

J. J. MCGINLEY.  
TWISTED NET FABRIC.  
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1,187,158.

Patented June 13, 1916.

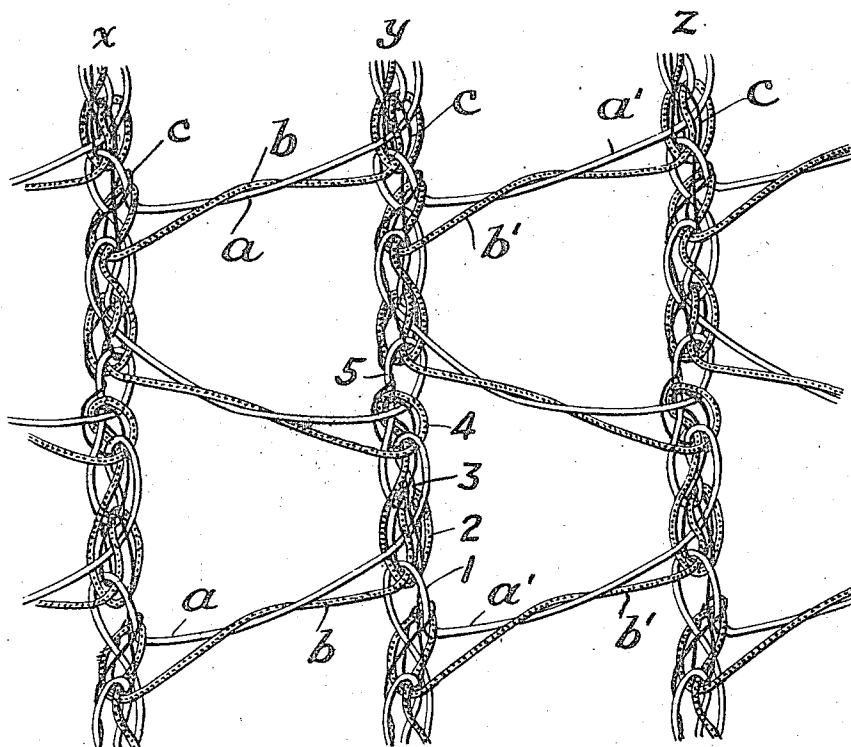


FIG. 1.

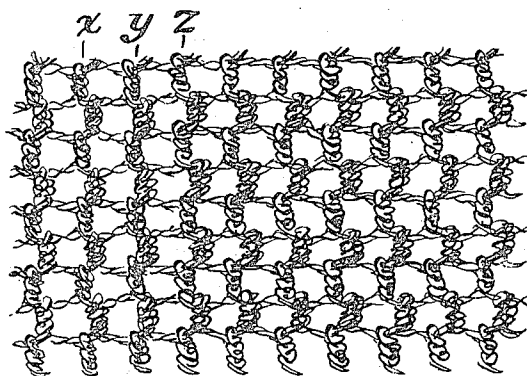


FIG. 2.

WITNESSES:

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## TWISTED NET FABRIC.

1,187,158.

Specification of Letters Patent. Patented June 13, 1916.

Application filed February 18, 1915. Serial No. 8,988.

*To all whom it may concern:*

Be it known that I, JOHN J. MCGINLEY, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Twisted Net Fabric, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

The object of my invention is to provide a new and improved open work knitted fabric especially adapted for use in the manufacture of laundry bags and dyers' bags. Such bags are subjected to hard wear and are sometimes cut or torn at different points. It is important, therefore, that they should be so knitted or woven that if so torn or cut the damage will be localized. This necessitates the weaving of the fabric in such manner that the threads of which the fabric is woven shall be interlocked at very frequent intervals in the knitting or weaving operation so that it will be absolutely impossible to ravel any particular thread or chain beyond a very small distance. A fabric which substantially meets these requirements is set forth in a patent issued to Frank Clewley, May 11, 1915, No. 1,139,344. This fabric is preferably knitted on a rib-lace machine in which only two guide bars, carrying two sets of needles, manipulating two sets of thread, are rendered operative. Two threads, one of one set and one of another set, are manipulated together as a pair and caused to interloop to form chains extending longitudinally or in the direction in which the fabric is knitted. Any given chain, however, is formed partly of the threads of one pair and partly of the threads of another pair; this being effected by causing the threads of a given pair, after they have been interlooped to form a series of loops of one chain, to be diverted laterally and then interlooped to form a series of loops of another chain, after which they are diverted laterally in the opposite direction and then interlooped to form another series of loops of the first chain, and so on. Between the first and last named series of loops of the first chain is an intermediate series

of loops formed by another pair of threads. At the junction between two series of loops of the same chain, one of the threads of the pair forming one of said two series of loops is looped around one of the threads of the pair forming the other of said two series of loops, thus tying together the two series of loops. Preferably, one thread of each pair, which may be called the locking thread, always performs this looping function, while the other thread of the pair, which may be called the locked thread, is the thread which is confined by the loop of the locking thread of another pair; the locked thread at this point being itself formed into a loop through which extends the locking thread of the last named pair in its transverse extension toward the adjacent chain.

The object of the present invention, more specifically stated, is to improve the construction of the above described fabric, and it comprises the combination, with the two sets of threads (which may be called main threads) interlaced as above described, of binder threads each of which traverses only a single chain and extends through certain of the main thread loops and is itself formed into loops which engage main thread loops.

