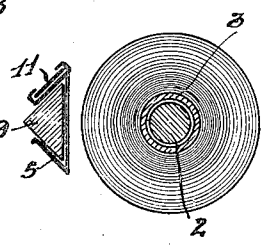

FIG. 3.

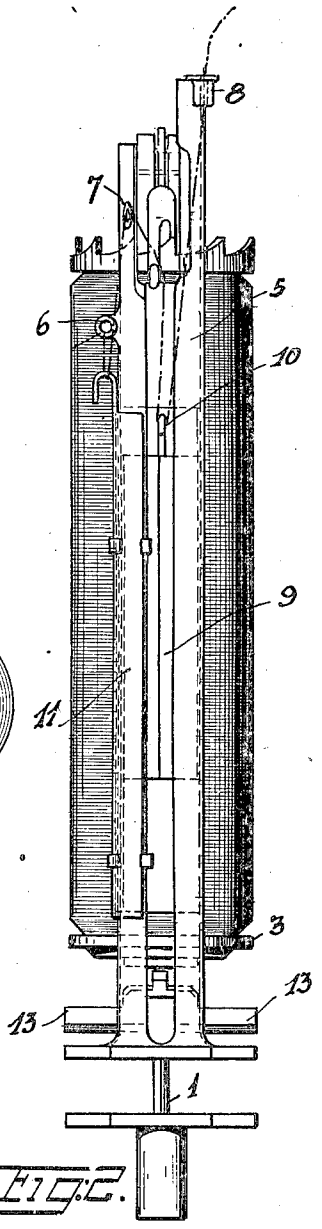

FIG. 2.

INVENTOR

Nazaire Philippon

By Watson, Cole, Grindle & Watson

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SPINDLE FOR BRAIDING LOOMS

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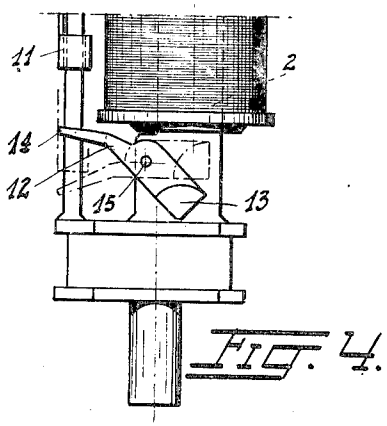

FIG. 4.

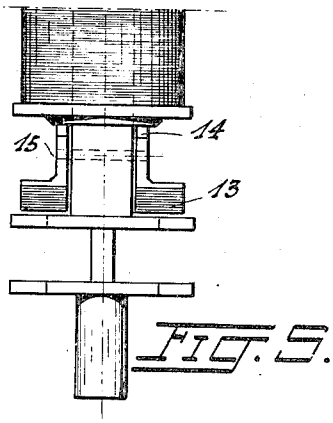

FIG. 5.

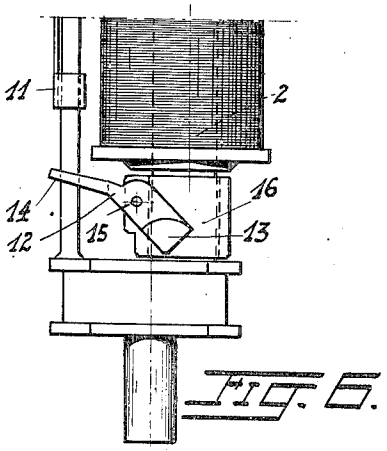

FIG. 6.

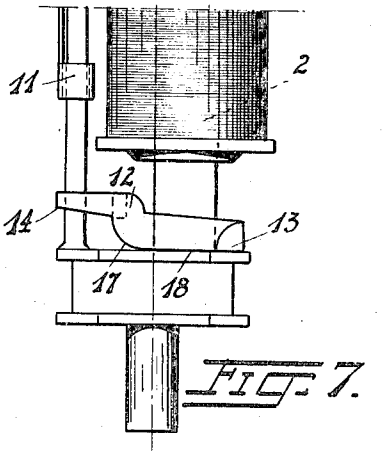

FIG. 7.

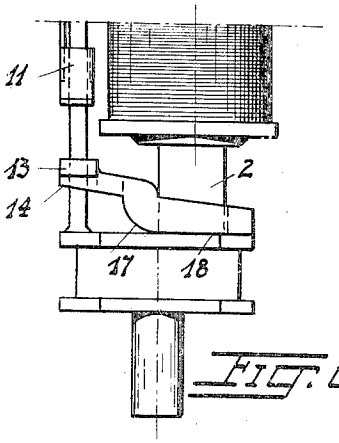

FIG. 8.

