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F. H. KELLEY.

SEWING MACHINE ATTACHMENT FOR FELLING, SERGING, &c.

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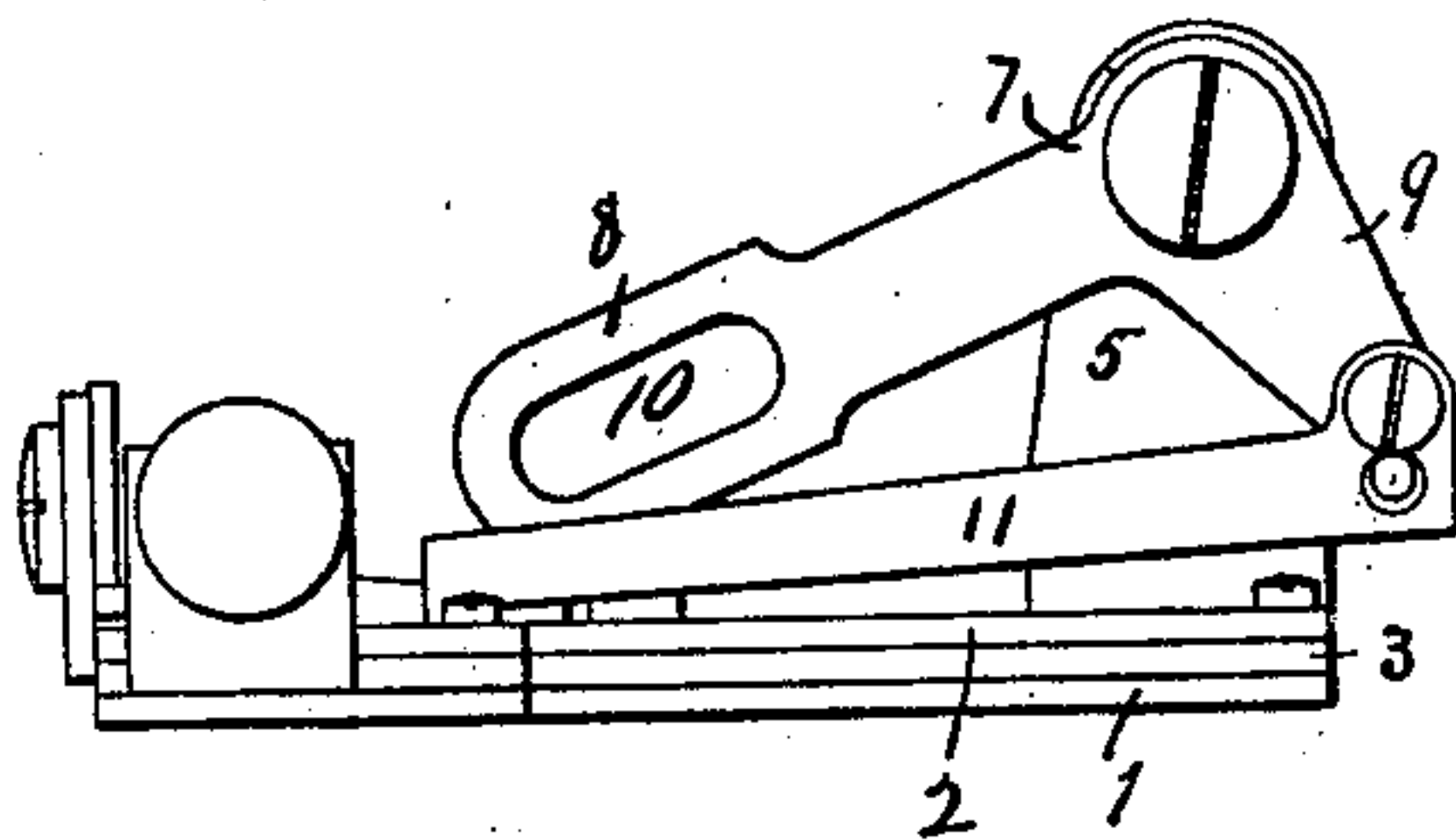
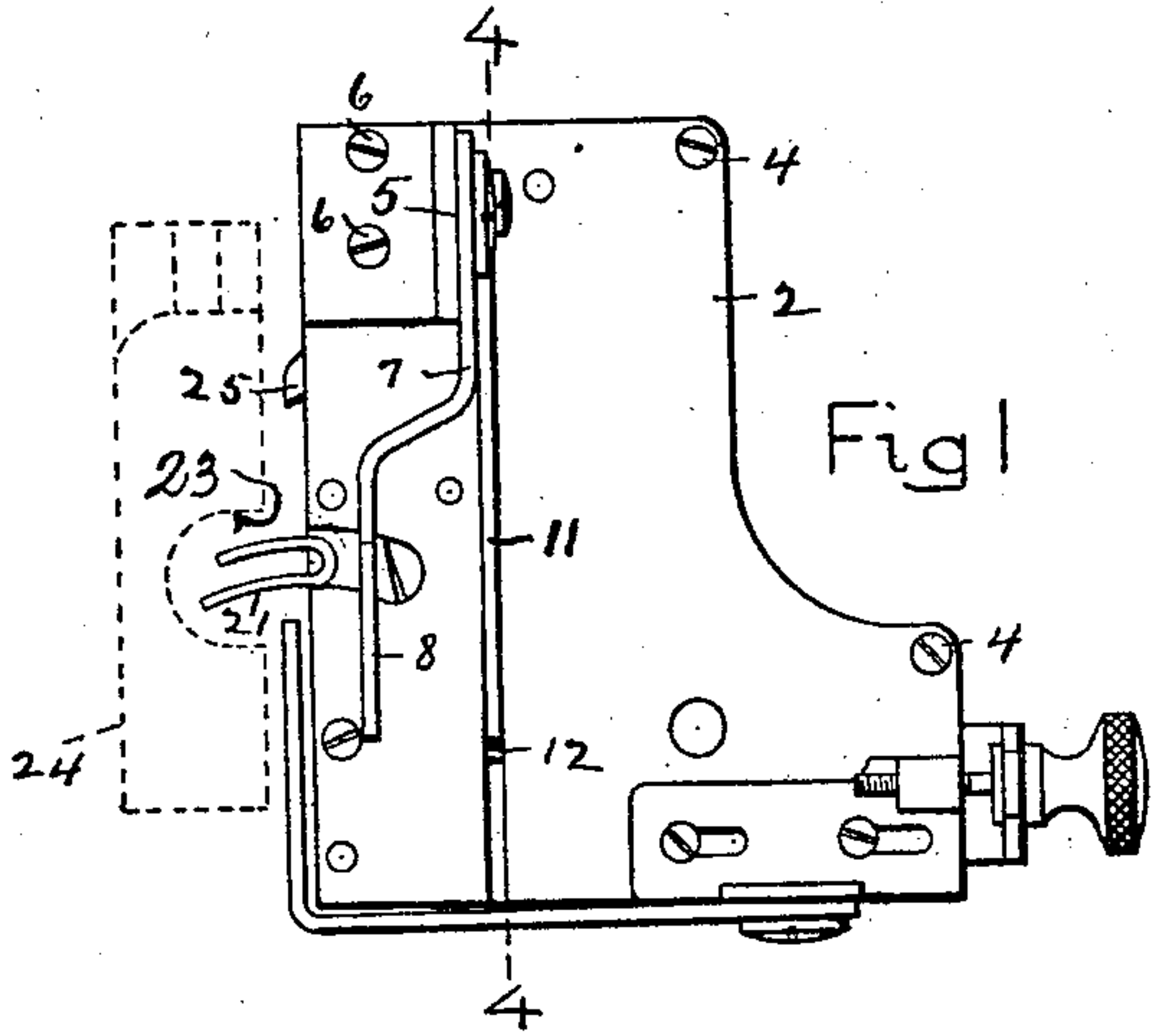


