

(No Model.)

G. KINSEY.
JAIL BAR.

No. 574,488.

Patented Jan. 5, 1897.

Fig. 1.

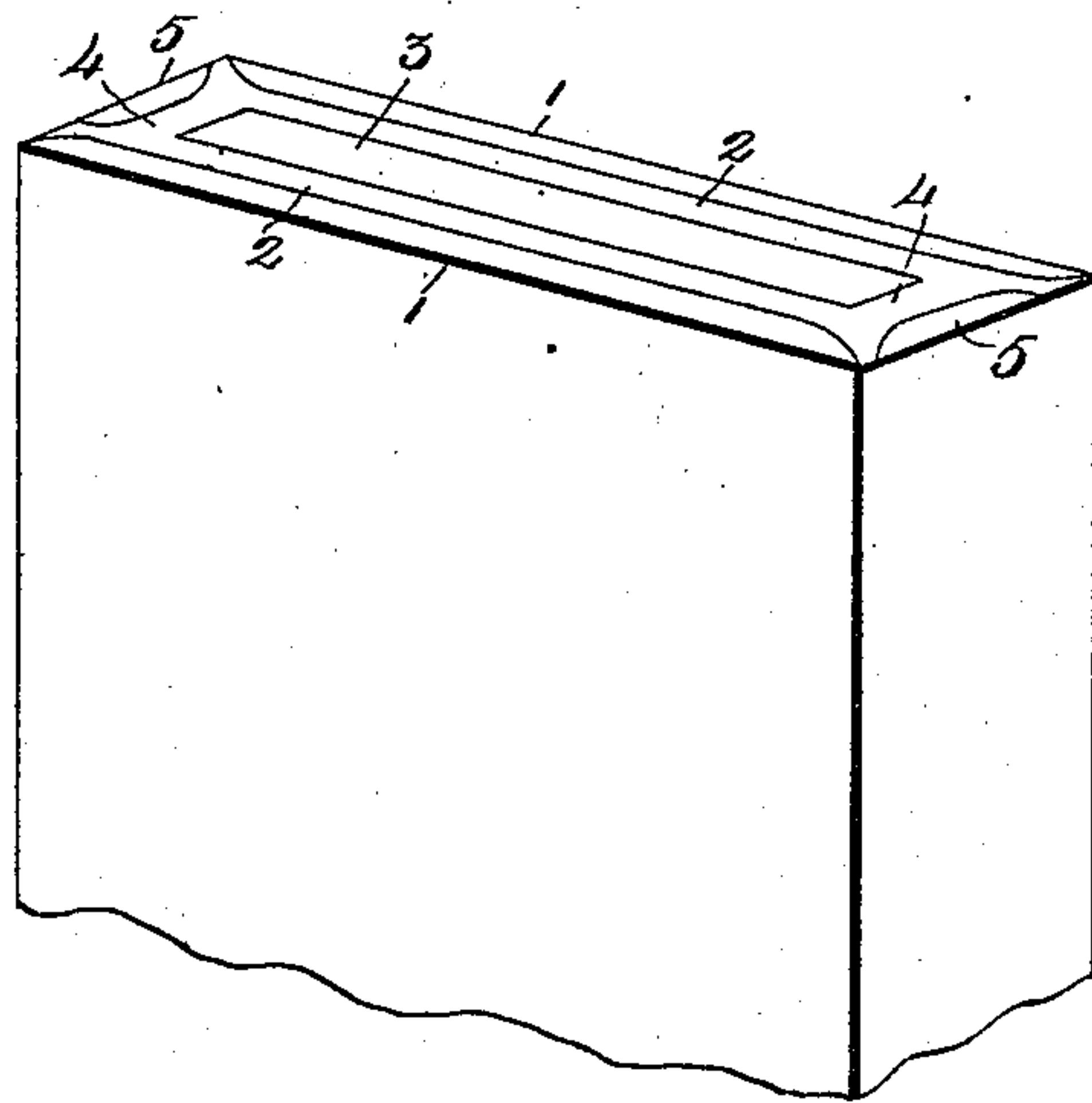


Fig. 2.

