A. PETERSEN.

CARRIER FOR BRAIDING MACHINES AND THE LIKE.

APPLICATION FILED JULY 15, 1907.

931,084. Patented Aug. 17, 1909.

Fig: 1.

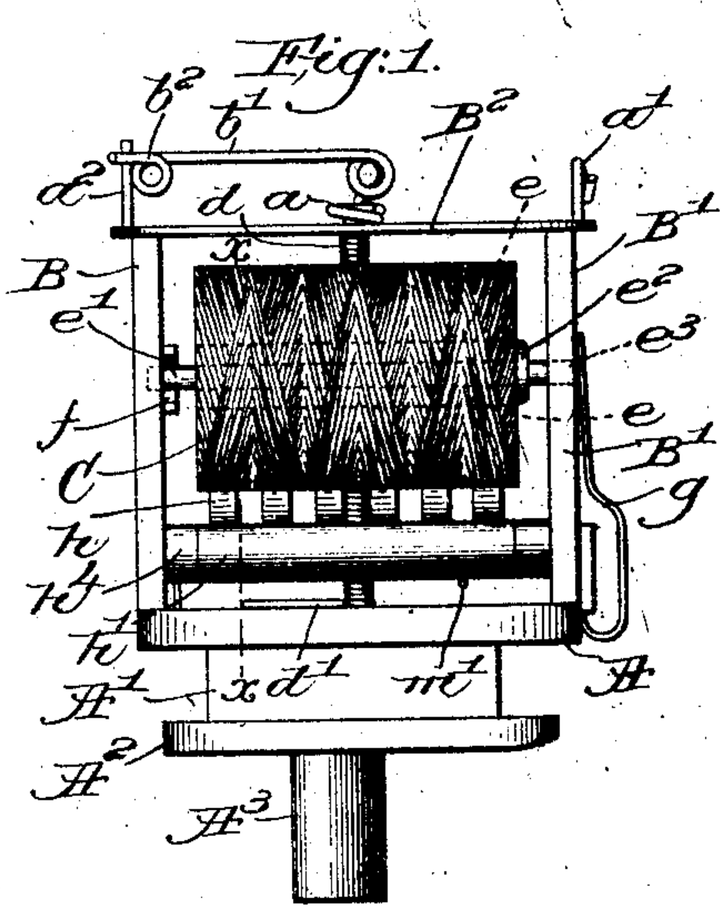


Fig: 2.

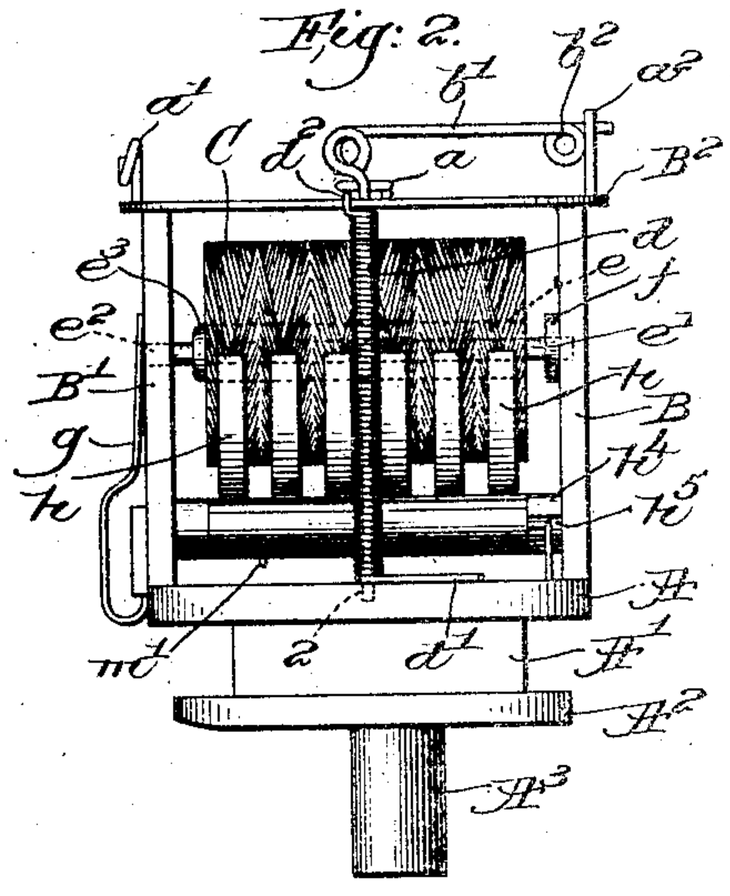


Fig: 3.

