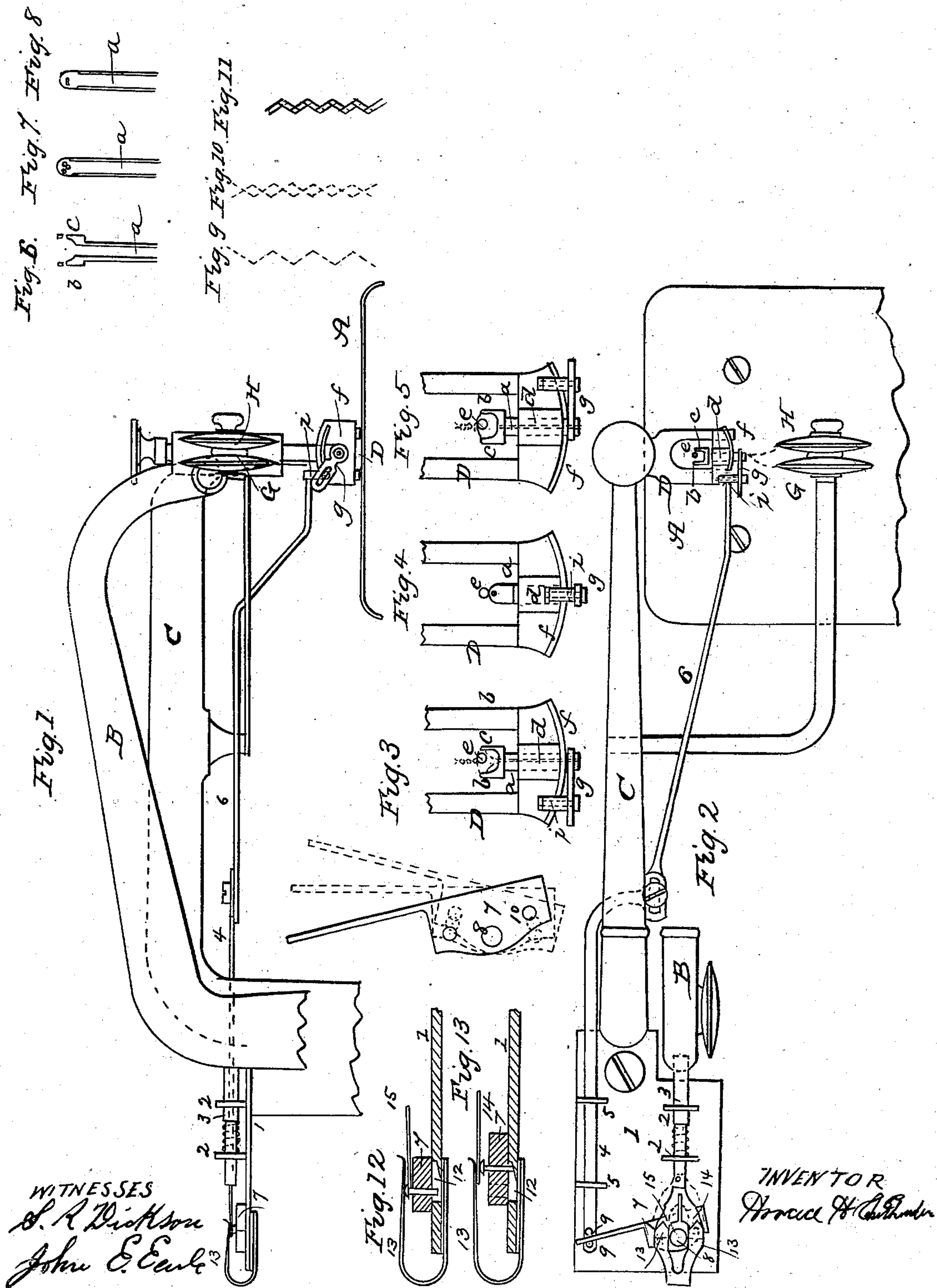


H. H. CHITTENDEN.

Braiding Attachment for Sewing Machines.

No. 43,289.

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UNITED STATES PATENT OFFICE.

HORACE H. CHITTENDEN, OF NEW HAVEN, CONNECTICUT.

IMPROVEMENT IN BRAIDING ATTACHMENTS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **43,289**, dated June 28, 1864.

