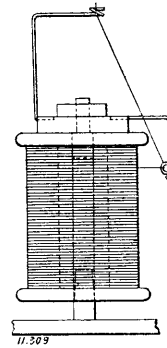
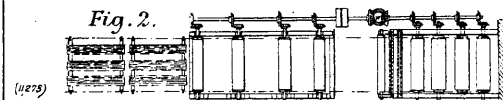
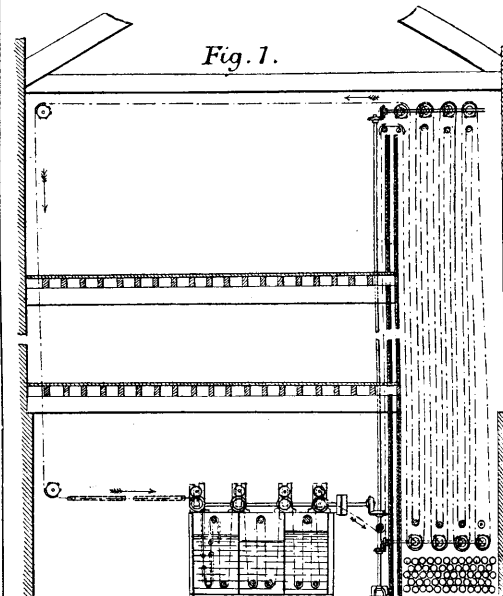


tate with very little friction, the thread guide is not so liable to overrun, and thus vary the tension on the yarn, as is the case when



the yarn is removed direct from the bobbin, and the bobbin caused to rotate in the manner hitherto common. (Accepted April 25, 1900.)

**11,278. J. H. Bolton, Colne, Lancs. Treating Yarn.** [2 Figs.] May 30, 1899.—This invention is for treating yarn in hank form in continuous succession, the hanks being so arranged that they are passed in succession into and out of a vat or chamber and can be removed and replaced without stopping the machine, which is constructed with two or more endless or con-



tinuous chains travelling parallel over a series of rollers and carrying rods or bars at right angles to the chain pin. A number of hanks are passed over two of these bars and the bars are attached to the travelling chains by specified means. (Accepted April 25, 1900.)

#### TEXTILE MACHINERY.

**11,309. C. Haklo, C. E. Liebreich, and A. Downbrough, Bradford. Unwinding Bobbins.** [1 Fig.] May 31, 1899.—This invention has for its object the unwinding of yarn from stationary flanged or other bobbins, by combining with each bobbin an appliance so arranged that the tension on the yarn as it is removed from the bobbin by the rotation of the spool cop or the like is reduced, therefore to reduce the liability to breakage of the yarn; also to unwind the yarn from the flanged or other bobbin with more uniformity of tension than is the case when the bobbin is rotated by the drag of the yarn. The bobbins containing the yarn to be wound therefrom into cops, or upon spools or other bobbins, are placed in any suitable position on the frame, and the spindles for receiving the cops, spools, or other bobbins on which the yarn is to be wound, are mounted and operated in the ordinary manner, but instead of drawing the yarn direct from the flanged or other bobbin in a manner that the said bobbin rotates, there is upon each flanged or other stationary bobbin a rotatable thread guide or carrier arranged in such manner that the thread guide or carrier is caused to rotate around the bobbin, and thus unwind the yarn therefrom without causing the bobbin to rotate. It is stated that by forming the thread guide of light material and mounting the same so that it will ro-