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J. B. BRINK ET AL

FRICTION DISTRIBUTING LET-OFF

Filed Feb. 28, 1922

Fig. 1.

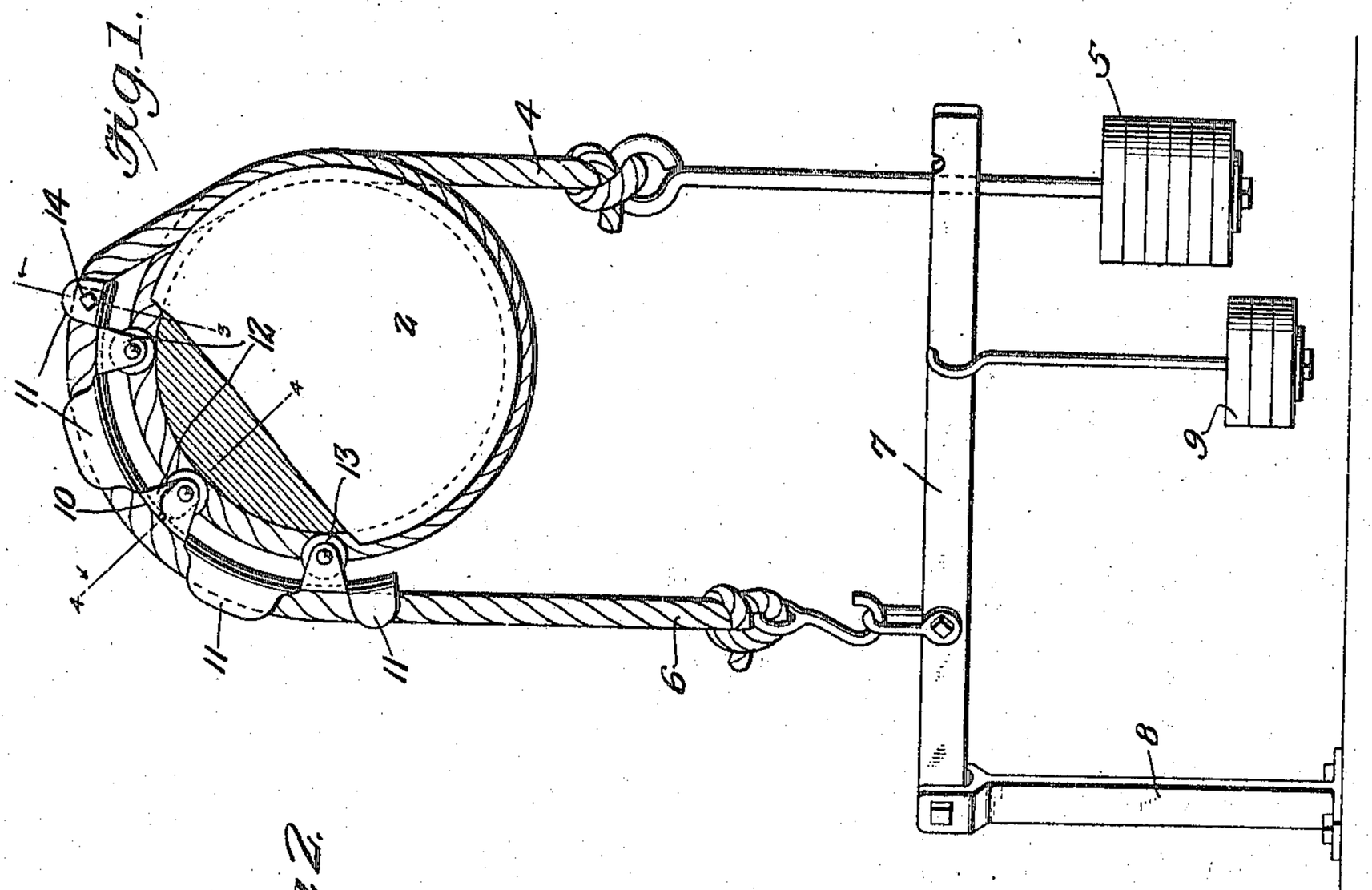


Fig. 2.

