

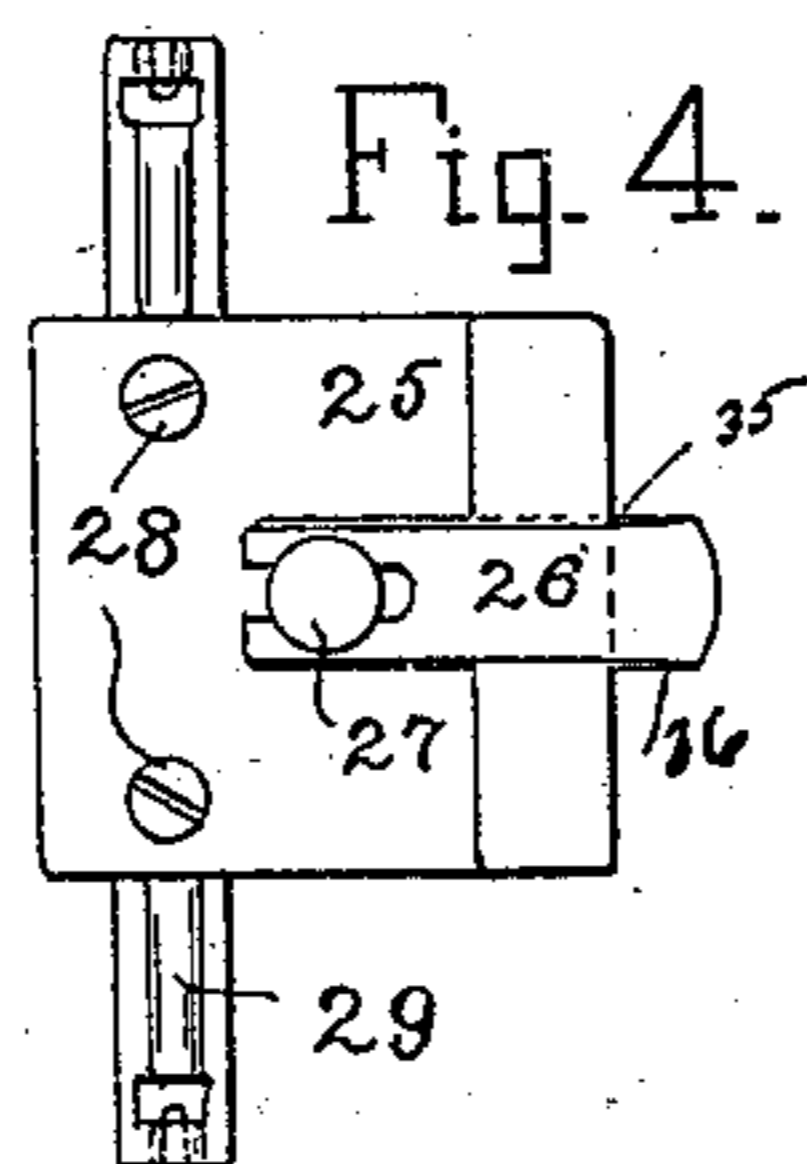
