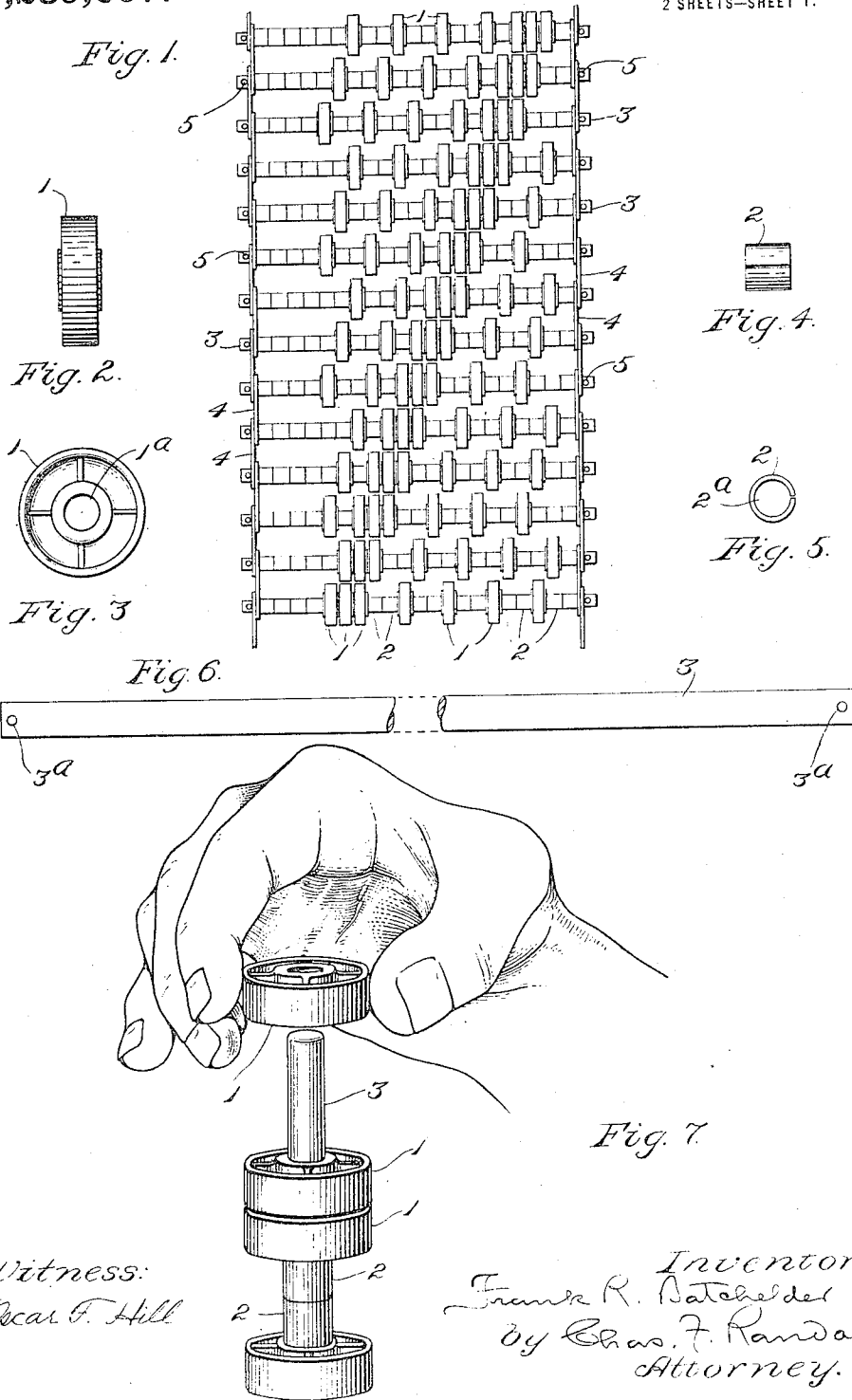


F. R. BATCHELDER.
METHOD OF BUILDING PATTERN OR CONTROL CHAINS.
APPLICATION FILED FEB. 4, 1918.

1,289,607.

Patented Dec. 31, 1918.
2 SHEETS—SHEET 1.



