

(No Model.)

A. RODIG.

PROCESS OF MAKING PLATES, &c., OF COMBINED METALS.

No. 530,719.

Patented Dec. 11, 1894.

Fig. 1.

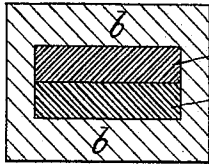


Fig. 4.

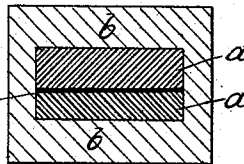


Fig. 5.

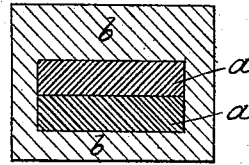


Fig. 2.

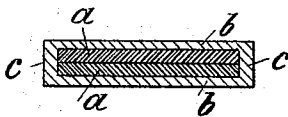


Fig. 6.

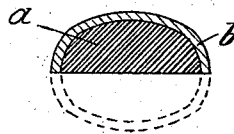


Fig. 7.

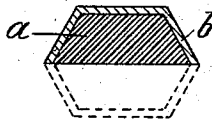


Fig. 8.

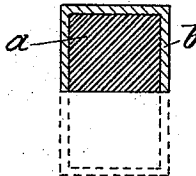


Fig. 9.

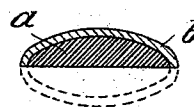
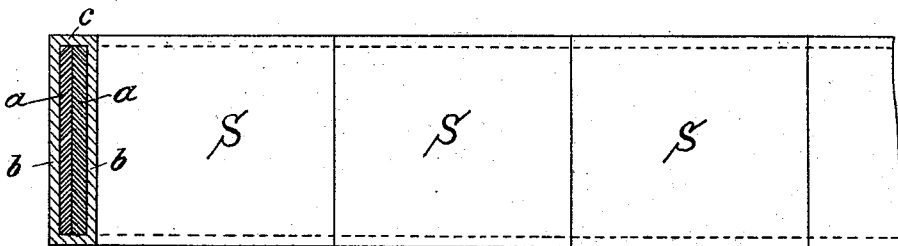


Fig. 3.



Witnesses:

Klas H. Pernstorf
J. J. Malle.

Inventor:

Adolf Rodig,
by *Alfred Faber*
Attorney.

UNITED STATES PATENT OFFICE.

ADOLF RODIG, OF SABAND, GERMANY.

PROCESS OF MAKING PLATES, &c., OF COMBINED METALS.

SPECIFICATION forming part of Letters Patent No. 530,719, dated December 11, 1894.

Application filed January 6, 1893. Renewed January 31, 1894. Serial No. 498,664. (No specimens.) Patented in England November 24, 1892, No. 21,467; in France November 24, 1892, No. 225,887; in Belgium November 24, 1892, No. 102,300; in Sweden November 24, 1892, No. 4,293; in Norway November 24, 1892, No. 2,970; in Italy December 21, 1892, XXVII, 33,023, LXV, 16; in Spain January 4, 1893, No. 13,995, and in Austria-Hungary June 30, 1893, No. 60,621 and No. 22,013.

To all whom it may concern:

Be it known that I, ADOLF RODIG, a subject of the Kingdom of Saxony, residing at Saband, in the Kingdom of Prussia, German Empire, have invented new and useful Improvements in Processes of Making Plates, &c., of Combined Metals, of which the following is a specification.

This invention has been patented in the following countries, namely: In Austria-Hungary, No. 60,621, tom. 43, fol. 23, 52, and No. 22,013, tom. XXVII, fol. 2,207, dated June 30, 1893; in France, No. 225,887, dated November 24, 1892; in Belgium, No. 102,300, dated November 24, 1892; in England, No. 21,467, dated November 24, 1892; in Italy, Reg. Gen., vol. XXVII, No. 33,023, Reg. Att., vol. LXV, No. 16, dated December 21, 1892; in Sweden, No. 4,293, dated November 24, 1892; in Norway, No. 2,970, dated November 24, 1892, and in Spain, No. 13,995, dated January 4, 1893.

My invention has reference to the manufacture of plates, bars, rods and the like of combined metals, in which the main part, or body, consists of iron, steel or other hard metal, while the outer portion or coating consists of copper or other soft material.

My invention has reference in particular to the manufacture of plates, &c., which are only partially coated with the softer metal,—and has for its object the simultaneous production of two such plates, &c., while operating upon the same as a unit.

