April 6, 1937. K. HOWIE 2,076,127

FLAT FASHIONED KNITTING MACHINE

Original Filed Nov. 8, 1933 7 Sheets-Sheet 1

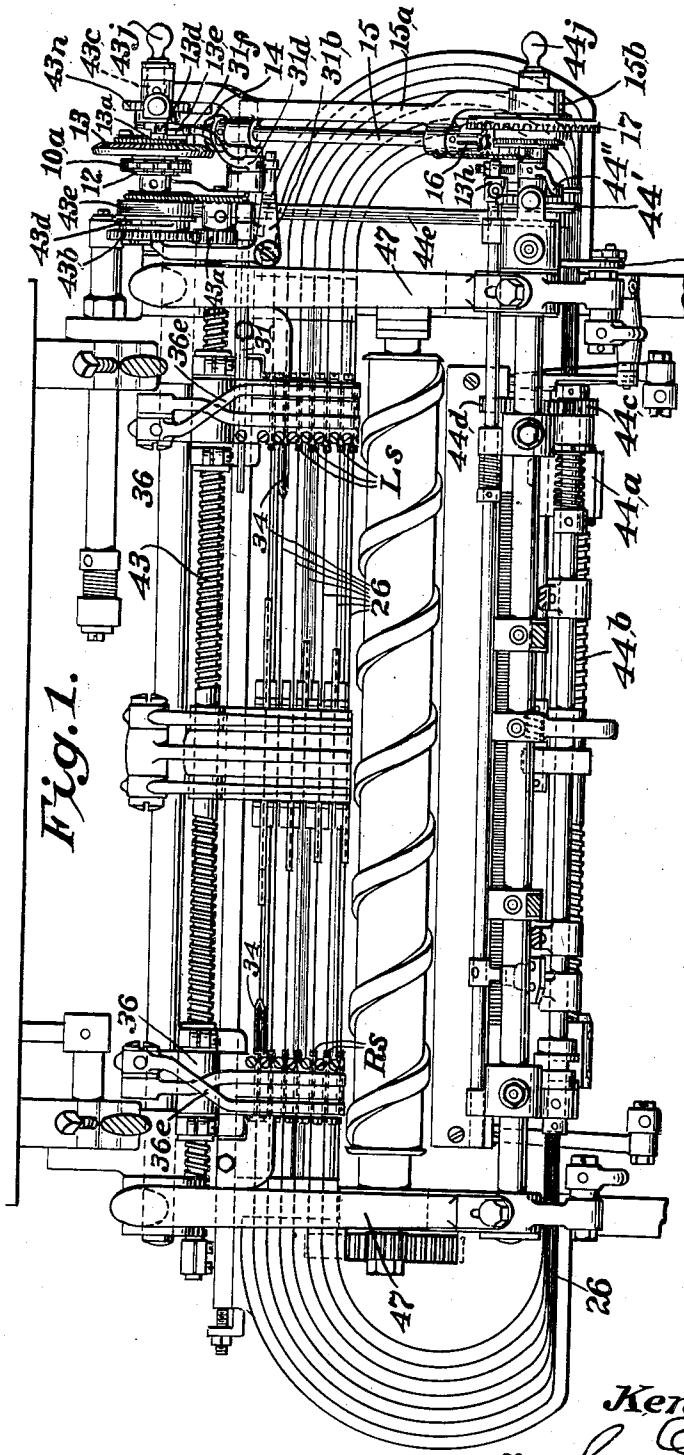


Fig. 1.

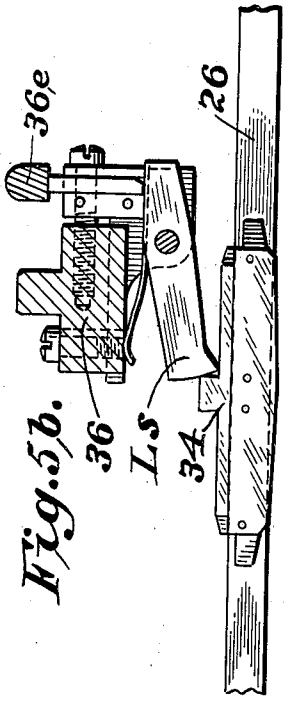


Fig. 5b.

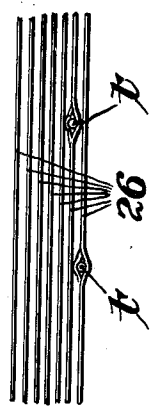


Fig. 5a.

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Kenneth Howie,

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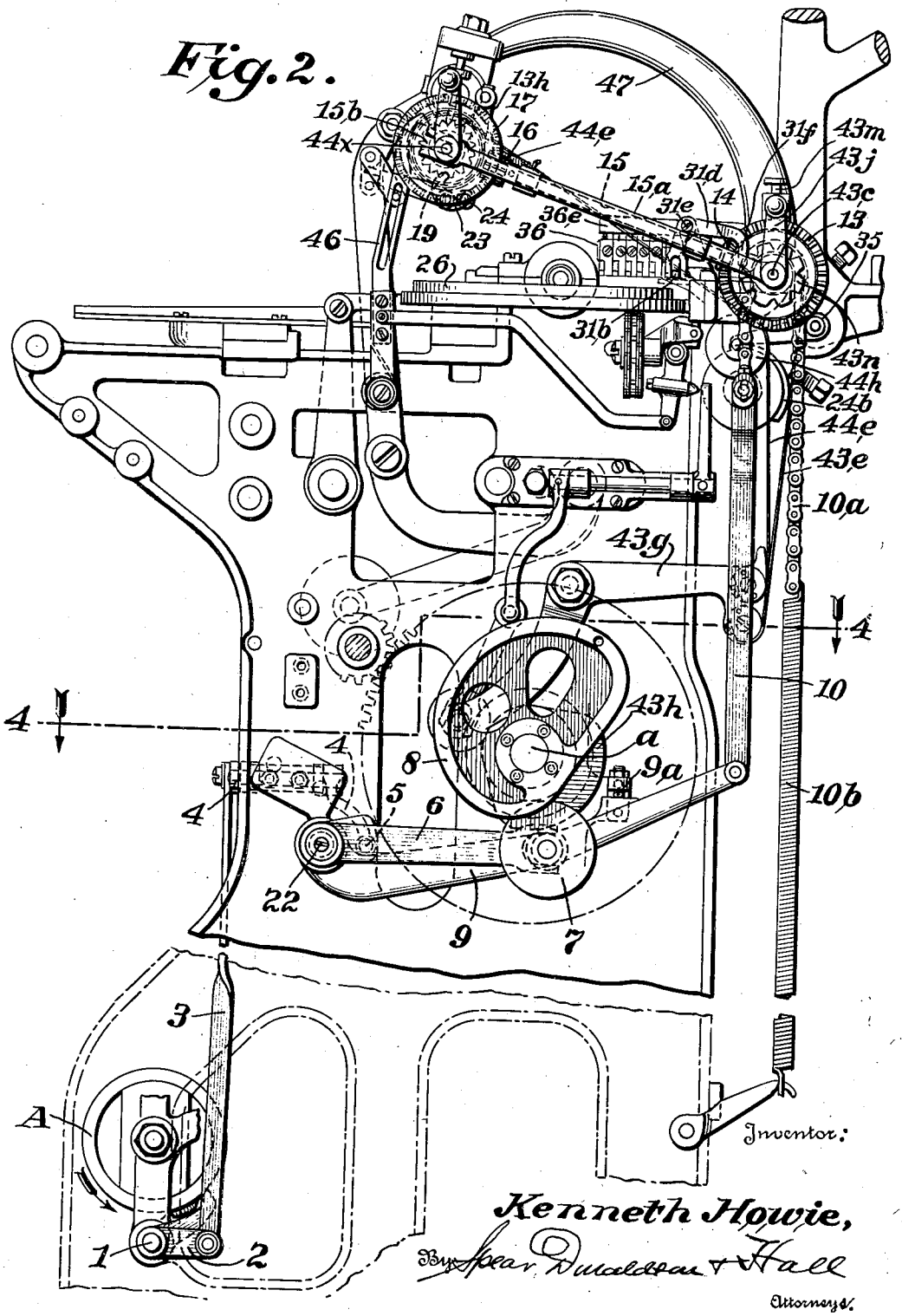
Attorneys.

