2 Sheets—Sheet 1.

S. C. BROWN.

MACHINE FOR SEWING STRAW BRAID.

No. 180,538. Patented Aug. 1, 1876.

Fig. 5.

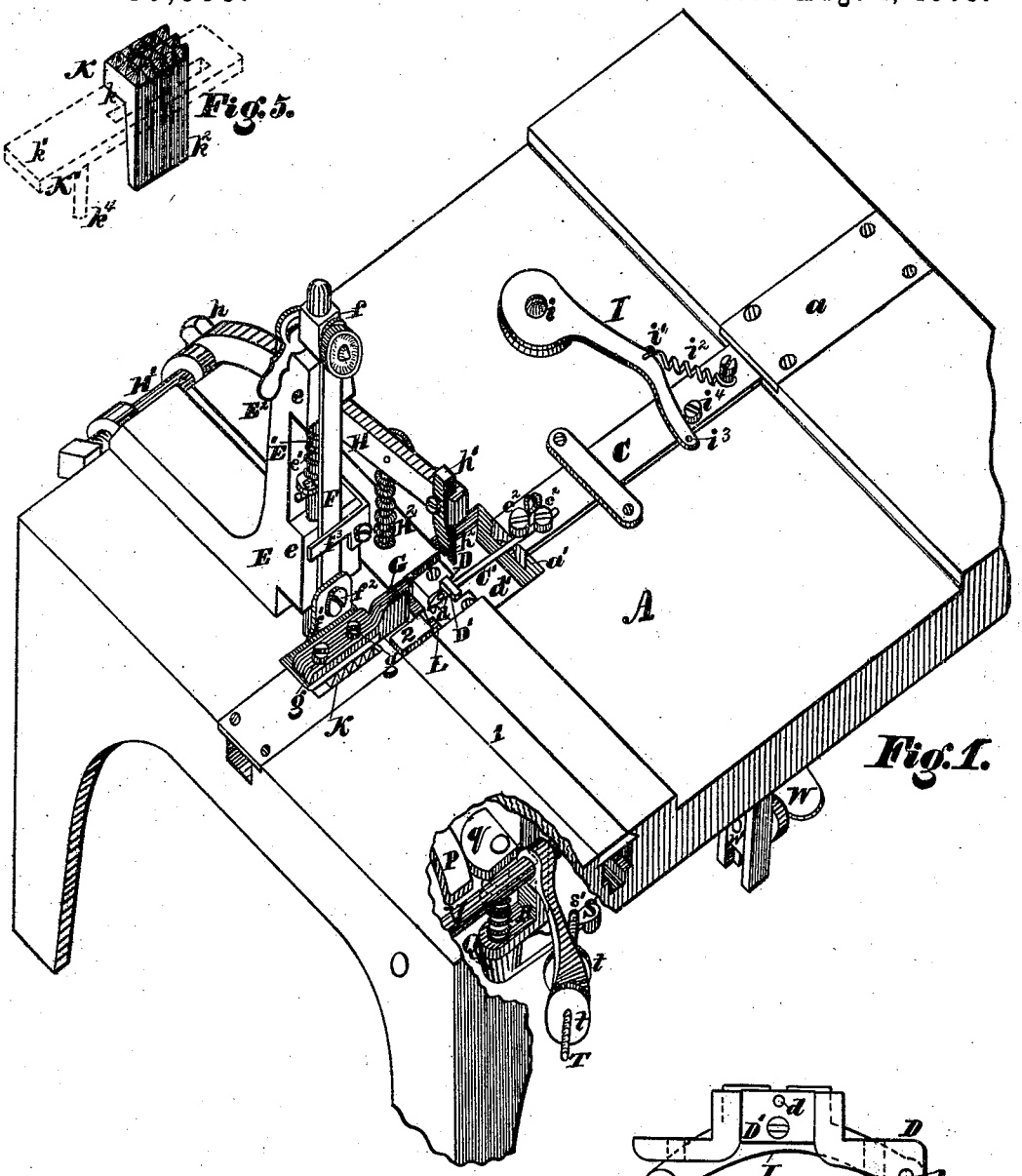

Fig. 1.

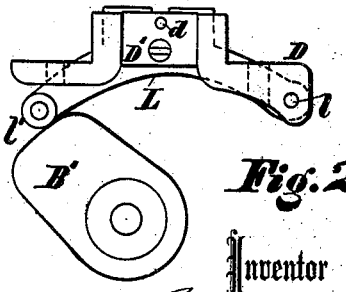

Fig. 2.

