

No. 872,258.

PATENTED NOV. 26, 1907.

F. SCHMIDT.

THREAD STRETCHING DEVICE FOR THE WARPS OF DRUM PRINTING MACHINES.

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Fig. 1.

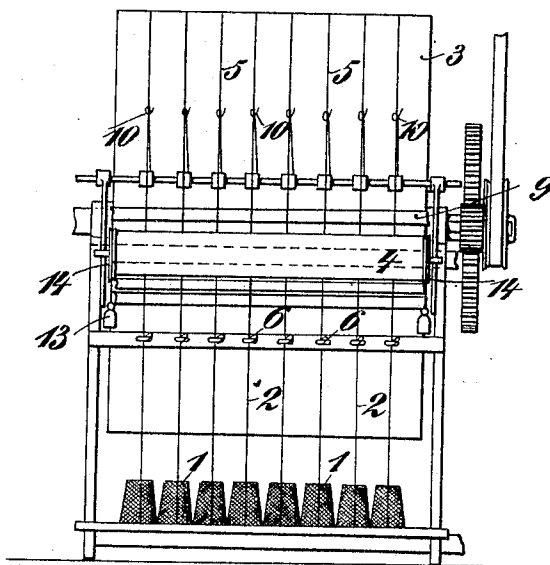
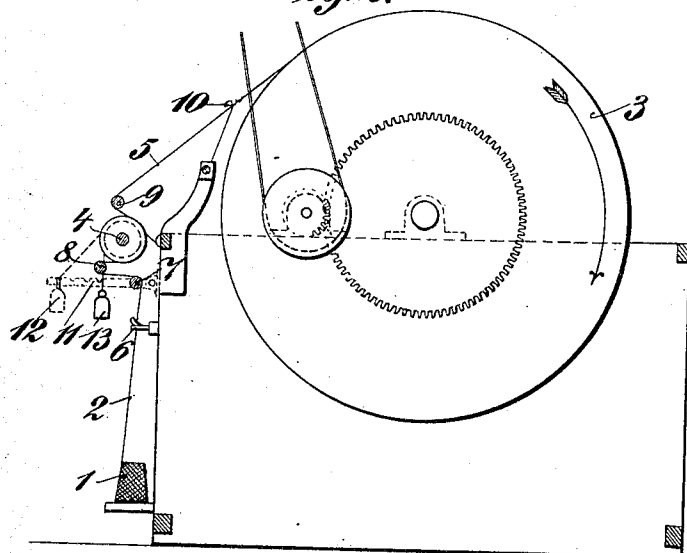


Fig. 2.



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FRANZ SCHMIDT, OF OBERSCHÖNEWEIDE, GERMANY.

THREAD-STRETCHING DEVICE FOR THE WARPS OF DRUM PRINTING-MACHINES.

No. 872,258.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed September 12, 1903. Serial No. 172,910.

To all whom it may concern:

Be it known that FRANZ SCHMIDT, a subject of the Emperor of Germany, residing at 7 Edisonstrasse, Oberschöne weide, near Berlin, in the Empire of Germany, factory proprietor, has invented certain new and useful Improvements in Thread-Stretching Devices for the Warps of Drum Printing-Machines, of which the following is a specification.

The present invention relates to a thread brake for the warp drums of drum printing machines.

As is known, with the thread brakes hitherto used for warp drums, pressure is exerted upon the thread material, in a direct manner, that is wound upon the spool by means of a spring or weighted lever and the tension is thereby produced on stripping the thread off. This contrivance has several disadvantages. A lack of uniformity in the braking is produced in that the spool has at the beginning a large diameter which diminishes as the thread material is drawn off. In this way the pressure of the spring and of the weighted lever continually decreases or increases in relation to the thread material, the result of this being that the tension of the thread drawn off also changes continually. This irregularity in the tension is augmented in that the full spool, although the speed of the warp drum remains the same, moves more slowly than the almost empty spool, so that the coefficient of friction between the spring or the weighted lever and the yarn changes in accordance with the different speed. This difference in the braking of the several spools makes itself very unfavorably felt on printing thread material on warp drums, in that the several spun yarns are differently stretched out, and consequently the threads do not reach the drums in a uniform length, the result of which is that the further working up (laying and weaving) is rendered difficult, and the finished pattern has a bad appearance. With these devices there is also the further drawback that the stringing or tentering has, relatively speaking, to be done slowly, in order to avoid too frequent breakages of the thread. As, in the case of such breakages of the thread, a rapid stopping of the drum is necessary, the spools, which will only bear a weak braking in the fine numbers, keep on running and often get mixed together. A further disadvantage of this braking upon the surface of the spool

results in that a deal of wear and tear is caused.

