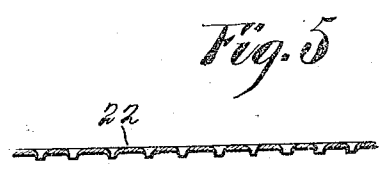
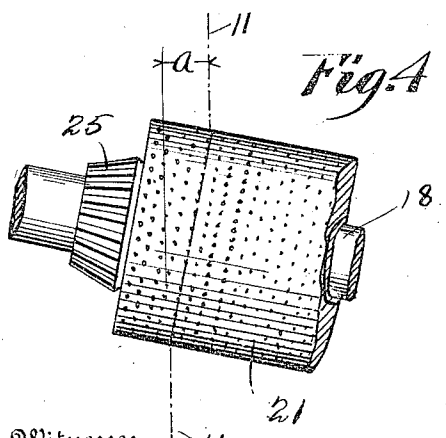
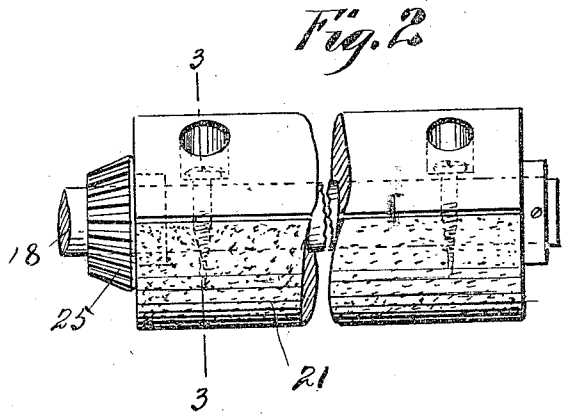
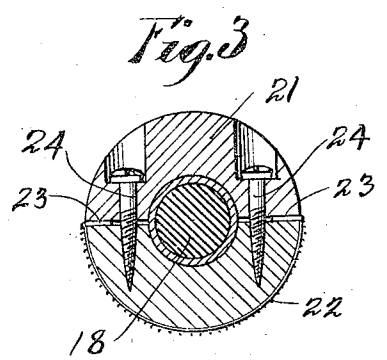
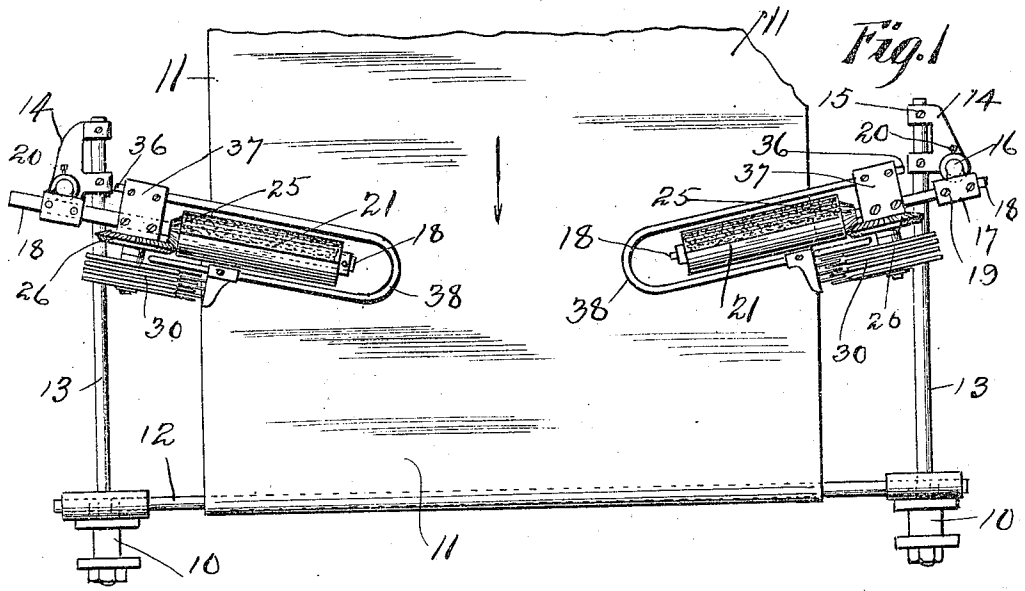


J. T. BOLTON.
 WEB STRETCHING AND GUIDING DEVICE.
 APPLICATION FILED NOV. 20, 1916.

Patented Aug. 21, 1917.
 3 SHEETS—SHEET 1.