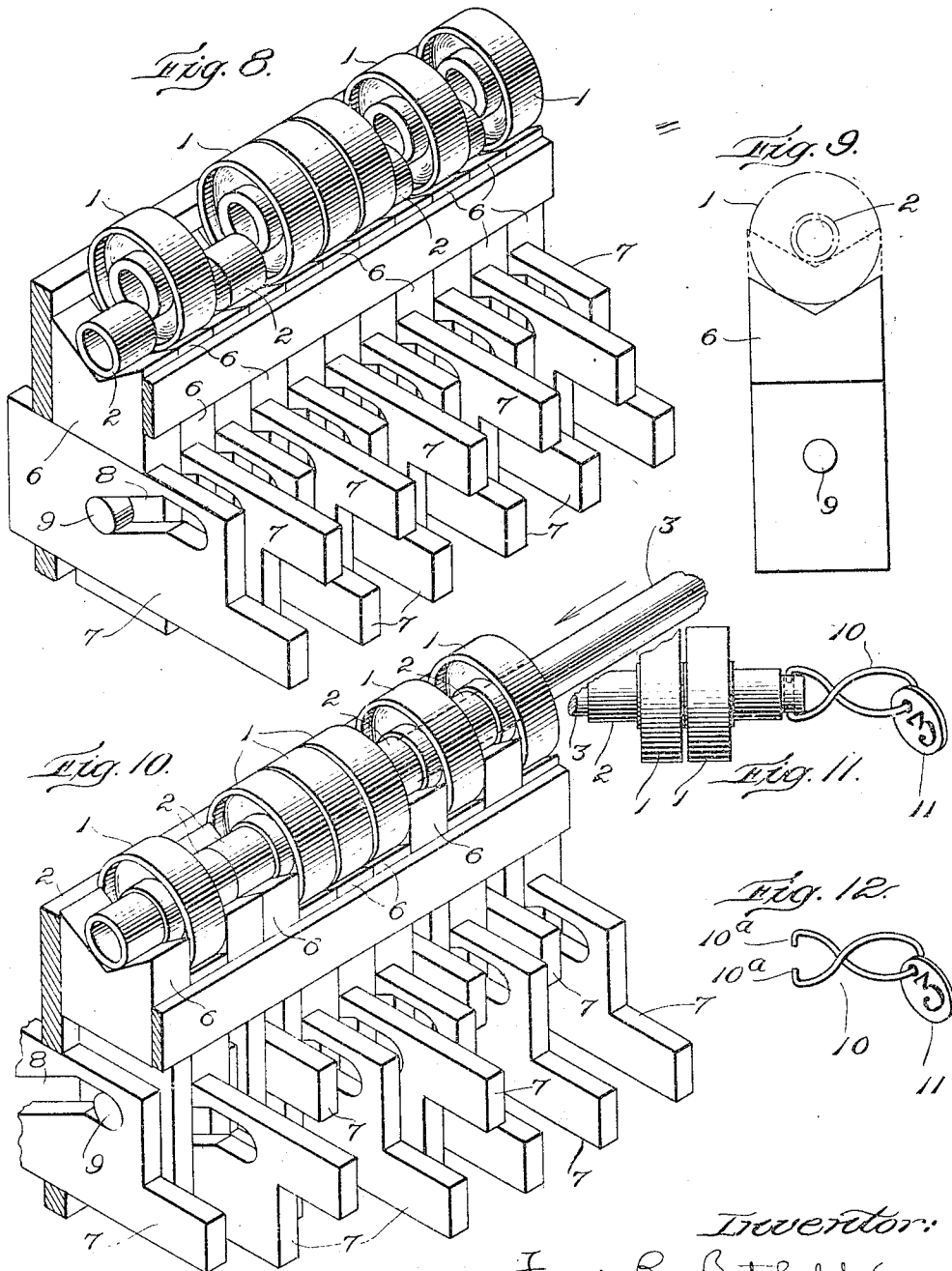
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UNITED STATES PATENT OFFICE.

FRANK R. BATCHELDER, OF WORCESTER, MASSACHUSETTS.

METHOD OF BUILDING PATTERN OR CONTROL CHAINS.

1,289,607.

Specification of Letters Patent.

Patented Dec. 31, 1918.

Application filed February 4, 1918. Serial No. 215,379.

To all whom it may concern:

Be it known that I, FRANK R. BATCHELDER, a citizen of the United States, residing at Worcester, in the county of Worcester, State of Massachusetts, have invented a certain new and useful Improvement in Methods of Building Pattern or Control Chains, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention is an improvement in the art of building (as it is termed) pattern or control-chains such as are employed for the purpose of controlling the working of looms and other machines.

The invention consists in a novel method of preparing the transverse rows or lines of control-elements or indicators of which pattern or control-chains are composed, the said method comprising improved procedure in assembling such elements or indicators in accordance with the desired pattern-arrangement.

The drawings show a portion of a pattern or control-chain of a well-known form, which is one of the forms of pattern or control-chains in connection with which the invention may be practised, and also show in detail the component parts of the said transverse rows or lines of a chain of such form. They also illustrate the following explanation of my invention.

Figure 1 of the drawings shows the said portion of pattern or control-chain.

Figs. 2 and 3, respectively, are an elevation and a side view of one of the rolls of the said chain, on a larger scale than Fig. 1.

Figs. 4 and 5, respectively, are an elevation and a side view of one of the spacers of the chain.

Fig. 6 is a view of one of the supporting-bars of the chain.

