A. G. FENN.

NEEDLE FEED MECHANISM.

APPLICATION FILED NOV. 17, 1908.

942,895. Patented Dec. 14, 1909.

3 SHEETS—SHEET 1.

Fig. 1

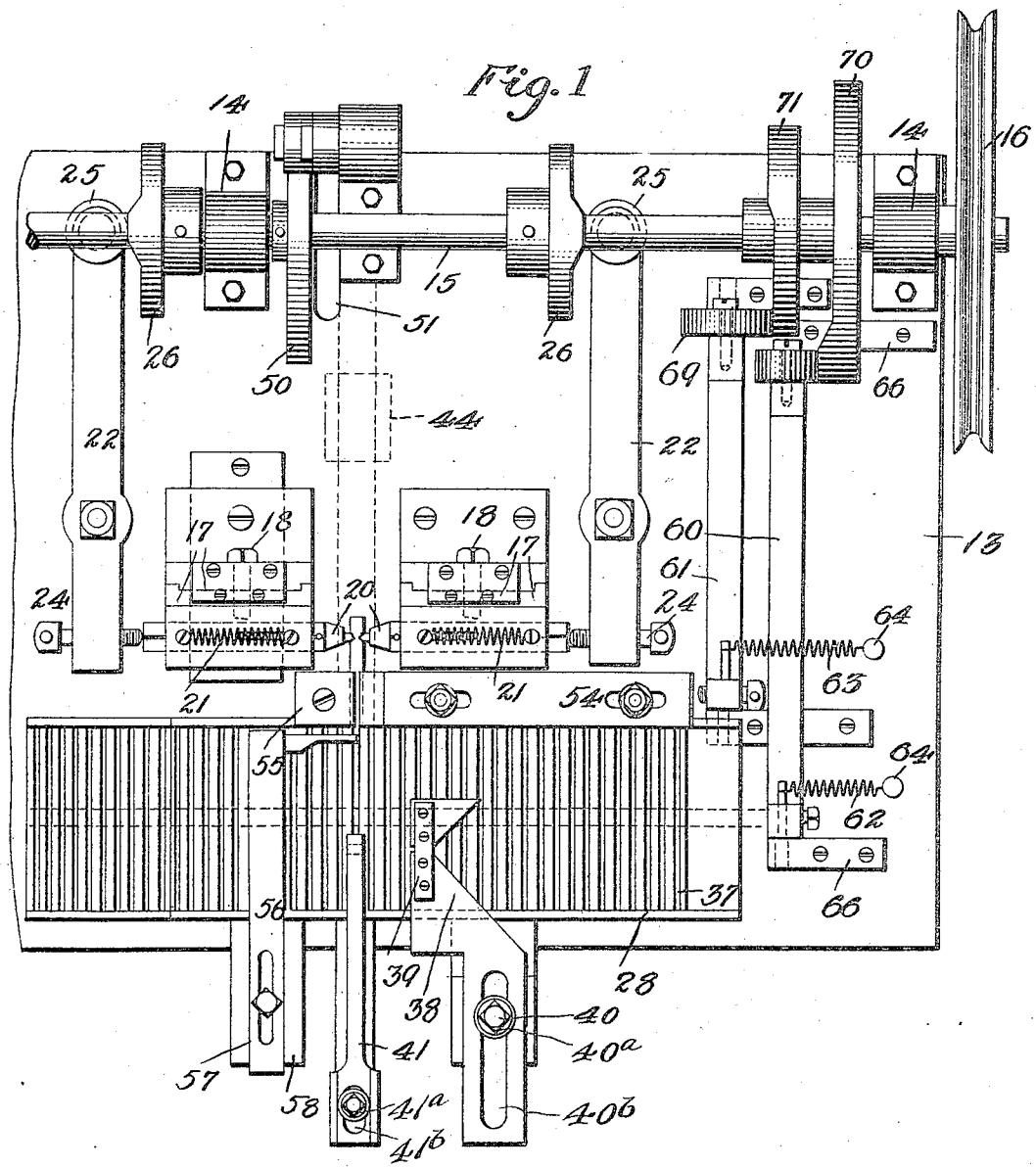
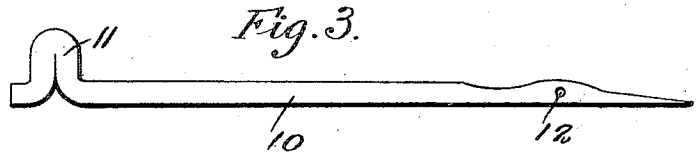


Fig. 3.



