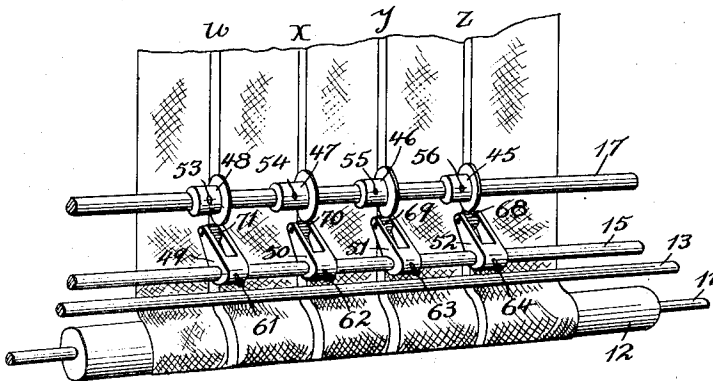
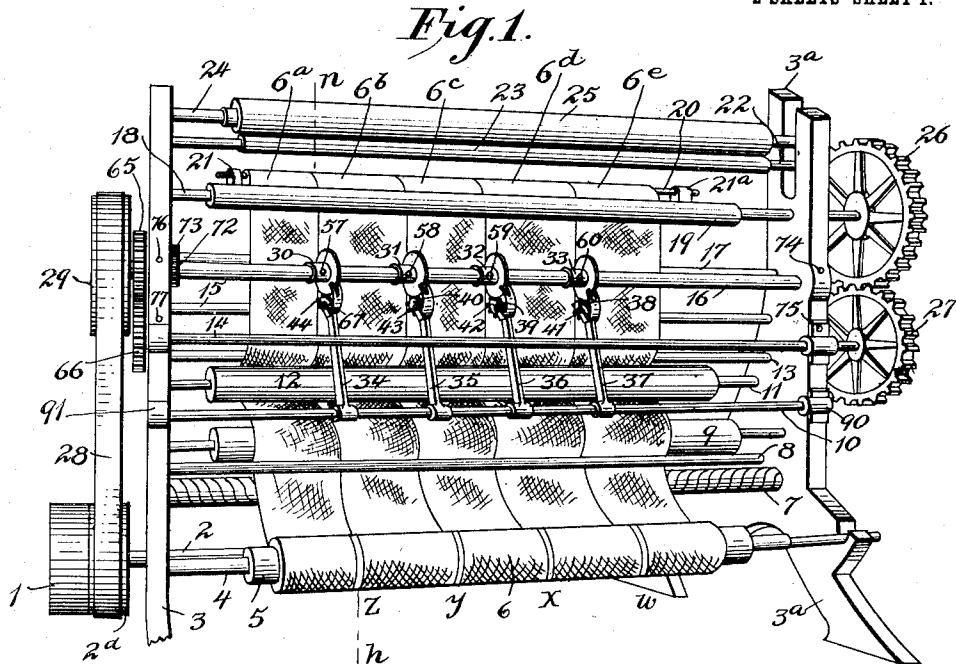


B. T. STEBER.
MACHINE FOR SLITTING CLOTH.
APPLICATION FILED AUG. 23, 1911.

1,025,931.

Patented May 7, 1912.

2 SHEETS-SHEET 1.



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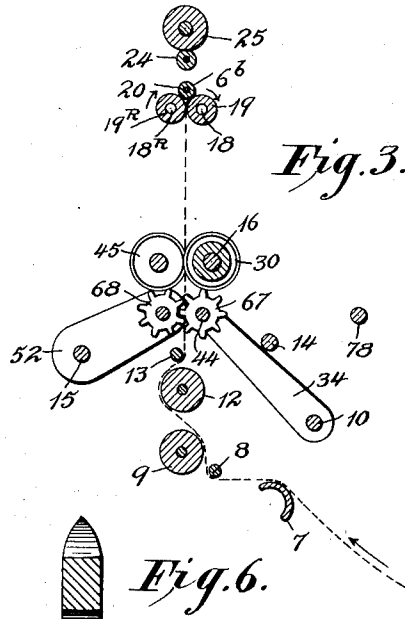


Fig. 4.

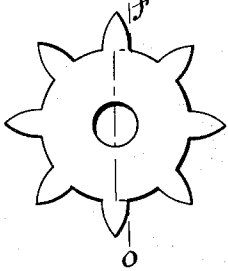


Fig. 6.



Fig. 5.

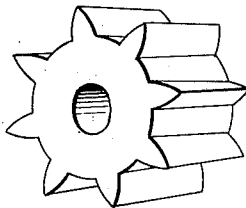


Fig. 8.

