

[54] **APPARATUS FOR SUPPLYING WEFT
THREADS TO A WARP KNITTING
MACHINE**

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No. 3,603,117.

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[51] Int. Cl.....**D04b 27/10**

[58] Field of Search.....**66/84, 84 A, 85, 85 A, 86,**
66/125, 192; 139/127 R, 127 P

[56]

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Primary Examiner—Mervin Stein

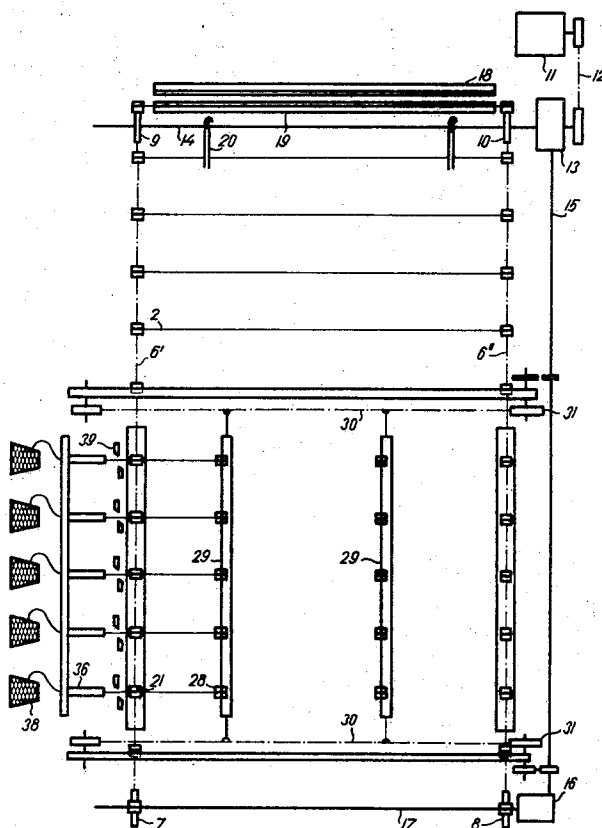
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[57]

ABSTRACT

A plurality of weft threads is simultaneously supplied to a conveyor which continuously and successively transports the weft threads to a warp knitting machine which forms chain stitches of first warps for holding the weft threads.

7 Claims, 14 Drawing Figures



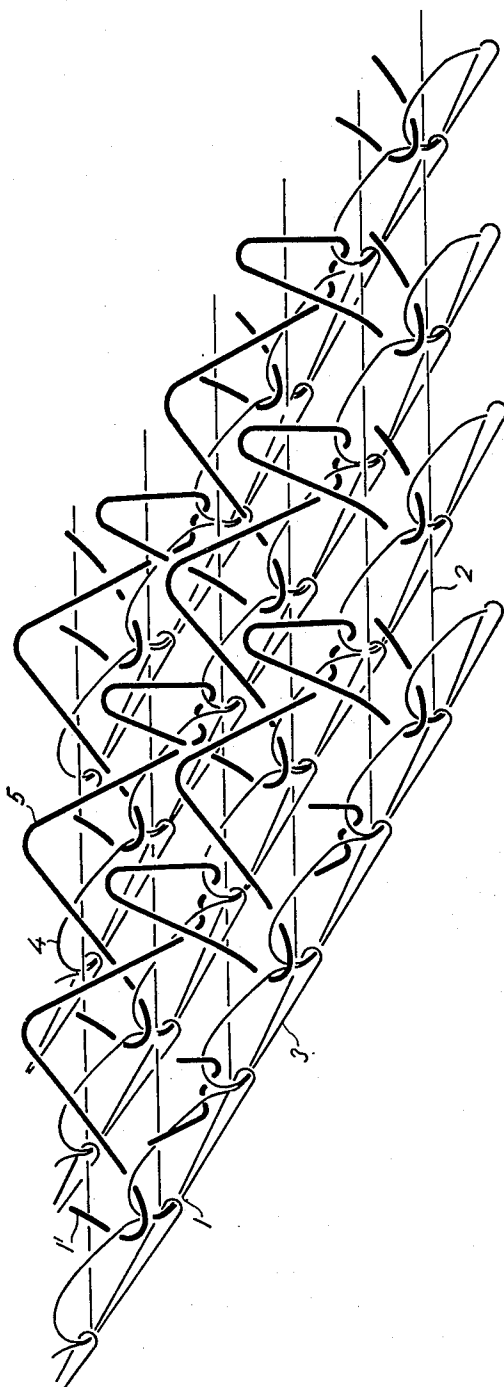


Fig. 1.

