April 17, 1951 M. CHINNICI 2,549,057

SEWING MACHINE

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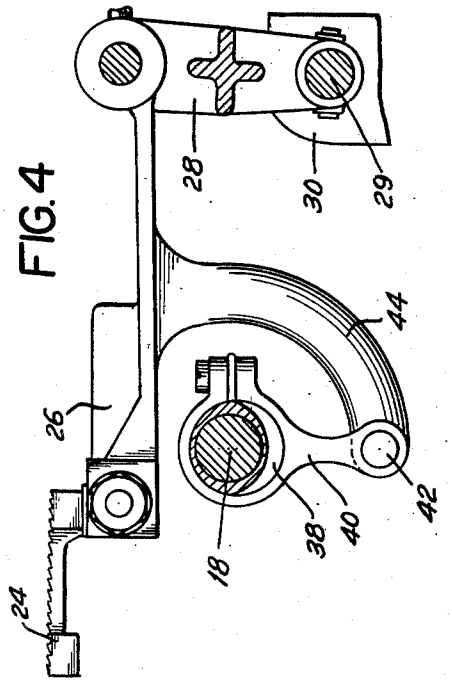


FIG. 4

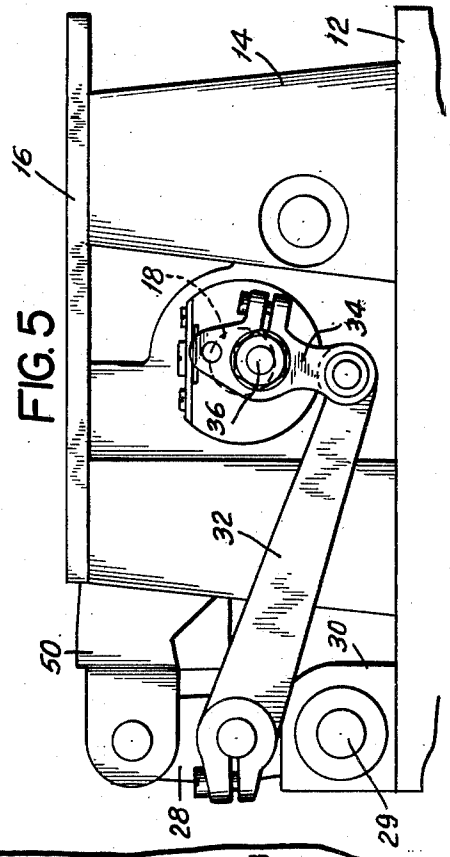


FIG. 5

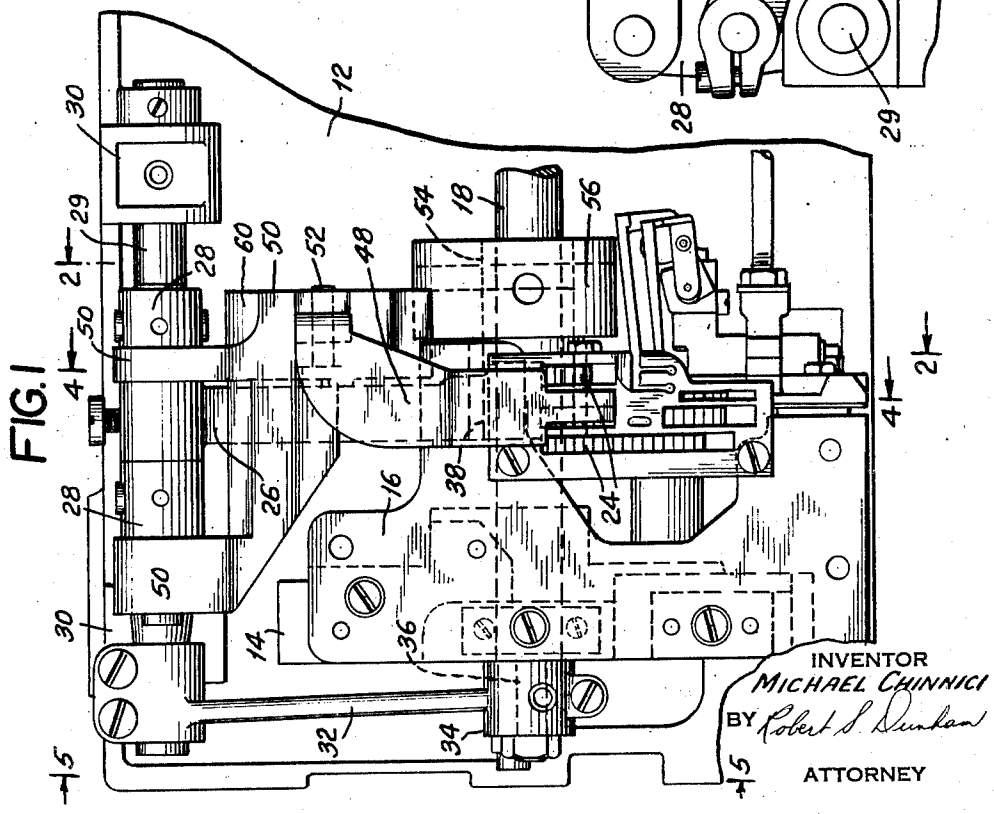


FIG. 1

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FIG. 2

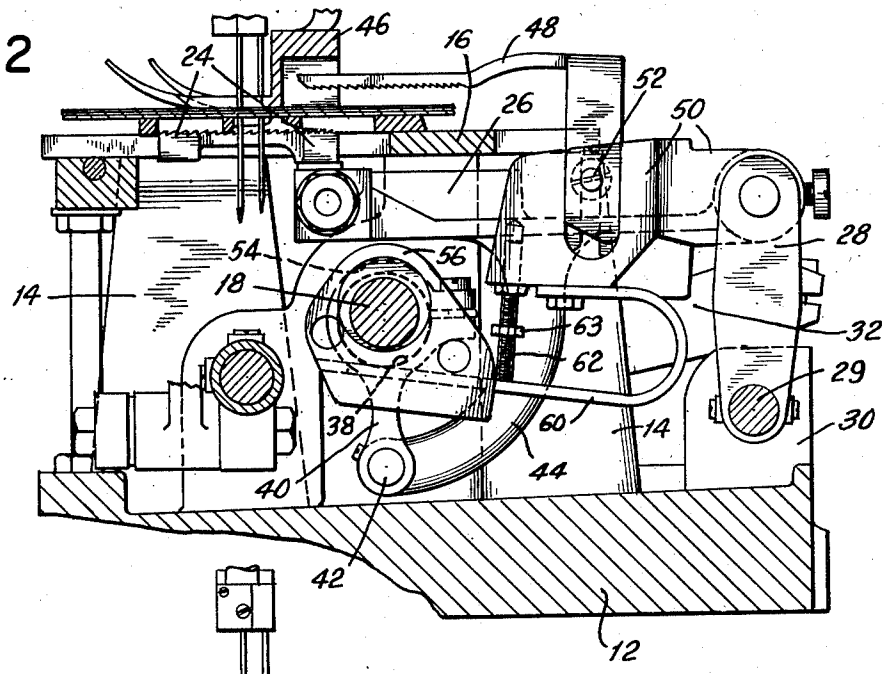
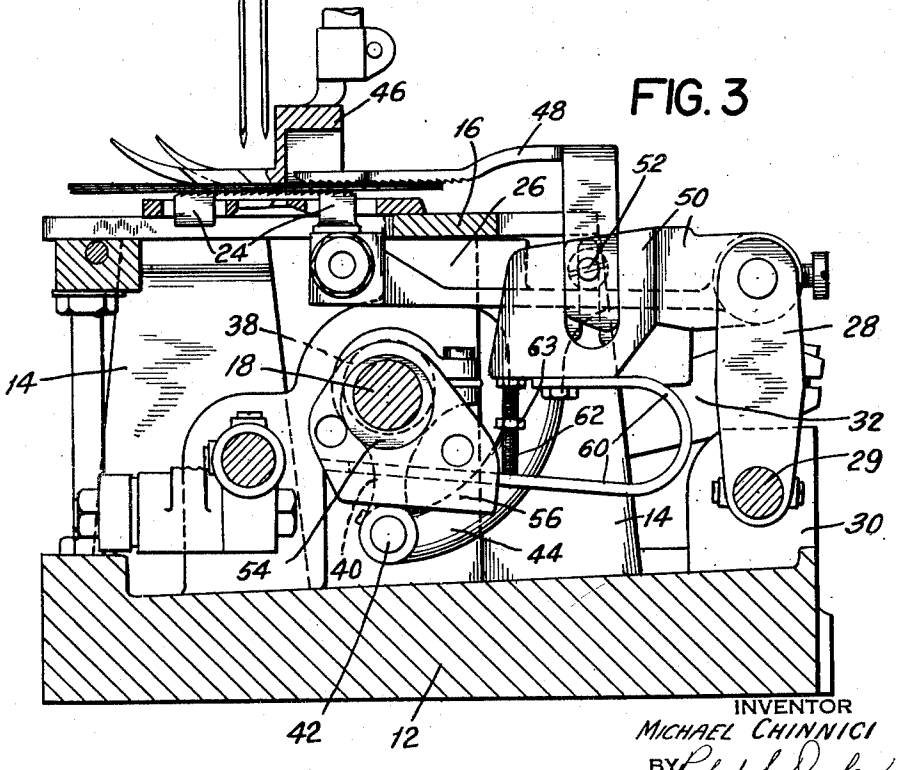


FIG. 3



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UNITED STATES PATENT OFFICE

2,549,057

SEWING MACHINE

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Application May 8, 1948, Serial No. 25,933

3 Claims. (Cl. 112—207)

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This invention pertains to sewing machines, with particular reference to their feeding mechanisms.

The conventional feeding mechanism comprises feed dogs operating on only the underside of the fabric, an arrangement that gives satisfactory results under ordinary conditions.