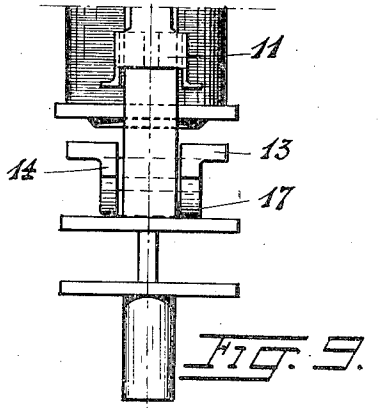

FIG. 9.

INVENTOR
Maxime Philippon
By Watson, Cole, Grindle & Watson

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2,481,237

UNITED STATES PATENT OFFICE

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SPINDLE FOR BRAIDING LOOMS

Nazaire Philippon, Wauthier-Braine, Belgium, assignor to Filature & Tressage Vanham, Société Anonyme, Wauthier-Braine, Belgium, a company

Application February 12, 1948, Serial No. 7,851
In Belgium February 26, 1947

6 Claims. (Cl. 87—18)

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The present invention relates to braiding looms, and particularly those of the usual type known under the generic title of "Barmen."

In these looms, the spindle comprises a hollow central upright in which slides a weight for tensioning the thread, and a side upright having at its lower part a tensioning and stop-motion device. This latter consists essentially of two thin pieces assembled by rivets and providing between them a hollow space sufficient to embrace the side support, along which the tensioning and stopping means slides. One of the two pieces carries at each of its ends two lugs which, in the event of the thread breaking, act through the fall of the tensioning means on the arresting bar of the loom. The stroke of the tensioning and stopping means in an upward direction is limited by a pin fixed to the side upright, and consequently, the lower flange of the bobbin cannot pass beyond this limit, thus preventing the tensioning and stopping means from striking against it.

Hence the bobbin can only occupy about the upper half of the central upright, and thus provides only a rather limited volume of thread.

The purpose of the present invention is to remedy this disadvantage.

With this purpose in view, the spindle which is the subject of the invention is characterized by the feature that it comprises at the base of the central support, and immediately above the upper plate of the foot of the spindle, a rocking member, which, through the fall of an element dependent on the breaking of the thread or on the emptying of the bobbin, acts on the stopping bar of the loom.

In the practical realisation of the invention, the rocking element has arms on both sides of the rocking axis, one of these arms resting normally on the upper plate of the foot of the spindle.

The invention may be embodied in a number of different forms of construction.

In one of these, the rocking element is constituted by two levers, which are situated one on each side of the central upright, and are connected with one another by a cross-piece, and pivot about a common axis.

The arms of the lever close to the lateral upright are reduced in thickness, and are under the direct action of a tension weight or a thread-tensioner, whilst the arms of the lever close to the stopping bar of the loom are provided with two pins or abutments, which engage this stopping bar with a displacement in upward direction.

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Another form of construction differs from the preceding by the feature that there is no longer an actual pivot, but the faces of the levers in contact with the upper plate of the spindle present a convex curved surface, which allows the levers to rock by a rolling movement.

In a third form of construction, the rocking member has pins or projections acting on the arresting or stopping bar near the thread-tensioning means placed on the side upright in such a manner that these pins or abutments actuate the stopping bar of the loom by a downward displacement.

A fourth form of construction is produced by actuating the rocking member not by means of the thread-tensioner, as in the three preceding forms of construction, but by the tension weight of the thread. For this purpose the tension weight slides in a hollow side support of triangular cross section for example, whilst the thread-tensioner is formed by a simple plate sliding along a face of the side upright.

Finally, according to a further form of construction, the rocking pivot of the rocking element is solidly connected with a sleeve which embraces the central upright and can slide up and down along it, for easy positioning.

Various examples of the construction of a Barmen spindle modified in accordance with the invention are illustrated in the accompanying drawings, in which:

Figure 1 shows a side elevation of a spindle with thread-tensioning means, and with a tension weight placed outside the spindle;

Figure 2 is a front view;

Figure 3 is a cross section on the plane III—III in Figure 1;

Figure 4 is a side view of a rocking member mounted on a Barmen spindle of the usual type;

Figure 5 is the front view of the same;

Figure 6 shows a rocking member mounted on a sleeve surrounding the central rod;

Figure 7 shows a member rocking by a rolling action, and acting in an upward direction on the arresting or stopper bar;

Figure 8 shows a similar member acting in a downward direction; and

Figure 9 is a front view of Figure 8.