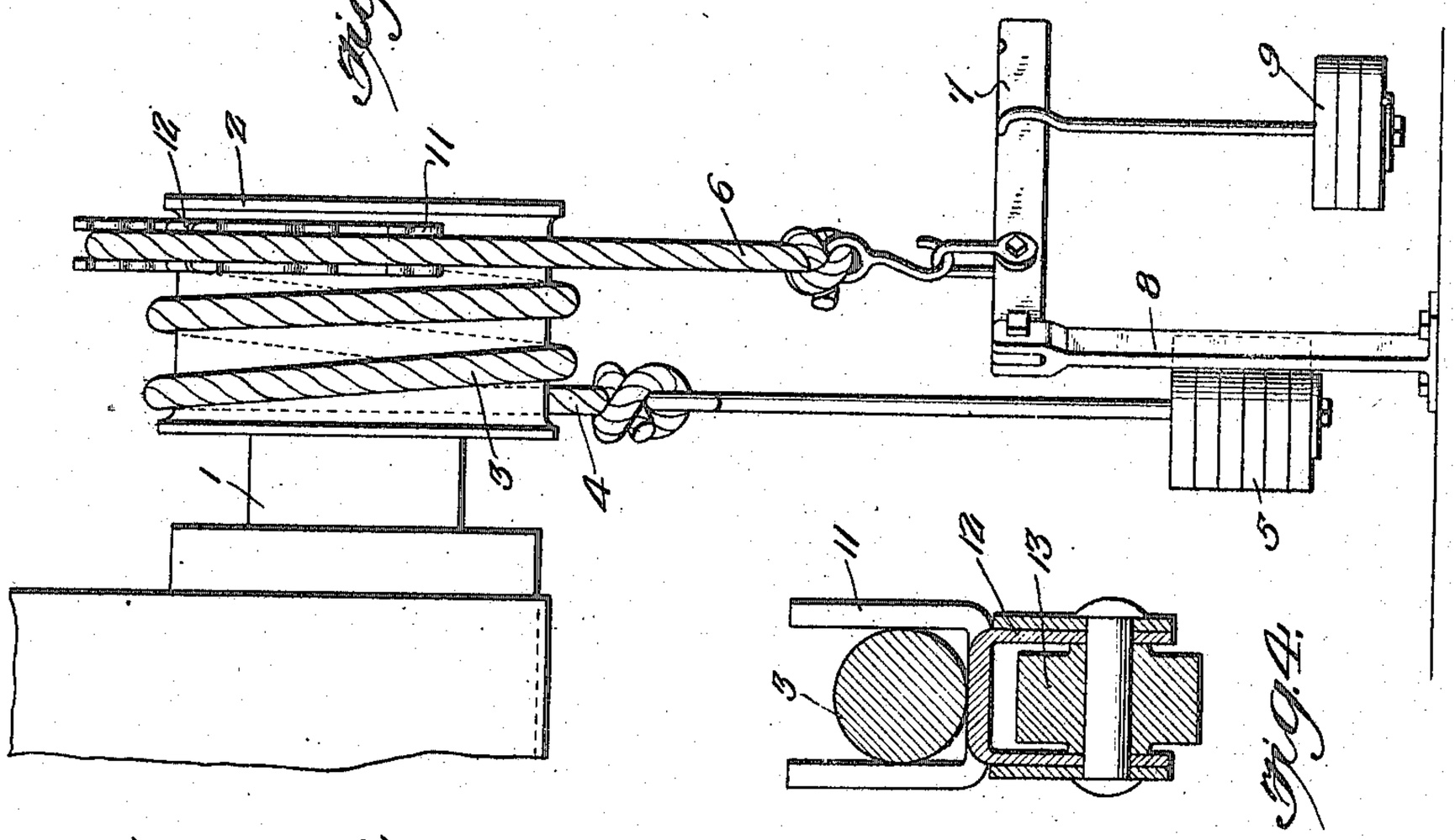
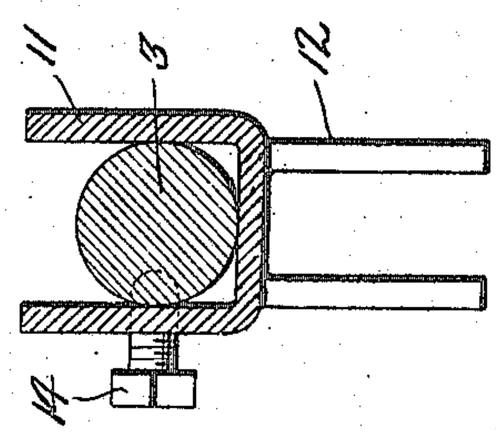