Witnesses

Jos. F. Collins

Myron G. Clear

Inventor

A. G. Fenn,

By C. A. Parker

Attorney

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3 SHEETS—SHEET 2.

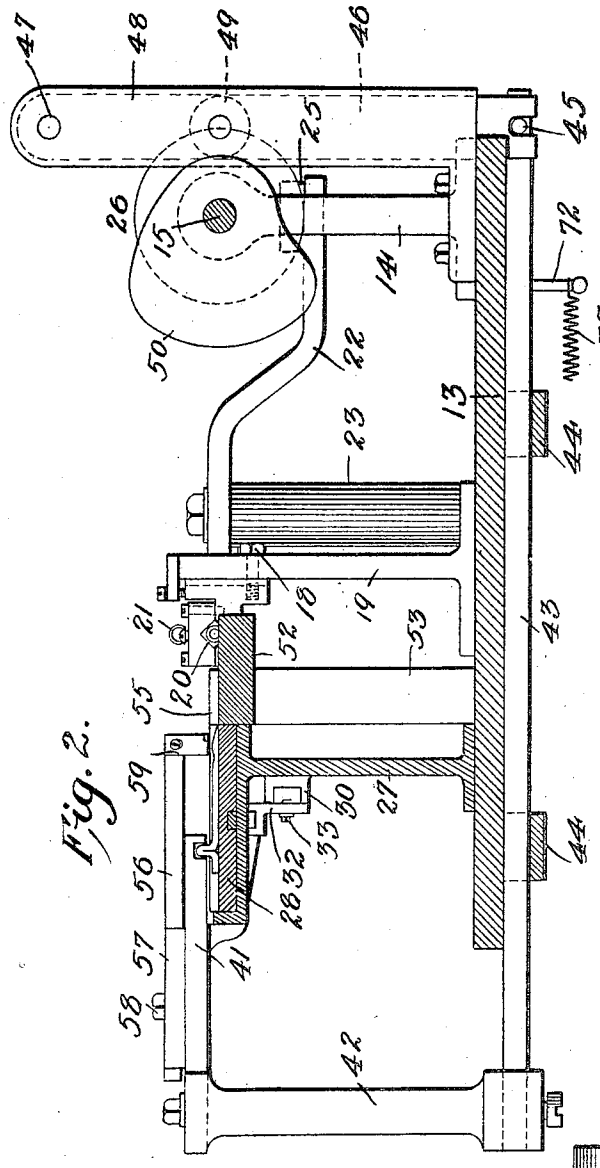

Fig. 2.

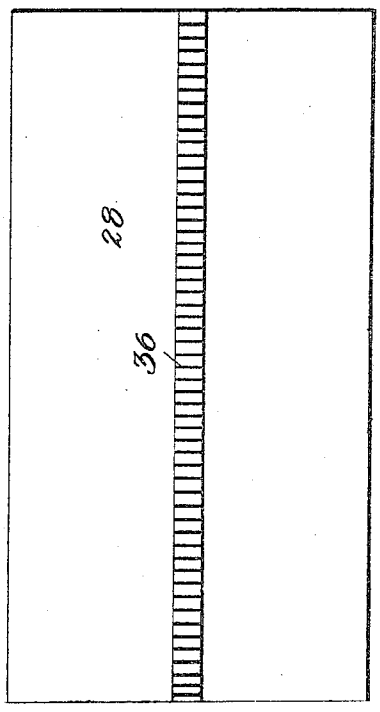

Fig. 5.

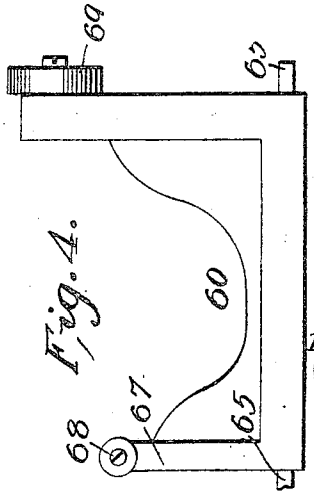

Fig. 4.

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Myron G. Clear.

Inventor

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By C. L. Parker

Attorney

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3 SHEETS—SHEET 3.