To all whom it may concern:

Be it known that I, HORACE H. CHITTENDEN, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Braiding Attachment for Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, when taken in connection with the accompanying drawings and the letters of reference marked thereon, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a partial side view of a portion of a sewing-machine with my improved attachment; Fig. 2, a plan or top view of the same; and in Figs. 3 to 14, inclusive, detached views to more fully illustrate my invention.

Same letters and characters indicate like parts.

My invention relates to that class of work done upon sewing-machines called "braiding;" and it consists, first, in a rocking braid-guide or fingers whereby the braid or cord being used is laid upon the fabric to which it is to be stitched in the most perfect manner; second, the apparatus for operating the said rocking braid-guide or fingers.

To enable others skilled in the art to make and use my improvements, I will proceed to describe the construction of the same, as also the operation.

I represent my improvements as attached to a Wheeler & Wilson sewing-machine; but it is equally applicable to any other sewing-machine. I show in my drawings so much of the said sewing-machine as will enable me fully to illustrate my invention.

A is the cloth-plate; B, the needle-arm; C, the presser-arm, and D the presser-foot.

That I may the better illustrate my invention, I show the braid-guide and its fingers enlarged in Figs. 3 to 8, inclusive.

a is the braid-guide. (Shown in section, Fig. 6.) It consists of a hollow spindle, its inner end divided to form two fingers, *b* and *c*. On the presser-foot D, I construct a bearing, *d*, in which I place the spindle or tail of the braid-guide *a*. In this said bearing it must lie perfectly free to be moved, as hereinafter described. *e* is the needle-hole in the presser-

foot. Through the spindle of the guide *a* pass the ends of two pieces of braid or cord. (Represented in Figs. 3 and 5 in red and blue.) The end of one (the blue) passes through an eye in one of the fingers, *b*, and that of the other (the red) through the eye of the other finger, *c*, or the two cords may be carried outside the spindle directly to the eyes; but I prefer to run them through the spindle, thence down through the needle-hole *e* onto the fabric on which the cord is to be stitched. While lying in the position as denoted in Fig. 3, the needle is caused to go down between the two cords and form a stitch, the needle rises, the guide and fingers are turned over to the position shown in Fig. 5, crossing the cords—that is, carrying the cords to opposite sides—the needle again descends between the two cords, while in the last-named position, Fig. 5, forms a stitch over the crossed cords, the needle again ascends, the fingers are returned to the position in Fig. 3, and so on, laying the cord in two zigzag lines, as shown in Fig. 10. Were the fingers not drawn back or away as they rotate from one side to the other, as shown in Figs. 3 to 5, they would catch or interfere with the thread of the machine. Therefore it is necessary that the fingers *b* and *c* should be drawn away in order to pass the thread which runs from the needle-eye through the presser-foot to form the stitch. This movement I accomplish in the following manner: I construct on the presser-foot a segmental guide, *f*, turned up perpendicular to the axis of the spindle. In this said guide I make a slot. (See Fig. 1.) I attach to the axis of the spindle a slotted lever, *g*. I construct a yoke, *i*, which sets on over the guide *f*, and to it the lever *g* is pivoted, the pivot running through the slot in the guide *f*. To turn and return the fingers and spindle, the said yoke *i* must traverse over the segmental guide *f*, as shown in its different positions during such traverse in Figs. 8, 4, and 5, and in its traverse, as it approaches the center, it will force the lever *g* outward, (and through its connection the spindle and fingers,) as seen in Fig. 4, away from and so as to pass the thread, and as it goes on from the center to the position in Fig. 5 it will be carried in again, and in its return traverse the same line as before.

I have described the fingers as carrying one cord or braid each; but a single cord through the eye of one finger only may be used and form a single zigzag line, as seen in Fig. 9; or several cords may be used in each finger by making more eyes, as seen in Fig. 7. For braiding I prefer to make the eye elongated, as seen in Fig. 8, as by doing so I am enabled to lay the braid more perfectly than with a round eye. The elongated eye will carry cord as well as the round eye.

The great advantage in laying braid by the rocking fingers is that they fold the braid, as seen, in a single line, Fig. 11, and consequently make much nicer work than if drawn from side to side without folding.

I place one or more spools, G H, Figs. 1 and 2, in any convenient manner and position from which to draw the cord or braid, and apply any known device for adjusting the tension of the cord or braid.

In operating the fingers to rock from side to side, as described, it is necessary to make two movements of the needle—that is, make two stitches to one full movement of the fingers, or, in other words, one stitch as the fingers rock forward and a second as they return. This may be done by a counter-shaft geared to run one revolution to two, which would probably be the first plan suggested. This would cause no small alteration of the sewing-machine; but my object being to make my invention equally applicable to all sewing-machines, I employ the device hereinafter mentioned, which forms the second part of my invention.