Witnesses

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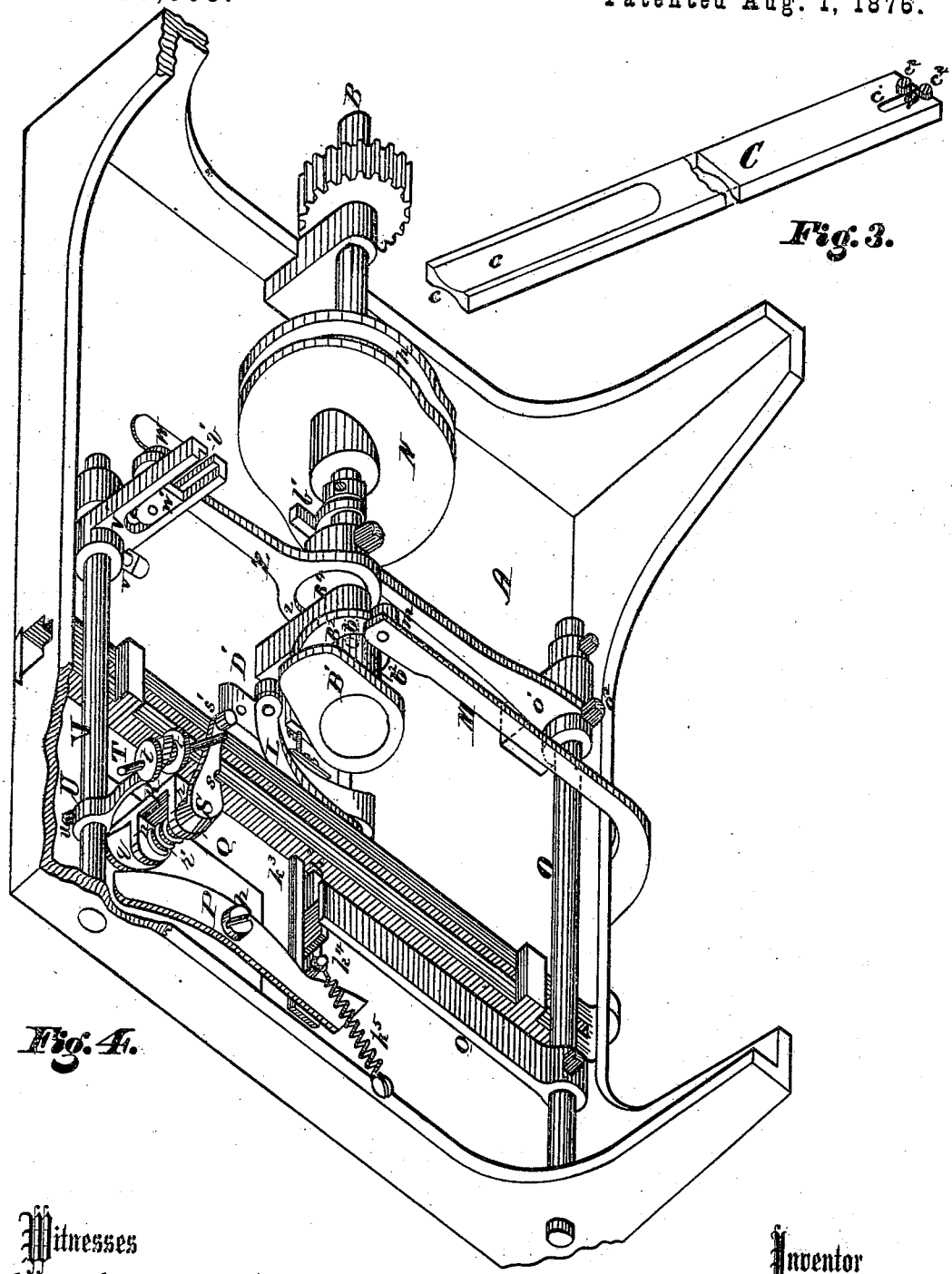

Fig. 3.

Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

SEYMOUR C. BROWN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO ROBERT F. S. HEATH AND SAMUEL S. CORBIN, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR SEWING STRAW BRAID.

Specification forming part of Letters Patent No. **180,538**, dated August 1, 1876; application filed December 8, 1875.

To all whom it may concern:

Be it known that I, SEYMOUR C. BROWN, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Sewing Straw Braid; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a broken perspective of my invention. Fig. 2 is a detail view. Fig. 3 is a broken perspective of the needle-bar. Fig. 4 is an inverted perspective of my invention. Fig. 5 is a perspective of the feed-block and carrier.

My invention has for its object to provide an improved machine for sewing straw-braid for hats and bonnets.

My improvements consist in the peculiar construction and combination of parts, as hereinafter more fully described.

