

G. F. SUMNER.

KNITTING MACHINE FOR MAKING FABRIC FOR MATTRESSES, &c.

No. 539,558.

Patented May 21, 1895.

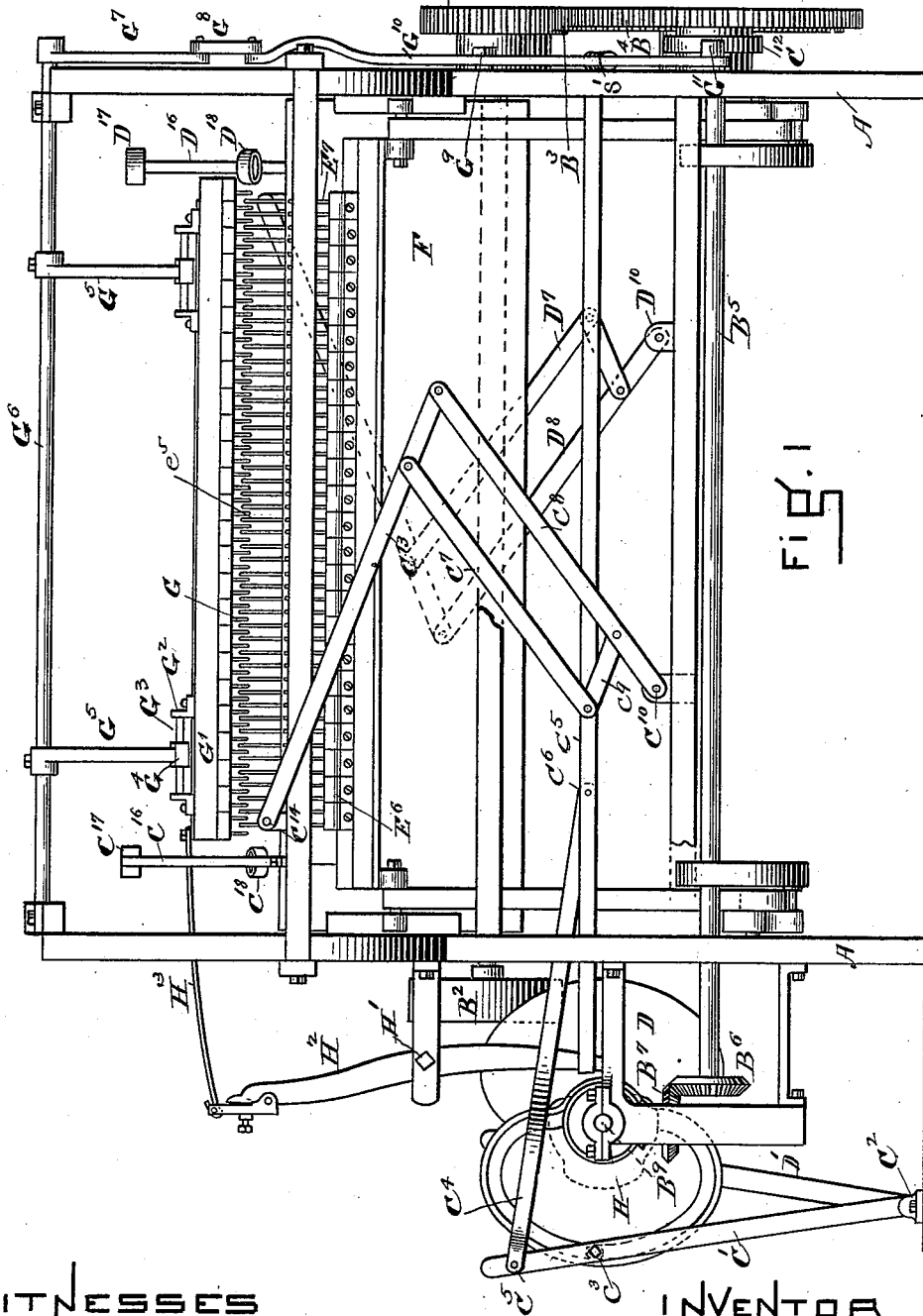


FIG. 1

WITNESSES

Frank G. Parker
Edward S. Day

INVENTOR

George Fred. Sumner

(No Model.)

