

Dec. 20, 1927.

A. A. GORDON

1,653,207

LOOM DOBBY

Filed Sept. 15, 1926

3 Sheets-Sheet 1

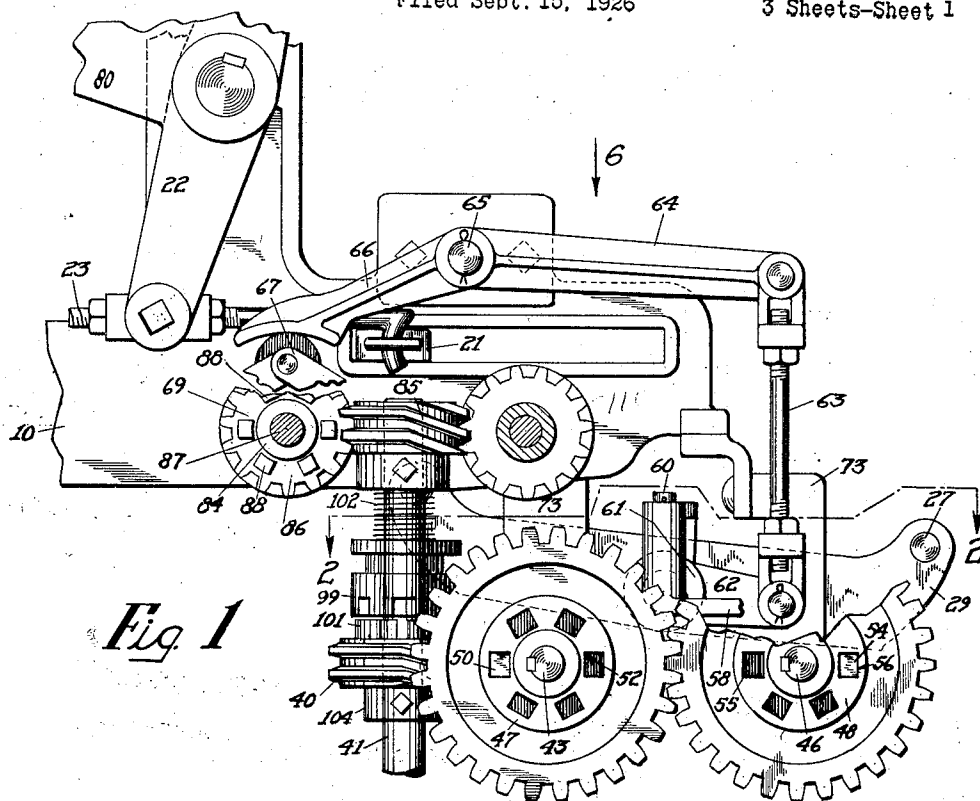


Fig. 1

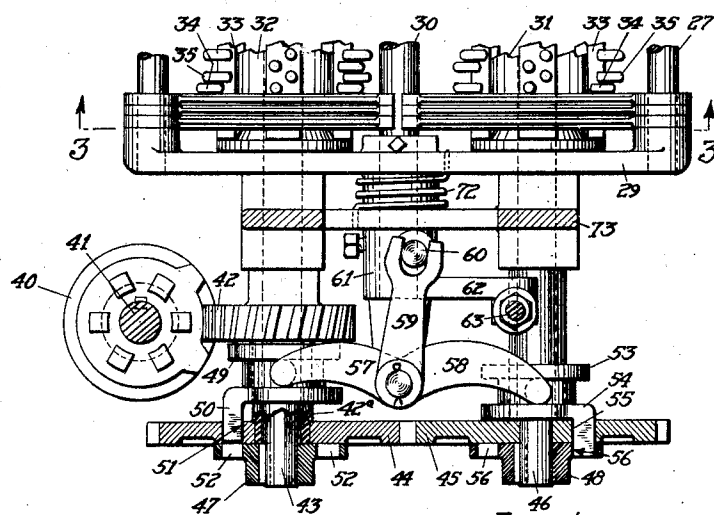


Fig. 2

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3 Sheets-Sheet 2

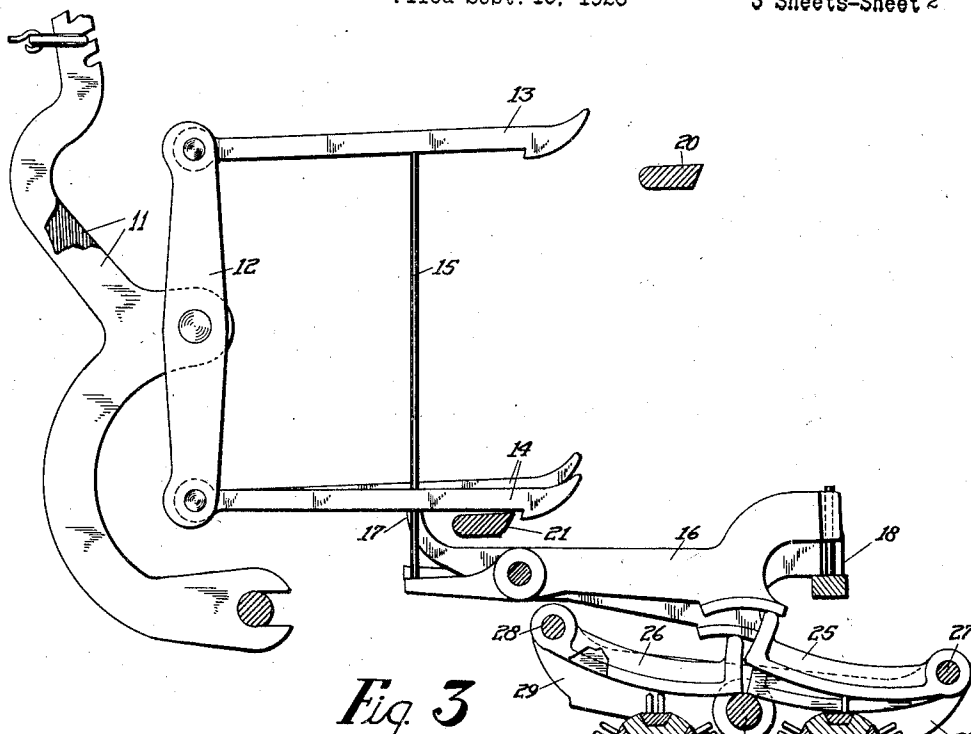


Fig. 3

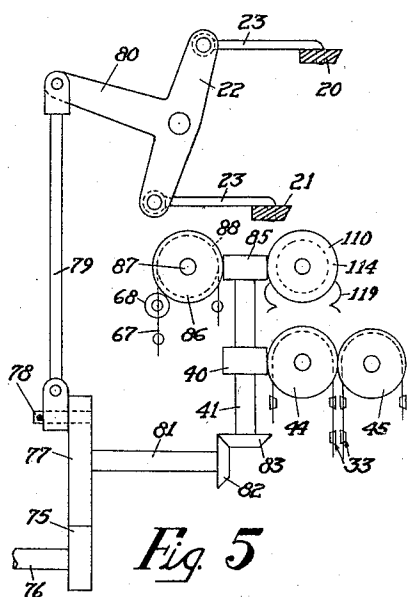


