An Easy Method of Determining the Fineness of Wool

Simple portable device developed for wool fiber measurements — Screens, measures and makes a permanent record as desired

By H. DOEHNER

In the construction of a device for measuring wool fiber, the idea was to construct an instrument which would give the wool grower, the wool dealer, and the mill man using wool, a quick and easy method by which he could obtain a good idea of the fineness of his raw material, without considerable loss of time and effort. It was also necessary to consider that many people desiring such information are not highly trained in the art of wool classification, therefore the device would have to be as simple as possible in its operation.

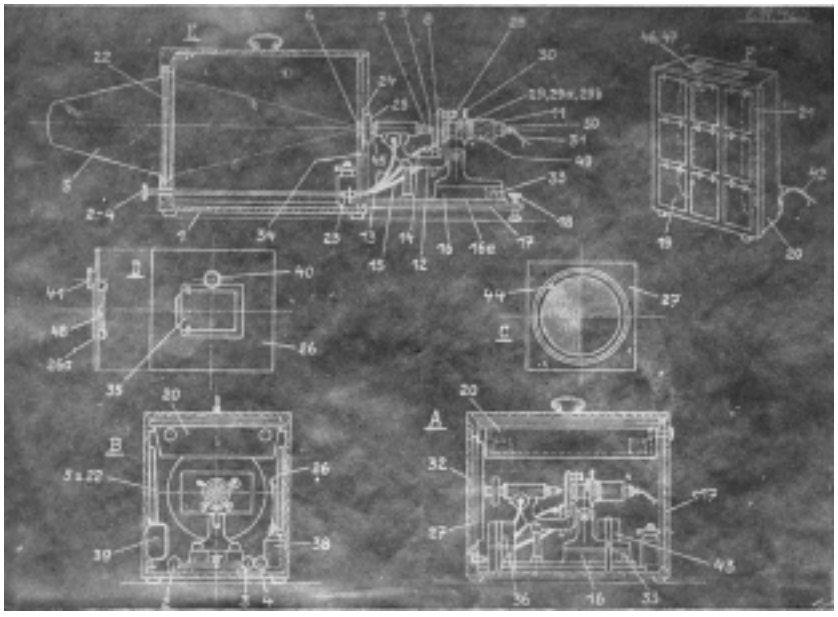

Fig. 1

The lanameter permits an inspection of fibers magnified 60 times. The sample to be measured is compared with known standards placed in a glass case with the former.

Editor's Note—A method, process, device, instrument, machine, etc., which assists in standardizing textile mill operations, is a help to the mill man. A description, therefore, of the device in this article will be of interest.

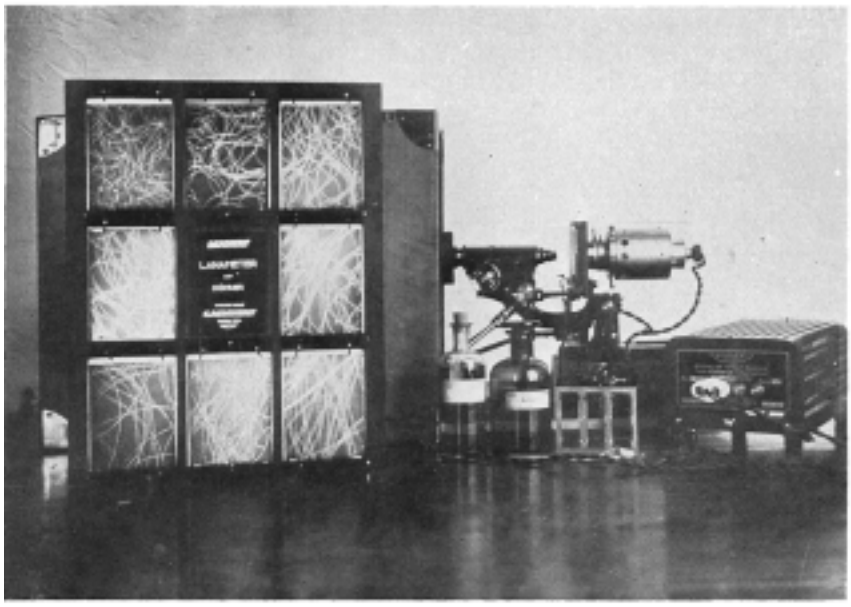

Fig. 2

Cut No. 2 shows the apparatus in a position to do this. In this way, the wool can readily be classified in regard to fineness. Should this rough classification not be sufficient for some reason or other, the apparatus provides a method of absolute measurement, which is so simple that hundreds of measurements can be made in a very short space of time. The details of the construction of the lanameter can be noted from Cut No. 1, consisting of figures A, B, C, D, E and F. On a base plate 16 is a microscope 12, with a movable objective plate 9, which provides space for the special slide 8. The construction of the slide receptacle can be noted in figure No. 3. A metal frame with 3 spaces serves to hold two cover glasses between which the sample of wool is placed. The cover glasses can be easily moved one way or the other, because of the arrangement of the springs on the back of the slides. The wool sample is cleaned easily by brushing with ether, and is placed, with a few drops of cedar oil, between the cover glasses and slid into position in the frame.