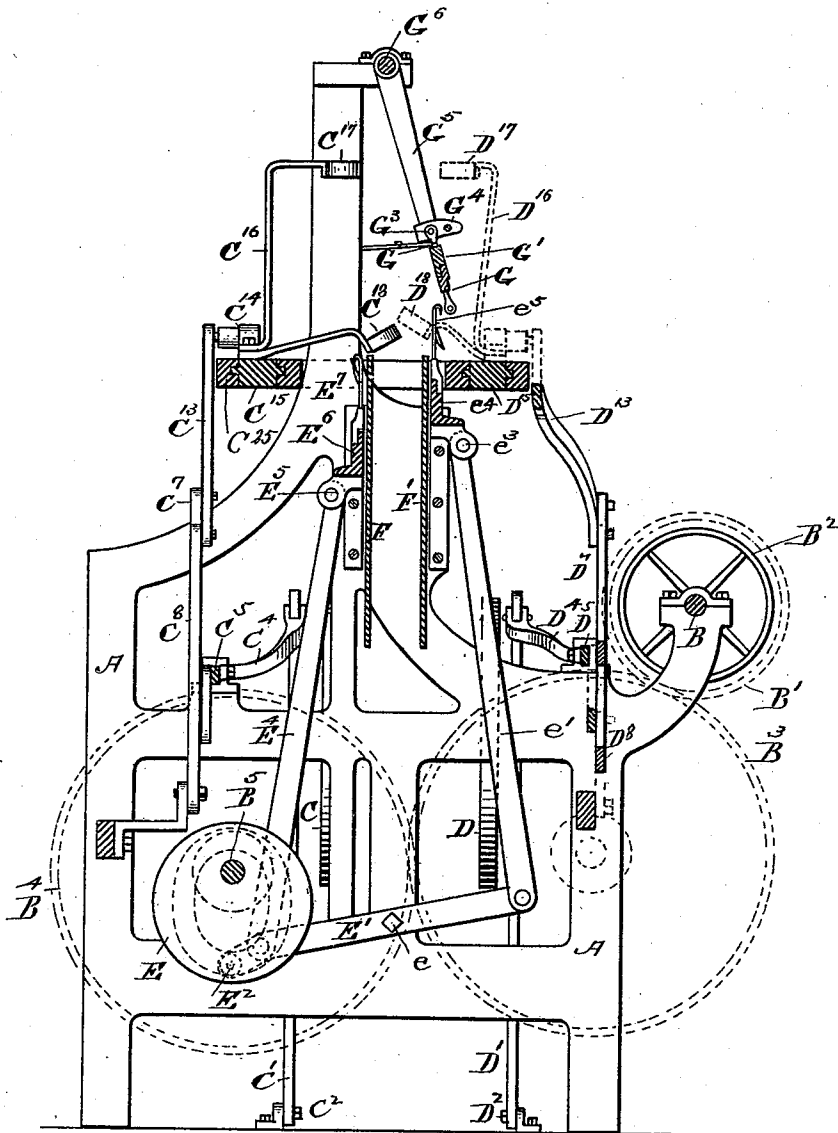
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WITNESSES.

Frank L. Parker
Edward S. Day

FIG. 3.