Fig. 5

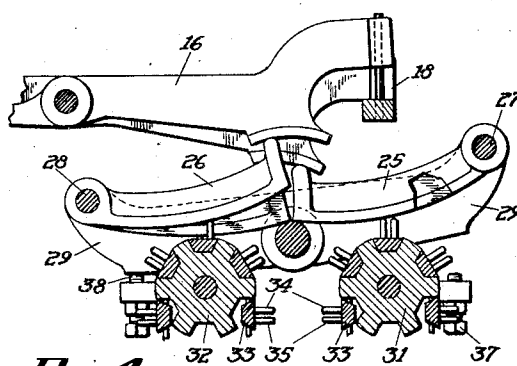


Fig. 4

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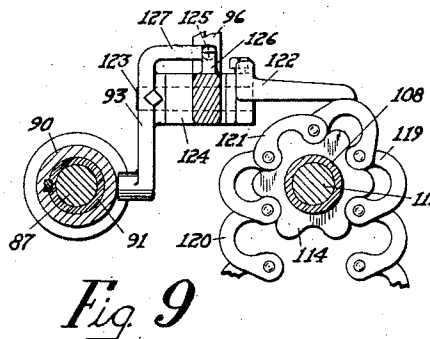
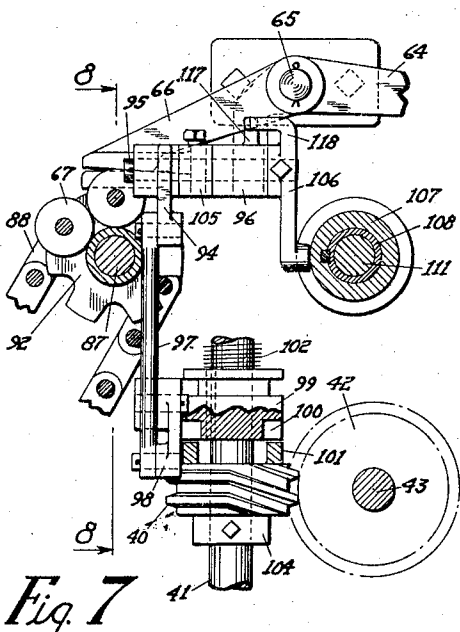
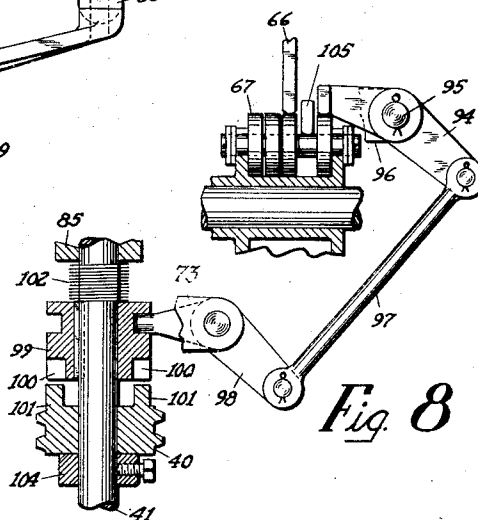
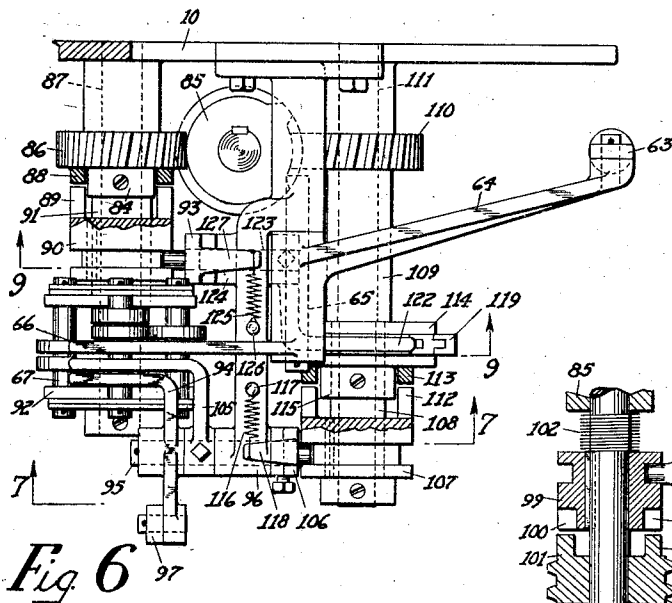
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