Fig. 4.

Fig. 3.



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UNITED STATES PATENT OFFICE.

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FRICTION-DISTRIBUTING LET-OFF.

Application filed February 28, 1922. Serial No. 540,040.

To all whom it may concern:

Be it known that we, JUDSON B. BRINK and EDWARD H. BUSS, citizens of the United States, residing at Emaus, Pennsylvania, have invented certain new and useful Improvements in Friction-Distributing Let-Offs; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in let-offs for warp beams for looms, particularly of the rope or similar type and as distinguished from the usual friction let-off, the present device is what might be termed a friction distributing let-off.

Various let-off devices have been devised and used, but the rope type has proved to be the most simple and effective arrangement. Usually the rope is wound one or more times around the head of the warp beam, being provided with a lever weight, on one end, generally the oustide and a counter weight on the other end, or inside, the tension exerted on the outside or lever side being much greater than on the inside, whereby the friction of the first lap of rope leading up from the lever weight is substantially in excess of that of the second or third laps, each lap decreasing in its gripping action, the third lap having scarcely any friction whatever.

The principal object of the present invention resides in the provision of a device whereby the friction of all laps, generally three, will be equally distributed and said laps will be caused to grip the drum or head of the beam with substantially equal tension and thereby obtain an even or uniform let-off, much desired in this type of apparatus.

Another object accomplished is that the wear on the rope, and particularly on the tension adjusting end thereof, will be reduced to a minimum, making it unnecessary to renew the rope at frequent intervals, as is the present custom.

With the usual arrangement, as hereinbefore stated, the three laps of rope would grip the beam with various degrees of friction and consequently there would be an uneven let-off, causing imperfect production and unsatisfactory results.

With the present construction, to be hereinafter fully described, a portion of one of the laps of rope is provided with an anti-friction device interposed between the beam head and said rope at the point where it leads from the tension adjusting lever weight or the like, onto and over the drum or head of the warp beam.

The preferred embodiment of the invention is illustrated in the accompanying drawing in which:

Fig. 1 illustrates an end view of the warp beam with the invention applied thereto.

Fig. 2 is a side elevation thereof; and

Figs. 3 and 4 are enlarged detailed sectional views on lines 3—3 and 4—4 respectively of Fig. 1.

Referring to the drawing in detail, 1 represents the warp beam of a loom having each end thereof provided with a head or friction drum 2, around which is adapted to be wound, preferably three laps of rope or the like 3. Secured to one end 4 of the rope, which I will term the inner end, is a weighted device 5 and secured to the other or outer end 6, of said rope, is a regulable weighted device comprising a beam or lever 7 pivotally supported at one end to a standard 8 and adapted to have supported from its free end a series of adjustable or changeable weights 9, whereby the tension on said rope can be varied or regulated, according to the necessary friction desired to be exerted by the let-off, as a whole.

The above described arrangement is more or less of a conventional type of rope friction let-off used in this relation and the purpose of the present invention is to improve the operation and construction of this well known type of friction device. In the actual use of rope friction let-offs for warp beams heretofore employed, the first lap of the rope, leading up from the weighted regulable tension device, exerts the greatest friction on the warp beam and each warp thereafter materially decreases in its friction or gripping effect, the last lap having scarcely any friction whatever. As a result of this, the let-off is uneven and unequal and there is considerable wear on the first lap of rope exerting the greatest tension or gripping effect on the warp beam.

