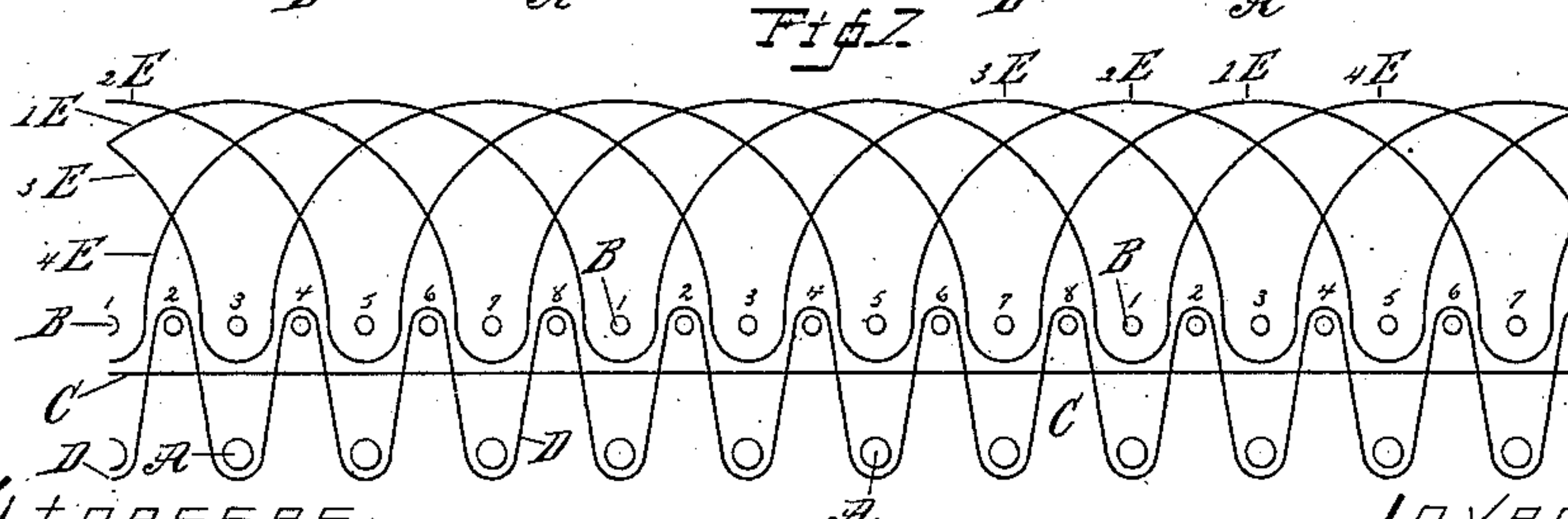
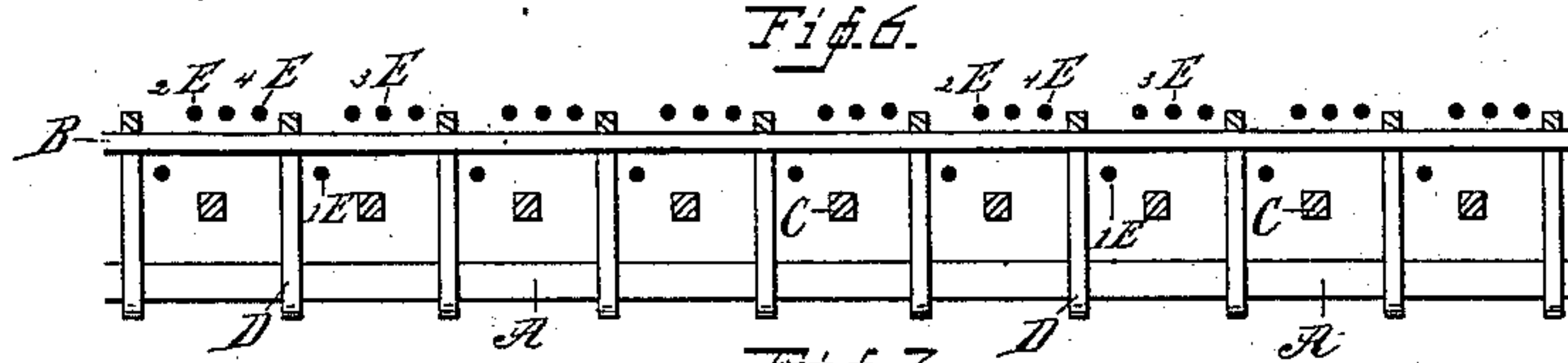
