2 Sheets—Sheet 1.

E. G. GIBSON.

Machine for Warping or Bundling Yarns.

No. 217,207. Patented July 8, 1879.

Fig. 1.

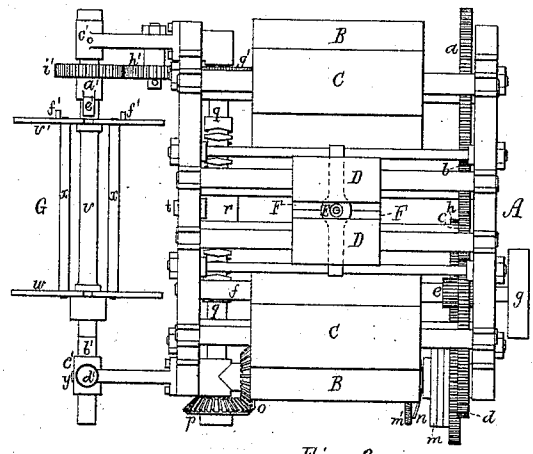


Fig. 2.

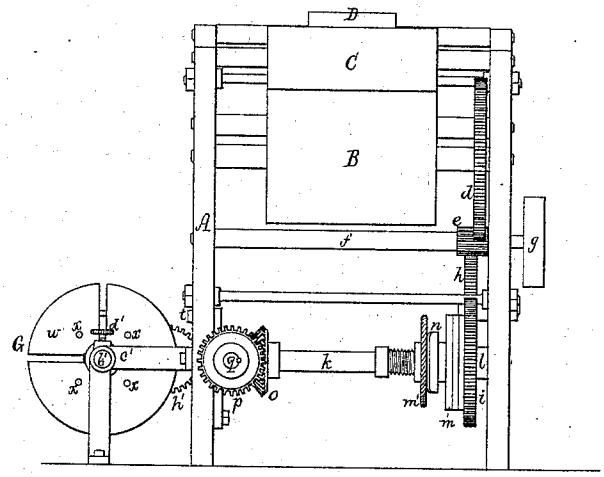
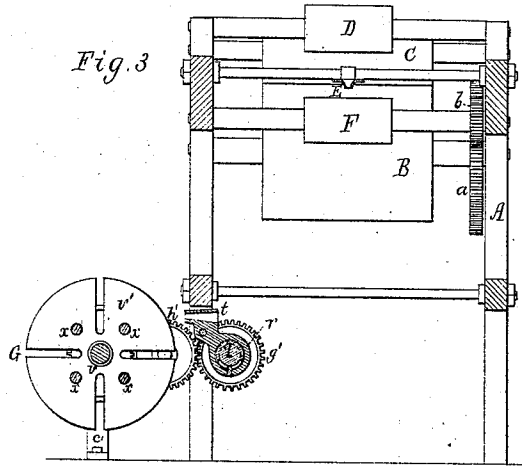


Fig. 3



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E. G. GIBSON.

Machine for Warping or Bundling Yarns.

No. 217,207. Patented July 8, 1879.

Fig. 4.

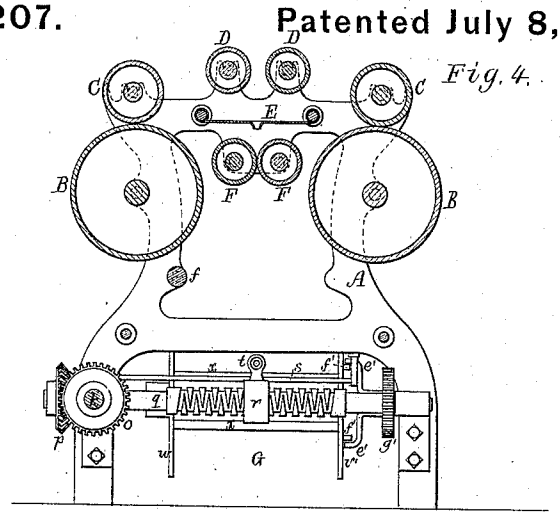


Fig. 5.

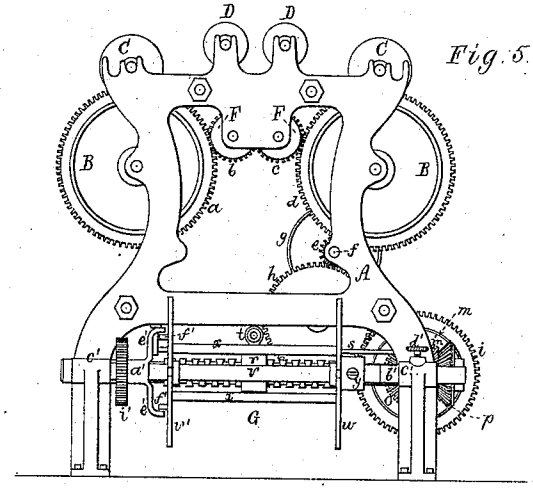


Fig. 7.

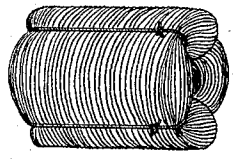
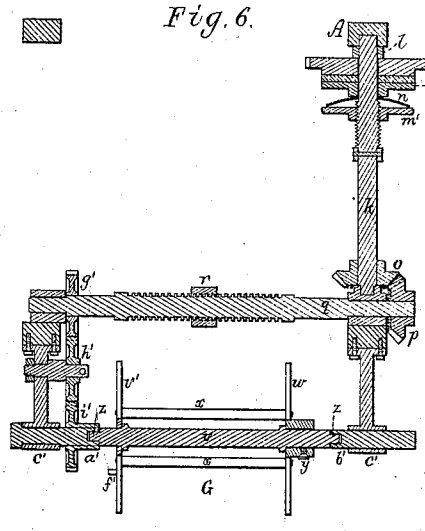


Fig. 6.



