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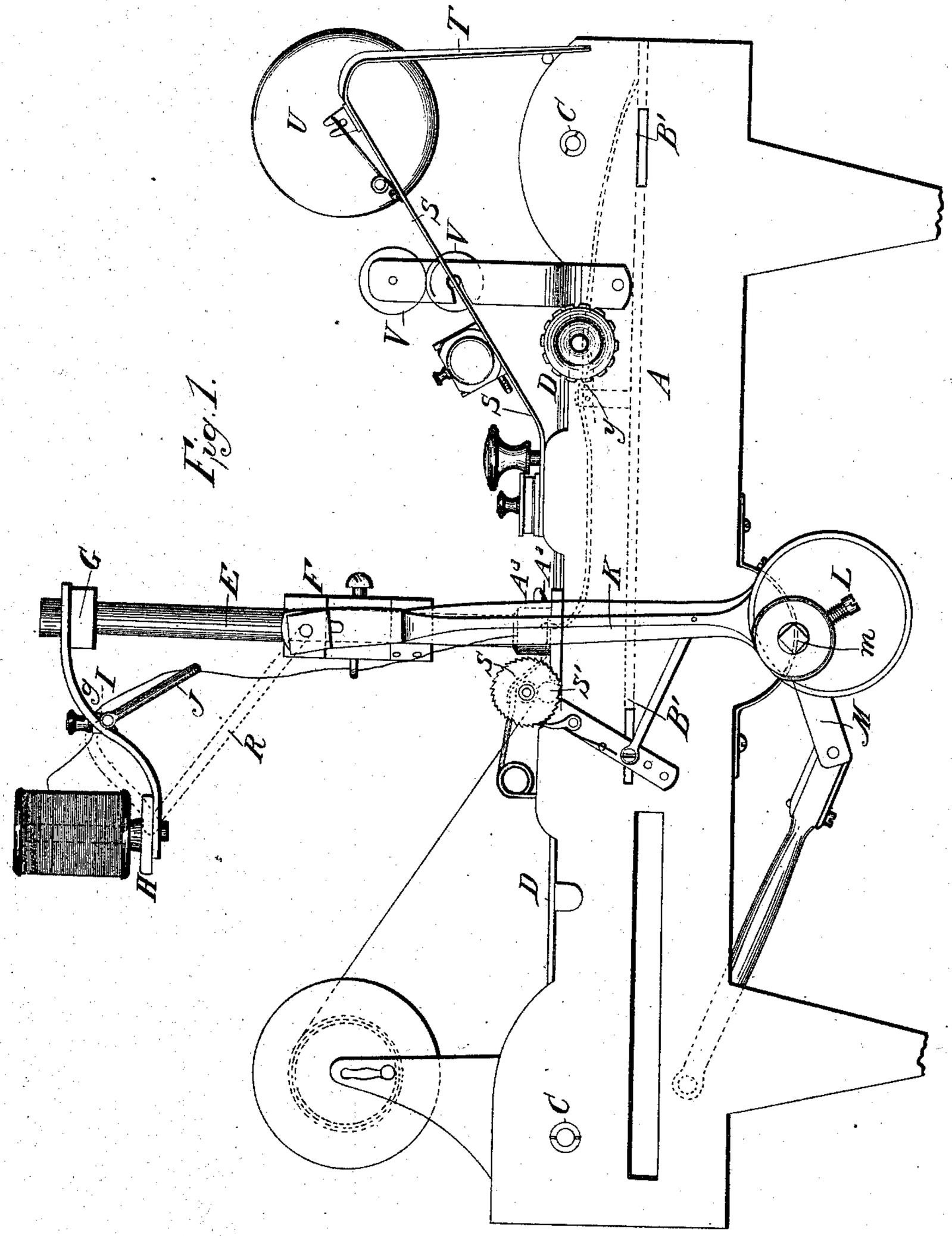
E. D. GIRD.

Sewing Machine for Making Shirt Bosoms.