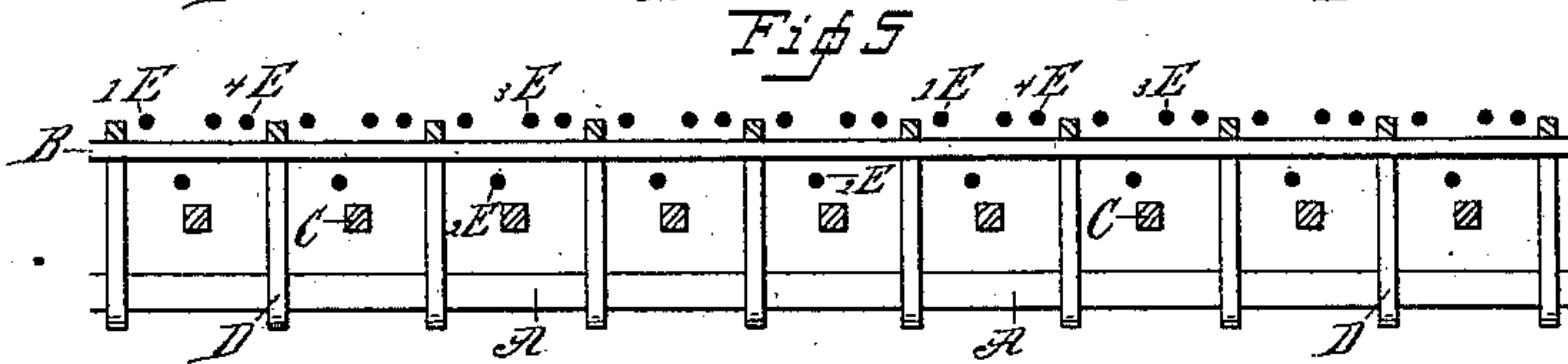
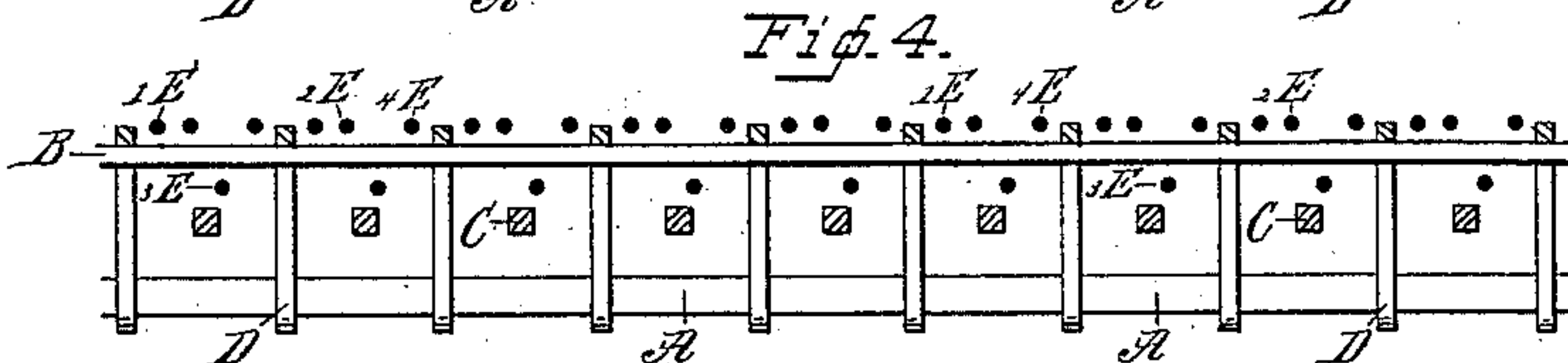