Fig 2

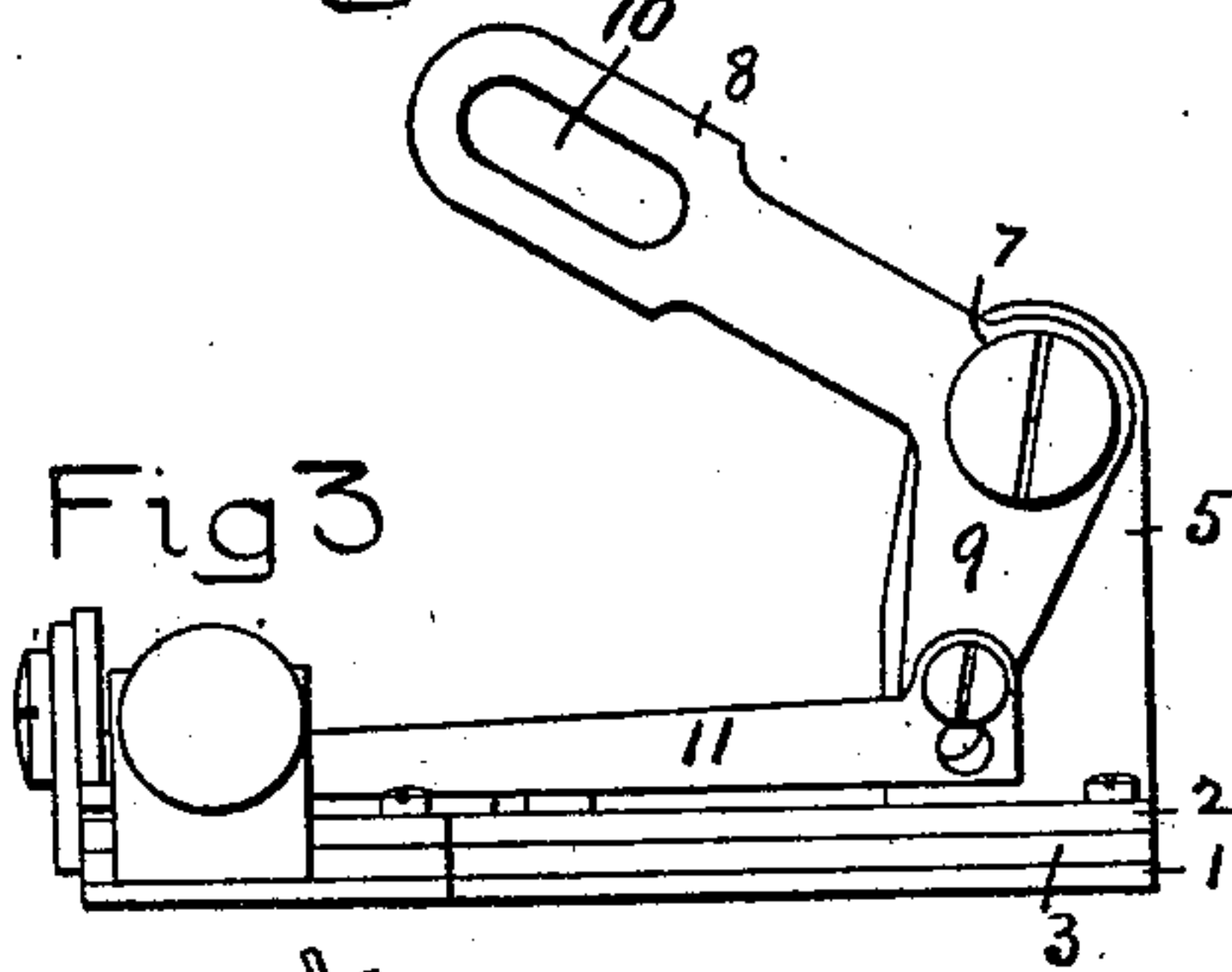


Fig 3

Fig 4