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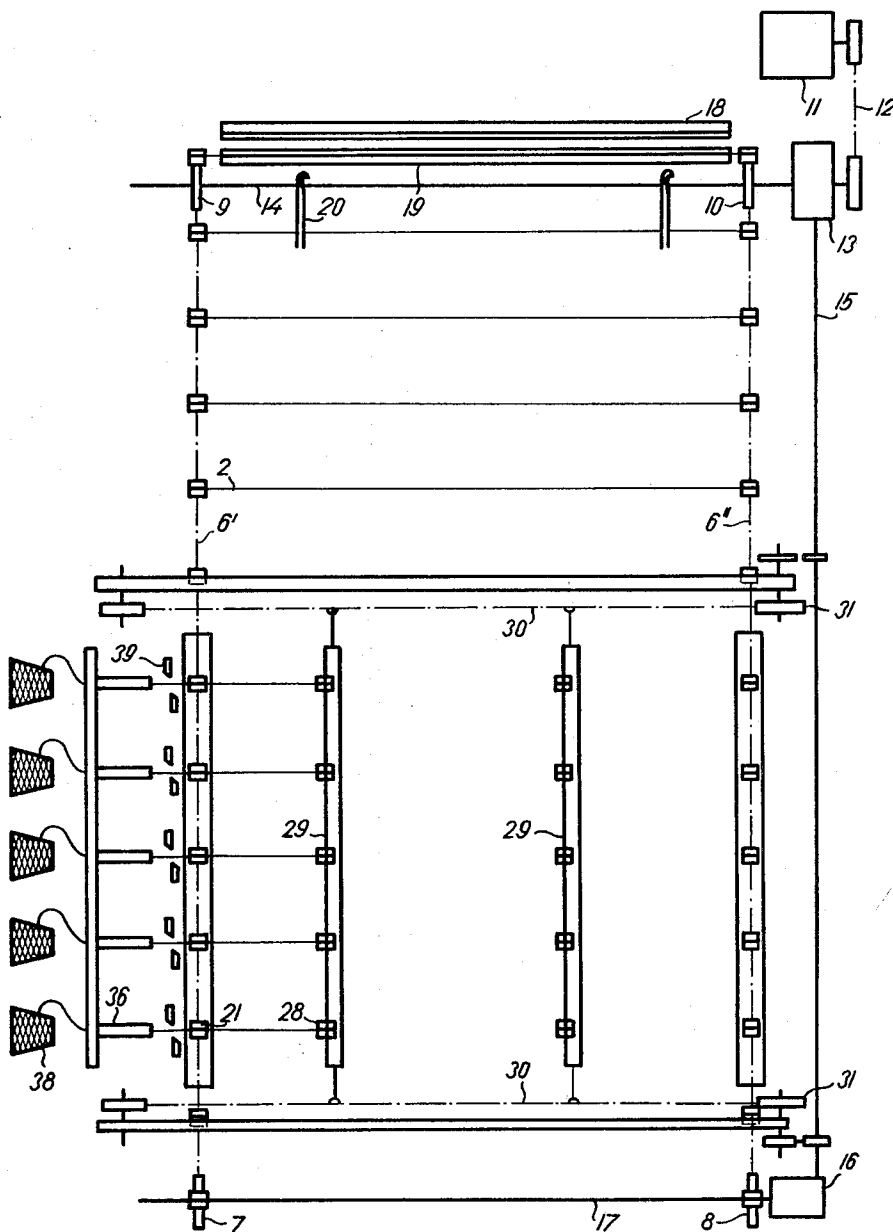


Fig. 2.

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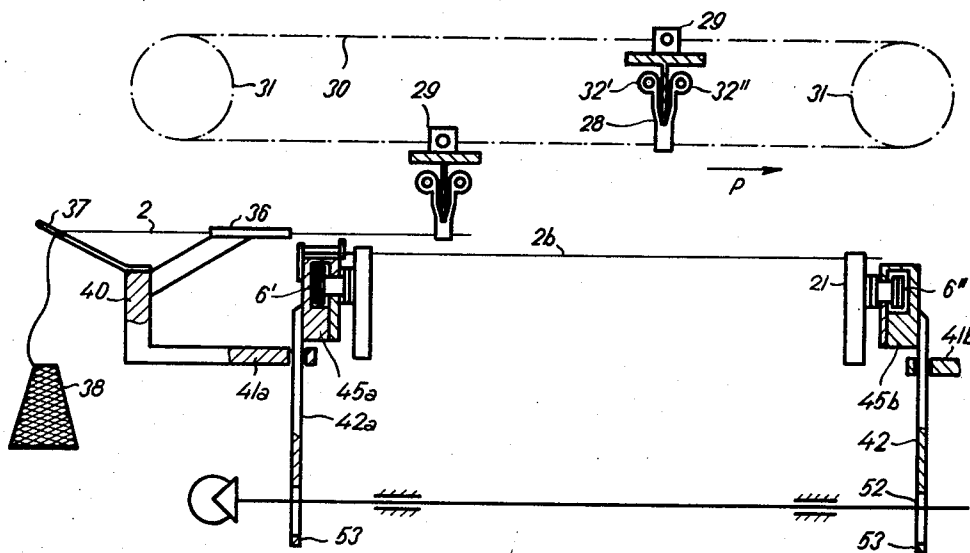


Fig. 3.