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FLAT FASHIONED KNITTING MACHINE

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Fig. 2.



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FLAT FASHIONED KNITTING MACHINE

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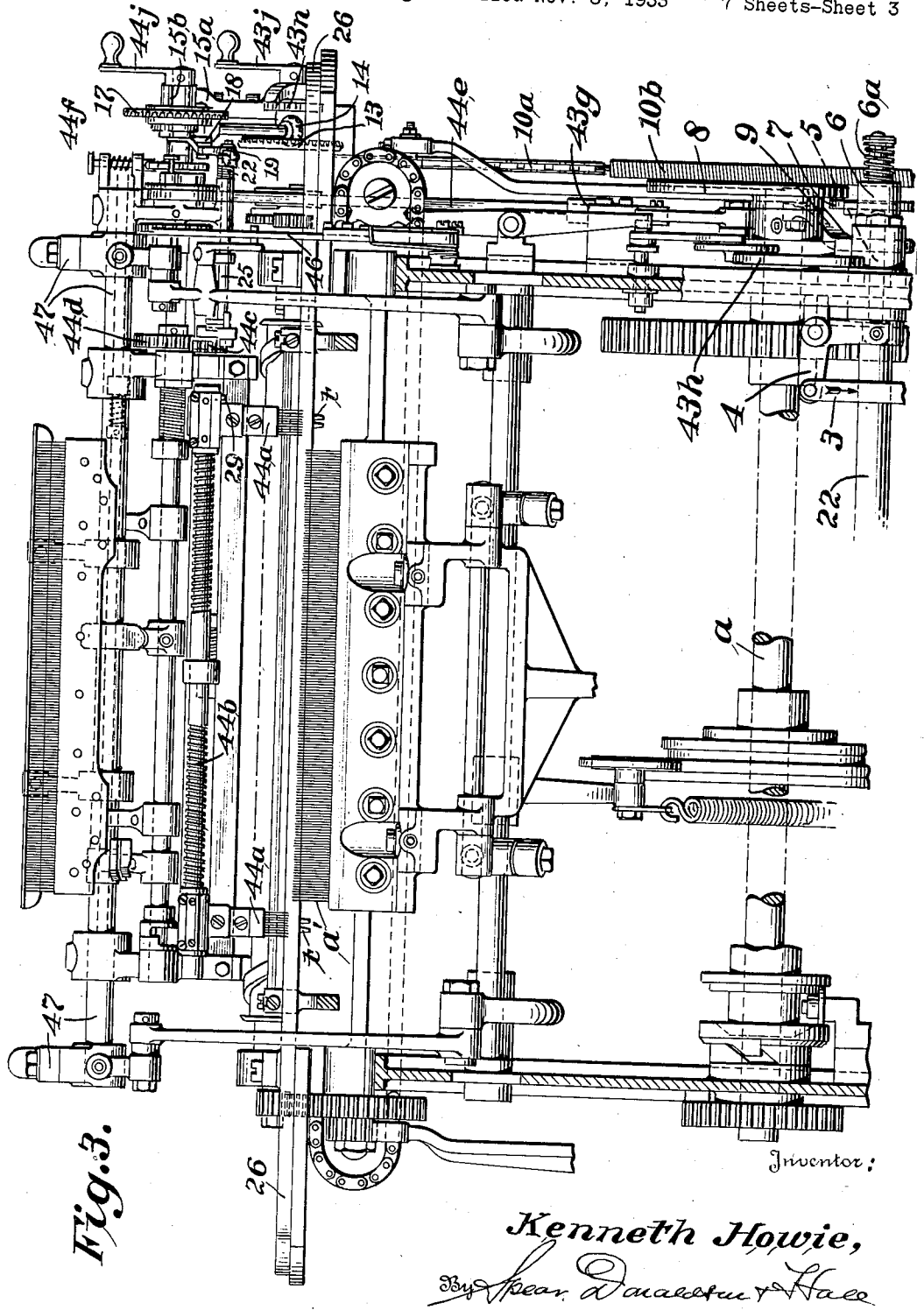


Fig. 3.

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April 6, 1937. K. HOWIE 2,076,127

FLAT FASHIONED KNITTING MACHINE

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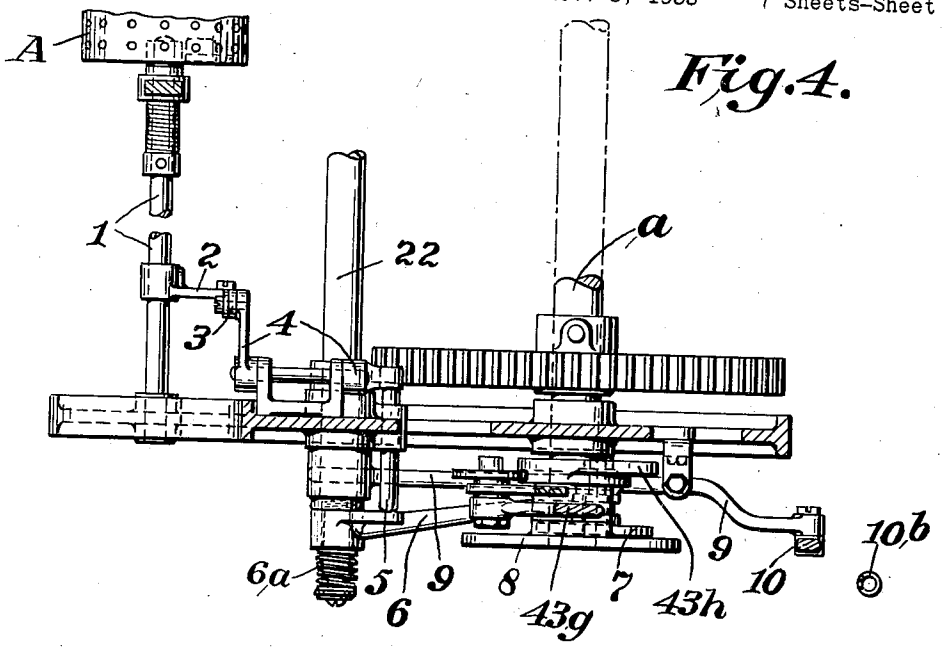


Fig. 4.

