March 24, 1925. 1,531,114

J. McBRIDE

FRICTION LET-OFF FOR LOOMS

Filed March 31, 1923 2 Sheets-Sheet 1

Fig. 1.

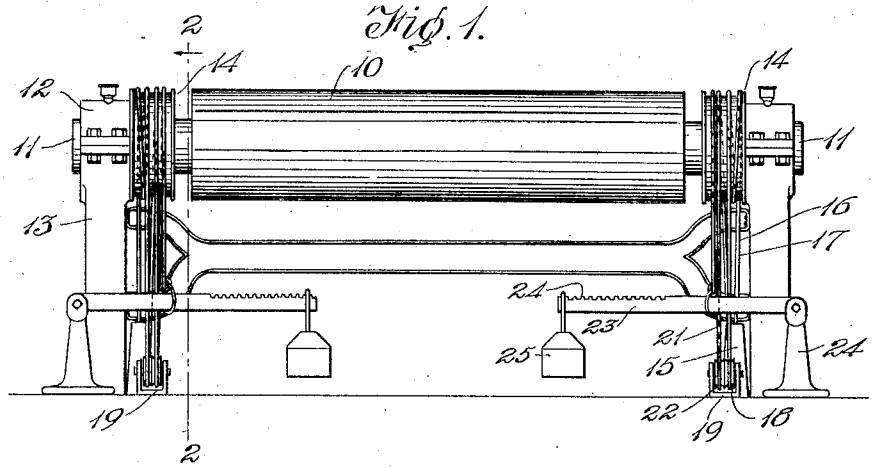


Fig. 3.

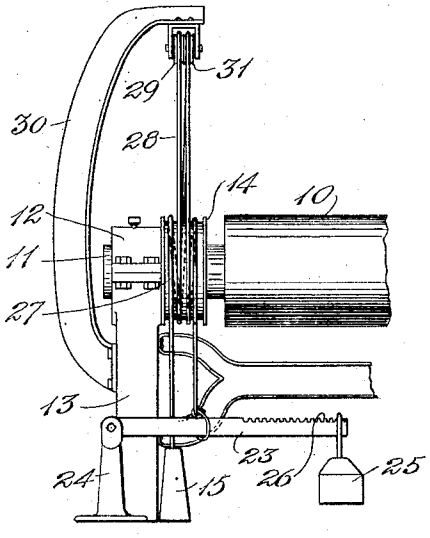
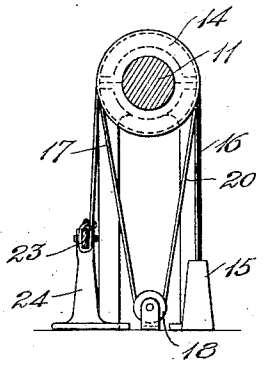


Fig. 2.



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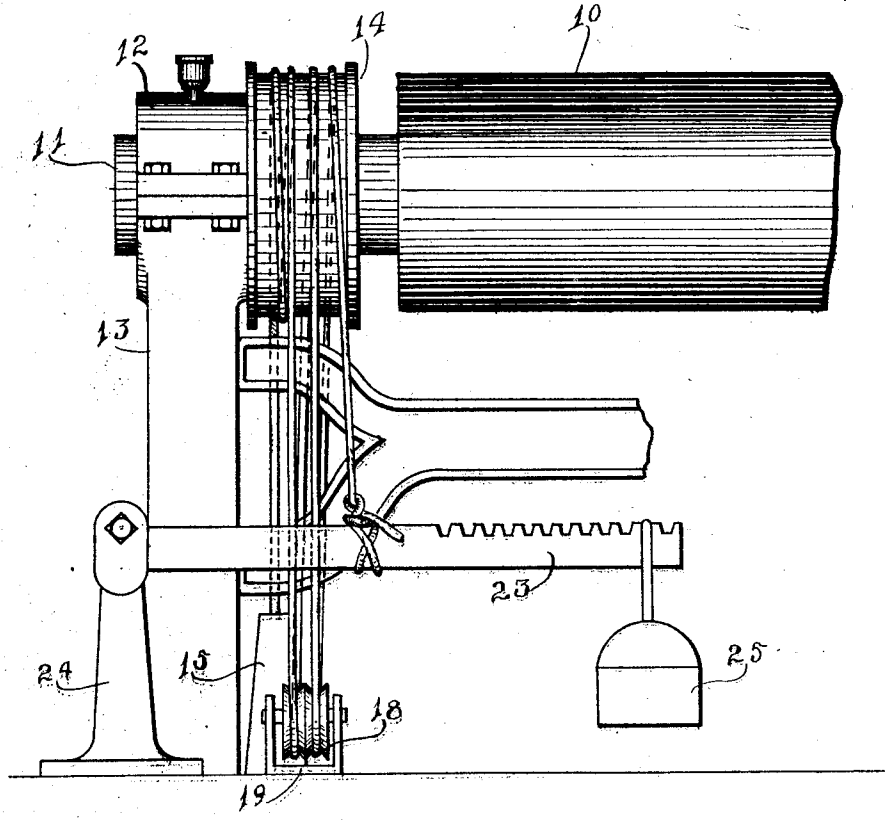


Fig. 4.

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Patented Mar. 24, 1925. 1,531,114

UNITED STATES PATENT OFFICE.

JOHN McBRIDE, OF CATASAUQUA, PENNSYLVANIA.

FRICTION LET-OFF FOR LOOMS.

Application filed March 31, 1923. Serial No. 629,035.

