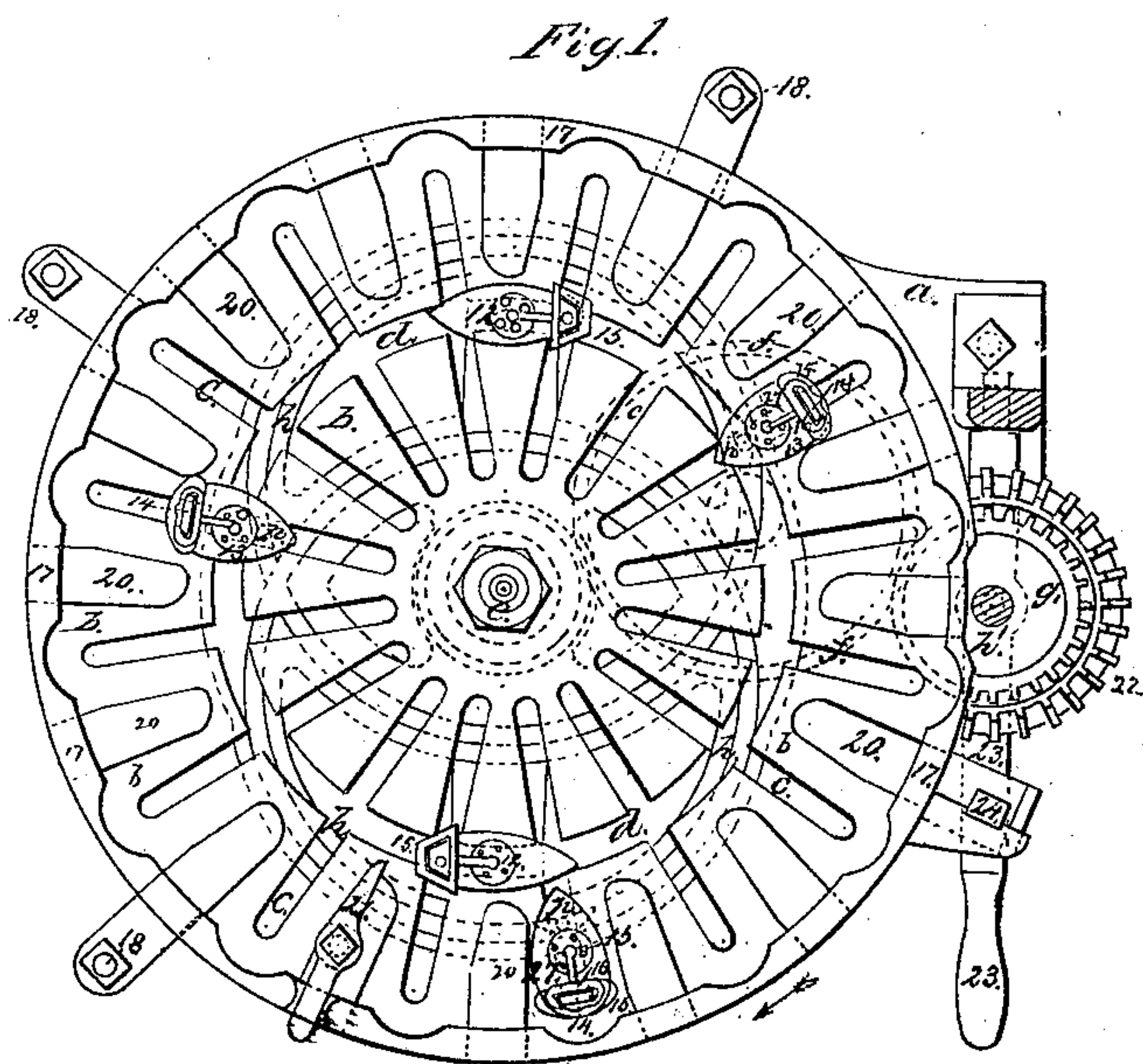
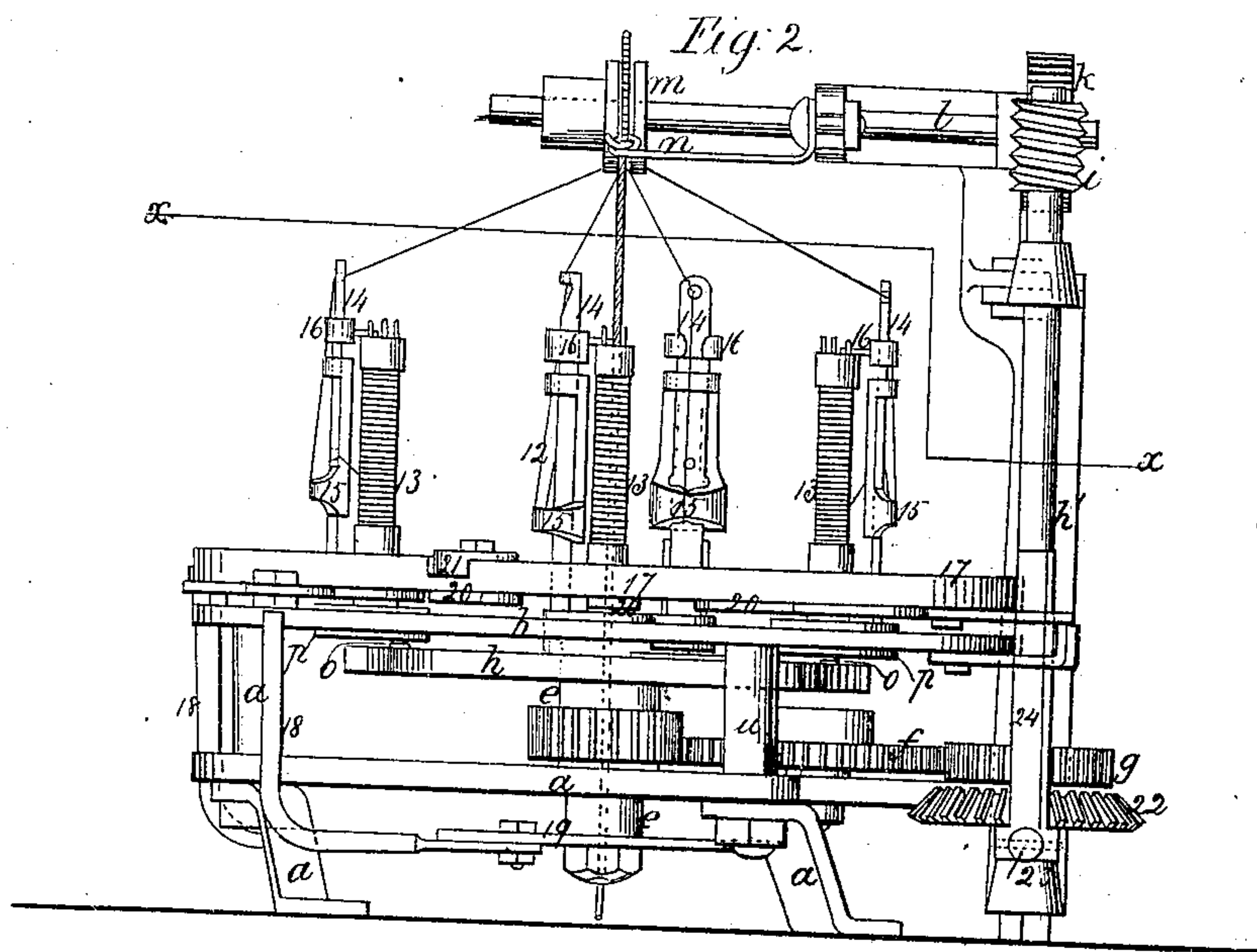
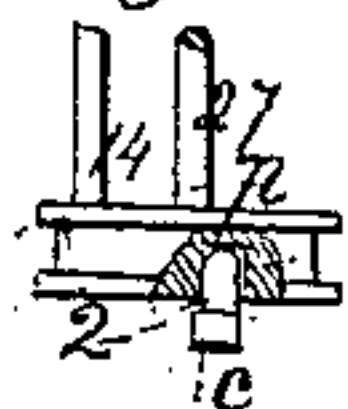