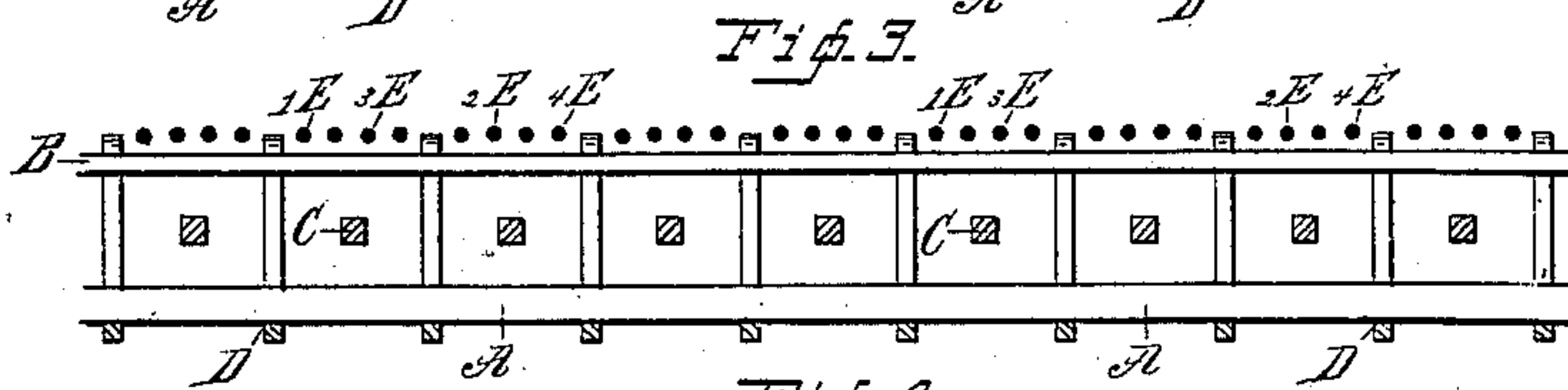