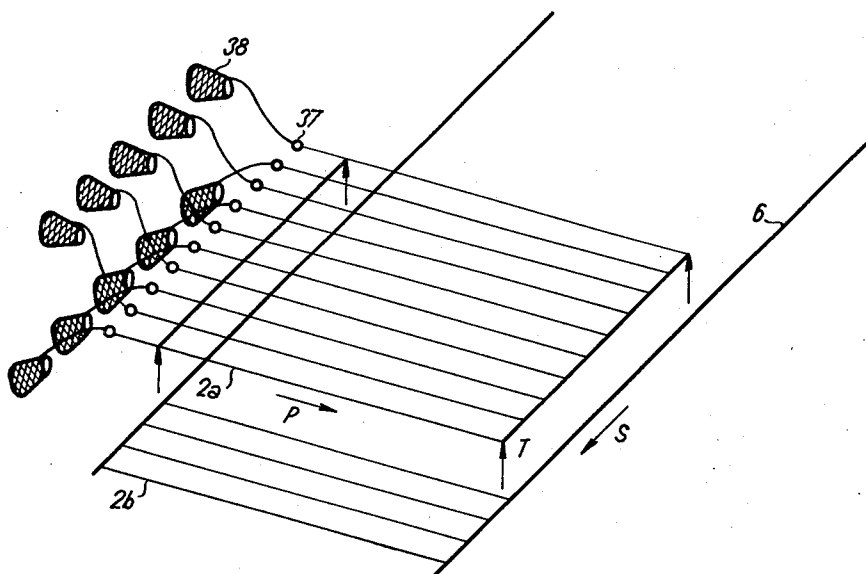
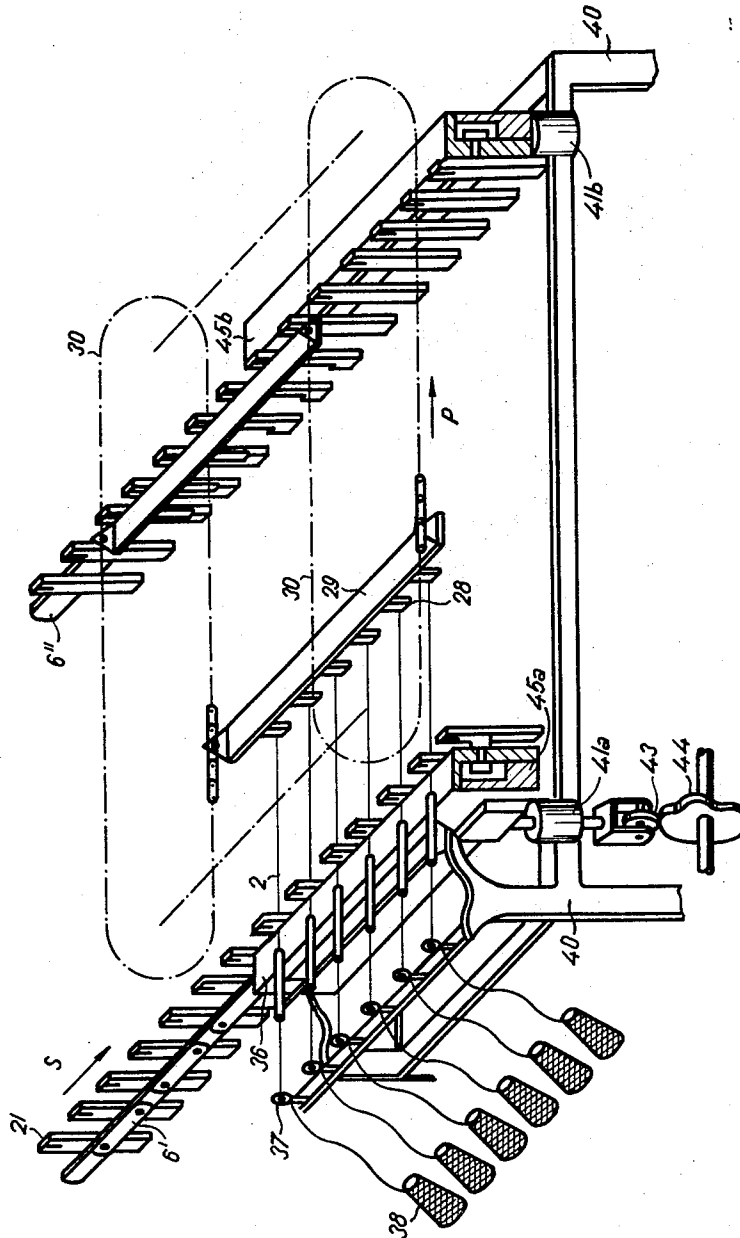


Fig. 4.

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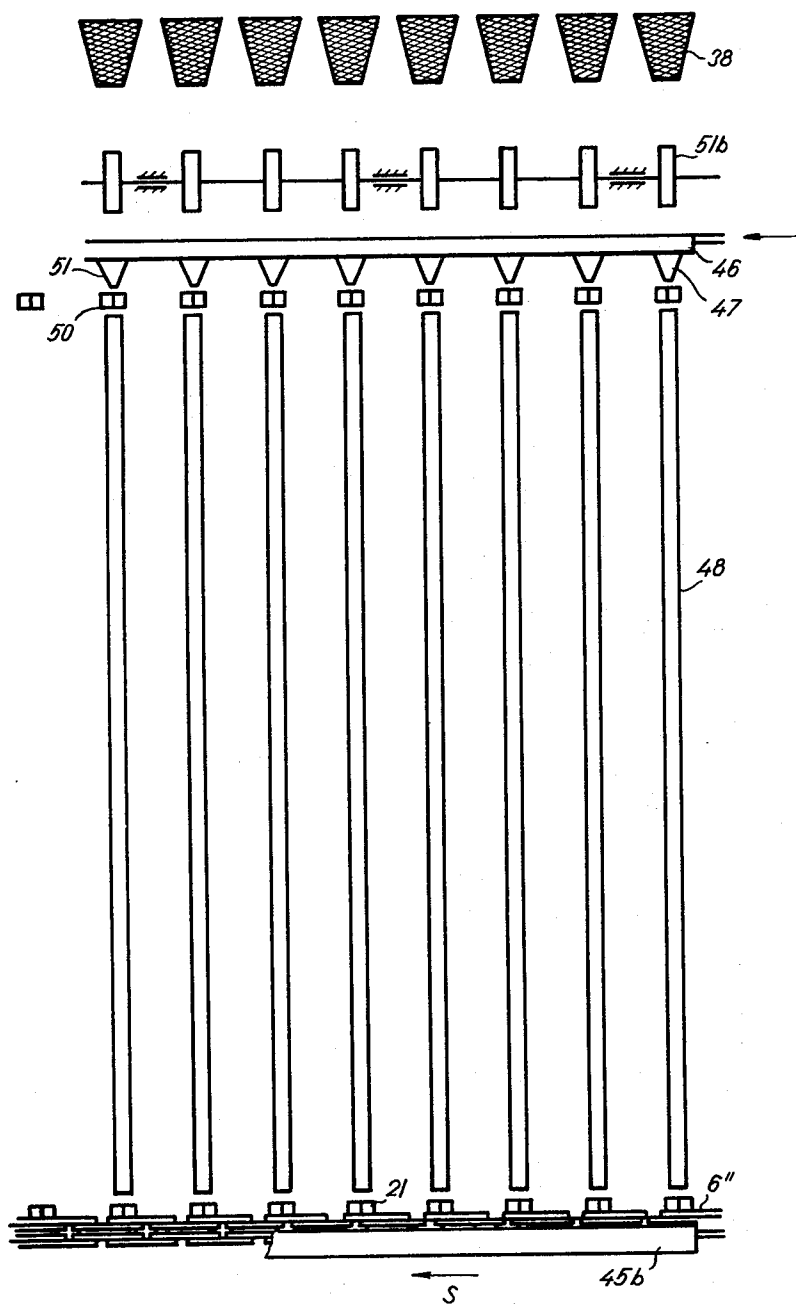


Fig. 6.

