cam **174** of lever **172** against the top butts **156** of the jacks **152**, as best illustrated in FIG. **8**.

Affixed to the upper surface of lever **172** is a conventional microswitch **178**, electrically connected to electric clutch **118**. The microswitch **178** is provided with a pivotal arm **180** having at its distal end a roller **182** adapted to contact a fixed element **184**, such as a threaded bolt, affixed to the bed plate of the machine. As the pattern drum **150** is racked in a counter-clockwise direction by cam **160**, the top butts **156** of the successive jacks **152** come into contact with the cam **174** of lever **172**. As each succeeding butt **156** engages cam **174**, lever **172** is urged in a clockwise direction about pivot **170**, against the force of spring **176**, to maintain roller **182** lightly in contact with bolt **184** (FIG. 7). In such circumstance, the contacts (not shown) of switch **178** are open, and no electrical impulses pass to clutch **118** to energize it.

However, when a butt **156** is removed from a jack **152**, as illustrated by the shadow lines in FIG. **9**, spring **176** urges lever **172** counter-clockwise about pivot **170**, since there is no butt **156** to contact cam **174**. As a result, roller **182** is pressed against bolt **184** to pivot arm **180** to close the contacts of switch **178** and complete a circuit to electric clutch **118**, thereby energizing the same. As a result, clutch plate **124** is attracted magnetically to clutch plate **130**, to impart rotation to the sliver feed rolls **40, 44**, as previously explained. The rate at which the sliver feed rolls rotate, as previously described, is dependent upon the setting of idler gear **88** with respect to gear cone **72**.

Each of the pattern mechanisms **11–18** of FIG. **1** incorporates the sliver feed control means just described, and each includes a microswitch **178** connected electrically to one of the eight sliver feeding means **19** of the machine. Thus, sliver may be fed selectively by the doffers **28** at each sliver and yarn feeding station **1–8**, as desired, according to a predetermined pattern.

Preferably, the jacks **152** of the pattern drums **150** select needles for reception of sliver fiber at the next succeeding sliver and yarn feeding station, whereas the sliver feed control means associated with each pattern drum, controlled by the top butts **156**, controls the electric clutch at the following sliver and yarn feeding station. Thus, pattern mechanism **11** of FIG. **1** selects needles for the reception of sliver at sliver and yarn feeding station **1**, but controls the clutch **118**, for the selective feeding of sliver, at station **2**. Similarly, pattern mechanism **12** selects needles for reception of sliver at sliver and yarn feeding station **2** and controls the electric clutch for the selective feeding of sliver at station **3**, etc. Of course, it will be readily understood by those skilled in the art that each such sliver feed control means may be readily adapted to control the electric clutch at the next succeeding feeding station, or at any other feeding station disposed about the needle cylinder, as desired.

It will be seen that this invention provides individual pattern means for controlling precisely, according to predetermined patterns, the feeding of sliver by a plurality of sliver feeding devices to a multi-feed high pile fabric circular knitting machine. It is possible to control each sliver feeding means so that sliver is fed selectively and intermittently, as desired, at each station of the machine and, when fed, may be precisely controlled as to the rate of feed, so as to vary selectively the density of the pile and the weight of the fabric being knit. This invention makes possible the knitting, on a commercially acceptable basis, of multi-color high pile fabrics of completely random design. Heretofore, it has been possible to provide multi-color fabric designs limited to a rigid, striped effect, because of the limited sliver feed controls heretofore utilized.

FIG. **10** illustrates schematically a four color, random pattern, high pile fabric **200** which, for the first time, may be produced on a multi-feed high pile fabric circular knitting machine. The fabric **200** may have areas **202** of red pile, areas **204** of blue pile, areas **206** of green pile ad areas **208** of yellow pile, all such areas being disposed at random throughout the fabric, without any rigid, striped or repeat effect. To knit such a fabric, the machine may be set up to feed red sliver fibers at station **1**, under the control of pattern mechanism **18**, blue sliver fibers at station **2** under control of mechanism **11**, green sliver fibers at station **3** under the control of mechanism **12** and yellow sliver fibers at station **4** under the control of mechanism **13**. Similarly, red, blue, green and yellow sliver fibers are fed to the needles, respectively, at stations **5, 6, 7** and **8**. While sliver is fed at all eight stations, to knit a four-color, random design fabric, yarn is fed at only two of the stations, located at diametrically opposing positions of the machine. For example, the machine might be operated to feed yarn to the needles at stations **4** and **8**. Thus, two courses of fabric are knit upon each rotation of the needle cylinder **22**.

In knitting such a four color two feed fabric, to produce a random multi-color high pile fabric of the type exemplified by FIG. **10**, three of the four colors, in each sequence of colors, are fed to the needles per rotation. Thus, during a given rotation of the needle cylinder **22**, red, blue and green sliver could be fed to selected needles at stations **1, 2, 3** and **5, 6, 7**, while the yellow sliver feeds at stations **4** and **8** are idle. During a subsequent rotation, the sliver feeding means at station **4** might be activated to feed yellow sliver to the needles, while the sliver feeding means at station **2** is deactivated, and no further blue sliver is fed at that station.

Because the sliver feeding means at each station is individually controlled by its own pattern mechanism, it is possible, during the knitting of any course of the fabric, to feed selectively three of the four slivers of each four color sequence. In knitting such a four color, random design fabric, one sliver out of each sequence of four slivers is idle, and reserved for the selective replacement of one of the three slivers being fed to the machine.

Although a preferred embodiment of this invention has been shown and described for the purpose of illustration, as required by Title 35 U.S.C. 112, it is to be understood that various changes and modifications may be made therein without departing from the spirit and utility of the invention, or the scope thereof as set forth in the appended claims.

I claim:

1. In a sliver feeding means for a high pile fabric circular knitting machine having a complement of needles,

a. a doffer,

b. a wire-covered main cylinder

c. a pair of rotatable wire-covered feed rolls for delivering sliver to the main cylinder, the wire coverings of said feed rolls meshing with each other and with