No. 772,424. PATENTED OCT. 18, 1904.

J. MELLES.

WIRE GRATING.

APPLICATION FILED MAR. 19, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 5.

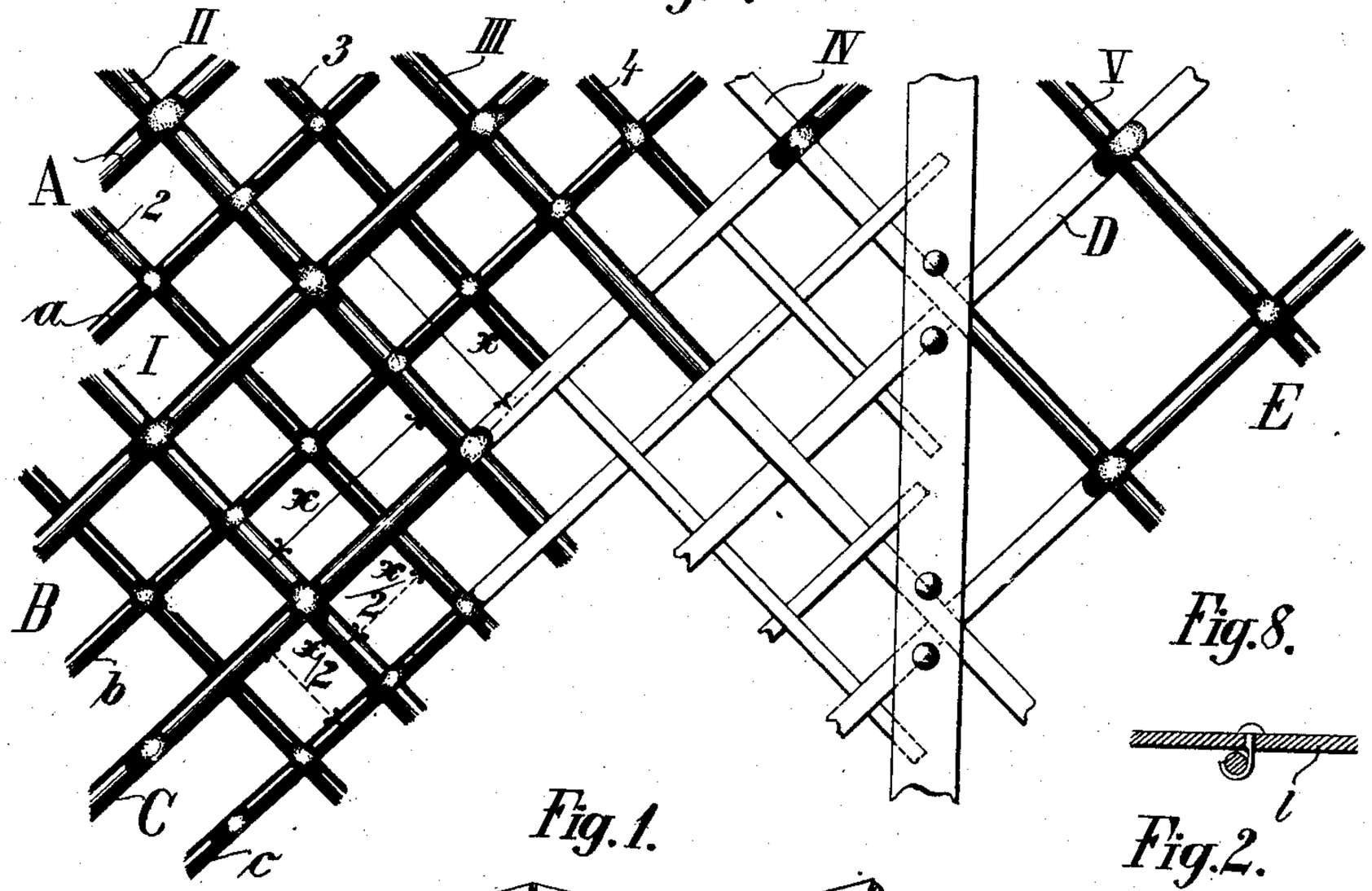


Fig. 8.