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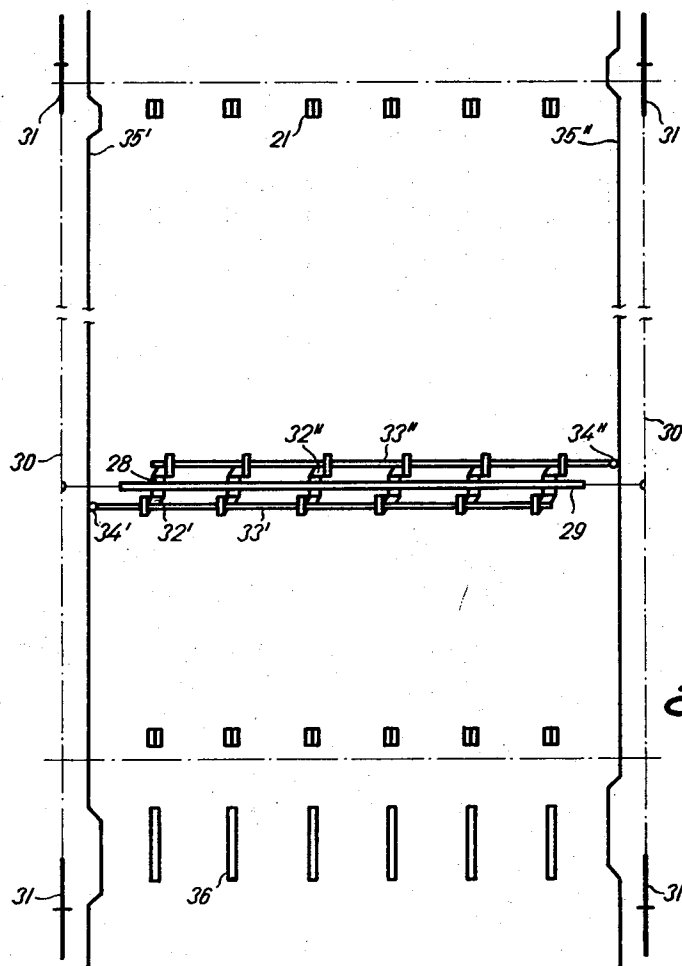


Fig. 11.

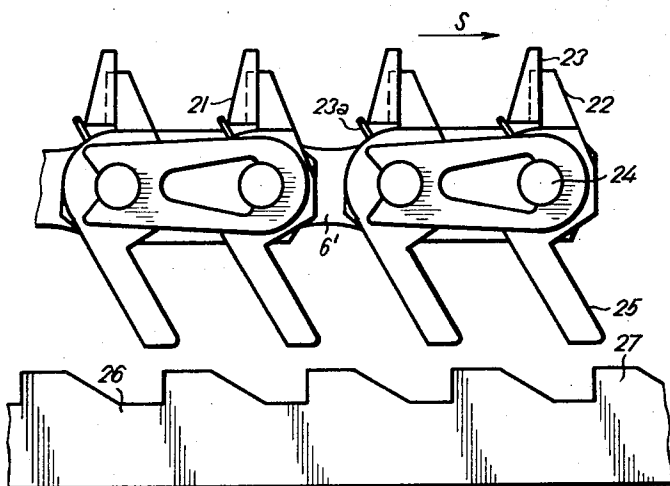


Fig. 10.

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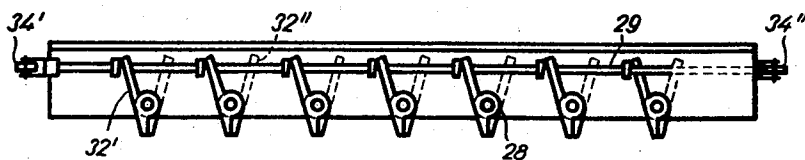


Fig. 12.

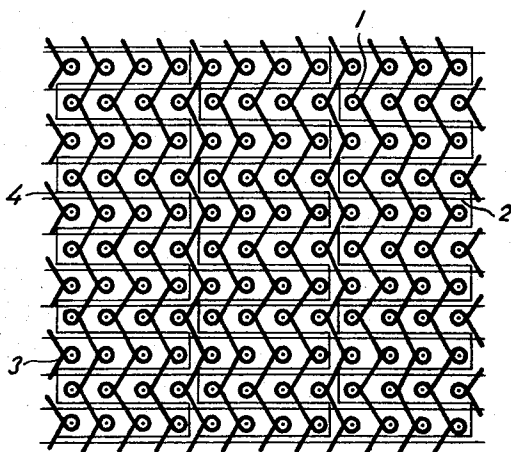


Fig. 13.

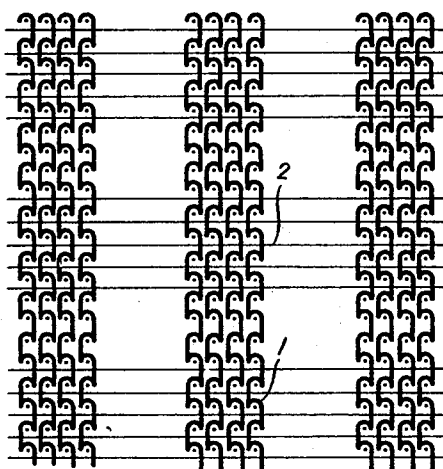


Fig. 14.

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APPARATUS FOR SUPPLYING WEFT THREADS TO A WARP KNITTING MACHINE

CROSS-REFERENCE TO RELATED APPLICATION

The present application is a division of our copending application, Ser. No. 818,205, filed Apr. 21, 1969, and entitled "Warp Knitted Pile Fabric and Apparatus for Making the Same," now U.S. Pat. No. 3,603,117.

BACKGROUND OF THE INVENTION

The present invention relates to textile machines, such as stitch knitting, warp knitting, or Raschel machines.

A warp knitted fabric is known in which a single weft thread is knitted through a warp thread system in such a manner that portions of the weft thread pass perpendicular to the direction of the wales through front loops and back loops of the warp threads, forming at the edges of the knitted fabric reversing arcs, a single weft thread being inserted throughout the entire length of the warp knitted fabric. A knitted fabric of this type cannot be patterned with weft threads of different colors or yarn number, and if the weft thread is omitted in one or several courses, the following weft thread is longitudinally inserted on the side of the fabric, and must be cut off during the final processing.