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FLAT FASHIONED KNITTING MACHINE

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Fig. 5.

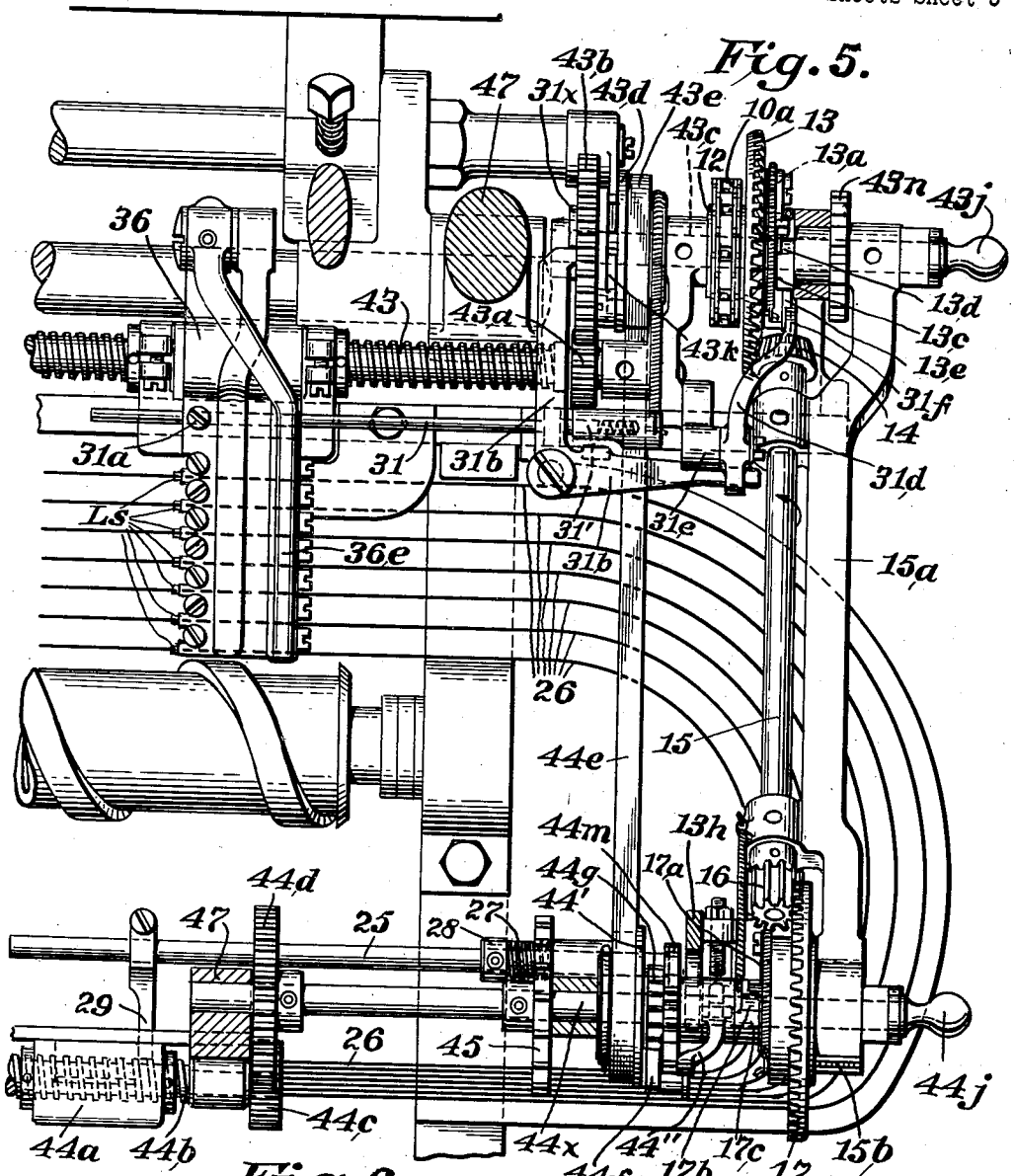
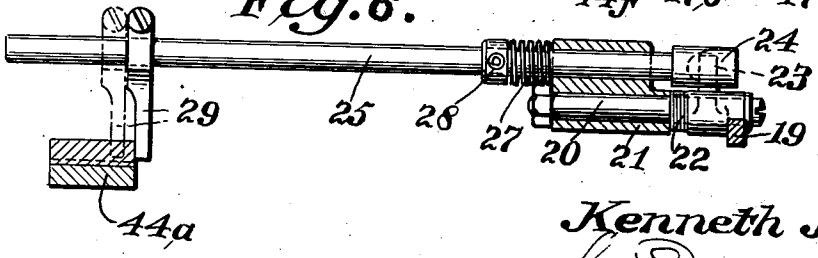


Fig. 6.



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FLAT FASHIONED KNITTING MACHINE

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Fig. 7.

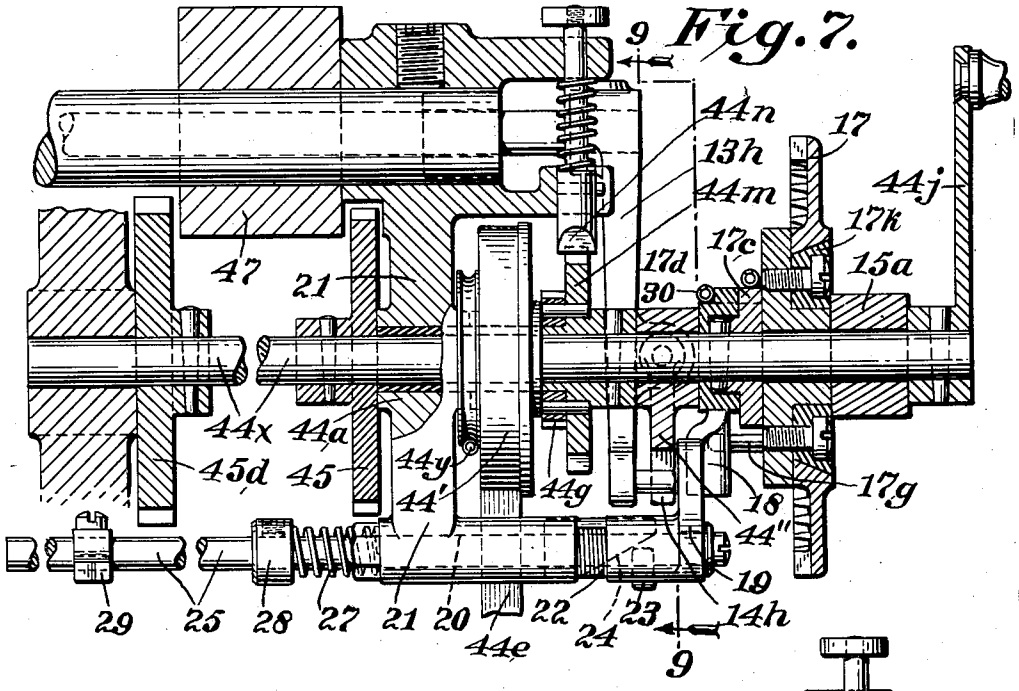
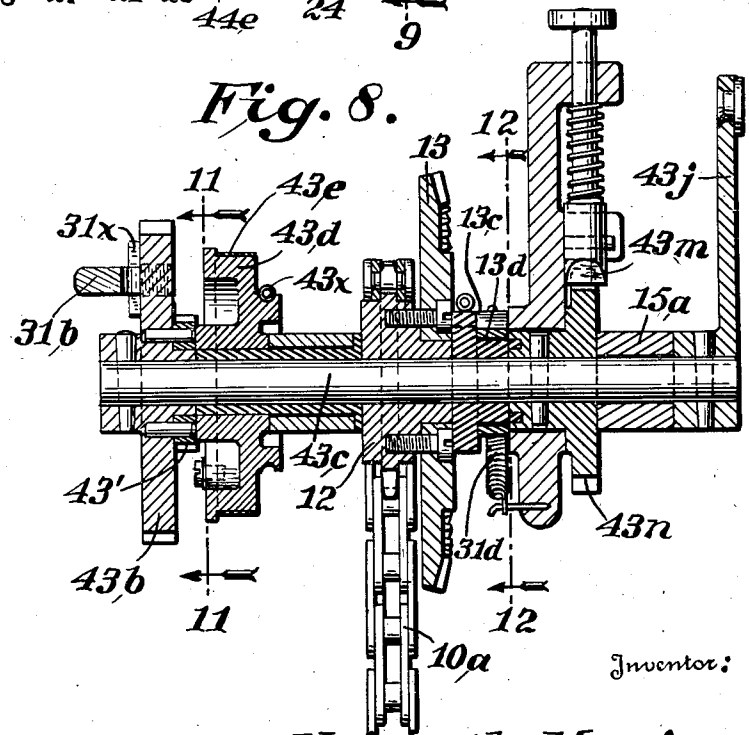