No. 87,559. Patented March 9, 1869.

Fig. 1.



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Sewing Machine for Making Shirt Bosoms.

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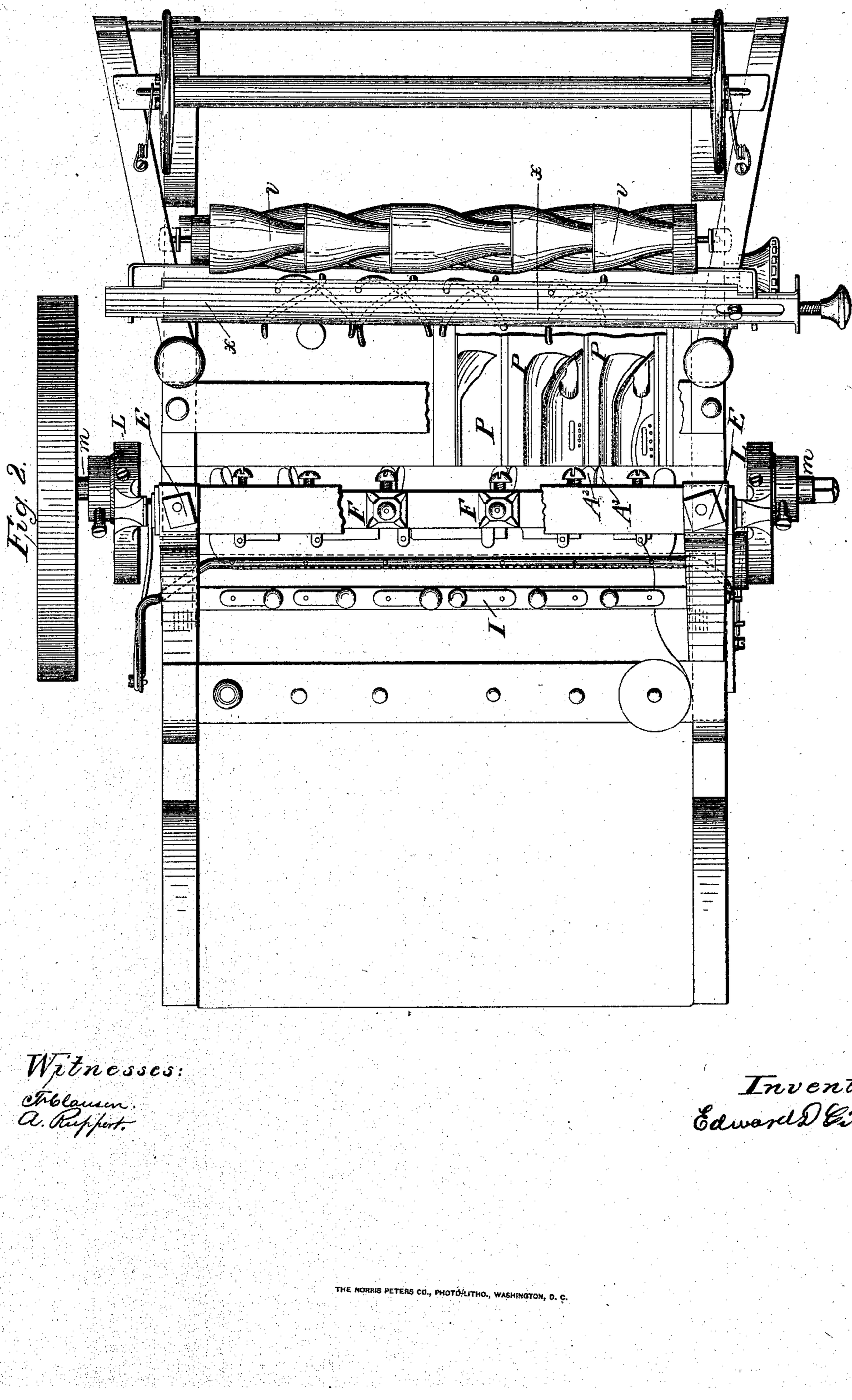

Fig. 2.

