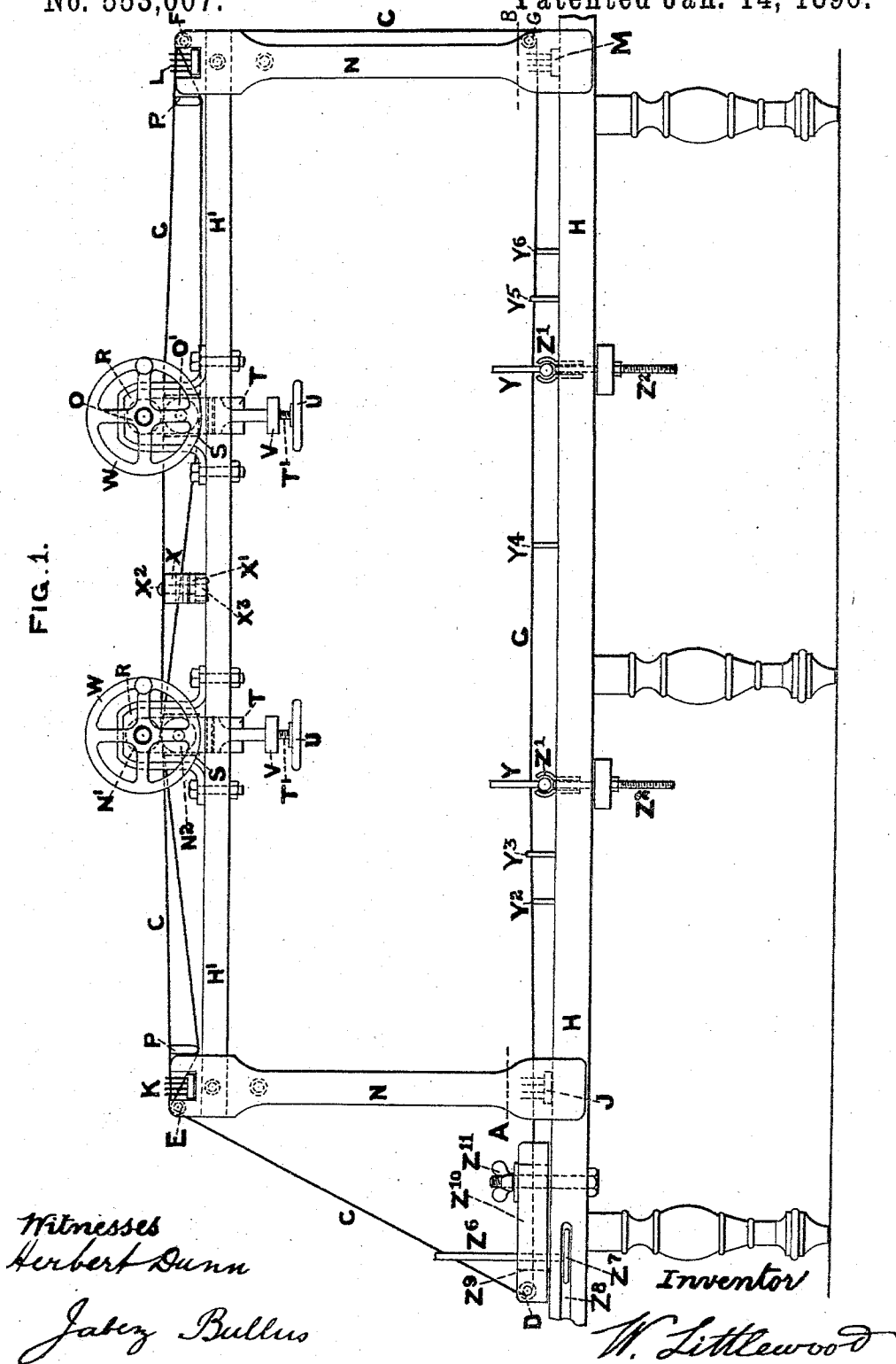


3 Sheets—Sheet 1.

APPARATUS FOR COLOR CLASSING AND DESIGNING FOR
MANUFACTURING TEXTILE GOODS.

Patented Jan. 14, 1896.



(No Model.)