To obviate these various disadvantages and to provide a distributing of the friction exerted by the let-off as a whole, in the pres-

ent invention, there is interposed between that portion of the first lap of rope, leading away from the regulable tension device, and the beam, an arch-shaped anti-frictional device 10, comprising up-turned wings or flanges 11 and intermediate downwardly turned wings or flanges 12, the up-turned flanges 11 providing a retaining means for the rope and the downwardly turned wings or flanges 12 having journalled therein rollers or the like 13, whereby that portion of the rope supported on the anti-frictional device will be spaced and held out of contact with the warp beam at this point, the rollers themselves being forced into engagement with the warp beam, preventing the excessive drag or friction of the rope thus supported and equalizing the friction or gripping action of the remaining wraps of the let-off. At the same time the wear on the rope will be reduced to a minimum and an even or uniform let-off of the warp beam obtained.

In order to anchor or maintain the anti-frictional device in its proper relative position one of the up-turned flanges 11 is provided with a stud bolt, set screw, or the like 14, providing a means for clamping said anti-frictional device to the rope.

It will be noted that the anti-frictional device 10 is located near the end of the warp beam, adjacent that end of the rope secured to the regulable tension means.

With the device as above described an equal or even pull or tension on all of the various laps of the let-off will be obtained without causing the undesirable biting or gripping of the outer end of the lap through which the initial tension or stress is transmitted to the remaining wraps or laps of the let-off and thereby insuring a more uniform and evenly disposed gripping of the let-off, resulting in more perfect production of the loom, and preventing undue wear and deterioration of the rope.

Although the invention has been described with relation to a rope let-off, it is, of course, to be understood that the invention is not to be so limited, as any other material or element may be used, if desired, in place of the rope.

What I claim is:

1. In a let-off for looms, the combination with a warp beam, of a frictional element adapted to be wrapped around the end of said beam, means for causing the desired friction of said element, means for regulating said friction and means for equalizing the friction of the various laps of said friction element.

2. In a let-off for looms, the combination with a warp beam, of a friction element adapted to be wrapped around the end of said beam, means for causing the desired friction of said element, means for regulating said friction, and means carried by the wrapped element engaging the warp beam for equalizing the friction of the various laps of said friction element.

3. In a let-off for looms, the combination with a warp beam, of a friction element adapted to be wrapped around the end of said beam, means for causing the desired friction of said element, means for regulating said friction and means interposed between a portion of the wrapped element and the warp beam for equalizing the friction of said friction element.

4. In a let-off for looms, the combination with a warp beam, of a friction element adapted to be wrapped around the end of said beam, means for applying a regulable tension to one end of said wrapped element to cause the desired friction thereof, and an anti-friction device interposed between said tension adjusting end of the wrapped element and the beam where it passes over said beam.

5. In a let-off for looms, the combination with a warp beam, of a friction element adapted to be wrapped around the end of said beam, means for applying a regulable tension to one end of said wrapped element to cause the desired friction thereof, and an anti-frictional roller device interposed between the tension adjusting end of the wrapped element and the beam, where it passes over said beam.

6. In a let-off for looms, the combination with a warp beam of a friction element adapted to be wrapped around the end of said beam, means for applying a regulable tension to one end of said wrapped element to cause the desired friction thereof, an arc-shaped member interposed between the tension adjusting end of the wrapped element and the beam where it passes over said beam, and rollers carried by said member in contact with said beam.

7. In a let-off for looms, the combination of a warp beam, of a friction element comprising a rope, adapted to be wrapped around the end of said beam, weights supported by both ends of said rope, one of said weighted ends adapted to apply a regulable tension to said rope to cause the desired friction thereof, an arc-shaped member interposed between tension adjusting end of the rope and the beam, where it passes over said beam, means for clamping said member to the rope, and rollers carried by the member in contact with said beam, whereby the usually increased friction of this lap of rope will be reduced and the friction, as a whole, equalized throughout the several laps.

In testimony whereof we affix our signatures.

JUDSON B. BRINK.
EDWARD H. BUSS