Referring to the accompanying drawing, A designates the table of the machine to be mounted upon legs, and worked by a treadle or other motor in the usual or any suitable manner. B is a horizontal shaft, located beneath the table A, to which the driving-power is applied, and by means of which the various working parts of the machine are operated. C shows the needle-bar, grooved on its upper and under sides, as shown at *c c*, so as to permit it to be made both light and strong, and also to reduce the friction between it and the keeper or plate *a* and the ways *a'*, on which the said bar moves. C' represents the needle, of the usual or any suitable construction, having its shank end resting in a groove, c^1, in the end of the needle-bar, and held thereto by two screws, c^2 c^2, on opposite sides respectively of said groove. D' is a guard fastened to the bridge D, the object of said guard being to protect the needle, which passes through an eye or opening, *d*, and at the same time to prevent the thread of the needle from falling down below the bridge into the opening *d'*.

E represents an arbor or standard on the table A, sustaining the vertical presser-bar E^1, which works in openings in the projections *e e*, and is held down by a coiled spring, e^1, impinging on a fixed collar, e^2, on said bar. F is a swinging arm, pivoted at *f* to the bar E^1, holding a detachable foot, f^1, fastened by a screw, f^2, to said arm. On this foot is a guard, G, fastened by screws *g g*, which pass through elongated slots in it, whereby it is rendered adjustable. E^2 is an eccentric arm or lever for raising the bar E^1, and f^3 is an L-shaped keeper, by means of which the swinging arm F is held when in operation.

H represents the plunger-arm fastened by a set-screw, *h*, to a horizontal shaft, H^1, and h^1 is the plunger, consisting of a block which fits in a vertical groove in the outer extremity of the arm H, and is provided with a slot or notch, h^2, for the passage of the needle. H^2 is a coiled spring resting on the table A, and supporting the arm H. In conjunction with this spring I design employing an adjusting rod and nut or screw. (Not shown in the drawing.)

I shows the take-up, pivoted to the table at *i*, and fastened at i^1 to a spiral spring, i^2, having its other end connected to the needle-bar C, an opening for the passage of the thread from the spool being formed at i^3.

K shows the feed-block, serrated on its upper surface, having an offset or shoulder at *k*. This block is inserted in position by simply slipping it in a rectangular opening in its carrier K', and is removed by merely lifting it out, requiring no fastening-screws or other holding device.

When in position in its carrier, the shoulder *k* rests on a way, k^1, in said carrier, its extension k^2 passing downwardly and through the latter, for a purpose hereinafter fully set forth. L shows the lifter pivoted on the bridge D at *l*, and provided with an anti-friction roller, *l'*, which works on the periphery of a cam, B^1, on the end of the shaft B. B^2 is another cam on said shaft, fastened to the cam B^1 by dowel-pins *b* passing from the former into the boss b^2 of the latter. The cam B^2 is for working the plunger-arm H operating on an arm, M,

fastened to the shaft H^1, said arm having an anti-friction roller, *m*, running on the periphery of said cam B^2. The needle-bar C is run by means of a cam-wheel, N, on the shaft B, a roller on the under side of said bar entering a groove, *n*, in the periphery of said cam. O is a horizontal rocking shaft provided with a striking-arm, *o*, by means of which the pressure-bar E^1 and feed-block K are simultaneously elevated, said shaft O being rocked from the shaft B by means of an arm, o^1, fastened by a set-screw, o^2, to the shaft O, and resting on a cam, b^1, on the shaft B. The feed-carrier K′, which rests and moves on ways k^3 cast on the under side of the table A, is provided with a downwardly-projecting stud, k^4, to which is fastened one end of a spiral spring, k^5, the other end of said spring being fastened to the table A. P represents a lever pivoted at *p*, on the under side of the table A. One end of this lever rests against the stud k^4, the other against a cam, *q*, on a vertical shaft, Q, sustained in bearings in a hanger, R, between the bosses *r r* of which is a spiral spring, *r*′, the function of which is to revolve the shaft Q, and allow of the return of the feed by the spring k^5. S is a crank-arm fastened to the end of the shaft Q, and formed with notches *s s*′, in one of which rests the hooked end of a threaded rod, T, having adjusting-nuts *t t* on either side of a rocking arm, U, fastened by a set-screw, *u*, on a shaft, V. This shaft V is provided with another arm, V′, fastened by a set-screw, *v*, and formed with an elongated slot or bifurcated end, *v*′, through which passes an adjusting-screw, W, having a thumb-nut, *w*, said screw passing also through an opening in the end of a bar, Z, having an enlarged open end or loop, *z*, in which fits an eccentric, B^4, on the shaft B. On the end of the adjusting-screw W is a block, *w*′, sliding on ways in the bifurcated end of the arm V′. 1 represents a slide, to which is firmly secured a gage, 2.

