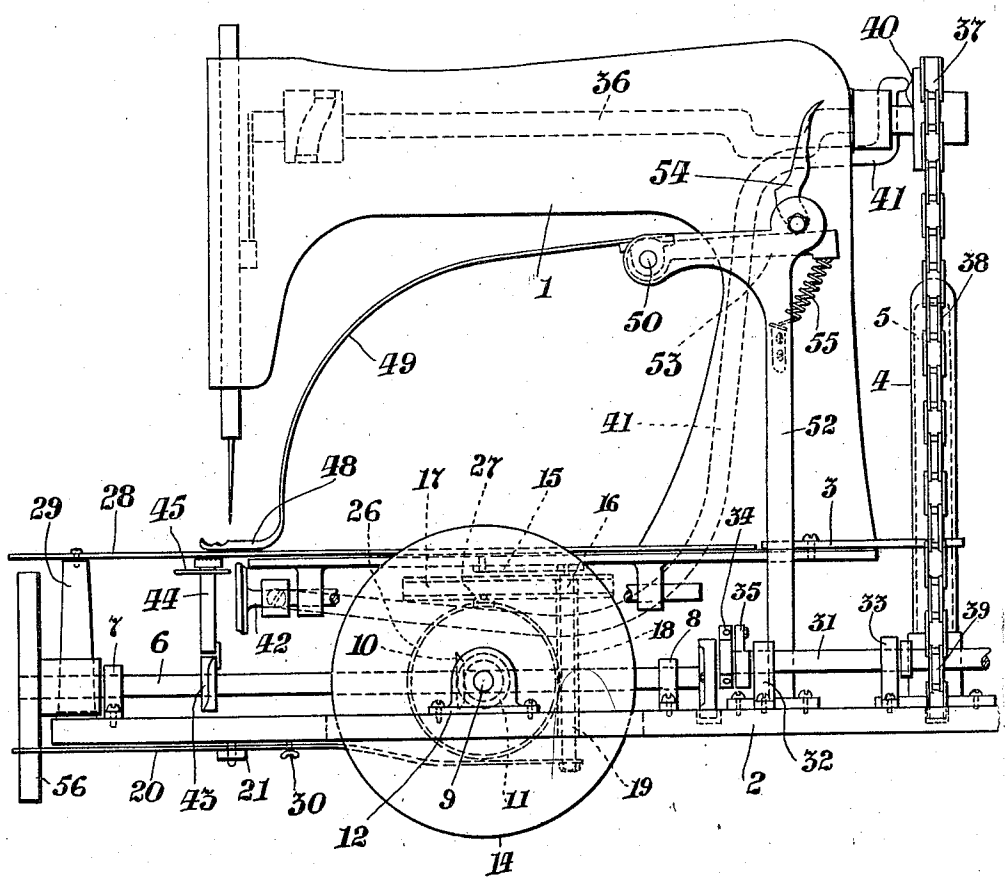
Oct. 23, 1923. 1,471,720

J. BINGHAM

SEWING MACHINE

Filed July 15, 1921 3 Sheets-Sheet 1

Fig. 1.