I attach a thin plate of metal, 1, to the rear of the machine in any convenient manner. In the Wheeler & Wilson machine I employ the screw, which secures the presser-arm to the bed-plate for this purpose. On the said plate, in proper guides 2 2, I place a slide, 3, with a coil or other spring applied thereto to hold the said slide against the needle-arm B. (See Fig. 2, where the arm is represented as raised.) When the needle-arm goes down the slide follows, as denoted in red, Fig. 2. I place a second slide, 4, in proper guides, 5 5, on the said plate, which connects by an adjustable rod, 6, with the yoke *i*, through which the spindle and fingers are rocked. On the said plate I hang a lever, 7, on a fulcrum, 8, an arm of which extends to the slide 4 and lies between two pins, 9 9, inserted in said slide 4. I operate the said lever 7 to move the slide 4 back and forth in the following manner: Through the said lever 7 I set two pins, 10 and 11. (See Figs. 12, 13, and 14, enlarged.) The said pins extend down through the lever 7 into slots 12. (See Figs. 12 and 13.) In the forward end of the said slots I form an inclined plane rising toward the front, and as the lever 7 is turned into the position denoted in Fig. 14 in black the pin 10 will ascend the incline in its slot (see Fig. 13) and rise up through the lever. I place a spring, 13 so as to rest upon the upper end of each

of the said pins to force them down, so that when the lever 7 is moved into the position denoted in blue both pins (nothing preventing) could be forced down, as seen in Fig. 12, but continue the movement of the lever to the position denoted in red, Fig. 14, and the pin 11 would be raised, as see pin numbered 10 in Fig. 13. Therefore to operate the lever 7 automatically, I place in the end of the slide 3 two thin spring-dogs, 14 and 15. (See Fig. 2.) As the needle-arm rises, suppose the lever 7 to be in the position denoted in red, Fig. 14, the pin 11 forward, and up as pin numbered 10 in Fig. 13, the dogs will be forced back by the rising needle-arm and the dog 15 will strike the pin 11 and force the lever from the position in red to that in black, as in Figs. 2 and 14. I form a head upon the said pins 10 and 11, (see Figs. 12 and 13,) and the dog strikes under the said head (see Fig. 12) and prevents the pin from dropping until the dog leaves it. The other pin ascends the inclined plane under the other dog, (see Fig. 13,) the elasticity of the dog allowing it to do so. This movement of the lever, through the connections before described, turns the spindle *a* from front to back, the needle-arm descends, the spring acting on the slide 3 forces the dogs back to the position denoted in red, Fig. 2, the pin 11 drops, and when the needle-arm again rises the dog 14 will strike the pin 10, which at this stage is elevated, and return the lever 7 to the position denoted in red, Fig. 14, and so on, each movement of the needle-arm alternately turning the lever, as described, and through connections the spindle and fingers.

If the braiding attachment is not wanted, set the lever in the position denoted in blue, Fig. 14, and allow both pins to drop. Then the dogs will pass over both without moving the lever.

To again set the braiding apparatus in motion, move the said lever 7 to either position denoted in red or black, Fig. 14, and one of the pins will be up to receive the dog in its next advance, and will operate as before.

Having thus fully described my invention, I do not broadly claim carrying cord or braid alternately from one side of the needle of sewing-machines to the other and setting a stitch at each movement in order to form a zigzag line. Neither do I claim as of my invention a double thread-holder operating in such a manner as to cross its two threads alternately to the right and left of the needle. Neither do I claim delivering thread, braids, or cords in the path of and before the needle of a sewing-machine through or by means of a rotary shaft; but

What I do claim as of my invention, and desire to secure by Letters Patent, is—

1. The spindle *a*, with one or more fingers, *b c*, and guide *f*, when the same are made to operate in combination with the needle of sewing-machines and its operative mechanism, substantially as and for the purpose specified.

2. The combination and arrangement described of the spindle *a*, segmental guide *f* and yoke *i* or its equivalent, substantially in the manner and for the purpose herein set forth.

3. The lever 7, pins 10 and 11, and dogs 14 and 15, when the same are combined and arranged to operate together substantially in the manner specified.

4. The lever 7 and slide 4, in combination with the fingers *b c*, substantially in the manner and for the purpose described.

HORACE H. CHITTENDEN.

Witnesses:

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JOHN E. EARL.