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LOOM DOBBY.

Application filed September 15, 1926. Serial No. 135,681.

This invention relates to improvements in dobbies for looms and it is the general object of the invention to provide a double index double cylinder dobby whereby the control for the harness levers can be passed from one cylinder to the other.

In my prior Patent No. 935,652 issued Oct. 5, 1909, there is shown a dobby having two separate cylinders and pattern chains which cooperate with a rocking frame having two sets of levers, the levers being arranged in pairs, one member of each pair being in each set and each pair being operatively positioned with respect to a dobby finger. A main control or box chain is made use of to rock the frame carrying the two sets of levers so that but one set will be operatively related to a pattern chain at a time. In this way it is possible to produce a fabric having two distinct weaves, one represented by one of the pattern chains and the other represented by the other chain, the shifting of the weave being accomplished by the control or box chain.

The chains in said patent and in all earlier dobby patents showing double cylinders, so far as I can ascertain, are of the so-called single index type, that is, the bars of chain are provided with a single row of pegs and it is necessary to move the chain once every pick of the loom, one chain bar controlling the upper set of hooks and the next chain bar controlling the lower set of hooks. Where the length of the repeat of the pattern is considerable a dobby made according to my prior patent will employ chains of considerable length and it is an important object of my present invention to substitute double index chains for those previously used so that the length of the chains may be halved.

It will be understood that each bar of the so-called double index pattern chain is provided with two sets of indicating pegs one of which controls the upper hooks and the other of which controls the lower hooks, so that one bar of the double index chain will suffice for two picks. When shifting, therefore, from one double index chain to another it is necessary to have the shifting come at the proper time to be sure that the weave continues on the proper set of pegs. In the aforesaid patent this condition does

not arise because the chain must receive a movement every pick of the loom and when the control is passed from one chain to the other by the control chain said other chain will start to move immediately and the hooks will be properly placed to form the next shed. It is an important and further object of my invention to provide for driving the control or box chain in the same time as the cylinders are driven, that is, the box or control chain advances every second pick as does the active cylinder. In this way I avoid the possibility of starting a new weave on the wrong set of pegs, a condition which might exist if the same ratio of driving were to exist as is shown in my aforesaid patent.

A well-known feature of double index dobbies is that it is possible to weave plain, that is, one up and one down, while the pattern chain is at rest because of the fact that the double index chain controls two successive picks of the loom and only two picks are necessary for completing the cycle in plain weaving. It is therefore a further object of my invention to provide a double index double cylinder dobby wherein either chain may be arrested to produce plain weaving. With this construction it is possible to weave an intricate pattern having a stripe of plain weave alternating with satin and controlled from one cylinder and another portion of the repeat having a two-up and two-down twill alternating with a somewhat wider stripe of plain weave which is not a multiple of the width of the plain stripe laid by the first chain. In this way it is possible to use two stripes of plain weave which are not related in number of picks and it is further possible when desiring to provide a stripe of plain weave of still a different width to combine the plain weaves of both chains, passing from one chain when its plain weaving is done to the bars of the other chain which are for plain weave.

With these and other objects in view which will appear as the description proceeds, my invention resides in the combination and arrangement of parts hereinafter described and set forth in the claims.

In the accompanying drawings wherein I have shown a convenient embodiment of my invention,

Fig. 1 is a side elevation of parts of a dobby embodying my improvements, parts being shown in section.