1,237,607.



Witnesses
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 J. L. Macdermott

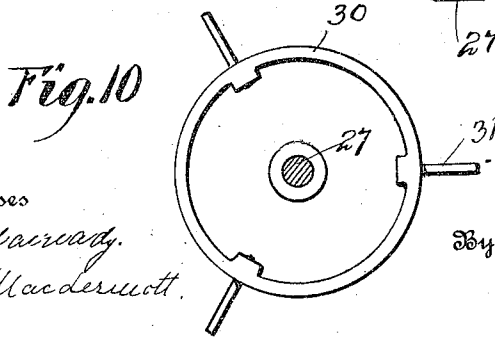
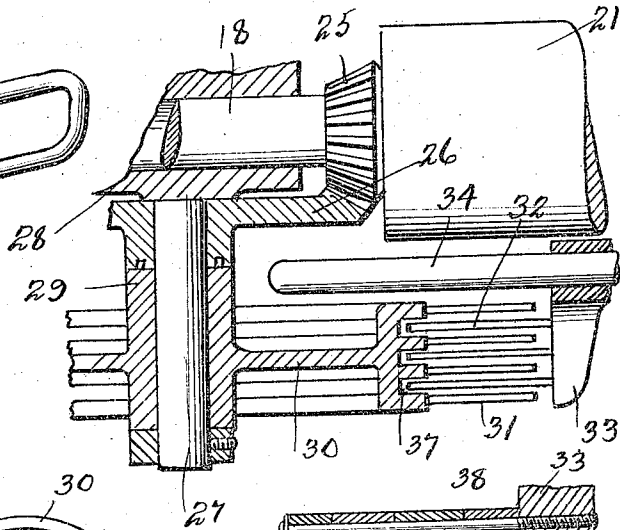
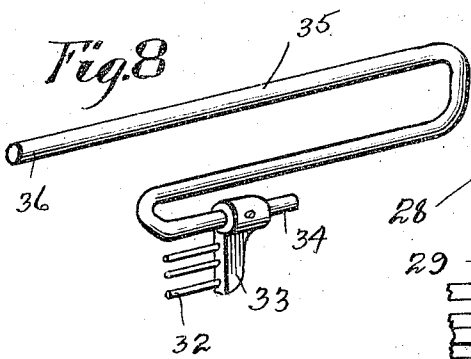
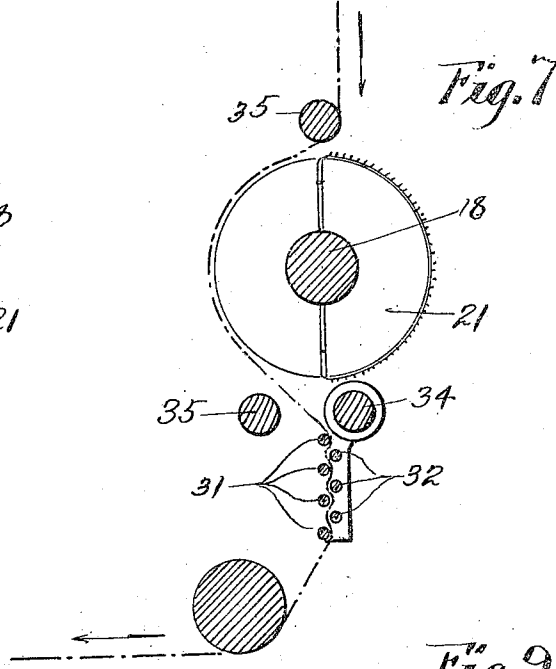
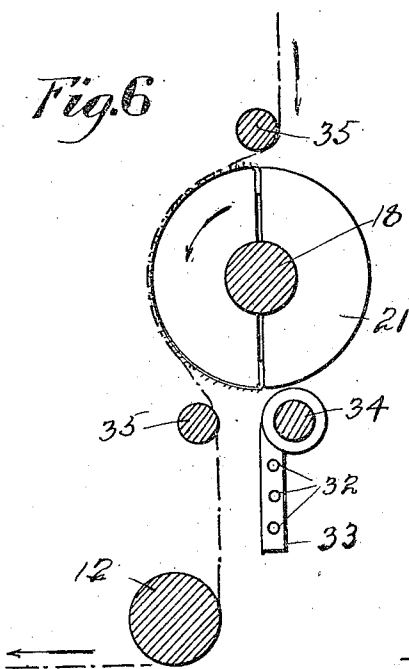
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 3 SHEETS—SHEET 2.

