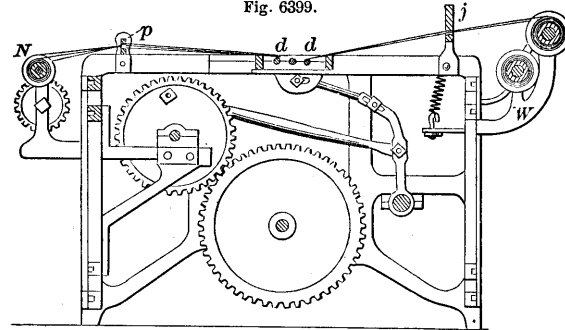


doubling and twisting cotton or linen yarn to form thread is performed.

The view is a transverse section of the machine. *a* is the cast-iron frame; *b*, the *creel* on which the bobbins *c* are loosely

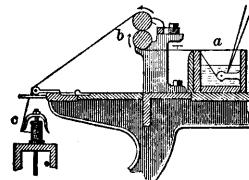
Fig. 6399.



Thread-Finishing Machine.

supported along the whole line of the machine, their lower ends turning in oiled steps, and their upper ends in wire eyes. *d d* are glass rods over which the yarn winds as it is unrolled; *e e*, oblong narrow troughs, lined with lead and filled with water, through which the thread passes to moisten it, being drawn through eyes at the bottoms of the forks *f f*, which may be lifted out of the trough. *g g* are smooth rollers of iron, and *h h* rollers of boxwood, between which the thread is pressed. The thread passes from the bobbins *c c* over the rods *d d*, thence downward beneath the forks *f f*, under the rollers *g g*, and upward between them and the rollers *h h*, thence downwardly through eyes *i i* to the bobbins *m m*, by which it is twisted and on which it is wound. The rollers *g* are turned by gearing, and turn the rollers *h* by friction. The spindles are driven from the drum *k* by a band passing over the pulley *l*, weighted to keep the pulleys tense. The bobbins are traversed vertically to wind the thread evenly upon them by a gear on the end of one of the lower roller-shafts, which turns a carrier-wheel engaging a wheel on the shaft carrying the heart-cam *m*; this operates the levers *n n*, raising and lowering the bobbins. See also THREAD-POLISHER.

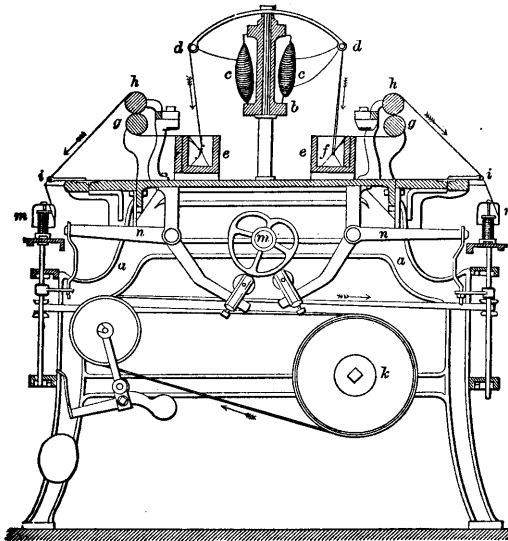
Fig. 6400.



Thread-Frame.

supported along the whole line of the machine, their lower ends turning in oiled steps, and their upper ends in wire eyes. *d d* are glass rods over which the yarn winds as it is unrolled; *e e*, oblong narrow troughs, lined with lead and filled with water, through which the thread passes to moisten it, being drawn through eyes at the bottoms of the forks *f f*, which may be lifted out of the trough. *g g* are smooth rollers of iron, and *h h* rollers of boxwood, between which the thread is pressed. The thread passes from the bobbins *c c* over the rods *d d*, thence downward beneath the forks *f f*, under the rollers *g g*, and upward between them and the rollers *h h*, thence downwardly through eyes *i i* to the bobbins *m m*, by which it is twisted and on which it is wound. The rollers *g* are turned by gearing, and turn the rollers *h* by friction. The spindles are driven from the drum *k* by a band passing over the pulley *l*, weighted to keep the pulleys tense. The bobbins are traversed vertically to wind the thread evenly upon them by a gear on the end of one of the lower roller-shafts, which turns a carrier-wheel engaging a wheel on the shaft carrying the heart-cam *m*; this operates the levers *n n*, raising and lowering the bobbins. See also THREAD-POLISHER.

Fig. 6401.



Thread-Frame.

Thread-frame. The doubling and twisting mill by which two or more yarns are combined to form a thread. The yarns as they are unwound from the bobbins or cops are passed beneath the surface of a solution of gum or starch in a trough *a* (Fig. 6400); the wetting enables them to be condensed into a more solid thread; they then pass between rollers *b*, by which they are laid parallel, or nearly so, and are thence conducted to the flyer *c*, by which they are twisted together, and to the bobbin, on which they are wound.

Fig. 6401 shows a machine similar to the throstle, by which