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Sewing Machine for Making Shirt Bosoms.

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Fig. 14.

Fig. 13.

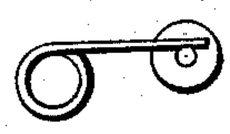


Fig. 11.

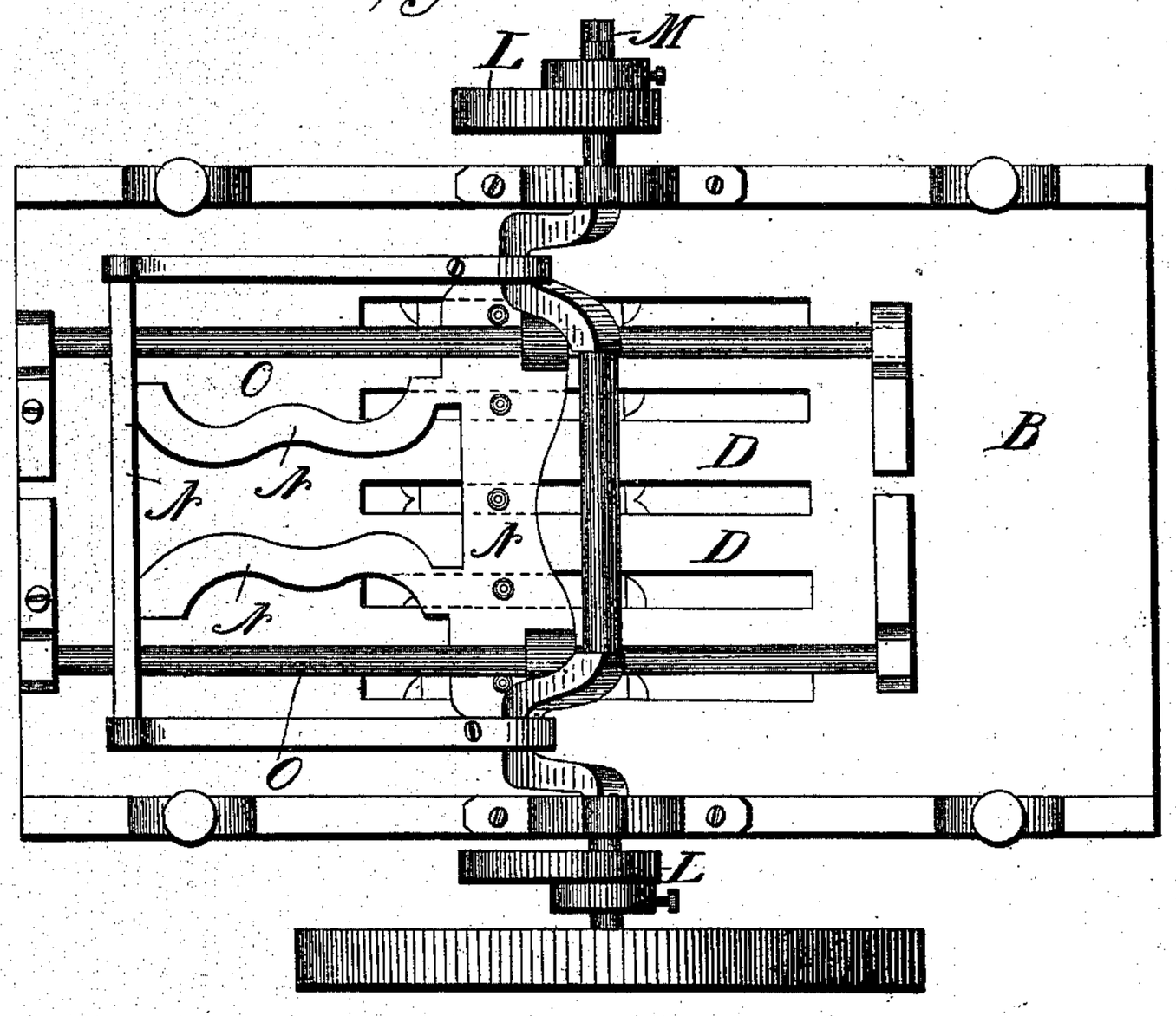
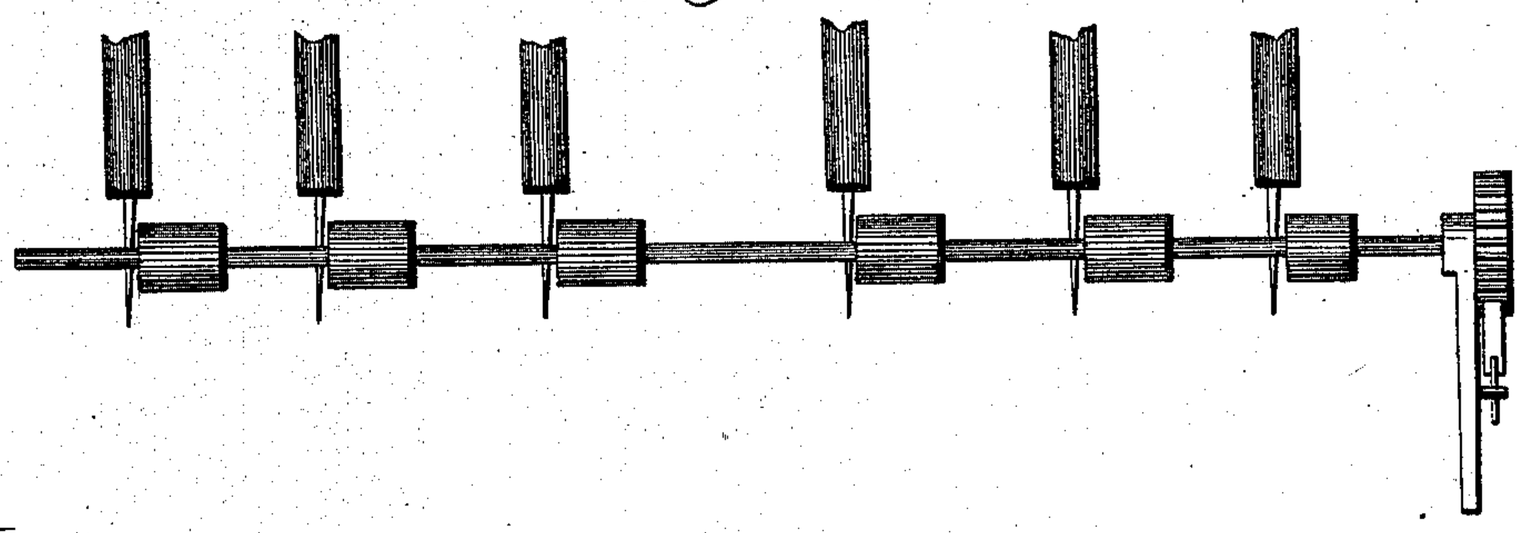


