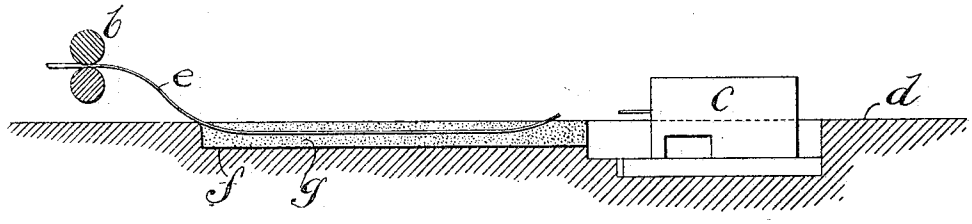
No. 809,934. PATENTED JAN. 16, 1906.

J. V. CULLINEY.

WORKING ROLLED METALS.

APPLICATION FILED JAN. 23, 1905.



Witnesses
Caleb J. Liber
D. McSweyn

John V. Culliney Inventor
by J. McSweyn
Attorney

UNITED STATES PATENT OFFICE.

JOHN V. CULLINEY, OF LEBANON, PENNSYLVANIA.

WORKING ROLLED METALS.

No. 809,934. Specification of Letters Patent. Patented Jan. 16, 1906.

Application filed January 23, 1905. Serial No. 242,215.

To all whom it may concern:

Be it known that I, JOHN V. CULLINEY, a citizen of the United States, residing in Lebanon, county of Lebanon, State of Pennsylvania, have invented certain new and useful Improvements in Working Rolled Metals, of which the following is a specification.

My invention relates to the making of various products from rolled metal by subjecting the same directly after passage through the rolls to a succeeding operation requiring a highly-heated condition of the bar—as, for instance, the making of rivets or other articles into which the bar is progressively worked by feeding the same to any suitable forging-machine, such as are commonly employed in the art.

The advantage of utilizing the heat remaining in the rolled bars after passage through the rolls in succeeding operations upon the bar has been recognized, and means have been devised for this purpose. Such means, however, so far as I am aware, have heretofore failed to so effectively conserve the heat remaining in rolled bars of small cross-section and considerable length as to enable the same to be progressively reworked into rivets or other product without providing either for the dividing of the bar into shorter lengths for separate succeeding workings or for additional heating means to enable it to be continuously worked up at a proper temperature into a practically uniform product. In order to effectively prevent such loss of heat in a long bar during the succeeding progressive operation referred to as will cause a material difference in the temperature at which the forward and rearward portions will be operated upon, I have found it essential that the surface of the heated bar should be protected by a closely-contacting material, whereby air is rigorously excluded from contact with said surface and heat dissipation is prevented.

To this end my invention consists in subjecting a bar taken directly from the rolls to further progressive working, while the trailing portion is protected by a closely-contacting comminuted or divided material adapted to prevent dissipation of heat therefrom as it progresses more or less slowly toward the separate mechanism by which it is being converted into the desired product, as fully described in connection with the accompanying drawing and specifically pointed out in the claims.

The drawing is a diagrammatic view illustrating the carrying into effect of my invention, *b* representing part of an ordinary train of rolls for converting blooms or billets into bar iron or steel, and *c* representing any suitable mechanism for converting said bar into a finished product—such, for instance, as rivets—by progressive action upon the forward end of the bar as it is fed along in any ordinary manner until the whole length of the bar has been operated upon by said mechanism. As shown, the latter is set somewhat below the floor-level *d*, though such arrangement is merely indicated as a preferable one in order to permit of lowering the bar *e* to or below the floor-level in passing it from the rolls *b* to said mechanism.

f represents a trough-like receptacle or depression extending between the rolls *b* and the mechanism *c* in the line of travel of the bar *e* to the latter. In this line of travel of the bar *e* I provide a pathway of suitable mobile material, indicated at *g* as loosely stored within the trough-like receptacle *f*, into which the bar *e* as it is carried away from the rolls is passed and in shifting contact with which it is drawn along as the bar is gradually fed to the machine *c* during its conversion into the finished product. I use the term "mobile" as indicating an essential characteristic of the material employed, the particles of which must be free to flow into close contact with the surface of the bar, while at the same time it must also be adapted to substantially prevent heat dissipation from the bar-surface so covered.

Various materials may obviously be used satisfactorily in carrying out my invention—as, for instance, slaked lime or charcoal or asbestos in comminuted form adapted to permit free movement of the trailing bar therethrough and to closely contact with the same as it moves along in said material, so that the whole bar-surface or the main portion thereof will be so protected thereby as to largely prevent the dissipation of heat.

The bar *e* as it comes hot from the rolls may be passed directly through the mobile material in its line of movement to the mechanism *c* or it may be lowered into the same as its forward end is carried to said mechanism and then trailed along therein as the latter is progressively converting it into the finished product.

In practice I have employed slaked lime as the covering medium with very satisfactory

results, the heat in an ordinary full-length bar as it comes from the rolls being so conserved during its trailing movement to a forging-machine as to enable the whole length of the bar to be continuously worked up into high-grade rivets at proper temperature and with great economy in labor, fuel, room, and equipment.

What I claim is—

1. The process of conserving the heat in metal bars while hot-working the same which consists in protecting the trailing portion thereof by means of a loose comminuted heat-conserving material.

2. The improvement in the process of hot-working rolled metals which consists in subjecting bars direct from the rolls to further progressive hot-working while trailing them through a comminuted heat-conserving material.

3. The improvement in the process of making rivets and the like from heated bars, which consists in passing the hot bars through a loose comminuted heat-conserving material while successively subjecting the forward portion thereof to the required forging treatment.

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

JOHN V. CULLINEY.

Witnesses:
DAVID M. FRY,
W. H. CASTNER.