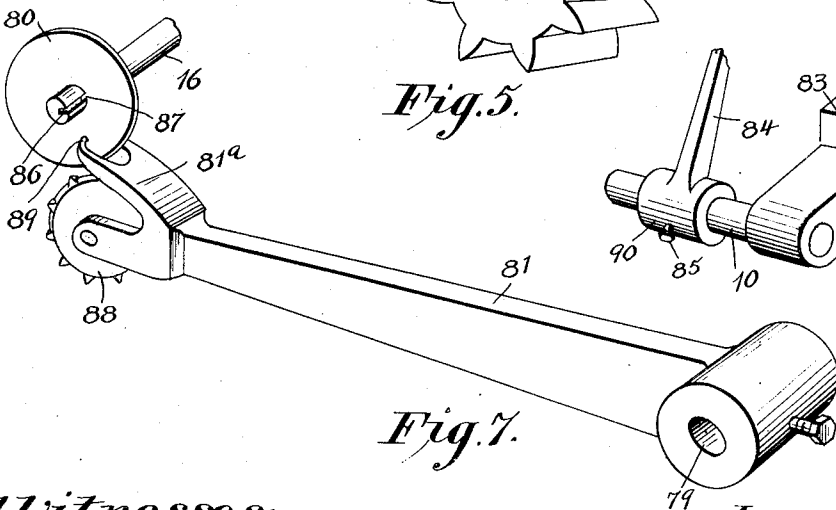
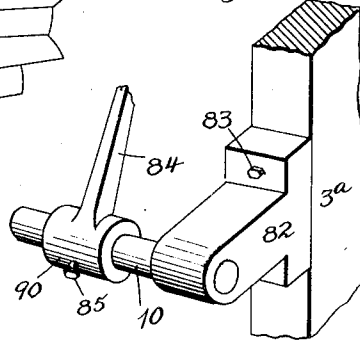


Fig. 7.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR SLITTING CLOTH.

1,025,931.

Specification of Letters Patent.

Patented May 7, 1912.

Application filed August 23, 1911. Serial No. 645,507.

REISSUED

To all whom it may concern:

Be it known that I, BERNARD T. STEBER, a citizen of the United States, residing at Utica, in the county of Oneida and State of New York, have invented new and useful Improvements in Machines for Slitting Cloth, of which the following is a specification.

This invention relates to that class of machines for slitting cloth wherein it is necessary to so guide the cloth to the slitting instrumentalities as to prevent them from cutting any of the strands of warp thread, or of the thread which extends in a direction longitudinal with the strips or bands to be cut.

The main object of my invention is to provide means whereby bands or strips of cloth such as are used for surgical bandages may be produced which are free from loose pieces of thread along their edges, a further object being to prevent waste of material.

I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1, is a view in perspective of a machine embracing my improvements, taken from the front left hand corner. Fig. 2, is a view in perspective, of the portion of the machine illustrating the means which hold the cloth into the guiding means this view being taken from a position at the left rear corner of the machine. Fig. 3, is a sectional view of the machine taken at the line *n, h*, Fig. 1. Fig. 4, is a view in perspective of one of the guiding wheels detached from the machine. Fig. 5, is a view in perspective of one of the holding in wheels detached from the machine. Fig. 6, is a sectional view of one of the guiding wheels, as if taken from the line *f, o*, Fig. 4. Fig. 7, is a view in perspective of a guiding arm which adjusts the cutter so as to follow irregularities in feeding of the cloth which becomes necessary in some instances. Fig. 8, is a view in perspective showing how Fig. 7, is fastened to the machine when so desired.

Similar numerals refer to similar parts throughout the several views.

The machine is preferably equipped with a main driving wheel 1, which receives motion from an individual motor or otherwise, this main driving wheel is firmly attached to the main shaft 2, which revolves with

