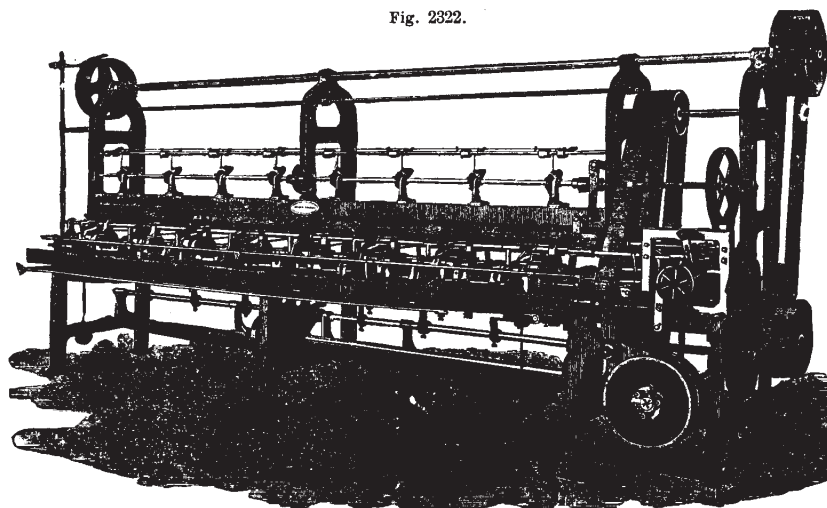


Spooling Machine. A machine for winding silk on to 100, 200 yards, or one-ounce spools, for domestic and manufacturing purposes. See also **SILK SPOOLING MACHINE.**

Fig. 2322 gives a front view of a spooling machine composed of two parts, the portion on the left consisting of eight little duplicate machines arranged in a row, and that on the right, of the apparatus which operates the winding machines. Each of these little machines winds a spool of thread. Back of these is a trough, containing empty spools, and back of this is a shelf which is intended to hold the bobbins of thread. From these bobbins threads are passed through a tension apparatus above them, and carried each to its little machine. The machines are held rigidly together by longitudinal rods, and there are three longitudinal shafts or rods passing through the whole set from the machinery at the right-hand end; the upper one, which we will call the guide-rod, moving back and forth and giving side motion to the thread; the main shaft below and behind, with cog-wheel attachments at each machine for revolving the spools; and a rod in front which carries a steel finger for

Fig. 2322.



Spooling Machine.

moving the thread, as will be explained presently. The spools are held horizontally and longitudinally in position just back of the front finger-rod by clamping-pins like axles, which pass into the holes at the ends and revolve with the spools very rapidly. Just back of each spool is a swinging curved hopper, its upper end reaching almost to the spool-trough previously mentioned, and its lower end open and curving up just under the position of the revolving spool. All that the attendant has to do is to keep the hoppers filled with empty spools, remove the full spools from the lower troughs as they accumulate, and see that the thread is regularly supplied by the bobbins behind.

A thread-guide is fastened on the upper sliding or guide-rod at each machine. The thread passes down from the tension apparatus over this guide to the spool. As the spool revolves, the longitudinal motion of the guide-rod back and forth moves the thread to and fro over the spool, which winds it up layer by layer.

A measuring-gage is attached to the machine, and just as two hundred yards are wound, the spool ceases to revolve; a little chisel moves up and nicks its edge; the sliding-rod in front with its steel finger moves longitudinally and draws the thread over; a hook passes up and pulls it down tightly into the nick; another chisel cuts it off, and the spool drops down into the receptacle provided for it in front. The swinging hopper then flies up with an empty spool in its curved lower end, which is taken up by the axle-clamp and starts into revolution. At the same time the thread, the cut end of which has been held down by the apparatus for the purpose, is pulled over and started on the new spool, and the operation proceeds as before.

The part of a spool on which the thread is wound always has a variable length, increasing as the winding proceeds outward from the center. Provision must therefore be made to give this variable motion to the guide-rod carrying the thread-guides. This is effected in its feed at the right end by giving a variable motion to the stops changing its direction. There are attached to this guide-rod two segmental nuts which are made to come alternately into contact with a revolving shaft having reverse screws contiguous to each other, one screw working in each half nut, causing the nuts to travel first in one direction and then in the other. These nuts connect with an arm with a forked end, which works on a fulcrum and operates over a pair of stops or jaws, pressing on to them and moving above them for one motion, and below them for the other, two heavy springs operating to produce the pressure and change the motion, alternately forcing it down and up, the alternate action of the nuts changing each time in accordance with this motion. By means of a cam and an arrangement of toggle-joint the pair of jaws opens gradually as the thread winds, keeping at a certain distance to correspond to each particular layer, thereby regulating exactly the sliding movement of the guide-rod. When the winding is finished and ready for another spool, the jaws are suddenly closed to their smallest dimensions and the operation is repeated.

Spool cotton works.

Willimantic * "Scientific American," xli. 351.

Spooling machine, cotton.

Cobb * "Scientific American," xxxix. 98.