1,237,607.



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1,237,607.

Patented Aug. 21, 1917.

3 SHEETS—SHEET 3.

Fig. 12

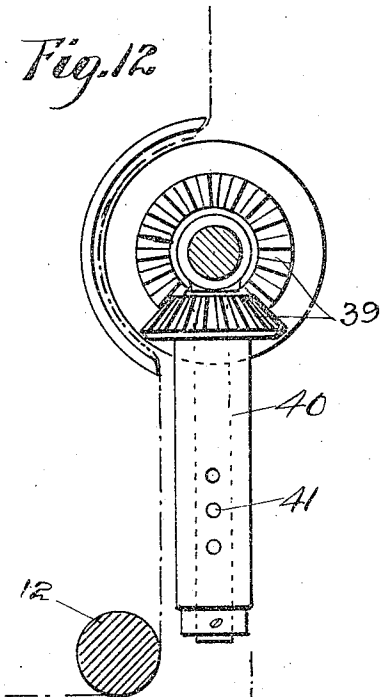


Fig. 13

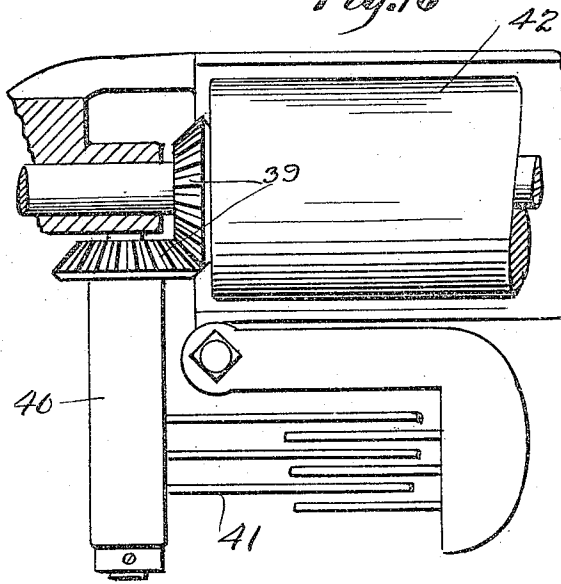


Fig. 14

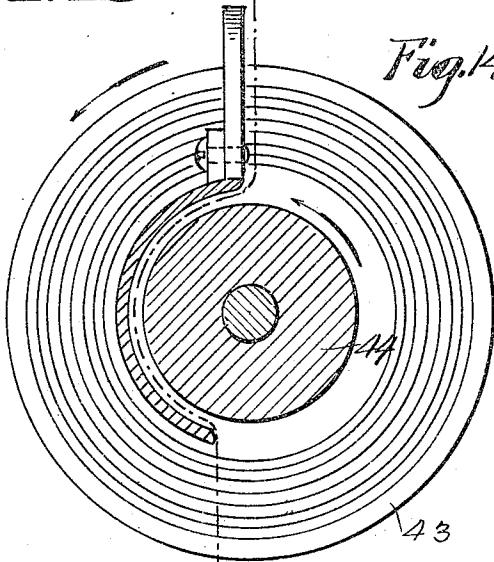
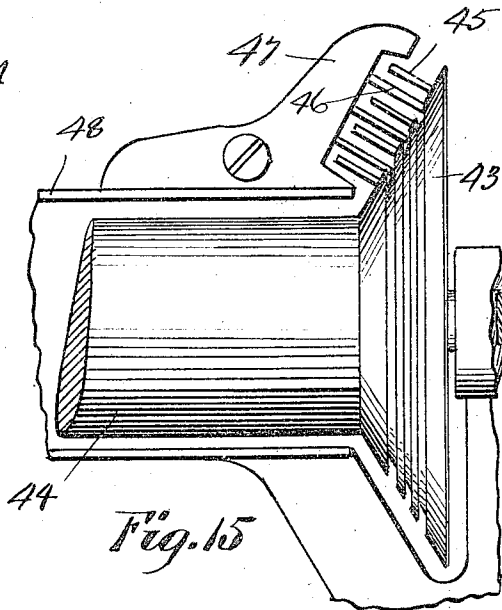


