

P. GUENTHER.

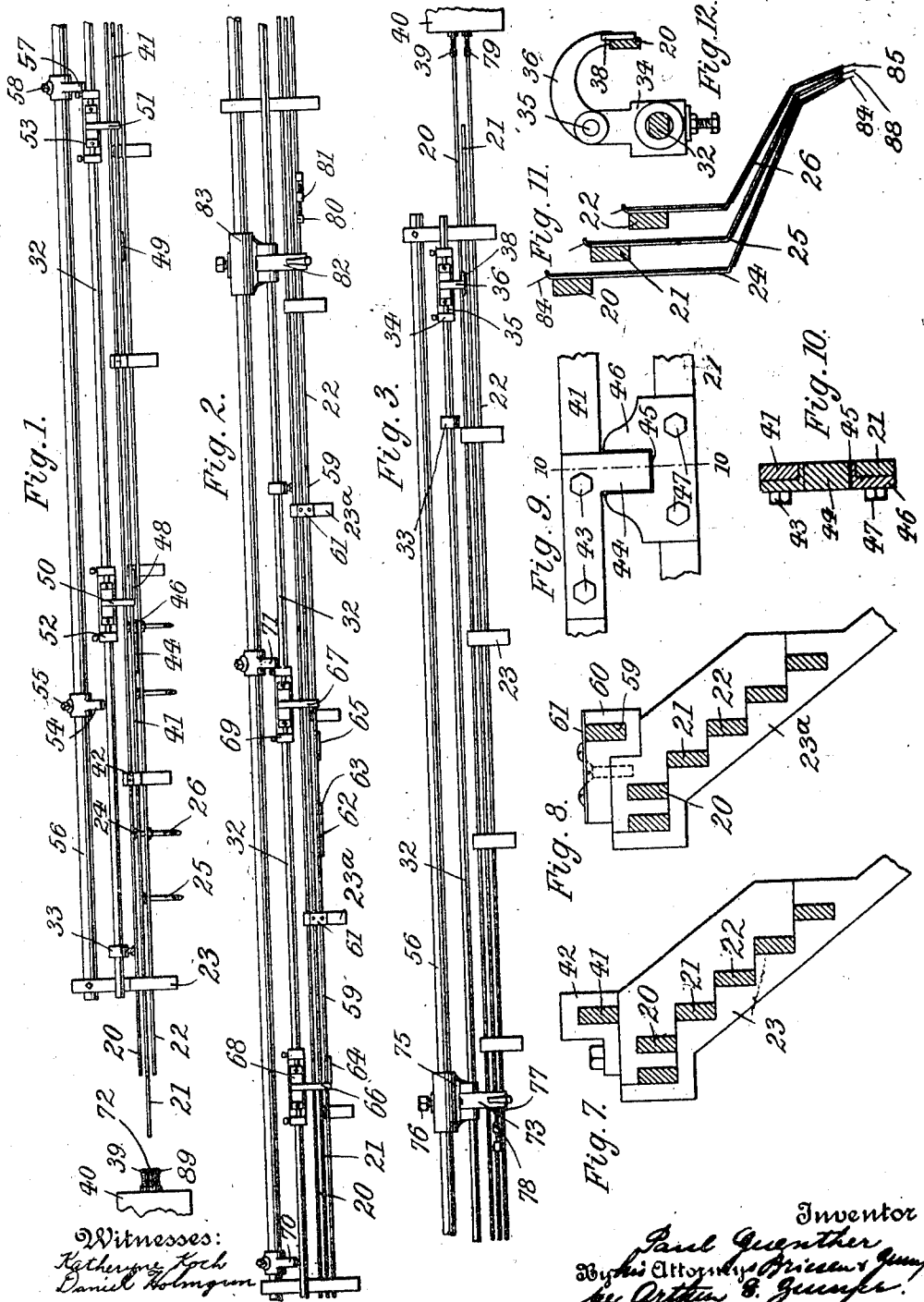
SECTIONAL PLATING DEVICE FOR STRAIGHT KNITTING MACHINES.

APPLICATION FILED DEC. 14, 1910.

Patented Feb. 27, 1912.

2 SHEETS—SHEET 1.

1,018,612.