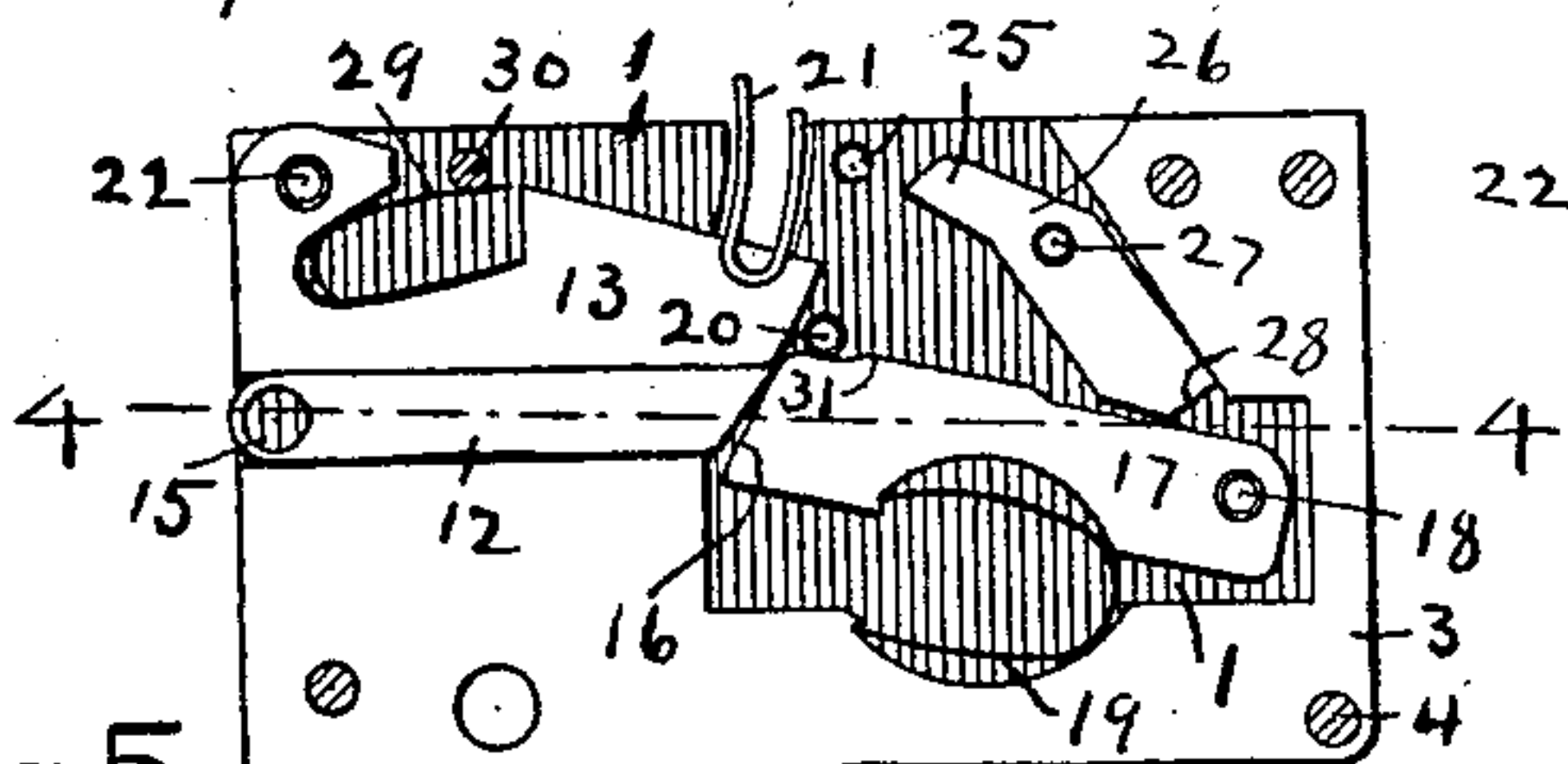
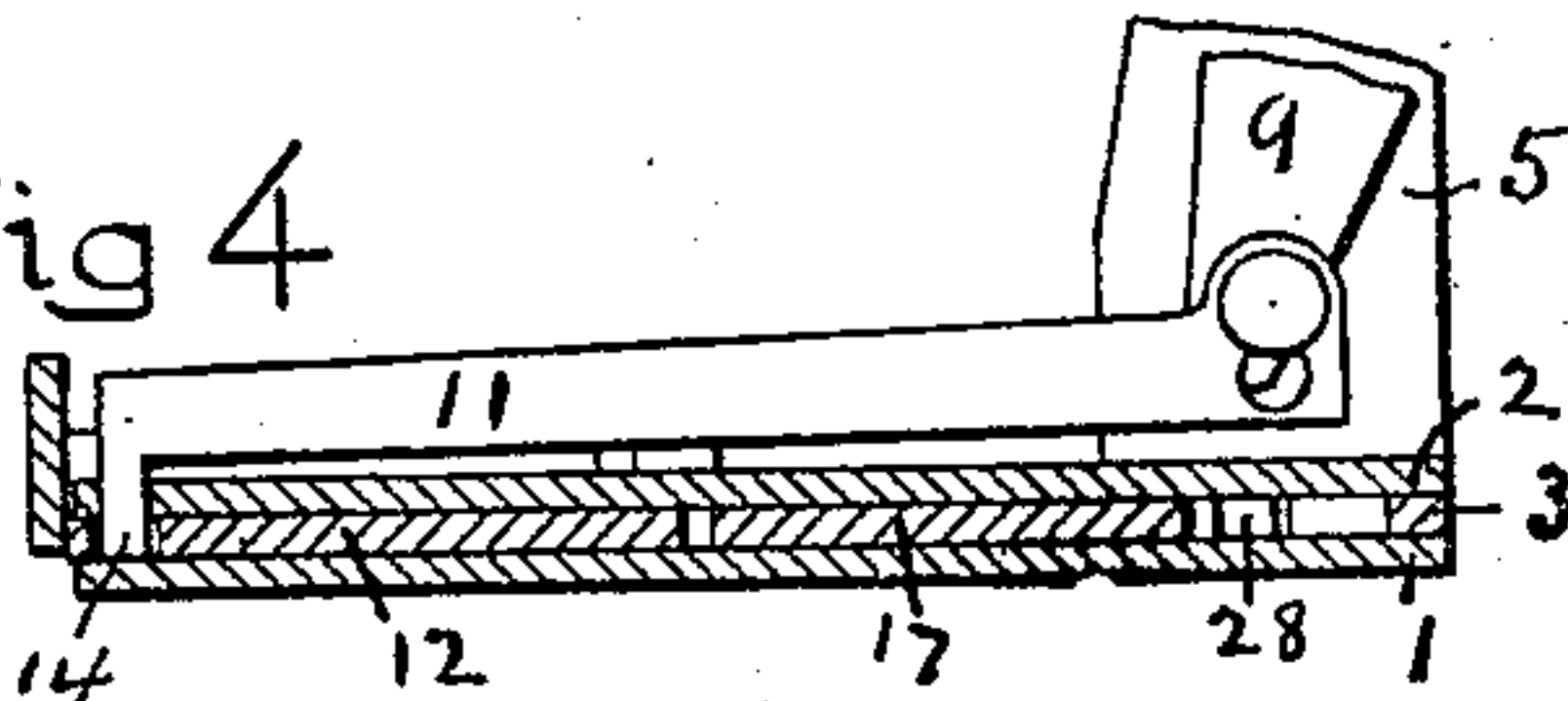