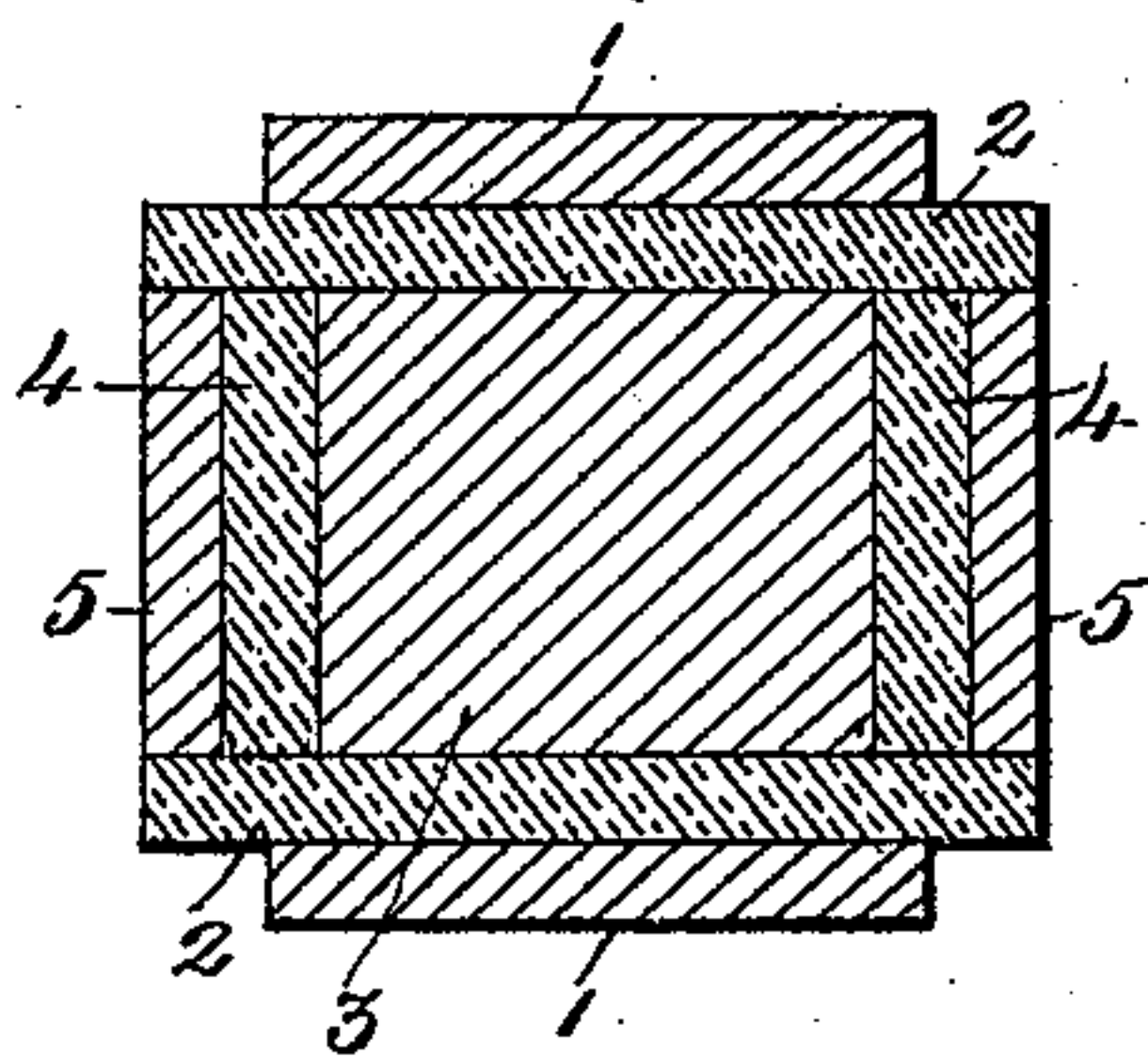