Fig. 2 is a horizontal sectional plan view, taken along line 2—2 of Fig. 1,

Fig. 3 is a vertical section taken on line 3—3 of Fig. 1, showing the outer cylinder active,

Fig. 4 is a view similar to a portion of Fig. 3 showing certain of the parts in a different position, with the inner cylinder active,

Fig. 5 is a diagrammatic side elevation of certain operating mechanism for the dobby,

Fig. 6 is a detail plan view looking in the direction of arrow 6, Fig. 1 and showing that part of the mechanism which lies above the structure shown in Fig. 2, certain parts being in section,

Fig. 7 is a vertical section on line 7—7 of Fig. 1, part of the chain sprocket being removed for clearness,

Fig. 8 is a vertical section on line 8—8 of Fig. 7 showing the control of the drive for the weave chains from the box chain, parts on the vertical shaft being in section for clearness, and

Fig. 9 is a detail vertical section on line 9—9 of Fig. 6, showing the relation of the control chain and the multiplier chain.

Referring to the drawings, my improved dobby is assembled on a frame 10 and is provided with the usual harness jacks 11 to which are pivoted levers 12 having upper and lower dobby hooks 13 and 14, respectively. The upper hooks 13 are lifted by rods 15 which rest on alternate dobby fingers 16 while the lower hooks 14 are lifted by upwardly curved ends 17 of the intermediate fingers 18. Upper and lower knife bars 20 and 21 for actuating the dobby hooks 13 and 14, respectively, are reciprocated alternately by rocking levers 22 (Figs. 1 and 5) which are connected to each end of each knife bar 20 and 21 by adjustable links 23.

The mechanism comprising my present invention includes a pair of double index dobby cylinders and their weave chains; a control chain which regulates the boxes, determines which cylinder shall be active when either is called and also determines when both cylinders shall be inactive for plain weaving, and calls the multiplier into action; and the multiplier mechanism which acts as usual to start and stop the control chain to lessen the number of bars on said control chain. These parts of the device will be described and then their operation explained.

Double cylinder motion.

The fingers 16 and 18 are each engaged by a pair of cylinder levers 25 and 26 (Fig. 3) pivoted at 27 and 28, respectively, in a supporting frame 29 secured to a rock shaft 30,

there being a pair of levers for each finger. Two pattern cylinders 31 and 32 are mounted below the cylinder levers 25 and 26, respectively, and are each provided with a chain made up of pattern bars 33 each having a double row of pegs 34 and 35 mounted thereon. The pegs are so positioned that each peg 34 will engage a lever 25 or 26 which is associated with one of the fingers 16 for the upper hooks 13, while each pin 35 will engage a lever 25 or 26 associated with a finger 18 operative to position one of the lower hooks 14. Adjustable stop screws 37 and 38 (Figs. 3 and 4) are provided for limiting the rocking movement of the supporting frame 29.

The purpose of having the two cylinders 31 and 32 is to be able to produce two distinct weaves in the fabric, one chain being pegged to give a weave different from that produced by the other chain. It is desirable to have but one cylinder in action at a time, namely, the one in operative relation with the cylinder levers, and it is further desirable to render the cylinders alternately effective to control the dobby fingers.

The mechanism for accomplishing this result is shown in Figs. 1 and 2 and includes an intermittent worm 40 which for the present will be assumed as rotating with an upright shaft 41. Said worm 40 engages a worm gear 42 loosely rotatable on the cylinder shaft 43 to which is secured the cylinder 32 (Figs. 2 and 7). A spur gear 44 fast on the hub 42^a of the worm gear 42 engages a similar spur gear 45 loose on the shaft 46 to which is secured cylinder 31. A driving disc 47 is keyed to the shaft 43 adjacent gear 44 and a similar disc 48 is keyed to the shaft 46 adjacent gear 45.

A grooved clutch collar 49 is slidable on the hub 42^a of gear 42 and has a tongue 50 extending into an opening 51 in gear 44 and also adapted to extend into one of several openings 52 in the disc 47 when the collar 49 is moved outward on the hub of the gear 42. A similar grooved clutch collar 53 is slidable on the hub of gear 45 for cylinder 31 and has a tongue 54 extending through an opening 55 in the gear 45 and adapted to extend into one of several openings 56 in the disc 48. There are preferably as many disc openings 52 or 56 as there are operative angular positions of the cylinder, there being six shown in the drawings.

The collars 49 and 53 are controlled by a three-armed yoke lever having an arm 57 engaging the collar 49, an arm 58 engaging the collar 53 and a forked arm 59 engaging a stud 60 on hub 61 of an actuating lever 62 (Fig. 2). The lever 62 (Fig. 1) is connected by an adjustable link 63 to a lever 64 pivoted to a fixed stud 65 and having an arm 66 engaged by a portion of the control chain 67 to be described hereinafter. A

torsion spring 72 (Fig. 2) acts to move the rocking frame 29 in a counter-clockwise direction as viewed in Fig. 1, opposing the action of the control chain when a ball on the latter moves under the arm 66. Bearings 73 support those ends of shafts 43 and 46 adjacent the shaft 41, the opposite ends of said shafts being supported in any approved manner.