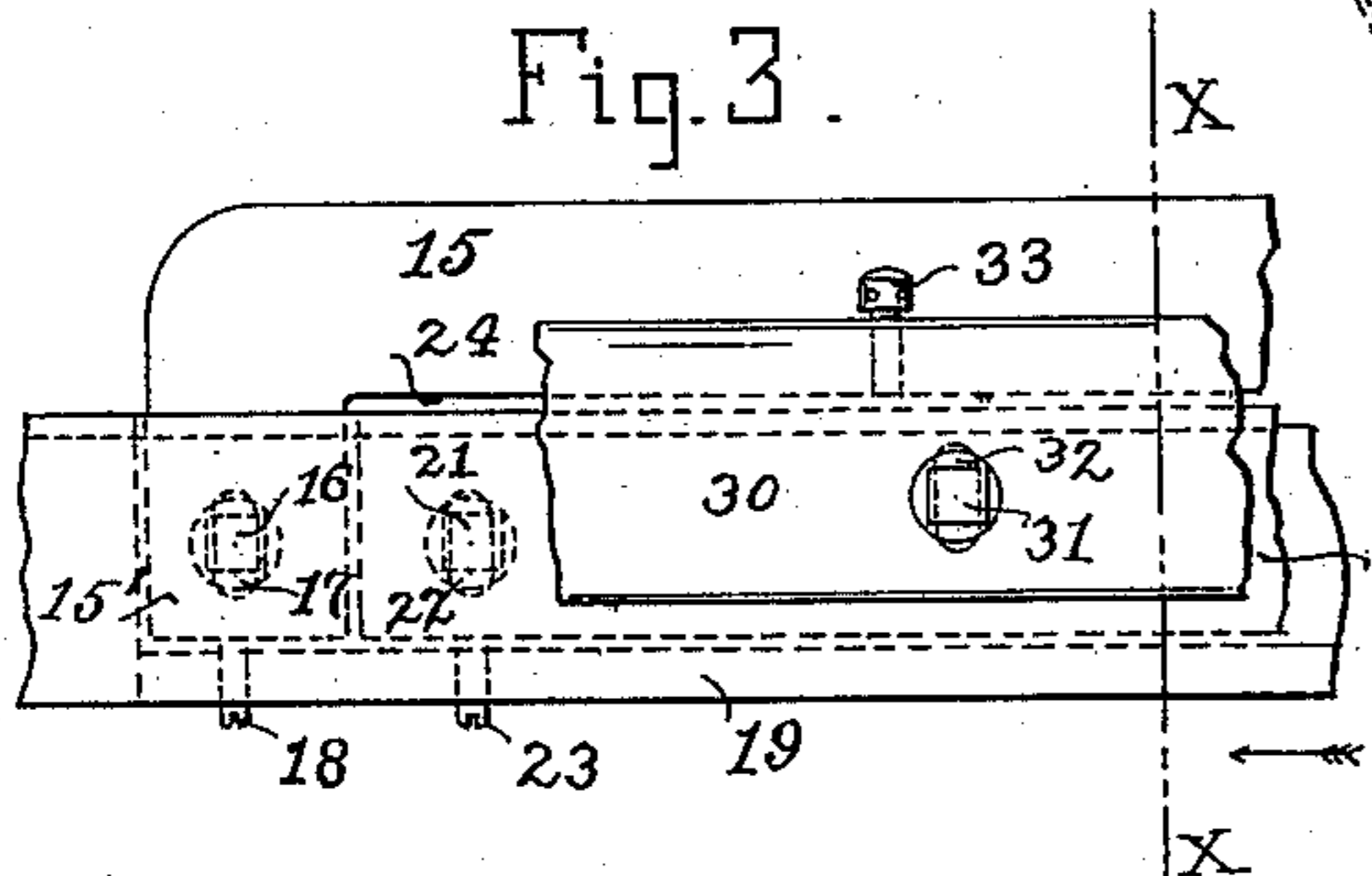
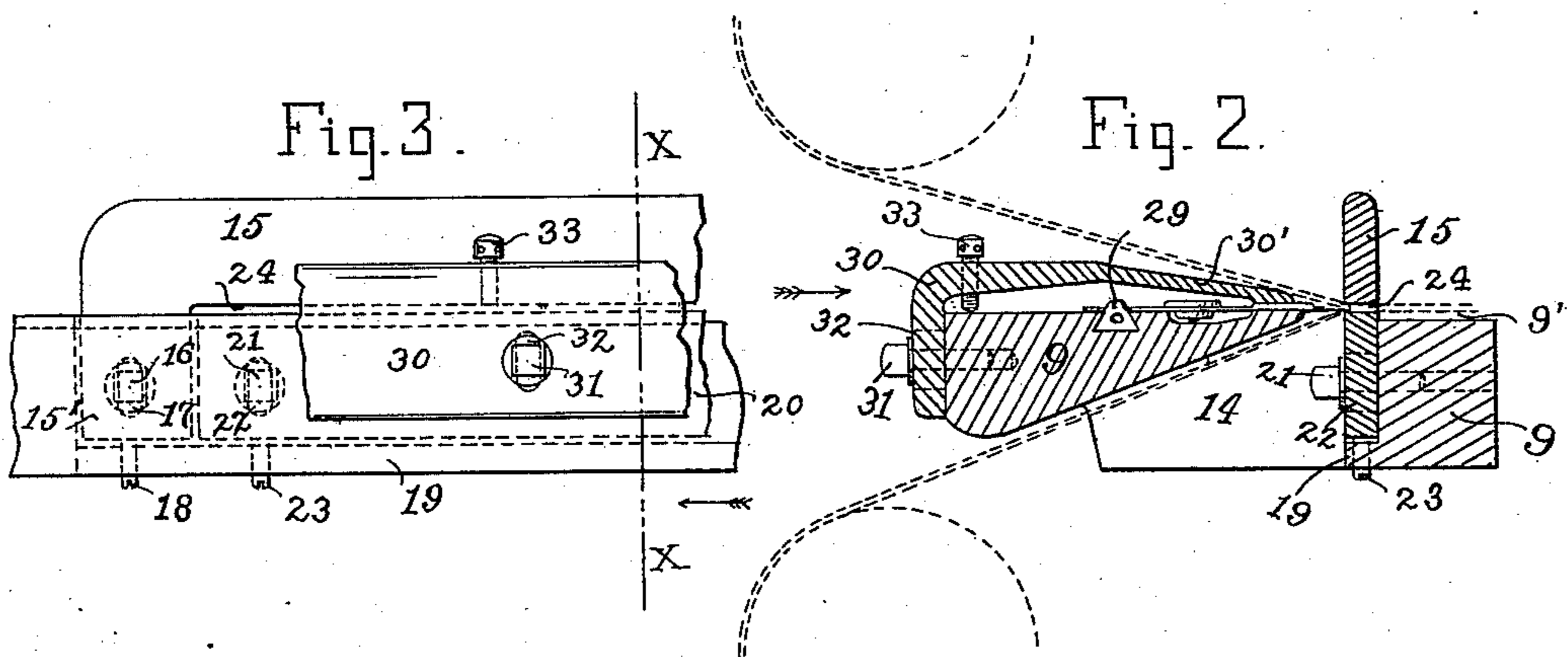
