Aug. 22, 1939. P. A. SPERRY 2,170,578

GUIDER

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Fig. 1.

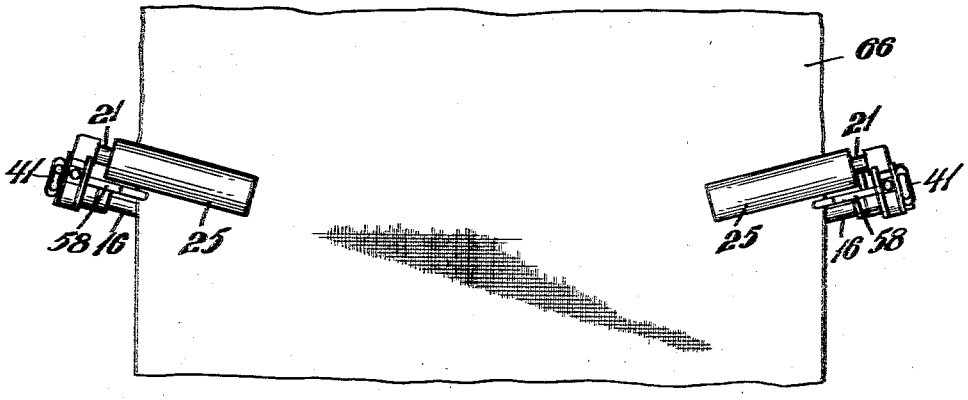
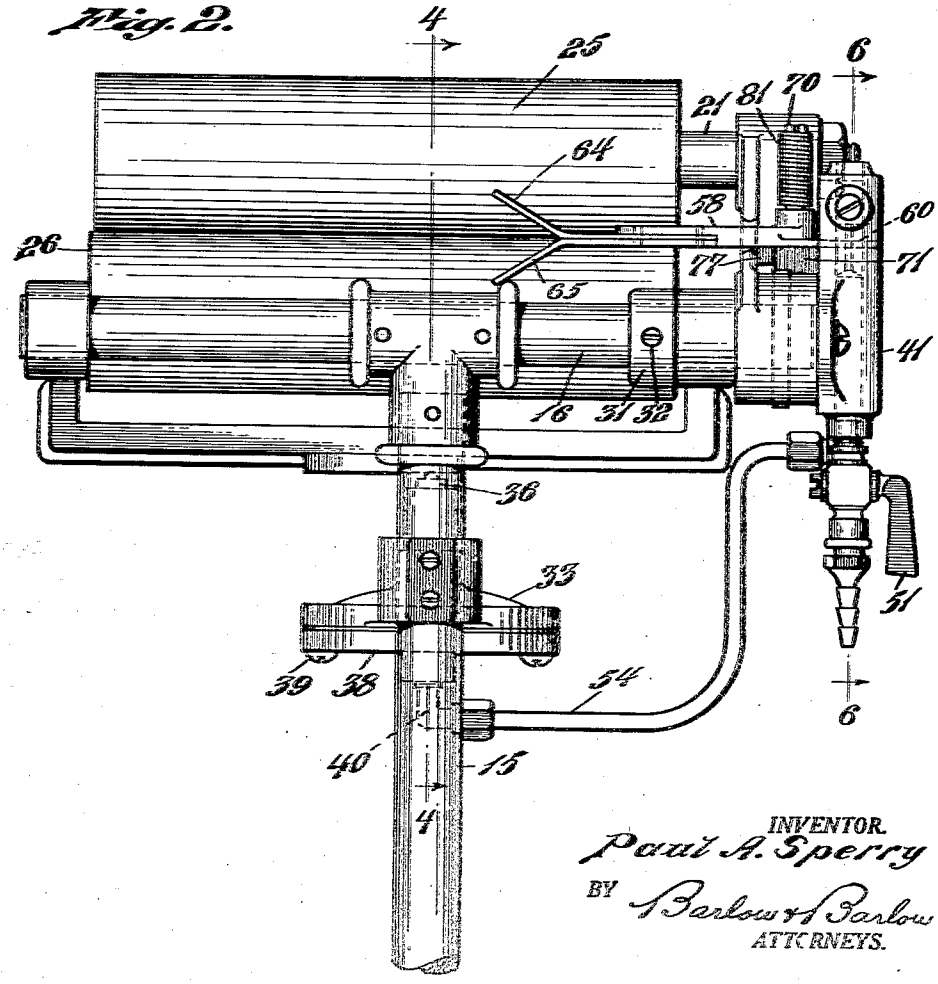


Fig. 2.