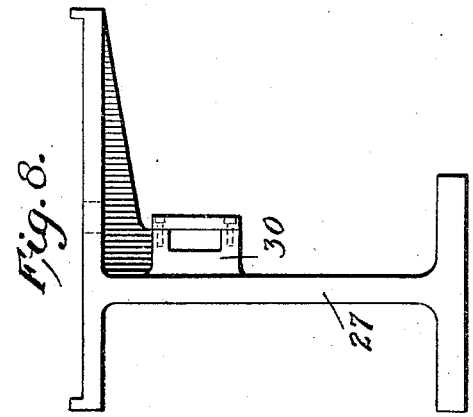

Fig. 8.

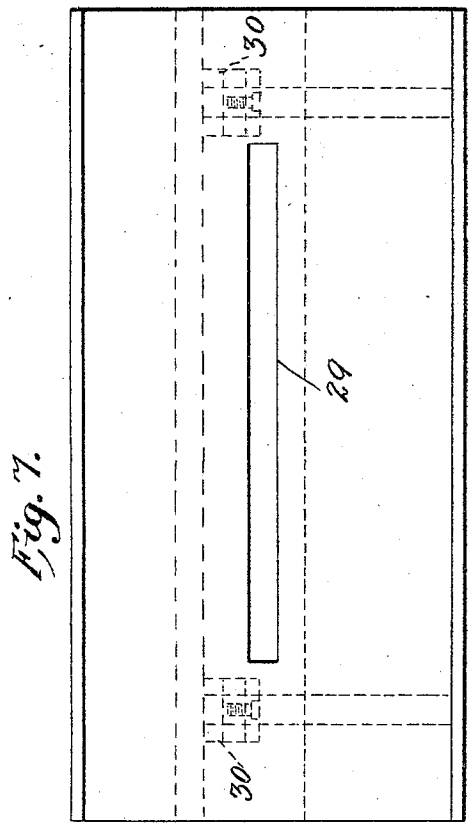

Fig. 7.

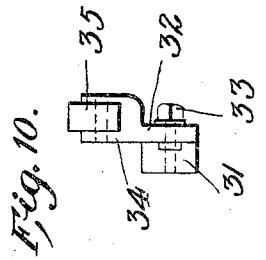

Fig. 10.

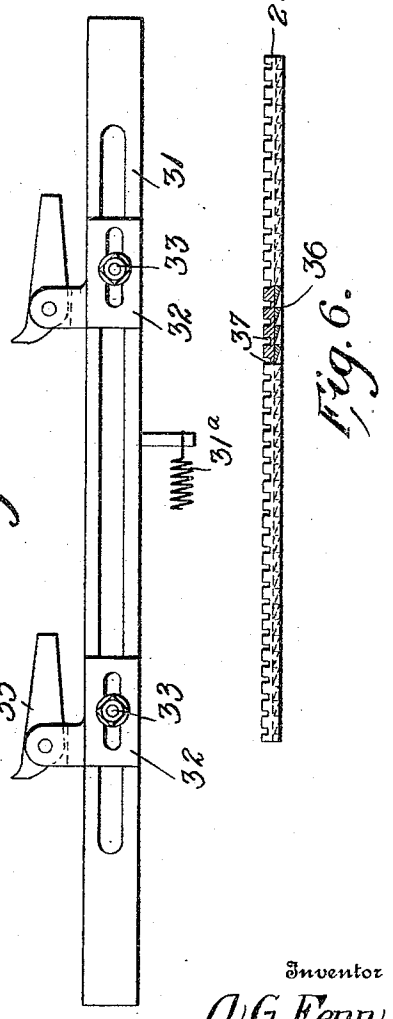

Fig. 9.

Fig. 6.

Witnesses

Jos. F. Collins.

Myron F. Clear.

Inventor

A. G. Fenn,

By C. L. Parker

Attorney

UNITED STATES PATENT OFFICE.

ARTHUR G. FENN, OF CHICOPEE FALLS, MASSACHUSETTS.

NEEDLE-FEED MECHANISM.

942,895. Specification of Letters Patent. Patented Dec. 14, 1909.

Application filed November 17, 1908. Serial No. 463,087.

To all whom it may concern:

Be it known that I, ARTHUR G. FENN, a citizen of the United States, residing at Chicopee Falls, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Needle-Feed Mechanisms, of which the following is a specification.

My invention relates to machines employed in the art of needle making, and more particularly to a novel and useful feed mechanism for the needle blanks for operation in such machines, my object being to provide an accurate, automatic feed of simple and inexpensive construction.