Fig. 2.

Fig. 1.

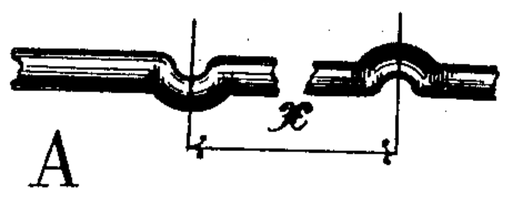


Fig. 7.

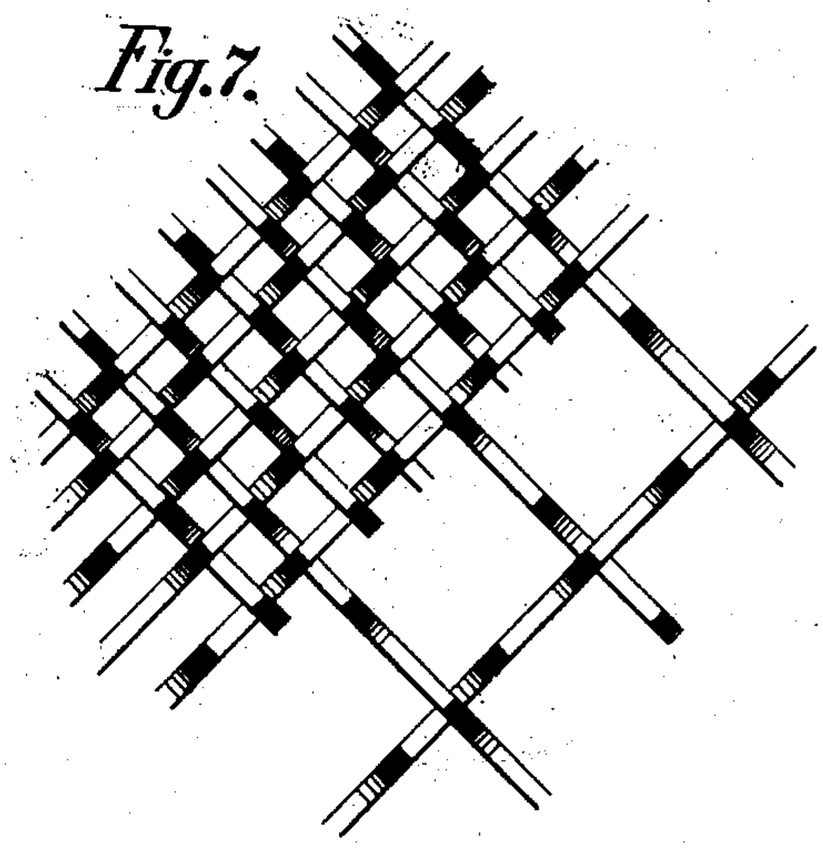
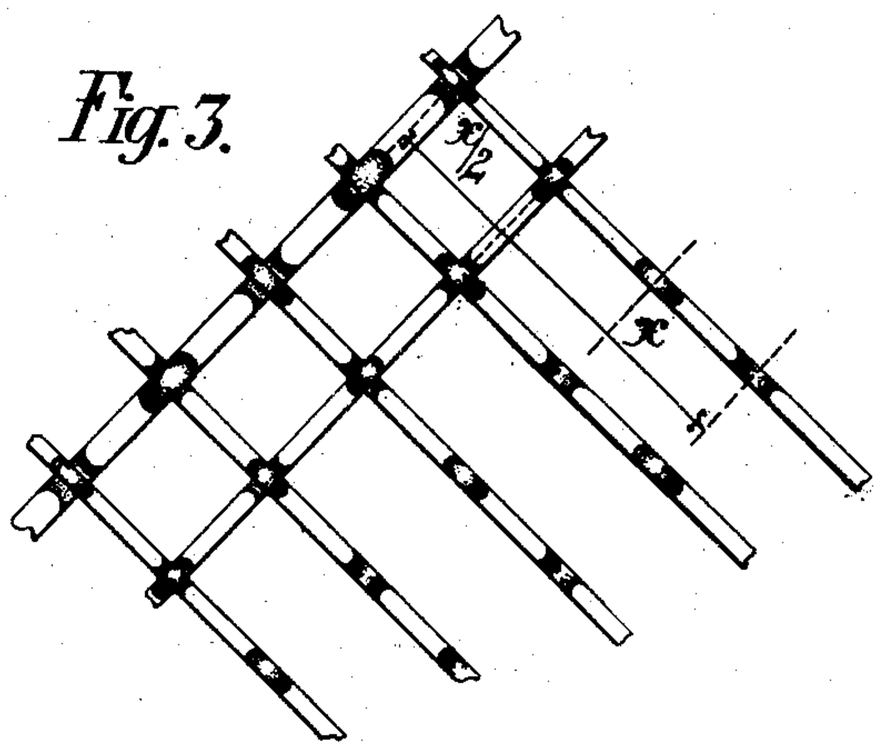