3 Sheets—Sheet 2.

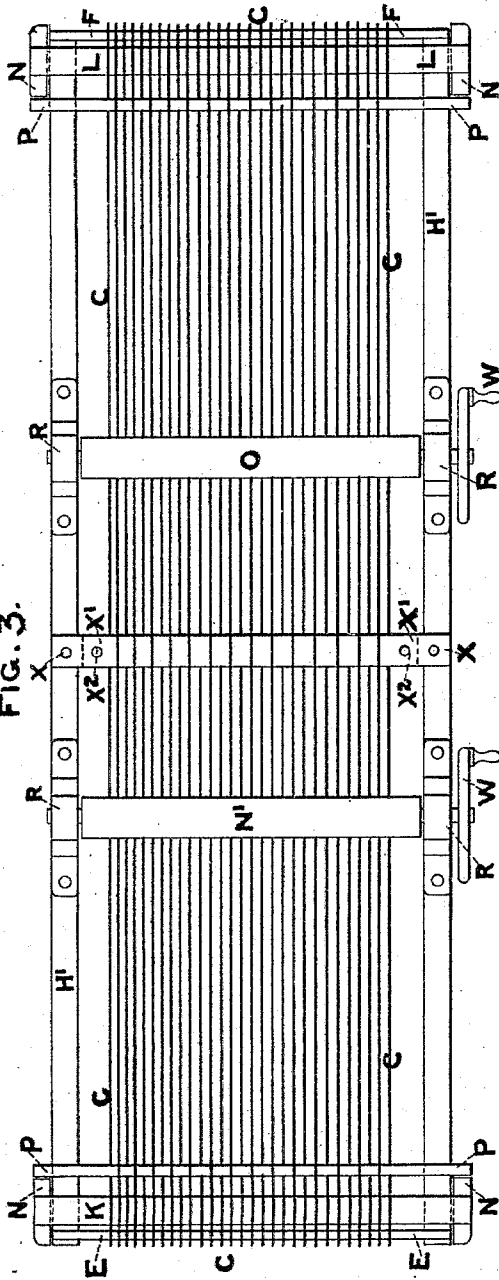
W. LITTLEWOOD.

APPARATUS FOR COLOR CLASSING AND DESIGNING FOR
MANUFACTURING TEXTILE GOODS.

No. 553,007.

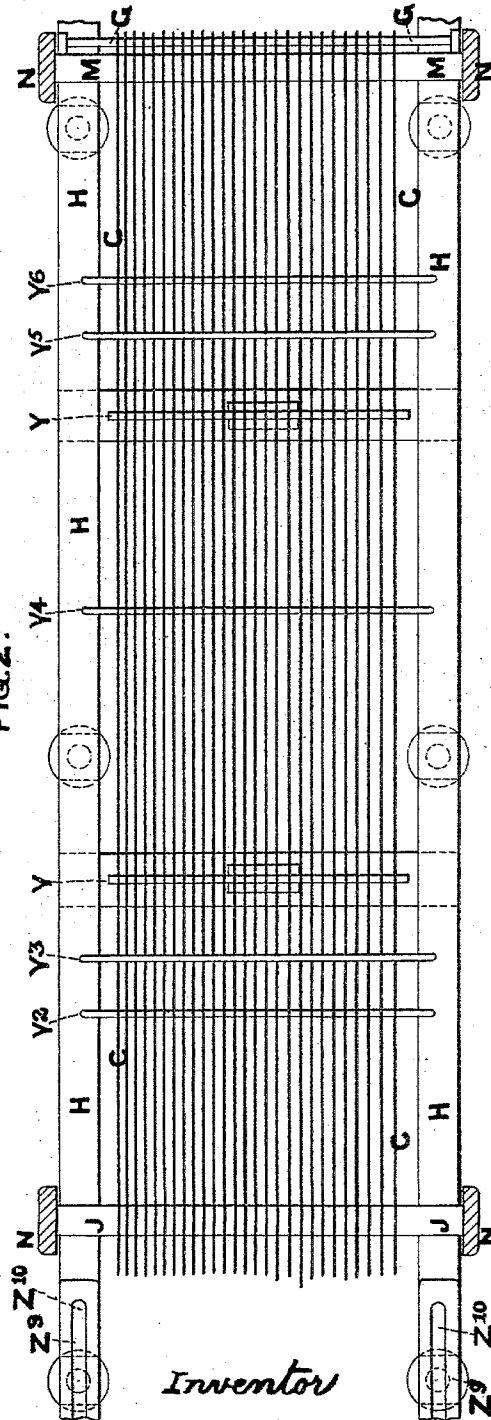
Patented Jan. 14, 1896.

FIG. 3.



Witnesses
Herbert Dunn
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FIG. 2.



Inventor
W. Littlewood

(No Model.)

3 Sheets—Sheet 3.

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FIG. 4.

