

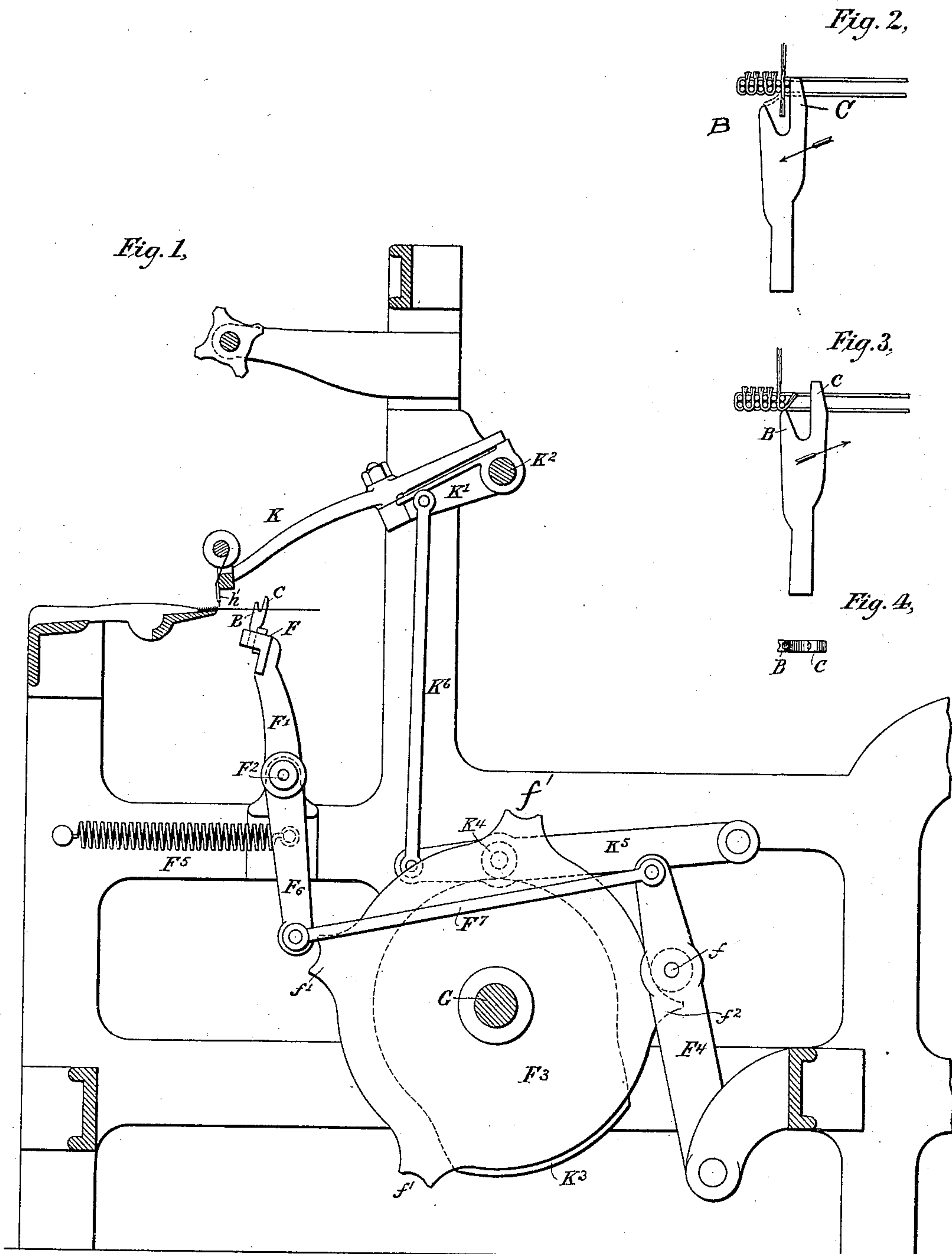
(No Model.)

A. K. SHERWOOD.

LOOM FOR WEAVING TUFTED FABRICS.

No. 356,213.

Patented Jan. 18, 1887.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## LOOM FOR WEAVING TUFTED FABRICS.

SPECIFICATION forming part of Letters Patent No. 356,213, dated January 18, 1887.

Application filed March 24, 1886. Serial No. 196,411. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR K. SHERWOOD, of Thompsonville, Connecticut, have made an invention of a certain new and useful Improvement in Looms for Weaving Tufted Fabrics; and I do hereby declare that the following is a full, clear, and exact description and specification of the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part hereof.

This invention has reference to looms for weaving Moquette carpets and similar fabrics, in the weaving of which tufts of yarn are inserted in and secured to the body of the fabric; and the object of the invention is to enable the ends of tufting material inserted from one side of the position of the warp-threads in the loom to be turned toward the side from which they have been inserted, so that both ends of the tufting material may be at the same side of the fabric.

The invention consists of certain combinations of mechanical devices hereinafter recited in the claims.

In the accompanying drawings, Figure 1 is a longitudinal section of parts of a loom. Figs. 2, 3, and 4 are detail views.