Fig. 8.



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FLAT FASHIONED KNITTING MACHINE

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Fig. 9.

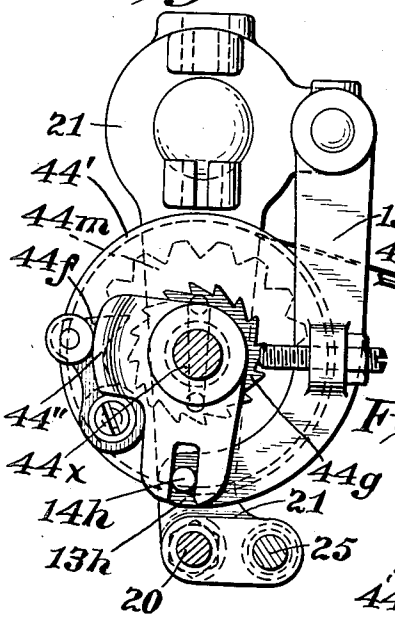


Fig. 10a.

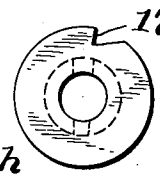


Fig. 10.

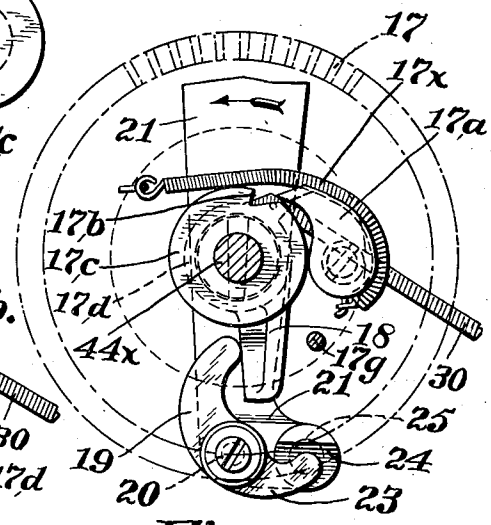


Fig. 10b.

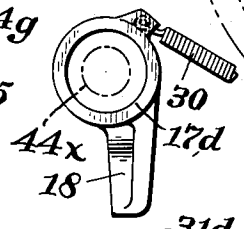


Fig. 11.

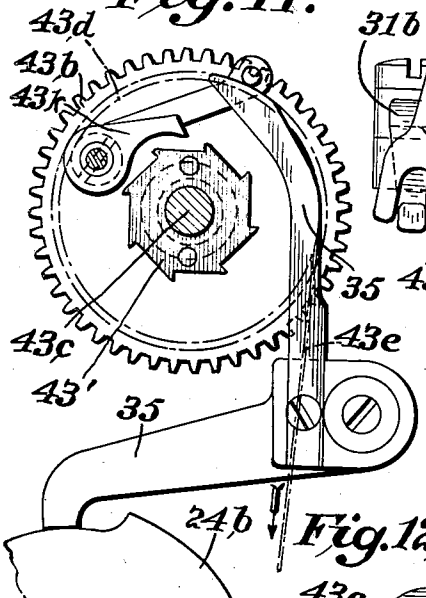


Fig. 12.

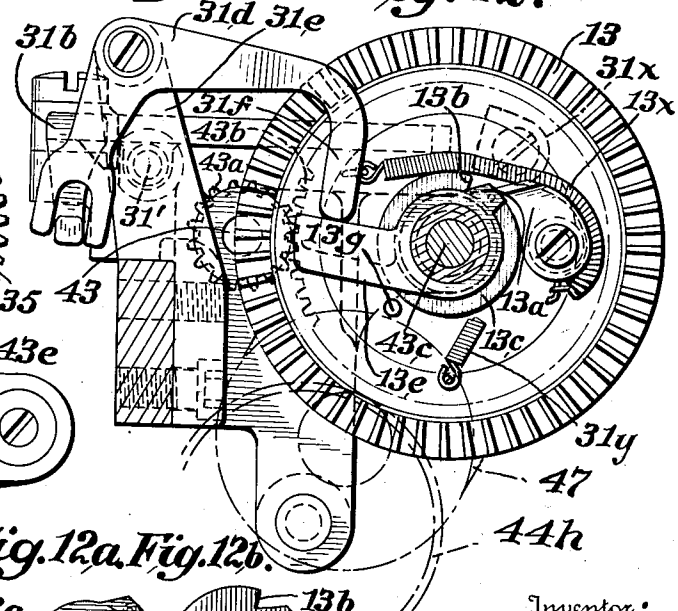
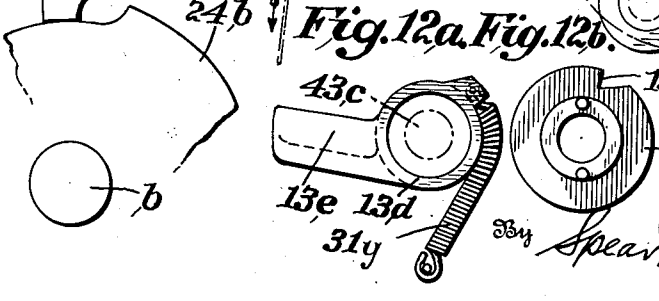


Fig. 12a. Fig. 12b.