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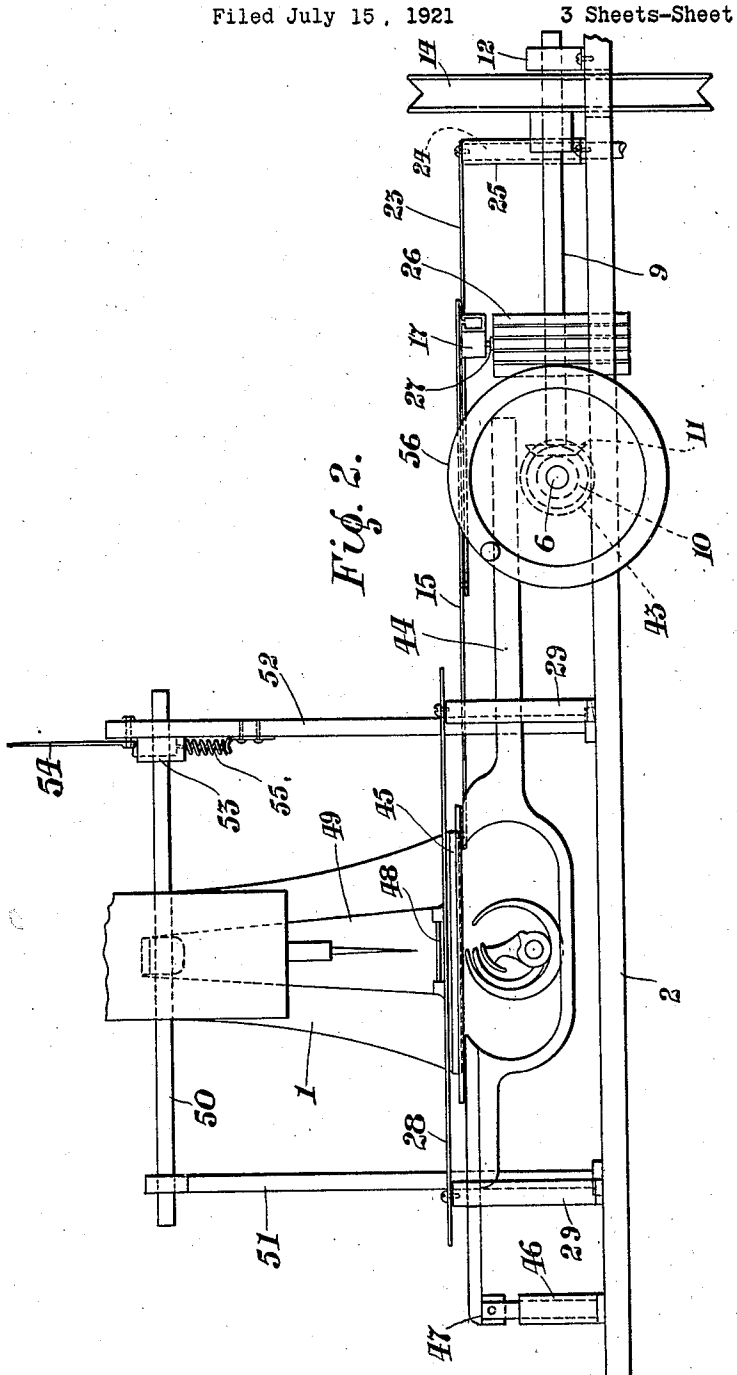

Fig. 2.

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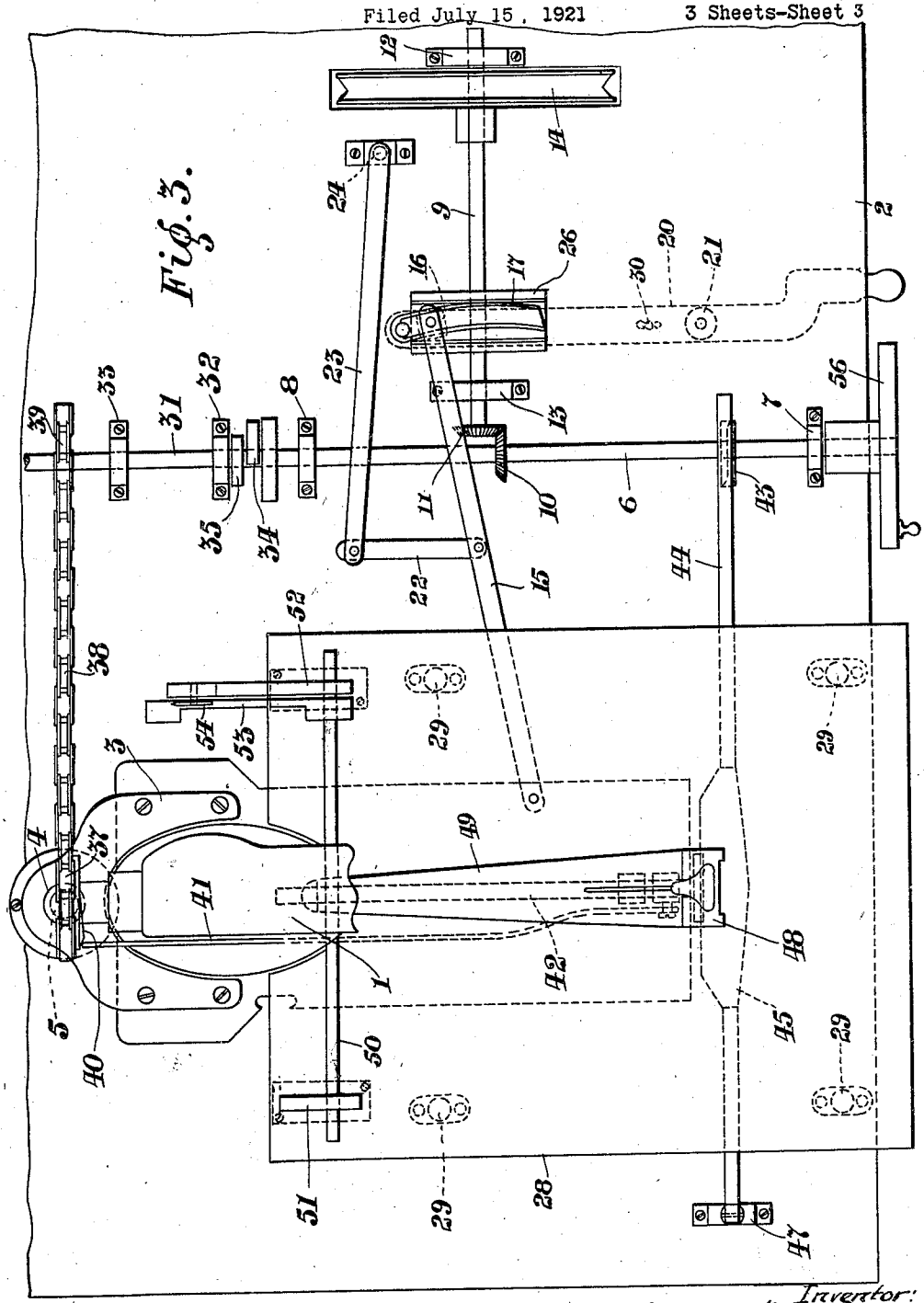
Filed July 15, 1921 3 Sheets-Sheet 3