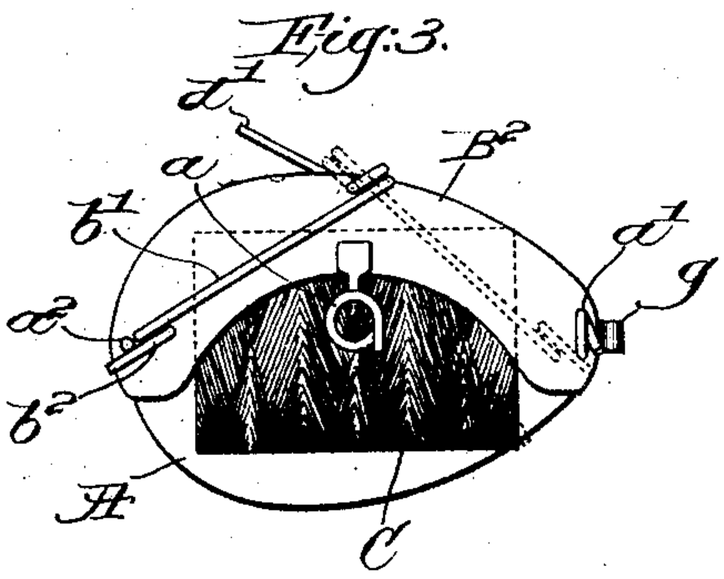


Fig: 4.

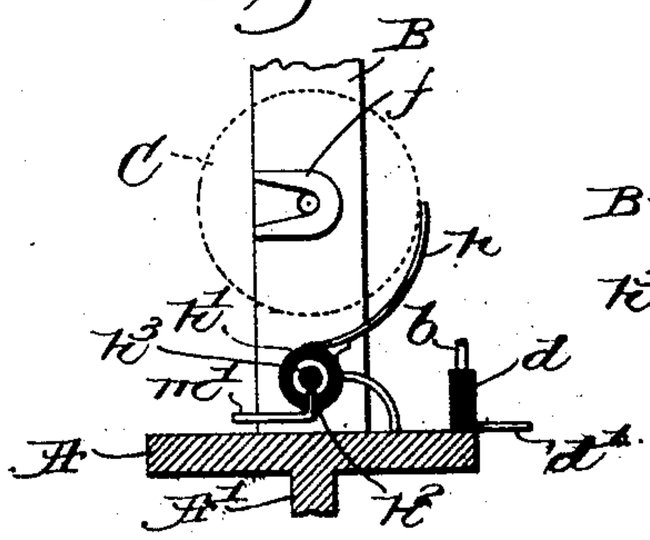
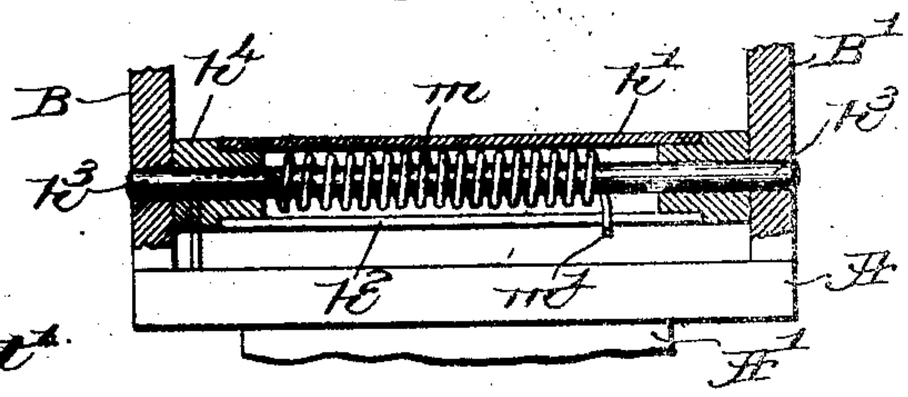


Fig: 5.



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UNITED STATES PATENT OFFICE.

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CARRIER FOR BRAIDING-MACHINES AND THE LIKE.

No. 931,084. Specification of Letters Patent. Patented Aug. 17, 1909.

Application filed July 15, 1907. Serial No. 383,719.