Fig. 12.



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UNITED STATES PATENT OFFICE.

EDWARD D. GIRD, OF CEDAR LAKE, NEW YORK.

IMPROVEMENT IN SEWING-MACHINE FOR MAKING SHIRT-BOSOMS.

Specification forming part of Letters Patent No. **87,559**, dated March 9, 1869.

To all whom it may concern:

Be it known that I, EDWARD D. GIRD, of Cedar Lake, in the county of Herkimer and State of New York, have invented a new and useful Improvement in Machines for Plaiting, Quilting, Hemming, and Making Shirt-Bosoms; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a side elevation of my improved machine. Fig. 2 is a top or plan view. Fig. 3 is a detached view of the hemmer-plate, guide-slots, and spring-bar. Fig. 4 is an end elevation of one of the presser-feet. Fig. 5 is a sectional elevation of the reel-rack and a sectional reel, showing also the device for securing the same to the machine, the tension-spring, an end view of the hemmer-plate and spring-bar. Fig. 6 is an elevation of the sectional reel. Fig. 7 is a top or plan view of the presser-feet and the guide or lifter for plaiting, by which the plait is lifted while sewing, and afterward allowed to fall and cover the seam sewed. Fig. 8 is a top view of the final folder, and Fig. 9 is a side view of the same. Fig. 10 is a top or plan view of the continuous presser-foot for quilting and plain sewing. Fig. 11 is a bottom view of the machine. Fig. 12 is a view of the needle-holders, with roller-feed for quilting. Fig. 13 is an end view of the roller-feed, with spring for pressing the same upon the work while passing through the machine; and Fig. 14 is a top view of the same.

Corresponding letters refer to corresponding parts in the several figures.

This invention relates to a machine for plaiting, quilting, hemming, and making shirt-bosoms; and consists in the construction, combination, and arrangement of its parts, as will be more fully described hereafter.

A in the drawings represents the framework of the machine, to which the bed-plate B is attached. B represents the bed-plate, which is secured to the side frames, A A, by means of a slot formed therein, as shown at B^1 B^1. This bed-plate is secured in position, and the frames are held together by means of the rods C C, upon which the top plate, D, rests.

From the upper edges of the frames A A there rise two posts or guides, E E, as shown in Fig. 1, upon which the cross-head F works, and to which the needle-bar is attached. To the top of these posts or guides, which are held firmly together by means of a lintel, G, are secured two pieces or arms, bent in the proper form, for supporting the spool-rack H, the tension-bar I, and the take-up J.

Motion is imparted to the cross-head, needle-bar, and take-up by means of the pitmen K K, which are operated by eccentrics on each side of the machine, as shown at L L, Figs. 1, 2, and 11, where they are shown as attached to a crank-shaft, M, by means of an adjusting or set screw. This crank-shaft, which moves both the needle-bar and shuttles, has two cranks formed in it, near where it is journaled to the frame, to which are to be connected two pitmen, the opposite ends of which are connected to the shuttle-carriage. The power for giving motion to the machine is to be applied to this shaft by means of a pulley placed thereon for the reception of a belt, or in any other suitable manner.

The shuttle-carriage N runs upon round guides or ways O O, which are parallel with the sides of the frame A, and are secured to the ends thereof by means of suitable boxes, in which they rest. The shuttle-carriers are attached to the carriage in any suitable manner, so as to move with such carriage, they being guided by grooves or slots formed in the bed-plate, as shown at P P, Figs. 2 and 11. When the crank-shaft is rotated, the cranks give a reciprocating motion to the shuttle-carriage, and at the same time the eccentrics on such shaft operate the needle-bar.

The take-up J, Fig. 1, is operated by means of a pitman or lever, R, which is pivoted to the cross-head F. As the cross-head moves in a vertical line the pitman gives motion to a crank formed on the outer end of the take-up, which motion causes said take-up to move through an arc of a circle for a distance sufficient to cause it to take up as much slack in the thread as may be found necessary in operating the machine. This take-up consists of a rod or bar, which is placed in a line parallel with the needle-bar, and is to have as many holes formed in it as there are threads or nee-

dles in the needle-bar, such holes to correspond in their distances from each other with the distance between the needles.

The tension-bar is arranged immediately above the take-up J, and is provided with springs, which are to be operated by thumb-screws, for the purpose of regulating the tension of the threads, such springs and screws corresponding in number with the number of needles in the needle-bar. Thus it will be seen that as the thread passes from the spool to the needles its tension may be regulated to suit any kind of work which the machine is required to perform.

The spool-rack consists of a plate which is secured to the bent arms upon the tops of the posts E E, and which is provided with a number of pins, corresponding with the number of needles. These pins are so arranged that as the spools are placed thereon the thread will be led directly therefrom to the tension-bar, and from thence to the needles.