INVENTOR

George Fred Sumner

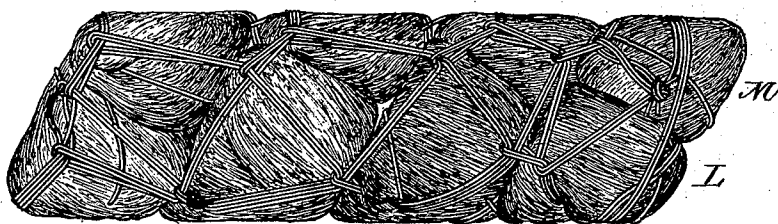
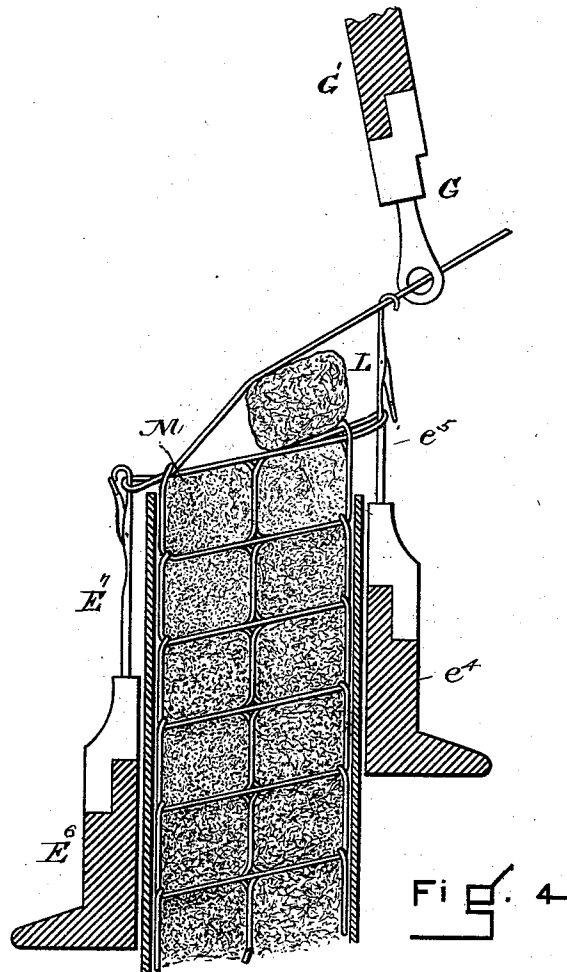
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4 Sheets—Sheet 4.

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WITNESSES
Frank G. Purker
Edward S. Day

FIG. 5. INVENTOR
George Fred Sumner

UNITED STATES PATENT OFFICE.

GEORGE FREDERICK SUMNER, OF CANTON, MASSACHUSETTS, ASSIGNOR TO
THE KNITTED MATTRESS COMPANY, OF SAME PLACE.

KNITTING-MACHINE FOR MAKING FABRIC FOR MATTRESSES, &c.

SPECIFICATION forming part of Letters Patent No. 539,558, dated May 21, 1895.

Application filed February 24, 1891. Serial No. 382,646. (No model.)

To all whom it may concern:

Be it known that I, GEORGE FREDERICK SUMNER, of Canton, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Knitting-Machines for Making Fabric for Mattresses, &c., of which the following, taken in connection with the accompanying drawings, is a specification.

This invention has for its object the combination, with the machines now in use, of certain new devices, by the aid of which the machine produces a new and improved knit fabric, adapted for mattresses, &c. This object I attain by the mechanism shown in the accompanying drawings, in which—

Figure 1 is a front elevation of my improved machine. Fig. 2 is a plan of the same. Fig. 3 is a vertical cross-section of the same. Fig. 4 shows in cross-section parts of the machine and a portion in section of the knit fabric. Fig. 5 shows a portion of the knit fabric.

In the drawings A A represent the frame to which the several operating parts of the machine are attached.

B is the main shaft which is hung in suitable housings and is driven by a pulley B².

For communicating motion to other parts of the machine, I have on the main shaft B a gear wheel B¹ which, acting through the transmitting gear B³ gives motion to the gear B⁴ and thence to the shaft B⁵.

In Fig. 3, two flat vertical plates F F' are shown. These plates together form an inclosed passage or chute, which serves to keep the fabric in place while being knitted together, the upper edge of which is held just above the upper edges of the plates F F'. (See Fig. 4.)

Upon each side of the chute I have needle bars E⁶ e⁴, carrying respectively the sets of needles E⁷ and e⁵. These needle bars are operated by pitmen E⁴ and e', (see Fig. 3) connected by pivots E⁵ and e³. (There are two sets of the pitmen, one at each end of the loom.) The pitmen are connected to a tilting lever E' which swings on a pivot at e, which is operated by the grooved cam E, acting through the pin E².