Fig. 15



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UNITED STATES PATENT OFFICE.

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WEB STRETCHING AND GUIDING DEVICE.

1,237,607.

Specification of Letters Patent.

Patented Aug. 21, 1917.

Application filed November 20, 1916. Serial No. 132,354.

To all whom it may concern:

Be it known that I, JOHN T. BOLTON, a citizen of the United States, and resident of the city of New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Web Stretching and Guiding Devices, of which the following is a specification.

This invention relates to spreading and guiding devices for operating upon a web of material such as cloth, paper or the like while being fed to a machine, such for instance as a tenter, calender, drier, printing machine and the like; and an object of the invention is to provide a simple and practical means comprising essentially a single operating roll, one operatively mounted at each of the opposite edges of the web with their axes set on an angle to the travel of the web, a portion of the face of each roll being roughened or provided with pins or protuberances to act upon and spread the web and bring its edges to a predetermined position upon entering the machine which is to operate upon it.

A further object of the invention is to provide means for automatically arresting the rotation of the roll when the web has received an excessive lateral motion on either side, so as to present the unroughened or smooth portion of the roll to the web, thereby permitting the web to slide upon this portion of the now stationary roll inwardly or back toward the center as it is drawn thereover during its continued travel.

A still further object of the invention is to provide simple and effective means whereby the device may be readily attached to any machine with which it is to operate.

The invention further consists in the provision of means whereby the roll mechanism may be adjusted vertically; and also whereby the angularity of the roll may be readily adjusted.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1— is a front view illustrating a traveling web of material upon the opposite

edges of which my improved stretching and guiding devices are shown as operating.

Fig. 2— is a side elevation showing a portion of my improved stretching and guiding roll, a portion of which is shown as provided with a roughened surface.

Fig. 3— is a sectional end view on line 3—3 of Fig. 2 illustrating the construction of the roll as made in halves secured together by screws, to one of which halves is secured a sheet of material with a roughened surface.

Fig. 4— is a view showing the roll as set on its operating angle to illustrate the spreading offset of its action upon the web while passing this roughened surface.

Fig. 5— is an enlarged view showing the edge of a sheet of material such as tin or the like as provided with sharp edged protuberances, which sheet is in some cases attached to a portion of the face of the roll.

Fig. 6— is an end view of the roll and the guide bars in section showing the web of material as guided around the roll to engage a considerable portion of this surface.

Fig. 7— is the same as Fig. 6 but illustrating the feeler fingers as having engaged the web and arresting the rotation of the roll in position to bring the smooth portion of its surface in contact with the web.

Fig. 8— is a perspective view illustrating the general shape of the guide bar, on one end of which is supported the fixed set of feeler fingers.

Fig. 9— is a sectional view showing the rotatable finger carrying feeler wheel as connected to the driving gear.

Fig. 10— is a plan view of the feeler wheel showing a plurality of sets of fingers projecting from its periphery.

Fig. 11— is an enlarged view showing one of the feeler fingers as provided with anti-friction rollers on its surface.

Figs. 12 and 13 are end and side views respectively of a modified construction of apparatus in which but one set of revolvable feeler fingers are employed and which set is driven at the same speed as the stretcher roll through miter gears.

Figs. 14 and 15 are end and side views respectively of another modification in which the fixed feeler fingers are located on the upper instead of the lower side of the roll,

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and the revoluble set of fingers are carried on a flanged portion of the roll.

