(No Model.) 2 Sheets—Sheet 1.

H. H. FEFEL.

COMBINED SEAMING, TRIMMING, AND OVERSEAMING MACHINE.

No. 407,286. Patented July 16, 1889.

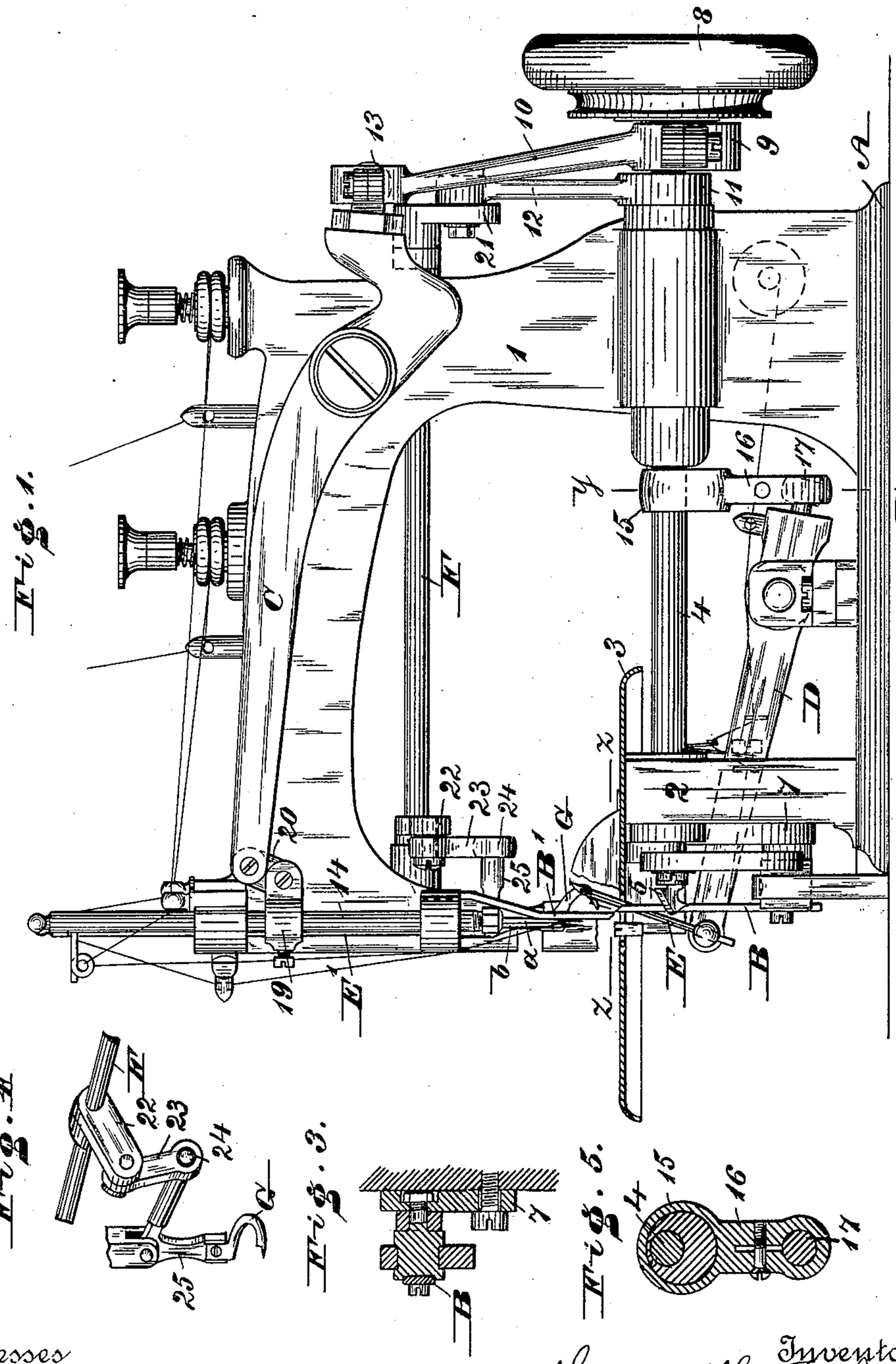

Fig. 1.

Fig. 4.

Fig. 3.

Fig. 5.

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Fig. 2.