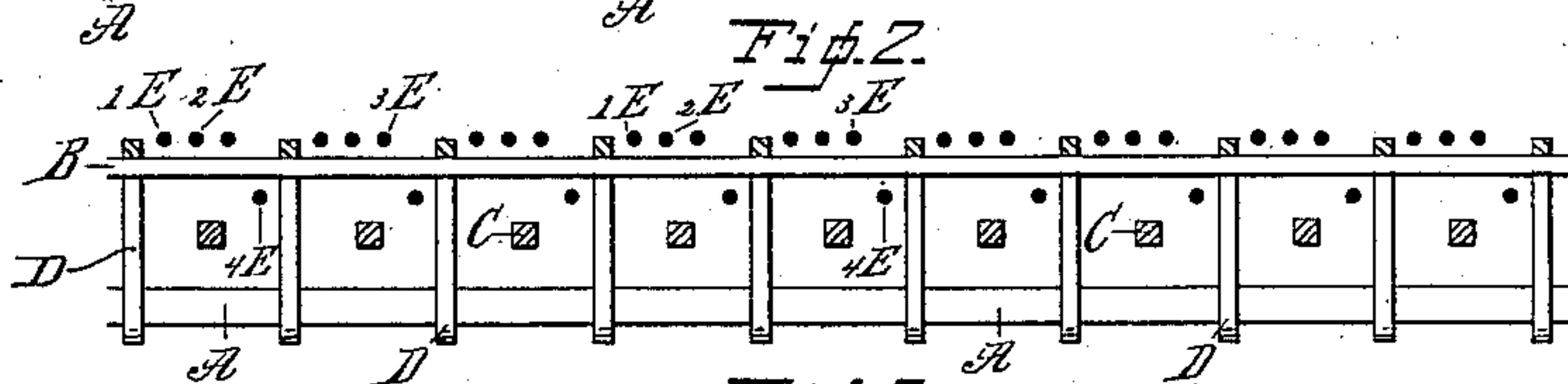
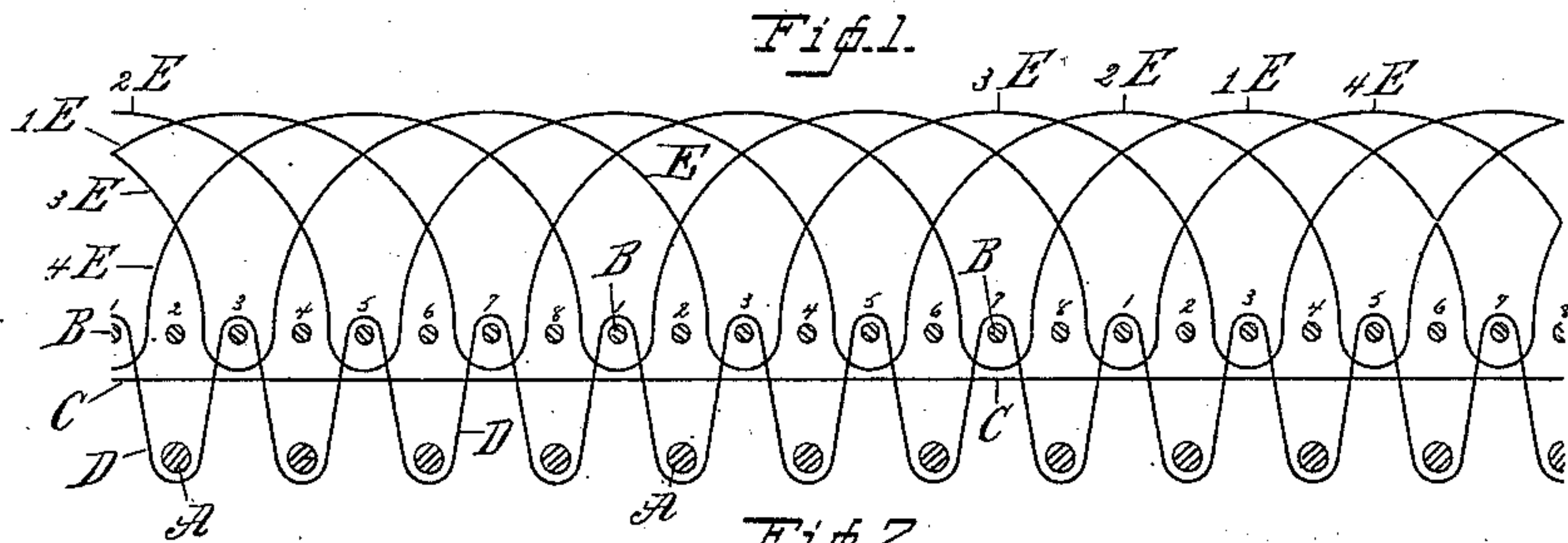