Another known warp knitted fabric is made in the same way, but the weft thread is knitted simultaneously with the warp threads in the marginal wales.

Another known warp knitted fabric has weft threads which are transversely slanted to the wales of the fabric angles less than 90°. This fabric requires irregular mutual crossing of the weft threads, so that the fabric is of irregular density.

The warp knitted fabrics according to the prior art have also the disadvantage that they cannot be provided with plush or pile loops. Other knitted fabrics are known in which plush loops are formed on the knitted fabric either of the back loops of the threads, or of additionally inserted pile threads. These fabrics have the disadvantage that the backing is irregular and the wefts do not form a right angle with the warps so that the appearance and strength of the fabric is detrimentally influenced.

In another known method, fibrous weft material is inserted into the fabric in lengths corresponding to the required weft lengths, and helical elements are used for providing substantially parallel courses of weft threads, gripping at both sides of the machine loops of several endless weft thread systems and conveying the threads continuously to the working station at a textile machine. A disadvantage of this arrangement resides in the fact that the weft threads are subjected to long and continuously increasing stress, requiring operation of the machine at a relatively low speed if frequent yarn breakages are to be avoided. Only high quality yarn can be used, which is an economic disadvantage.

According to another method of the prior art, a weft inserting guide inserts the weft thread after each revolution of the machine from one side to the other side of the fabric, which means that the weft inserting guide performs one working cycle during two machine revolutions. The disadvantage of this arrangement is that the weft inserting guide has to traverse substantially the whole width of the machine, and that color patterning, and patterning by transverse strips without weft threads, cannot be carried out.

Another method of the prior art provides a weft thread system continuously moving in the direction of the advancement of the fabric, and producing slanted weft threads in the same. A reversing carriage lays the weft thread system into a continuously moving conveyor. The obtained product is of comparatively low tensile strength since the weft threads are slanted and irregularly cross each other. Also, the appearance of the fabric is not satisfactory.

SUMMARY OF THE INVENTION

It is an object of the invention to overcome the disadvantages of the prior art, and to produce a warp knitted fabric having separate weft threads.

Another object of the invention is to produce a warp knitted fabric of great strength and pleasing appearance.

Another object of the invention is to produce a warp knitted fabric having separate weft threads, and additional warp threads forming plush loops.

Another object of the invention is to form and to supply to the warp knitting machine, weft threads having a length corresponding to the width of the warp knitted fabric.

Another object of the invention is to fasten the diagonal plush loops to one side of the fabric by the back loops of the chain stitches of the warps.

With the above objects in view, an apparatus in accordance with the invention comprises transporting conveyor means for transporting weft threads of the same length in one direction to a warp knitting machine, weft supplying means for supplying in a transverse direction a plurality of weft threads to the transporting conveyor means, and control means for effecting transfer of weft threads having said length from the weft supplying means to the transporting conveyor means, and from the same to the warp knitting machine.

In one embodiment of the invention, the weft supplying means include a supply conveyor pulling out weft threads across the transporting conveyor which is partly raised for gripping the weft threads held by the supply conveyor, whereupon the same are cut. In another embodiment of the invention, the weft supplying means include air nozzles and guiding tubes into which the air nozzles blow weft threads, which are transferred to the transporting conveyor and cut off adjacent the nozzles.

Due to the fact that weft threads of a length corresponding to the width of the warp knitted fabric are continuously transported to the warp knitting machine, the weft threads can be arranged at irregular intervals, or at equal intervals with the yarn number, and color of the weft threads being varied. The usefulness of the fabric is increased when both the warp and weft system are arranged at irregular intervals. Also, it is advantageous to make the plush loops of the fabric only on a part of the surface of the same.

The novel features which are considered as characteristic of the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a fragmentary perspective view illustrating a pile fabric according to the invention;

FIG. 2 is a schematic plan view illustrating an apparatus according to one embodiment of the invention;

FIG. 3 is a schematic cross-sectional view of the apparatus shown in FIG. 2;

FIG. 4 is a diagram illustrating the motion of the apparatus of FIG. 2;

FIG. 5 is a fragmentary perspective and schematic view illustrating a modification of the apparatus of FIG. 3;

FIG. 6 is a fragmentary plan view of another embodiment of the invention using pneumatic means for supplying the weft threads;

FIG. 7 is a schematic front elevation, partially in section, illustrating the apparatus of FIG. 6;

FIG. 8 is a schematic side elevation illustrating the apparatus of FIGS. 6 and 7;

FIG. 9 is a fragmentary side view, partially in section, illustrating a cam operation for delivering weft threads to the warp knitting machine;

FIG. 10 is a fragmentary side view illustrating a device for opening the grippers of the transporting conveyor;

FIG. 11 is a schematic plan view illustrating the operation of the grippers of a supply conveyor in the embodiment of FIGS. 3 and 5;

FIG. 12 is a fragmentary side view illustrating a detail of the device shown in FIG. 11;

FIG. 13 is a schematic plan view illustrating a fabric according to the invention; and

FIG. 14 is a schematic plan view illustrating a patterned fabric according to the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The fabric of the invention receives weft threads from apparatus shown in FIGS. 2 to 12. Referring first to FIG. 2, an endless conveyor 6 has two endless chains 6' and 6'' guided over chain wheels 7, 8 driven by a shaft 17, and chain wheels 9, 10 driven by a shaft 14. A motor 11 drives shaft 14 by means of a gear transmission 13 and a chain drive 12, and also drives a shaft 15 which is connected by a gear transmission 8 with shaft 17. The drive of conveyor 6 must be coupled with the drive of the stitch knitting machine, which is best accomplished by driving the stitch knitting machine by the same electric motor over a gear transmission when a regular distribution of weft threads 2, which are transported by chains 6' and 6'' of conveyor 6, is required. The weft threads transported by conveyor 6 are inserted between comb structures 18 and 19 which are part of the stitch knitting machine which includes a row of needles 20 reciprocable to pass into the spaces between the teeth of comb-shaped structures 18 and 19, the latter effecting the knocking off of the loop.