In the preferred embodiment of the invention the binder thread extends through the loops of only one main thread of each of the two pairs of main threads with which it interlaces—namely, the locking thread. The provision of a binder thread so interlaced with the main threads interlocks the threads with greater security and prevents even local raveling.

The invention will be understood by reference to the accompanying drawings showing a preferred embodiment of my invention, in which—

Figure 1 is an enlarged face view of the fabric in which, however, the fabric is distorted to show the longitudinal rows of loops extending on a straight line and to accentuate the open-work effect. Fig. 2 is a face view showing more accurately the appearance of the fabric to the eye.

$x, y, z$ , represent three adjacent longitudinally extending chains.

$a, b$ , represent respectively the locking

thread and locked thread of one pair of main threads.

$a'$ ,  $b'$ , represent respectively the locking thread and locked thread of another pair of main threads.

It will be understood that the terms "locking" and "locked" are employed somewhat arbitrarily, the fact being that the connection between these two threads is more in the nature of an interlocking connection.

It will be observed that threads  $a$  and  $b$  are interlooped to form a series of loops in the chain  $x$ , thence extend transversely and form a series of loops in the chain  $y$ , and thence extend transversely to form another series of loops in the chain  $x$ ; and so on. Threads  $a'$  and  $b'$  are interlooped to form a series of loops in the chain  $y$ , thence extend transversely and form a series of loops in the chain  $z$ , and thence extend transversely and form another series of loops in the chain  $y$ ; and so on.

The binder thread  $c$  of each chain is interlooped with the locking thread in the same manner that the locked thread is interlooped therewith. Thus in chain  $y$ , the binder thread  $c$  is carried along with the locked thread  $b'$  through one series of loops, then (as thread  $b'$  is diverted laterally) is carried along with the locked thread  $b$  to form another series of loops in chain  $y$ , then (as thread  $b$  is diverted laterally) is carried along with the locked thread  $b'$  to form another series of loops in chain  $y$ ; and so on. Thus the binder thread, in the preferred embodiment of the invention, does not pass through the loops of the locked thread, but does pass through all the loops of the locking thread, and in addition thereto forms, in conjunction with a loop of the locking thread, a means of tying together adjacent series of loops in the same chain, as will be hereinafter more particularly described. Thus, the chain  $y$  is formed of a number of series of loops formed by thread  $a'$  and threads  $b'$  and  $c$ , alternating with a number of series of loops formed by thread  $a$  and threads  $b$  and  $c$ . The other chains are similarly formed partly of loops formed by one pair of main threads and a binder thread and partly of loops formed by another pair of main threads and the same binder thread.

It will be observed, by reference (say) to the lower part of the section of chain  $y$  shown in the drawings, that thread  $a'$  is formed into a loop 1 which is interlooped with loops 2 formed by threads  $b$  and  $c$ . Loops 2 are interlooped with a loop 3 formed by thread  $a$ , which latter thread also extends through loops 2 and thence extends (together with thread  $b$ ) transversely toward the chain  $x$ . The said loop 3 formed by thread  $a$  is interlooped with loops 4

formed by threads  $b$  and  $c$ , which loops 4 in turn extend around the neck of a fifth loop 5, formed by thread  $a$ ; threads  $a$  and  $b$  thence extending transversely toward the chain  $x$ .

The loop 5 formed by thread  $a$  corresponds to the loop 1 formed by thread  $a'$  and engages threads  $b'$  and  $c$  in the same manner as thread  $a'$  is above described as engaging threads  $b$  and  $c$ .

It will be understood that I have described a single "repeat" of the fabric along the line of a single chain, including its connection with adjacent repeats, this connection being established by both a locking thread and a binder thread. This description will suffice for an understanding of the entire fabric.

After the fabric is knitted the fabric tends to assume the form shown in Fig. 2; that is, the tying in loops of threads  $a$ ,  $a'$ , etc., tend to draw out and elongate in a lateral direction owing to the "pull" between each series of loops in one chain and the two series of loops formed by the same pair of main threads in an adjacent chain. This produces irregular but similarly shaped rows of figures, the figures of each row being alternately staggered to the right and left.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:

1. A knitted fabric composed of a number of longitudinally extending chains, each of which comprises four main threads and a binder thread, one pair of main threads forming alternate series of loops of the chain and integrally united with another chain, another pair of main threads forming the remaining alternate series of loops of the chain and integrally united with another chain, while the fifth or binder thread extends continuously along the chain, and extends through the loops of one main thread of each pair in a manner similar to the extension through said loops of the other main thread of each pair.

2. A knitted fabric composed of a number of longitudinally extending chains each of which is composed of threads forming knitted loops adjacent series of which are formed of two different pairs of main threads and the same binder thread, adjacent series of main thread loops being interlocked and the binder thread extending with one main thread of each pair through loops of the other main thread of each pair.

3. A knitted fabric composed of a number of longitudinally extending chains, each of which comprises four main threads and a binder thread, one pair of main threads forming alternate series of loops, of the chain and integrally united with another chain, another pair of main threads forming the remaining alternate series of loops of

the chain and integrally united with another chain, while the fifth or binder thread extends continuously along the chain with one main thread of each pair and with it  
5 extending through the loops of the other main thread of each pair.

In testimony of which invention, I have

hereunto set my hand, at Philadelphia, on this 16th day of February, 1915.

JOHN J. MCGINLEY.

Witnesses:

JNO. J. KELLEY,  
K. G. DEITER.