With the foregoing object in view, my invention resides specifically in the features of construction and operation, to be hereinafter described, with reference to the accompanying drawings, forming a part of the specification, in which,

Figure 1 is a plan view of a machine used in the needle making art, for performing an operation upon a needle, as hereinafter described, and provided with my improved feed mechanism. Fig. 2 is a cross sectional elevation, taken therethrough. Fig. 3 is an elevation of a needle blank. Fig. 4 is an elevation of one of the oscillatory operating levers employed in my improved mechanism. Fig. 5 is a bottom plan view of the feed table. Fig. 6 is a side view thereof, partly in section. Fig. 7 is a top plan view of the supporting frame. Fig. 8 is an end view thereof. Fig. 9 is a side elevation of the operating slide bar, and, Fig. 10 is an end view thereof.

With reference to the accompanying drawings, and particularly Fig. 3 thereof, I have shown a needle 10, having as usual, a portion thereof doubled thereon at right angles to itself, to form the shank 11, and designed to be operated upon in the machine illustrated in Figs. 1 and 2, to receive opposed indentations, indicated at 12, in its cheek, for the purpose of guiding a drill in the subsequent operation of drilling a small hole through the cheek.

Machines for making needles are usually built upon a bed plate 13, supporting journal brackets 14 through which the rotatable driving shaft 15 is mounted, said shaft having a pulley 16 upon one end for belt connection with a suitable source of power and being in turn adapted to rotate the operating parts of the machine.

In the indenting machine, as herein shown, spaced brackets 17, adjustable by means of bolts 18, are mounted upon supporting stands 19, secured to the bed plate 13, and provided with apertures alined therebetween, through which apertures operate longitudinally reciprocatory dies 20, movable inwardly toward one another against the tension of coil springs 21. The dies 20 are reciprocated by means of their levers 22, pivoted upon the upper end of supporting posts 23, extending upwardly from the bed plate 13, to horizontally oscillate the forward ends of said levers 22, being provided with contact screws 24, adjustable transversely therethrough and adapted for contact with the rear ends of the dies 20, and the rear ends of said levers 22, being provided with angular roller mounted projections 25, with which to engage cam disks 26, secured upon and rotatable with the operating shaft 15.

In the embodiment of my invention, as shown, I provide a T-shaped supporting stand 27, having its base suitably secured upon the bed plate 13, forwardly of the die-supporting brackets 17, said frame 27 being provided with an upper slotted horizontal face adapted for the reception therein of a needle slide 28. The supporting frame 27 is further provided with a longitudinally extending slot 29 in its upper horizontal face, and with apertured brackets 30 through which a longitudinally slotted slide member 31 is mounted to reciprocate against the tension of a spring 31^a, said member 31 being provided with spaced clips 32, adjustably secured through its longitudinal slot by bolts 33, said clips 32 being provided with bifurcated upper portions 34, in which are pivotally mounted pawls or dogs 35, each having an upwardly curved and sharpened end, and a weighted opposite end in order to project said sharpened end upwardly through the longitudinal slot 29 of the horizontal upper portion of frame 27, into engagement with a longitudinal rack 36 of the feed slide 28. The movement of the feed slide 28, under operation of the reciprocatory member 31 thus successively places the needle blanks 10, located in the transverse slots of the upper surface of said slide 28, which slots are numbered 37, in position to be fed between the opposing sharpened inner ends of the reciprocatory dies 20, to receive the indentations 12 in the cheeks thereof.

