UNITED STATES PATENT OFFICE.

ISAAC HIRSCH, OF CHICAGO, ILLINOIS.

PROCESS OF MANUFACTURING CUTLERY.

SPECIFICATION forming part of Letters Patent No. 475,314, dated May 24, 1892.

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To all whom it may concern:

Be it known that I, ISAAC HIRSCH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in the Process of Manufacturing Cutlery, of which the following is a full, clear, and exact specification.

My invention relates to cutlery and the like and the process of manufacturing the same, and has for its object to provide a new process of manufacturing such articles and a new product or article so produced.

In the ordinary process of manufacturing cutlery it has been customary (and indeed with all devices hitherto used in the manufacture of cutlery it has been necessary) to apply successive blows to the metal thus to be worked up into cutlery. For example, in the manufacture of knives, where such knives are to be made each of a single piece of metal, it has been the practice to draw out or produce the blade by a series of sharp blows from a heavy hammer, often as many as thirty to fifty blows being required to reduce the steel to the flattened condition required. Sometimes this operation requires two or more heatings. The handle then is also dropped out in a press or die and successive heatings are required between the forming of the handle and the blade. In the first instance the metal should be in the bar or plate raised to the proper temperature. This in all the ordinary methods of manufacture is likely to result in the formation of a certain scale or surface discoloration or in the deterioration or alteration of the surface of the metal. This result to a greater or less degree follows each successive heating to which the metal is to be treated. In the succeeding process of hammering out or stamping out by dies or rolls into the desired form more or less of this imperfect or deteriorated surface formation is driven into the metal. It is practically impossible to remove all of such surface formation thoroughly when the object has been partially formed and then by successive processes is brought to the final form desired. Not only is this true, but by the successive heatings, which must necessarily vary somewhat in their intensity, owing to the changing form of the portion of metal thus to be successively heated or treated, the metal is itself in various ways deteriorated, so that the final result in the ordinary and familiar process is liable to be imperfect or deteriorated from two causes: first, from the driving in of surface imperfections, and, second, from successive and unequal heatings. The removal of the scale and surface imperfections is extremely difficult, if not impossible, as before stated, during the successive heating processes; but it can be accomplished when the metal is in its original state. I have therefore devised a process of manufacturing cutlery wherein I first subject the metal, in suitable bars, plates, rods, &c., of a given or uniform shape and size, to a furnace heat of a suitable nature and character, so that all of the rods and all portions of each rod may be raised to the proper and necessary temperature and all of them to the same temperature. These rods are then passed with considerable rapidity, so as not to give opportunity to cool, through a surface-cleaning device. They are then passed, before opportunity is had for cooling, into the dies or rolls, which are so organized as that each article of cutlery or the like is entirely produced in the form of a blank from such rod, bar, or plate, so as to require no further drawing or hammering. The successful operation of the process depends somewhat upon the immediate stamping or rolling of the article after the surface-cleaning, so that such stamping follows so quickly that any intermediate surface change is practically impossible. Should the surface or scale cleaning device be not employed, then the stamping or rolling should follow the heating in such close connection that no cooling or surface formation could take place between the furnace and the roll. The successful operation also includes the rapid working of the rolls, dies, or stamping device, and in the process I have found that it is even desirable to bring one end of the heated rod into the surface-cleaning or rolling apparatus, or both, and draw the metal from the fire or furnace by such process, the several elements of the device being thus placed in close proximity to each other. By this process I have produced articles of cutlery wherein the blanks coming from the rolls present perfectly smooth and almost finished

surfaces, while the internal structure is found to be singularly uniform throughout the entire article.

I claim—

1. The process of manufacturing cutlery, which consists in subjecting the metal bars, plates, or rods by a single heating to a uniform heat throughout and then before they have materially cooled stamping from such rods by rolls, dies, or stamps the articles of cutlery, each with a single operation, so as to avoid reheating.

2. The process of manufacturing articles of cutlery, which consists in heating the bars, plates, or rods by a single heating to a uniform heat throughout, then before they have materially cooled cleaning or scaling the surface of such metal plate, rod, or bar, and then before cooling stamping by a single operation of the rolls, dies, or stamps from such metal the finished blanks for the cutlery to avoid reheating and surface imperfections.

ISAAC HIRSCH.

Witnesses:
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