As shown in these figures, the spindle comprises a foot part 1 identical with that of the Barmen, upon which is fixed a central bobbin-carrying upright post 2, which is a solid cylindrical rod of small diameter, but sufficient however to take a bobbin 3 full of thread. This bobbin rests on a

metal support 4, which allows it to descend very close to the foot of the spindle.

The foot of the spindle has in addition a side upright 5, which is hollow throughout its whole length, or semi-hollow, and is for example of triangular or semi-circular cross section. Upon this post 5 at a certain height is welded a ring with an eyelet 6 for the passage of the thread. Towards the top of the side upright 5 another hole 7 provided with an eyelet serves for the return of the thread into the hollow of this side upright. At the top of the latter there is an eyelet 8 for the outgoing of the thread towards its braiding point. The upright thus has a base facing the bobbin and a kind of edge turned outwards.

In this lateral upright slides a tension weight 9, provided with a hook 10, by which this weight remains suspended to the thread during the working of the spindle. Upon the hollow upright 5 slides a thread-tensioning plate 11, correcting the dead points of the tension weight working in the side upright, alternately upwards and downwards. When the tension weight is no longer suspended from the thread, either because the thread of the bobbin is exhausted or through breakage of the thread, the tension weight 9 drops by gravity on to the end 14 of a rocking member 12 mounted at the lower part of the spindle and having abutments 13 which can act on the disengaging bar, not shown, of the loom, and an arm 14 which is subjected to the action of the tension weight 9 in the event of breakage of the thread. The rocking is effected about a pivot 15 provided on the central upright 2.

According to the form of construction shown in Figures 4 and 5, it is the ordinary Barmen type without modification which receives the rocking member 12 pivoting about the pivot 15. This arrangement does not prevent the tension weight placed in the interior of the central upright from sliding as far as the bottom of the spindle. In this case the arm 14 is actuated by the thread-tensioner 11, the lugs of which, normally acting as an arrester, have been simply omitted.

The pivotal axis 15, instead of being mounted directly on the central rod 2, may be mounted on a sleeve 16 surrounding this rod and slidable for its positioning along the latter, as shown in Figure 6.

In another form of construction, instead of oscillating about an axis or pivot, the rocking member 12 is arranged to roll or rub even slightly on the base plate of the spindle, as shown in Figure 7. In this case its lower profile has a curve 17 and it rests on this base plate through a supporting face 18.

In the examples which have just been described, the rocking member 12 acts against the stopper bar through pins or projections 13 which are displaced in an upward direction. It is obviously possible, however, to arrange this rocking member so as to make it work with an action or displacement in a downward direction. In this case, as shown for example in Figures 8 and 9, the pins or projections 13 are arranged at the end of the arm or arms 14 that receive the impulse from the element acting by gravity in the event of breakage of the thread or emptying of the bobbin. It is obvious that this member may be either the tension weight or the thread-tensioner, which hitherto has been solidly connected with the arrester.

By so arranging the rocking member that on the functioning of the spindle the abutments find their passage just beneath or above the clutch or stopping bar of the loom, it is possible to fix a somewhat reduced bobbin-carrying ring, making it possible to lengthen the bobbin without exceeding the height of the ordinary Barmen-type spindle. The diameter of the bobbin is thus increased by the fact that the central upright may be, as in Figure 1, a thin, solid, cylindrical rod, and also by the possible special form of the external upright, the dimensions of which are reduced to a minimum, thus removing any risk of entanglement with the crossings of the spindles in the loom, and finally and especially through the very small over-all dimensions of the rocking member. For the utilisation of the ordinary Barmen-type spindles, an increase in the capacity of the bobbin results from the special form of the thread-tensioner. It is thus possible to use bobbins of a capacity of at least three times the capacity of the bobbins used in the normal Barmen-type spindles.

In addition to the advantages pointed out, it will be observed that owing to the capacity of the bobbin being much greater than that of the Barmen type, whilst still maintaining the same height of the spindle, there is obtained on the one hand a greater ease of working, due to the lowering of the centre of gravity of the bobbin, and on the other hand a saving of labour, which is proportional to the increase in the capacity of the bobbin. Finally, the labour for the doubling frames will also be proportionally reduced.

It will also be observed that the rocking member acting on the control bar of the loom is independent of the thread, of the thread-tensioner and of the tension weight, which prevents any sudden or unforseen stoppage.