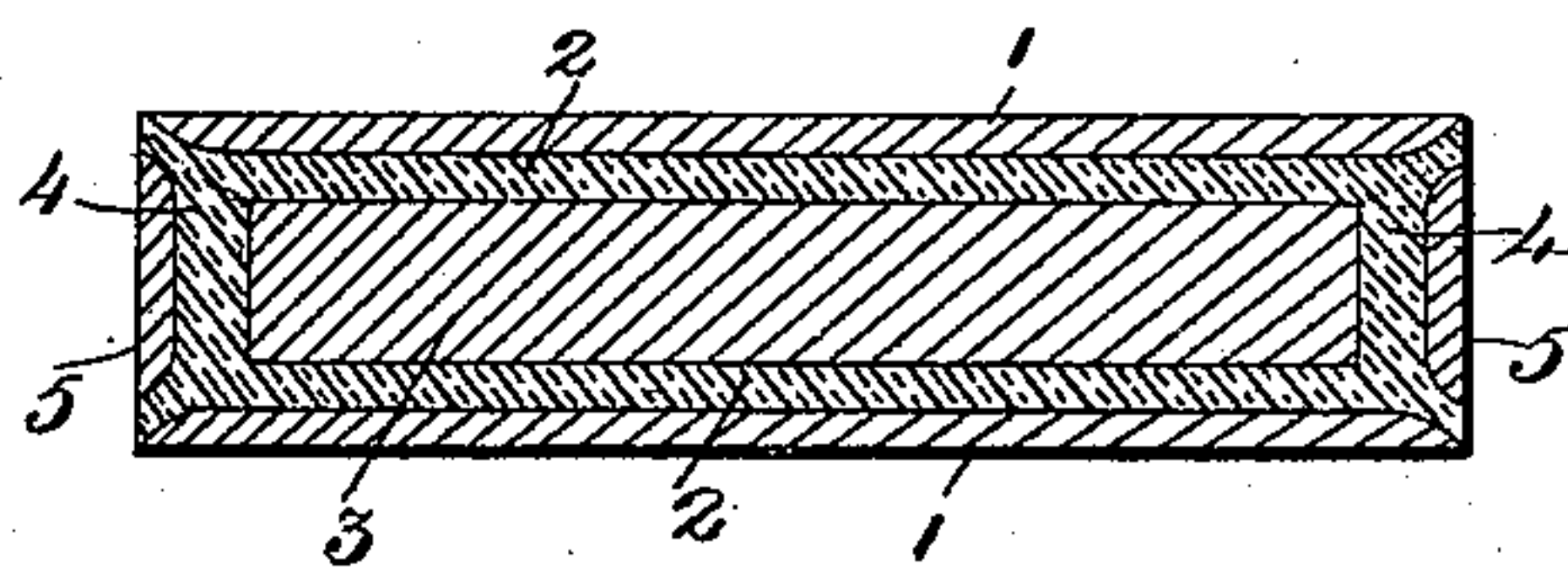