As the invention has reference to particular portions of the loom only, the other parts of the loom may be of any of the well-known forms of construction or of any construction not inconsistent with the operation of the parts hereinafter described—as, for example, that form of loom shown in the patent to Smith and Skinner, No. 186,374, of January 16, 1877. Thus, the spools carrying the tufting material may have tubes *h'* for inserting the ends of the tufting material through the warp-threads, and the spools may be brought down from the spool-frame to the position for such insertion and given the necessary motions therefor and returned therefrom by vibrating arms *K*, one at each side of the loom, pivoted to rock-shaft arms *K'*, carried on the rock-shaft *K<sup>2</sup>*, and operated by the cam *K<sup>3</sup>* through the roller *K<sup>4</sup>*, lever *K<sup>5</sup>*, and rod *K<sup>6</sup>*, as shown. The lay *F* may also be vibrated backward and forward in any way to accomplish its usual and well-known function of beating up, as by means of the lay-cam *F<sup>3</sup>*, operating through the roller *f*,

lever *F<sup>4</sup>*, rod *F<sup>7</sup>*, lever-arm *F<sup>6</sup>*, rock-shaft *F<sup>2</sup>*, and arms *F<sup>7</sup>*. The lay-cam is secured on the cam-shaft *G* of the loom. The spring *F<sup>5</sup>* throws the lay backward. The lay-cam *F<sup>3</sup>*, as shown in the drawings, with its four projections, *f'*, *f'*, *f'*, and *f<sup>2</sup>*, is adapted to beat up four shoots of filling for each row of tufting material inserted—three shoots of coarse filling and a fourth shoot of fine filling—around which the tufting material is intended to be bent, and by which it is to be held in the usual way, the lay making a double beat in beating up the coarse filling and a single beat in beating up the fine filling.

In order that the present invention may be embodied in the loom, the lay is provided with a series of auxiliary reeds or dents, *B*, in advance of the position of the usual beating-up reeds or dents, *C*, and somewhat shorter, as shown in Fig. 2, which includes a side view of the two reeds or dents in their proper relative position ready to be secured in the ordinary lay-frame. The auxiliary reed or dent *B* is of just such length that, swinging on the rock-shaft *F<sup>2</sup>* as its center, it partially beats up the fabric; but just before completing the beating up it sinks through the warp-threads and swings forward under the woven fabric through the rest of its stroke, the longer dents, *C*, meantime completing the beating up. The auxiliary reed or dent *B* is sufficiently in advance of the dent *C* to insure its swinging forward under the fabric after sinking through the warp, as just described, a sufficient distance to pass beyond the ends of the tufting material after the same have been inserted between the warp-threads and are ready to be bent backward. The action of the dents *C* in beating up the filling-thread that has been shot, just after the insertion of the ends of the tufting material, down through the warp straightens out those downwardly-projecting ends which the dents *B* had bent slightly forward, and thus insures the operation which ensues on the return or backward stroke of the lay—to wit, the auxiliary dents *B* carry the ends of the tufting material backward before them and upward through the warp and leave them in such position that the next forward stroke of the lay in beating up the next shot of filling causes the dents *C* to complete the opera-



tion of bending the ends of the tufting material upward, so that both ends of such tufting material stand erect on the same face of the fabric. This operation is assisted by such an opening of the shed after the backward bending-stroke of the dents B as carries upward the threads of the warp that are next to the tufts on both sides of the same, and I prefer to so open the shed at that point in the operation of the loom for the greater certainty thereby secured in the completion of the bending operation by the forward stroke of the dents C of the lay.

Fig. 2 shows, diagrammatically, the position of the parts immediately after the shot of fine filling which holds the tufting material has been beaten up and just before the dents B swing backward and carry the ends of the tufts up with them through the warp, and Fig. 3 the position of the parts when the dents B are making their backward bending-stroke and are just entering between the warp-threads from below, carrying the tufts before them.

I prefer to slightly hollow out the faces of the dents B and C, as shown in Fig. 4, where they come in contact with the tufting material—to wit, the front side or face of the dents C and both the front and rear sides or faces of the dents B—so that the effect of the contact in every case is rather to gather than to spread the tufting material, which is generally a loose soft yarn.

The dents B, on their backward bending-stroke, should, preferably, pass as closely as possible to the last filling-thread of the fabric that has just been beaten up, to wit, in rubbing-contact with the same.

The preliminary beating up by the auxiliary dents B is found to improve the fabric and to straighten and prepare the downwardly-projecting ends of the tufting material for a more certain and reliable operation of bending back-

ward through the warp, and the mechanism described is a simple and certain way of performing that bending operation. Although I prefer to connect these bending dents B directly with the lay, so that both are combined with and moved by the same cam, this direct connection is not essential to the first, second, third, and fifth parts of the invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, substantially as before set forth, of devices for inserting the ends of the tufting material in the warp with a series of beating-up dents attached to the lay and a series of beating-up and bending dents in advance of the lay-dents, whereby the filling-threads are beaten up and the ends of the tufting-threads are carried to the side of the warp from which they were inserted, substantially as and for the purposes described.

2. The combination, substantially as before set forth, of devices for moving the tufting material within the range of the dents and the double dents for beating up and bending the ends of said material.

3. The combination, substantially as before set forth, of bending-dents which carry the tufting material backward and upward through the warp and the lay with the lay-cam, whereby the first two devices are operated by the last.

4. The combination, substantially as before set forth, of devices for inserting the ends of the tufting material in the warp with hollowed bending-dents for carrying said ends to the side of the warp from which they were inserted without spreading the same.

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