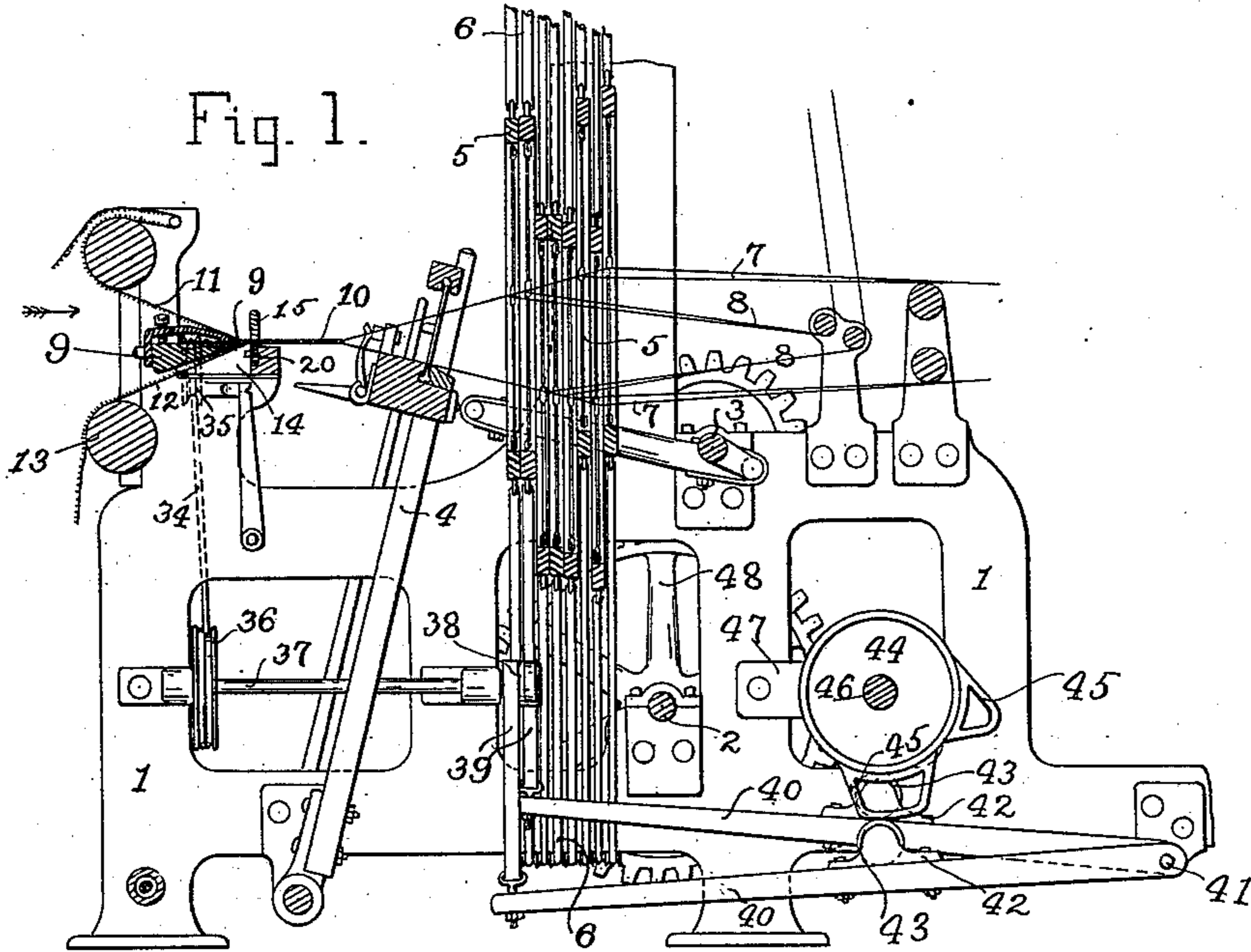
(No Model.)