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Patented Apr. 6, 1937

2,076,127

UNITED STATES PATENT OFFICE

2,076,127

FLAT FASHIONED KNITTING MACHINE

Kenneth Howie, Norristown, Pa., assignor to Wildman Mfg. Co., Norristown, Pa., a corporation of Pennsylvania

Application November 8, 1933, Serial No. 697,202
Renewed October 2, 1936

12 Claims. (Cl. 66—89)

The invention relates to means for restoring the narrowing point carriers and the stops which determine the lengths of strokes of the yarn guide carriers, to their initial positions after the prescribed operations of the machine have been completed in the making of the full fashioned stocking leg.

The improvement is illustrated in connection with forms of machines disclosed in application for Letters Patent of the United States filed by Kenneth Howie and Charles C. Krieble, Feb. 4, 1932, Ser. No. 590,942 on which Patent 1,982,991 has been issued and an application by Kenneth Howie, March 3, 1932, Ser. No. 596,642 on which Patent 1,986,577 has been issued.

One object of the present invention is to provide means whereby the machine under its own power will be reset for performing another cycle for the production of another garment or article as soon as the previous one has been completed.

In the accompanying drawings

Figure 1 is a plan view of a single head full fashioned knitting machine of the form shown in the above mentioned applications with my improvement embodied therein.

Fig. 2 is a side view of the machine.

Fig. 3 is a front view.

Fig. 4 is a plan view of a section on line **4**—**4** of Fig. 2.

Fig. 5 is an enlarged plan view of the right hand end portion of the machine showing the improvement in place.

Fig. 5*a* is a detail view of the yarn guide on the endless flexible band.

Fig. 5*b* is a detail of the yarn guide carrier stop.

Fig. 6 is a detail view.

Fig. 7 is a vertical sectional view of mechanism associated with the forward stub shaft for adjusting the narrowing point carriers.

Fig. 8 is a vertical sectional view of mechanism associated with the rear stub shaft for adjusting the yarn carrier stops.

Fig. 9 is a detail sectional view across the front stub shaft on line **9**—**9** of Fig. 7 looking from the right and showing mechanism for operating the screw shaft of the narrowing point carrier blocks in narrowing, some parts being omitted.

Fig. 10 is another section across the front stub shaft looking from the right and showing mechanism for back-racking the screw shaft of the narrowing point carrier blocks.

Fig. 10*a* shows one tooth ratchet.

Fig. 10*b* is the shield for the ratchet of Figs. 10 and 10*a*.

Fig. 11 is a section across the rear stub shaft on line **11**—**11**, Fig. 8 showing pawl and ratchet and gear for operating the rear screw shaft of the yarn guide carrier stops.

Fig. 12 is another cross sectional view of the rear stub shaft on line **12**—**12** of Fig. 8 showing mechanism for back racking the screw shaft of the yarn guide carrier stops.

Fig. 12*a* shows the shield and Fig. 12*b* shows the one tooth ratchet belonging to the mechanism shown in Fig. 12.

In these drawings the row of needles *a'* are operated substantially as in ordinary practice and as illustrated in detail in the applications above noted.

The yarns are fed to the needles by yarn guide eyes, one of which is shown at *t* in Fig. 5*a*, mounted on the endless flexible bands **26** to which a reciprocating movement is imparted individually by driving mechanism, which selects the desired band according to the particular yarn which is to be introduced into the fabric, all as in the applications above referred to. These endless bands are arrested variably in order to fashion the fabric, and for this purpose stops *Rs* and *Ls* are mounted on the under side of carrier brackets **36**, Figs. 1, 5 and 5*b*, which stops are controlled to be active or inactive by levers **36***e*. These stops coact with dogs **34**, Fig. 5*b* mounted on the flexible bands for arresting said bands according to the prescribed plan. The stops are adjusted along the bands to vary the lengths of strokes of the latter according to the fashioning to be performed and for thus adjusting the stops the brackets or carrier blocks **36** suitably guided are moved step by step inwardly towards each other to set the stops to perform the stopping actions on the yarn carrier bands in narrowing the fabric. The stop carriers **36** are therefore moved by a screw shaft **43**. This is operated by a train of mechanism involving a gear **43***a* on the screw shaft meshing with a gear **43***b* on stub shaft **43***c* suitably mounted in the frame of the mechanism at the rear part thereof.

On this stub shaft is loosely mounted a drum **43***d* from which a steel band **43***e* extends to a lever **43***g* operated by a cam on the main shaft *a*. The drum carries a pawl **43***k* Fig. 11 engaging a ratchet **43'** on the shaft **43***c* by which it is turned to operate through the gears, the screw shaft **43** to set the stop carrier brackets **36** with their stops inwardly towards each other for reducing gradually the length of stroke of the yarn guide carrier bands in narrowing the fabric. The distance of the step by step inward movement of the stop carrying brackets **36** is that of

two needle spaces as in ordinary practice, for fashioning the leg of the stocking. A suitable coil spring **43***x* returns the drum **43***d* after each action for a repetition of the operation. The stub shaft has a notched disc **43***n* engaged by a detent **43***m* Fig. 8 mounted in the frame for preventing overthrow of the screw shaft **43** and to act as an index to indicate if the shaft is in proper position relative to the narrowing sequence.

It will, therefore, be seen that during the narrowing actions the screw shaft **43** will be rotated in one direction step by step to move the stop carrier brackets **36**, Figs. 1 and 6, this action being due to the movement imparted from cam **43***h*, lever **43***g*, band **43***e*, drum **43***d*, with its pawl operating the stub shaft through the ratchet thereon, and from stub shaft the movement is transmitted to the screw shaft through the gears **43***b* and **43***a*.

For operating the narrowing points step by step along the needle row, for narrowing, the carrier blocks **44***a* of these narrowing points are moved by the screw shaft **44***b* through the gearing **44***c*, **44***d*, the former being on the screw shaft and the latter on the front stub shaft **44***x*, suitably mounted in a frame part. This stub shaft is provided with a drum **44'** operated in one direction by a steel band **44***e* extending back over a guide sheave **44***h* Fig. 2 to the same lever **43***g* which operates the band **43***e* before mentioned. The drum carries a pawl **44***f* Fig. 9 to engage a ratchet **44***g* fixed on the stub shaft **44***x*. The drum is loose on the stub shaft and is returned by a suitable spring **44***y* after each action of the pawl.

A shield or shutter **44''** Fig. 9 holds the pawl out of engagement with the ratchet **44***g* when the pawl is in retracted position. When the pawl is to function for turning the stub shaft **44***x* and the front screw shaft **44***b* for narrowing, it moves off of said shield into engagement with the ratchet to turn it sufficiently to rotate the screw shaft for a two needle space movement of the narrowing points in narrowing. When, however, the pawl **47***f* is to turn the screw shaft for forming picot the shield is automatically adjusted by lever **13***h*, and pin **14***h* (as a result of setting the picot bar in operative position) to set the shield **44''** in position to take only one tooth of the ratchet, as fully described in said application No. 596,642.

When back-racking is performed as will be hereinafter described the pawl **44***f* will be out of engagement with ratchet **44***g* as shown in Fig. 9 so that stub shaft **44***x* then can be rotated in the opposite direction from that which the pawl would give it. This pawl during back-racking, therefore, offers no resistance to the backward rotation of shaft **44***x* and ratchet **44***g*.