Referring to the drawings, 10 designates rail portions of the frame of a tentering machine to which the web of material 11 is being fed in the direction of the arrow over the guide bar 12. To each of these rails 10 is connected an upright rod 13, on the upper end of which is a bracket 14 held in position on the rod by means of set screws 15 and in this bracket 14 is pivotally mounted at 16 a bearing member 17 in which is held a fixed shaft 18 prevented from rotation by set screws 19.

By this construction it will be seen that the stretch rolls may be readily adjusted in line with the travel of the goods which is desirable for a number of reasons among others being that often the flapping or snapping of the goods due to a quick stretching pull throws a wrinkle into its edge and the stretch roll must be adjusted a distance from the machine rolls to permit this wrinkle to become straightened out before entering the machine and this distance varies with the weight of the goods. In other words, when a length of goods of a certain weight is to be run through the tentering machine the stretch rolls are adjusted vertically relative to the lower guide bar 12 and are worked just far enough away from this bar to permit the straightening out of a wrinkle which may be drawn into the goods. The lighter the goods the closer the stretch roll is run to the bar 12 and the heavier the goods the farther away it may be set.

It will be noted that by this construction, the bearing member 17 may be swung to any angle in its bearing portion of the bracket 14 and retained in that position by the set screws 20. On this shaft 18 is rotatably mounted my improved stretcher roll 21, which roll may be constructed of any suitable material and in any suitable way but is preferably formed of wood or fiber, and in halves as illustrated in Fig. 3. I preferably cover one of these halves with a sheet of material 22 having a roughened surface, and fasten the edges 23 of this covering sheet by turning them inwardly between the two halves of the roll and then fasten these halves together by the screws 24, leaving the roll free to turn on the shaft 18, but the roll may be made in one piece and the roughened surface might be a part of the roll itself if desired.

In some instances this covering sheet may be constructed of tin, brass or other thin sheet metal with sharp protuberances raised thereon by punching holes through outwardly from the inside thereof, but I do not wish to be restricted to this particular form of roughened surface as sand paper, small pins or any other suitable form of roughened surface may be employed.

A small beveled pinion 25 is attached to one end of this roll, which pinion engages a gear 26 which is rotatably mounted on the upright pin 27 connected to the bearing 28 and this gear is connected to the hub 29 on the feeler wheel 30 to rotate said wheel in time with the roll, but at a speed one-third as fast. I therefore have provided three sets of fingers 31 on this feeler wheel so that one set will always be in position to cooperate with the single set of fixed fingers 32 at each revolution of the roll, to grip the margin of the web should it be drawn too far to one side, to arrest the rotation of the roll. This set of fixed feeler fingers 32 is attached to the arm 33, which latter is supported on the looped end 34 of the guide bar 35, see Fig. 8. The upper end 36 of this guide bar is fixed in the bearing 37 and its upper arm extends longitudinally along the upper face of the roll, the bar is then looped around its end as at 38 and its lower arm returns along the lower face of the roll as best illustrated in Figs. 6 and 7, whereby the web may be passed under both of these arms to guide it around a considerable portion of the surface of the roll to provide an extended area of contact of the web with the surface of the roll.

The opposite end 34 of this bar provides a return loop on which the bracket for the fixed fingers 32 is supported as best illustrated in Fig. 8.

By my improved construction of stretching and guiding devices, it will be noted that the traveling web is conducted over the face of the single roll, which roll is rotated by contact therewith. The axis of each roll is inclined with the travel of the web, whereby the rotating surface of the roll has a stretching effect to move the margin of the web outwardly as best illustrated in Fig. 4. The action of the protuberances on the face of the roll is to spread the web when the roll is set at an angle to the axis of the roll, a distance equal to a as illustrated in said figure. It will be seen from this that the greater the angle of the roll, the greater will be its pulling and stretching action. If the edge of the web should be drawn outwardly beyond a predetermined line it passes in front of the fixed fingers 32 and when the stretching roll rotates into the position illustrated in Fig. 7, to bring its plane or smooth portion toward the web, at this moment the fingers 31 of the feeler wheel, cooperating with the fixed fingers 31, engage the web in the manner illustrated in Fig. 7, and arrest its rotation, and as this wheel is connected to the roll, the latter is also stopped. The web continues to travel and is now caused to slide over the smooth surface of the inclined roll, which action at once causes the edges of the fabric to contract or move inwardly and be withdrawn from engagement with the feeler fin-