Witnesses:  
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per Arthur S. Gump

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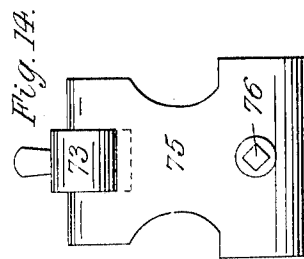
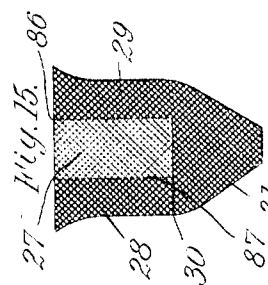
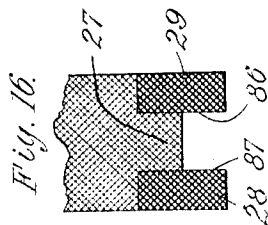
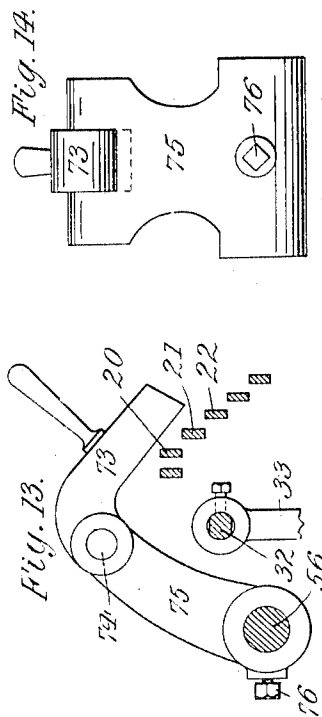
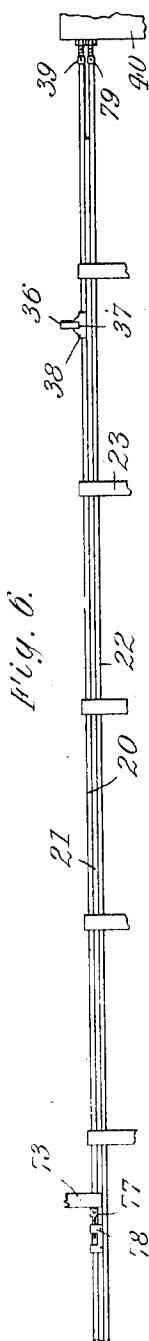
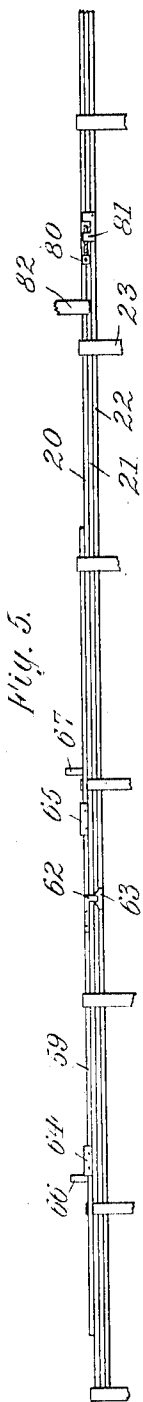
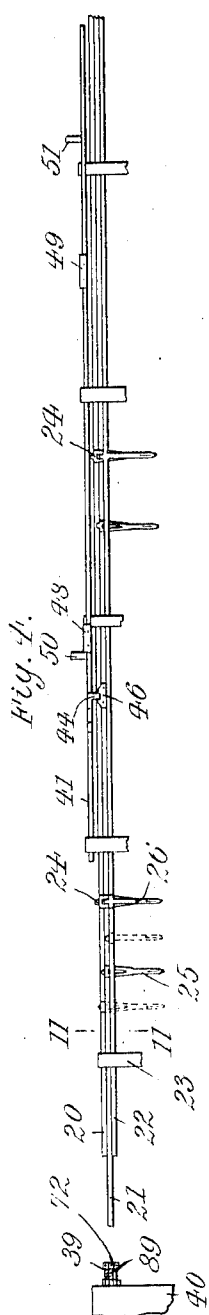
SECTIONAL PLATING DEVICE FOR STRAIGHT KNITTING MACHINES.