The stub shaft **44***x* has a notched index or centering wheel **44***m* engaged by a spring detent **44***n* mounted on a suitable part of the narrowing frame **47**.

Thus it will be observed that both of the screw shafts **43** and **44***b* are operated for narrowing from the same cam **43***h* Fig. 2 on the main shaft *a* through the lever **43***g*, the bands and the connections above described.

Back-racking mechanism

After a stocking leg is finished it is necessary to operate the screw shafts **43** and **44***b* backwards to return the blocks **44***a* with their narrowing points, and also the carriers or brackets **36** with their yarn carrier stops to position for making the next article, and for this purpose back-racking mechanism is provided operating through means on the stub shafts **43***c* and **44***x* to turn the screws **43** and **44***b* backward. This mechanism is brought into action automatically as the machine continues to run, and during a period following the completion of knitting i. e. following the completion of the stocking leg, said mechanism being operated under the power which operates the machine.

The back racking mechanism is controlled from the pattern drum A Figs. 2 and 4 through a rock shaft **1**, an arm **2** thereon connected by a link **3** with a bell crank lever **4** which operates a spring pressed plunger **5** which shifts laterally a fork **6** carrying a roller **7**. A spring **6***a* presses the fork in opposition to the plunger. This roller is shifted by the fork into line with a cam **8** on the main cam shaft *a* of the machine. This roller is carried by a lever **9** which is mounted pivotally on an extension of the rocker shaft **22** or stitch control shaft.

The lever **9** is connected by a link **10** with and operates in one direction a chain **10***a* running over a sprocket wheel **12** fixed to a bevel gear wheel **13** which is loose on stub shaft **43***c*. This chain is operated in reverse direction by a spring **10***b*. The gear wheel **13** meshes with a bevel pinion **14** on a transverse shaft **15** which carries a crown pinion **16** meshing with a crown gear **17** on the stub shaft **44***x*. The shaft **15** is journalled in the frame bracket **15***a* which is supported by the stub shafts **43***x* and **44***x*.

The crown pinion and gear are provided in order that the movement of the narrowing frame **47** can take place without disengagement of the gearing, it being understood that the screw shaft **44***b*, and the stub shaft **44***x* and other elements of the drive for the screw shaft **44***b* are mounted on the said narrowing frame whose center of rotation is not coaxial with the center of the stub shaft **43***c*. For a like reason the frame bracket **15***a* is forked at **15***b* where it engages stub shaft **44***x*. The two gears **13** and **17** (bevel and crown gears), are loose on their respective shafts and each carries a pawl marked respectively **13***a* and **17***a* to engage a single tooth **13***b*, **17***b* in their respective ratchets **13***c*, **17***c*, fixed on their respective shafts **43***c*, **44***x*.

Each of these pawls is controlled by a shutter or shield marked respectively **13***d* and **17***d*. The forward shutter is pivoted on the stub shaft **44***x* and has a downwardly extending arm **18** to be operated by a lever **19** pivoted loosely on a pin **20** mounted in a frame bracket **21**. This lever is spring pressed by a coil spring **22**. It has an arm **23** which is operated by a sliding cam **24** on a rod **25** mounted slidably in the bracket **21** and pressed in one direction by a spring **27** bearing on the bracket at one end and on a collar **28** fixed on the slide rod **25**. This rod has fixed thereto an arm **29** which is in the path of the right hand narrowing block **44***a* which carries the right group of narrowing points so that when the narrowing block is at the right hand position the shutter, or shield **17***d* through the described connections, will be in position to hold the pawl **17***a* out of operation, i. e. said pawl will not operate the ratchet but will move back and forth on the shutter or shield. A coil spring **30** tends to pull the shutter rearwardly at all times i. e. into a position where it will shield the ratchet from engagement by the pawl when narrowing operations are being performed.

The coil spring **22** tends to keep the lever **19**

(which operates the shutter) against the sliding cam which operates it. The throw-out position of the shutter or shield is assumed when, in the racking operation, the narrowing point carriers are racked back automatically to their extreme outer positions. When the right hand narrowing point block moves to the left for narrowing, the shutter is withdrawn so that the pawl (when it is again brought into operation by the reciprocation of the chain and gearing) will then engage the ratchet for the back racking operation. This withdrawal of the shutter is due to block **44***a* leaving arm **29** whereupon spring **27** will move rod **25** leftward, thus withdrawing cam **24** from lever **19**, **23** which due to spring **22** then moves away from arm **18** of the shutter and allows the spring **30** of the shutter to rotate said shutter and thus free the pawl **13***a* to engage its ratchet.

The shutter **13***d* of the rear mechanism is operated by a rod **31** fixed by a set screw **31***a* to the stop carrier **36**. This rod, when the right hand stop carrier **36** is racked back to the extreme right or idle position comes against a bell crank lever **31***b* pivoted to the bracket **31***c*. This bell crank lever operates a depending arm of lever **31***d* pivoted to the bracket at **31***e*, and having a horizontal arm with a depending rear end **31***f* which presses down on and operates the tail extension **13***e* of the rear shutter or shield **13***d* to move it to a position where it renders the rear pawl ineffective. This shield is under tension of a spring **31***y*.

Each set of mechanism, front or rear, is individually controlled by its own shutter or shield and pawl, but both sets are dependent for their operation upon the main operating mechanism i. e. the main pattern mechanism and the set of connections before described including the link **10**, chain **10***a*, and associated parts.

One reason, therefore, for the shutter or shield arrangements at both the front and back-racking mechanisms is to permit each mechanism to exert individual control over its own actions. This provides for the difference in back racking as between the narrowing point carriers **44***a* and the carriers **36** for the stops of the yarn guide carriers, which difference is necessarily due to the fact that the carrier stops are adjusted two needle spaces whereas the narrowing points are adjusted at the heel tabs two needle spaces inwardly and one needle space outwardly.

Further the shutter or shield for the back racking mechanism of the screw shaft **44***b* of the narrowing point carrier **44***a* is provided so that the back racking pawl is held out of action while narrowing goes on. This is true also of the shutter at the rear mechanism i. e. it is held in position to render the back racking pawl of this rear set of mechanism out of action while the carrier stops are being adjusted inwardly for narrowing.

Through the use of the individual controls each depending upon the resetting of its main elements (i. e. the narrowing point carriers **44***a* in the one case and the stop carriers **36** in the other) the main operative mechanism controlled by the main pattern mechanism can have movement beyond that which is necessary to effect racking back of the parts to normal position, and yet no damage will be done either set of mechanism, each controlling itself, through its pawl and ratchet under control by its own shutter or shield.

The back racking having been started automatically by the pattern mechanism through the connections described continues until the stops and the narrowing point carriers have been returned to the extreme or normal positions of rest, for the beginning of the new stocking. The machine continues its operation, after the back racking has been done, for bringing in a new yarn to start the new stocking and continues in operation until nearly one new course of yarn is laid in the needles. The machine then comes to rest automatically by the let-off mechanism.

The operation now (i. e. when the machine stops) has been brought to the point where the operator by slight manual operation, quickly performed, can complete the preparation for the beginning of a new fabric, involving turning the machine manually to complete the new course and placing the welt bar into connection with the first course.