Fig 5

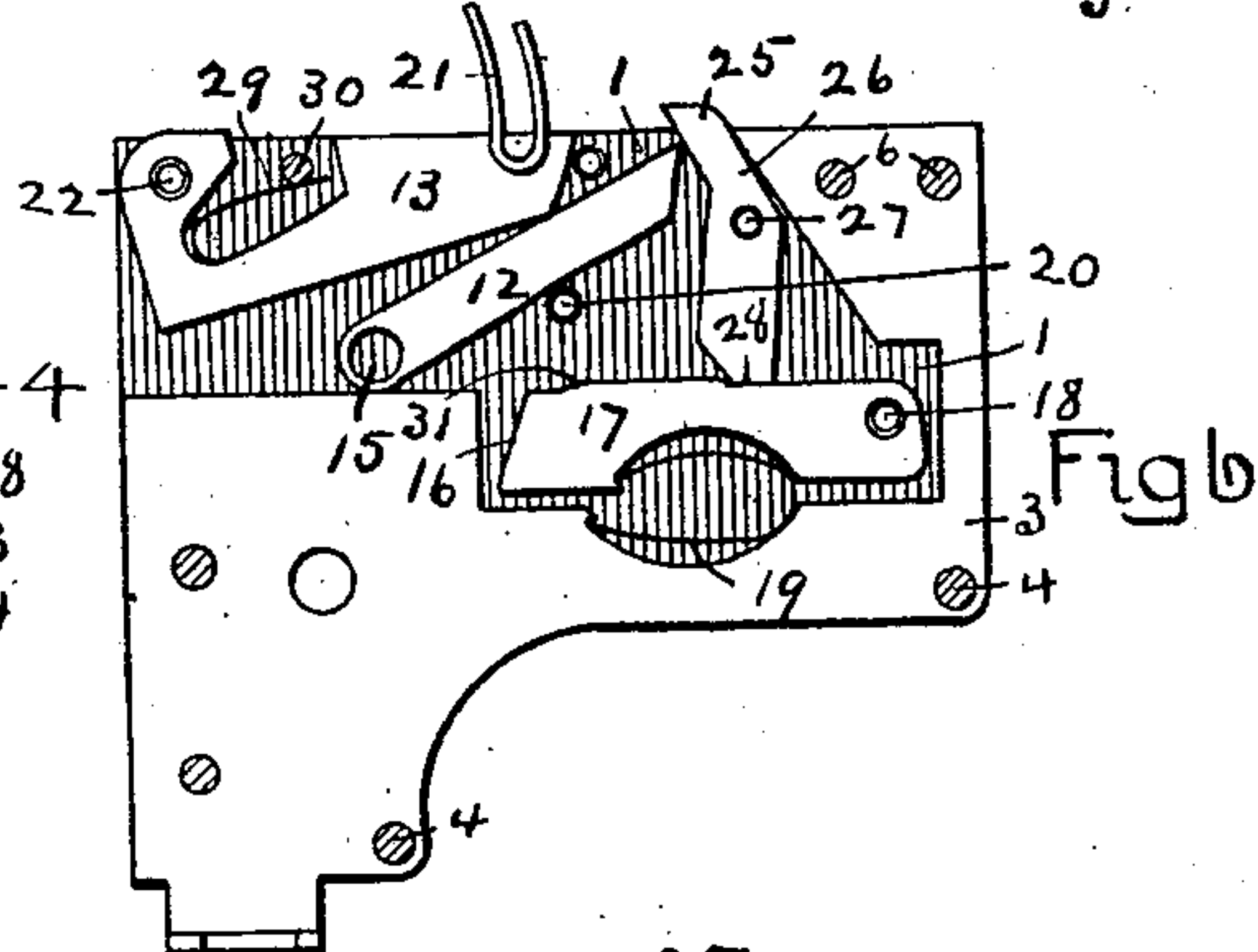


Fig 6

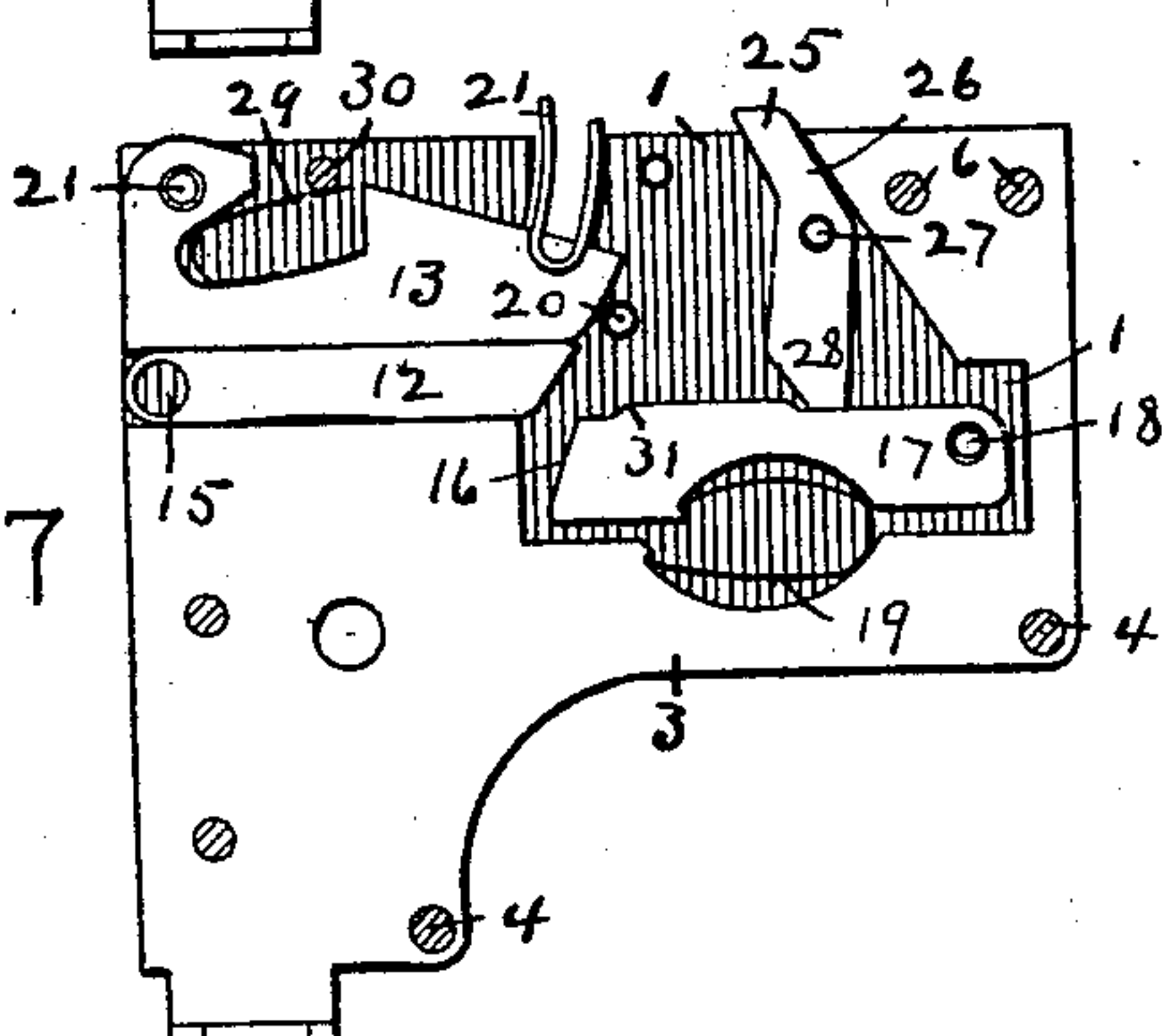


Fig 7

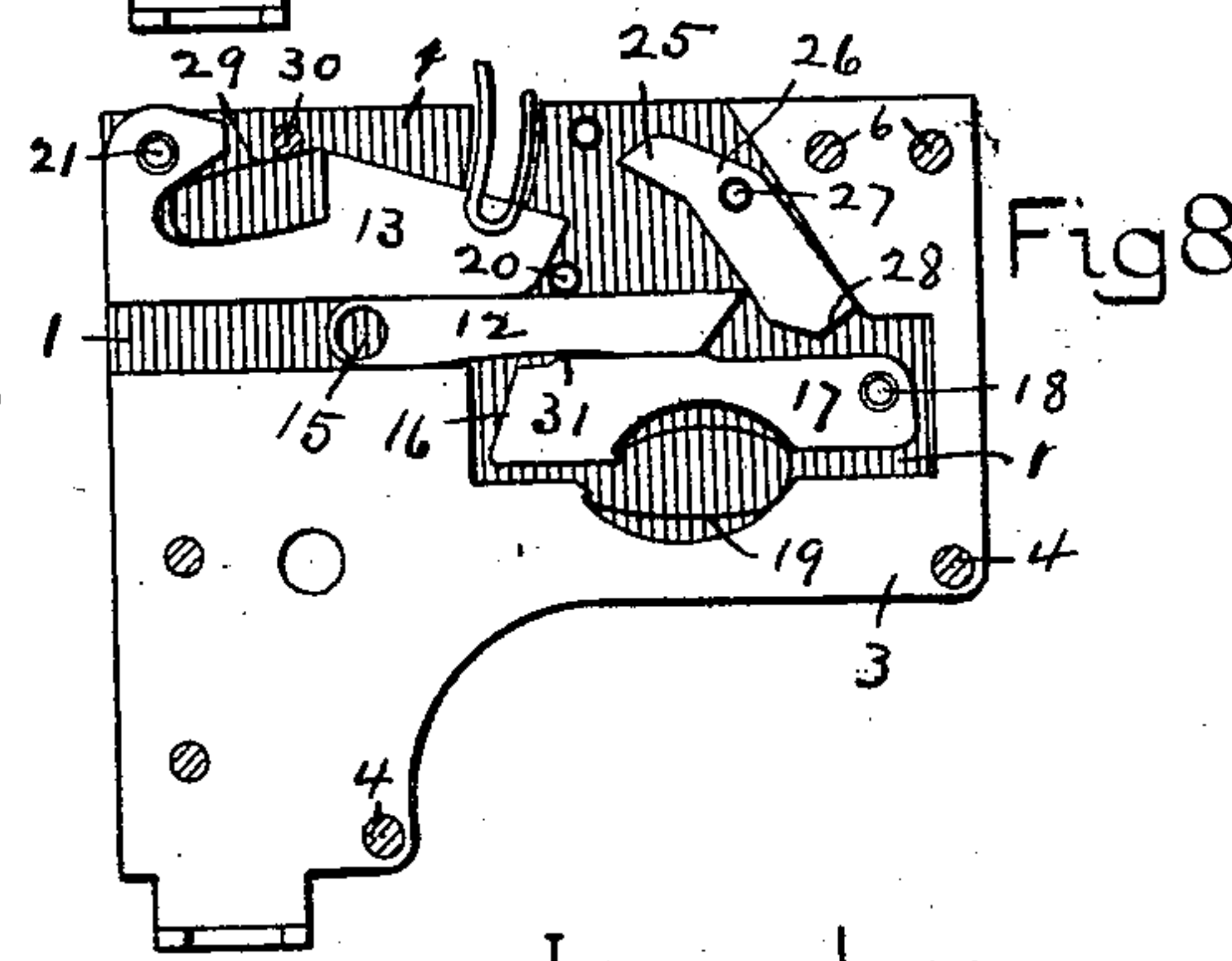


Fig 8

Witnesses

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## SEWING-MACHINE ATTACHMENT FOR FELLING, SERGING, &c.

No. 859,301.

Specification of Letters Patent.

Patented July 9, 1907.

Application filed October 14, 1903. Serial No. 176,942.

