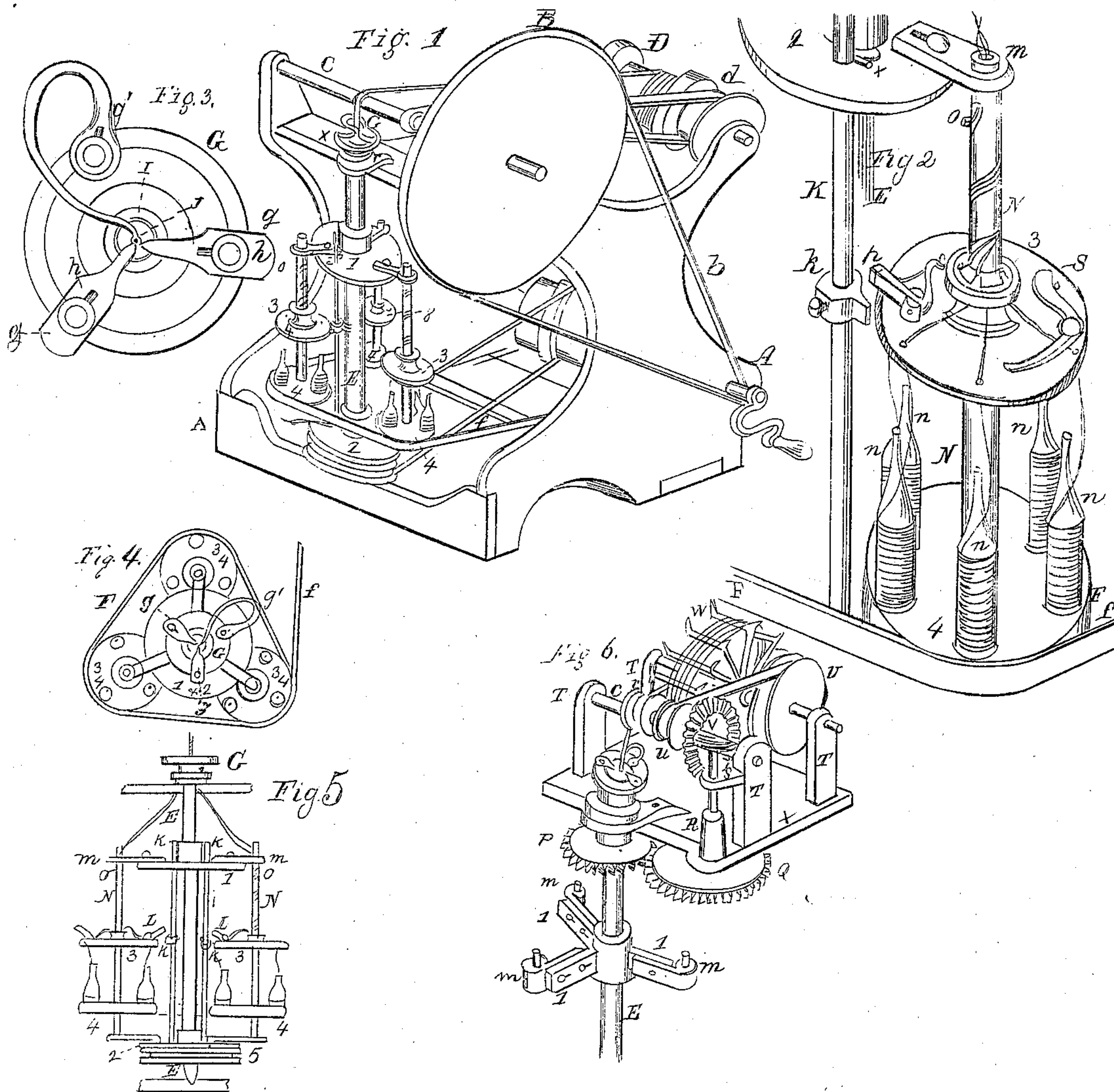


H. Boardman, Cord Machine.

No. 86,497.

Patented Feb. 2. 1869.



Witnesses,
J. B. Miley
Jacob Stauffer

Inventor,
Harris Boardman

United States Patent Office.

HARRIS BOARDMAN, OF LANCASTER, PENNSYLVANIA.

Letters Patent No. 86,497, dated February 2, 1869.

IMPROVEMENT IN MACHINE FOR MAKING CORD.

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, HARRIS BOARDMAN, of Lancaster, in the State of Pennsylvania, have made certain Improvements on Machines for Making Cord; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of the parts in position.

Figure 2, an enlarged view of certain parts, embracing a portion of my improvements.

Figure 3 illustrates the top of the main shaft, with my centralizing adjustable guides.

Figure 4 is a plan view, showing the flexible stationary driving-belt for the bobbin-supporters 4.

Figure 5 is a vertical section of parts of the mechanism shown in fig. 1.