W. WATTIE.

CUTTING ATTACHMENT FOR DOUBLE PILE FABRIC LOOMS.

No. 393,947.

Patented Dec. 4, 1888.



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UNITED STATES PATENT OFFICE.

WILLIAM WATTIE, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE
KNOWLES LOOM WORKS, OF SAME PLACE.

CUTTING ATTACHMENT FOR DOUBLE-PILE-FABRIC LOOMS.

SPECIFICATION forming part of Letters Patent No. 393,947, dated December 4, 1888.

Application filed March 1, 1888. Serial No. 265,858. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WATTIE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Cutting Attachments for Double-Pile-Fabric Looms; and I do hereby declare that the following is a full, clear, and exact description thereof, which, in connection with the drawings, making a part of this specification, will enable others skilled in the art to which my invention belongs to make and use the same.

My invention relates to looms used in the manufacture of double pile fabrics, and more particularly to the mechanism for cutting the pile; and the object of my invention is to provide a rigid guide for the traveling knife or cutter, which will permit adjustment thereof for different lengths of pile, and so control the movement of the knife or cutter as to cut the shortest pile without injury to the black cloth.

My invention consists in certain novel features in the construction of the mechanism for cutting the pile in double-pile-fabric looms, as will be hereinafter fully described, and the nature thereof indicated by the claims.