By the mechanism thus far described the rocking frame 29 can be moved from the position shown in Fig. 3 to that shown in Fig. 4, thereby passing control of the dobby fingers from cylinder 31 to cylinder 32, and simultaneously rendering cylinder 31 inactive and cylinder 32 active. In this way the pattern shifts from one weave to the other. Except for the arrangement of the pegs 34 and 35 the cylinders 31 and 32 and parts associated therewith are substantially the same as the corresponding parts of my aforesaid patent.

I will now describe the control pattern which determines among other things when the frame 29 and parts carried thereby shall be rocked.

Control mechanism for cylinders.

The control chain which determines when the pattern cylinders 31 and 32 shall exchange control of the dobby fingers should be given an operative movement every second pick of the loom in order to prevent the cylinders from assuming control on the wrong pick, as already set forth. The mechanism for insuring the proper drive of the control chain is indicated diagrammatically in Fig. 5, where a pinion 75 secured to the top or crank shaft 76 of the loom meshes with a gear 77 having twice as many teeth as the pinion 75. A crank pin 78 on the gear 77 is connected by a link 79 to an arm 80 of the rocking lever 22, said lever 22 being thus rocked in one direction on one pick of the loom and in the opposite direction on the next pick.

The gear 77 is mounted on a shaft 81 which is connected to the worm shaft 41 by mitre gears 82 and 83. An intermittent worm 85 secured to the upper end of upright shaft 41 (Figs. 1, 5, and 6) meshes with a worm gear 86 rotatable freely on fixed stud 87 and held in proper position on said stud by collar 84. With these connections, it is not possible for the rocking levers 22 or the control chain 67 to get out of step with the cylinders 31 or 32, or to change the relative positions thereof at the wrong pick. It will be seen that the dwell portions of intermittent worms 40 and 85 are on the same side of the shaft 41 and that the gears 42 and 86 are on opposite sides of said shaft 41 so that but one of the gears 42 or 86 and the mechanism associated therewith is being actuated at a time.

The worm gear 86 has lugs 88 adapted for engagement with teeth 89 of a collar 90 slidable on and keyed to the sleeve 91 of cylinder 92 for the control chain 67 (see Fig. 6). An arm 93 controlled by the multiplier mechanism to be described, moves the collar 90 toward and from the worm gear 86 to turn the cylinder 92 and control chain 67 or render the same inactive.

The control chain is several spaces wide to cooperate with a plurality of control levers, one of said levers 94 being loosely mounted on a short shaft 95 rotatable in a fixed bearing 96 formed as part of the dobby frame. Said lever 94 is attached by a connector 97 to a lever 98 (see Fig. 8) a portion of which enters the groove of a collar 99 keyed to and slidable vertically on shaft 41. Said collar 99 has pockets 100 which receive the lugs 101 of the worm 40 assumed in the previous description to rotate with shaft 41. A compression spring 102 between worm 85 and collar 99 tends to move the latter toward worm 40 and the latter is supported by collar 104 fast on shaft 41. It is thus possible for the control chain to disconnect the cylinders 31 and 32 from their driving mechanism.

Another lever 105 is secured to the shaft 95 and registers with one of the spaces of the control chain 67. An arm 106 (Fig. 7) fast on shaft 95 enters the groove of a clutch member 107 slidable on and keyed to the sleeve 108 extending from the hub 109 of a worm gear 110 rotatable on fixed stud 111 and driven by worm 85. The clutch member 107 has teeth 112 to engage lugs 113 on a multiplier chain cylinder 114 freely rotatable on sleeve 108 and held in position by hub 109 and collar 115 secured to the sleeve 108. The raising of lever 105 by a ball on the control chain connects the driving worm gear 110 to the multiplier cylinder 114 to cause rotation of the latter. A spring 116 interposed between fixed lug 117 of the dobby frame and finger 118 of lever 106 tends to move the clutch member 107 away from the cylinder 114.

It will be apparent that the control mechanism just described determines the position of the rocking frame 29 and which of the cylinders 31 or 32 shall be active; is able to disconnect the two cylinders 31 and 32 from their driving gearing so that they may remain at rest for the purpose of weaving plain; and starts and stops the multiplier mechanism about to be described.

Multiplier mechanism.

I have already described how the control chain starts and stops the multiplier chain, and I will now describe how the multiplier determines when the control chain shall be active and when it shall be at rest. The multiplier cylinder 114 carries a single space

counter chain 119 having a number of high link 120 and a low link 121. A lever 122 lies over the chain and is secured to a short shaft 123 which is free to rock in a bearing 124 formed as part of the dobby frame. The previously described arm 93 is secured to the shaft 123 and controls the collar or clutch member 90. A spring 125 interposed between lug 126 of the dobby frame and finger 127 of arm 93 tends to move clutch member 90 toward gear 86.