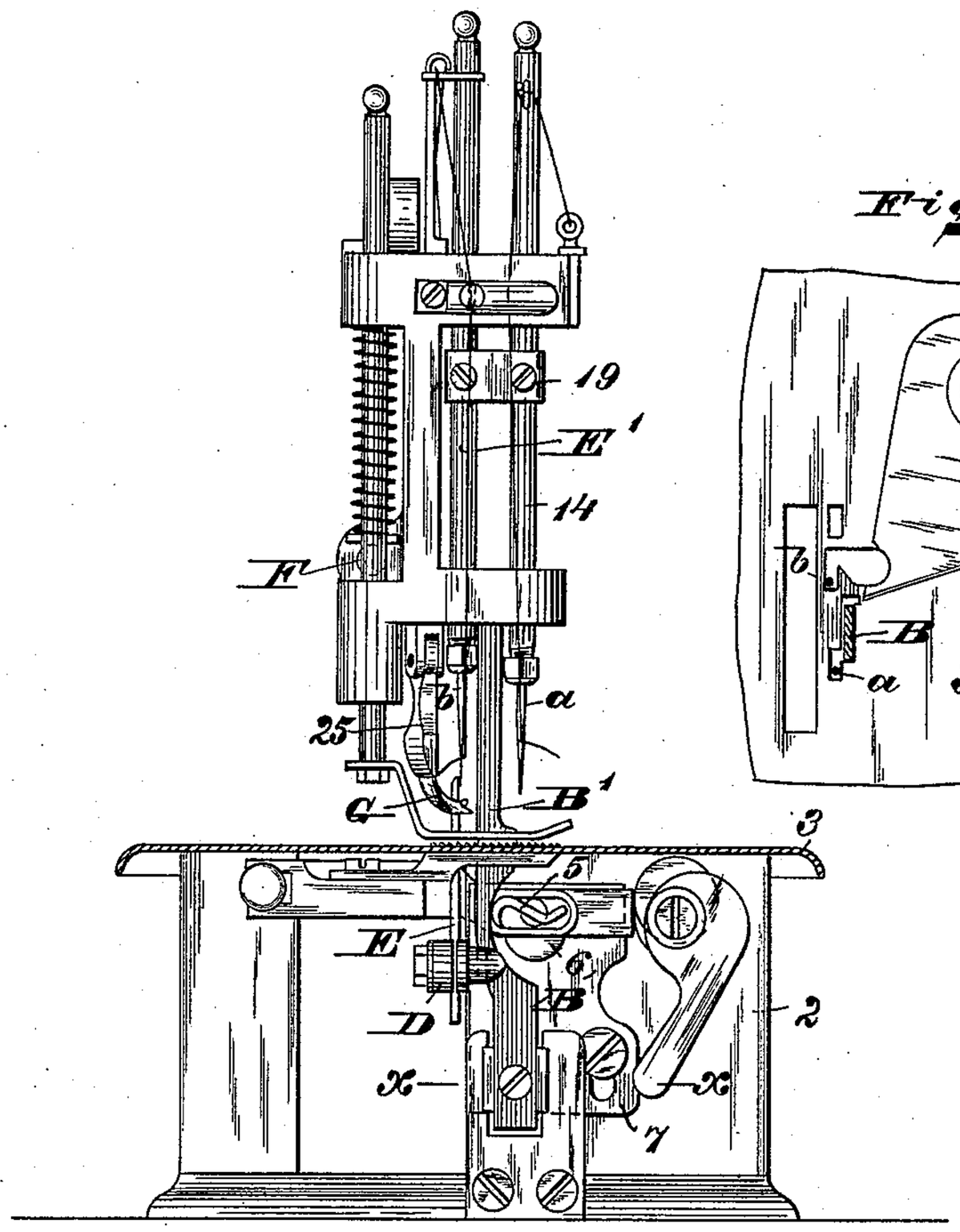
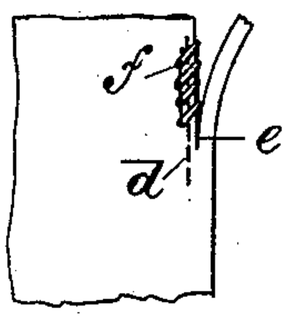


Fig. 6.

Fig. 7.



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UNITED STATES PATENT OFFICE.

HENRY H. FEFEL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO THOMAS A. PEARCE, OF SAME PLACE.

COMBINED SEAMING, TRIMMING, AND OVERSEAMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 407,286, dated July 16, 1889.

Application filed October 27, 1888. Serial No. 289,285. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. FEFEL, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Combined Seaming, Trimming, and Overseaming Machines, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of a combined machine embodying organized means or devices for seaming, trimming, and overseaming by successive operations in one machine.

Figure 1 represents a side elevation of a machine embodying my invention. Fig. 2 represents a front end view thereof. The cloth-plate in both figures is in section. Fig. 3 represents a horizontal section on line *x x*, Fig. 2. Fig. 4 represents a perspective view of the spreader of the overseaming mechanism and connected parts detached. Fig. 5 represents a vertical section of a portion on line *y y*, Fig. 1. Fig. 6 represents a horizontal section on line *z z*, Fig. 1, on an enlarged scale. Fig. 7 represents a face view of a piece of fabric or goods seamed, trimmed, and overseamed in accordance with my invention.

Similar letters and numerals of reference denote corresponding parts in the several figures.

Referring to the drawings, A designates the bed of the machine, from which rise the goose-neck or arm 1 and support 2 for the cloth-plate 3.

Mounted on the arm 1 and support 2 is the driving-shaft 4, one end of which carries the looper 5 and an eccentric 6, the latter being encircled by a vertically-moving plate 7, which is guided on the support 2 and carries the blade or knife B, above which is the stationary blade or bed-knife B′, the latter being firmly secured to the arm 1. The shaft 4 also carries at the end adjacent to the driving-pulley 8 two eccentrics, one of which is encircled by the yoke 9 of a connecting-rod 10 and the other by the yoke 11 of a connecting-rod 12. The rod 10 is attached by a ball-and-socket or universal joint 13 with the vibrating bar C, which is mounted on the arm 1 and connected with the needle-bar 14.