INVENTOR.
Paul A. Sperry
BY Barlow & Barlow
ATTORNEYS.

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Fig. 3.

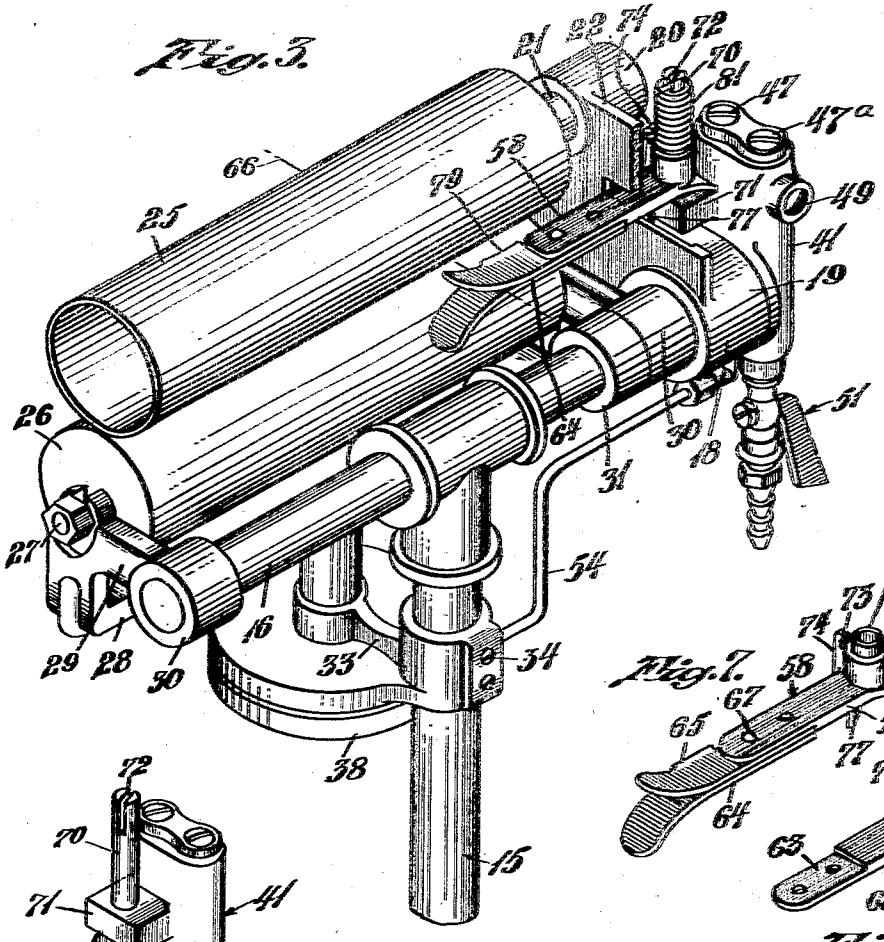
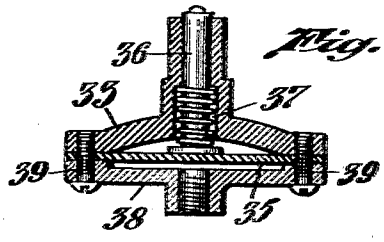


Fig. 7.

Fig. 8.

Fig. 5.

Fig. 11.



INVENTOR.
Paul A. Sperry
BY Barlow & Barlow
ATTORNEYS.

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Fig. 4.