So long as the high links 120 are under lever 122 the clutch member 90 will be out of driving engagement with the worm gear 86 and the control chain will be at rest, but when the low link 121 comes under said lever 122 spring 125 will move clutch member 90 into driving relation with gear 86 and the control cylinder will move.

Operation.

When the loom is running the upright shaft 41 and the worm gear 85 will receive a complete revolution every second pick of the loom and the dwell and actuating parts of the worm 85 are such that gear 86 will receive an advance movement on even picks of the loom and gear 110 will receive an advance movement on the intervening odd picks. The result of this action is that either one or the other of the control or multiplier chains will be moved inasmuch as the control chain is so built that one or the other of the clutch members 90 or 107 will be operatively engaged with the cylinder associated therewith. So long as there are so-called sinkers under the lever 94 spring 102 will hold the collar 99 and worm 40 in driving contact so that one or another of the cylinders 31 or 32 will be driven. This condition corresponds to the figured part of the repeat of the pattern which is being woven by one or another of the dobby chains mounted on the cylinder 31 or 32. When the figured part of the repeat is finished and it is desired to weave plain a ball on the control chain will come up under lever 94 and by mechanism previously described and shown in Fig. 8 the worm 40 will be disconnected from the shaft 41 and the gear 42 will come to rest. This will happen no matter which of the two cylinders 31 or 32 is active and at such a time as a bar 33 pegged for plain weaving is under the levers 25 and 26. The number of picks during which the plain weave is being woven can be determined either by the control chain or the multiplier, or both. For instance, if ten picks of plain are desired and this does not correspond to the number of links in chain 119, then there will be five bars on the control chain with balls under lever 94 and the multiplier cylinder 114 will be stopped by lever 105 having a sinker thereunder when low link 121

is under lever 122. Under these conditions gear 86 will drive the control chain for ten picks during which the loom will weave plain. Thereafter a sinker or low ball will appear under lever 94 and spring 102 will act to establish driving connection between collar 99 and worm 40 to resume the weaving of the figured part of the repeat. If, on the other hand, the number of picks of plain which are to be woven correspond to the number of picks controlled by the multiplier chain, then a ball will be under lever 105 so that the cylinder 114 will rotate, the high links 120 of the multiplier chain acting as previously described to hold the control chain at rest. After the multiplier chain has completed its cycle, control may be resumed by the control chain and the figured part of the weave incorporated into the fabric.

It will be seen that when the weave passes from the plain to the figured part thereof it is possible to have this change accompanied by a shifting of the position of the frame 29 so that the other of the cylinders 31 or 32 can continue control after the plain weaving has been finished. From the mechanism described it is possible to weave plain from either cylinder irrespective of which cylinder has been producing a figured weave and that the plain weave can be followed by a weave controlled from either of the cylinders independent of which cylinder was weaving plain.

The form of control mechanism and multiplier shown herein, so far as they are interrelated and provided with intercontrolling levers, may be of the usual construction and I do not claim these parts as such. It is old, especially in fancy terry towel looms, to have the box or control chain and multiplier chain substantially as shown herein and it is also old as set forth in my aforesaid patent to have the control chain determine the position of the rocking frame 29, but so far as I am aware it is new to have the drive for the cylinders 31 and 32 under control of the control chain and it is furthermore new, I believe, to have these two cylinders under control of the multiplier chain so that the same multiplying unit can be made to apply to either of the cylinders depending upon which one is weaving plain. These features of the invention are rendered possible by the substitution of the double index chain and fingers for the corresponding single index elements heretofore used and shown in my aforesaid patent.

From the foregoing it will be seen that I have provided a double index double cylinder dobby wherein the length of the chain required on the dobby cylinders 31 and 32 are one-half the length of the chain heretofore required and necessitated by the dobby set forth in my aforesaid patent. It will

further be seen that because of the fact that the dobby cylinders and the control chain are driven in the same time, that is, receive an advance movement every second pick, it is not possible for the pattern to get out of time and the proper set of pegs 34 or 35 will resume control when the frame 29 is rocked. In my previous patent the cylinders corresponding to cylinders 31 and 32 receive a movement every pick of the loom and there was therefore not the possibility of a mispick which exists when the indications for two successive picks are given by a single bar of the chain. It will furthermore be seen that by reason of the control exercised over the cylinders 31 and 32 by the control chain and also the multiplier chain it is possible to arrest both of said cylinders so that either one may be pegged to weave plain. Also, the number of picks which are to be woven plain by either of said cylinders can be determined either from the control chain or by the multiplier chain, or both.