The actions may be stated to be as follows:

(1) Automatically laying the new thread nearly but not quite, across the whole row of needles, then (2) automatically stopping the machine, (3) then completing the laying in of the remainder of the first course, (4) by turning the machine over slightly by hand and stopping this action at just the right moment to prevent dropping this first course, (5) then placing the welt hooks in connection with this first course and (6) then throwing on the power to drive the machine.

As set forth in application No. 590,942 above mentioned the changing of yarns is controlled by selector mechanism which is set to discard one yarn carrier and substitute therefor another band with its yarn carrier as called for by the main pattern mechanism, and it will therefore be understood that the operation above described readily can be performed by continuing the operation of the machine after the stocking leg has been completed, during which continuation the back racking is performed after which the feeding of yarn to the needles is resumed automatically until the new course for beginning the next stocking is partly laid in the row of needles.

In said prior application it is also set forth that a reciprocating driver is employed for the yarn carrying band or bands, said driver having pawls which will pick up or drop the yarn carrier means according as called for by the pattern mechanism, all the above actions being performed while the machine continues to run.

In the drive for the front pawl and ratchet mechanism the crown gear is connected by an adjustment so as to time it relative to the rear set of mechanism. This adjustable connection involves a screw and cone arrangement shown in Fig. 7 at **17***k*.

It will be seen from the above that after the completion of the stocking section the power drive continues to function, and from a common source of power transmission, i. e. the cam **8**, lever **9**, link **10**, chain **10***a*, etc. the back-racking mechanism of both the front and rear screw shafts is operated, each mechanism throwing itself out automatically when the appropriate part, point carrier or stop carrier, has been returned to its starting point, and furthermore, the new yarn is selected and laid in most of the needles for the first course of the new fabric and then the machine stops.

Each of the front and rear sets of back-racking mechanism can be operated by hand, each being provided with a hand crank mounted on the stub shaft, these being marked respectively **44***j* and **43***j*.

In Fig. 11 is shown a cam **24***b* on yarn changer shaft *b* as in application No. 596,642 for operating a lever **35** to throw pawl **43***k* out of operation so that the screw shaft **43** will not be operated during the formation of picot.

At **45** is shown a toothed wheel which is operated by a retrograde pawl **46** in the formation of picot. It forms no part of the present improvement, and is mentioned merely for identification. It and the retrograde pawl **46** are disclosed in both of the applications above mentioned.

During the knitting of the stocking the back-racking or restoring pawls **13***a*, **17***a* will be in their retracted positions on the high parts of their respective shutters **13***d*, **17***d*, where said pawls will rest out of action and out of engagement with their single tooth ratchets. They now have no movement because their operating connections are idle owing to the fact that the roller **7** is now out of line with the cam **8**. The pawls in their idle positions will not interfere with the rotation of the stub shafts during narrowing because their ratchets will be free to turn under said pawls.

At the completion of the stocking section, and while the machine continues in operation, the mechanism A through the connections described will shift the roller **7** into line with the cam **8** and the pawls will be given their prescribed effective strokes off from the high parts of the shutters and into engagement with their single tooth ratchets. Thus, back-racking will be inaugurated and will be continued until the rod **31**, carried by the right hand stop carrier or bracket **36**, and the cam **24**, operated by the right hand narrowing point block, will operate the described connections for shifting their respective shutters **13***d*, **17***d* so as to advance their high parts and thus close the single tooth spaces of the ratchet to prevent engagement of the back-racking pawls therewith. This cessation of the back-racking or restoring action will take place individually at each of the front and rear back-racking or restoring mechanisms under their own control respectively, and despite the fact that the driving means for the pawls may continue to operate, said pawls in any further action performing idle strokes, on the shutter and out of line with the single teeth. Now when the machine operates for making the next stocking leg blank, the shutters will remain in their positions guarding or closing the single teeth of the ratchets until narrowing begins and the stop carrier or bracket **36** moves inwardly towards the center of the machine, and the narrowing point carrier likewise moves along the needle row inward towards the transverse center line of the machine whereupon the rod **31** and the cam **24** will be withdrawn from the mechanism which has been holding the shutters **13***d* and **17***d* in their positions closing the teeth of the single tooth ratchets, and these teeth will be exposed for the engagement of the pawls when these are operated, it being understood, however, that said pawls will not be operated until the knitting of the stocking blank is completed, said pawls remaining out of line with the single teeth of said ratchets owing to the fact that they still remain in idle position on the high part of the shutter. When the stocking blank is completed, then the pattern mechanism gives effective movement to the pawls as before described and the cycle is completed.

Stops are provided at **13***g*, **17***g* to limit the movement of the shutters in closing the teeth of the back-racking ratchets **13***c* and **17***c*.

It will be seen from the above that when the narrowing pawls are operative, the back-racking pawls are held out of action and conversely when the back-racking pawls are in service, the narrowing pawls, see Figs. 9 and 11, are held out of action in their retracted positions.

A spring plunger **31***'* acting on lever **31***b* resets the operating connections of the shutter **13***d* when the stop carrier **36** by its movement leftward, Fig. 5, withdraws the rod **31** from pressing against said lever. Springs **13***x* and **17***x*, Figs. 10 and 12, press the back-racking pawls to their work. A stop **9***a* limits the movement of lever **9**, Fig. 2.

At **31***x*, Figs. 5 and 12, is shown a stop mounted on the gear wheel **43***b* which, in the final movement of back-racking, comes against the end of lever **31***b* when this has been moved into the position of Fig. 5, and has moved the shutter **13***d* to close the tooth in the back-racking ratchet.

This stop determines accurately the final position of the back-racking mechanism.

The invention is not limited to a machine in which there are a plurality of yarn feeds with an endless band for each yarn guide, and a stop for each band, as fashioning can be done in a single feed machine with which may be associated back-racking or restoring mechanisms for the stop means and for the narrowing mechanism of the general form disclosed herein.

In the operation of back-racking, the back-racking pawls are carried around the axis of the stub shafts and move the one tooth ratchets not more than a full revolution at each action.

It requires a number of these revolutions to effect the full restoration of the narrowing point carriers and the yarn guide stops. At each backward movement of the pawl it will drop into the one tooth ratchet and give it another revolution on the next action.

I claim:

1. A flat fashioned knitting machine comprising narrowing point carriers, means for automatically moving said carriers for narrowing, stop means to arrest yarn guide carrier means, means for automatically adjusting said stop means for narrowing, power operated means thrown into operation after the knitting of a stocking blank has been completed for restoring the narrowing point carriers and the stop means to starting position automatically and simultaneously, and means actuated by the narrowing point carrier and the stop means at the ends of their restoring movements respectively for determining the points at which the arresting of said point carriers and the stop means will take place.

2. Apparatus according to claim 1 in which each of the elements i. e. narrowing point carriers and stop means exerts its control individually upon its own restoring mechanism to throw the same out of operation.