Fig. 3.



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J. MELLES.

WIRE GRATING.

APPLICATION FILED MAR. 19, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

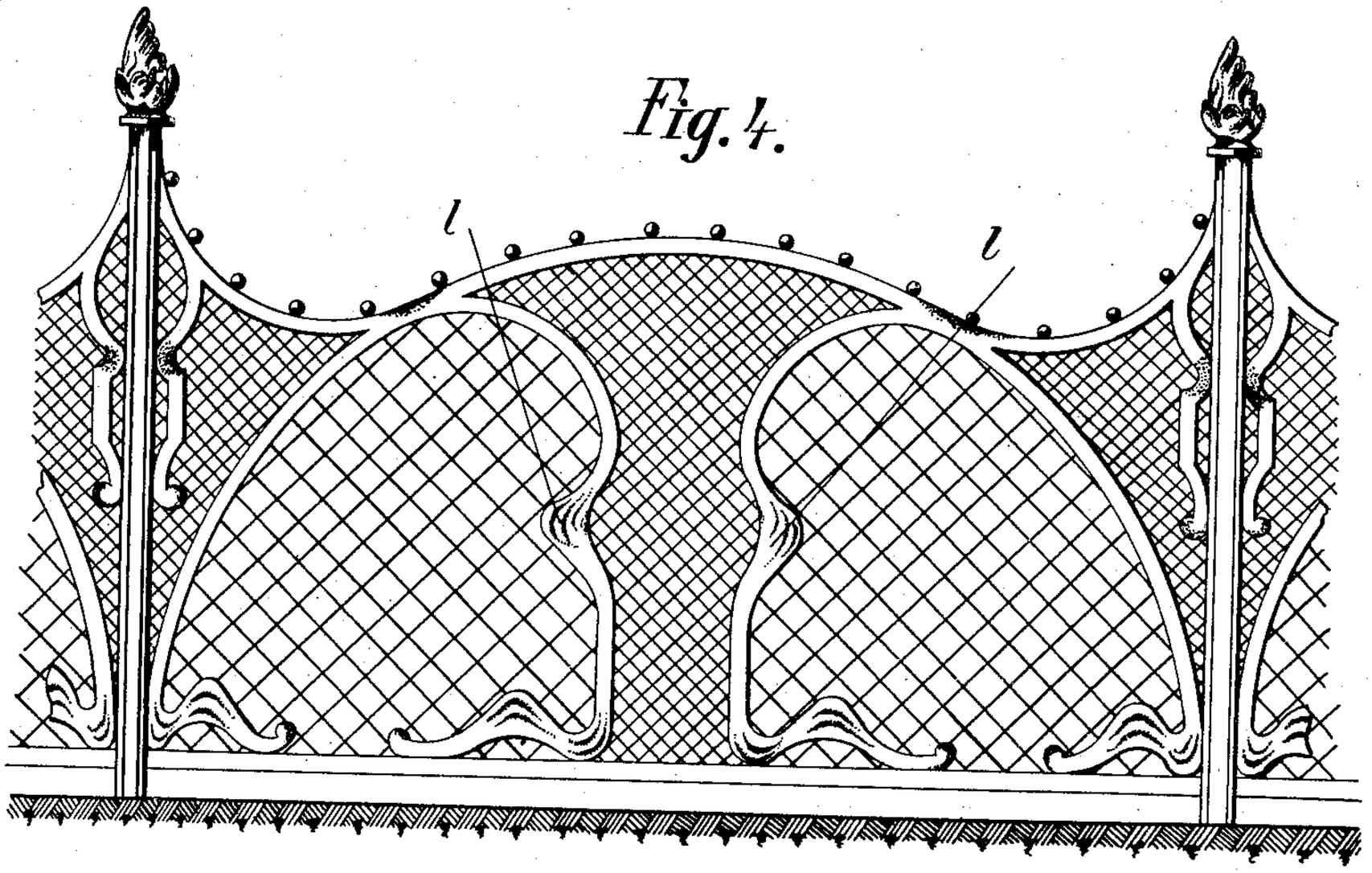
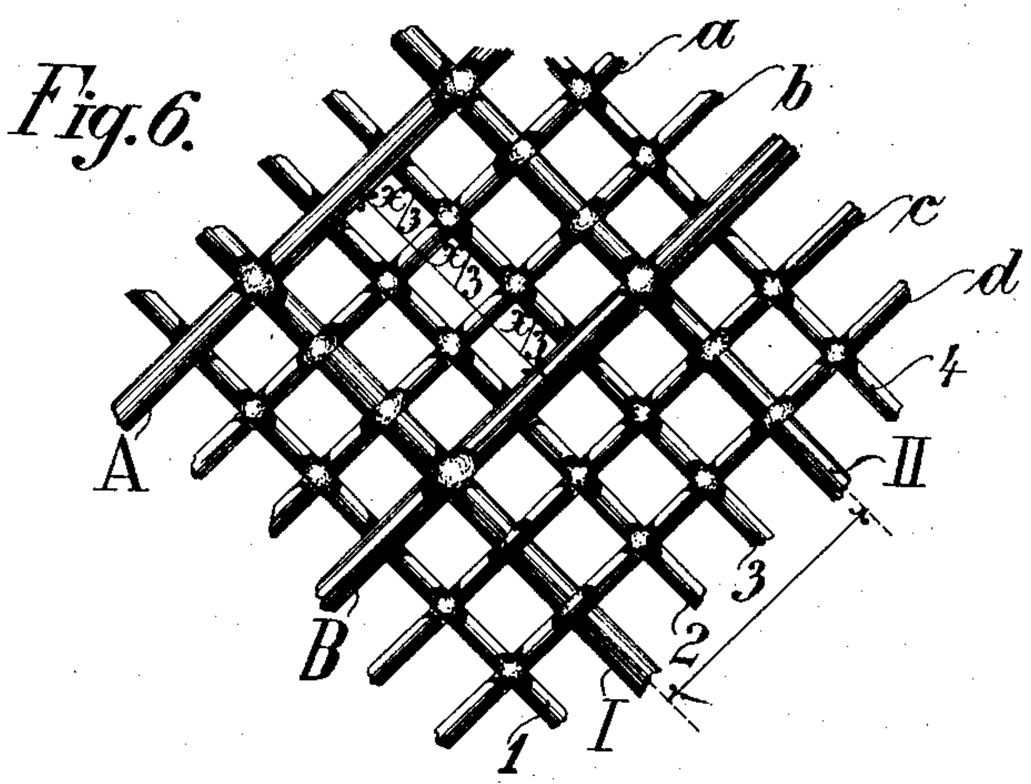


Fig. 6.