it and causes the pulley 2^a, to turn. Connected with the pulley 2^a, by the belt 28, is the pulley 29, which is firmly fastened to the shaft 16, and causes it to revolve, the shaft 16 contains the slitting cutters 30, 31, 32, and 33. The machine is also equipped with the shaft 17, which is located immediately in the rear of the shaft 16, and is rotatably connected therewith by means of the spur gears 72, and 73, this shaft 17, contains the slitting cutters 45, 46, 47, and 48, these slitting cutters and the slitting cutters 30, 31, 32, and 33, are each slidably mounted on their respective shafts, and fastened in place by the set screws 57, 58, 59, and 60, on shaft 10, and 53, 54, 55, and 56, on shaft 17, each pair of slitting cutters consisting of one cutter on shaft 16, and one on shaft 17, so placed face to face as to form shearing cutters. Through the medium of gears 65, 66, 27, and 26, motion is given to the shaft 18, and its roller 19, clearly shown in Fig. 1, the shaft 18, being connected with the shaft 18^R, shown in Fig. 3, in such a manner as to cause the two shafts to revolve in the same direction which in this machine is done by means of two sprockets and a chain immediately behind the frame of the machine 3^a, Fig. 1, and not visible on drawings. The two rollers 18, and 18^R, are of such a distance apart as to not allow them to hug the cloth while it is passing between them. Immediately above the spaces between the rollers 19, and 19^R, is the removable arbor 20, upon which the cut rolls of cloth are wound, this arbor can either be slotted or made in two halves held together by the collars 21, and 21^a, or in any suitable manner to grasp the ends of cloth in order to begin winding the same. 74, 75, 76, and 77, shown in Fig. 1, are screw holes in the two frame portions of the machine 3, and 3^a, these are used when it is desirable to use single automatically adjustable slitting cutters in place of pairs of shearing cutters just described, and when this is to be done the cutters 30, 31, and 32, 33, 34, 45, 56, 47, and 48, are either removed or slipped out of the way, and the shaft 16, is alone supplied with cutters as shown in Fig. 7, it being borne in mind that shaft 16, is grooved on one side as shown at 86, Fig. 7, the single cutters 80 having a projecting portion 87, which makes the cutter revolve with the shaft while it can still be fitted quite loosely

to it so as to enable the arm 81, to slide it upon the shaft and keep it in alinement with the guiding wheel 88. Two similar bearings are supplied like the one disclosed in Fig. 8, in which 82, is the bearing referred to the same being fastened to the frame portions of the machine 3, and 3^a, by means of the screw holes 74, 75, 76, and 77, thus forming the two end supports of the shaft 10, which is removed from its bearings 90, and 91, shown in Fig. 1, and used in the bearings 82, when the single cutters which are automatically adjusted in position by the arm 81, are used, the main object of changing the position of the shaft 10, being to put the end of the moving arm 81^a, in such a position as to cause the cutter 80, to be moved the same distance as that traveled by guide wheel 88.

The arm 81, swings upon the upward projecting stud 84, of the fixture 90, which is held in place by the set screw 85, shown in Fig. 8. This stud is located in such a position that the arm 81, will stand at approximately right angles to the cloth when the guiding wheel 88, is entered between the desired pair of strands of warp yarn and, when the cloth vibrates sidewise the guiding wheel 88, will follow, carrying the end of the arm 81, and its extension 81^a, thus causing the single cutter 80, to cut in the middle between the proper pair of strands of warp yarn; it will be observed that the holding in wheel 68, shown in Figs. 2, and 3, and in detail in Fig. 5, is of sufficient width to allow the free side motion of the guiding wheels when the arrangement shown in Figs. 7, and 8, is used.

I have constructed this machine so as to guide the cloth in such a manner as to always present the spaces between two predetermined strands of yarn to cutters having a fixed position upon their shaft for cutting certain kinds of cloth, as for example when the texture is sufficiently coarse, the weaving sufficiently accurate, and the cloth sufficiently elastic to allow accurate guiding, but there are times when finer cloth is to be cut, or when the weaving is more irregular, or when the bleaching of the cloth has caused uneven shrinkage to an extent as to make it difficult to hold the two edges of the portions which are to form the cut bands or strips in fixed positions without undue stretching and in such cases it is only necessary to withdraw the shaft 10, and remove the guide wheel arms 34, 35, 36, and 37, then fasten the bearings as shown in Fig. 8, to the frame portions 3, and 3^a, of the machine by the screw holes 74, 75, 76, and 77, shown in Fig. 1, then remove the cutters 30, 31, 32, and 33, from the shaft 16, and replace them by the cutters shown in 80, Fig. 7, after which the guide wheel arms 81, which carry the guide wheels 88, are placed upon

the stud 84, which enters the hole 79, and the holders 90, are placed on the shaft 10, as shown in Fig. 8.