The thread guides G are mounted upon a swinging oscillating guide bar G'. This guide

bar G' is hung on small housings G², which have between them rods G³. (See Fig. 1.) The rods G³ pass through foot pieces G⁴, attached to the swinging hangers G⁵, made fast to the rocker shaft G⁶. A swinging motion is given to the hangers by the rocker shaft G⁶, which receives its motion from the cam C¹², Fig. 1. Said cam C¹², acting through the pin G¹¹, lever G¹⁰, (pivoted at G⁹) link G⁸ and crank arm G⁷; the lever G¹⁰ being re-acted upon by the spring S'. A to-and-fro longitudinal motion is given to the guide bar G' by the cam H on the shaft B⁹, which acts through the lever H² (pivoted at H') and link H³, Fig. 1.

The above referred to parts relate to the parts of the machine that do the knitting, that is, inter-knit thread about the large filling layers and thus hold the parts that constitute the body of the fabric together. These parts are old and need not be more fully described.

The fabric made on my machine is different from any heretofore made and therefore requires a peculiar construction and arrangement of certain parts of the machine, which parts and arrangements I will now describe. In my improved fabric I have two filling layers L and M, Figs. 4 and 5. These filling layers are taken from conveniently located reels, not shown, and laid in the chute by carrying devices C¹⁷, C¹⁶, C¹⁸ and D¹⁷, D¹⁶, D¹⁸, Fig. 3, one of which is located at each side of the chute, as shown, and as these carrier devices, as well as the mechanism that operates them, are alike, I will describe but one.

The carrier C¹⁷, C¹⁶, C¹⁸, consists of two rings C¹⁷ and C¹⁸ attached by rods to the carrier slide C¹⁵. This slide C¹⁵ is operated in guide-ways C²⁵ as shown in Fig. 3 by the gear B⁶, Fig. 1, acting through the gears B⁷ and B⁸, shaft B⁹, cam C, pin C³, lever C', pivoted at C², pivot C⁵, link C⁴, sliding rod C⁵ (connected to the link C⁴ by the pin C⁶) and parallel system of levers C⁷, C⁸, C⁹, C¹³, pivoted to each other as shown, said system swinging on a pivot at C¹⁰ connected to the frame work of the machine, and acting on the carrier slide C⁵ through the pivot C¹⁴.

The operation of my machine is as follows: The binding threads are placed in the usual way for starting to knit, then the knitting operation is started, and when a good start-

ing tie is formed the filling layers are placed by the carriers in the chute and in working connection with the binding thread. Then all of the working parts, namely, the two sets of needles, the thread guide bar and the two filling layers, and carriers, are set in proper relation to each other and to the filling and binding threads, that is, they are so set that when the machine begins to move all parts will co-operate in their normal manner, when the working of the machine will be as follows: One set of needles (the rear set for instance) being down, the carrier on that side will lay over the loops of the thread a layer of filling. Now the guides will draw over the threads from the opposite side (the needles of which are now drawing the loops of thread down to bind that layer) and the rear needles will come up so as to receive the loops of thread from the guides as they bring it over from the front. Now the front needles being down, the front carriers will bring along a layer of filling and place it on the front. When this has been done the thread guides will draw the loops from the rear over to the front and hook them on to the front needles which are now up to receive the said loops. Again the front needles descend and take the loops with them, and again all of the motions are repeated. This can go on until a sufficient body of the fabric is made. Then the ends of the threads are joined and the article is complete. It is to be understood that the thread guides

do not carry the loops to the same series of needles at each passage but alternate the loops in such a manner as to form the proper knitting stitch.

From the above it may be seen that the fabric made in my machine has a double filling held by a series of knitted threads in such a manner that a strong, double, thick and yet very yielding fabric is produced.

I do not claim the fabric in this application as it forms the subject of a pending application of even date, Serial No. 382,645.

I claim—

In a warp machine for knitting mattress fabric, the combination of two sets of needles, means to actuate the same alternately, and a set of guides for the warp threads with means to impart thereto their longitudinal and transverse movements, with two slides C¹⁵ and D¹⁵ one upon each side of the machine and having filling layer carriers mounted thereon, guide-ways for said slides, and means to reciprocate the same, all for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 12th day of February, A. D. 1891.

GEORGE FREDERICK SUMNER.

Witnesses:

FRANK G. PARKER,
EDWARD S. DAY.