gers, thereby releasing the wheel which again starts to rotate by action of the fabric sliding over the roll, which action continues until the margin of the web is again drawn over to one side and in front of the feeler fingers when the arresting operation is again repeated.

It will be noted in Fig. 9 that the fixed feeler fingers are of a length sufficient to extend into grooves 37 in the feeler wheel, which is to positively prevent the web from catching over the ends thereof.

Then again in some cases as illustrated in Fig. 11 small rolls 38 are mounted on the fingers so as to reduce the frictional resistance as the web is being drawn thereover while the rotation of the stretcher roll is arrested.

In some instances instead of running the feeler wheel slower than the roll 21 as above described, I provide a set of miter gears 39, one connected to the roll 42 and the other to the sleeve 40, thereby driving this sleeve 40 with its single set of pins 41, at the same speed as that of the roll. In other cases, I provide a flange 43 with feeler fingers 45 arranged to work in conjunction with the fixed fingers on the member 47 which is supported on the web 48 and in this case I have placed this support 47 above the roll rather than below as illustrated in the preferred form.

I have shown three ways of operating the feeler fingers in time with the roll, but I do not wish to be restricted to any of these constructions, as any suitable means may be provided for moving a set of feeler fingers into position to engage the margin of the web when moved in their path of travel to stop the roll in a predetermined position.

I have described and illustrated one embodiment of my invention with two modifications thereof, but I desire it to be understood that I do not limit myself to any of the exact constructions shown and described as the details of the same may be changed and rearranged without departing from the spirit of my invention, the scope of which is defined by the appended claims.

I claim:

1. A web stretching and guiding device comprising a roll for engaging each edge of the web to be fed, means whereby each roll may have its axis set on an angle to the travel of the web, a longitudinally disposed section on the surface of each roll being roughened and a similarly disposed section being smooth.

2. A web stretching and guiding device comprising a single roll for engaging each edge of the web to be fed, means whereby each roll may have its axis set on an angle to the edge of the web and alternate rough and smooth longitudinally disposed sections on the surface of each roll.

3. A web stretching and guiding device comprising a roll for engaging each edge of the web to be fed, means whereby each roll may have its axis inclined in the direction of the travel of the web, and having alternate rough and smooth longitudinally disposed sections on the surface of said engaging roll, and means controlled by the action of the web for arresting the spreading action of said roll upon the web.

4. A web stretching and guiding device comprising a roll for engaging each edge of the web to be fed, means whereby each roll may have its axis inclined in the direction of the travel of the web, the surface of the roll being provided with alternate roughened and smooth sections, and means for guiding the web around a portion of the surface of the roll.

5. A web stretching and guiding device comprising a single roll for engaging each edge of the web to be fed, means for setting the axis of each roll on an incline in the direction of the travel of the web, the surface of the roll being provided with a smooth section and a section not smooth both extending longitudinally of the roll, means for guiding the web around a portion of the surface of the roll, and means for automatically arresting the rotation of the roll to bring its smooth side toward the web when the web has been drawn to one side beyond a predetermined point.

6. A web stretching and guiding device comprising a rotatable roll adapted to engage each edge of the web to be fed, a portion of the surface of each roll being smooth and a portion not smooth, means for guiding the web over the surface of the running roll, and means for arresting the roll to bring its smooth side toward the web when it has been drawn an excessive distance to one side.

7. A web stretching and guiding device comprising a roll mounted to be rotated by contact with each edge of the traveling web, means whereby the axis of each roll may be inclined in the direction of travel of the web, a portion of the surface of the roll being smooth, and a portion not smooth, means for guiding the web around a portion of the surface of the roll and a feeler member driven in time with said roll for arresting the roll to bring its smooth side toward the web when the web has been drawn to one side beyond a predetermined point.