To all whom it may concern:

Be it known that I, ANKER PETERSEN, a subject of the King of Denmark, but at present a resident of Chelsea, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Carriers for Braiding-Machines and the Like, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention relating to braiding machine carriers has for its object the production of a carrier capable of carrying a very much larger thread mass than now commonly used in braiding machines, and to dispense with usual dangling weights commonly coacting with a toothed portion of a spool or spool carrier surrounding the upright stud forming part of the carrier and provided at its top with an eye from which thread is led to the fabric being made. The dispensing of the weight, the parts for guiding the same, and the parts with which the weight coacts reduces the weight of the carrier and enables the same to be run in the machine at a very much faster speed.

My improved carrier presents a frame comprising connected top and bottom plates between which the thread mass can be removably sustained with its axis parallel to the plates. Said frame is provided with a take-up having an eye which is acted upon by a spring that tends to move the eye in a horizontal direction parallel with the axis of the thread mass, said take-up being arranged above the upper plate. The surface of the thread mass is also acted upon by a tension device comprising a plurality of separately yieldable resilient fingers which are collectively under the control of a single adjustable spring.

I will first describe one embodiment of my invention and then point out the novel features thereof in the appended claims.

Figure 1 shows my improved carrier in side view with the take-up in its normal position; Fig. 2 an opposite side view; Fig. 3 is a top view of Fig. 1 showing the take-up in three positions, the full lines showing the take-up as occupying its normal position, while the dotted lines show two positions of the take-up as the thread is being delivered from the delivery eye to the work; Fig. 4 is a section to the left of the dotted line *x*, Fig. 1, and Fig. 5 is a sectional detail through the hub carrying the spring fingers of the tension or drag mechanism, the spring fingers being broken off.

Referring to the drawing, A represents a bottom plate having at its under side a neck A′ pointed at its opposite ends to be moved through usual serpentine grooves of the usual plate of any usual braiding machine, the lower end of the neck having an attached foot A^2 and a stud A^3, the latter being adapted to be engaged by usual notched arms of gears commonly employed to move the series of carriers in opposite directions. It will be understood that the machine in which this carrier is used may be employed to cover cords, or may be made to unite threads in the formation of a cord, or to unite threads in the formation of a braid, that depending on the shape of the serpentine grooves in which the carriers are moved. Hereinafter I shall refer to the fabric as work.

Rising from the bottom plate at its opposite ends are two uprights B, B′ that sustain at their upper ends a top plate B^2 shown as of crescent shape and provided with a leading eye *a* at one edge and at a point substantially midway the length of the thread mass C, which is sustained between said plates with its axis parallel thereto, as will be more fully hereinafter described.

A rock-shaft *b* is journaled in the two plates A and B^2, the lower end of said rock-shaft being received in a hole or recess 2 formed in the lower plate. The upper end of the rock-shaft is provided with a horizontally extending arm *b′* which is provided with a horizontally extending arm *b′* which is provided at its free end with an eye b^2, said arm and eye serving as the take-up or slack thread controller. The rock-shaft *b* is surrounded by a spring *d* connected therewith near plate A by solder, the free end d^2 of said spring engaging the top plate, so that said spring acts normally to turn said shaft in a direction to move the eye b^2 of the take-up arm toward a stop a^2 which rises from the upper plate B^2 and away from a delivery-eye *a′* which is sustained by the upper plate at the opposite end thereof from the stop a^2, thus immediately taking up any slack thread caused by the rotation of the

spool, the spring yielding to the pull of the thread and giving up to the work said slack thread, as required.

In threading up the carrier, the thread from the thread mass C is taken through the leading eye *a*, thence through an eye *m* at the inner end of the arm *b'*, thence along said arm *b'* through the eye b^2 at the end thereof and thence through the delivery eye *a'*. When the braiding carrier is in use, the tension to which the thread is subjected tends to draw the take-up arm *b'* over toward the delivery eye *a'*, as shown in dotted lines Fig. 3, and said take-up arm will normally be held in substantially the dotted line position except when the thread becomes slack when the spring *d* will serve to swing the arm back sufficient to take up any slack. The advantage of this construction is that the movement of the take-up arm affects only the portion of the thread between the eye b^2 and the delivery eye *a'*, for in all positions of the take-up arm the length of thread between the eye b^2 and the thread mass is the same. A very perfect control of the thread is thus obtained.

