This invention relates to a well-known type of mantle steaming machine and the principal objects of the invention are to provide simple and effective means for securing suitable tension upon the mantle while it is being wound on the steaming cylinder; to provide means for indicating the amount of tension and particularly for indicating when it varies due to wear or misadjustment; to provide extremely simple means whereby the original tension can be restored in case of fluctuation and to provide effective means for shifting the power from the steaming cylinder to the mantle roll and vice-versa and preventing both of them from being connected with the power at the same time.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which

Fig. 1 is a side view of the principal part of a mantle steaming machine constructed in accordance with this invention and showing the mantle being wound on the mantle roll;

Fig. 2 is an end view showing the power-shifting means;

Fig. 3 is a side view of a part of the machine but an end view of one of the shafts, showing the brake for providing the desired tension on the mantle roll;

Fig. 4 is an elevation thereof in the direction of the arrow 4 in Fig. 3;

Fig. 5 is an elevation as indicated by the arrow 5 in Fig. 4, showing the means for automatically releasing the brake drum and showing it in the light position when the mantle is being unwound from the mantle roll, and

Fig. 6 is an edge view of the brake drum.

This invention is shown as applied to a machine for processing cloth, common known as a mantle steaming machine. As shown in the drawings, the machine involves certain features which are well known. It has a power shaft 10 which by means of sprockets 11 and 12, respectively, and chains thereon is adapted to transmit power to a steaming cylinder 13 and a mantle roll 14. This is done by means of sprockets on the shafts of these two rotary members. The steaming cylinder 13 is perforated, as usual and the cloth 15 to be processed is brought under and over guides and over an idle roll 16 to the steaming cylinder and wound thereon with the mantle 17 which is unwound from the mantle roll and wound on the steaming cylinder around the roll 16 in alternate layers with the fabric to be treated.

The steaming cylinder, as has been the case heretofore, is driven forward to wind up the mantle and fabric thereon and, as stated, the steaming cylinder is perforated to permit of the exhausting of the steam from the same through the cylinder itself. The mantle will be rolled up then on the mantle roll and drawn from the steaming cylinder, taking the cloth off the steaming cylinder with it and delivering the cloth from the machine. Suitable devices are provided for guiding the cloth and mantle. All this as so far described is old and well known.

It is also old to provide means for tensioning the mantle as it passes through the steaming cylinder from the mantle roll but one of the objects of this invention is to provide an improved tension device for this purpose combined with means for releasing it upon reversal and allowing free rotating during reversal.

The driving shaft 10, of course, rotates in a forward direction all the time and the sprockets 11 and 12 are provided with clutches 19 and 20, by which they can be connected with the driving shaft or freed from it. These clutches are operated by two levers 21 and 22 respectively, pivoted at 23 on the same shaft and connected with their respective clutches by yokes having pivot pins 24 and 25. These two levers 21 and 22 can be operated independently except for the fact that one of them is provided with an arcuate slot 36 and the other with a pin 37 entering the slot. This allows freedom of motion of each lever for a certain distance and then compels the other lever to follow it.

In the position shown in Fig. 2 the lever 22 has just been pulled over from the right to the position shown and the pin 37 has caused the lever 21 to be pulled over also to the position shown. This connects the clutch 20 and disconnects the clutch 19. Pulling the lever 21 to the right, as indicated by the arrow, will have the opposite effect or bring them both to neutral position and then connecting the clutch 19 and disconnecting the clutch 20. Therefore the steaming cylinder and the mantle roll cannot be connected with the power at the same time.

The shaft 30 of the mantle roll is shown as provided with a brake drum 31. This drum is not fixed to the shaft but is concentric therewith. On the shaft is shown a cam 32 illustrated as consisting of four cam surfaces. Fixed to the brake drum 31 is an outer cam 33 also consisting of four cam surfaces. Between each cam surface 32 and the corresponding cam surface 33 is a roller 34 resting between them. During the unwinding, which is indicated by the arrow and by...
the position of the rollers or balls in Fig. 5, each roller is jammed against the corresponding internal curved cam surface 33.

By such contact is produced a forward driving connection which will rotate the drum from the shaft. The reversing of the rotation of the shaft, however, immediately and automatically disengages all of said rollers and allows them to roll up into the high part of their cam surfaces. An entire freedom of rotation in the mantle winding direction is secured. This is important because during the forward rotation, when the mantle is being wound on the steaming cylinder, it is essential that tension be applied to the mantle to keep it winding the cloth always with the same degree of tightness on the steaming cylinder. This can be done by the application of a brake to this drum 31. It is also essential that when the mantle is being unwound from the steaming cylinder no such tension should be applied and consequently when the shaft 30 is being rotated from the shaft 18 to draw the mantle from the steaming cylinder, complete freedom of braking of the mantle roll is accomplished. These objects are secured by this arrangement.

The application of a brake to the drum 31 has been mentioned. This can be accomplished by the provision of two pivoted brake supports 37 having brake surfaces 38 operating directly on the outside surfaces of the drum 31 which is cylindrical. A rod 39 is fixed to one of these supports and extends through the other. It is screw-threaded and has a hand nut 40 adjustable along the screw-threads. A spring 41 is provided to hold the two supports apart and a spring 42 to produce pressure on the support, the spring 41 having lower compression than the spring 42. The nut is provided with a scale 43 and the support 37 is provided with a pointer 44. The object of this construction is to provide for setting the nut at first so as to get what is decided to be the exact amount of tension for the kind of cloth being processed. Now the position of the pointer on the scale is noted.