Fig. 7 illustrates the procedure in applying successive rolls and spacers to a supporting-bar according to the usual method.

Fig. 8 is an isometric view of illustrative appliances which may be employed in carrying my novel method into practical effect, and shows rolls and spacers applied to the said appliances according to the first step of the said method.

Fig. 9 shows separately one of the bed-sections of Fig. 8.

Fig. 10 illustrates the line of rolls and spacers with their eyes alined or in register with one another, and further illustrates the

step of inserting a supporting-bar into the alined eyes of the series.

Fig. 11 shows a row or line of pattern-elements mounted upon a supporting-bar, with retainers engaged with the ends of the bar to prevent loss of spacers or rolls therefrom.

Fig. 12 shows separately one of the retainers of Fig. 11.

The transverse rows or lines of the pattern-chain of Fig. 1 are composed of rolls 1, 1, and spacer-sleeves 2, 2, (or spacers as the latter may be called,) of smaller diameter than the rolls, carried by supporting-bars 3, 3. The said supporting-bars are joined together by links 4, 4, into a continuous series, which latter in usual practice is in endless form. The rolls 1, 1, and spacer-sleeves 2, 2, have central holes or eyes 1^a, 2^a, which fit the supporting-bars, and they are strung upon each of the respective supporting-bars in an order or sequence determined by the corresponding transverse line of the general pattern which is embodied in the pattern-chain. The links 4, 4, have eyes in their ends, which fit the ends of the supporting-bars, and the links are held in place upon the ends of the supporting-bars by means of cotter-pins 5, 5, occupying holes in the outwardly-projecting portions of the supporting-bars.

Heretofore the elements of each of the transverse rows or lines of control-elements or indicators of a pattern or control-chain have been assembled by hand by slipping or threading the rolls and spacers, or other forms of elements or indicators, upon a supporting-bar one after another and usually one at a time, as illustrated by Fig. 7. A pattern sheet or chart showing the lay-out of the respective lines of the general pattern serves as a guide in performing the work. The operations are performed more or less slowly. When mistakes occur in the selection of the elements of a row or line, in the order in which the elements are arranged in such row or line, correction can be made only through the removal of elements from the supporting-bar by slipping them off the latter at one end or the other of the bar and afterward slipping elements back upon the bar to render the row or line correct and complete. The fact that mistakes have occurred is not readily observed during the process of assembling, and it happens frequently that they are not detected until the completely assembled line or

series is inspected, as by being compared with the pattern-sheet. In such event, a greater or less number of elements has to be slipped along the supporting-bar and off from the latter at one end or the other thereof in making the required correction, and the same number has to be slipped or threaded upon the supporting-bar again, one at a time as before.

10 Objects of the invention are, by an improved method or process of preparing the respective transverse rows or lines of control-elements or indicators representing the transverse lines of a pattern, to facilitate
15 and expedite the building of pattern or control-chains, and lessen the cost of doing such work. Also, to afford opportunity for inspection of each of the rows or lines of control-elements or indicators after having been
20 arranged in order but before being combined with the supporting-bar therefor; and for correction of such mistakes as may have occurred in the selection and order of the said elements without it being necessary to slip
25 portions of the row or line off from a supporting-bar and to replace them thereon, or otherwise handle any control-elements or indicators except the ones which require to be replaced by different ones, or to be trans-
30 posed.

My method consists in preparing each of the respective rows or lines of control-elements or indicators representing the transverse lines of a pattern by selecting pattern-
35 elements of the different characters required to constitute such row or line, arranging them side by side in the order indicated by the corresponding transverse line of the pattern as in Fig. 8, disposing in mounting
40 alinement, as by adjusting them with their eyes in one common line as in Fig. 10, and thereafter combining them with their carrier, as by inserting a supporting-bar into the alined eyes of the row. At the right-
45 hand side of Fig. 10 a supporting-bar is shown in process of being inserted by an endwise movement. By reason of first disposing the elements in a row it is rendered convenient to make any necessary correction
50 in the selection and order of the elements before the insertion of the supporting-bar, while the respective elements are free to be removed and replaced individually, as well as to be transposed if required.

55 My method may be carried into effect in various ways in practice, and is not necessarily restricted to the employment of any particular machine for the purpose. Figs. 8, 9, and 10 illustrate one form of appliances
60 which may be utilized. In these views, 6, 6, etc., are supports which are arranged side by side in a series corresponding in number with the number of elements to be assembled in a row or line. They have notched upper
65 ends adapted to receive rolls and spacers, and

correspond in width with the latter. They also are movable vertically independently of one another. By way of indicating one mode of actuating them, and holding them in place either up or down, I have shown a key 7 70 combined with each support, each key being constituted by a slide having a slot 8 receiving a pin 9 carried by the corresponding support. The slot has an inclined portion with "dwell" continuation at its upper end. 75 When the dwell continuation is occupied by the pin the support is supported vertically in its higher position. When the key is moved endwise, the inclined portion of the slot shifts the support either up or down, as 80 the case may be, and the dwell continuation which receives the pin keeps the support in the new position which has been given to it.

