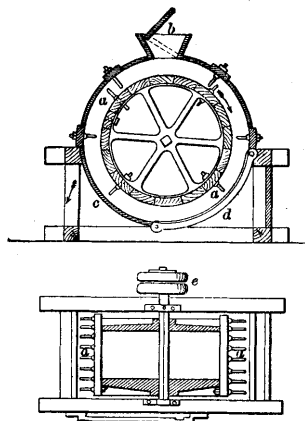


**Willow-ing-machine.** 1. (*Flax.*) A set of revolving bars for removing the pith and other refuse from flax, hemp, etc.

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.

Fig. 7214.



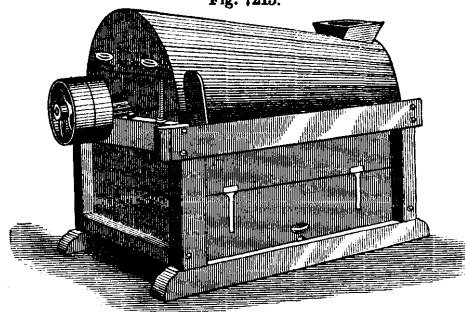
Willow.

The spikes *a a* are less numerous but 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 *b*, and the cotton is taken out through the door *c*, while the impurities pass through the grid *d*. The drum, which is driven by means of the fast and loose pulleys *e* 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. 7215 consists of a casing containing a conical beam studded 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 flocks are pulled apart and the dirt shaken out while it is being gradually carried forward to the place of discharge. Sand and

Fig. 7215.



Willower.

heavier impurities fall through a grating at the bottom, while the dust and lighter matters are driven off by a fan and pass through wired openings into a chute. Called also *twilly*, *shake-willy*, *willow*, *willy*, *willey*, *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-wands wherewith 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 *batted* with rods while resting on an elastic grated 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 tussocks.

The willowing in the series of operations on ordinary cotton is followed by the *batting-machine*, in which *scutching*, *blowing*, and *lapping* are employed, to rid the cotton of remaining impurities, and bring it to a light downy condition, fit for presentation to the *carding-machine*, which lays the fibers parallel, in readiness 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 inclosed 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 *burring*. See WILLOWING-MACHINE; WILLOWER.