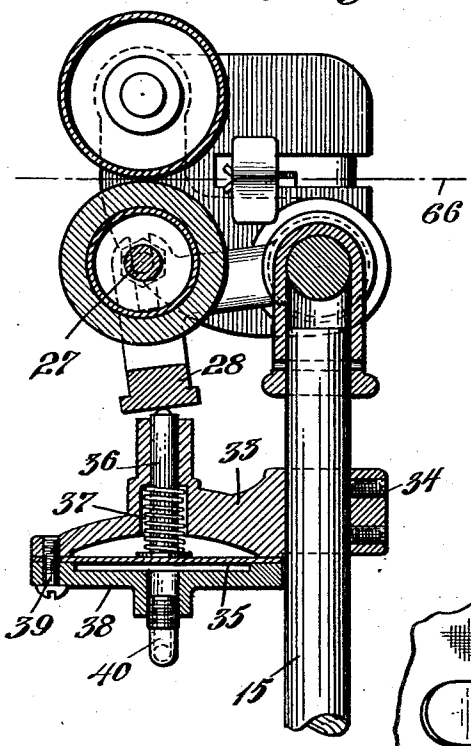


Fig. 6.

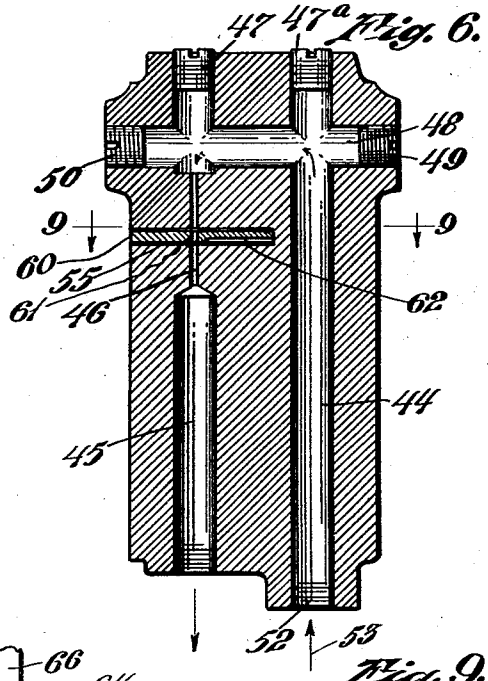
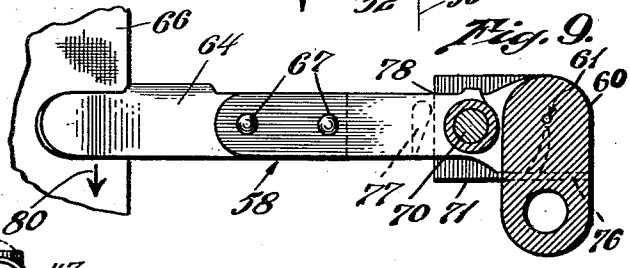


Fig. 9.



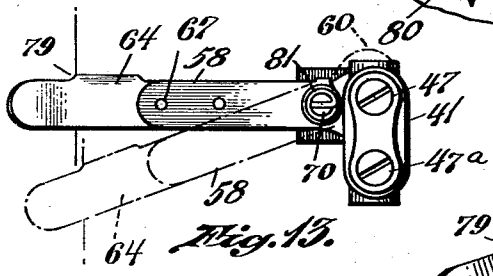


Fig. 13.

Fig. 10.

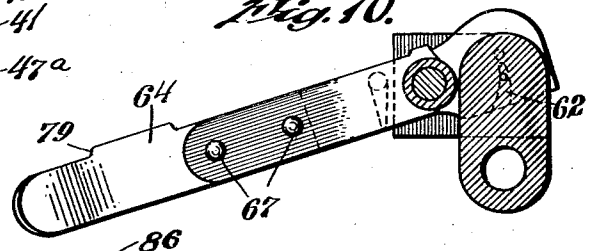
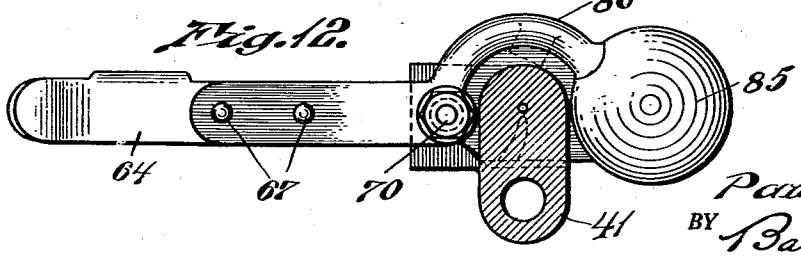


Fig. 12.