The possibility for observation of the entire sample is furnished by the construction of the cross table. The moving of the same is accomplished by the devices 13 and 14, and also by the screws 2 and 3, at the front of the wooden box.

This wooden box has several purposes. First, it serves as a container for the entire apparatus, which is shown by figure A in Cut No. 1. Secondly, it serves as a dark chamber, between the microscope 12 and screen 22, for the micro-photograph of the magnified wool sample and also as an observation hood (Cut No. 4), or as a measurement disc for the reading of the measurements (Cut No. 5), or as a retainer for a photographic plate from which the actual photograph can be made for permanent record (Cut No. 6).

The space between the microscope and the wooden box is kept dark by a black hood, or curtain, with braces 25, fixed per-

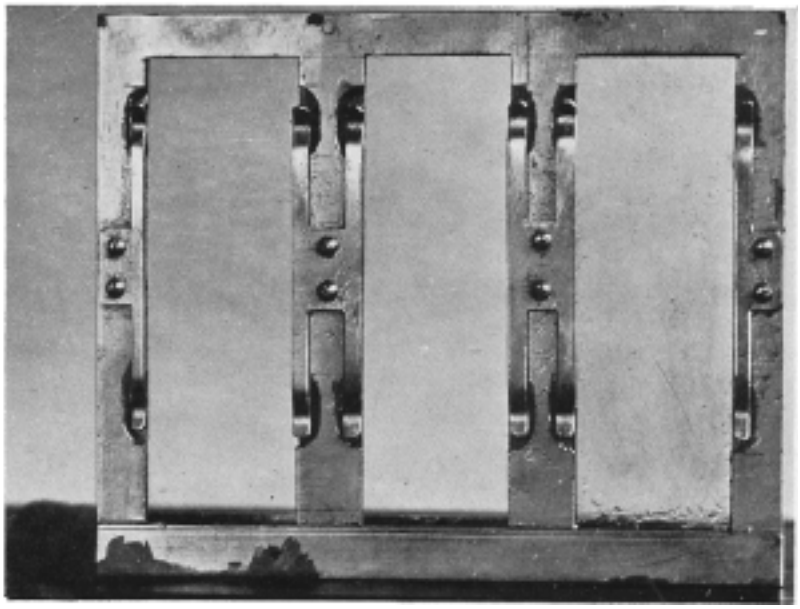

Fig. 3

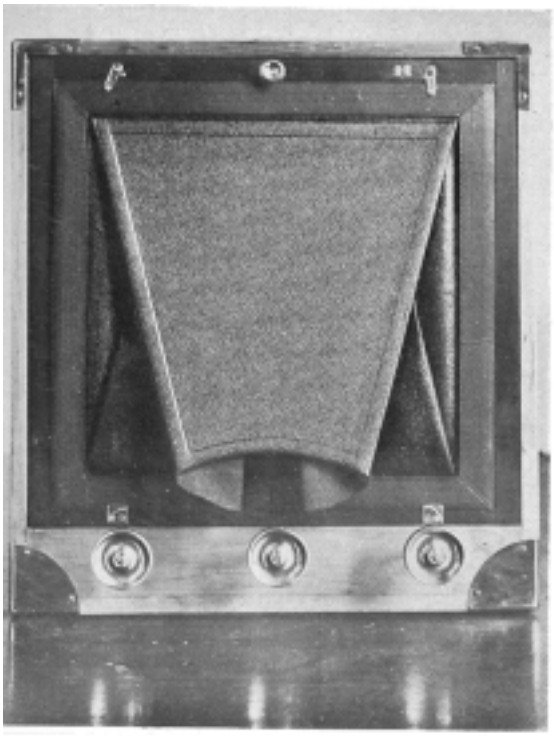

Fig. 4

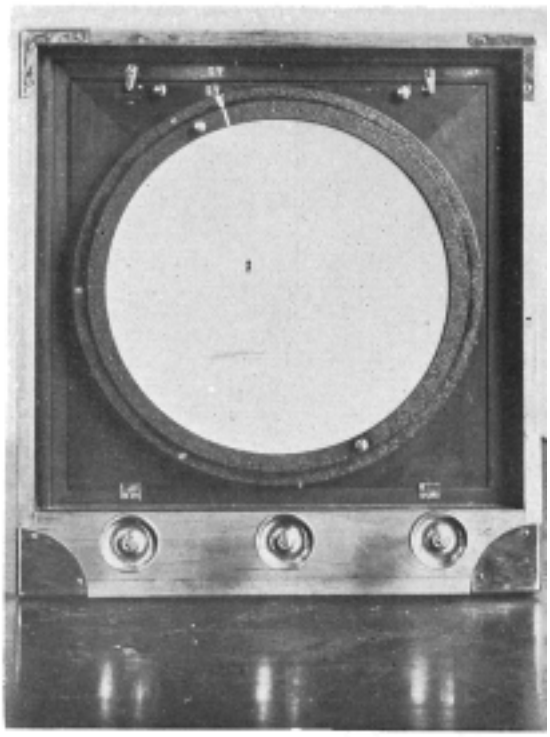

Fig. 5

manently on the tube of the microscope. In order to permit a view of the sample during daylight, a hood is provided at one end of the wooden box. This can be removed if it is desired.

For measurements of individual fibers, a revolving disc can be inserted in place of the glass screen which has minute divisions of a scale 27 (Cut No. 1, figure C). For this purpose, the light photograph is magnified 500 times and can be measured very accurately. A millimeter with 500 magnifications is equivalent on the measurement disc to 2/1000 millimeter or 2 microns. The classification can now be made much easier by plotting the values found on graph paper, which gives a curve representing the sample. This method is much less tiresome than measurements under the microscope, and they are made in much less time and far more accurately. After some practice, 100 measurements require only about 10 minutes of time.

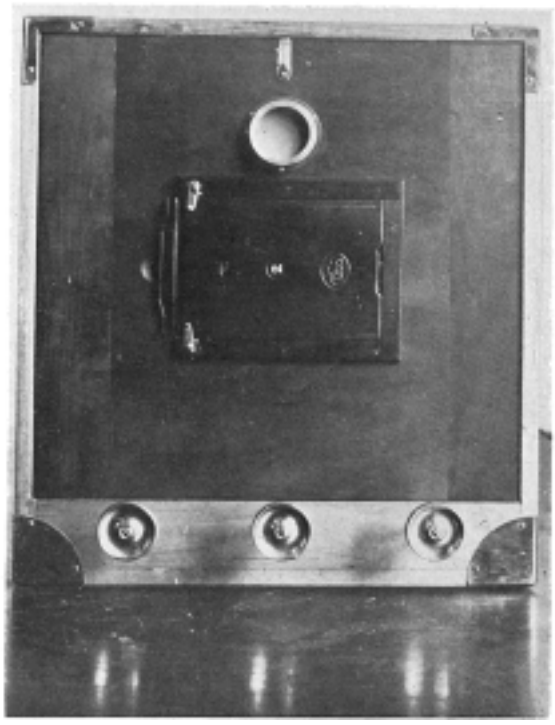

Fig. 6