It should be mentioned in conclusion that nothing prevents the use according to the requirements of manufacture of bobbins with a capacity lower than the maximum capacity.

I claim:

1. A spindle for a braiding loom, comprising: a foot having an upper plate, a central bobbin-carrying post extending upwards from the foot, a rockable body mounted immediately above the upper plate of the foot, one end of the rockable body being so weighted that it normally rests upon the upper plate of the foot, the other end of the rockable body normally being raised, and the rockable body being capable when rocked out of this normal position of causing the stoppage of the loom, a thread-tensioning element adapted to be supported by thread passing from the bobbin, and a lateral post extending upwards from one side of the foot adjacent the rocking body and serving as a guiding means for causing the thread-tensioning element, in the event of breakage of the thread or exhaustion of the bobbin, to fall on to the raised arm of the rockable body and thereby rock the said body.

2. A spindle for a braiding loom, comprising: a foot having an upper plate, a central bobbin-carrying post extending upwards from the foot, a rockable body pivotally mounted immediately above the upper plate of the foot, one end of the rockable body being so weighted that it normally rests upon the upper plate of the foot, the other arm of the rockable body normally being raised, and the rockable body being capable when rocked out of this normal position of causing the stoppage of the loom, a thread-tensioning element adapted to be supported by thread passing from the bobbin, and a lateral post extending upwards from one side of the foot and serving as guiding

means for causing the thread-tensioning element, in the event of breakage of the thread or exhaustion of the bobbin, to fall on to the raised arm of the rockable body and thereby rock the said body.

3. A spindle for a braiding loom, comprising: a foot having an upper plate, a central bobbin-carrying post extending upwards from the foot, a rockable body consisting of two parallel levers, pivotally mounted one on each side of the central bobbin-carrying post immediately above the upper plate of the foot, and a cross-bar uniting the two levers, one end of the rockable body being so weighted that it normally rests upon the upper plate of the foot, the other arm of the rockable body normally being raised, and the rockable body being capable when rocked out of this normal position of causing the stoppage of the loom, a thread-tensioning element adapted to be supported by thread passing from the bobbin, and a lateral post extending upwards from one side of the foot, between the two parallel levers of the rocking body, and serving as a guiding means for causing the thread-tensioning element, in the event of breakage of the thread or exhaustion of the bobbin, to fall on to the raised arm of the rockable body and thereby rock the said body.

4. A spindle for a braiding loom, comprising: a foot having an upper plate, a central bobbin-carrying post extending upwards from the foot, a rockable body resting directly upon the upper plate of the foot, the under surface of the said body being of such curvature that the body can rock by a rolling motion of the said under surface upon the said plate, one end of the rockable body normally being raised, and the rockable body being capable when rocked out of this normal position of causing the stoppage of the loom, a thread-tensioning element adapted to be supported by thread passing from the bobbin, and a lateral post extending upwards from one side of the foot and serving as guiding means for causing the thread-tensioning element, in the event of breakage of the thread or exhaustion of the bobbin, to fall on to the raised arm of the rockable body and thereby rock the said body.

5. A spindle for a braiding loom, comprising: a

foot having an upper plate, a central bobbin-carrying post extending upwards from the foot, a hollow lateral post extending upwards from one side of the foot, a rockable body mounted immediately above the upper plate of the foot, one end of the rockable body normally being raised, and the rockable body being capable when rocked out of this normal position of causing the stoppage of the loom, a thread-tensioning plate slidable up and down on the outside of the lateral post, and a thread-tensioning weight slidable up and down inside the lateral post, the said plate and the said weight being normally supported by thread passing from the bobbin, and the said tensioning weight being adapted, in the event of breakage of the thread or exhaustion of the bobbin, to fall on to the raised arm of the rockable body and thereby rock the said body.

6. A spindle for a braiding loom, comprising: a foot having an upper plate, a central bobbin-carrying post extending upwards from the foot, a hollow lateral post of triangular cross section extending upwards from one side of the foot, a thread-tensioning plate slidable up and down and guided along one external face of the lateral post, a thread-tensioning weight of triangular cross section slidable up and down inside the lateral post, the said plate and the said weight being normally supported by thread passing from the bobbin, at least one of the said thread-tensioning elements being adapted, in the event of breakage of the thread or exhaustion of the bobbin, to fall on to the raised arm of the rockable body and thereby rock the said body.

NAZAIRE PHILIPPON.

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