A presser-foot and feeding device are provided, so that the machine as far as described is organized for sewing or seaming fabrics and trimming the edges of the same, this in general respects being well known. The shaft 4 carries an eccentric, which is encircled by the yoke 15 of a rod 16, whose lower end is connected by a ball-and-socket or universal joint 17 with a lever D, the outer end of which carries a looper or looping-needle E, which is so disposed thereon as to move in oblique directions through the cloth-plate 3.

E′ represents a needle-bar, which is parallel with the needle-bar 14, the two bars being connected by a strap or coupling 19 and a pivoted link 20 with the arm C, whereby the needles *a b* of said bars are simultaneously operated, it being seen that the cloth-plate 3 is provided with a number of throats to permit the passage of the two needles, the surface of the feed-bar, and the looper-needle E. For each needle *a b* and the looper E a suitable take-up is provided for evident purposes.

Mounted on the arm 1 is a rock-shaft F, which is parallel with the shaft 4 and operated at one end by a crank 21 and a pitman or rod 12, the latter having the yoke 11, which encircles an eccentric on said shaft 4. The other end of the rock-shaft carries a crank 22, to which is pivoted an arm 23, whose lower end is connected by a ball-and-socket or universal joint 24 with an elbow-lever 25, the latter being mounted on the adjacent portion of the arm 1, and having secured to its lower limb a hook G, which I denominate a "spreader" or "spreader-hook," the same having its points so disposed that at a proper time it takes a loop or thread from the looper E and conveys it to the path of the descending needle *b* for forming an overseam on the edges of the fabric previously seamed and trimmed.

The operation is as follows: Power is applied to the pulley 8, whereby motion is communicated to the shafts 4 and F and the parts connected therewith. Both needles *a b* rise and fall simultaneously, the looper 5 rotates, and the eccentric 6 operates the sliding plate 7, whereby the blade B is advanced to and returned from the bed-knife B′. The looper E also rises and falls, due to the action of the

lever D and connected mechanism. The elbow-lever 25 is also operated, due to the arm 23, crank 22, and rock-shaft, whereby the spreader G engages with the thread on the looper E and takes the same in the form of an enlarged loop from said looper to the path of the descending needle *b*. Two pieces or thicknesses of fabric are placed on the plate 3 and advanced under the needle *a*, whereby they are sewed or seamed, as at *d*, Fig. 7. The blade B then rises and cuts through the fabric, trimming the edges of the same, as at *e*. The trimmed edges now reach the overseaming devices, when the needle *b* descends and passes through the fabric, near the edges thereof. The looper E rises and passes between the thread of the needle *b* and said needle, forming a loop on the under side of the fabric adjacent to the edge thereof. The looper continues its ascent, taking its own thread at the top of the same through the throat of the cloth-plate, and the needle *b* rises. The spreader now advances to the looper and engages with the thread at the top of the same and carries it forward in the form of a spread or widened loop beneath the needle *b*, so as to be in the path thereof. The needle *b* then descends and enters the loop on the spreader, after which the looper recedes, tightening the loop, and the spreader returns to its normal position, it being seen that an overseam is formed on the edge of the fabric, as seen at *f*, Fig. 7. Owing to the needle *b* being set out farther than the needle *a*, the overseam covers the original seam, as well as the edges of the fabric, imparting strength and finish to the fabric at said edges.

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

1. The combination, with a needle and looper and their operating mechanism, of an additional needle and looper and a spreader adapted to take the loop from said looper and spread it for the additional needle, with operating mechanism for said needle, looper, and spreader, a vertically-moving trimming device operating between the path of the needles and in advance of said additional needle, substantially as and for the purpose set forth.

2. The combination, with a needle and looper and their operating mechanism, of an additional needle and looper and a spreader or carrier for the loop from said additional needle to its looper, with operating mechanism for said needle, looper, and spreader, forming combined devices for seaming and overseaming, the first-mentioned needle and looper being in advance of said additional needle and looper, substantially as described.

3. In a combined seaming, trimming, and overseaming machine, the parallel shafts 4 and F and operating mechanism, two needles *a b* and bars carrying the same, the looper 5 for the needle *a*, the looper E for the needle *b*, the spreader G, passing to and from the looper 5 and needle *b*, with operating mechanism, and a trimming-knife intermediate of the two needles, said parts being combined substantially as described.

4. A combined seaming, trimming, and overseaming machine having a cloth-feeding device, two vertically-operating needle-bars, one of which has a seaming and the other an overseaming needle, a vertically-operating trimmer on the side of the path of the work of the needle and behind the seaming but before the overseaming-needle, a looper-needle working through the cloth-plate and connected with and operated by mechanism connected with the driving-shaft, and a pivoted spreader above the cloth-plate and operated by mechanism connected with the driving-shaft, the said spreader being adapted to receive the loop from the looper-needle and spread it for the overseaming-needle, said parts being combined substantially as described.

HENRY H. FEFEL.

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