If it becomes necessary to make a record of the wool sample, a microphotographic plate is inserted in the apparatus as shown by Cut No. 1, section D. In place of the screen, a frame with a copy plate in its center 26a, for direct photo a bromo-silver paper or plate (35, photo No. 6) is attached. The clearness of the outlines on the screen can be regu-

lated through a peek hole 40. In this way, the picture can be adjusted, made clear, etc., before taking the actual photo.

For micro-projection, the microscope is equipped with a "planocular" 6, a No. 2 objective 7, which, together with the tube extension 45, gives 60 magnifications. For 500 magnifications, a No. 5 objective with the corresponding tube extension is used. The light for the projector is furnished by a low voltage bulb 49, housed in an adjustable, well-ventilated cover, provided with an adjustment button 5, and a condensor 28. The necessary current for the light can be obtained from any socket.

For micro-photography, a yellow stained glass 29, is recommended, which is fitted into the bulb cover. In addition, blind glasses 29a, can be used to obtain more clear cut outlines. The standards are placed in a glass case 20, which is illuminated by two bulbs 22. A four pole socket 46 and 47 is provided for 110 and 220 volts, respectively. The standards are of transparent positives made with 60 magnifications, which can be made easily.

The construction of the whole apparatus is such that all its parts will fit into the wooden case shown. Every piece is numbered and has a definite place when not in use. The device, therefore, can be used anywhere and instantly be put into operation.

The wool grower, therefore, by means of this instrument, can constantly watch his wool, keeping a running record of his product. The wool dealer has a chance to easily, frequently and definitely check his purchases and detect any changes. The mill man has absolute control over his purchases, avoiding possible changes which might upset his manufacturing routine with having to have a high priced wool buyer.

It is possible that the lanameter as described above eventually will aid in a reasonable standardization of wool in farming, sale and manufacturing.