The feed-motion, as represented at S S′ in Fig. 1, consists of two fluted rollers, placed one above the other, and situated just in the rear of the needles, as clearly shown in the above-named figure. The object of fluting these rollers is to give them a sufficient gripe or hold upon the cloth to insure the proper movement of the same in its passage past the needles, the presser-foot, and through the folders.

The upper roller is held down by means of springs over it at each end thereof. These springs are represented in Fig. 1, and as secured to the upper edges of frame A.

A modification of this feed-motion is shown at Fig. 12 of the drawings, which is intended to be used in quilting and other kinds of plain sewing. This feeder consists of a rod or shaft, having placed upon it at the side of each needle a roller. This shaft, with its rollers, is turned or rotated by means of a connection with the pitman, through a rod connected thereto, which rod acts upon an arm connected to a ratchet-wheel, the wheel being acted upon by means of a dog secured to such arm.

The feed-motion heretofore described being operated in the same manner, it is believed that one description will answer for both. This last-named arrangement of feed-rollers answers the double purpose of presser-foot and a feed-motion, it being held down by a spring at each end.

Having described the parts necessary for sewing, it will be seen that the thread in passing from the spool over the tension-bar and under the spring down through the take-up, and from thence into the eyelet on the back side of the cross-head to the needles, will be properly guided and controlled in its movements, and that if the main shaft is put in motion all of the above-recited parts will be put in motion also, and the cloth will be carried through the machine automatically, and any number of seams will be sewed or stitched corresponding to the number of needles in the needle-bar.

The machine, as above described, being arranged for sewing, I will now show the changes necessary for doing the different kinds of work of which it is capable.

To arrange the machine for plaiting or making shirt-bosoms, it is necessary to place the reel rack or support, as shown in Fig. 1 of the drawings, in the front end of the machine.

The cloth to be plaited is to be wound upon the reel U, Fig. 1, from which one end is to be led to the gathering-rollers V V, and from thence to the folders X, and then, through the final folder, (shown in Figs. 8 and 9,) to the needles under the presser-feet A^2 and between the feed-rollers, by which its movements are regulated.

The reel is prevented from turning too easily by means of tension-springs at each end thereof, as shown in Fig. 1.

The rollers V V consist of a series of truncated cones formed upon each, and having the outer edges of their larger portions slightly rounded, so as to facilitate the folding of the cloth as it passes through them, and they are so arranged with reference to each other that the large portion of the cone upon one roller works within the cavity formed in the smaller portion of the other roller.

This peculiar formation of said rollers contracts the cloth, or partially folds it, preparatory to its entering the folder X, as shown in Figs. 1 and 2. This last-named folder consists of two plates, placed parallel to each other, and having attached to their inner surfaces wires or rods, which are bent and arranged as shown in Fig. 2 of the drawings, the object of which is to nearly complete the folding or plaiting of the cloth which was commenced by the rollers V V. The upper plate of this folder is reduced in width at or near its ends, and is made to rest and move in the notched and upturned ends of the lower plate, as a consequence of which the two plates, with their plaiting-wires, are made adjustable, so that plaits of any desired width can be laid with one plaiter. This plaiter may be used with or without the final folder, B^2, presently to be described, as circumstances require.

For adjusting these plates thumb-screws are provided, as shown clearly in Figs. 1 and 2.

What I have termed the final folder B^2, or the one situated nearest the needles, consists of two parallel strips of metal, having upon their interior surfaces pieces of thin metal secured, as clearly shown in Figs. 8 and 9, they being so bent as to overlap each other, and thus complete the plaiting of the cloth, and press the folds of such plaits into close contact previous to their passing to the presser-feet and to the needles.

The cloth to be placed upon the reel for the purpose of being converted into shirt-bosoms may be in width equal to what is required for a full bosom; or it may be in two strips, so as

to form the sides of the bosom in separate parts, the necessary change being made in the plaiting device for forming the dividing-line between the two parts.