Grippers 21 are mounted on conveyor chains 6' and 6'', each gripper including a stationary jaw 22, and of a movable jaw 23 mounted for angular movement on pins 24 on chains 6' and 6'', as shown in FIGS. 9 and 10. The stationary jaws 22 are parts of the chain links which are connected by pins 24. Springs 23a bias the movable jaws 23 toward the stationary jaws 22. The clamping of the weft threads 2 by grippers 21 is im-

proved by forming the stationary jaws 22 with a U-shaped cross section forming a channel into which the movable jaw 23 advances so that the weft thread is more reliably held in the channel by the movable jaw 23.

The movable jaws 23 have tails or fingers 25 cooperating with a vertically movable control member 27 which has a row of teeth 26. The mechanism for moving control member 27 is not shown, since it is not an object of the invention.

Weft supplying conveyor means are provided which include a pair of conveyor chains 30 passing over chain wheels 31 driven by transmission means from shaft 15. Conveyor chains 30 are connected by support bars 29 each of which carries a row of grippers 28, see also FIGS. 3, 5, 11, and 12. Each gripper 28 has a pair of jaws 32', 32'' connected by a pin. Movable jaws 32' are operated by a control rod 33' having lugs respectively engaging the tails of movable jaws 32', and having a follower roller 34' cooperating with a stationary cam 35' extending along one of the conveyor chains 30, as shown in FIGS. 11 and 12. The other movable jaws 32'' are operated in the same manner by a control rod 33'' which has a cam follower roller 34'' cooperating with a stationary cam 35'' extending along the other conveyor chain 30, as shown in FIGS. 11 and 12. The movement of grippers 28 is transverse to the movement of grippers 21, as best seen in FIGS. 2 and 5.

The weft supply means further include cross wound packages or bobbins 38 from which weft threads are respectively guided through stationary eyes 37 and stationary guide tubes 36, mounted on supporting means 40, as best seen in FIG. 5. The same or different threads may be supplied by packages 38, but each system or series of weft threads 2 has a number corresponding to the number of supply packages 38. A corresponding number of cutting scissors 39 is located between guide tubes 36 and grippers 21 on conveyor chain 6'.

Supporting means 40 has bearing bushings 41a and 41b in which support rods 42 are mounted for vertical movement, as shown in FIGS. 3 and 5. Each support rod 42 carries a cam follower roller 43 cooperating with cam means 44 so that carriers 45a, 45b connected to the upper ends of support rods 42, can be raised and lowered. Carriers 45a and 45b have a channel-shaped main part closed by a cover plate so that inner cavities are formed for guiding the links of conveyor chains 6' and 6'', while grippers 21 are located outside of the cavities, supported by carriers 45a and 45b. Consequently, rotation of cams 44, which are provided at both ends of conveyor chains 6' and 6'', will effect raising and lowering of conveyor chains 6' and 6''.

FIG. 3 illustrates a minor modification of the construction as shown in FIG. 5 since instead of cams 44, circular eccentrics are mounted on a driven shaft, and are located in corresponding openings of support bars 42 which carry carriers 45a and 45b.

Another modification of the weft supply means is shown in FIGS. 6, 7 and 8.

Weft threads 2 are drawn from the packages 38 by pairs of transporting rollers 51a, 51b and transported to a thread accumulator 49. An air guiding body 46 has a number of nozzles 47 for blowing air streams through guide tubes 48 into which weft threads 2 are blown. Cutting means 50 are located between the nozzles 47

and tubes 48. As in the embodiment of FIGS. 3 and 5 carriers 45a and 45b support the conveyor chains 6' and 6'', and are mounted on support bars 42 operated by eccentric members 52 as described with reference to the modification of FIG. 3.

At the working station at the end of conveyor chains 6', 6'', an arcuate cam 54 is disposed, as shown in FIG. 9, cooperating with the tails of grippers 21 for opening the same against the action of springs 23a.

For producing the pile fabric shown in FIG. 1, a known plush comb has to be attached to the stitch knitting machine.

Chains 6', 6'' continuously transport weft threads 2, held by pairs of grippers 21, toward combs 18 and 19 of the stitching machine, and new weft threads are continuously supplied to grippers 21 by the weft supply means shown in FIGS. 3 and 5, or by the weft supply means shown in FIGS. 6, 7 and 8. When a weft thread 2 held by a pair of grippers 21 arrives at the ends of the loops of chains 6', 6'', cam 54 is effective to open grippers 21 by engaging the tails of the movable jaws 23 so that the weft threads are released. Before opening grippers 21, the same press the weft thread 2 from below against the front faces of all needles 20. At this moment, kinking takes place, the latches of needles 20 are closed, and the weft threads can slide over the point of needles 20 to the rear face of the same, so that each weft thread 2 is knitted into the fabric between front loops 3 and back loops 4 of warps 1. When cam 54, see FIG. 9, has opened the respective pair of grippers for releasing the weft thread, it permits the grippers 21 to close again and to move in empty condition in the direction opposite to the direction S with the lower run of conveyor chains 6', 6''. Pairs of closed grippers 21 pass over chain wheels 7 and 8, and move again in the direction S toward the weft supply conveyor means 30.

In the embodiment of FIG. 5 and its modification shown in FIG. 3, the endless conveyor chains 30 move in the direction of the arrow P.

The weft supply grippers 28 carried by support bar 29 on the lower run of conveyor means 30 have clamping jaw portions located at the horizontal level of the guide tubes 36 from which weft thread ends project, and a small distance above the level of the jaws of transporting grippers 21, as best seen in FIG. 3.