With the present invention it is necessary that there be arranged between the contrivances from which the thread material is taken off (spools, cops, or the like) and the yarn drum, a brake roller which is caused to rotate by the yarn bearing upon its upper surface. The braking of the rollers can be effected in any manner desired, *e. g.* by clamping or weighting the trunnions or pins, by means of thread brakes of the ordinary kind and the like. It is important that the braking strain on the roller can be changed for instance by using adjustable springs or weighted levers for braking purposes. As the brake roller must rotate it is, furthermore essential that it be provided with a roughened surface in order to prevent slipping of the threads.

The advantages afforded by the thread brake herein employed for warp drums are of a manifold character. As the brake roller forms a sharp point of separation between that part of the thread which is wound upon the warp drum, and between the spools or cops from which it is drawn off, and as it affords the same resistance for all the threads passing over it, the tension between the brake roller and the warp drum is the same for all threads, the diameter of the spools and the cops of the individual threads being immaterial. It can, therefore, never result that an uneven stretching of the threads takes place, so that upon the further treatment of the material faultless products are obtained.

Owing to the continually uniform strain, breakages of the thread are practically impossible, and annoying loss of time is entirely obviated. As the threads no longer slip along one surface under strain, but are wound off on the periphery of one surface, stripping no longer occurs. The adjustability of the breaking strain presents the advantage that the tension of all threads can be uniformly altered at will. Owing to the arrangement of the roughened surface of the brake roller the tension on the threads can be made very high, without liability of any slipping thereof.

A constructional form of the new braking device is shown in the drawing.

Figure 1 is a side elevation of the warp drum with the braking device. Fig. 2 is a front elevation of the same.

From the cops 1 the warps 2 are drawn off

by the warp drum 3, the latter being rotated in the direction of the arrow. The roughened surface brake roller 4 is inserted between the parts 2 and 5 of the threads, the threads being wound once or several times round the brake roller, or they can only come in contact with a portion of its upper surface. Before the threads are guided upon the braking roller 4 they pass through eyes or mails 6 and over guide bars 7 8; a guide bar 9 and eyes 10 are also located behind the brake roller. The brake roller 4 is mounted to rotate and is loaded with weights 13 at its ends. These weights are guided by means of threads 14 over terminal rollers of the brake roller, so that a rotary momentum or a frictional momentum is continually exerted upon the brake roller. Though the roller 4 is referred to as a "brake" roller, it may be stated that the purpose thereof is to effect a stretching of the yarn threads, and to which end the said roller is constructed of a diameter considerably less than that of the warp drum 3, the roller being also comparatively light in weight so as to be readily turned upon its axis by the friction produced by the threads thereupon. In consequence, the weights or loading devices for the said roller are not so heavy as would be required, strictly speaking, to cause the roller to act as a brake.

In Fig. 2 a weight lever 11 is shown in dotted lines, upon which a weight 12 is mounted to slide. This weight lever can also serve as a substitute for the weight 13.

The method of operation of the device described is based upon the fact that owing to the braking action of the device 13, 14 and 11, 12 a uniform loading of the brake roller 4 takes place, so that it always presents the same resistance to the thread drawn off. On drawing off the threads the brake roller 4 revolves and the threads have, while they are wound upon the upper surface of the brake roller, to overcome the uniform resistance thereof.

The device can be altered in various ways; for example the guide bars 7, 8, 9 can be stationary or mounted to rotate, and if stationary they assist the braking action; they can be replaced by thread eyes or mails and the like. They can also be dispensed with entirely, and instead of them the warp threads can be given one or more turns round the brake roller. The loading of the brake roller can also be effected in various ways; for instance, instead of the weighting devices mentioned, adjustable springs can be used for exerting the braking pressure. In any case it is essential that there be a common braking roller for all the warps, and which opposes always the same resistance to the pull exerted upon the warps, independent of the spools or cops which serve for the yield of the threads. It will be noticed from an inspection of the drawings, that the roller 4 rests loosely upon the threads, and is supported thereby.

What I claim and desire to secure by Letters Patent of the United States is:—

1. In a tension device for yarn printing machines, the combination with the cops and the printing drum for receiving the yarn thread therefrom, of a stretching roller, resting loosely and movable on the threads between the cops and the drum and supported directly thereby, said roller being provided with weights on the ends thereof.

2. In a tension device for yarn printing machines, the combination with the cops and the printing drum for receiving the yarn threads therefrom, of a stretching roller resting loosely and movable on the threads between the cops and the drum and supported directly thereby.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses this 27th day of August 1903.

FRANZ SCHMIDT.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.