*To all whom it may concern:*

Be it known that I, FREDERICK H. KELLEY, a citizen of the United States, residing at Northboro, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Sewing-Machine Attachments for Felling, Serging, and Ornamental Stitching, of which the following is a specification, accompanied by drawings, forming a part of the same, in which—

Figure 1 represents a top view of an attachment for a sewing machine embodying my invention. Figs. 2 and 3 represent a side elevation of my improved attachment with the operative parts in different positions. Fig. 4 is a vertical sectional view on the plane of line 4—4, Figs. 1 and 5. Fig. 5 is a plan view with the top plate removed, showing the operative mechanism in its normal position. Fig. 6 is a plan view with top plate removed, and with the operative mechanism in the position assumed at the end of the first downward movement of the needle bar. Fig. 7 is a plan view with the top plate removed, and with the operative mechanism in the position assumed at the end of the next succeeding upward stroke of the needle bar, and Fig. 8 is a plan view with the top plate removed showing the position of the operative mechanism at the second and each alternate downward stroke of the needle bar.

Similar reference letters and figures refer to similar parts in the different views.

My present invention relates to that class of sewing machine attachments by which the fabric is pushed to one side at each alternate downward stroke of the needle, during the operation of sewing, whereby the row of stitches is made to assume a zigzag line, enabling the operations of felling, serging, ornamental stitching, and what is known as "blind stitching" to be accomplished.

Referring to the accompanying drawings 1 denotes the bottom plate of the attachment which rests on the sewing machine, 2 the top plate resting on an intermediate plate 3, which is cut away to give space for the operative mechanism as shown in Figs. 5, 6, 7 and 8. These three plates are fastened together by screws 4, 4, and constitute the framework of the attachment. A bracket 5, fastened to the top plate 2 by screws 6, 6, is pivotally connected to a bell crank lever 7 having a long arm 8 and a short arm 9. The slot 10 in the long arm 8 of the bell crank lever 7 is engaged by a stud on the reciprocating needle bar, not shown, and the short arm 9 is connected by a link 11 with a wedge 12 that operates the pusher plate 13 as hereinafter described. The rocking motion of the bell crank lever imparts a reciprocating movement to the wedge 12 and the latter has a pivotal connection with the bell crank lever by means of a projection 14 on the end of the link which

enters a circular opening 15 in the end of the wedge. As the wedge 12 moves forward during the downward stroke of the needle bar it strikes the beveled end 16 of a switch plate 17, pivoted at one end on a stud 18 with its beveled end 16 normally held by a spring 19 against a fixed stud 20. The free end of the wedge 12 is deflected by the beveled end 16 of the switch plate 17 and caused to move between the fixed stud 20 and the pusher plate 13, thereby swinging the pusher plate on the stud 22.

Attached to the pusher plate 13 is a forked pusher 21 which is crowded by the swinging movement of the pusher plate 13 against the edge of the fabric to push it beyond the path of the needle which, at its downward stroke, passes between the prongs of the pusher 21. The fabric in front of and behind the portion displaced by the pusher is maintained in its normal position by a presser-foot notched at 23 to receive the pusher 21, and represented in Fig. 1 by broken lines 24. The advancing wedge 12 strikes the end 25 of a latch lever 26 pivoted upon a stud 27 and rocks the latch lever to press its opposite end 28 against the switch plate 17, thereby swinging the beveled end of the switch plate away from the fixed stud 20 against the tension of its spring 19 into the position shown in Fig. 6. The wedge 12 is next returned to its original position during the upward stroke of the needle bar, thereby allowing the pusher plate to be retracted by a spring 29 acting against a fixed stud 30, and as the pusher 21 is moved back the elasticity of the fabric restores the displaced portion to its normal position in the path of the needle. While the straight portion of the wedge 12 is moving between the stud 20 and the pusher plate 13 the latter is held stationary during the downward and upward movement of the needle through the plane of the fabric. At the next downward movement of the needle bar the wedge 12 is again advanced, this time passing between the fixed stud 20 and the switch plate 17, as represented in Fig. 8, slightly moving the switch plate by its contact with a swell or projection 31 on the side of the switch plate in order to relieve its pressure against the end of the latch lever. The continued movement of the wedge strikes the end 28 of the latch lever and returns it to its normal position so that upon the return movement of the wedge the spring 19 will return the switch plate to its normal position, and the operative parts of the mechanism will then assume their normal position, as shown in Fig. 5.

To summarize, the operation of my device is as follows:—From the normal position of the mechanism as shown in Fig. 5, the downward stroke of the needle bar moves the wedge 12 forward by means of the bell crank lever 7 and connecting link 11. The wedge 12 is deflected between the fixed stud 20 and the pusher plate 13 by means of the switch plate 17 and crowds the