APPLICATION FILED DEC. 14, 1910.

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2 SHEETS—SHEET 2.



Witnesses:  
Katherine Koch.  
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Inventor  
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per Arthur C. Guenther

# UNITED STATES PATENT OFFICE.

PAUL GUENTHER, OF DOVER, NEW JERSEY.

SECTIONAL PLATING DEVICE FOR STRAIGHT-KNITTING MACHINES.

1,018,612.

Specification of Letters Patent.

Patented Feb. 27, 1912.

Application filed December 14, 1910. Serial No. 597,186.

To all whom it may concern:

Be it known that I, PAUL GUENTHER, a citizen of the United States, residing at Dover, in the county of Morris and State of New Jersey, have invented a new and Improved Sectional Plating Device for Straight-Knitting Machines, of which the following is a specification.

This invention relates to a straight knitting machine which is so constructed that selected portions of a stocking or other garment may be plated, while the remaining portions thereof may be formed of but a single thickness. It has more particularly been found desirable to provide the soles and heels of silk stockings with an exteriorly invisible interknitted lining thread, so as to reinforce these parts, while the instep and the leg of the stocking is made of but a single thread.

My invention comprises novel and effective means for performing the plating operation and consists of the various features of construction more fully pointed in the appended claims.

In the accompanying drawings: Figures 1, 2 and 3 are consecutive plans of the thread carrier sustaining bars and cooperating parts of my improved straight knitting machine; Figs. 4, 5 and 6 are front elevations of Figs. 1, 2 and 3 respectively; Fig. 7 is a sectional side view of one of the guides for the shogging bars and the left tappet rod; Fig. 8 a sectional side view of one of the guides for the shogging bars and the right tappet rod; Fig. 9 an enlarged front view of one of the tappets; Fig. 10 a vertical cross section on line 10-10, Fig. 9; Fig. 11 a cross section on line 11-11, Fig. 4, showing the thread carriers; Fig. 12 a sectional end view of one of the friction boxes; Fig. 13 a sectional end view of one of the fixed stops and cooperating parts; Fig. 14 a front view of the stop; Fig. 15 illustrates the foot portion of an unfinished stocking knitted on the machine, and Fig. 16 shows a stocking length having plated high heels.

The drawings illustrate only those parts of a straight knitting machine of the Cotton type, which are pertinent to my invention, the parts omitted being of well known construction.

Throughout the length of the machine, extend a suitable number of preferably staggering shogging bars of which bars 20, 21,

22 only are used for carrying out my invention, while the additional bars shown in Figs. 7, 8 and 13 are used for purposes foreign to this invention. Bars 20, 21, 22 are slidably supported by suitable spaced guides 23 forming part of the machine frame. Bar 20 is the main shogging bar and supports a plurality of main thread carriers 24, while bars 21, 22 are auxiliary shogging bars and support respectively a like number of auxiliary thread carriers 25, 26. Carriers 24 are adapted to travel across the entire width of the stocking or other fabric to be made and produce in conjunction with needles, sinkers and other well known elements of construction the meshes or loops 27 of the fabric. Carriers 25 are designed for lining or reinforcing the left hand sole and heel portion 28 of the stocking, while carriers 26 reinforce the right hand portion 29 thereof. After the feet have been knitted down to line 30 (Fig. 15), one set of auxiliary thread carriers is rendered inoperative, while the other auxiliary carriers travel across the entire width of toe 31.

The movements of the main thread carriers and auxiliary thread carriers are so timed that the latter will lag for a uniform distance behind the former, thereby insuring a true plating as more fully brought out in Patent #878,724 granted to me February 11th, 1908.

Reciprocative movement is imparted to bars 20, 21, 22 by means of a shifter bar 32 mounted in standards 33 and axially reciprocated by well known mechanism (not shown). Upon bar 32 is mounted a friction device or box 34 which when unchecked participates in the movement of bar 32 by frictional contact. Upon a longitudinal spindle 35 of box 34 is mounted an arm 36 which is adapted to engage the corresponding recess 37 of a lug 38 secured to bar 20. The stroke of the latter is limited by a pair of adjusting screws 39 tapped into the usual left and right fashioning heads 40 of the knitting machine.

