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WEB FEEDING DEVICE

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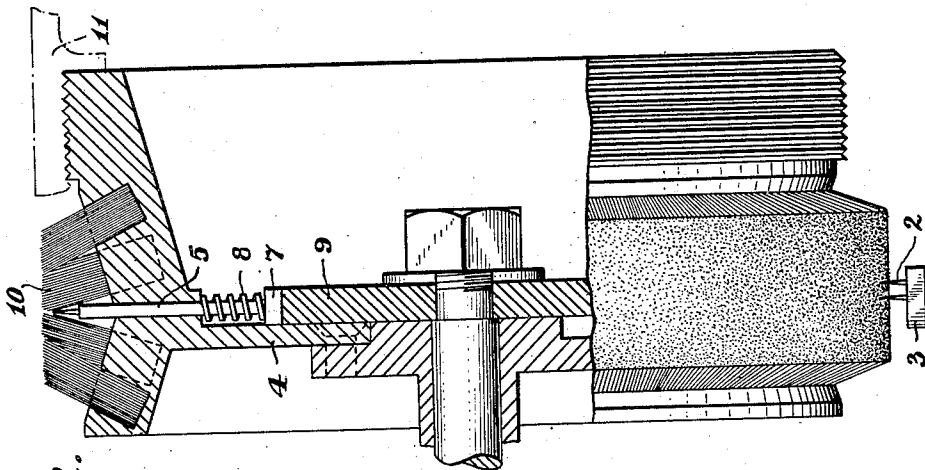


Fig. 2.

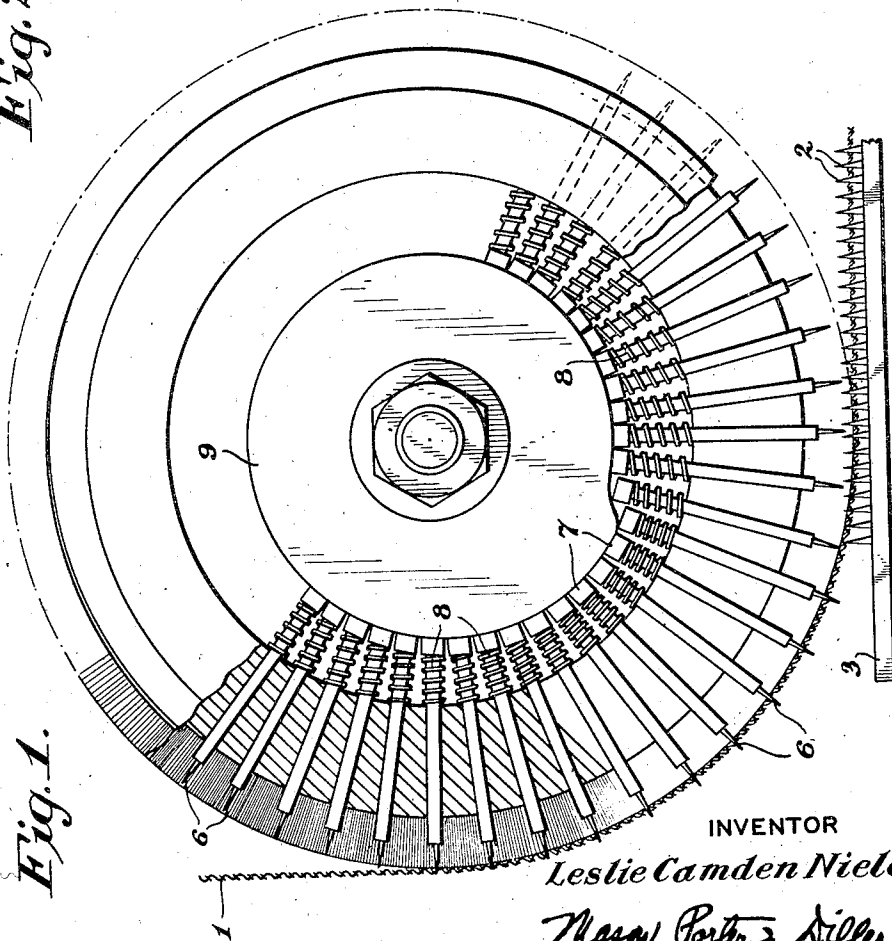


Fig. 1.