When the grippers 28 approach the guide tubes 36, the cams 35' and 35'', see FIG. 11, operate the control rods 33' and 33'' to open grippers 28 so that the spread jaws 32', 32'' assume a position located on opposite sides of a weft thread end hanging from the end of the respective guide tube 36. When the row of grippers 28 is in this position, cams 35' 35'' permit the closing of grippers 28 so that all weft thread ends projecting from guide tubes 36 are gripped, and the weft threads 2 are drawn through guide tubes 36, and eyes 37 and unwound from the respective packages 38. When the respective row of grippers 28, clamping weft threads 2, has moved beyond the position shown in FIG. 3 to a position located substantially above carrier 45b, and outwardly of the row of grippers 21 on the same, a portion of the pulled out weft thread 2 extends between a pair of grippers 21, still located above the same.

FIG. 4 schematically shows this position and indicates the movement of conveyor means 6 in the direction S, the movement of the weft threads 2 in the

direction of the arrow P to a position 2a, and the additional movement in the direction of the arrow T by which the new weft thread 2a is placed in the grippers 21 and is moved by a conveyor means 6 toward the working station.

When the weft threads 2 have been pulled out completely by the respective row of grippers 28, the cams 44 in the embodiment of FIG. 5, and the eccentric members 52 in the embodiment of FIG. 3 turn to a position for raising support bars 42 with carriers 45a and 45b, and grippers 21.

The control member 26, shown in FIG. 10, is simultaneously moved to engage tails 25 of grippers 21 so that jaws 22, 23 open before arriving at the level of the weft thread 2 which extends between tube 36 and the gripper 28 which is now in the proximity of the carrier 45b, and on the right side of the right hand gripper 21, as viewed in FIG. 3. When carriers 45a and 45b are in the higher position, they stop momentarily due to the shape of cams 44 or 52, and the teeth 27 of control member 26 release tails 25 so that the spring biased jaws 22, 23 close and grip the weft thread 2a at the higher level.

The motions of conveyors 6 and 30, and of control member 26 are synchronized in such a manner that the first weft thread pulled out by the first gripper 28 is located directly above the first pair of grippers 21 so that the same can grip the weft thread after a straight vertical motion. The following pulled out weft threads are located above other pairs of grippers 21 when carriers 45a and 45b move upward to the higher level with grippers 21. All pairs of grippers 21 are supplied with a weft thread 2b, and none remains empty. At the proper moment, scissor means 39, see FIG. 2, are operated to cut off weft thread 2b from the weft thread portion in tube 36 such a distance from the latter that it can be gripped by a gripper 28. If no particular pattern is desired, each pair of grippers 21 transports only a single weft thread 2b in the direction S toward the knitting station 18, 19, 20. It is evident that grippers 28 must not be opened before control member 26 operates grippers 21 to clamp the weft thread. As soon as weft threads 2b are located between the jaws 22, 23 of grippers 21, tails 25 are released by the teeth 27 of control member 26, see FIG. 10, and the weft threads 2b are gripped by the spring biased grippers 21, and upon advancement of conveyors 6 and 30, weft threads 2b are pulled out of grippers 28 opened by cams 35', 35'' when further moving in the direction P. When the transfer of the weft thread has been effected, cams 44, or 52 move carriers 45a, 45b with pairs of grippers 21 down to the lower position.

Only one support 29 with the row of grippers 28 is at any time supported by the lower run of conveyor chains 30, while the other support 29 is located on the upper run, and moves in opposite direction. The number of weft threads which can be simultaneously supplied to the grippers 21 of conveyor 6 depends on the speed of the machine at which the weft threads 2 are knitted into the fabric, and the higher the speed of the machine is, the more weft threads have to be supplied simultaneously to pairs of grippers 21.

In the pneumatic weft supply apparatus shown in FIGS. 6, 7 and 8, a number of weft threads determined by the number of packages 38, transporting rollers 51a,

51b, and nozzles 47, is simultaneously blown in a direction perpendicular to the continuous motion of weft threads by grippers 21 of conveyor 6. Weft threads 2 drawn by transporting rollers 51a, 51b and accumulated in accumulator 49, are blown by nozzles 47 into and through tubes 48, passing through a cutting device 50.

The feeding rollers 51a and 51b are so controlled that they supply the required length of weft threads in cooperation with a measuring mechanism, not shown. When rollers 51a, 51b stop, the streams of air continuously blown out of nozzles 47 maintain the weft threads 2 in a straight condition so that the ends of the weft threads project out of the ends of tubes 48 and are located above grippers 21 on conveyor chain 6'. Another portion of the weft threads is located above grippers 21 supported by conveyor chain 6'.

When each weft thread is located above a gripper 21, carriers 45a and 45b are raised by eccentric members 52 to a position in which the clamping jaw portions of jaws 22, 23 are located on opposite sides of the respective weft thread in an open position assumed under the control of control member 26, whereupon the latter releases the tails 25 of grippers 21, permitting springs 23a to close the jaws 22, 23 so that the weft thread is gripped by a pair of grippers 21. cutting devices 50 are operated by cam means, not shown, to cut off the weft thread between the respective nozzles 47 and grippers 21, whereupon cams 52 return carriers 45a, 45b with conveyor chains 6', 6'' and pairs of grippers 21 holding weft threads so that the weft threads are again at the lower level at which they are supplied to the knitting machine.

As is shown by the schematic cross-section 48a of a tube 48 in FIG. 7, the tube 48 has a bottom slot extending in longitudinal direction so that the weft thread held between a pair of grippers 21, can move downwardly with the same. Feeding rollers 51a, 51b are now operated to pull measured lengths of weft threads from packages 38, whereupon the weft threads are blown into the tubes 48.

When it is desired to produce a patterned fabric, the warp thread 1 and the weft threads 2 are patterned by omitting warp threads 1 and weft threads 2 at places determined by the pattern. As shown in FIG. 14, groups of four wales are separated where groups of five warp threads were not supplied, and groups of five weft threads 2 are separated where groups of three weft threads 2 were not supplied. The threading of the warp thread 1 and weft threads 2 is carried out according to the desired pattern. It is also possible to determine the distribution of the weft threads 2 by means of a Jacquard patterning mechanism, not shown, which effects swinging out of grippers 28 in the direction of the movement of conveyor 6.