Having thus described my invention it will be apparent that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention, and I do not wish to be limited to the details herein disclosed, but what I claim is:

1. In a loom, a dobby having two pattern cylinders, means to advance a selected one of said cylinders only on alternate picks of the loom, a separate chain of pattern bars mounted on each cylinder, each pattern bar having a double row of indicator pins, sets of upper and lower dobby hooks, a rocking lever, means to rock said levers alternately in opposite directions on alternate picks of the loom, knife bars for said dobby hooks actuated by said levers, a separate indicator lever for each upper and each lower hook, a lifter rod for each upper hook engaging alternate indicator levers, each remaining indicator lever directly engaging a lower hook, a pair of cylinder fingers for each indicator lever, each pair being positioned for engagement by one only of said pins on each pattern chain bar of each cylinder, pattern-controlled means effective to render said pattern cylinders alternately active and to simultaneously move the corresponding cylinder fingers to operative position, means to advance said pattern-controlled means in fixed relation to the operation of said pattern cylinder feed and to the movements of said rocking levers and knife bars, said knife bars alternately engaging and moving said upper and lower dobby hooks after each advance movement of one of said cylinders, and in timed relation therewith, whereby the loom harnesses are shifted in predetermined combinations.

2. In a loom dobby having a set of dobby fingers to control the harness levers of the

loom and two pattern chain cylinders movable one at a time into controlling position with respect to the fingers, control means to render said cylinders alternately operative with respect to the fingers, a control chain for said means, a double index pattern chain on each pattern cylinder, and means to give the control mechanism and the cylinders operative movements at equal intervals.

3. In a loom dobby having a set of dobby fingers to control the harness levers of the loom and two pattern chain cylinders movable one at a time into controlling position with respect to the fingers, control means to render said cylinders alternately operative with respect to the fingers, a control chain for said means, a double index pattern chain on each pattern cylinder, and means to give the control mechanism and the cylinders operative movements at equal intervals, said last named means giving a motion to the control mechanism and to the cylinder operatively related to the fingers at intervals of two picks of the loom.

4. In a loom dobby having a set of dobby fingers to control the harness levers of the loom and two pattern chain cylinders movable one at a time into controlling position with respect to the fingers, a control chain given an operative movement every second pick of the loom, means actuated by the control chain to render the cylinders alternately operative with respect to the dobby fingers, a double index chain on each cylinder, and means to move the cylinder operatively disposed with respect to the dobby fingers every second pick of the loom.

5. In a loom dobby having a set of dobby fingers to control the harness levers of the loom and two pattern chain cylinders movable one at a time into controlling position with respect to the fingers, a control chain given an operative movement every second pick of the loom, means actuated by the control chain to render the cylinders alternately operative with respect to the dobby fingers, a double index chain on each cylinder, and means to move the cylinder operatively disposed with respect to the dobby fingers every second pick of the loom, the control chain adapted to receive a movement on alternate picks of the loom and the cylinder operatively disposed with respect to the fingers adapted to receive a movement on the intermediate picks of the loom.

6. In a loom dobby having a set of dobby fingers to control the harness levers of the loom and two pattern chain cylinders movable one at a time into controlling position with respect to the fingers, a rocking frame on which the cylinders are mounted, a control chain, means actuated by the control chain to alter the position of the rocking frame to move the cylinders one at a time into operative position with respect to the

fingers, a double index chain on each cylinder, and means to give the control chain and the cylinder operatively disposed with respect to the fingers operative movements at intervals of two picks of the loom.

7. In a loom dobby having a set of dobby fingers to control the harness levers of the loom and two pattern chain cylinders movable one at a time into controlling position with respect to the fingers, a control chain to receive a step by step movement, means interposed between the control chain and the cylinders to move one of said cylinders at a time into operative position with respect to the dobby fingers, a pattern chain on each cylinder to control a plurality of picks of the loom while the operative cylinder is at rest, means to give the cylinder operatively related to the fingers a step by step movement, and means to hold the control chain and the cylinder operatively disposed with respect to the fingers at rest between successive movements thereof for a number of picks equal to the number of picks which are controlled by the pattern cylinder operatively disposed with respect to the fingers when said cylinder is at rest.

8. In a loom dobby having a set of dobby fingers to control the harness levers of the loom and two pattern chain cylinders movable one at a time into controlling position with respect to the fingers, a control chain, means interposed between the control chain and the cylinders to render one of said cylinders operative at a time with respect to the dobby fingers, pattern chains on each cylinder, each chain being formed of bars and each bar being able to control a plurality of picks of the loom, and means to give the operative cylinder and the control chain a movement at intervals corresponding in number of picks to the number of picks controlled by one bar of the pattern chain.

9. In a loom dobby having a set of dobby fingers to control the harness levers of the loom, a pair of pattern cylinders movable alternately into controlling position with respect to the dobby fingers, a pattern chain on each cylinder having bars each effective to control a plurality of picks of the loom, and means to drive the cylinder operatively disposed with respect to the fingers at an interval of picks corresponding to the number of picks controlled by any one bar of the chain.