Bar 21 receives reciprocative movement from shifter bar 32 by means of a parallel intermediary tappet rod 41 arranged vertically above the left hand portion of bar 21 and guided in hook-shaped keepers 42 of guides 23. To rod 41 is secured, by screws 43 an L-shaped tappet 44 the depending leg of which is received within a corresponding recess 45 of a lug 46 secured to bar 21 by

screws 47. As will be seen from Fig. 9, tappet 44 has a slight play within recess 45, so that any undesirable vibrations etc. accidentally imparted to rod 41 will not be transmitted to bar 21. Rod 41 is further provided with a pair of relatively fixed abutments or lugs 48, 49 which are adapted to be engaged by the arms or reciprocative members 50, 51 of a pair of friction boxes 52, 53 slidably mounted on shifter bar 32. The correlation between the parts is such that arm 50, by engaging abutment 48 will shift rod 41 to the right, while arm 51, by engaging abutment 49 will move the rod toward the left. The play of friction box 52 toward the left is limited by a stop 54 adjustably secured by screw 55 to a stationary shaft 56. In like manner, the play of friction box 53 toward the right is limited by a stop 57 secured to shaft 56 by screw 58.

At a distance from rod 41 toward the right (Figs. 1, 2 and 3), there is provided vertically above bar 22 a tappet rod 59 guided in grooved keepers 60 of guides 23<sup>a</sup>, to which they are confined by covers 61. Rod 59 carries an L-shaped tappet 62 engaging a recessed lug 63 of bar 22, the parts 62, 63 being duplicates of the parts 44, 46. A pair of abutments 64, 65 of rod 59 are adapted to be engaged by the arms 66, 67 of friction boxes 68, 69 that are slidably mounted on bar 32. The play of boxes 68, 69 toward the left and right respectively, is controlled by a pair of abutments 70, 71 of shaft 56.

The stroke of bar 21 toward the left is limited by an adjusting screw 72 tapped into left hand head 40, while its stroke toward the right is checked by a stop lever 73 fulcrumed at 74 to a bracket 75 which is by screw 76 secured to shaft 56. Stop 73 is adapted to be engaged by the adjusting screw 77 of a lug 78 fast on bar 21. The play of bar 22 toward the right is controlled by a screw 79 tapped into the right hand head 40, while its movement toward the left is limited by a screw 80 tapped into a lug 81 of bar 22, said screw being adapted to engage a stop 82 of a fixed bracket 83, the parts 82, 83 being duplicates of the parts 73, 75.

Figs. 1 to 6 illustrate the position of the shogging bars, after shifter bar 32 has completed its travel toward the right. When bar 32 starts its movement toward the left, arm 36 will take along the main shogging bar 20, thereby shifting the main thread carriers 24 to the left, and placing their threads 84 into the sinkers (not shown). As soon as carriers 24 have traveled for a distance equal to the desired lag between them and carriers 26, arm 67 engages the lug 65 of tappet rod 59 which will thus be taken along to correspondingly shift bar 22 together with the lining thread carriers 26. In this way the

lining threads 85 are placed into the sinkers on top of the previously introduced main threads 84. When carriers 26 have arrived at the line marked 86 in Figs. 15 and 16, their further movement is checked by screw 80 abutting against stop 82, so that the main thread carriers alone will traverse the sections 27 of the stockings. When these carriers have advanced beyond line 87 for a distance equal to the above lag, arm 51 has traveled a distance equal to the space between it and lug 49 shown in Figs. 1 and 4, so that arm 51 will now take along tappet rod 41 to correspondingly advance bar 21 together with the lining thread carriers 25. In this way their threads 88 are placed into the sinkers on top of threads 84 to produce the reinforced sections 28 of the stockings, whereupon bars 20, 22 are consecutively arrested by abutting against their respective screw stops 39, 72. It will be observed that while bar 22 was advanced by the engagement of arm 67 with lug 65, the lug 64 and arm 66 were moved in unison to the left. After bar 22 together with lug 64 came to a standstill owing to the engagement of screw 80 with stop 82, arm 66 has continued its movement until its box 68 engaged stop 70. On the other hand arm 50 came to a standstill owing to the engagement of its box 52 with stop 54 prior to the arrest of bar 21, the correlation between the parts being such that after the completion of the stroke toward the left, arm 50 is spaced from lug 48 for a distance equal to that between the parts 65 and 67 as illustrated in Figs. 2 and 5, before the beginning of such stroke, such distance corresponding to the desired lag between the main thread carriers and the lining thread carriers. In this way the parts are properly set, so that during the return stroke of shifter bar 32, carriers 24, 25, 26 receive their properly timed movements.

