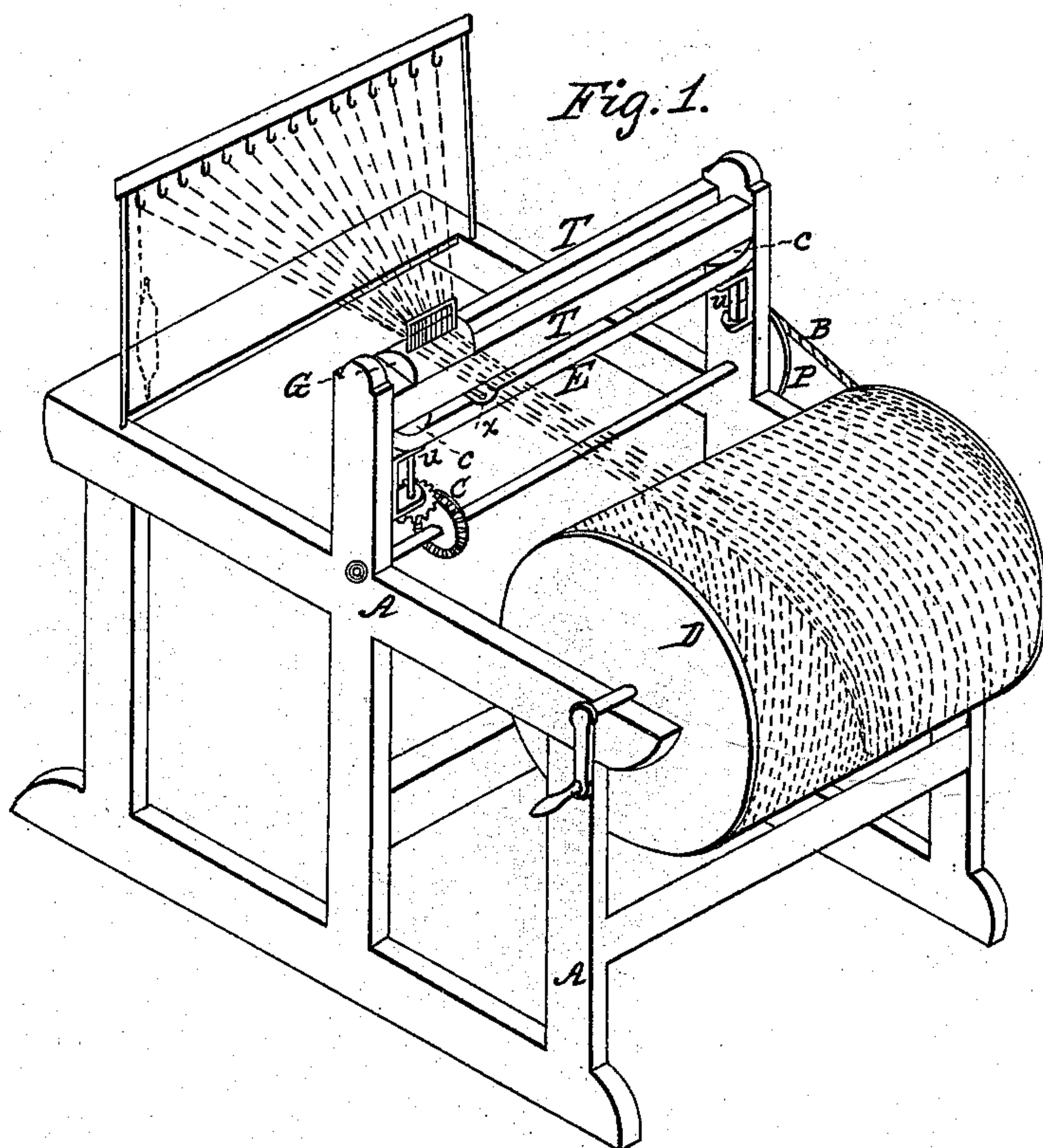


L. E. PRATT.

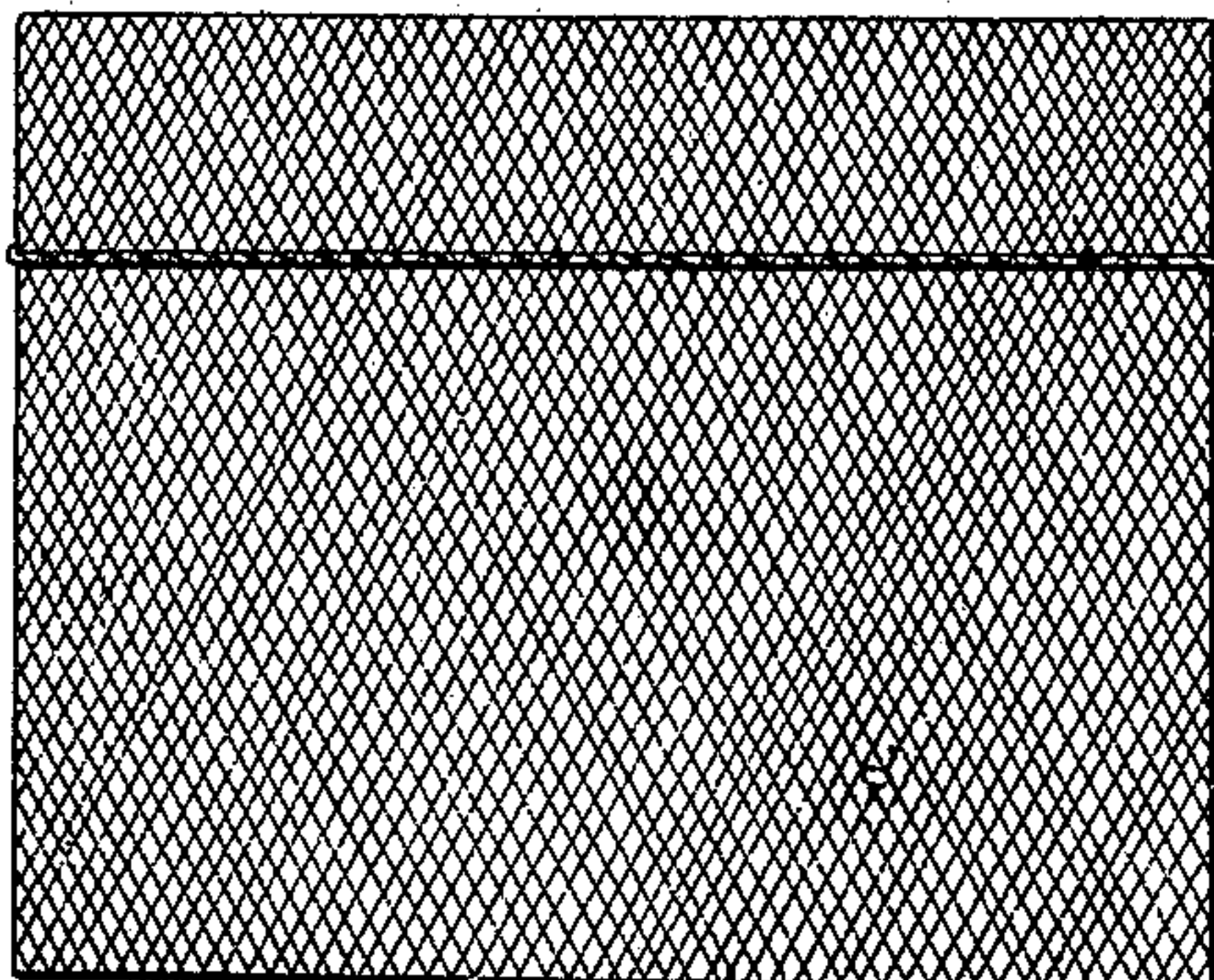
Dyeing Vat.

No. 16,934.

Patented March 31, 1857.



*Fig. 2.*





# UNITED STATES PATENT OFFICE.

LUCIEN E. PRATT, OF SOUTH KINGSTON, RHODE ISLAND.

## IMPROVEMENT IN PREPARING YARN FOR DYEING AND SCOURING.

Specification forming part of Letters Patent No. 16,934, dated March 31, 1857.

*To all whom it may concern:*

Be it known that I, LUCIEN E. PRATT, of South Kingston, in the county of Washington and State of Rhode Island, have invented a new and useful Improvement in Preparing Yarn for being either Scoured or Dyed; and I hereby declare that the following is a full and clear description of the same, reference being made to the drawings and diagrams herewith presented, the said drawings constituting a part of said description.

The nature of my invention consists, chiefly, in the mode of packing, winding, or forming the yarn or threads of wool, cotton, worsted, silk, or other fibrous material into a portable ball or body, which, when so wound and taken from the drum (presently to be described,) I denominate a "muff" of yarn, and which body or muff so formed and connected will endure the handling, scouring, dyeing, drying, and cleansing without being tangled or felted together or in any way injured.

