Willow-ing-machine. 1. (Flax.) A set of revolving bars for removing the pith and other refuse from flax, hemp, etc.

2. (Cotton.) A machine for cleaning cotton, similar to the opening-machine, and more particularly adapted for cotton of long fiber and full of impurities.

![Diagram of Willow-ing-machine]

The spikes are much longer than those of the opener, the spikes of the drum passing between those in the cover.

The machine is fed through the hopper, and the cotton is taken out through the door, while the impurities pass through the grid. The drum, which is driven by means of the fast and loose pulleys at the rate of 300 revolutions per minute, can prepare 150-200 pounds of cotton per hour. Each charge consists of about 11 pounds, and the duration of each operation is about 25 seconds.

Fig. 7216 consists of a casing containing a conical beam studied with spikes, which pass between other spikes in the casing. The cotton is put in at one end of the machine, and being caught by the spikes, the fibers are pulled apart and the dirt shaken out while it is being gradually carried forward to the place of discharge. Sand and heavier impurities fall through a grating at the bottom, while the dust and lighter matters are driven off by a fan and pass through a chute into a chute. Called also twilly, stead, weef, willow, willie, devil, opening-machine. See also Cotton-cleaning Machine.

The term "willow" is said to have been derived from the fact that in the early forms of the machine a cylindrical willow cage was used. It is more than probable that the term is derived from the willow-woods wherein the cotton was beaten, to loosen it and eject the impurities, before the invention of machinery for the purpose. The finer varieties of cotton are yet treated with rods while resting on an elastic grating table; the felting-material for hats is similarly treated; and cow-hair to mix with plastering-mortar is also beaten with rods to separate and loosen the tufts.

The willowing in the series of operations on ordinary cotton is followed by the beating-machine, in which stretching, loosening, and lapping are employed, to rid the cotton of remaining impurities, and bring it to a light downy condition. For presentation to the carding-machine, which lays the fibers parallel, it is necessary for the operations of drawing and twisting.

3. (Wool-manufacture.) A large wooden cylinder having strong iron spikes about 3 feet long projecting from its periphery, and arranged in a spiral direction around it.

The cylinder is enclosed in a wooden case, and the wool is supplied to it by an endless apron and feeding rollers. The wool as it passes between the rollers is exposed to the action of the spiked cylinder, whose teeth tear apart the fibers of the wool, making it light and open, at the same time allowing dust and dirt to fall through a grating beneath. This is preliminary to the picking and bursing. See Willow-ing-machine; Willow.