The operation and the starting of the machine is as follows: The roll of cloth 6, has previously been wound upon the beam 5, which is placed on the shaft 4, after which the end of the cloth is drawn in as best illustrated in Fig. 3, first over the tension rod 7, which has fine oblique grooves extending diagonally across its face from a bottom left to an upper right position on that portion of the bar which is to the right of the center, and other fine oblique grooves extending from a bottom right to an upper left position from the center of the bar to its left hand extremity as shown in Fig. 1, these grooves spread the cloth enough to prevent it from wrinkling next it is placed under the rod 8, then over the roller 9, back of the roller 12, in front of the roller 13, between the guide wheel 67, and the holding in wheel 68, between the shearing cutters which are mounted on shafts 16, and 17, and up between the traction rollers 19, and 19^R, when they are fastened to the arbor 20, and the weight rollers 24, and 25, are allowed to come down and rest upon the arbor 20, when the machine is set in motion the cloth is drawn through between its cutters and over and around the various contrivances by means of the winding up of the arbor 20, which makes the split or independent rolls 6^a, 6^b, 6^c, and 6^d, when the desired size or diameter is attained by these narrow rolls of cloth the weights 24, and 25, are lifted high enough to release the tension against them, the arbor 20, is removed a short distance from its position by allowing it to unroll a few inches of its cloth which is then cut, crosswise by hand or otherwise after which the arbor 20 is removed leaving the separate rolls 6^a, 6^b, 6^c, and 6^d, ready for use or to be put in packages for market. The arbor 20, may again be placed in its position and the operation repeated.

When cloth is of a fine texture it is sometimes preferable to weave the cloth by omitting one or more strands of warp yarn at the places where the cloth is to be cut and when the cloth is so woven sufficient space is given for the free action of guiding wheels whose section is quite thick, and as the point of one tooth must follow in the path of the base of its preceding neighboring tooth I have found in practice that the guiding of cloth woven in this manner becomes very positive, although cloth of sufficiently coarse texture can be guided without so weaving, but when woven in this special manner the machine will work well without so fine an adjustment as must be necessary when no strands of warp have been omitted.

I have shown a machine for cutting between certain strands of warp yarn, but it be-

comes obvious that my improvements can be attached directly to the weaving loom if so desired without departing from the spirit of my invention, and while I have caused my cloth to move or be drawn between the cutting instrumentalities it becomes apparent that the cloth could be held stationary in given lengths, and the guiding and cutting instrumentalities can be made to travel and cut the cloth between predetermined strands of thread, in fact a light machine containing the portions disclosed in Figs. 7, and 8, could be caused to travel over a length of cloth supported between two end supports and thus cut bands of cloth in which each cut would remain between the strands of thread from which the cutters started.

The value of my invention for the manufacture of surgical bandages will be appreciated when it is remembered that such bandages should be free from all loose sections of thread, and that previous to this invention such threads were present in all such bandages and had to be removed by means of holding the edge of the rolls of cut bandages against fast running emery wheels, which was a very imperfect system and by employing large numbers of employees to remove the threads by hand, and it will readily be noted that no such loose short strands can possibly exist when the cutting is confined entirely to the weft threads or those which extend crosswise in the bandage.

The rollers 23, and 25, are preferably lifted by means of a lever which is attached to the frame of the machine but I have not shown this in my drawings as the manner in which the cloth is drawn or rolled up forms no part of my invention.

Referring now more specifically to the holding in wheels 68, 69, 70, and 71, shown clearly in Fig. 2, and in detail in Fig. 5, these were introduced in order to prevent the cloth from slipping out of contact with the guiding wheels 38, 39, 40, and 67, which could otherwise happen in case the cloth was very irregularly wound upon the beam 12.

By referring to Fig. 1, and Fig. 3, of the drawings it will be observed that the points or teeth of the guiding wheels 38, 39, 40, and 67, extend entirely through the cloth which is preferably held in contact with said points by adjacent holding in means to prevent it from sagging and becoming disengaged therefrom, and that it is these points or teeth which do the guiding, and not the wheels: the wheels being employed on account of their convenient form; but points extending through the cloth from other mechanical equivalents would answer the purpose just as well as do the wheel points, and yet fall within the full spirit of my invention.

It becomes obvious also that by removing

every alternate one of my guiding wheels the cutters which aline with the positions occupied by such guiding wheels can still cut between two given strands of warp thread provided the strips to be cut are of a reasonably narrow width and the cloth is quite perfectly woven.

It will be understood too, that I intend to equip some of my machines with several sets of guiding wheels, such as shown in Figs. 1, 2, and 3, but to have each set following the other at some chosen position on the machine, and finally to employ the arrangement illustrated in Fig. 7, to cut the cloth into strips.

Having now described my invention, I claim:

1. In a machine for slitting cloth into strips, the combination of guiding means which enter between two strands of each warp and weft thread, an adjacent support to prevent the cloth from sagging away from said guiding means and cutting means which enter between the same two strands of warp thread, with means for pulling the cloth in a direction longitudinal with its warp thread.

2. In a machine for cutting cloth into strips, the combination of guiding means which enter between two strands of each warp and weft thread, an adjacent support to prevent the cloth from sagging from said guiding means and cutting means which cut between the same two strands of warp thread with means for pulling the cloth in a direction longitudinal with its warp thread and means for rolling the strips into small rolls.