INVENTOR.
Paul A. Sperry
BY Barlow & Barlow
ATTORNEYS.

Patented Aug. 22, 1939 2,170,578

UNITED STATES PATENT OFFICE

2,170,578

GUIDER

Paul A. Sperry, New Haven, Conn.

Application July 2, 1936, Serial No. 88,585

5 Claims. (Cl. 26—65)

This invention relates to a guider, more particularly adapted for expanding and guiding webs of cloth or the like during their travel in certain textile finishing operations; and this invention has for one of its objects the provision of an arrangement whereby the desired operations are performed without folds, puckers or pleats occurring along the edge of the cloth.

Another object of the invention is the provision of a very sensitive control mechanism which will be actuated by movement of the cloth with a very light pressure thereon.

Another object of the invention is the provision of a feeler member for the guider in which the normal travel of the cloth plays an important part in the actuation or movement of the feeler member.

Another object of the invention is the simplification of the working parts of the apparatus that the same may be more sensitive and quickly actuated with less liability of getting out of order or requiring repair.

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:

Fig. 1 shows a fragmental portion of a web of cloth with my guiders arranged to nip the opposite marginal edge portions thereof;

Fig. 2 is an elevational view of the guider;

Fig. 3 is a perspective view of the guider;

Fig. 4 is a section on substantially line 4—4 of Fig. 2;

Fig. 5 is a perspective view of the valve housing assembly and the pin upon which the feeler member is mounted;

Fig. 6 is a sectional view on substantially the line 6—6 of Fig. 2;

Fig. 7 is a perspective view of the feeler member;

Fig. 8 is a perspective view of a portion of the feeler member looking at the opposite side thereof;

Fig. 9 is a sectional view on substantially line 9—9 of Fig. 6, showing the feeler member in a relation to the selvage of the cloth and the control of the conduit open or in a position to permit the fluid actuating medium to pass along the conduit to the diaphragm;

Fig. 10 is a view similar to Fig. 9 showing the feeler member in a different position, and the communicating passage closed;

Fig. 11 is a sectional view of the diaphragm for controlling the movable roll;

Fig. 12 is a sectional view showing a feeler member of a somewhat modified structure from that shown in the remainder of the figures;

Fig. 13 is a fragmental plan view showing the feeler member in full lines in its at rest position and in dotted lines the position to which it may be moved by the work and showing also the relative positions of its engaging edge.

In the use of guiders for webs of cloth or the like, it is usual to have some sort of a feeler member extending perpendicularly to the plane of the cloth so that as the selvage edge of the cloth moves laterally out of the line of desired travel it will engage this feeler member and move it with the edge of the cloth and in turn the movement of the feeler finger is arranged to control the movement of the rolls which nip the edge of the cloth as the same passes between them. With sheer fabrics and sometimes with heavier fabrics, as the cloth moves against the feeler member, the edge of the cloth will be caused to be folded back upon itself to cause a wrinkle or crease which is highly undesirable, as irregularities or an uneven pulling of the cloth as it enters a tentering machine or other uses to which the same is to be put may result. Also, in compressed air operated guiders, there is apt to be a sluggish movement of the control parts, and in order to obviate these undesirable results, I have arranged a feeler member which swings generally in the plane of the cloth and with the pull of the cloth and at the same time moves away from the edge of the cloth so that the same requires a very light pressure of the cloth on it and by moving away from the edge of the cloth as the cloth moves along the feeler it will not cause the cloth to wrinkle or fold over at the edge and by reason of the lightness of the parts a very nice, quick acting, controlled guider is provided which, with reference to guiders available on the market, is an improvement from many standpoints; and the following is a more detailed description of the present embodiment of this invention illustrating the preferred means by which these advantageous results may be accomplished:

With reference to the drawings, 15 designates the leg portion of a generally T-shaped bracket having arms 16 extending at right angles thereto and in the arrangement of the invention as shown the leg is vertical and the arms in a horizontal position, although it will be understood that this bracket may be mounted in various positions depending upon the direction of the travel of the cloth. The bracket also includes a casting designated generally 18 having a boss 19 rigidly fixed

on one of the arms 16 and extending generally at right angles to the arm. A boss 20 fixedly mounts a shaft 21, while a plate portion 22 of this casting suitably shields the control mechanism which is secured thereto.