Fig. 3.



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GEORGE KINSEY, OF CINCINNATI, OHIO.

JAIL-BAR.

SPECIFICATION forming part of Letters Patent No. 574,488, dated January 5, 1897.

Application filed March 16, 1896. Serial No. 583,419. (No model.)

To all whom it may concern:

Be it known that I, GEORGE KINSEY, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Jail-Bars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in jail-bars; and it consists in the novel arrangement and combination of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a perspective view of a portion of my improved jail-bar. Fig. 2 is a transverse section of the original pile from which the bar is rolled, and Fig. 3 is a cross-section of the completed bar.

The object of my invention is to construct a jail-bar wherein the several layers of metal of which it is composed shall be so disposed as to offer a maximum amount of resistance to the attacks of jail-breakers and render futile any attempt of the latter to escape. That such attacks shall be entirely resisted it is necessary that the bar be composed of soft metal which shall offer successful resistance to heavy blows, strains of leverage, and impacts, and additionally of hard metal which shall successfully resist the action of cutting-tools or files at all points. Since the hard metal is generally and necessarily more or less brittle, it must be protected at its weakest points by the softer metal, which does not as a rule crack under a heavy blow, and since again soft metal can easily be filed, drilled, or cut away with properly-tempered tools it is necessary to so dispose the hard metal as to intercept the file or other cutting-tool before too much of the soft metal has been penetrated. Again, in the roll-welding of the several layers of hard and soft metal it is well known that the shrinkage inherent in the hard metal as a result of gradual cooling is partially overcome by being welded to the soft metal, and it therefore becomes necessary to so arrange and dispose the various layers in making up the original pile from which the bar is rolled that the completed bar shall present all the advantages which a bar

of maximum efficiency should possess. In a jail-bar which is substantially rectangular or oblong in cross-section it becomes necessary to bring the edges of the layers of hard metal disposed along the wide or flat side of the bar well up into the corners of the general cross-section of said bar, so that an immediate resistance shall be offered at this point to the action of any cutting-tool or file, this being the point of the bar that is usually first attacked by the jail-breaker, as it is the most convenient for filing or cutting. I am aware that attempts have been made to roll an original pile so as to bring the edges of the lateral layers of hard metal into the corners of the completed bar; but from the making up of the original pile this could never (so far as I am aware) be successfully accomplished, owing to the absence of the necessary front and rear layers of hard metal, by the yielding of which (when heated and under compression on the edges of the bar in connection with the resistance of the front and rear soft layers when under compression on the flat sides of the bar) the edges of the lateral layers referred to are properly directed into said corners. To successfully accomplish this important object, I have constructed a pile from which a bar having all the merits enumerated can be rolled out.

In detail the invention may be described as follows:

Referring to the drawings, 1 1 represent the outer lateral layers of soft steel or wrought-iron placed on the outside of the adjacent lateral longitudinal layers 2 2 of hard steel. Interposed between the hard layers 2 2 is a soft core 3 of the same material as the layers 1 1. On each side of the core and interposed between the layers 2 2 are the hard-steel layers 4 4, which, when the bar is rolled out, constitute the front and rear or terminal hard inner layers of the bar. In assembling the original pile (see Fig. 2) the layers 2 overlap both the core 3 and the outer edges of the layers 4, there being interposed between the overlapping ends or edges of the layers 2 the terminal layers 5 5 of soft metal, which, when the bar is completed, constitute the terminal or front and rear soft layers of the jail-bar.

It is a well-known fact in the operation and

practice of welding that the hard metal when heated to the welding-point is much softer than the softer metal heated to the same point, and the plates which are hard when cold as a matter of fact offer the least resistance by reason of their comparative softness during the welding operation, and the plates which are soft when cold offer the greater resistance during the welding operation. The original pile is first lightly hammered or rolled, so as to compress the same along the surfaces of the layers 1 1 and then on the surfaces 5 5. By this operation the pile becomes welded and slightly flattened, the terminal outer plates of soft metal 5 by their consequent comparative increased resistance gradually driving the edges of the plates 2 outwardly and into the corners of the bar, the plates 4 4 themselves becoming compressed and gradually becoming thicker and narrower under the rolling or hammering operation, the whole being thus solidly welded together. The bar is then rolled under strong pressure in fixed grooves confining the surfaces of the layers 5 5 and compressing the surfaces 1 1, the former being thoroughly welded to the overlapping edges of the plates 2 2 (which have been forced or wedged out toward the corners by the layers 5 5) and to the plates 4 4. Without the plates 4 4 being placed in connection with the plates 5 5 in the relation here indicated the edges of the plates 2 2 could not be so successfully directed into the corners of the finished bar, for the reason that said normally-hard layers 4 4 when heated almost to the melting-point (which is necessary to secure a perfect weld) become much softer than the layers 5 5, the said plates 4 4 consequently presenting a yielding cushion to the plates 5 5, (rendered harder in comparison with the plates 4 4 by the heating operation,) which, under compression of the hammer or rolls operating on them force the edges of the plates 2 2 apart after the manner of a wedge, thus bending them around the side edges of the plates 1 1, to which they also become thoroughly welded. The completed bar under the present construction is thus composed, as seen in Fig. 3, of front and rear plates 5 of soft metal, lateral plates 1 1 of soft metal, a core 3 of soft metal, and a tube of hard metal composed of the layers 2 2, parallel to the layers 1 1 of layers 4 4 at right angles thereto, leaving the terminal plates 5 interposed between those portions of the plates 2 which overlap the plates 4, and leaving said overlapping portions well directed or deflected into the corners of the bar.