10. In a loom dobby having a set of dobby fingers to control the harness levers of the loom and two pattern chain cylinders movable one at a time into controlling position with respect to the fingers, a control chain, means interposed between the control chain and the cylinders to render one of said cylinders at a time operative with respect to the fingers, a pattern chain mounted on the cylinder operatively disposed with respect to

the fingers and having bars each effective to control a plurality of picks, and a multiplier mechanism for the control chain to arrest the movement of the latter when either cylinder is operatively related to the fingers, whereby either cylinder is effective to produce a weave controlled by one bar of the chain on the cylinder operatively related to the fingers for a number of picks greater than the number of picks controlled by one bar of the chain.

11. In a loom dobby having a set of dobby fingers to control the harness levers of the loom and two pattern chain cylinders movable one at a time into controlling position with respect to the fingers, a control chain, means interposed between the control chain and the cylinders to render one of said cylinders at a time operative with respect to the fingers, a pattern chain mounted on the cylinder operatively disposed with respect to the fingers and having bars each effective to control a plurality of picks, and a multiplier mechanism for the control chain to arrest the movement of the latter when either cylinder is operatively related to the fingers, whereby either cylinder is effective to produce a weave controlled by one bar of the chain on the cylinder operatively related to the fingers for a number of picks greater than the number of picks controlled by one bar of the chain, said control chain effective to shift control of the dobby fingers from one cylinder to the other, whereby the pattern chain of either cylinder may be effective when at rest to control the weave of the loom.

12. In a loom dobby having a set of dobby fingers to control the harness levers of the loom and two pattern chain cylinders movable one at a time into controlling position with respect to the fingers, a control mechanism, a multiplier mechanism, means actuated by the control mechanism to render either of said cylinders operatively disposed with respect to the dobby fingers at a time, and a pattern chain on each cylinder formed of bars each of which is effective to control a plurality of picks of the loom, the chain for at least one of the cylinders having at least one bar to produce plain weaving, and connections between the multiplier and control mechanisms whereby the latter is held at rest for a plurality of picks greater than the number of picks controlled by one bar of chain when the aforesaid bar for controlling plain weaving is operatively placed with respect to the dobby fingers.

13. In a loom dobby having a set of dobby fingers to control the harness levers of the loom and two pattern chain cylinders movable one at a time into controlling position with respect to the fingers, a control mechanism including a control chain and cylinder, means interposed between the control mecha-

nism and the pattern cylinders and actuable by the control chain to render either of the pattern cylinders operative with respect to the dobby fingers at a time, means to drive the pattern cylinder operatively disposed with respect to the fingers, means to arrest movement of the last named pattern cylinder actuated by the control mechanism while the control chain moves, said control chain being capable of exchanging the control of the dobby fingers from one pattern cylinder to the other while said pattern cylinders are at rest.

14. In a loom dobby having a set of dobby fingers to control the harness levers of the loom and two pattern chain cylinders movable one at a time into controlling position with respect to the fingers, control mechanism, means interposed between the control mechanism and the cylinders to determine which cylinder shall be operatively disposed with respect to the dobby finger, means to drive the cylinder operatively disposed with respect to the fingers, means to arrest such movement of said last named cylinder, and a pattern chain for the cylinder controlling the dobby fingers effective to control a plurality of picks when said cylinder is at rest.

15. In a loom dobby having a set of dobby fingers to control the harness levers of the loom and two pattern chain cylinders movable one at a time into controlling position with respect to the fingers, a control mechanism, a multiplier mechanism, means interposed between the control mechanism and the pattern cylinders to render one or the other of the latter operative with respect to the dobby fingers, a pattern chain on each pattern cylinder formed of bars each of which controls a plurality of picks of the loom, certain bars of each chain being pegged to weave plain and the remaining bars of one chain effective to produce another type of weave and the remaining bars of the other chain effective to produce still another type of weave, and means actuated

by the control mechanism to arrest the movements of the pattern cylinders and chains when a bar for plain weaving on either cylinder is operatively disposed with respect to the dobby fingers, said control mechanism effective to shift control of the dobby fingers by the cylinders from one cylinder to the other whereby any of the types of weaves woven by any part of one chain can be followed by any other type of weave woven by either chain.

16. In a loom dobby having a set of dobby fingers to control the harness levers of the loom and two pattern chain cylinders movable one at a time into controlling position with respect to the fingers, a control mechanism, means interposed between the control mechanism and the cylinders to render one or the other of the cylinders operative with respect to the dobby fingers, means to drive the pattern cylinder operatively positioned with respect to the fingers, devices actuated by the control mechanism to arrest the drive of the pattern cylinder operatively positioned with respect to the fingers, and a pattern chain on the cylinder controlling the fingers effective to control a plurality of picks of the loom for each movement of the pattern cylinder therefor.

17. In a dobby having a set of dobby fingers to control the harness levers, a pair of pattern cylinders movable one at a time into operative position with respect to the fingers, control mechanism operatively connected to the pattern cylinders to determine which of the latter shall be operatively disposed with respect to the fingers, means to drive the pattern cylinder operatively disposed with respect to the dobby fingers, and additional means actuated by the control mechanism to stop the drive of the pattern cylinder operatively disposed with respect to the dobby fingers.

In testimony whereof I have hereunto affixed my signature.

ALBERT A. GORDON.