The operation of this machine is substantially as follows: The pressure-foot being first raised by means of its eccentric lever, the braids to be sewed together are placed beneath the guard G and plunger h^1. The pressure-bar is then depressed by means of the aforesaid eccentric lever, bringing the foot and guard upon the braids. On turning the shaft B the plunger h^1 drives down a portion of the braids into the space occupied by the lifter L, which recedes correspondingly, a U-depression being thus formed in said braids. The needle-bar C now moves forward toward the bridge D, passing its needle through the eyes *d* and h^2, and through the braids. The shuttle (which is not shown in the drawing, being constructed and operated in the usual manner) now passes through the loop of the needle-thread, and the needle-bar is thereupon drawn back, withdrawing its needle out of the braids, and forming the complete loop. The plunger h^1 immediately ascends, the lifter L following and throwing up the depressed portion of the braids. Simultaneously with the elevation of the plunger and lifter the pressure-bar E^1 and feed-block K are raised by the striker-arm *o*, the feed-block being then moved along with its carrier in the direction of the bridge D′ for the required length of its stitch, when it falls vertically, by the recession of the said striker-arm, and is subsequently withdrawn in its depressed horizontal plane to its normal position. When the feed-block drops, as described, the pressure foot and guard or gage G drop with it, binding the braids down to the table. The plunger h^1 then again descends, and the stitch is formed, as already described.

For forming a long stitch, the block *w*′ is slid to the inner extremity of the slot *v*, and the hooked end of the rod T inserted in the innermost notch *s* in the crank-arm S. The quality or length of the stitch may be still further regulated by means of the adjusting-nuts *t t*. The movement of the needle-bar C operates the take-up I, the free end of which is prevented from being drawn too far back on the return-motion of said bar by means of a limiting-screw, i^4. When the needle-bar is making its backward or return motion the free end of the take-up is drawn by the spring *i* against the limiting-screw i^4, when the latter is directly or nearly opposite the fulcrum *i* in the nearest line therefrom. The bar continuing its backward movement, the spring i^2 is distended, stiffening the tension of the take-up. When the needle-bar moves forward or toward the bridge D′, and the screw i^4 passes the shortest line in its path from the fulcrum *i*, the spring i^2 is relaxed, and the tension of the take-up thereby weakened. In other words, when the shuttle is passing through the needle-thread, and when the latter is required to be slack, the tension of the take-up is weak; but when the needle is passing out of the braid, and when it first begins to enter the same, said tension is stiffened.

The object of the gage or stop 2 on the slide 1 is to prevent the braids from being brought too near the operator, thereby making the stitch at too great a distance from the edge of the braids, it being desirable, for the sake of saving straw, to make the stitch as close to the lapped edges of the braid as possible. By means of the pivoted arrangement of the arm F the presser-foot and guard or gage G may be instantly swung up out of the way of the operator whenever the same is desired. I would here remark that, for different thicknesses of braid, or for braid of various qualities, different-sized guards G, or guards of different widths, will have to be employed. The advantage of the loose feed-block is twofold, as follows: first, it permits said block to be lifted and let fall independently of its carrier, thereby saving the lifting of the carrier; secondly, it allows said block to be readily removed and easily inserted, this being particularly desirable in sewing straw, which is liable to choke up and foul the feed, unless the latter is frequently cleaned.

The described arrangement of devices for actuating the feed produces a regular "four-motion" of the latter, which is considered the best motion for the purpose, at least for the class of goods for which this machine is intended.

What I claim as my invention is—

1. The adjustable and removable gage or guard G, in combination with, and attached to, the presser-arm F, substantially as shown and described.

2. The combination of the plunger-arm H and lifter L, made in separate parts, and having independent fulcrums, but moving simultaneously, substantially as shown and set forth.

3. The take-up I, pivoted on the table A at *i*, and operated by the needle-bar C through the medium of a spring, i^2, in combination with the limiting-screw or stud i^4, substantially as shown and described.

4. The combination, with the feed-carrier K′, of the lever P, shaft Q, having cam *q* and spring *i*, crank-arm S, hooked rod T, rock-shaft V, arms V′ and U, fastening-screw W, and bar Z, having an enlarged opening or loop for the eccentric B^4 on the shaft B, these several parts being constructed and combined for operation substantially as shown and set forth.

5. The combination, with the shaft V, crank-arm R, and notched crank S, of the adjustable hooked rod T, cam *q*, striker P, and feed-carrier K′, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 3d day of December, 1875.

SEYMOUR C. BROWN.

Witnesses:

M. DANL. CONNOLLY,

CHAS. F. VAN HORN.