3. In a machine for slitting cloth into strips, the combination of guiding means which enter between two strands of each warp and weft thread, an adjacent support to prevent the cloth from sagging from said guiding means and cutting means which enter between two strands of warp thread, with means for pulling the cloth in a direction longitudinal with its warp thread.

4. In a machine for cutting woven cloth comprising a series of threads extending in one direction, and a series of crossing threads into strips, the combination of guiding means which extend through the cloth between two given strands each of the warp and weft threads which form weave, means for holding the cloth upon the guiding means adjacent thereto, and cutting means which cut the crossing threads.

5. In a machine for slitting cloth, the combination of a toothed guiding member, extending through the cloth between two strands of warp thread from one face of the cloth, and a toothed member intermeshing therewith on the other face of the cloth, with means for pulling the cloth in a direction longitudinal with the warp thread.

6. In a machine for slitting cloth, the combination of a toothed guiding member, extending through the cloth between two strands of warp thread from one face of the cloth, and a toothed member intermeshing therewith on the other face of the cloth, with means for pulling the cloth in a direction longitudinal with the warp threads, and means for cutting the cloth into strips.
7. In a machine for slitting cloth, the combination of a toothed guiding wheel, extending through the cloth between two strands of warp thread from one face of the cloth, and a toothed member meshing therewith on the other side of the cloth, with means for pulling the cloth in a direction longitudinal with the warp threads, means for cutting the cloth into strips, and means for winding the strips into rolls.
8. In a machine for slitting cloth where certain warp threads have been omitted, the combination of guiding means to enter the parts where the warp threads have been omitted, supporting means to hold the weft thread between the guiding means, and cutting means for cutting the weft threads where the warp threads have been omitted with means for feeding the cloth.
9. In a machine for slitting cloth wherein certain warp threads have been omitted the combination of a toothed guiding wheel, a toothed holding in wheel to hold the strands of weft thread between the teeth of the guiding wheel, and a weft thread cutter, with means for drawing cloth from a roll.
10. In a machine for slitting cloth, the combination of a toothed guiding wheel, a toothed holding in wheel for preventing the cloth from sagging, and a weft thread cutter, with means for drawing cloth from a roll.
11. In a machine for slitting cloth, the combination of a pointed guiding member, a grooved holding in member, a second pointed guiding member, and grooved holding in member following said guiding and holding in member, and a cutting member, with means for winding cloth upon a roll.
12. In a machine for slitting cloth wherein certain warp threads have been omitted, the combination of a pointed guiding member to enter the portions where the warp threads have been omitted, means for supporting the cloth where the pointed member enters and cutting means for cutting the weft threads where the warp threads have been omitted, with means for feeding the cloth.
13. In a machine for slitting cloth, the combination of an independently swinging guiding wheel carrying arm, a toothed guiding wheel carried by said arm, and a movable cutter slidably mounted on a revoluble shaft, with connecting means between the swinging arm and cutter for causing the cutter to slide upon the revoluble shaft.
14. In a machine for slitting cloth, the combination of guiding means which enter between two strands of each warp and thread from one face of the cloth, holding in means on the opposite face of the cloth, a movable member actuated by said guiding means, and a cutter connected with said movable member in such a manner as to move together.
15. In a machine for slitting cloth the combination of a guiding wheel located on one face of the cloth, a wheel for holding the cloth to the guiding wheel located on the opposite side of the cloth at a position opposite the guiding wheel, and a cutter with a spreader to draw the two outer edges of the cloth apart and keep it from gathering wrinkles.
16. In a machine for slitting cloth, the combination of a toothed guiding wheel, a toothed holding in wheel in mesh with the toothed guiding wheel and a cutter, with a spreader to draw the two outer edges of the cloth apart and keep it from gathering wrinkles.
17. In a machine for slitting cloth the combination of a toothed guiding wheel, a toothed holding in wheel to keep the cloth in contact with the guiding wheel, and a cutter, with a spreader to draw the two outer edges of the cloth apart and keep it from gathering wrinkles.
18. The combination of pointed guiding means to enter between two strands of each of weft and warp threads, of a woven fabric, means for holding the guiding means in mesh with the cloth, and preventing the same from sagging and a cutter, with means for spreading the cloth.
19. In a machine for rolling up cloth, in which certain warp threads have been omitted the combination of means to guide said cloth, consisting of projections extending entirely through the cloth from one face, with adjacent means for holding the cloth in contact with said guiding means to prevent the cloth from sagging.

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