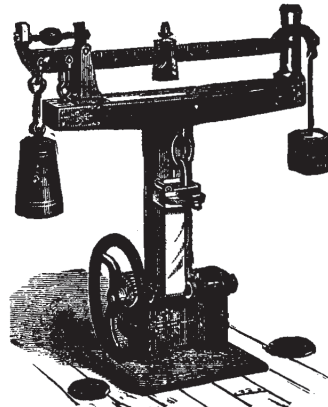


"a. The weight of the tissue per square yard is taken after the samples have been well dried in the stove or in the sun.

Fig. 642.



Riehlé Brothers' Cloth Tester.

"b. The number of threads in warp and weft is ascertained by the ordinary thread counter of a quarter-inch field.

"c. The resistance to traction of either tissues or cordage is measured by means of an apparatus which has two jaws, between which the tissue or cord is fixed, one jaw being stationary and the other connected with a lever, which is loaded until the sample breaks. In France the apparatus used is the dynamometer of Perreaux. For tissues the trials are made with bands 16" long and 2" wide, one cut lengthwise and another crosswise of the stuff.

"The following are the conditions required by the navy and public offices for the following principal tissues:—

Kind of Tissue.	Threads per centimeter.		Weight per square meter.	Resistance of a band 5 cm. wide.	
	In the Warp.	In the Weft.		Lengthwise.	Crosswise.
Hand loom cloth . . . . .	-	-	k. 435	k. 220	k. 230
Hand loom cloth . . . . .	-	-	345	130	140
Tilt cloth . . . . .	32, 33	10, 11	540-550	270	330
Double yarn hammock cloth . . . . .	-	18	330-370	200	230
Sail cloth, No. 1 . . . . .	22	7	550	275	410
Sail cloth, No. 6 . . . . .	24, 25	10	350	170	255
Sail cloth, No. 8, single yarn . . . . .	16-18	13, 14	270	135	200

"After experimenting on samples well dried at a temperature of about 30° C., the same should be repeated with others damped with water, which, of course, generally offer greater resistance than dried samples."

The cloth tester of MM. Chavin and Marin-Darbel, of Paris, is shown in "Scientific American," \* xxxix. 211.

The cloth tester used by M. Giffard in testing the fabric of his captive balloon, Paris, 1878, is shown in "Scientific American," \* xxxix. 194.

See also Riehlé . . \* "Manufacturer and Builder," xi. 178.  
Hausner . . \* "Scientific American Sup.," 1236.

**Cloth Test'er.** A machine for testing the strength of cloth by direct pull.

Riehlé Brothers' cloth-testing machine is shown in Fig. 642. One end of the sample of cloth, paper, or twine is inserted in a clamp attached to the weighing mechanism and the other end wrapped around a roller. The strain is put on by turning a hand-wheel, and the beam kept in equipoise by shifting the running weight. The strain is continued until the sample breaks, the result of the test being indicated on the scale in pounds. The scale levers are inclosed in the box in the upper part of the frame.

Yarn, fiber, and paper testers operate in a similar manner. See list under MEASURING, ETC., INSTRUMENTS.

"The official test of resistance of tissues and cordage shows the nature of the yarn and the quantity of matters contained therein by the following triple method:—