To all whom it may concern:

Be it known that I, CORNELIUS H. SLINGER, a citizen of the United States, residing at Hawthorne, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Friction Bands for Let-Off Mechanisms, of which the following is a specification.

This invention relates to mechanisms for letting off sheet material and on a revolving beam, as the warp in a loom, under such control that when the free end of such sheet is pulled upon the consequent revolution of the beam takes place subject to the braking action of a band frictionally embraceing a part of the beam. The invention consists in the improved friction band for such mechanisms substantially as hereinafter set forth, the same being characterized by a flexibly connected series of hard attenuated transversely extending contacts (as contacts afforded by the successive coils of a metal helix) each immovable lengthwise of the band and said band having attaching means at its respective ends and being especially adapted for frictional contact with the (usually metallic) braking peripheral surface of the let-off beam.

The drawing shows my invention applied to the let-off mechanism of a loom.

Figure 1 showing a side elevation of such a mechanism embodying my improved friction band;

Figure 2 a section of the friction wheel of the beam of said mechanism; and

Figure 3 the improved band, detached.

I have shown in the drawing one of the many different types of let-off mechanisms for looms which are known as “automatic,” that is, a let-off mechanism in which the friction band, attached at one end to some fixed structure, as the frame, has its other end instead of also being attached to some fixed structure, attached to means which tends to exert tension on the band but is subject to the pressure of the sheet being withdrawn to move said means in a direction to reduce the tension on the band and so relax its frictional pressure on the beam.

This mechanism is used herein simply by way of illustration, it being understood that my invention is applicable to any let-off means in which a friction band is employed as a brake for the revolving beam.

a is a bracket in which the beam b, which has a peripherally grooved metal head or wheel c fixed to rotate therewith, is journaled, and in which is fulcrummed a weight-carrying lever d in which in turn is fulcrummed a lever d’, the warp (here forming the sheet to be let off), designated A, extending over a suitable guide e on the lever d’ and under a similar guide f on the lever d; g is the band, one end of which is attached to a fixed point of the bracket a, as at A, and the other end of which is attached to the lever d’, as at z.

The improved band in the best form of the present invention is shown as consisting of a metal helix having an eye-bolt g’ attached to one end and a hook g” attached to the other, the eye-bolt being adapted to be passed through a part of the bracket a and secured by the nut j and the hook g” being adapted to be engaged in the eye forming the attaching point z. The helix is flexible but each of its coils is immovable lengthwise of the helix, due on the one hand to the elements or coils of the helix abutting each other and to the helix being non-extensible, not necessarily in the absolute sense but in the sense that any weighting of levers d d’ for producing operative let-off conditions would not sensibly extend the helix.

The device that is employed in the place of my improved band is usually a suitable length of rope or heavy cord. On account of its more or less soft nature such a band obtains a grip on the periphery of the beam (as wheel c) which does not yield gradually when the let-off pull is exerted on the sheet A, but abruptly; and in a loom, and especially where fine fabrics are being woven, this produces from time to time an undue spacing of the weft threads in the fabric, such undue spacing being known in the weaving art as “shyers.” This condition becomes aggravated, moreover, when there is considerable humidity in the atmosphere, and also when the material of the rope or other soft material forming the band becomes coated with a mass of foreign material which in time it wipes from the periphery of the beam.

By employing a band composed of hard rings, such as the coils of the helix g, each immovable lengthwise of the band I avoid entirely the difficulty above mentioned, so that the release of the beam invariably takes place gradually and never in a jerky or sudden fashion.

One important element of my invention, in that it produces a grip on
the beam that will relax gradually, is that each ring forms an attenuated contact k which extends transversely of the opposed surface of the beam, the several contacts being spaced from each other, in the present instance by forming the helix of material which is round in cross section, as round wire. Accumulations of foreign matter between the band and the periphery of the beam do not affect the gripping action of the band, because the spaced hard transversely extending contacts of the band are never prevented by such accumulations from obtaining a uniform purchase, throughout the series, on the beam.

I have experimented with helical bands in which its constituent elements are movable, to wit, by the band being a helix and being extensible subject to the weighting of the levers for producing operative let-off conditions, but I find that such extensible bands rather encourage than discourage the production of slivers when the let-off mechanism is used in a loom, apparently because when the beam rotates under the pull of the warp A the spring is distended somewhat before it begins to lift the levers, and then when it does lift the levers a relaxation takes place which involves the jumping, so to speak, of the elements of the band to fresh points of contact with the beam.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A friction band for a let-off mechanism of substantially the kind described including a flexibly connected series of hard attenuated spaced contacts extending each transversely of the band and each immovable longitudinally of the series.

2. A friction band for a let-off mechanism of substantially the kind described consisting of a flexibly connected series of hard rings each immovable longitudinally of the series.

3. A friction band for a let-off mechanism of substantially the kind described consisting of a flexible helix of hard material having its coils each immovable longitudinally of the helix.

In testimony whereof I affix my signature.

CORNELIUS H. SLINGER.