It is well known that the usual method of reeling yarns into hanks or skeins and handling the skeins over in the process of scouring, dyeing, and wringing is attended not only with much labor, but damage and waste to the yarn; and when we consider the time spent in reeling, spooling, &c., together with the waste and damage done to the yarn, it appears important to adopt some method of manipulation by which these may be obviated. I have therefore made a change in the manner of proceeding. Instead of reeling the yarns into separate skeins individually, I take twenty or thirty or any convenient number of threads and wind them at once from the cap or from the spinning-bobbins, passing them through a guide (reed or hack to keep them at a suitable distance apart) onto a drum, in such manner that by the constant moving of the guide alternately from end to end of the drum the yarns may be laid in helical bands on the drum and one another and crossed over each other in the several layers at equal distances, the whole forming a continuous net-work over the drum, which progresses in thickness without laying in contact with each other any two threads which may be parallel.

This process may be more fully understood by referring to the drawings and diagrams representing the method and the apparatus

used in the operation. (See drawings, Fig. 1.)

A A is the frame.

D is the drum on which the yarn is to be wound.

B is a band leading from the pulley on the end of the drum-shaft (not shown) and giving motion by the pulley P to the shaft S. This shaft S by small bevel-wheels C turns the upright shaft *u*. On the upper end of this shaft is a pulley *e*, connected by a belt E to the pulley *e'* on a similar upright shaft *u'*.

G is the guide-block resting on the bars T and T'. On the under side of the guide-block is a projecting arm with a slot, (seen at *x*), where it embraces a pin or stud projecting upward from the belt E. Now the belt passing round the pulleys *e* and *e'* gives alternate motion to the guide G. The dotted lines indicate the position of the yarn as it passes from the cap to the drum.

Fig. 2 shows the muff of yarn as taken from the drum.

I do not claim the use of this or any other particular machine for the purpose of forming the afore-described muff or body of yarn, as the same might be done on a reel by having a suitable guide so constructed and arranged as to move a suitable distance along the reel alternately, or other different devices might be used for producing the same effect.

It is not new to wind a single continuous thread on a spool or bobbin in helices and so that a layer of such may cross another layer thereof. This, however, will not answer in preparing a muff for being scoured or dyed, because there is not strength enough in the single thread to enable it to be drawn off the drum or separated from the muff, for the helix-coils of the single thread will felt or stick more or less together and become so matted as to prevent the proper circulation or impregnation of the dyeing material from taking place.

By employing a number of threads, as described, and laying the coils in a band or collection of such bands, the bands of each layer on the drum being made to cross those of a layer above or below, we are enabled to prepare the muff, so that it will not only be more open than one made by a continuous thread, but so that the threads after being scoured or dyed can be unwound in a band or collection and without danger of being broken.



By my process the finest and weakest of yarn can be wound, dyed, and unwound, whereas by winding it in a single continuous thread it could not be unwound without constant breakage ensuing. Thus it will be perceived that one great advantage arising from my method—viz., winding the yarn in bands—is to be found in the fact, where they are laid together, as described, the strength of the many weak yarns is availed of in the unwinding process, and as each yarn bears only a small portion of the strain on the whole it is not liable to be broken. Yarns for the purpose of being dyed have never been laid together in layers of bands, and so that those of each layer may cross those of a layer beneath them.

It should be borne in mind that in my process of making the muff the threads of each band are all to be kept separate from each other or to be wound at a short distance asunder or so that they may not touch one another laterally so as to felt together. This is an important feature in my process, and in this respect it differs materially from the common method of winding a single thread in helices, which touch one another side by side.

With my process in comparison to the old mode of reeling yarn for being scoured and

dyed one boy can unreel eighty to one hundred pounds of yarn while he would be reeling twenty-five pounds.

The waste made by my process is not a tenth part as much as takes place by the old process, and there is no breakage of the yarn of any consequence, whereas by the old process breakage is constantly liable to take place.

I do not claim winding a single thread in helices crossing one another, as is done in the formation of cops or balls of sewing-thread; but what I do claim is—

My improvement in making muffs of thread or yarn to be dyed or otherwise treated, as described, my said improvement consisting in winding a series of threads, each separated from or at a distance from the other in one helix-band around a cylinder or drum, and so that the coils of each layer of such on the cylinder may cross those of the next layer, substantially as described.

In testimony whereof I hereto subscribe my name in presence of two witnesses.

LUCIEN E. PRATT.

Witnesses:

R. G. HAZARD,  
JAMES WALKER.