The rock-shaft *b* near its lower end has a projection *d'* shown in this present instance as an extension of the spiral spring *d* surrounding said shaft. If the thread should break said spring *d* will turn the rock-shaft *b* to bring the arm *b'* against the stop a^2, as shown in Figs. 2 and 3, and such movement of the rock-shaft will swing the projection *d'* beyond the edge of the lower plate A into the position shown in full lines Fig. 3. When the projection *d'* is in this projected position it is designed to coact with a member of some suitable stop motion thereby to stop the operation of the machine.

The thread constituting the thread mass C is shown as wound on wooden quill *e* shown by dotted lines Figs. 1 and 2, through which is extended a spindle *e'* having near one end a collar e^2 and said spindle *e'* is sustained in the uprights B, B', so that the thread mass is placed with its axis horizontally. The thread mass will, in practice, be wound after what is known as the diagonal or Leeson wind, the ends of the thread mass presenting substantially vertical end walls, the diameter of the mass substantially filling the space between the bottom and top plate of the carrier that is not occupied by the tension means used and to be described.

The upright B at its inner side has a wedge-shaped fork or crotch piece *f* provided in its apex with a hole for the reception of one end of the spindle *e'*, one end of the quill opposite the end of the spindle to enter the hole in the crotch *f* meeting the collar e^2, while the short end e^3 of said spindle outside said collar enters a hole in the upright B', and extended therethrough is acted upon by spring *g* connected with the carrier, said spring maintaining the opposite ends of the spindle seated in the hole in the apex of the fork *f*. The collar e^2 aids in keeping the spindle in the quill with its end e^3 always under control and capable of being pressed into the hole in said upright to act on said spring, that the opposite end of the spindle may be pressed into the hole in fork *f*.

The periphery of the thread mass is subjected to tension or its too free turning movement is checked through the action of a tension device comprising, as shown, a plurality of spring-steel fingers *h* carried by a tube *h'* split for a portion of its length as at h^2. The split tube surrounds loosely a stationary shaft h^3 mounted in the uprights B, B', and having near one end a loose collar h^4 having a slot h^5. A spiral spring *m* is coiled about the shaft h^3 inside said tube, and one end *m'* of the wire forming the spring protrudes from the slot in the tube and abuts one edge thereof and the end of the wire is extended substantially horizontally, as shown in Fig. 4. The other end of the wire forming said spring enters the notch h^5 in the collar h^4 and its end may abut the bottom plate. Constructed in this way the spring *m* acts normally to turn the tube on said shaft in a direction to cause the free ends of the spring fingers *h* to act on the periphery of the thread mass for a considerable distance with relation to the length thereof, all the fingers acting to check the rotation of the thread mass too easily, and yet each finger is free to yield independently of an adjacent finger, according to the requirements of the surface of the thread mass directly thereunder, such collective and independent yielding of the fingers insuring more perfect tension than would be the case if but two fingers were used and said fingers were connected at their outer ends. The extension *m'* of the wire of the spring will contact with the bottom plate of the cam when a spool is removed, thus preventing the spring *h'* from being moved too far to the left Fig. 4.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a braiding carrier, the combination with a carrier frame having means to sustain a thread mass with its axis parallel to the direction of movement of said frame, of a leading eye above the thread mass, a delivery eye, and a spring-controlled take-up arm movable parallel to the axis of the thread mass and situated between the leading eye and the delivery eye.

2. In a braiding carrier, the combination with a carrier frame having means to sustain a thread mass with its axis parallel to the direction of movement of said frame, of a leading eye sustained above the thread mass, a delivery eye, and a pivoted spring-con-

trolled take-up arm having means at its end in line with the axis about which it swings to guide the thread and a thread-receiving eye at its free end.

3. In an apparatus of the class described, the combination with a carrier presenting top and bottom plates, means to removably sustain a thread mass between said plates, and a yielding take-up acting on the thread as it is delivered from the thread mass, of a plurality of independently-yieldable fingers acting frictionally on the thread mass, and means acting on all of the fingers collectively to yieldingly hold them against the thread mass.

4. In an apparatus of the class described, the combination with a carrier presenting top and bottom plates, means to removably sustain a thread mass between said plates, and a yielding take-up acting on the thread as it is delivered from the thread mass, of a plurality of independently-yieldable connected fingers acting frictionally on the thread mass, and a spring acting on all of the fingers to yieldingly hold them against the thread mass.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ANKER PETERSEN.

Witnesses:
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