In the use of the device the tension may be reduced by wear or accident and, if so, this will show up immediately on the scale. Then the nut may be turned as much as may be necessary to bring the pointer to the same value as before, and this will maintain the proper position with respect to the pointer, which will give the same tension as that at the start of the operation.

The brake is always applied to the drum 31. This drum is loose on the shaft 30 when that shaft is connected to be driven by the shaft 10 and tight when the shaft 46 is being driven by the shaft 10 by the action of the parts 32, 33 and 34.

Although this release and brake has been described in connection only with the shaft 30 of the mantle roll, it also can be used in connection with the shaft 46 of the steaming cylinder 13 and this cylinder would be provided with the same elements as shown in Figs. 3 to 6 inclusive for that purpose.

It will be seen that the mantle roll which receives the mantle as it is unwound from the steam cylinder during the removal of the cloth after being processed is driven from the main shaft, or other source of power, through a friction clutch. This drive is disconnected when the processing is being done and the mantle roll rotates in the opposite direction by the rotation of the steaming cylinder winding the mantle upon itself. It is during the winding of the mantle on the steaming cylinder that a suitable tension is desired and no tension practically when the mantle is being wound up on the mantle roll. The drum is released automatically and stopped when the reversal of the roll is made and this is done without affecting the setting of the braking system so that no adjustments have to be made between the alternate rotations of the mantle roll in opposite directions.

It will be seen that, by the indicator mentioned, the operator can adjust the tension to a proper amount and without any further manipulation on his part the degree of tension will be indicated. Thereafter if there is any variation in the tension due to wear or accident or the like, the indicator will show it and it is a very simple matter to turn up the nut and bring the indicator back to its original position which the operator knows will provide the original amount of friction. In this way the tension can be kept constant after once being adjusted to be suitable for the particular kind of fabric being run off. Although I have illustrated and described only one form of the invention, I am aware of the fact that modifications can be made therein by anyone skilled in the art without departing from the scope of the invention as expressed in the claims and which is limited to all the details of construction herein shown and described, but what I do claim is:

1. In a machine for processing cloth, the combination with a steaming cylinder, a mantle roll and a driving shaft, of sprocket wheels loosely mounted on said driving shaft, means for driving the steaming cylinder from one sprocket wheel, means for driving the mantle roll from another sprocket wheel, a pair of clutches for connecting either sprocket wheel with the driving shaft, a pair of levers pivoted at the same point, each connected with one of said clutches for operating it, one lever having an arcuate slot and the other having a pin in said slot, whereby after one lever has moved from inoperative position toward operative position through neutral it will pick up the other lever and disconnect the other clutch by the time the first clutch is moved into a position to connect its sprocket wheel with the shaft.

2. In a machine for processing cloth, the combination with a steaming cylinder, a mantle roll, means for driving the steaming cylinder, and means for disengaging the drive for the steaming cylinder, means for driving the mantle roll, and means for automatically releasing the braking system when the mantle is being unwound from the mantle roll, and means for automatically releasing the braking system when the mantle is being unwound from the mantle roll, and means for automatically releasing the braking system when the mantle is being unwound from the mantle roll, and means for automatically releasing the braking system when the mantle is being unwound from the mantle roll.
from the mantle roll when the means for driving it is disengaged.

4. In a machine for processing cloth, the combination with two rolls by either of which the cloth can be unwound from the other, of a braking device for the purpose of controlling the desired amount of tension necessary in a cloth winding machine comprising a shaft for the roll from which a fabric is to be unwound, a brake drum on the shaft, a support surrounding a part of the surface of the drum and movable to and from the drum, a friction member carried by the support and engaging the drum, means for releasing the drum from its shaft when the shaft is driven in one direction by power, means for exerting pressure upon the support, and means for regulating the pressure exerted.

5. In a machine for processing cloth, the combination with two rolls by either of which the cloth can be unwound from the other, of a braking device for the purpose of indicating and controlling the desired amount of tension necessary for the proper processing of a fabric, comprising a shaft for the roll from which a fabric is to be unwound, a brake drum loose on said shaft, a friction support surrounding a part of the surface of the drum and movable to and from the drum, means for connecting the drum with the shaft to rotate the drum when the shaft is being rotated backwards to unwind the fabric and for releasing the drum from its shaft when the shaft is driven forwardly by power, means for exerting a definite amount of pressure upon the support, and means for indicating the correctness of the amount of pressure under varied conditions of wear and adjustment.

6. In a braking or friction means for obtaining the proper amount of tension on a roll upon which a fabric is wound, the combination of a shaft for said roll, a friction drum on the shaft, a pair of pivoted friction supports adapted to be brought into contact with said friction drum, yielding means for applying pressure to said supports to force them together about the drum, a rod on one of the supports passing through the other and having a screw-thread, a nut on the screw-thread, a spring under the nut, whereby the turning of the nut will adjust the friction, indicating lines on said nut and a pointer carried by the support with which the nut is connected for indicating the friction, whereby said nut can be used to correct the pressure and restore the original amount of friction in case of wear or disarrangement of the parts.

7. In a machine for processing cloth, the combination with a steam cylinder, a mantle roll and a driving shaft, of sprocket wheels loosely mounted on said driving shaft, means for driving the steam cylinder from one sprocket wheel, means for driving the mantle roll from another sprocket wheel, a pair of clutches for connecting either sprocket wheel with the driving shaft, a pair of levers, each connected with one of said clutches for operating it, and means whereby after one lever has moved from inoperative position toward operative position through neutral it will pick up the other lever and disconnect the other clutch by the time the first clutch is moved into a position to connect its sprocket wheel with the shaft.

LELAND F. REMINGTON.