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WEB FEEDING DEVICE

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10 Claims. (Cl. 26—57)

1

The present invention relates to an improved device for feeding a continuous web or band of material.

The object of the present invention is to provide a means for the feeding of a band or web of, for example, cloth, to a place where it is taken up, such for instance as the pins of a pair of stenter chains upon which cloth may be treated by warp contraction.

According to the present invention the feeding means comprise a wheel or drum preferably power driven having a plurality of radially disposed pins displaceable about their axes as the wheel or drum rotates to engage the cloth or other web and feed this forward, these pins being either positively moved outwards and inwards relatively to the axis of the wheel or drum, or may be moved in one direction against springs, such for instance as by displacing the spring controlled pins as they rotate with the wheel or drum against the surface of a stationary cam.

The device is preferably combined with a wheel or drum having bristles, and I prefer such bristles to be disposed on the same wheel or drum as carries the pins engaging the web.

It is obvious that the fabric cannot become displaced owing to the fact that the pins hold it positively throughout its travel round the device up to and including the transfer to the stenter pins. It can be seen that the device can be power driven in such a way that its speeds can be a certain amount slower than, equal to, or considerably faster than the stenter pins, thus causing a particular limited amount of warp stretching, a normal warp tension or a considerable warp overfeed to counterbalance the particular warp shrinkage and if the drive is infinitely variable between the two limits it can be pre-set to give the required conditions for most fabrics.

The invention can be used on any known stenter, with or without automatic cloth guiding and in particular in combination with British Patent No. 542,323.

One form of construction is illustrated by way of example in the accompanying drawing, in which—

Fig. 1 is a side view of a feed wheel for the feeding of cloth to a pin stenter,

Fig. 2 is a corresponding front view, partly in section, with the cloth removed.

A web or band of cloth 1 to be fed upon the pins 2 of a travelling stenter 3 passes preferably from automatic guiding means (not shown), which may consist of a pin wheel or other means engaging the said cloth or the like web 1 and

2

adapted to swivel freely about a vertical axis or an axis at right angles to the direction of displacement of the stenter pins.

This web or band is fed to and placed upon the pins by means of a rotating wheel 4 on which are mounted a plurality of evenly spaced radially disposed plungers 5, the outer ends of which are formed as or carry sharp pins 6, which plungers are guided in guideways in the wheel 4 and have tappet heads 7 holding up compression springs 8 against the pressure of a stationary cam 9. It will consequently be seen that as the wheel 4 rotates, the pins 6 will enter the cloth 1 smoothly and feed this on to the pins 2 of the stenter 3 by reason of the action of the cam 9, and that as soon as the cloth has been taken up by the pins 2, the pins 6 will be withdrawn from engagement with the web of cloth 1 as the tappet heads 7 pass on to the recessed portion of the cam 9 under action of the springs 8.

If desired there may be combined with this pin wheel feeding means a brush wheel comprising sets of bristles 10 radially disposed to the wheel 4 and preferably in groups lying at an angle to the plane of rotation of the wheel 4 and symmetrically on either side of the median plane in which the pins 6 lie, these bristles acting to press the fabric evenly down upon the pins 6 without any risk of damage to the fabric.

In certain cases it will be desirable to drive the wheel 4 at a higher peripheral speed than the speed of translation of the stenter pin gill 3, so that the cloth is "over fed" to these pins, thereby compensating for longitudinal warp shrinkage of the cloth in the stenter machine. In this case the displacement of the pins out of engagement with the cloth as the cloth is transferred to the pins of the stenter prevent the cloth from being torn.

Instead of impressing the cloth wholly upon the pins of the stenter by means of the bristles 10 on this wheel or drum 6, these bristles 10 may depress the cloth 1 partially upon the pins 2 of the stenter, the cloth or web 1 then being further impressed upon the pins 2 of the stenter by a second free running brush wheel running in tandem thereto.

One of the above devices is disposed on either side of the web which in the case of woven fabric is in direct line with the selvage and at the same time in direct line with the run of pins on a stenter chain and immediately above them at such a height that the bristles on the wheel shall force the fabric on to the stenter pins with

3

the required amount of ripple for the circumstances involved.

I declare that what I claim is:

1. A method of feeding a continuous web of material on to a stenter, consisting in engaging the web at a number of spaced points consecutively along its edges by means of pins outside the path of the points of stenter-pins, displacing the said pins whilst engaging the web in a path the continuation of which would intersect the locus of the points of the stenter-pins, and disengaging said pins from the web at substantially said point of intersection and immediately prior to engagement of the web upon the stenter-pins.

