UNITED STATES PATENT OFFICE.

JOHN H. BLOODGOOD, OF NEW YORK, N. Y., AND MOSES A. JOHNSON, OF LOWELL, MASSACHUSETTS.

IMPROVEMENT IN THE MANUFACTURE OF FELTED YARNS.

Specification forming part of Letters Patent No. **49,367**, dated August 15, 1865.

To all whom it may concern:

Be it known that we, JOHN H. BLOODGOOD, of the city and State of New York, and MOSES A. JOHNSON, of Lowell, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Felted Yarns, the same being a new article of manufacture; and we do hereby declare that the following is a full and exact description thereof.

Yarn or thread composed of wool, hair, or other fibrous materials capable of being felted has heretofore been made, the process or art of producing the same being fully set forth in Letters Patent of the United States granted to us jointly and severally as hereinafter stated—viz., to John H. Bloodgood on the 5th day of April, 1853, to Moses A. Johnson on the 6th day of May, 1856, to Bloodgood and Johnson on the 6th day of March, 1860, and to Bloodgood and Johnson on the 15th day of November, 1864.

The process or art set forth in the patents above referred to is based on the well-known property of wool, hair, and certain other substances which have naturally a hooked or barbed fiber to become felted or matted together when subjected to moisture, heat, and friction, the general outline or main feature of the process being the passage from one bobbin to another of a sliver or fillet of wool, and during such passage applying to it moisture, heat, and friction, by means of which the thin and ribbon-shaped fiber becomes rounded or cylindrical and formed into a perfect yarn or thread, which is without twist and is suitable for making cloth, knit goods, or other fabrics.

Substance having a smooth exterior, such as cotton, flax, China grass, jute, &c., cannot be made into yarn or thread by the process of felting, those substances only which have hooked or barbed fibers being suitable for this mode of treatment.

We have found by experiment that one-half, or even a larger portion, of non-felting fiber—such as cotton, flax, jute, and hemp—can be mixed with wool or other fiber capable of being felted, and that when submitted to moisture, heat, and friction the barbed or felting fiber will so embrace and inclose the smooth or non-felting fiber that a perfect, strong, and even thread is produced, having for many purposes a greater value than yarn or thread made entirely of a felting substance or material. For instance, when the sliver of which the yarn is to be made is composed of wool and flax the short and barbed fibers of the wool as they cling to each other inclose and entwine between them the long fibers of the flax, which, being thus contorted and involved with the wool, imparts additional strength to the yarn. When thus composed of the two last-named materials the yarn is more pliable, elastic, and extensible than flax yarn or thread. When these felting and non-felting fibrous substances are felted together by the process set forth in the patents hereinbefore referred to, or by the use of heat, moisture, and friction applied to them in any equivalent manner, the felting fiber predominates in the outer layers of the yarn, while the inner part or core of the yarn contains the most of the non-felting fiber.

Cloth or fabrics made of this yarn show a predominating woolen surface, while at the same time the comparatively long fibers in the inside of the thread or yarn have greater strength than if composed exclusively of wool.

We prefer to have the flax or other fiber well picked and separated before mixing it with the wool; but we do not claim any particular mode of mixing or carding the same, as the invention herein set forth relates exclusively to the formation of a felted composite thread or yarn, which thread or yarn is made from a sliver or roving previously prepared from felting and non-felting fibrous materials.

What we claim, and desire to secure by Letters Patent, is—

A felted thread or yarn composed of felting and non-felting materials, the same being a new article of manufacture.

JNO. H. BLOODGOOD. [L. S.]
MOSES A. JOHNSON. [L. S.]

Witnesses to signature of J. H. Bloodgood:
F. W. BLOODGOOD,
WILLIAM H. FIELD.

Witnesses to signature of M. A. Johnson:
H. DENNETT,
HORACE B. SHATTUCK.