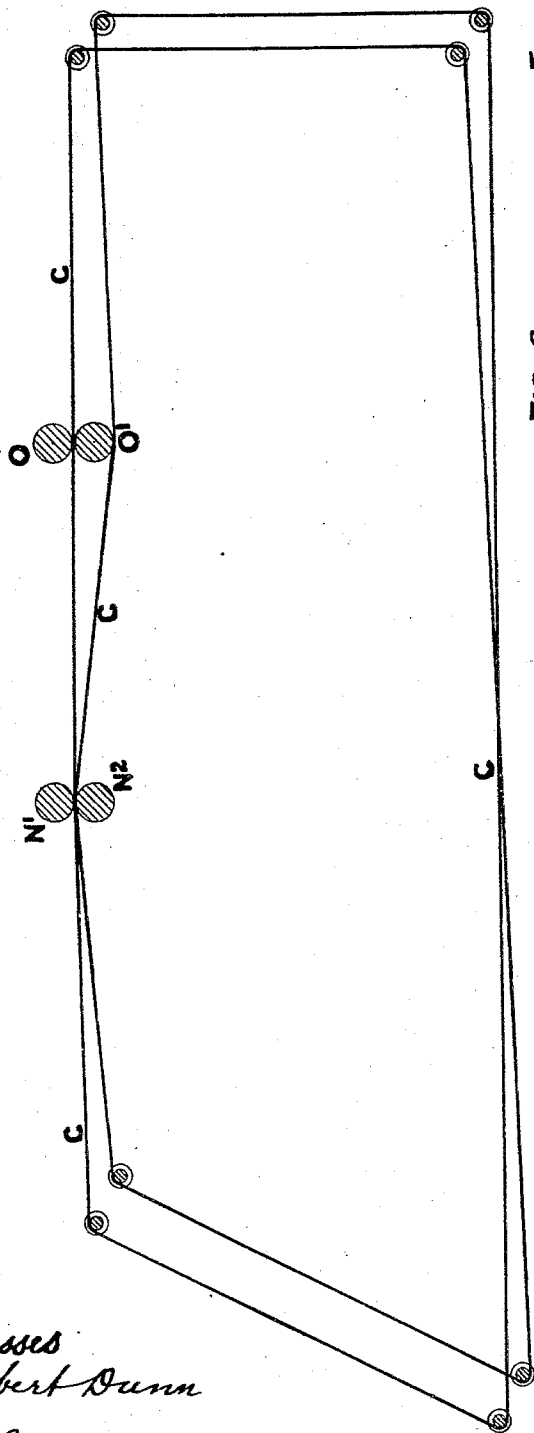


FIG. 5.

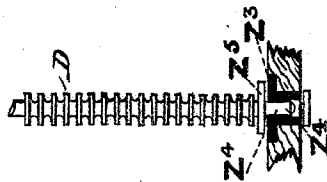


FIG. 6.

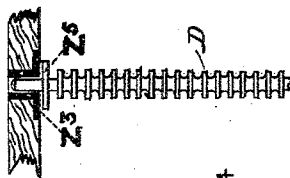


FIG. 7.



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UNITED STATES PATENT OFFICE.

WALKER LITTLEWOOD, OF LEEDS, ENGLAND.

APPARATUS FOR COLOR CLASSING AND DESIGNING FOR MANUFACTURING TEXTILE GOODS.

SPECIFICATION forming part of Letters Patent No. 553,007, dated January 14, 1896.

Application filed June 2, 1894. Serial No. 513,317. (No model.) Patented in England August 28, 1893, No. 16,179.

To all whom it may concern:

Be it known that I, WALKER LITTLEWOOD, a subject of the Queen of Great Britain, residing at Leeds, in the county of York, England, have invented a certain new and useful Apparatus for Color Classing and Designing for the Manufacture of Textile Goods, (for which I have obtained a patent in Great Britain, No. 16,179, dated August 28, 1893,) of which the following is a specification.

My invention consists of an apparatus for color classing and designing for the manufacture of textile piece goods.

The object of my invention is to facilitate the designing of patterns, or give new ideas for patterns to be woven in looms, by assisting the designer to originate his ideas for the patterns and to simultaneously produce a number of different patterns while he is in the act of composing one particular pattern. By this the use of designing cards or drafts is dispensed with, and the designer has a means of producing better patterns and a greater variety, as he is assisted in the production of the patterns, for while he is manipulating the parts hereinafter described to produce one particular pattern he is producing other patterns, some of which are perhaps richer and more to his fancy or taste than the one he was engaged upon.

According to my invention I employ for giving the pattern a series of threads or cords containing lengths of different shades or colors. The ends of the threads or cords are joined, so that when such series of threads or cords is placed over rollers, as hereinafter more particularly explained, an endless web is formed. By arranging the threads or cords side by side and by moving or manipulating these threads or cords so that one section or particular color in one thread or cord is brought between two others varied effects are produced.

In the drawings, Figure 1 is a side elevation of apparatus for carrying said process into effect. Fig. 2 is a plan view of the top part of the apparatus. Fig. 3 is a plan view of the lower part of the apparatus, taken in section on the line A B in Fig. 1. Fig. 4 is a diagram showing the manipulation of the threads. Fig. 5 is a detail view of one end

of a fluted dividing-roller, and Fig. 6 is a similar view of the other end of the same roller. Fig. 7 is an end view of the roller and its locking-pin.