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No. 772,424. Patented October 18, 1904.

UNITED STATES PATENT OFFICE.

JAMES MELLES, OF BRIEG, GERMANY, ASSIGNOR TO C. SCHÖNFELDER & CO., OF BRIEG, GERMANY.

WIRE GRATING.

SPECIFICATION forming part of Letters Patent No. 772,424, dated October 18, 1904.

Application filed March 19, 1903. Serial No. 148,483. (No model.)

To all whom it may concern:

Be it known that I, JAMES MELLES, a subject of the King of Prussia, Emperor of Germany, residing at Brieg, Germany, have invented certain new and useful Improvements in Wire Gratings, of which the following is a specification.

This invention relates to the manufacture of unitary panels or structures of wire grating or the like having patterns of different width of mesh. If such wire grating or the like is to be manufactured, the wires of the wide-mesh grating must pass also through the narrow-mesh grating. The construction of such gratings has been effected hitherto by attaching the wires running in one direction to those running in the other direction by clamps or similar devices, the use of which increases, of course, the price of the grating and is detrimental as regards appearance. Further, gratings thus made with clamps have no great strength, because they have no hold in themselves. Another disadvantage of such method of construction is that gratings of very narrow mesh cannot be made at all on account of the width of the clamps.

My invention overcomes these disadvantages, and consists in the construction of wire gratings of different widths of mesh in one piece in which the wires of the wide mesh and those of the narrow mesh are interwoven, so as to form a network without clamps or similar locking devices, so that the grating holds itself together and is thus of great strength and so that there shall be no limitation as to narrowness of mesh.

Figures 1 and 2 illustrate two different kinds of corrugations of wires used in the manufacture of wire grating. Fig. 3 illustrates a piece of ordinary grating. Fig. 4 illustrates a finished grating made according to my invention. Figs. 5 and 6 show variations of one method of carrying out my invention. Fig. 7 shows another method of carrying out my invention. Fig. 8 shows a detail of finishing the grating.

In the manufacture of ordinary wire gratings and the like by hand the rods or wires are preliminarily corrugated or bent in various manners, because the wire rods are too thick to be made into network by merely bending them by hand. Fig. 1 illustrates such a wire rod in which the corrugations are continuous throughout. Fig. 2 illustrates such a wire in which the corrugations or indents are a certain distance apart from one another, according to the width of mesh, and when the wires are to cross one another the corrugations being directed partly upward and partly downward, as required by the desired interlacing. For instance, if quite a simple wire net or grating is required the corrugated wire rods are placed so that they pass alternately over and under the wire rods which cross them.

The manufacture of a grating with narrow and wide meshes in one piece, such as is shown as example in Fig 4, may be effected in two different ways. Either the wide-mesh part is made the basis of the network or grating and intermediate wire rods are interlaced between them or the narrow-mesh part forms the basis and only a certain number of rods of this part are allowed to pass through the part which is be of wide mesh. The former method comes into consideration as regards wire rods corrugated as illustrated in Fig. 2 and the second method as regards wire rods corrugated as illustrated in Fig. 1. The width of mesh is determined by the distance between the corrugations, and it is not suitable to obtain the difference of width of mesh by the omission of wires of the narrow mesh in the case of wires corrugated according to Fig. 2, because indents made for the narrow mesh would be unused and visible in the wide mesh, which would give a defective appearance to the net or grating. In the case of wires corrugated according to Fig. 1 the appearance of unused corrugations is not unsightly. However, it is essential in both methods that the rods of the base-net should not be indented or corrugated differently as regards that part of their length which is in the other net and as regards the other part of their length, so that they may be uniformly prepared pre-

liminarily without further considerations. For this reason when the wide-mesh part of the net or grating forms the base-net the intermediate rods for the construction of the narrow-mesh part are placed between the main rods in such a manner that they always run above or below the latter. If the narrow-mesh part forms the basis, the main rods cannot run through the wide-mesh part and stop at it alternately unless the rods are corrugated differently for the wide-mesh part; otherwise in consequence of the existing corrugations it would be impossible to form a regular connection in the wide-mesh part of the grating, which, however, is absolutely necessary for the formation of a net. Therefore only every fourth, eighth, &c., rod of the narrow-mesh net may be continued in the wide mesh.