(Specimens.)

J. BIDMEAD.
ELASTIC FABRIC.

No. 351,570.

Patented Oct. 26, 1886.



Witnesses,

C. C. Perkins.
C. C. Ruggles.

Inventor,

Joseph Bidmead
By A. M. Wooster
att.

UNITED STATES PATENT OFFICE.

JOSEPH BIDMEAD, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE
BRIDGEPORT ELASTIC WEB COMPANY, OF SAME PLACE.

ELASTIC FABRIC.

SPECIFICATION forming part of Letters Patent No. 351,570, dated October 26, 1886.

Application filed June 3, 1884. Serial No. 133,660. (Specimens.)

To all whom it may concern:

Be it known that I, JOSEPH BIDMEAD, a citizen of Great Britain, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Elastic Fabrics; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to that class of webs which are known to the trade as "mock terries"—i. e., fabrics in which the face is formed of warp-threads of cotton, wool, or silk loosely thrown up, and the back of weft-threads, ordinarily of cotton. This class of fabric is now used quite extensively for many purposes, notably in the manufacture of elastic goring for shoes, for which purpose it is quite popular, owing to its great elasticity, combined with firmness and durability, the rubber threads being closely bound. In elastic fabrics for shoe-goring and other analogous purposes it is required that the face of the fabric be a solid color, ordinarily black, and it is desirable that the back be a clear white or light color. It has, however, been a serious objection to this class of goods as heretofore made that the black binder-warps showed through at the back, thus leaving black lines at the back even in the best qualities that could be made. It has, moreover, been impossible to use light-colored binder-warps, as in all weaves heretofore used in the production of mock terries the binder-warps have shown more or less upon the surface of the fabric, which, in case light-colored binder-warps were used in connection with dark face-warps, would be very injurious to the sale of the fabric.

Having thus briefly outlined the state of the art, I will proceed to describe my present invention, the object of which is to produce a mock-terry fabric having the ordinary face peculiar to this class of goods, and having a clear white or light-colored back, no light-colored threads showing upon the face, and no dark threads upon the back, the binder-warps being of white or light-colored cotton.

In my description I shall refer by letters of reference to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal section of the fabric. Fig. 2 is a cross-section at the first pick. Fig. 3 is a cross-section at the second pick. Fig. 4 is a cross section at the third pick. Fig. 5 is a cross-section at the fifth pick. Fig. 6 is a cross-section at the seventh pick; and Fig. 7 is a longitudinal section of a fabric woven with the same threads and the same twill, but in which the manipulation of the loom-harness is slightly changed.

A represents the back-wefts, which are made quite heavy, ordinarily about double the size of the face-wefts. B represents the face-wefts; C, the rubber threads or strands; D, the binder-warps, and E the face-warps.

For convenience in illustration, I have indicated the face-warps as 1 E, 2 E, 3 E, and 4 E, the series being continually repeated, and in Figs. 1 and 7 I have indicated the picks as 1, 2, 3, 4, 5, 6, 7, and 8, which completes the pattern. In order to produce a mock-terry fabric having a perfectly black face and a perfectly white or light-colored back—that is, free from any dark lines—I make the back-wefts A and the binder-warps D white or light colored, and the face-wefts B and the face-warps E black, or whatever color it is desired to have the face of the fabric.

The fabric illustrated in the drawings is an ordinary three-up and one-down twill; but I do not of course desire to limit myself to this style of twill, as several other species of this class of fabrics can by proper manipulation of the loom-harness be so woven as to produce the same result—as, for instance, a two-up and one-down twill, or four-up and four-down, or two-up and two-down, or even one-up and one-down, which is a crossing of alternate warps and would show no twill.

The peculiarities of the weave in my improved fabric lie in so manipulating the warps that the light binder-warps do not cross the face-warps at all, as in Fig. 7, or cross one warp only at each alternate pick, as in Figs. 1 to 6, inclusive; in making the face-wefts pick over twice to each pick of the back-wefts; and in using back-wefts much larger than the face-wefts, so that the completed fabric will be balanced—that is, it will lie perfectly flat at all times, and not roll like a clock-spring in either direction. The relative size and

weight of the back and face wefts will of course depend largely upon the weight of fabric that is desired. I have frequently found it desirable to use back-wefts three or four times the size of the face-wefts, which is impossible in other fabrics of this class.

As stated above, my improved fabric can be produced by several arrangements of the loom-harness. It is sufficient, however, for the purposes of this specification to describe one arrangement. I will therefore describe the manipulation of the loom-harness in weaving a three-up and one-down twill mock-terry elastic fabric embodying my invention.