2. A web feeding device for feeding a web to the stenter-pins of a stenter and consisting of a plurality of pins movable in guides radial to a common centre, means to guide a web of cloth into range of the points of said radial pins to be engaged thereby outside the path of the points of said stenter-pins, means to displace said radial pins about said centre to bring the web impaled thereon into a position in which said web intersects the path of displacement of the points of said stenter-pins, and means to move said web engaging radial pins away from said stenter-pins and out of engagement with the fabric immediately prior to the engagement of the web by said stenter-pins.

3. A web feeding device comprising in combination a travelling stenter, a wheel rotatable about a centre, a plurality of pins radially mounted in said wheel, means to positively move said pins radially outwards from said centre so that their points describe a locus other than concentric with said centre and passing at one place adjacent to the locus of the points of the pins of said stenter, and means to retract said radially movable pins adjacent said place.

4. A web feeding device comprising a combination a travelling stenter, a wheel, a plurality of pins radially mounted in guides in said wheel, means to rotate said guides about said centre so that the locus of the points of the pins mounted therein passes adjacent to the locus of the points of the stenter-pins, a stationary cam mounted about said centre and engaging said radial pins and having its minimum eccentricity substantially about the radial line from the centre of rotation of the guides to a place where the path of the points of the pins in said guides if not retracted would intersect the path of the points of the stenter-pins.

5. A web feeding device comprising in combination a travelling stenter, a wheel rotatable about a centre, a plurality of pins radially mounted in said wheel, means to positively move said pins radially outwards from said centre so that their ends describe a locus other than concentric with said centre and passing adjacent the locus of the points of the pins of said stenter, means to retract said radially movable pins immediately previous to the place where the loci would intersect if the said radial pins were not retracted, and a plurality of flexible bristles radially disposed on said wheel and surrounding the pins guided therein.

6. A web feeding device comprising in combination a travelling stenter, a wheel rotatable

4

about a centre, a plurality of pins radially mounted in said wheel, means to positively move said pins radially outwards from said centre so that their ends describe a locus other than concentric with said centre and passing adjacent the locus of the points of the pins of said stenter, means to retract said pins immediately previous to the place where the loci would intersect if said radial pins were not retracted and a plurality of flexible bristles radially disposed on said wheel and surrounding the pins guided therein and inclined in planes at an angle to the plane of said pins guided therein.

7. A web feeding device comprising in combination a travelling stenter, a wheel rotatable about a centre, a plurality of pins radially mounted in said wheel means to positively move said pins radially outwards from said centre so that their ends describe a locus other than concentric with said centre and passing adjacent the locus of the points of the pins of said stenter, means to retract said pins immediately previous the place where the loci would intersect if the said radial pins were not retracted, a plurality of flexible bristles radially disposed on said wheel and surrounding the pins guided therein, and a peripheral cloth supporting flange on said wheel offset from said pins.

8. A web feeding device comprising in combination a travelling stenter, a wheel rotatable about a centre, a plurality of pins radially mounted in said wheel, means to move said pins radially outwards from said centre to engage the web, and means to retract each pin towards said centre in sequence to release the web after a portion of the web substantially equal in length to the distance between the points of two of said radially movable pins and terminating at the pin being retracted, has been engaged upon the pins of the stenter.

9. A web feeding device comprising in combination a travelling stenter, a wheel rotatable about a centre, a plurality of pins radially mounted in said wheel the points of which are driven about said centre at a greater peripheral speed than the speed of the points of the stenter-pins, means to move said pins radially outwards from said centre to engage the web, and means to retract each pin towards said centre in sequence to release the web after a portion of the web substantially equal in length to the distance between the points of two of said radially movable pins and terminating at the pin being retracted, has been engaged upon the pins of the stenter.

10. A method of feeding a continuous web of material on to web conveying means, consisting in engaging the web at a number of spaced points consecutively along its edges by means of pins outside the path of its engagement by said web conveying means, displacing the said pins whilst engaging the web in a path the continuation of which would intersect the path of the places of engagement of said web conveying means, and disengaging said pins from the web at substantially said place of intersection and immediately prior to engagement of the web upon said web conveying means.

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