pusher 21 against the fabric before it is engaged by the needle. The pusher 21 is then maintained in a stationary position by the continued forward and backward movement of the wedge 12 between the fixed stud 20 and the pusher plate 13, until the needle has moved upward above the fabric. The wedge 12 strikes the end 25 of the latch lever 26, and rocks the latter to move the switch plate away from the fixed stud 20 into its inoperative position. At the conclusion of the downward movement of the needle bar, when the bell crank lever has assumed the position shown in Fig. 2, the operative mechanism occupies the position shown in Fig. 6. On the return movement of the needle bar the wedge 12 is drawn back by the bell crank lever 7 and connecting link 11 to its original position; the pusher plate 13 is retracted by the spring 29 to its original position and at the end of the upward movement of the needle bar the operative mechanism occupies the relative positions shown in Fig. 7. At the next downward movement of the needle bar, the wedge 12 moves forward passing on the opposite side of the fixed stud 20, and between it and the switch plate 17, allowing the pusher plate 13 to remain at rest. As the wedge 12 moves forward in the movement, it strikes the swell or projection 31 on the side of the switch plate 17, and moves it slightly away from the latch lever 26. The wedge 12 then strikes and reverses the latch lever 26 which has been relieved from the pressure of the switch plate 17. The result of this downward movement of the needle bar is shown in Fig. 8. On the next upward stroke of the needle bar the wedge 12 is drawn back and the switch plate 17 is moved to its original and operative position by the spring 19. The operative parts of the attachment are now again in the positions shown in Fig. 5, and the cycle of movements described above is repeated on the next two downward and upward strokes of the needle bar.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a sewing machine attachment, the combination of a pusher, a pusher plate, a fixed stud, a reciprocating wedge, means for reciprocating said wedge, adapted to pass the same between the pusher plate and the stud, means for operating said wedge without influencing the pusher on alternate reciprocations of said wedge, and means for retracting the pusher after the wedge has been withdrawn from between the stud and the pusher plate.

2. In a sewing machine attachment, the combination of a pusher, a pusher plate, a fixed stud, a reciprocating wedge, means for reciprocating said wedge adapted to pass the same between said pusher plate and said stud, said means also furnishing a positive stop for said wedge at each end of its movement, and means for retracting the pusher after said wedge has been withdrawn from between the stud and the pusher plate.

3. In a sewing machine attachment, the combination of a pusher, a pusher plate, a reciprocating wedge operatively connected with the needle bar, a fixed stud, means for deflecting the path of the wedge between the fixed stud and the pusher plate, also allowing the wedge to pass alternately on the opposite side of the fixed stud from the pusher plate, and means for retracting the pusher after the wedge has been withdrawn to the inoperative position.

4. In a sewing machine attachment, the combination of a pusher, a pusher plate, a reciprocating wedge operatively connected with the needle bar, a fixed stud, a pivoted switch plate which in its normal position deflects the wedge between the fixed stud and the pusher plate, means for removing the switch plate to an inoperative position out of the path of the advancing wedge and means for retracting the pusher after the reciprocating wedge has been withdrawn to its inoperative position.

5. In a sewing machine attachment, the combination of a pusher, a pusher plate, a fixed stud, a wedge, means for reciprocating said wedge between said pusher plate and said stud, means for retracting the pusher plate to its original position when the wedge is withdrawn from between the fixed stud and the pusher plate on the upward stroke of the needle bar, and means for allowing the wedge to pass on the opposite side of the fixed stud from the pusher plate.

6. In a sewing machine attachment, the combination of a pusher, a pusher plate, a fixed stud, a reciprocating wedge operatively connected with the needle bar, a switch plate, means for holding the switch plate normally in an operative position in contact with the fixed stud, means for moving the switch plate into an operative position to allow the reciprocating wedge to pass on the opposite side of the fixed stud, and means for retracting the pusher after the reciprocating wedge has been withdrawn to its inoperative position.

7. In a sewing machine attachment, the combination of a pusher, a pusher plate, a reciprocating wedge operatively connected with the needle bar, a fixed stud, a switch plate, a latch lever pivoted midway its length and arranged to be struck by the advancing wedge, on the downward stroke of the needle bar so that its opposite end will force the switch plate out of an operative position in contact with the fixed stud, and means for retracting the pusher after the reciprocating wedge has been withdrawn to its inoperative position.

8. In a sewing machine attachment, the combination of a pusher, a pusher plate, a reciprocating wedge operatively connected with the needle bar, a fixed stud, a pivoted switch plate, a latch lever arranged to hold the switch plate in its inoperative position, a swell or projection on the side of the switch plate, whereby the switch plate is slightly swung on its pivot by the advancing wedge out of contact with the latch lever, and means for retracting the pusher after the reciprocating wedge has been withdrawn to its inoperative position.

9. In a sewing machine attachment, the combination of a pusher, a pusher plate, a reciprocating wedge operatively connected with the needle bar, a fixed stud, means whereby at each downward stroke of the needle bar the wedge passes alternately on opposite sides of the fixed stud and means for retracting the pusher after said wedge has been withdrawn from between the fixed stud and the pusher.

10. In a sewing machine attachment, the combination of a pusher, a pusher plate, a reciprocating wedge operatively connected with the needle bar, a fixed stud, a pivoted switch plate normally held by a spring in an operative position to deflect said wedge, a latch lever pivoted midway its length and arranged to be rocked by the advancing wedge in order to move the switch plate from its operative position, a spring applied to retract the pusher when released by the wedge and a swell or projection on the switch plate in the path of the wedge, whereby said switch plate is slightly swung away from the latch lever at each alternate downward stroke of the needle bar.

Dated this 7th day of October 1903.

FREDERICK H. KELLEY.

Witnesses:

PENELOPE COMBERBACH,  
RUFUS B. FOWLER.