To this end my present invention consists essentially in placing together the two plates, &c., with the flat surfaces which are to remain exposed in the finished article contiguous, then enveloping the same with a covering of the softer metal, and then reducing and separating;—all of which is hereinafter more fully pointed out,—reference being had to the accompanying drawings, in which—

Figure 1 represents a cross section of the combined metal blanks with the covering applied, and adapted for the manufacture of plates. Fig. 2 is a similar view showing the compound blank reduced or rolled out. Fig. 3 is a plan view of the reduced blank showing the same cut into slabs. Fig. 4 is a cross

section showing the core pieces of different thickness and an insulating material interposed. Fig. 5 is a cross section showing the covering heavier on one side than on the other. Figs. 6 to 9 are cross sections illustrating several different cross-sections, as for rods or bars.

Similar letters of reference designate corresponding parts throughout the several views of the drawings.

I will now proceed to describe the manner of carrying out my invention with respect to the manufacture of plate or sheet iron having a coating of copper on one side thereof.

Referring to Fig. 1, two iron plates or blanks *a a*, of the proper shape and dimensions are placed one upon the other. Then a shell or envelope of copper is cast or otherwise formed in the well known manner about the plates thus superimposed, the ends being either wholly or partly covered; or they may remain exposed. The compound blank thus obtained is submitted to shaping rolls in the usual manner. The combined effects of heat and pressure thoroughly unites the plates and shell without however causing the metal of the two iron plates to unite. The reduced blank (Figs. 2 and 3) is then cut into slabs, as shown in Fig. 3, in the manner usual in sheet metal or metal plate manufacture. The edges *c c* of the sheet of copper forming the coating are removed in the natural course of the operations in the subsequent rolling of the slabs, although, if desired, they may be removed by suitable shears, or other known means.

By the aforesaid process two plates are obtained in each case, each plate being covered with copper on one side only and capable of being worked subsequently as though it consisted entirely of one metal.

To prevent any possible difficulty in separating the two plates *a a* constituting the combined blank, they may be separated by interposing any suitable insulating material *d* (Fig. 4) such for instance as paper, graphite or asbestos.

While in Fig. 1, I have shown the two pieces *a a* of equal thickness, it is evident that as

shown in Fig. 4, they may be of unequal thickness, with the result that the final product consists of sheets or plates of different thicknesses. Again, as shown in Fig. 5, the coating or shell may be cast thicker on one side than the other with the result that the final product consists of sheets or plates presenting coatings of different thicknesses.

The shape of the blanks *a a* is varied according to the desired shape of the finished product. In the manufacture of rods of semi-circular or semi-elliptic cross section, where it is desired to coat the curved sides only with the softer metal, the blanks formed to the desired cross section are placed back to back, that is to say, with their flat bases contiguous, and the shell of soft metal is cast about the same as before. The blank thus prepared is rolled in the usual way and finally the shell or coating is split longitudinally along the line of juncture of the two inner parts to separate the two rods or bars.

In Figs. 6, 7, 8 and 9, I have illustrated bars of combined metal, of different cross sections, each of which bars or rods is coated on all sides or faces but the one which formed the contact surface.

I do not wish to restrict myself to the use of iron as a core or body, and copper as a coating metal, since it is evident that other metals could be used, the only essential part being that the coating metal should be the softer of the two.

I do not herein claim broadly the manufacture of either wholly or partially coated bimetallic articles by applying to a hard core a coating of soft metal, nor the particular means of applying such coating, or of retaining the same in position on such core, hereby particularly reserving such claims for my pending applications in which the same are set forth, namely: Serial No. 441,929, filed August 2, 1892, and Serial No. 486,278, filed September 23, 1893.

What I claim as new, and desire to secure by Letters Patent, is—

1. The herein described method for manu-

facturing plates, bars, rods and the like, of combined metals, consisting in placing the two metal blanks back to back, forming about the combined blanks a shell of a relatively softer metal, and then reducing and separating the compound blank thus formed, substantially as and for the purpose set forth.

2. The herein described method for manufacturing plates, bars, rods and the like of combined metals, consisting in placing the two metal blanks back to back with the interposition of an insulating material, forming about the combined blank a shell of the relatively softer metal, then shaping and separating the compound blank thus formed, substantially as described.

3. A method for the manufacture of sheets, plates, bars and the like of combined metals, consisting in placing two metal blanks together, covering the same with the comparatively softer metal, and subsequently dividing the same, substantially as and for the purpose set forth.

4. The herein described method of manufacturing plates, bars, rods and the like, of combined metals, which consists in reducing and separating a compound blank composed of two metal blanks placed back to back and having an exterior shell of a relatively softer material, substantially as set forth.

5. The herein described method of manufacturing plates, bars, rods and the like, of combined metals, which consists in reducing and separating a compound blank composed of two metal blanks placed back to back and having an exterior shell of a relatively softer material and an interposed layer of insulating material between the metal blanks, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ADOLF RODIG.

Witnesses:

HERMANN SCHÖLZEL,
B. EMERY.