It will be understood by those skilled in the art that by double-pile-fabric weaving is meant that arrangement of the loom in which two independent warps are drawn in, each to harnesses of its own, and the pattern-chain is so arranged that with the same filling thrown first in one warp and then in the other two independent pieces of cloth are woven, one above the other, while between the back warps, also in harnesses of its own, are drawn the pile warps, which in the process of weaving are so bound in with the filling, first in one piece of cloth and then in the other, as to make the pile join the two pieces of back cloth together. After the double pile fabric is woven in the manner above described, it is cut apart while still on the loom by means of a cutting mechanism, which severs the pile-threads without disturbing the back cloths, thus producing plush or velvet having a long or short pile, as desired.

Referring to the drawings, Figure 1 repre-

sents a cross-section of a portion of a loom for weaving and cutting a double pile fabric and to which my improvements have been applied. Fig. 2 represents, on a much enlarged scale, the cutting mechanism shown in Fig. 1 detached and taken on line *x x*, Fig. 3, looking in the direction of the arrow, same figure. Fig. 3, on the same scale as Fig. 2, represents a front view of a detached portion of the breast-beam, looking in the direction of the arrow, Figs. 1 and 2; and Fig. 4 is a plan view of the knife-blade or cutter-plate detached.

In the accompanying drawings, 1 is a portion of the loom side, 2 the bottom shaft, 3 the crank-shaft, 4 the lay, 5 the harness-frames, 6 the harness-straps, 7 the back warp-threads, and 8 the pile warp-threads, all as usually constructed and arranged in looms of this class.

9 is the breast-beam, over which the double pile fabric 10 passes, and is cut apart, forming the two fabrics 11 and 12, by my cutting mechanism, before passing to the take-up rolls. The breast-beam 9, to which my cutting mechanism is applied, and with which it is combined, extends across the loom in the usual way and has a longitudinal slot or opening, 14, extending through the same and made a little longer than the width of the fabric, 10, to be woven. Said slot 14 is made narrow at the upper side of the breast-beam 9, but is broadened out upon the under side of the breast-beam, as shown in Fig. 2, to permit of the lower piece of cloth, 12, after the double fabric 10 is cut, passing to the lower take-up roll, 13. A flat bar, 15, extends along the upper surface of the breast-beam 9 of the same length as the slot 14 therein, and is adjustably supported directly over the rear upper part of said slot, with its lower edge a little above the face of the breast-beam 9, (see Fig. 2,) by means of bolts 16, passing through slots 17 in the turned-down ends 15' of the bar 15, and secured in the breast-beam 9. By means of adjusting-screws 18, supported in a lip, 19, extending out into the slot 14 directly under the turned-down ends 15' of the bar 15, the height of the lower edge of said bar 15 above the face of the breast-beam 9 is regulated. A second flat bar, 20, extends within the slot 14

between the turned-down ends 15' of the bar 15, and directly under said bar 15, and is adjustably secured in said slot 14 by means of bolts 21, extending through slots 22 in the ends of said bar 20 and secured in the breast-beam 9. The top edge of the bar 20 comes about flush with the face of the breast-beam 9, and by means of the adjusting-screws 23, corresponding to the adjusting-screws 18 for the bar 15, the height of the upper edge of the bar 20 may be regulated. The bars 15 and 20 are so adjusted relatively to each other that the width of the opening 24 between their two contiguous faces corresponds to the thickness of the double pile fabric to be woven from back to back of the fabric, which passes through the opening 24 between the bars 15 and 20.