Pick No. 1, (see Fig. 2:) The light binder-warp D is raised, as are also the first, second, and third face-warps E, which cover said binder, the fourth face-warp E is depressed, and with the warps in these positions the face-weft B is passed through the shed. During this and the subsequent picks the rubber threads or strands C remain stationary between the warps forming the shed.

Pick No. 2: The light binder-warp D is depressed, and all the face-warps E are raised, and the face-weft B and back-weft A are passed over together.

Pick No. 3: The light binder-warp D is raised, the first, second, and fourth face-warps are also raised, the third face-warp is down, and the face-weft B is passed over.

Pick No. 4 is the same as No. 2.

Pick No. 5: The light binder D is raised, the first, third, and fourth face-warps are also raised, the second face-warp is down, and the face-weft is passed over.

Pick No. 6 is the same as No. 2.

Pick No. 7: The light binder-warp is up, the second, third, and fourth face-warps are also raised, the first face-warp is down, and the face-weft is passed over.

Pick No. 8 same as No. 2.

Pick No. 9 same as No. 1, and so on, eight picks completing the twill.

It will thus be seen that as the fabric is woven the binder-warps D are always covered by face-warps, so that the use of a white binder enables me to produce a perfectly white back without injury to the face of the fabric.

In the modified form illustrated in Fig. 7 the manipulation of the loom-harness is substantially the same, the only difference being that warp D binds on the other pick—that is to say, the face-wefts engage the face-warps at one pick and the binder-warps at the next pick, but do not cross the face-warps at all.

The manipulation of the loom-harness is as follows:

Pick No. 1: The light binder-warp D is depressed, as is also the fourth face-warp E, the first, second, and third face-warps E being raised. Face-weft B and back-weft A are passed through the shed together. The rubber threads or strands C remain stationary between the warps, as in the other form.

Pick No. 2: The light binder-warp D is raised, as are also all the face-warps E. Face-weft B is passed over.

Pick No. 3: The light binder-warp D is depressed, as is also the third face-warp E, the first, second, and fourth face-warps E being raised. Face-weft B and back-weft A are passed over together.

Pick No. 4 is a repetition of pick No. 2.

Pick No. 5: The light binder-warp D is depressed, as is also the second face-warp E, the first, third, and fourth face-warps E being raised. Face-weft B and back-weft A are passed over together.

Pick No. 6 is a repetition of pick No. 2.

Pick No. 7: The light binder-warp D is depressed, as is also the first face-warp E, second, third, and fourth face-warps E being raised. Face-weft B and back-weft A are passed over together.

Pick No. 8 is a repetition of pick No. 2.

Having thus described my invention, I claim—

1. As a new manufacture, an elastic fabric consisting of face and back wefts, face and binder warps, and rubber warps, the back-wefts being larger than the face-wefts, and there being twice as many face-wefts as back-wefts, so that the face-wefts and face-warps wholly conceal the binder-warps, substantially as described.

2. An elastic mock-terry fabric having a back formed of heavy wefts and binder-warps of one color, and a face formed of face-warps interwoven with face-wefts of another color, the face-wefts being smaller in size and double the number of the back-wefts, whereby the binder-warps are covered and the fabric perfectly balanced, substantially as described.

3. An elastic fabric consisting of face and back wefts, face and binder warps, and rubber threads or strands, the face warps and wefts being one color, and the back-wefts and binder-warps another color, the face-wefts being smaller in size and double the number of the back-wefts, and the face-warps being loosely thrown up, whereby the binder-warps are wholly covered, substantially as described.

4. An elastic mock-terry fabric having a set of heavy back-wefts, a set of face-wefts smaller in size than the back-wefts and double their number, a set of face-warps interwoven with the face-wefts, and a set of binder-warps interwoven with the two sets of wefts, but wholly covered on the face of the fabric by the face warps and wefts, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH BIDMEAD.

Witnesses:

A. M. WOOSTER,
WM. A. JONES.