The needle blanks 10 are arranged in the transverse slots 37 of the feed slide 28, with their shanks 11 extending upwardly out of said slots, as clearly shown in Fig. 2. Arranged within the path of movement of the blanks 10 during their feeding movement, are a pair of spaced blocks 38, having beveled faces converging inwardly toward their adjacent ends, said blocks 38 being connected by a connecting strip 39, and being adjustably mounted by means of a bolt 40^a, upon a vertical post 40, through a slot 40^b in said strip 39, which post extends upwardly from the bed plate 13. The blocks 38 are so arranged as to receive against the beveled faces of either of them, the upwardly projecting shanks 11 of the needle blanks, in order to move said needle blanks longitudinally, into perfect alinement, by causing the shanks to pass between the adjacent ends thereof. As each of the needle blanks 10 arrive in the position to be fed between the dies 20, their shanks 11, which are by this time, in perfect alinement, will engage within the slotted end of a longitudinally adjustable feed finger 41, secured by means of a bolt 41^a through its slot 41^b upon the uper end of a vertical arm 42, having adjustable connections at its lower end, to a longitudinally reciprocatory bar 43, mounted transversely of, and upon the lower face of the said plates 13, through brackets 44, and provided at its opposite end, with an angularly projecting pin 45 engaged by the slotted lower end of a vertical arm 46, pivotally mounted upon its upper end, at 47, to a supporting post 48, and provided intermediate its length, with an angular roller mounted projection 49, in engagement with a cam 50, mounted upon the driving shaft 15, of the machine. The arm 46 is thus oscillated vertically, upon its said pivot 47, within a transverse slot 51 in the bed plate 13, to longitudinally reciprocate the bar 43 and cause reciprocation, through the aforesaid connection, of the feed finger 41, which by reason of its forward slotted end, feeds the alined needle blank between the dies 20.

Mounted upon a supporting plate 52, supported longitudinally between the feed frame 27, and the die bracket 17, by vertical posts 53, is a longitudinally movable member 54, forming a jaw movable in opposition to a stationarily secured jaw 55, by means hereinafter described. The stationary jaw 55, and its movable jaw 54, are mounted upon opposite sides of the needle blank, being operated upon by the dies 20, and said movable jaw is reciprocated to clamp the needle blank between the same and said stationary jaw whereby to hold said needle blank immovable during the indenting operation thereupon. The alining guide blocks 38, and the feed finger 41, are longitudinally adjustable with respect to themselves, and transversely adjustable with respect to the feed slide 28 by means of their respective bolts 40^a and 41^a, and slots 40^b and 41^b, as is also an arm 56, secured through its longitudinally slotted rear end to a supporting upright 57 extending from the bed plate 13, by means of a bolt 58, and extending transversely above the feed slide 28, and provided adjacent its forward end with an arm 59 extending at right angles thereto, and into the path of movement of the forward end of said finger 41, to limit the forward feeding movement of the same and cause all of the needle blanks 10 to be fed the same distance between the dies 20.

The reciprocatory member 31 operating the feed slide 28, and the movable jaw 54, are reciprocated by members 60 and 61 respectively, movable toward their respective parts against the tension of springs 62 and 63, extending between the same and pins 64 of the bed plate 13. The members 60 and 61 are similarly formed, and a description of the member 60, shown in Fig. 4, will suffice for both. This member 60 is in the form of a U-shaped frame having its base provided with lateral extensions 65 forming trunnions for engagement within journal brackets 66, secured upon the bed plate 13. One of the upwardly extending arms 67, of said member is provided with an adjustable screw mounted transversely therethrough, said screw being numbered 68, and adapted for contact with the end of the reciprocatory member 31, while the opposite upwardly projecting arm of said member is provided with a roller 69, mounted in connection therewith, for contact with the cam face of a disk 70, mounted upon the operating shaft 15. The similarly formed member 61 has its roller 69 in contact with the cam face of a disk 71, mounted upon said operating shaft 15, alongside of the disk 70.

The operation of my improved feeding mechanism is thus as follows: The feed slide 28 is first filled up with the needle blanks 10, arranged as described within its transverse slots, 37 and placed within the longitudinally slotted upper horizontal portion of its supporting frame 27. The machine being started, the said slide 28 is moved along to successively bring the blanks 10 into operative engagement with the feed finger 41, by the cam 70, member 60, and the reciprocatory operating member 31, as before described. By means of the blocks 38, the needle blanks are alined for engagement with the feed finger, which feeds one of such blanks forwardly between the dies 20, for indentation, and withdraws the same, after its indentation by said dies, and before movement of the said feed slide 28, to bring the succeeding needle blanks into registry therewith. The cams 26, 50, 70 and 71, are thus timed to produce the operation succes-

sively as follows: First, the movement of the feed finger to feed the needle blanks registered therewith between the dies 20; second, the movement of the movable jaw 54 to clamp the needle blanks between itself and the stationary jaw 55; third, the longitudinal movement of dies 20 to produce the indentations 12 upon the needle cheeks; fourth, the movement of the movable jaw 54 away from stationary jaw 55 to release the needle blanks; fifth, the movement of the feed finger 41 to withdraw the needle blanks from between the dies 20, to their original position, upon the feed slide 28, and sixth, the movement of the said feed slide 28 to feed the next needle into registering engagement with the feed finger 41.