It has been found, however, that the conventional device is not adequate when it becomes necessary to feed an upper layer of fabric in exact synchronism with a lower layer in order to maintain the layers in a fixed relationship to each other during the complete sewing operation.

To overcome that difficulty I provide feed dogs both above and below the fabric, with means for operating the dogs simultaneously in order to clamp the layers of fabric together during every feeding step, thus continuously maintaining the layers in their original relationship.

Further and other objects and advantages will be apparent from the specification and claims, and from the accompanying drawings which illustrate what is now considered the preferred embodiment of the invention.

In the drawings:

Fig. 1 is a plan view of a portion of the machine, taken at the plane of the fabric;

Fig. 2 is a view on line 2—2 of Fig. 1 showing the feed dogs open;

Fig. 3 is the same view as Fig. 2 but with the feed dogs closed and gripping the layers of fabric between them;

Fig. 4 is a detail view on line 4—4 of Fig. 1; and

Fig. 5 is a detail view on line 5—5 of Fig. 1.

On the machine base 12 are upstanding brackets 14 on which is mounted the work support 16. The actuating shaft 18 runs longitudinally of the machine.

In order to feed the material across work support 16 the usual feeding mechanism is provided underneath the work, comprising feed dogs 24 carried by a feed bar 26 (Figs. 1, 2, 3, 4), which is actuated by rocker member 28. Rocker 28 is pivoted at 29 on brackets 30 on bed 12 and is oscillated by a link 32 actuated by an arm 34 which in turn is actuated by a crank pin 36 on the end of shaft 18 (Fig. 5), thus reciprocating feed bar 26 horizontally.

The feed bar 26 is raised and lowered by an eccentric 38 on shaft 18. The eccentric operates a strap 40 pivoted at 42 to a curved arm 44 integral with feed bar 26.

A conventional presser foot 46 holds the material down on the work support against the pressure of the feed dogs 24.

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When several layers of material are to be sewn together, the above described feed means is not satisfactory since the feed dog engages only the lowermost layer of material. The uppermost layer may lag behind, thereby causing bunching and uneven ends.

The invention provides an auxiliary feed dog 48 which grips the uppermost layer of material from above at the same time that dog 24 grips the lowermost layer from below, thus clamping the layers together during the feeding operation, thereby preventing relative movement of the various layers. Dog 48 enters presser foot 46 so that fibre cannot escape between the parts.

The feed dog 48 is attached to an auxiliary feed bar 50 by means of an adjustable clamp 52. Feed bar 50 is pivotally connected to feed rocker 28 and is reciprocated horizontally thereby.

An eccentric 54 (Fig. 2) on shaft 18 imparts the necessary vertical motion to feed dog 48 through the instrumentality of a block 56 and a U-shaped bent metal member 60 having its upper branch bolted to the underside of feed bar 50, and its lower branch entering a substantially horizontal slot in block 56, thus permitting member 60 to follow horizontal movements of feed bar 50 while imparting vertical movements thereto. Member 60 also acts as a spring compensating for any differences in thickness of fabric traveling between members 48, 24, 46.

The spread between the arm and member 60 may be adjusted by a screw 62 threaded into bar 50 and rotatable by an integral nut 63.

As shown in Fig. 2 the upper and lower feed dogs 24 and 48 are shown separated while the needles penetrate the material. Upon further rotation of shaft 18 eccentric 38 will lift feed dog 24, and eccentric 54 will lower feed dog 48. At the same time arm 28 rocks to the left causing the feed dogs to grip the material as shown in Fig. 3. Further rotation of shaft 18 will feed the material to the right and then cause the machine to repeat its stitching and feeding cycle.

It is to be understood that the invention is not limited to the specific embodiment herein illustrated and described but may be used in other ways without departure from its spirit as defined by the following claims.

I claim:

1. Feeding mechanism for a sewing machine comprising: a feed dog above the material; means for reciprocating said dog horizontally; and separate means for moving said dog vertically into and out of material-gripping position, said separate means including an eccentric, a

block surrounding said eccentric for actuation thereby and provided with a substantially horizontal slot therethrough, and a flat U-shaped metal member having one branch adapted to reciprocate in said slot and its other branch rigidly connected to said feed dog, substantially as set forth.

2. The invention set forth in claim 1 in which means is provided for adjusting the spread of said U-bar.

3. Feeding mechanism for a sewing machine having an actuating shaft, comprising: a lower feed dog below the material; means for reciprocating said lower feed dog horizontally; means for vertically raising and lowering said lower feed dog into and out of material-gripping position; an upper feed dog above the material; means for reciprocating said upper feed dog horizontally in synchronism with the reciprocation of said lower feed dog; and separate means for vertically lowering and raising said upper feed dog into and out of material-gripping position simultaneously

with the vertical movement of said lower feed dog, said separate means including an eccentric on said shaft, a block surrounding said eccentric for actuation thereby and provided with a substantially horizontal slot therethrough, a flat U-shaped metal member having one branch adapted to reciprocate in said slot, and a feed bar rigidly connecting the other branch of said metal member to said upper feed dog.

MICHAEL CHINNICI.

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