

# UNITED STATES PATENT OFFICE.

J. F. RICH, OF CHATHAM RUN, PENNSYLVANIA.

## IMPROVEMENT IN WOOL FLANNEL.

Specification forming part of Letters Patent No. 42,226, dated April 5, 1864.

*To all whom it may concern:*

Be it known that I, J. F. RICH, of Chatham Run, in the county of Clinton and State of Pennsylvania, have invented a new kind of Flannel; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention consists in a new kind of woolen flannel in which hard-twisted yarn is presented in one surface for wear and a softer yarn to the other surface for warmth, such flannel being made by using a harder or more-twisted yarn for the warp and a softer or less-twisted yarn for weft, and weaving in such manner as to throw the greater portion of the warp on one side and the greater portion of the weft on the other side.

The weaving may be performed by various arrangements of harness; but I generally use three leaves of heddles, and the order in which the several heddles are raised to bring the warp to one surface and the weft to the other may also be varied, as will be understood by the practical weaver—as, for instance, the front, second, and back leaves may be raised in regular succession, leaving two leaves always below the shuttle as it passes through the warp;

or they may be raised in the following order: front, second, front, back, second, back; or, front, back, front, second, back, second; or, back, front, second, front, second, back; and in order to bring a greater portion of the warp to one side double yarns may be passed through one leaf of heddles.

The face or warp side of the fabric may be sheared or left unscoured.

This improved flannel will have all the flexibility of knitted goods, while the softness of the surface to which the weft is brought will make it very warm and comfortable when worn next the person, and the other surface, to which the warp is brought, being presented outside, where the wear is greatest, will wear much longer than any ordinary flannel, either plain or twilled.

Having thus described my invention, I claim and desire to secure by Letters Patent—

As an improved article of manufacture, a flannel composed and made in the particular manner herein set forth.

J. F. RICH.

Witnesses:

LAMBERT P. STOUT,  
C. B. RICH.