In order to manufacture a pile fabric with plush loops, as shown in FIG. 1, the back loops of the warp thread are laid, and are knitted below the needles 20, or over sinkers of a plush comb, not shown, so that the plush loops 5 are formed.

A fabric made in accordance with the present invention is suitable particularly for decorative fabrics, as used for covering furniture, but may also be used for the manufacture of underwear and other textile fabrics for which no expansibility is desirable. The fabric is

also suitable for carpets, carpet backings, mats, base fabrics for needle tufted textiles, and other purposes.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of warp knitting apparatus differing from the types described above.

While the invention has been illustrated and described as embodied in an apparatus and machine for making a warp knitted pile fabric, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention, and therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims.

We claim:

1. Apparatus for supplying weft threads to a warp knitting machine, comprising transporting conveyor means for successively and continuously transporting weft threads having the same length in one direction to said machine with the ends of said weft threads aligned in said one direction; weft supplying means including a plurality of means aligned in said one direction and movable in a direction perpendicular to said one direction for simultaneously engaging the ends of a plurality of weft threads having the same length, and for supplying in said perpendicular direction said plurality of weft threads to a position in which both ends of said weft threads of said plurality are aligned in said one direction; and control means for simultaneously effecting transfer of said plurality of weft threads of the same length in said position to said transporting conveyor means, and for successively effecting transfer of said weft threads of said plurality from said transporting conveyor means to said machine.

2. Apparatus as claimed in claim 1, comprising cutting means for cutting off said weft threads so that the cut off weft thread lengths are transported by said transporting conveyor means to said machine, said control means releasing said weft threads from said transporting conveyor means at said machine.

3. Apparatus for making a fabric of warp threads and weft threads, comprising a warp knitting machine; transporting conveyor means for successively and continuously transporting weft threads of the same length in one direction to said machine; weft supplying means for supplying in a direction perpendicular to said one direction a plurality of weft threads to said transporting conveyor means, said weft supplying means including supply means and supply conveyor means located at the same level above the level of said transporting conveyor means, said weft supplying means crossing said transporting conveyor means and simultaneously drawing supplied weft threads across said transporting conveyor means; and control means for effecting transfer of said weft threads having said length from said weft

supplying means to said transporting conveyor means, and for successively effecting transfer of said weft threads from said transporting conveyor means to said machine, said control means including means for moving at least a portion of said transporting conveyor means to the level of said weft supplying means, and means for transferring said plurality of weft threads at said level from said weft supplying means to said transporting conveyor means, said moving means of said control means including a rotary control cam, and cam follower means for raising a portion of said transporting conveyor means to said level of said supply conveyor means; and cutting means for cutting off said weft threads so that the cut off weft thread lengths are transported by said transporting conveyor means to said machine, said control means releasing said weft thread length from said transporting conveyor at said machine.

4. Apparatus as claimed in claim 1, wherein said transporting conveyor means include two transversely spaced endless transporting loops extending in said one direction, and two rows of transporting grippers mounted on the same, respectively, and forming pairs for holding lengths of weft threads; wherein said weft supplying means include a supply conveyor having two endless supply loops extending in said transverse direction and transversing said endless transporting loops, at least one support between said supply loops, a plurality of supply grippers mounted on said support in a row, and supply means for supplying a plurality of weft threads to said plurality of supply grippers, respectively, so that said supply conveyor pulls a plurality of weft threads from said supply means and across said transporting conveyor means so that the weft threads are located above pairs of transporting grippers, respectively; and wherein said control means include first cam means and cam follower means for opening said pairs of transporting grippers when the same register with said supply grippers, respectively, second cam means and cam follower means for raising said pairs of opened transporting grippers so that the same engage weft threads pulled out by said plurality of supply grippers whereupon said transporting grippers are controlled by said first cam means and cam follower means to close and to clamp said weft threads, cutting means for cutting the clamped weft threads at said supply means so that said transporting conveyor means transport the cut off lengths of weft threads to said machine, and third cam means and cam follower means for opening and closing said transporting grippers in the region of said machine for delivering weft threads to the same.

5. Apparatus as claimed in claim 1, wherein said weft supplying means include a plurality of air nozzles, a

plurality of air guiding tubes, and supply means for supplying a plurality of weft threads to said nozzles so that the weft threads are blown into said air guiding tubes, respectively, and project out of the same, said air guiding tubes being located above said transporting conveyor means, and having bottom slots for the passage of weft threads; and wherein said control means include means for moving at least a portion of said transporting conveyor means to the level of said air guiding tubes, and means for transferring said weft threads at said level through said slots to said transporting conveyor means; and comprising cutting means for cutting off said weft threads between said nozzles and said tubes so that the cut off weft lengths are transported by said transporting conveyor means to said machine.

6. Apparatus as claimed in claim 5, wherein said transporting conveyor means include two transversely spaced endless transporting loops extending in said one direction, and two rows of transporting grippers mounted on the same, respectively, and forming pairs for holding lengths of weft threads; and wherein said control means include first cam means and cam follower means for opening pairs of transporting grippers when the same register with said guiding tubes, respectively, second cam means and cam follower means for raising said pairs of opened transporting grippers so that the same engage at the ends of said tubes, weft threads pulled out by said nozzles, respectively, whereupon said transporting grippers are controlled by said first cam means and cam follower means to close and clamp said weft threads and to move the same down through said slots whereupon said cutting means cut off said clamped weft threads so that said transporting conveyor means transport the cut off lengths of weft threads to said machine, and third cam means for opening and closing said transporting grippers in the region of said machine for delivering weft threads to the same.

7. Apparatus for supply weft threads, comprising a warp knitting machine; supporting conveyor means for successively and continuously transporting weft threads in one direction to said machine; weft supplying means including a plurality of stationary weft supply means, and weft supply conveyor means for simultaneously transporting a plurality of weft threads from said weft supply means, respectively, across said transporting conveyor means in a direction transverse to said one direction; and control means for effecting simultaneous transfer of said plurality of weft threads from said supply conveyor means to said transporting conveyor means, and for effecting successive transfer of said weft threads from said transporting conveyor means to said machine.

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