Patented Aug. 11, 1868.



Witnesses:
Geo D. Walker
Chas. + Smith

Inventor:
William Furutill

United States Patent Office.

WILLIAM TUNSTILL, OF PATERSON, NEW JERSEY.

Letters Patent No. 81,038, dated August 11, 1863.

IMPROVEMENT IN BRAIDING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM TUNSTILL, of Paterson, in the county of Passaic, and State of New Jersey, have invented and made a certain new and useful Improvement in Machines for Covering Cord; and I do hereby declare the following to be a full, clear, and exact description of the said invention, reference being had to the annexed drawing, making part of this specification, wherein—

Figure 1 is a plan of the said machine below the line $x\ x$.

Figure 2 is an elevation of the same.

Figure 3 is an elevation, partly in section, of the bobbin-carrier and switch.

Similar marks of reference denote the same parts.

Machines have before been made for covering cord with warps and weft-threads to form the article usually employed for window-shades and curtains.

In one of the machines of this class a bed-plate has been employed, having a circular raceway for the bobbins or spools that carry the weft-threads, and with radial slots, in which bobbin-carriers are moved to operate the longitudinal or warp-threads. These bobbin-carriers are moved by two eccentric-grooved cams intersecting each other.

In these machines a pin has been employed that projects down into the groove of the cam from each of the carriers, and on this is a long button or switch that will move across the points of intersection of the grooves. In order to have this pin and its switch strong enough, it has been necessary to have a wide groove in the cam, and difficulty has been experienced in fitting these switches so that they would work reliably in the cam-groove and not come into contact with each other.

In the patent of James Grower, assignee of John Danby, March 20, 1866, a machine of this class is described.

The nature of my said invention consists in a stop-motion that is made to operate by the breaking of any of the threads, the same consisting in a ring surrounding the slotted plate and acted upon by either of the weights on the warp or weft-carriers.

In the drawing, a is a frame, carrying the bed-plate b , in which are the radial slots c and circular slot d , the central portion of said plate b receiving its support from the frame a by the central column e .

h is the grooved eccentric cam-plate, having the column e for its axis, and driven by the gear f to its pinion, and g is a wheel, driving said wheel f , and this wheel g is on the shaft h' that extends up to the worm i , wheel k , shaft l , and roller m , that draws the cord gradually through the column e , that is hollow, and passes the covered cord off to any suitable winding-apparatus. n is the guide for the cord at the point of weaving.

The parts thus far described are of the usual and known character, and, operating in the usual manner, need no farther description, except so far as is necessary to illustrate my said invention.

The general shape of the grooves in the double eccentric cam-plate h is the same as usual, but the grooves are much narrower, and receive the switch o that is formed with a pin, 2, projecting on the upper side, and entering a hole bored into the under side of the carrier p , so that said switch is strong but narrow, and hence the groove can be of much less width than heretofore, and the openings, where the grooves intersect, are small, and not liable to catch the switch as the movement progresses.

The switches and bobbins are so positioned that the bobbins and their carriers move across the circular slot d each time one of the filling or weft-bobbins 12 passes, so as to cover the cord with a woven tube.

Each bobbin-carrier is provided with a pin, 27, (see fig. 3,) on which the bobbin 13 is set, and with a standard, 14, upon which the tension-weight 15 slides, and the catch 16 on said standard holds the bobbin from turning by taking pins in its upper end, but said catch is lifted by the weight 15, so as to allow more thread to unwind when the weight is drawn up by the tension.

This mode of arranging the weights and catches is generally employed in braiding-machines, and when either thread breaks, its weight falling operates the stop-motion. My particular improvement in this portion of the machine consists in the arrangement of parts to operate the stop-motion.

17 is a ring around the plate *b*, supported by arms, 18 that connect to a disk, 19, around the end of the column *c* that is below the frame *a*.

Within this ring are inclined spurs, 20, near each of the slots *c*, so that either of the weights 15 of the carriers in those slots falling, will act, as the carrier is moved outwards, against the inclined side of such spur, and give this ring 17 a partial rotation in the direction of the arrow, fig. 1.

A similar movement is obtained from either of the bobbins 12, in case a thread breaks, as the weight falls and acts upon the lever 21, and gives a movement to the ring, as before.

The pinion *g* is coupled to the wheel 22, which rests upon the lever 23, that is held up by the latch-bar 24, catching over a projection from the ring 17, so that the wheel 22 is dropped or uncoupled from the wheel *g*, and thereby the machine entirely stopped, in case the ring 17 is moved in consequence of a thread breaking.

It is to be understood that the driving-power is to be applied to the wheel 22 in any convenient manner. I have, however, shown said wheel as bevelled, and adapted to being driven by a bevel-gear, pulley, and flat belt, as shown in Letters Patent granted to me, May 28, 1867.

The stop-motion ring may be applied to any character of circular-braiding or weaving-machine to which it is adapted, and that regardless of the number of carriers, or the size of the machine.

In the drawing there are only three of the warp-carriers represented, and two carriers for filling. This is done to avoid confusion of the parts, it being intended that there shall be one warp-carrier to each radial slot in the plate, and that the machine may be fitted for receiving any desired number of warp-carriers.

What I claim, and desire to secure by Letters Patent, is—

The ring 17, applied in the manner specified, to receive motion from the weight in case a thread breaks, in combination with the stop-motion lever 23, and coupling or clutch, substantially as set forth.

In witness whereof, I have hereunto set my signature, this seventeenth day of February, 1868.

WILLIAM TUNSTILL.

Witnesses:

CHAS. H. SMITH,

GEO. D. WALKER.