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UNITED STATES PATENT OFFICE.

EVERETT G. GIBSON, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO LOWELL MACHINE SHOP, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR WARPING OR BUNDLING YARNS.

Specification forming part of Letters Patent No. **217,207**, dated July 8, 1879; application filed February 10, 1879.

To all whom it may concern:

Be it known that I, EVERETT G. GIBSON, of Lowell, of the county of Middlesex and the State of Massachusetts, have made a new and useful Improvement in Machines for Warping or Bundling Yarns; and do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a top view; Fig. 2, a front elevation; Fig. 3, a transverse section; Fig. 4, a longitudinal section; Fig. 5, a side elevation, and Fig. 6 a horizontal section of parts of a warper with my improvement or additions to be hereinafter explained.

My invention relates to warpers or machines for use in fasciculating yarns, or preparing them for being readily applied to the yarn-beam and the reed and harnesses of a weaving-loom.

By means of my invention the yarns, after having been taken from the spools of the creel or creels of the warper and fasciculated or brought together in a strand, are delivered to and wound upon a bundling-reel, so constructed as not only to enable the coil to have fastening lines or ropes run through and tied to it, but afterward, and while so bundled, to be readily removed from such reel, such coil or bundle then being in the state fit for the market, or essentially as shown in perspective view in Fig. 7.

In the drawings, A denotes the middle frame of a duplex warper, such warper being supposed to be provided, as shown in the application of Richard H. Plummer, filed on February 10, 1879, in the Patent Office for a patent for an improvement in warpers, with two creels, the requisite stop motion or motions, and main and reducing reeds to operate with the mechanism, arranged within or applied to such frame, there being in such frame, and constituting essential parts of such warper, two sets of draft-rollers, B C, two guide-rollers, D D, a trumpet-guide, E, and a pair or set of delivery-rollers, F F, and also mechanism for revolving such draft or delivery rollers.

The latter mechanism consists of a train of gears, *a b c d e*, applied to the shaft of the main draft-rollers B B, and to those of the delivery-rollers F F, and to a driving-shaft, *f*, provided with a working-pulley, *g*, all being arranged as shown.

The gear *e* on the shaft *f* engages with another train of gears, *h i*, the gear *i* of which turns loosely upon a shaft, *k*, and rests against a shoulder, *l*, thereon, and also against a friction-wheel, *m*. This latter wheel is adapted to the shaft, so as to be revolved with it, and still be capable of being moved a little either toward or away from the gear *i*.

The friction-wheel is forced against the gear by means of a nut, *m'*, screwed on the shaft, and against a bow-spring, *n*, placed on the shaft, and between the nut and the friction-wheel.

A bevel-gear, *o*, fastened on the shaft *k*, engages with another bevel-gear, *p*, screwed upon another or cross shaft, *q*, provided with helix-grooves, running in opposite directions, and crossing each other, and connected so that a stud projected into one of them will, by the continuous rotary motion of the shaft, be caused to have a reciprocating rectilinear motion.

There is on the shaft a sliding collar, *r*, provided with such a stud to enter the helical groove. The said collar slides on a horizontal rod, *s*, and is provided with an eye or guide, *t*, to receive the fasciculated yarns, which are led from it to the bundling-reel G, arranged as represented.

The bundling-reel is composed of a shaft, *v*, a fixed radially-slotted head, *v'*, a movable radially-slotted head, *w*, and a set of movable rods or bars, *x*, such rods extending from one of such heads to the other, and being inserted in sockets therein. The movable head slides on the shaft, and is provided with a set-screw, *y*, for fastening it in place thereon. The shaft at its ends has journals *z z* to enter corresponding sockets in the ends of two arbors, *a' b'*, supported in brackets *c' c'*, arranged as represented.

One arbor, *b'*, is movable endwise in its bracket, to which there is applied a set-screw, *d'*, for securing the arbor in place. The other arbor, *a'*, revolves freely in its sustaining-bracket, and is provided with clutch-arms *e' e'* to engage with studs *f' f'* extended from the

fixed head. To the screw-shaft *q* and the arbor *a'* a train of spur-gears, *g' h' i'*, is applied, whereby the arbor is revolved with and by the shaft *q*.

As the reel is revolved the strand of yarns will be coiled evenly and in successive layers upon it, from head to head of it, until such reel may have been sufficiently charged, which having been accomplished, baling ropes or yarns are to be passed through the slots of the heads of the reel and the bore or central passage of the mass, and each of such ropes, after having been drawn tightly, is to have its ends tied together against the periphery of the coil. This having been done, the reel should be removed from its sustaining-arbors, the movable head and the bars should be separated from the bundle and shaft, and the bundle should be removed from the shaft and its fixed head.

The driving-arbor *a'* of the reel being revolved by a train of gears, *g' h' i'*, the first one of which is fixed to and turned by the screw-shaft *q* of the mechanism for distributing the yarn on the reel, it becomes necessary to have combined with the driving-gear *i* and the shaft *k* the friction-wheel *m* and the means of varying the pressure of such wheel against the gear *i*, in order that the tension on the yarn may be varied and the rate of revolution of the reel be properly diminished as the bundle may increase in diameter.

In such way can the strand of yarns be bundled for transportation and use, as occasion may require.

I claim—

In a yarn-warper, the combination of the bundling-reel and mechanism, substantially as described, for revolving it, for distributing the yarns upon it, and for regulating or varying the tension of the yarn upon it as the bundle may increase in diameter, with a set of delivery-rollers, one or more sets of draft-rollers, and suitable guides or guide-rollers, all arranged and to operate essentially as set forth.

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