Fig. 5 illustrates, at an enlarged scale relatively to Fig. 4, a part of grating made according to the first method. In order to render the construction clear, the rods of the wide-mesh part forming the basis in this case and which are continued in the narrow-mesh part are drawn thicker than the intermediate rods placed between them. The main rods running in one direction are marked A B C, and those crossing them in the other direction are marked I II III, &c. The intermediate rods are marked *a b c*, &c., and 1 2 3, &c., respectively. On the work-table, for instance, the outlines of the different parts of the grating are drawn, so that the operator may know not only how far he has to carry the intermediate rods, but also how far he has to carry the main rods.

The operation is then as follows: If, for instance, a wide-mesh part has to be produced, in which case the intermediate rods may be considered first as not present, the wires II and IV of the wires I and II III IV placed on the table are first lifted, and then the rod B, for instance, is placed in position. Then follows the lifting of the rods I III V, &c., and the insertion of the rod C. The operation is then repeated. At such parts of the drawings outlined on the table in which any pattern requires the insertion of intermediate rods the procedure is as follows: First, the corresponding intermediate rods 1 2 3 4, &c., are placed on the work-table. Should it happen that a main rod—for instance, B—is to be inserted, this is to be effected in the same manner as described before—*i. e.*, the wires II IV, &c., could be previously lifted. Before the insertion of the intermediate rod *b* which succeeds the main rod B the intermediate rods 1 2 3 4, &c., are lifted, but all simultaneously. Now follows the lifting of the main rods I III V, &c., then the insertion of rod C, then, again, the lifting of intermediate rods 1 2 3 4, &c., simultaneously, insertion of intermediate rod *c*, and thus the operation continues.

Fig. 6 illustrates still more clearly the procedure just described. In this case two intermediate rods instead of one rod, as before, are placed between two main rods, so that the width of mesh of the narrow-mesh part of the grating is x/3. The intermediate rods 1 2 3, &c., pass each time below the main rods A B, &c., and the intermediate rods *a b c d*, &c., pass each time over the main rods I II, &c. The main rods form an independent net among themselves. The intermediate rods do not form again a real net by themselves, but are situated loosely over each other. As before, they are held by the main or base net.

Fig. 7 shows a grating made according to the second method of wire corrugated according to Fig. 1, and any further description thereof appears to be superfluous. If the grating has been thus made, a frame 1, Fig. 4, may be placed thereon in order to more clearly define the parts of different widths or mesh, and such frame or border may be connected to the wire rods in the manner shown as an example in Fig. 8. Of course the illustration of thick and thin rods is chosen only for the clearer understanding of the mode of manufacture. The thickness of the wires is of no consequence. If preferred, the formation of the base net or grating may be suitably modified and made more complicated, and instead of forming the meshes square they may be polygonal.

What I claim, and desire to secure by Letters Patent of the United States, is—

In a wire grate a series of straight wires, each wire having corrugations, such corrugations being provided at equal distances, one half of the corrugations being bent in opposite direction to the remaining half, another series of straight wires, provided at right angles to the former wires, being corrugated in like manner and arranged so that the corrugations of the one series of wires with their concave sides lie within the corrugations of the other series of wires, both series forming a network, further series of wires being of smaller length each single wire of which being provided within the space of each two wires of the former two series, such wires having corrugations, the concave sides of which being in contact with the wires of the former two series, and metal strips covering the ends of the shorter wires.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

JAMES MELLES.

Witnesses:
CURT PFEIFFER,
ARTHUR FEUGER.