Fig. 3.



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UNITED STATES PATENT OFFICE.

JOSEPH BINGHAM, OF LURGAN, IRELAND, ASSIGNOR TO WILLIAM HENEY, OF BELFAST, IRELAND.

SEWING MACHINE.

Application filed July 15, 1921. Serial No. 484,862.

To all whom it may concern:

Be it known that I, JOSEPH BINGHAM, of 19 Flush Place, Lurgan, County Armagh, Ireland, have invented certain new and useful Improvements Relating to Sewing Machines, of which the following is a specification.

This invention relates to embroidery sewing machines, its object being to provide improvements therein. With machines at present used for embroidery, of the class known in the trade as "German embroidery", the movement of the work-holder backwards and forwards to suit the vibrating needle renders the work comparatively slow and, consequently, comparatively costly.

Under this invention the work is not moved on the work-plate as usual, but the machine-head frame comprising the head, the upper arm and support is supported so as to be capable of movement to obtain the necessary throw of the needle, said movement being under the control of suitable mechanism, so that the throw can be varied as required. The presser foot, feed, and work-plate are all on a stationary base.

The machine-head frame may, for example, be so supported that it can be swung about a pivot and moved through an arc of a circle to give the required throw of the needle, or it may be reciprocated in any required direction for this purpose.

The mechanism for controlling the throw of the machine-head frame may be similar to that at present used for vibrating the needle bar of an embroidery sewing machine, and be under the control of the operator through the medium of a knee lever, or equivalent, in known manner. The arrangement may be such as to make it possible to move the machine-head frame to give an equal or an unequal throw of the needle on each side of a central position; or to give a throw of the needle from the centre outwards to one side or the other, and inwards to the centre again in order to do certain classes of work, as, for example, a split leaf.

The sewing mechanism of the machine may be adapted, in known manner, to give a quick return movement so as to make the action of the needle and hook suitable for the throw given to the machine head frame.

The invention will now be described with reference to the accompanying drawings whereon:—

Fig. 1 is a side elevation of an embroidery sewing machine constructed in accordance with the invention.

Fig. 2 is a part front elevation of the machine.

Fig. 3 is a plan view of the machine,

Referring to the drawings:—

The machine head frame 1 comprising the head, upper arm and support, is supported on a stationary base 2 by a bracket 3 having a tubular portion 4 movably carried on a pillar 5 secured to the base 2 and shown in dotted lines, Figs. 1 and 3. A shaft 6 (see particularly Fig. 3) is supported in bearings 7 and 8 on the base 2 and is capable of being driven from another shaft 9 at right angles to the shaft 6 by bevel wheels 10 and 11. The shaft 9 is supported in bearings 12 and 13 on the base 2, and carries a driving pulley 14 through which the drive of the machine is effected. One end of a lever 15 is connected to the machine head frame 1, its other end being pivotally connected with a member 16 slidable in a segmental guide 17 having a downwardly extending portion 18 (Fig. 1) supported on a pillar 19. The pillar 19 passes through a hole in the base 2 and is connected to one end of a lever 20 pivotally connected, at 21, to the underside of the base 2. A link 22 is pivotally connected, at one end, to the lever 15 its other end being pivotally connected to one end of a link 23 whose other end is connected to a pillar 24 rotatably carried in a support 25 secured to the base 2. The pillar 24 passes through the base 2 and is connected with the knee lift lever mechanism (not shown). A cross-over cam 26 (Fig. 2) is provided on the shaft 9 which is engaged by a following member 27 pivotally conected with the segmental guide 17. The work plate 28 is held stationary on supports 29 on the base 2.