Figure 6 illustrates a modification of parts, having adjustable arms 1, instead of the circular disk 1, shown in the other figures.

The nature of my invention consists in the application of adjustable centre-guides on the head of the main-shaft stand, and an arrangement of devices to stop the machine when a thread breaks, and minor improvements to perfect the cord-making machine.

To enable others skilled in the art to make and use my invention, I will explain certain parts which are not new, and in the claim confine myself to what I deem novel and patentable.

The central shaft E has its appropriate step and bearings.

My improvement on this is mainly confined to its top or head, G.

Fig. 3 shows the top referred to, two plates, *g*, made adjustable on the flange, by means of a slot and headed screw, *h*, together with a third, bent in the form of a spring, *g'*, also adjustable, the end of which, in connection with the terminal points of the other two plates, *g*, jointly form a central guide, for the passage of the finally-united strands of the cord as it comes from the apex of the central pieces, heretofore in use on the top of the shaft.

Ordinarily, much annoyance is caused by the clamping of the cord when drawn to one side, as is the case when the tension-twist on the pulley or horizontal shaft C is not in a vertical line.

The spring-piece *g'* is designed to yield and permit a knot to pass through, and again resume its position. Jointly, they hold the cord to the centre, and prevent a side draught on the loose apical pieces, and greatly aid in a uniform delivery of the cord to the reel, and help to make better work.

Fig. 2 illustrates a lever, *p*, having a hook on the inner end, around or over which the thread from the bobbin passes as it enters a perforation under the flange of the collar or head that surrounds the bobbin-shafts N. This elbowed lever *p* has its outer end made suf-

ficiently weighty to cause it to drop when the thread breaks which holds it up. A slotted lug confines it by a pivot, as shown. Each thread from the bobbins has its own lever *p*.

In order to stop the machine when a thread breaks, each series of bobbins has a drop-rod, K, near the edge of its circular disk or top plate 3, contiguous to the shaft E.

This rod K is sustained by a pin, X, which projects from it, resting on a flange on the upper disk 1, there being an opening provided for the pin to pass through.

When the rod is turned, by said lever *p* coming in contact with an adjustable catch *k* on said rod, the pin X is brought opposite the opening, permitting the rod K to drop by its own gravity, and in so doing actuating a lever, clutch, or belt-shipper, by any of the means now employed for that purpose.

In place of the lever *p*, I have also tried the bent lever *s*, shown also by fig. 2, which is thrown outward on its being released by the breaking of a thread, and operating in like manner as the elbowed lever *p*, for which I deem it an equivalent.

The three disks 4 which support the bobbins are pulley-like, and form an equilateral triangle, with the main shaft E in its centre, as in other cases.

The bobbin-shafts have their step below, in the arms projecting from the disk 2, and bearings above in the arms projecting from the disk 1, which arms are made adjustable horizontally by means of slots and headed screws.

The bobbin-pulleys or supports are revolved by a stationary flexible strap or belt, F, made adjustable by a splice-fastening at one end, the other end, *f*, being carried back and attached to the side of the machine. By its use a much wider range for adjustment is permitted, and, for various reasons, better adapted than a rigid, annular track, with bevelled sides on the inner face, for expanding slightly or contracting the action of the pulleys by a vertical adjustment, which differs substantially in principle and construction, although in both cases friction imparts motion to the bobbin-supports, so as to revolve them on their own shafts, while they are being revolved by the central shaft in unison.

I may state that in fig. 6, I show a reel, W, formed with radiating arms on one side, each arm provided with a horizontal arm, having raised ends to retain the cord wound upon it. One projecting end is loose, or made to turn out of the way, to facilitate removing the cord.

On the reel-shaft there is a strap-pulley, U, deriving motion from a strap-pulley, *u*, on the shaft C.

This shaft has a bevelled cog-wheel, V, operated by a screw-gear on a vertical shaft, in its bearings R on the table *x*.

On the under side is a horizontal cog-wheel, Q, which meshes in a pinion, P, affixed to the main shaft E, under its upper bearing. This main shaft has a fixed and loose pulley, and receives motion by any of the or-

dinary modes in general use. This arrangement may possess novelty in its compactness and efficiency, but I do not deem them sufficient to make any claim. I may mention, however, that I employ tension-pins O, shown only in the top of the bobbin-shafts N. These may be inserted at divers points on the shaft, for the purpose of more effectually confining the threads in position around the shaft as they are drawn out and twisted into the first ply.

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

The centring-pieces *g g g'*, constructed and applied to the top G of the shaft-stand E, substantially in the manner and for the purpose specified.

Also, the combination of the lever *p* or *s* with the drop-rod K, adjustable catch *k*, and pin X, all constructed, arranged, and operating substantially as represented.

HARRIS BOARDMAN.

Witnesses:

WM. B. WILEY,
JACOB STAUFFER.