Upon this shaft 21 I rotatably mount in ball bearings or other suitable mounting a roll 25, usually a polished steel roll with corrosive resisting surface which provides the fixedly mounted roll of the device.

A lower roll 26 is usually formed of rubber and is rotatably mounted upon a shaft 27 parallel to the shaft 21. This shaft 27 is mounted in a U-shaped yoke 28 extending beneath it, or on the distal side from the roll 25. Arms 29 extend from the ends of the yoke terminating in bosses 30 which receive the arms 16 and hingedly mount the yoke 28 therefrom. A collar 31 having a set screw 32 holds one of the bosses 30 up against the boss 19 of the bracket so as to prevent movement of the bracket and its shaft 27 lengthwise and yet permit a hinging action of the yoke 28 carrying the roll 26 about the arms of the bracket as a center for movement toward and from the relatively fixed roll 25.

A diaphragm housing casing 33 is adjustably mounted upon the upright 15 by means of set screws 34 and contains a diaphragm 35 mounted between the casting 33 and the removable bottom wall 38 held in place by screws 39. A plunger 36 is supported by the diaphragm and is in engagement with the yoke 28. A spring 37 acts between the casing 33 and the diaphragm to better control the action of the diaphragm in its movement. A conduit 40 provides access for fluid pressure, usually compressed air, to be applied to the diaphragm to move the same upwardly and cause the rolls to move into nipping engagement with the work. It will be readily apparent, however, that a vacuum may be applied as well as fluid pressure for the control of such parts by arranging the vacuum the opposite side of the diaphragm.

A control unit designated generally 41 is shown in perspective in Fig. 5 and consists of a base portion 42 which has openings 43 therein for securing this unit onto the boss 19 of the bracket. This unit is formed, as more particularly shown in Fig. 6, from which it will be apparent that there is a bore 44 extending longitudinally through the body of the unit; and a bore 45 parallel thereto with a restricted portion 46 also extending through the unit. These bores are both closed as at 47 and 47*a* at one end. A connecting bore 48 joins these two bores 45 and 44 and is closed at its opposite ends 49 and 50. A valve 51 is secured to the end 52 of the bore 44 and controls the inlet of compressed air which may travel inwardly as shown by the arrow 53 through the bore 44 across the bore 48 and then downwardly along the bore 45 and its restricted portion 46 whence it is connected by a conduit 54 to the elbow 40 at the diaphragm casing.

In order to control the passage of compressed air as indicated, this control unit is provided with a slot as at 55 extending into the restricted portion 46 of the conduit 45 in which a gate or blade of a feeler member is inserted for control of this passage. This feeler member is designated generally 58 and consists of a casting of somewhat irregular shape, perhaps best shown in the perspective views of Figs. 7 and 8. There is an elongated portion 59 terminating at one end in a blade 60 which is provided with an opening 61 and a recess 62 in one surface which extends nearly to the opening 61 but not quite thereto. At the opposite end, this member is reduced as to provide a recess 63 in which there are mounted a pair of arms 64 and 65 which are flared outwardly at one end forming a fork for receiving the work or web of cloth 66. Rivets 67 extend through these arms 64 and 65 and join them securely to the portion 59 of the feeler member. Between the ends of this feeler member there is a boss 68 having an opening 69 therethrough for receiving the mounting pin 70 standing upwardly from the shelf 71 integral with the control unit 41. This pin is slotted as at its upper end as at 72 and a spring encircles this pin engaging the slot 72 and also extends into a notch 73 in the upstanding portion 74 adjacent the boss 68 of the feeler member tending to move the feeler member toward the rolls. The edge 75 of the blade 60 engages the edge 76 of the slot 55 to limit the movement of the feeler member toward the rolls, while a stop 77 provided on the feeler member engages the edge of the shelf 71 and limits the movement of the feeler member in the other direction away from the rolls.