8. A web stretching and guiding device comprising a roll mounted to be rotated in contact with each edge of the traveling web, means whereby the axis of said roll may be inclined in the direction of travel of the web, a portion of the surface of the roll being smooth and a portion not smooth, means for guiding the web around a portion of the surface of the roll, and a

rotatable feeler member positively driven by and in time with said roll for arresting the roll to bring its smooth side toward the web when the web has been driven to one side beyond a predetermined point.

9. A web stretching device comprising a driver roll adapted to engage each edge of the web to be guided, means for guiding the web around a portion of the surface of the roll, alternate rough and smooth longitudinal sections on said roll, and adjustable means for setting the axis of said roll on an angle to the travel of the web.

10. A web stretching device comprising a driver roll adapted to engage each edge of the web to be guided, means for guiding the web around a portion of the surface of the roll, a portion of said roll being roughened, adjustable means for setting the axis of said roll on an angle to the travel of the web, and means for automatically arresting the rotation of said roll in position to present its smooth side to the web when the web is drawn too far to one side.

11. A web stretching and guiding device comprising a roll adapted to be driven by contact with each edge of a traveling web, a portion of said roll being smooth, readily adjustable means for setting said roll at an angle to the travel of said web, means for guiding the web to engage a considerable portion of the surface of said roll, and rotatable means positively driven by the rotation of the roll for arresting the latter when the web is drawn too far to one side.

12. A web stretching device comprising a roll adapted to be driven by contact with each edge of a traveling web, a portion of said roll being smooth, readily adjustable means for setting said roll at an angle to the travel of said web, means for guiding the web to engage a considerable portion of the surface of said roll, and means for arresting the roll at a predetermined point in its rotation by an excessive lateral movement of the web to bring its smooth side toward the web.

13. A web stretching and guiding device comprising a roll adapted to be driven by contact with each edge of a traveling web, a portion of said roll being smooth, readily adjustable means for setting said roll at an angle to the travel of said web, means for guiding the web to engage a considerable portion of the surface of said roll, and a rotatable feeler positively driven in time with said roll for automatically arresting the rotation of the roll so as to bring its smooth side to the web when the latter is drawn too far to one side and to release the roll when the web has returned.

14. A web stretcher comprising a roll hav-

ing a portion of its surface roughened, means for setting said roll at an angle to the travel of the web, a rotatable feeler having a plurality of fingers, a plurality of fixed fingers cooperating with said rotatable fingers, and means whereby the inserting of the web margin between said cooperating fingers arrests the rotation of said roll.

15. A web stretcher comprising a roll having a portion of its surface roughened, means for setting said roll at an angle to the travel of the web, a rotatable feeler having a plurality of fingers, a plurality of fixed fingers cooperating with said rotatable fingers, means whereby the inserting of the web margin between said cooperating fingers arrests the rotation of said roll, and means whereby said fingers are provided with anti-friction surfaces.

16. A web stretcher comprising a roll having alternate rough and smooth longitudinally disposed portions on the working surface of said roll, and adjustable means whereby the axis of said roll may be readily set at any desired angle to the travel of the web.

17. A web stretcher comprising a roll to engage each of the opposite edges of the goods, each roll having a working surface roughened on one side and smooth on its opposite side, and means whereby said roll may be readily adjusted in line with the travel of the goods engaged by it.

18. A web stretcher comprising a roll to engage each of the opposite edges of the goods, each roll having a working surface roughened on one side and smooth on its opposite side, and means whereby the angularity of the axis of each roll may be adjusted.

19. A web stretching and guiding device comprising two single rolls one arranged on each side of the web to engage its opposite edges, each of said rolls having a portion only of its working surface smooth, said rolls being set on an angle to each other whereby they will pull in opposite directions upon the web, and means whereby an excessive side motion of the web margin on one roll will cause the same to stop with its smooth surface to the web and so permit the opposite roll to pull the web back to normal, said means being adapted to start the stopped roll when the web is centralized.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN T. BOLTON.

Witnesses:

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THOS. FORSYTH.