By reference to Fig. 2, it will be noted that the longitudinally reciprocatory bar 43 is provided with a depending pin 72, connected by means of a retractile coil spring 73 to a suitable portion of the stationary frame of the machine, such as the legs of bed plate 13, against the tension of which spring 73, the movement of said bar 43, under actuation of cam 50, is made. By reference to the adjustable contact screws 24, and 68 of the operating levers, 22, 60 and 61, it will be seen that the stroke of the dies 20, the movable jaw 54, and the reciprocatory slide operating member 31, may be adjusted.

In view of the foregoing description of the construction and operation of my improved feed mechanism, it is thought that the same will be perfectly understood. It may be stated however, that it is my purpose and desire to install this mechanism upon machines in the needle making art, other than the indenting machines, a conventional form of which I have herein illustrated, and that I desire to be protected in the use of my invention in connection with whatever machines of this character it may be readily employed.

As is well known, by persons skilled in the art, the needle blanks are fed to, and operated upon within, numerous machines, each performing a different operation thereon, before a needle is complete. It has been the practice to feed the needles in spaced lateral relation to the machines, allowing the same to drop promiscuously into a receptacle after operation thereon in each machine, and removing the receptacle of blanks to be fed to the next machine. Thus is necessitated a person to individually feed the blanks at each machine. I do away with this by providing plates having means to hold a plurality of blanks, with means to feed the individual blanks into the machines and withdraw the blank to its original position after the operation, thereby permitting the plates to be bodily transferred to the next machine. Thus the plates need be filled with blanks but once, and that before the first operation, doing away with the individual feed at the machines and thereby cutting down the cost of labor.

Having fully described my invention, I claim:

1. In a blank feed mechanism, for needle forming machines, the combination of bodily transferable members, having means to receive and hold a plurality of needle blanks, means for supporting one or more blank-carrying members for movement to feed its blanks successively into registry with the needle forming mechanism, and means to advance each blank into operative relation within the needle forming mechanism, as it is brought into registry therewith, and to withdraw the same from said needle forming mechanism after the operation thereof to its original position within the blank carrying members, substantially as described.

2. In a blank feed mechanism for needle forming machines, the combination of bodily transferable members, having means to receive and support needle blanks in spaced lateral relation, means for supporting one or more blank-carrying members for movement to feed its blanks laterally into successive registration with the needle forming mechanism, and means to advance each blank longitudinally into operative relation within the needle forming mechanism, as it is brought into registry therewith, and to withdraw the same from said needle forming mechanism, after the operation thereof to its original position within the blank carrying members, substantially as described.

3. In a blank feed mechanism, for needle forming machines, the combination of bodily transferable members provided with spaced grooves adapted to receive and support needle blanks, means for supporting one or more of said blank-carrying members for movement to feed its blanks successively into registry with the needle forming mechanism, and means to advance each blank into operative relation within the needle forming mechanism, from its holding groove, and as it is brought into registry therewith, and to withdraw the same from said needle forming mechanism, after the operation thereof, and to its original position within its said holding groove to its original position within the blank carrying members, substantially as described.

4. In a blank feed mechanism for needle forming machines, the combination of bodily transferable members, having means to receive and hold a plurality of needle blanks, means for supporting one or more of said blank carrying members for movement to feed its blanks successively into registry with the needle forming mechanism, and means to advance each blank into operative relation within the needle forming mechanism, as it is brought into registry therewith, and

to withdraw the same from said needle forming mechanism after the operation thereof, comprising a movable feed arm having a cut-out portion in its lower face, into which the needle shank may engage, substantially as described.

5. In a blank feed mechanism for needle forming machines, the combination of bodily transferable members, having means to receive and hold a plurality of needle blanks, means for supporting one or more of said blank carrying members for movement to feed its blanks successively into registry with the needle forming mechanism, means to advance each blank into operative relation within the needle forming mechanism, as it is brought into registry therewith, and to withdraw the same from said needle forming mechanism after the operation thereof and to its original position within the blank carrying member, comprising a movable feed arm having a cut-out portion in its lower face, into which the needle shank may engage, and means in the path of movement of said needle blanks forwardly of said feed arm, to aline the said blanks for engagement of their shanks in said cut out portion of said feed arms, substantially as described.

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

ARTHUR G. FENN.

Witnesses:

JAMES L. CRAWFORD,

MYRON G. CLEAR.