The bar as thus completed resists attacks from every side by blows, strains of leverage, cutting or sawing tools, or drilling between the layers, since the outside protecting metal layers and core, being of comparatively soft metal or steel, cannot crack, and the intervening hard layers cannot be cut or drilled. Again, the edges of the hard plates or layers, being

directed well into the corners, offer from the outset the desired resistance to any attempt at filing the bars, and offering, moreover, a maximum thickness of metal to be filed through, since a maximum depth of hard metal exists or is accumulated along a diagonal line extending from any corner of the core to the adjacent corner of the outside of the bar; and the core 3 is entirely surrounded and protected from drills by a tubular stratum of hard tool-proof steel formed by the welding together of the four hard layers above described. The best results in the completed bar are attained by building up the original pile (see Fig. 2) so that the sides of the layers 1 1 shall be disposed within the limits of the planes of the outer faces of the layers 4 4.

Having described my invention, what I claim is—

1. In the manufacture of jail-bars, a suitable pile composed of outer layers of soft metal adapted to form the outer lateral layers of the bar, an inner layer of hard metal adjacent to each of said aforesaid layers of soft metal, terminal inner layers of hard metal interposed between the aforesaid layers of hard metal, the edges of the latter outwardly overlapping the terminal inner layers of hard metal, an inner core of soft metal confined between the several layers of hard metal, and terminal outer layers of soft metal, interposed between the overlapping edges of the hard inner layers which lie adjacent to the soft outer lateral layers, the several layers adapted to form a completed bar, substantially as described.

2. In the manufacture of jail-bars, a suitable pile composed of outer layers of soft metal adapted to form the outer lateral layers of the bar, an inner layer of hard metal adjacent to each of said aforesaid layers of soft metal, terminal inner layers of hard metal interposed between the aforesaid layers of hard metal, the edges of the latter outwardly overlapping the terminal inner layers of hard metal, an inner core of soft metal confined between the several layers of hard metal, and terminal outer layers of soft metal, interposed between the overlapping edges of the hard inner layers disposed adjacent to the soft outer lateral layers, the sides of the outer lateral layers of soft metal being disposed within the limits of the planes of the outer faces of the terminal inner layers of hard metal, the several layers being adapted to form a completed bar, substantially as described.

3. A jail-bar comprising two parallel hard-steel layers disposed along the sides of the bar, two parallel hard-steel layers disposed transversely to the aforesaid hard layers, along the front and rear walls of the bar and making with the first-named hard layers a tubular stratum of hard steel, a soft steel or equivalent core within the tubular hard steel stratum, soft steel or equivalent layers cov-

ering the several hard-steel layers and forming the side, and front and rear walls of the bar, the portions of the metal of the hard layers at or adjacent to their meeting edges, 5 being diagonally directed outwardly beyond said layers, and well into the corners of the completed bar thus formed, whereby a maximum depth of hard metal is formed along a line extending diagonally from the corner of

the core to the adjacent outer edge or corner 10 of the bar where the hard inner layers and soft outer layers meet, substantially as set forth.

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

GEORGE KINSEY.

Witnesses:

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