If the stocking toes 31 are to be made, arms 50, 51 are swung back to render bar 21 inoperative, whereupon the latter is shifted toward the left, to bring carriers 25 out of the way. Stop 82 is then swung backward, to permit bar 22 to perform a full stroke, a screw 89 of left hand head 40 limiting the stroke to the left of bar 22.

The plating device which forms the subject of this invention, is simple in construction and effectively prevents the turning out of imperfectly plated goods even after a prolonged use of the knitting machine. It is a well known fact that in machines of this kind, all operative parts thereof are subjected to heavy jars and to longitudinal vibrations caused thereby, which jars occur at each reversal of the shogging bars. The latter strike with comparatively strong force against the stops carried by the machine, so that the bars are liable to rebound, thereby disarranging the loop forming parts, and si-

multaneously vibrating the entire machine frame in a longitudinal direction. It is obvious that with prolonged use of the machine, the shogging bar guides wear out, so that the bars carrying the thread guides are more apt to become slightly rocked or jammed, especially if there is provided the usual close fit between said bars and the elements transmitting movement from the main shifter bar to the thread guide bars. By interposing between said bars my novel tappet rods, the transmission of any rocking impulses from the shifter bar to the thread guide bars is prevented, while owing to the slight play between the tappets and the recessed lugs of said thread guide bars the undesirable effect of rebounds is minimized.

I claim:

1. In a machine of the character described, a main shogging bar, a pair of auxiliary shogging bars, tappet rods operatively connected to the auxiliary shogging bars with freedom of movement relatively thereto, and means for reciprocating the main shogging bar and the tappet rods.

2. In a machine of the character described, a main shogging bar, an auxiliary shogging bar, a rod arranged in parallelism with said bars, a tappet on said rod, means for connecting the tappet to the auxiliary shogging bar with freedom of movement relatively thereto, means for connecting the rod to the main shogging bar, and means for reciprocating the main shogging bar.

3. In a machine of the character described, a main shogging bar, an auxiliary shogging bar, a recessed lug on the auxiliary shogging bar, a rod, a tappet on said rod that is loosely received within the lug-recess, means for connecting the main shogging bar to the rod, and means for reciprocating said main shogging bar.

4. In a machine of the character described, a shogging bar, a recessed lug secured thereto, a rod extending in parallelism with said

bar and located vertically thereabove, means for intermittently reciprocating said bar, and a tappet on said rod that is loosely received within the lug-recess, said recess being slightly larger than the tappet so that the latter has a play within the former.

5. In a machine of the character described, a shogging bar, a rod arranged in parallelism therewith, means for connecting the rod to the bar, said means permitting freedom of movement between said rod and bar, a pair of abutments on the rod, and a pair of reciprocative members adapted to engage the abutments.

6. In a machine of the character described, a shogging bar, a rod arranged above said bar, means for connecting the rod to the bar, said means permitting freedom of movement between said rod and bar, a pair of abutments on the rod, a pair of reciprocative members adapted to engage the abutments, and stops for said members.

7. In a machine of the character described, a fashioning head, a stop carried thereby, a shogging bar adapted to engage said stop, an adjusting screw carried by the shogging bar, a removable stop adapted to be engaged by said screw, a tappet rod extending along part of the shogging bar, means for connecting said rod to said bar, with freedom of movement relatively thereto, and means for intermittently reciprocating the tappet rod.

8. In a machine of the character described, a shogging bar, stops therefor, a rod extending along part of said bar, a tappet on said rod, a recessed lug on the shogging bar engaged by the tappet, abutments on said rod, arms adapted to engage the abutments, friction devices carrying said arms, and stops for said devices.

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