June 24, 1924.

1,498,969

J. G. HOMAN

MANUFACTURE OF RESISTANCE GRIDS

Filed Jan. 3, 1920

Fig. 1.

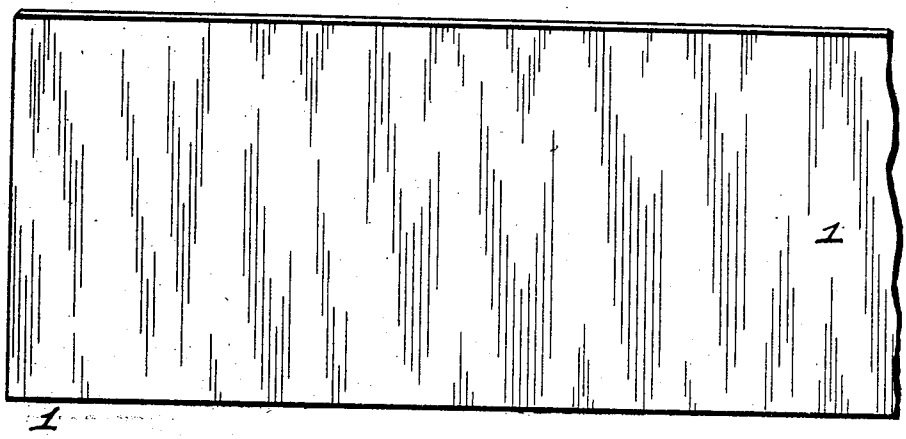
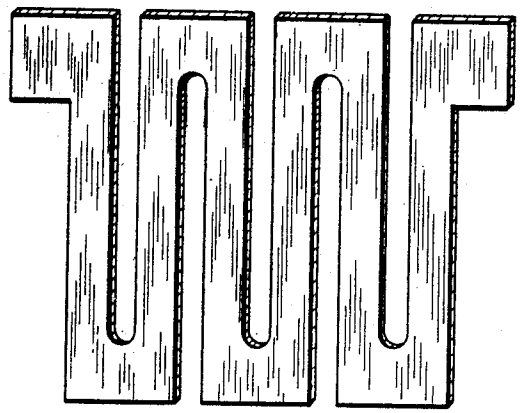


Fig. 2.



Witnesses:
Edwin Trust
J. M. Geoghegan.

Inventor:
John G. Homan,
By J. N. Cooke,
Attorney.

Patented June 24, 1924. 1,498,969

UNITED STATES PATENT OFFICE.

JOHN G. HOMAN, OF STEUBENVILLE, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WILLIAM H. KELLER, OF NORTON, VIRGINIA.

MANUFACTURE OF RESISTANCE GRIDS.

Application filed January 3, 1920. Serial No. 349,305.

To all whom it may concern:

Be it known that I, JOHN G. HOMAN, a citizen of the United States, and a resident of Steubenville, in the county of Jefferson and State of Ohio, have invented a new and useful Improvement in the Manufacture of Resistance Grids; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the manufacture of resistance grids and has special reference to punched sheet metal grids, such as are shown and described in U. S. Letters Patent granted to William Keller No. 1,184,706 dated May 23, 1916 and No. 1,240,457 dated September 18, 1917.

In the manufacture of resistance grids, prior to the Keller inventions, it was generally customary to use units or grids made of cast metal, and one of the main objections to the same was its tendency towards brittleness and crystallization. With some steels, as formerly worked under said inventions, such tendency to brittleness was present with the sheet or plate material, and obviously where shock and vibration is present with such material, this property of developing a crystal structure of considerable extent, is detrimental to the grid in the service to which it is subjected, and often results in premature failure or breakage.

The object of my invention is to manufacture material for these resistance grids which will overcome such objections to a great extent and in many instances eradicate them entirely by adopting a cheap, simple and efficient method of producing plates or sheets for the purpose of forming such punched, stamped or otherwise fabricated resistance grids.

To enable others skilled in the art to which my invention appertains to practice my improved method, I will describe the same more fully, referring to the accompanying sheet of drawings, in which:

Figure 1 shows a side elevation of a sheet or plate of metal, such as steel, which is to be treated under my improved method; and

Fig. 2 is a like view of the punched or stamped resistance grid formed therefrom.

Like symbols of reference herein indicate like parts in each of the figures of the drawings.

As illustrated in the drawings 1 represents an ordinary sheet or plate of finished steel, which is rolled or forged or otherwise produced in any suitable manner, and such sheet is heated until annealed, if necessary to a temperature of about 900 degrees C. After this is done such sheet is passed through rolls (not shown) to reduce the thickness of such sheet in such a manner as to exceed the elastic limit of the material and deform it, and this is done at a temperature lower than such annealing temperature and usually below the visible red. This sheet is then re-annealed, if desired, to facilitate mechanical working. The grid as shown in Fig. 2 may then be punched from the sheet 1.

The above result of deforming the sheet may be accomplished immediately after the treatment at the hot rolls when the sheet 1 was originally prepared, if such treatment is sufficient to prepare such sheet for subsequent cold working, and this working can be performed as part of the finishing process at the hot rolls, so that such cold working while accomplished on the hot rolls is done when the sheet has cooled substantially, and the better results are usually obtained when the sheet is below the visible or red temperature.

As set forth above, however, the sheet may be heated after leaving the hot rolls before the deformation.

It is not desired to limit my invention to any particular alloys of iron or steel, or shapes of material, as bars or wire may also be used, and it will further be obvious while two methods of preparing such sheets or plates for the manufacture of punched or stamped resistance grids are described, as part of my invention, it will be understood that I am not limited to either of such methods, as various other methods may be resorted to, without departing from the spirit of the invention or sacrificing any of its advantages.

It will thus be seen that my invention outlines a method or procedure adapted to present practice of sheet plate manufacture and which produces material for resistance grid manufacture which is highly resistant to the increase of size of its crystals upon repeated heatings to which grids are usually subjected.

What I claim as my invention and desire to secure by Letters Patent is:

1. The herein described method of pre-

paring sheets or plates for punched or stamped resistance grids, which consists in subjecting the sheet or plate to substantial cold deformation subsequent to the hot working process in forming the same.

2. The herein described method of preparing sheets or plates for punched or stamped resistance grids, which consists in subjecting such sheet or plate to relatively cold deformation exceeding the elastic limit of the material and subsequent to the hot working process in forming the same.

3. The herein described method of preparing sheets or plates for punched or stamped resistance grids, which consists in subjecting the sheet or plate to substantial cold deformation subsequent to the hot rolling process, said sheet or plate being subjected to reheating between the hot rolling process and the cold deformation.

4. The herein described method of preparing sheets or plates for punched or stamped resistance grids, which consists in subjecting such sheet or plate to relatively cold deformation exceeding the elastic limit of the material and subsequent to the hot rolling process in forming the same, said sheet or plate being subjected to reheating between the hot rolling process and the cold deformation.

5. A resistance grid comprising metal worked hot and subsequently subjected to cold deformation.

6. A resistance grid comprising metal worked hot, reheated and subjected to cold deformation.

7. A resistance grid punched from a sheet of metal worked hot and subsequently subjected to cold deformation.

8. A resistance grid punched from a sheet of metal, worked hot, reheated and subjected to cold deformation.

In testimony whereof, I, the said JOHN G. HOMAN, have hereunto set my hand.

JOHN G. HOMAN.

Witness:
J. M. GEOGHEGAN.