The presser-feet A^2, used for plaiting, as shown in Fig. 7, consist of a number of projections from a bar of metal, which bar is placed upon pins or studs working vertically through the top plate of the machine, their lower ends passing through and being secured to curved springs, which are attached to the frame of the machine.

A cam-rod, having a head, Y, extends across the machine, which, when turned, presses upon the curved surfaces of the springs and elevates the pressers.

The presser-feet above alluded to have formed upon one side of that portion of them through which the needles pass curved projections A^3, as shown in Fig. 7, which are for the purpose of raising the edge of one plait while the other is being sewed, so that when it is finished the edge of one will lap over the other. This device can be attached to and operated in conjunction with the presser-foot, or it may be made entirely separate therefrom, as desired, by attaching the parts which lift the plait to a rod running on the presser-feet, said rod being provided with a thumb-screw, for placing it under the control of the operator.

To arrange the machine for hemming, the devices for plaiting (described above) are removed, and the reel-rack T^1, (shown at Fig. 5,) hemmer-plate T^2, having guide-slots *t* and spring-bar *t'*, and hemmer T^3, (shown at Fig. 3,) attached to the machine in place thereof.

The strips of cloth which are to be hemmed are to be wound upon the sectional reel T^4, (shown at Fig. 6,) from which they pass down into the guide-slots, under the spring-lever, and into the hemmers, where the necessary fold is given to them, and from which they pass under the presser-feet to the needles.

It will be observed that the reel designed to be used when the machine is plaiting is much longer than the width of the machine, this being rendered necessary by the fact that the plaiting reduces the width to such an extent as to render such an arrangement necessary in order to bring into requisition all the needles, and to make available the full width of the machine.

The hemmers T^3, last referred to, are secured to a plate of metal of sufficient length to secure and hold as many as may be necessary to hem the desired number of strips at one operation. This hemmer-plate is provided at its ends with holes for the reception of the screws which secure it to the upper plate of the machine. It is also provided upon its rear edge with two flanges, one of which may be turned up upon its edge, and the other may be secured thereto in any suitable manner. These flanges are cut away at the proper points *t* in front of the hemmer, for the purpose of forming guides for the strips of cloth to be hemmed. To each end of this plate there is to be attached one end of a spring, *t'*, formed by being bent into a circle, near the point of its attachment to the plate, while the portion which is between such rings extends forward for a distance sufficient to allow its transverse portion to lie in the space between the flanges raised upon the plate.

The office of the above-described spring is to bear upon the strips of cloth immediately before they enter the hemmers, in order that such strips may be kept from wrinkling as they enter said hemmers.

I have described and shown the needle-bar as composed of a single piece of metal, and the needles as being fixed in their positions in that bar; but it will be apparent that, by constructing the bar which holds the needles in position separate from the cross-head and properly arranging it, the needles may be varied in their positions, so as to stitch plaits of different widths or to hem strips of different widths at the same time, the only changes required in the other parts of the machinery being to so arrange the carriage which carries the shuttles as to permit of their being changed to correspond with the position of the needles; and, in addition to this, to arrange the presser-feet to correspond with the other changes, which may be done by changing such feet, or the bars upon which they are formed, or by making them adjustable upon such bars.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The gathering-rollers V V, when constructed substantially as shown and described.

2. The adjustable folder X, constructed substantially as shown and described.

3. The combination and arrangement of the gathering-rollers V V and the folder X, when constructed substantially as shown and described.

4. The combination of the reel *u*, gathering-rollers V V, folder X, final folder, and feed-rollers S S', substantially as shown and described.

5. The combination of the presser-feet and fold-lifters, substantially as shown and described.

6. The arrangement of the levers, pins, springs, and cam-shaft for raising and lowering the presser-feet, substantially as shown and described.

7. The combination of the slotted hemmer-plate and hemmers, the curved supports T^1, and the reel W, substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD D. GIRD.

Witnesses:

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A. RUPPERT.