3. A flat fashioned knitting machine comprising narrowing point carriers, stops for yarn guide carriers, a screw shaft with a pawl and ratchet for turning the screw shaft to adjust the point carriers two needle spaces inwardly of the machine, and a retrograde pawl and ratchet for turning the said screw shaft to adjust the point carriers outwardly one needle space, a screw shaft and a pawl and ratchet for turning said last mentioned screw shaft for adjusting the carrier of the stops for narrowing, back-racking pawl and ratchet mechanism for operating

the point carrier-adjusting screw reversely for restoring the same to starting position, back-racking pawl and ratchet mechanism for operating the stop adjusting screw reversely for restoring the stops to starting position, each of said restoring back-racking pawl and ratchet mechanisms having means individual thereto for throwing the back-racking pawl thereof out of operation upon the restoration of the member (point carrier or stop means) belonging thereto to its starting point, the individual throw-out means for the back racking pawl belonging to the yarn carrier stops being operated by the carrier of said stops when said carrier arrives at its original position, and the individual throw-out means for the back racking pawl belonging to the narrowing points being operated by the carrier of said points when it arrives at its original position, a cam, a shiftable roller, and means operated by said roller in one position for operating the back-racking mechanisms, substantially as described.

4. A flat fashioned knitting machine comprising narrowing point carriers, stops for yarn guide carrier means, screw shafts for adjusting the said point carriers and yarn guide carrier stops respectively, a stub shaft for each screw shaft geared thereto, means on each stub shaft for rotating the same for narrowing, connections for driving said last mentioned means, gears loosely mounted on the stub shafts operating pawl and ratchet means on each stub shaft for rotating the same in reverse direction for restoring the narrowing point carriers and stops, means for driving one of the gears comprising a cam, a shiftable roller and means for shifting said roller into line with the cam, and a counter shaft connecting the said gears, substantially as described.

5. A flat fashioned knitting machine comprising a screw shaft, narrowing point carriers operated thereby, means automatically operated by a portion of the machine organization for restoring said carriers to starting position by rotating said screw shaft reversely, said means including a pawl and ratchet, a shield for controlling the engagement of the pawl with the ratchet, and a push rod, cam, and lever controlled by one of the narrowing point carriers for controlling the said shield, substantially as described.

6. A flat fashioned knitting machine comprising a screw shaft, adjustable stops for regulating the length of reciprocations of the yarn guide, carirer means for the stops adjusted by said screw shaft, automatically operating means driven by a portion of the machine organization for restoring said stops to starting position by rotating said screw shaft backwardly, including a pawl and ratchet, a shield for controlling the engagement of the pawl with the ratchet, and a push rod and levers operated by the stop carrier means for controlling the shield, and thereby arresting the backward movement of the parts, substantially as described.

7. In a flat fashioned knitting machine, narrowing point carriers, a screw shaft for adjusting said carriers, yarn guide carrier means, stop means for the yarn guide carrier means, a screw shaft for adjusting said stop means, said screw shafts being parallel with each other and with the needle row, means for turning the screw shafts for adjusting the narrowing point carriers and the stop means in one direction for narrowing, and means for automatically and simultaneously rotating said screw shafts in the reverse direction for restoring the narrowing point carriers and the stop means to their starting positions, and means for automatically timing the last mentioned means to act when the knitted fabric is completed, each screw shaft having a stub shaft associated therewith, gearing between each stub shaft and its screw shaft, means on each stub shaft for turning it forwardly and means on each shaft for turning the same backwardly, a cam on the main shaft common to both forwardly operating means for operating the same and a cam on the main shaft common to and for operating backwardly the operating means of the points and stops, and power transmitting connections between said cams and the said means respectively, substantially as described.

8. In a flat fashioned knitting machine, narrowing point carriers, a screw shaft for adjusting said carriers, yarn guide carrier means, stop means for the yarn guide carrier means, a screw shaft for adjusting said stop means, said screw shafts being parallel with each other and with the needle row, means for turning the screw shafts for adjusting the narrowing point carriers and the stop means in one direction for narrowing, and means for automatically and simultaneously rotating said screw shafts in the reverse direction for restoring the narrowing point carriers and the stop means to their starting positions, and means for automatically timing the last mentioned means to act when the knitted fabric is completed, a cam on the main shaft and connections operated thereby imparting forward rotation to said screw shafts for narrowing, and a second cam on the main shaft which through other connections imparts reverse rotary movement to said shafts for backracking, said timing means including a roller shiftable into and out of line with said cam and pattern means for shifting said roller, said other connections including a back racking pawl and ratchet mechanisms for each shaft, the back racking pawl for the stops being thrown out of operation by the carrier of said stops, and the back racking pawl for the narrowing points being thrown out of operation by the carrier of said points when said carriers individually reach their original positions, substantially as described.

9. In a flat fashioned knitting machine, narrowing point carriers, a screw shaft for adjusting said carriers, yarn guide carrier means, stop means for the yarn guide carrier means, a screw shaft for adjusting said stop means, said screw shafts being parallel with each other and with the needle row, means for turning the screw shafts for adjusting the narrowing point carriers and the stop means in one direction for narrowing, and means for automatically and simultaneously rotating said screw shafts in the reverse direction for restoring the narrowing point carriers and the stop means to their starting positions, and means for automatically timing the last mentioned means to act when the knitted fabric is completed, said means which gives restoring movement to the screw shafts comprising a shaft extending from the restoring means of one screw shaft to the restoring means of the other screw shaft, substantially as described.

10. A flat fashioned knitting machine comprising a member adjusted for narrowing, a screw shaft for adjusting said member, mechanism to give a reverse movement to said screw, means for throwing said reversing mechanism out of operation, said means comprising a member actuated

only and directly by the said adjusted member at the end of its return movement along the screw, said throw out means for the reversing mechanism comprising a shield for retracting and holding a driving pawl.

11. A flat fashioning knitting machine comprising narrowing point carriers, stop means to arrest yarn carrier means, means for adjusting the narrowing point carriers and the stop means for fashioning the fabric, mechanism solely for automatically restoring said narrowing point carriers and said yarn carrier stop means to initial position and timing means for initiating the operation of said automatic restoring mechanism to take place after the knitting of the complete stocking blank has been accomplished, said machine after restoration of the stop means and narrowing point carriers has taken place continuing in operation to lay yarn in the needle row for a portion of the first course for the new stocking blank, whereafter the machine comes to a stop, substantially as described.

12. In a flat fashioned knitting machine, narrowing point carriers, a screw shaft for adjusting said carriers, yarn guide carrier means, stop means for the yarn guide carrier means, a screw shaft for adjusting said stop means, said screw shafts being parallel with each other and with the needle row, means for turning the screw shafts for adjusting the narrowing point carriers and the stop means in one direction for narrowing, and means for automatically and simultaneously rotating said screw shafts in the reverse direction for restoring the narrowing point carriers and the stop means to their starting positions, and means for automatically timing the last mentioned means to act when the knitted fabric is completed, each screw shaft having a stub shaft associated therewith, gearing between each stub shaft and its screw shaft, means on each stub shaft for turning it forwardly and means on each stub shaft for turning the same backwardly, said backwardly turning means comprising one tooth ratchets, one for each stub shaft and pawls to engage the one toothed ratchets making a complete revolution about the axis thereof at each stroke, and means for throwing said last mentioned pawls out of operation when the narrowing point carrier and the carrier for the yarn guide stops respectively have reached their initial positions, said throw out means being operated by said carriers, substantially as described.

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