According to one plan of performing the operations, the supports of the series are 85 adjusted into their lower position as in Fig. 8, with their notched upper ends in one horizontal line. Rolls and spacers are laid in the trough constituted by their alined notches, as in said figure, side by side in the order indicated by the corresponding lines of the pattern-chart. The supports upon which
90 spacers have been laid then are raised so as to aline the eyes of the spacers with those of the rolls, as in Fig. 10. During these stages, 95 the row or line is subject to inspection, and any mistakes in selection or arrangement may be corrected. The eyes of the series having been alined with one another, the supporting-bar is inserted into such eyes 100 from one end of the row or line, as indicated in Fig. 10.

Or, starting with all the supports in their lowest position, those which are to receive spacers may first be raised to their highest 105 position, and then spacers may be applied to those which have been raised and rolls to those which remain down, according to the pattern. The eyes of the spacers and rolls will be properly alined for the application 110 of a supporting-bar, permitting such application to be made.

Or, operations may be begun with all of the supports in their highest position, and after the application of rolls and spacers 115 those which receive rolls may be depressed to place the eyes of the rolls in line with those of the spacers.

Or, operations may be begun with all of the supports in their highest position, and 120 before the application of rolls or spacers thereto the supports to which rolls are to be applied may be pushed down. Rolls may then be dropped into the recesses thereby produced, and spacers placed upon the re- 125 maining supports. The eyes of the spacers and rolls will be properly alined for the application of a supporting-bar.

After the supporting-bar has been combined with the series of pattern or control- 130

elements or indicators it is lifted away from the supports, with the said series upon it, and placed upon a rack to await the linking together of the successive bars of a pattern or control-chain.

In order to prevent pattern or control-elements or indicators from being lost from the supporting-bars after the assembling has been performed, retainers may be engaged with the ends of said bars, as shown in the case of one end of a bar in Fig. 11. A convenient form of retainer is shown at 10 in Figs. 11 and 12. It consists of a length of spring wire which is doubled back upon itself in the shape of a loop, with the free ends of the wire crossing each other and bent to form engaging portions 10^a, 10^b, facing each other. The said engaging portions are adapted to enter an eye at one end of a bar, from opposite sides of the latter, so as to connect the retainer with such end of the bar and enable it to keep the said elements or indicators from coming off from the bar. By squeezing the sides of the loop toward each other, the bent ends may be separated, as for the purpose of facilitating engagement of such ends in an eye of a bar, or for the purpose of disengaging the retainer from such eye. Only one end of the wire may be bent to form an engaging portion, in which case the other end will not enter the eye of the bar, but will rest against the exterior thereof at the side opposite that at which the bent end enters the eye, thereby operating to keep the bent end engaged in the eye. The retainer may have connected therewith a tag, as 11, numbered to indicate the number of the row or line of pattern-elements or indicators in the series of rows or lines comprised in the pattern-chain that is being built.

My method may be carried into effect in other ways and by other appliances also, and in connection with pattern or control-chains having other forms of pattern or control-elements or indicators and supporting-bars.

In some cases my method may be utilized in assembling pattern-elements upon a transfer-bar, and subsequently transferring the

said elements from the said transfer-bar to a pattern-chain bar.

The devices herein shown and described as illustrative means of carrying my method into practical effect are made the subject of claims in my application for U. S. Letters Patent for Impt. in assembling machines, filed Feb. 6, 1918, Serial No. 215,696.

What is claimed as the invention is:—

1. As an improvement in the art of building pattern or control-chains, the method of preparing the respective lines of pattern-elements representing the transverse lines of a pattern which consists in selecting pattern-elements of the different sizes that are required to constitute a line of pattern-elements, arranging them side by side in a row in the order required by the corresponding transverse line of the pattern, disposing them with their openings in one common line, and then inserting a supporting-bar into the alined eyes of the row.

2. As an improvement in the art of building pattern or control-chains, the method of preparing the respective lines of pattern-rolls and spacers representing the transverse lines of a pattern which consists in arranging rolls and spacers side by side in a row in a sequence appropriate to the corresponding transverse line of the pattern, disposing them with their eyes in one common line, and then inserting a supporting-bar into the alined eyes of the row.

3. As an improvement in the art of building pattern or control-chains, the method consisting in selectively assembling pattern-elements or indicators side by side in a row in pattern-relationship and mounting alinement, making necessary corrections therein before combining them with their carrier, and thereafter combining them with said carrier.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK R. BATCHELDER.

Witnesses:

JAMES B. LOWELL,

ALICE M. TISDALE.