When edge 75 is in engagement with the edge 76 of the slot, as seen in Fig. 9, the feeler member will be extending in a direction generally parallel to the axes of the roll and will have its engaging edge 79 which is between the bifurcated arms, as near the center of the desired path of travel of the cloth as may be had, and in this position the opening 61 in the blade 60 will be in alignment with the restricted portion 46 of the bore 45 so that compressed air may be passed through the conduit forcing the diaphragm upwardly and the rolls toward each other to nip the web. Should now the web or cloth 66 start to move too far over towards the guider its selvage will run into engagement with the feeler member 58, and with the cloth traveling in the direction of the arrow 80 will cause the feeler member to move against the action of the spring 81, which being in the direction of the pull of the cloth, causes the feeler member to move very easily, as the general movement of the cloth assists the movement of the feeler member, thus moving the blade control so that the opening 61 is out of registry with the restricted portion 66 and the recess 62 is moved into line with the hole 46, thus the blade cuts off the air pressure tending to actuate the diaphragm and the diaphragm is permitted to move downwardly by reason of its own weight assisted by the action of the spring 37 forcing the air back through the conduit 45 into the restricted portion 46 thence into the grooves 62 and out free to the atmospheric pressure through the slot 55.

It will be apparent that the movement of the feeler finger pivoting about the pin 70 as a center moves away from the edge of the cloth, as more clearly shown in Fig. 13, in dotted lines, so that there will be no tendency for the movement of the cloth to double over, crease or pucker, which is apt to occur in similar devices where such movement of the feeler finger does not occur. This feeler finger is so pivoted that its swing is in substantially the plane of the cloth, as may also be readily apparent from Fig. 13.

In some cases, instead of having a spring tending to move the feeler finger in one direction, a weight may be used to cause movement as shown in the modification in Fig. 12. Here the pivot 70 is the same as heretofore but instead of having a spring actuate the same, a ball of some con-

siderable mass, designated **85**, is cast on an arm **86** for swinging the feeler member about this pin **70** as a center.

The foregoing description is directed solely towards the construction illustrated, but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

I claim:

1. In a stretching and guiding apparatus, a pair of rolls between which a web of material is passed, a feeler member having a part formed with a recess and a pair of arms set into the recess and secured to such portion at its end, bifurcated arms for engaging the edge of the web between the arms of said bifurcation.

2. A stretching and guiding apparatus having a pair of guide rolls mounted on axes which are relatively movable toward and from each other and between which rolls a web of material is passed, a pivot at right angles to said axes and the plane of the web, a feeler member mounted on said pivot and having a portion extending in the plane of said web and located adjacent to one edge of the web to be engaged thereby to swing when engaged by the web in the direction of the pull of said web, means responsive to the movement of said feeler member and independent of the feeler for controlling the movement of the rolls toward each other, and a spring to return said feeler member to starting position when the web disengages the same.

3. In a stretching and guiding apparatus, a roll on a relatively fixed axis, a roll on a relatively movable axis, a pivot having its axis at right angles to said roll axes, a feeler for engaging the work mounted on said pivot, means responsive to the movement of said feeler and independent of the feeler for controlling the movable axis to move it toward the fixed axis, said feeler being mounted to have its work-engaging portion swing in generally the plane of the work engaged thereby and away from the desired path of travel of the work as it is moved by the work.

4. In a stretching and guiding apparatus, a relatively fixed roll, a relatively movable roll, a diaphragm, means responsive to the movement of said diaphragm for moving the movable roll, a conduit leading to said diaphragm, a slot intersecting said conduit, a gate movable into said slot and transversely of said conduit for controlling said conduit, and means for moving said gate.

5. In a stretching and guiding apparatus, a relatively fixed roll, a relatively movable roll, a diaphragm, means responsive to the movement of said diaphragm for moving the movable roll, a conduit leading to said diaphragm, a slot intersecting said conduit, a gate movable into said slot and transversely of said conduit having an opening therein movable into registry with said conduit or out of registry therewith for controlling said conduit, and means for moving said gate.

PAUL A. SPERRY.