To all whom it may concern:

Be it known that JOHN McBRIDE, citizen of the United States, residing at Catasauqua, in the county of Lehigh and State of Pennsylvania, has invented certain new and useful Improvements in Friction Let-offs for Looms, of which the following is a specification.

This invention relates to looms, and has special reference to the type of a loom, known as broad silk loom.

In the operation of broad silk looms there is provided for the warp beam or roll means to prevent the warp threads being drawn off the roll too rapidly, and to endeavor to keep such threads constantly under an even tension between the warp beam and the woven silk.

Various means have been used for this purpose, and among others there has been employed what is known as the friction let off. The common form of this device embodies a drum at each end of the warp beam around which is wound several coils of flexible strand, such as rope or the like, the ends of the rope hanging down and being provided each with a suitable counterweight, either directly attached to the respective end or secured thereto through the medium of a lever. It is usual to take several wraps of the rope around the friction or brake drum, this being necessary in order to maintain the requisite tension on the warp threads.

With the means above described, it is found in practice that the threads do not unwind from the drum smoothly and evenly because the rope tends to grip tighter at some times than at others on the drum. The result of this is that the weave is uneven, the number of picks per inch in part of the fabric varying from the number of picks per inch in other parts thereof. Furthermore, it is found that this means is defective because of the tendency to sudden gripping which snaps the warp threads and thus makes bad spots in the weave, as well as causing delay in the operation of the loom.

The principal and most important object of the present invention is to provide a novel arrangement of friction let off wherein the defects caused by the ordinary friction let off will be eliminated, and, by the use of which, a smooth and even fabric will be produced and breakage in the warp threads will be obviated.

With the above and other objects in view as will be hereinafter apparent, the invention consists in general of certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings and specifically claimed.

In the accompanying drawings, like characters of reference indicate like parts in the several views, and:

Fig. 1 is a view showing the warp beam of a broad silk loom with the improved let-off applied thereto.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged detail of one end of such a beam with a modified arrangement of friction let-off.

Figure 4 is an enlarged detail showing the manner in which the ropes are run over the pulleys.

In carrying out the objects of the present invention, there is provided the usual warp beam 10, having journalled ends 11 supported in suitable bearings 12. It is to be understood that these bearings are carried by a frame 13 which is part of the frame of the loom, the remainder of the frame and loom not being deemed necessary here to be shown, as the invention concerns itself only with the production of a novel friction brake means for the warp beam. At each end of the warp beam, there is provided a friction drum 14, around which passes a flexible strand which may be of any type of rope, either metallic or non-metallic, may be leather or rawhide or a chain or the like. At one end of this strand is carried a counterweight 15 and, in the type shown in Figures 1 and 2, the strand passes up from the counterweight as at 16, and thence down as at 17 to a sheave 18 carried in a floor stand 19.

After passing in the sheave 18, the rope again passes up as at 20 over the top of the drum, and then down as at 21 to pass under a second sheave 22. From this sheave the rope again passes over the drum 14, and has its remaining end brought down and connected to a lever 23 having one end pivoted to a floor stand 24, and carrying on its opposite end a counterweight 25 which may be adjustably engaged with any one of a

series of notches 26 formed on the upper side of the lever 23.

It will be noted that the strand may be wrapped entirely around the friction drum one or more times at any desired point in its length.

In the form shown in Fig. 3, the strand passes from the counterweight up and around the drum as at 27, and after wrapping around the drum once it extends upward as at 28 to a sheave 29 supported above the drum on a bracket 30. The rope is then alternately passed beneath the drum and up and down the second sheave 31 being finally brought down, wrapped once around the drum, and thence led to the lever 23 to which it is secured as before.

Practice has shown that with this arrangement a much more ideal braking of the warp beam or roll may be effected, and by proper adjustment of the counterweights, the tension on the warp threads may be regulated to the desired degree, and such tension will be maintained throughout the weave operation without perceptible variation. Thus the silk woven will be uniform in texture throughout its length, and will be free from knotted warp threads due to breakage of such threads by uneven tension thereon.

It will be obvious that this must be so when it is considered that the different portions of the flexible strand which are in contact with the drum 14 are so disposed in relation to the drum that there is no tendency for them to wind tightly thereon and grip the drum at times.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It is obvious that minor changes may be made in the form and construction of the invention without departing from the material spirit thereof. It is not, therefore, desired to confine the invention to the exact form herein shown and described, but it is desired to include all such as properly come within the scope claimed.

Having thus described the invention, what is claimed as new, is:

1. The combination with the warp beam or roll of a loom; a brake drum carried by said roll, a sheave located in spaced relation to the brake drum, a flexible strand passing around the brake drum and sheave and being free from the drum between said drum and sheave, said strand being engaged on the drum only on the side remote from the sheave and means for exerting a tensile stress on said strand.

2. The combination with a warp beam or roll of a loom; of a brake drum carried by said warp beam or roll, a plurality of sheaves having their axis parallel to and spaced from the axis of the drum, a counterweight, a flexible strand having one end connected to said counterweight, said strand being passed around the drum and the sheaves alternately, and means on the remaining end of the strand to exert pull against said counterweight.

3. The combination with a warp beam or roll of a loom; of a brake drum carried by said warp beam or roll, a plurality of sheaves having their axis parallel to and spaced from the axis of the drum, a counterweight, a flexible strand having one end connected to said counterweight, said strand being passed around the drum and the sheaves alternately, means on the remaining end of the strand to exert pull against said counterweight, said means comprising a lever pivoted at one end and having the stand connected thereto intermediate its ends, and an adjustable counterweight slidably mounted on said lever.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN McBRIDE.

Witnesses:

WILLIAM J. McBRIDE,

TANA SMITH.