I will now describe the cutting mechanism. The reciprocating plate 25, to which is secured the knife or cutter 26 by means of a screw, 27, is fastened by screws 28 to the triangular bar 29, which is fitted to slide freely back and forth in a corresponding groove cut in the top surface of the breast-beam 9. (See Fig. 2.) The front free edge of the plate 25 rests on the top surface of the breast-beam 9 at the edge of the longitudinal slot 14 therein, and is thickened at this part and provided with a slot, 35, having beveled edges to receive the corresponding beveled sides, 36, of the knife blade or cutter 26. (See Fig. 4.) By means of the adjustable bars 15 and 20, between which the double pile fabric 10 passes, the center of the opening 24, between said bars, may be made to come directly opposite the knife 26, so that the same length of pile may be cut on both pieces of cloth, 11 and 12; or the center of said opening 24, by adjusting the bars 15 and 20, may be made not to come directly opposite the knife 26, so that a different length of pile will be cut on the two pieces of cloth 11 and 12, and this without raising or lowering or adjusting the knife 26. A plate, 30, the same length as the bar 15, extends upon the upper surface of the breast-beam 9, with its inner edge, 30', bent down over the upper edge of the breast-beam, and having its outer edge secured thereto by means of screws 31, passing through the slots 32 in said plate 30. The plate 30 extends over the upper face of the breast-beam nearly to the slot 14, and incloses the reciprocating plate 25, carrying the knife 26, and the inner free edge of said plate 30 extends just above the thickened free edge of the plate 25, so as to furnish, in connection with the upper surface of the breast-beam, a bearing for holding down on the breast-beam the knife-bearing plate 25, and the knife 26, attached thereto, as the same are moved back and forth in the operation of cutting the pile. By means of adjusting-screws 33, extending through the plate 30 and bearing upon the breast-beam, the said plate 30 may be raised or lowered, as desired.

The plate 25, carrying the cutter 26, is moved back and forth on the breast-beam to

cut the pile by the ordinary mechanism, as follows: A cord, 34, is attached to one end of the triangular bar 29, and passes over a grooved pulley, 35, at the end of the breast-beam 9, and is wound around a drum, 36, fastened upon a shaft, 37, mounted in bearings on the loom side. A corresponding cord is attached to the other end of the reciprocating bar 29, and passes over a corresponding pulley, and is wound upon the drum 36, making in effect an endless cord passing over the drum 36 and around the pulleys. Upon the other end of the shaft 37 is a smaller drum, 38, to which are fastened two straps, 39, upon opposite sides of said drum 38. The lower ends of said straps 39 are attached to the ends of levers 40, which are pivoted at their other ends on the stud 41, fastened to the loom side. In stands 42, upon the upper sides of the levers 40, are rolls 43, which engage a compensating cam, 44, the leaves 45 of which are so constructed that while one lever is being pushed down the other is allowed to rise, both rolls 43 following the shape of the cam. The cam 44 is mounted on one end of a shaft, 46, having a bearing in a stand, 47, bolted to the loom side. The other end of said shaft carries a pinion, which meshes with the gear 48 on the bottom shaft, 2.

It will be seen that the revolution of the cam 44 imparts a rotary motion through the levers 40, straps 39, drum 38, and shaft 37 to the drum 36, which is so proportioned as to drive the knife blade or cutter 26 back and forth on the breast-beam a distance a little greater than the width of the cloth to be cut.

The special purpose of the plate 30, extending along over the face of the breast-beam 9, with its inner edge above the reciprocating plate 25, carrying the cutter 26, is to act as a guide for said cutter and hold the plate 25 down upon the breast-beam as it is moved back and forth thereon, and prevent the cutter from jumping up and cutting into the upper back cloth, 11, when a very short pile is being cut on the fabric.

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

1. The combination, with the cutter-plate 25, with its outer free edge thickened and provided with a slot having beveled sides, of the knife blade or cutter 26, secured to said plate 25, and provided with beveled sides fitting into said slot in said plate to hold the cutter down at its cutting-edge, substantially as shown and described.

2. The combination, with the breast-beam and a shield or guide supported thereon and extending over the upper surface thereof to inclose the reciprocating cutter and act as a guide for the same, of the reciprocating plate having a slot with beveled sides, the cutter being supported thereon and held down at its free cutting-edge by fitting into said slot, substantially as shown and described.

3. In a loom for weaving double pile fab-

rics, the combination, with the breast-beam,
of a top shield or guide supported thereon
and a reciprocating cutter-plate fitted on said
breast-beam, said shield or guide and said
5 breast-beam furnishing a rigid top and bottom
guide for the cutter near its cutting-edge en-
tirely independent of and within the angle of

the two pieces of fabric that are cut apart,
substantially as shown and described.

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