In carrying out my invention I employ an endless warp made up of threads or cords C, containing lengths of the shades required, so forming the said warp into sections of any required number. Each section of the said warp represents one particular or "solid" color. The said threads or cords C are carried by or pass over dividing-rollers D, E, F, and G and through reeds or raddles J, K, L, and M made of bars carrying a series of pins between which the said threads or cords C are passed.

The frame comprises a lower portion, H, and a top portion, H', the top portion being supported by pillars N, and carries two sets of rollers N' and N² and O and O'. The said rollers N', N², O and O' are journaled in pedestals R upon the frame H', and the lower rollers, N² and O', are adjustable relatively to the top ones by means of sliding bearings S, springs T, screws T', hand-wheels U and frames V, by which the said rollers are caused to move the threads or cords C when the top rollers are rotated by means of hand-wheel W. The first set of rollers, N' and N², is for moving along or winding around the whole of the threads or cords at once, and the latter set, O and O', for changing certain of the threads or cords, so as to vary the classifying of the colors by moving the threads or cords in an end-to-end manner, as hereinafter explained. Upon the frame H' is a clamp composed of a fixed bar X and adjustable bar X', the adjustment of which is effected by means of bolts X² and thumb-screw X³. The said threads or cords are divided by bars P into two series, both of which pass between the rollers N' and N²; but only one series passes between the rollers O and O', the other series passing under the lower roller, O'.

To regulate the fineness of the "sets," pivoted reeds or raddles Y are fixed on the frame H and are so centered that they can be turned to an angle to produce the fineness required by drawing the threads or cords closer to each other. The said reeds or raddles are carried in clamps Z' bolted to an adjustable screw Z².

The colors may be numbered and similar numbers placed on the frame of the machine opposite where each section of color should be when classed. The warp-threads may be also
 5 of two or more twisted colors, or of any different material required, such as cotton, silk, mohair, and the like.

The dividing-rollers D, E, F, and G are carried in bearings Z³ and can be locked at one
 10 side of the machine by means of pins Z⁴ passing through the flanges Z⁵. The said dividing-rollers may be either plain or fluted. The object of the flutings is to prevent lateral or sidewise motion of the threads during their
 15 motion while under manipulation. When plain rollers are used, a raddle Z⁶ is fixed on the movable bar Z⁷, which is adjustable in the slot Z⁸, so that it can be moved relatively to the dividing-roller D, which is carried on
 20 a sliding piece Z⁹, which is made so as to be slid for taking up any slackness in the endless warp-threads by means of slot Z¹⁰ and bolt and thumb-screw Z¹¹.

The action is as follows: The winding-rollers N¹ and N² and O and O' are open or out
 25 of contact with the threads or cords C, and the dividing-rollers D, E, F, and G are unlocked, so that the threads or cords C are free to be moved at will. The operator slides such
 30 threads or cords into one section as he requires to produce the design in that section (the sections or lengths of the threads or cords are interchangeable) and by this action all the other sections are changed, the threads
 35 or cords producing simultaneous designs throughout the machine, which may be either mixed or what is known as a "solid" color. The said designs can be examined by screwing up the lower roller, N², so that the rollers N¹
 40 and N² pinch or bite on the said warp. The hand-wheel W is then turned, and the said warp travels or is wound round the machine,

by which means all the designs produced are brought alternately under examination.

In order to vary the designs from solid colors, or to bring the threads or cords into what is
 45 known as "end and end," or to blend them, the lower roller, N², is put out of contact with the said warp, and the lower roller, O', is screwed up. The clamp upon the frame H' is then applied by moving up the bar X', so that every
 50 other thread or cord is held from traveling. The said rollers O and O' move the remaining or alternate threads and bring them round so as to blend them, or bring them into end
 55 and end, so producing a varied design, and by moving the said endless warp-threads one more section another complete class or series of designs is produced throughout the machine. In these cases the dividing-rollers
 60 D, E, F, and G are locked. By moving the sections only half-way double the number of designs may be produced. Y², Y³, Y⁴, Y⁵, and Y⁶ are guide bars or ribs for the threads.

What I claim as my invention, and desire
 65 to secure by Letters Patent, is—

1. An apparatus for making a plurality of designs, comprising a series of parallel threads of different color at different parts of their
 70 length, and mechanism for supporting all the threads and permitting each of them to be moved longitudinally in either direction, substantially as set forth.

2. An apparatus for making a plurality of designs, comprising a series of endless parallel threads of different color at different
 75 parts of their length, and mechanism for supporting all the threads and permitting each of them to be moved longitudinally in either direction, substantially as set forth.

WALKER LITTLEWOOD.

Witnesses:

HERBERT DUNN,
 JABEZ BULLUS.