The arrangement is such that, when the machine is in motion, the cam 26 will move the segmental guide 17 and lever 15 so as to cause the machine head frame to be given movement about its pivot 5 the amount of

the movement being controlled by the operator from the knee lift lever (not shown) by moving the latter and causing the links 22 and 23 to move the lever 15 and slidable member 16 in the segmental guide 17. The arrangement is also such that it is possible to move the machine head frame to give a uniform throw of the needle on each side of a central position, or from a central position outwards to one side, the throw being controlled by the segmental guide 17 which can be altered to different positions by means of the lever 20. A thumb screw 30 is provided for tightening the lever 20 when the position of the segmental guide 17 has been set to give the required movement.

The shaft 6 is connected with another shaft 31 supported in bearings 32 and 33 (the axis of the shaft 31 being above the axis of the shaft 6) by links 34 and 35 which cause the shaft 31 to vary in speed during each revolution to allow the machine head frame 1 time to travel from one side to the other during the time the needle is at its highest point.

The top driving shaft 36 of the machine head frame 1 is driven by a chain wheel 37 and chain 38 from a chain wheel 39 on the shaft 31.

The chain wheel 37 is provided with a cam surface 40 which is capable of moving a lever 41 connected with the under shaft 42, the movement being so timed as to allow of the hook being kept clear of the needle on its downward stroke and preventing the thread coming into contact with the hook until the latter is in position for taking the loop when it moves inwardly towards the needle.

The feed mechanism for carrying the cloth through the machine is operated from a cam 43 on the shaft 6 which is engaged by one end of a bar 44 carrying the feed plate 45, the other end of the bar 44 being pivotally connected to a support 46 by a double hinged joint 47, so that the bar 44 is capable of movement in any direction about the double hinged joint 47.

The presser foot 48 has a curved extension 49 and is connected with a rod 50 which is movably supported in brackets 51 and 52 on the base 2. A lever 53 is fixed on the rod 50 and is capable of being moved by a hand lever 54 for the purpose of moving the rod 50 to raise and lower the presser foot 48. A compression spring 55 is connected with the bracket 52 and lever 53 to allow the presser foot 48 to be quickly lowered into position.

A hand wheel 56 is provided on the shaft 6 for the purpose of moving the machine head frame to any required position whilst it also serves as a balance wheel.

Having now fully described my invention what I claim and desire to secure by Letters Patent is:—

1. An embroidery sewing machine having a movable machine head frame comprising the head, upper arm and support and means for moving the head frame laterally through an arc of a circle so as to give the desired throw to the needle and means for varying the lateral arcuate movements.

2. An embroidery sewing machine having a movable machine head frame, comprising the head, upper arm and support, a presser foot, feed mechanism and work plate mounted on a stationary base and means for moving the head frame laterally through an arc of a circle so as to give the desired throw to the needle and means for varying the lateral arcuate movements.

3. An embroidery sewing machine having a pivoted machine head frame, comprising the head, upper arm and support, and means for moving the head frame laterally through an arc of a circle so as to give the desired throw to the needle and means for varying the lateral arcuate movements.

4. An embroidery sewing machine having a pivoted machine head frame, comprising a head, upper arm and support, and means comprising a quadrant, cam and levers for moving the head frame laterally through an arc of a circle so as to give the desired throw to the needle and means for varying the lateral arcuate movements.

5. An embroidery sewing machine having a pivoted machine head frame, comprising a head, upper arm and support, means comprising a quadrant, cam and levers for moving the head frame laterally through an arc of a circle so as to give the desired throw to the needle, means for varying the lateral arcuate movements and means whereby the machine head frame may be caused to give a uniform throw of the needle on each side of a central position, or from a central position outwards to one side.

6. An embroidery sewing machine having a pivoted machine head frame, comprising a head, upper arm and support, means for moving the head frame laterally through an arc of a circle so as to give the desired throw to the needle, means for varying the lateral arcuate movements, means whereby the machine head frame may be caused to give a uniform throw of the needle on each side of a central position or outwards to one side, a presser foot and feed mechanism and work plate mounted on a stationary base.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH BINGHAM.

Witnesses:
HARRY WALTER ALLSOP,
JOHN MCGHEE.