C. HELLMICH.

COVERING METALS.

APPLICATION FILED MAR. 10, 1906.

910,814. Patented Jan. 26, 1909.

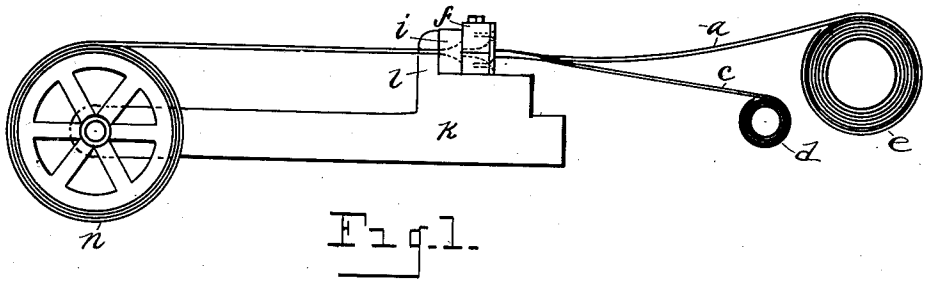


Fig. 1.

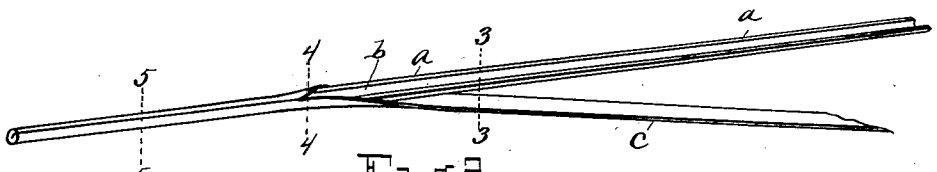


Fig. 2.

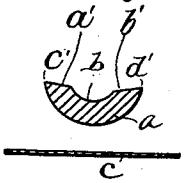


Fig. 3.

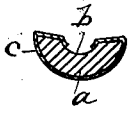


Fig. 4.

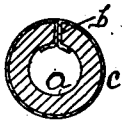


Fig. 10.

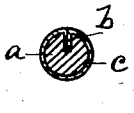


Fig. 5.

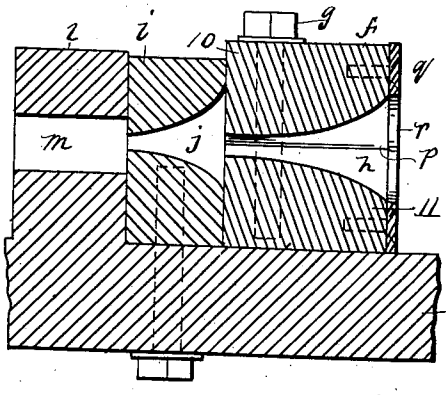


Fig. 6.

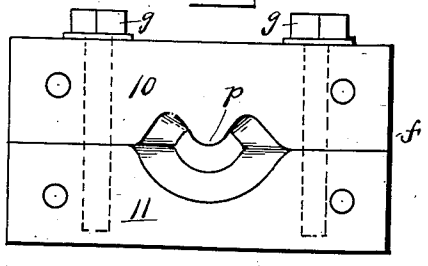


Fig. 7.

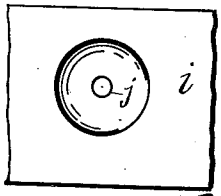


Fig. 9.

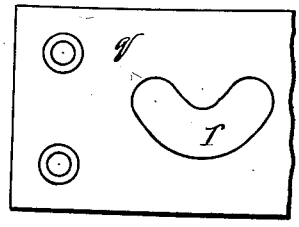


Fig. 8.

Witnesses.
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By Newell S. Wright
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UNITED STATES PATENT OFFICE.

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COVERING METALS.

No. 910,814. Specification of Letters Patent. Patented Jan. 26, 1909.

Application filed March 10, 1906. Serial No. 305,265.

To all whom it may concern:

Be it known that I, CARL HELLMICH, a subject of the Emperor of Germany, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Covering Metals, of which the following is a specification, reference being had to the accompanying drawings, which form a part of this specification.

The invention has reference in general to compound metallic bodies consisting primarily of an inner section or core and a sheathing enveloping the core, and preferably though not necessarily of a metal different from that of the core, an example being the brass or copper covered rod or bar used in the manufacture of various useful and ornamental articles.

Sheathed bodies of the character described are very desirable on account of their being rustless and by reason of the superior finish and ornamental appearance the sheathing or covering provides, and are extensively used in place of solid non-oxidizable metals by reason of the relatively small cost of production, the core forming the major portion of the body being of an inexpensive metal, as iron. The difficulty that has existed in the past, however, has been the production of a sheathed body in which the sheathing or covering would not crack or open at the joint during the bending of the body into the desired article of manufacture, and a further drawback has been the conspicuousness of the seam or joint.

The present invention resides in a method of forming compound articles,—particularly covered rods or bars,—in which the seam or joint is inconspicuous and is prevented absolutely from opening during the operation of bending.

In the drawings,—Figure 1 is a diagrammatic view illustrating the steps of my method; Fig. 2 is a perspective view, showing details of the process for forming the compound body; Figs. 3, 4 and 5 are sectional views taken on lines 3—3, 4—4 and 5—5 of Fig. 2; Fig. 6 is a vertical central section through the mechanism employed in carrying out the method; Fig. 7 is a front view of one of the dies; Fig. 8 is a front elevation of the positioning or guide plate; Fig. 9 is a front elevation of the drawing die; and Fig. 10 is a sectional view, illustrating a modified form of compound body.

In general, the method may be said to consist in applying a sheet metal strip or sheathing about the exterior of a channeled core or blank and over the outer side edges of the walls, in then folding the blank or core upon itself longitudinally, thereby abutting the marginal portions of the sheathing and clamping the same between the core sides, and finally reducing the covered core for the purpose of increasing the clamping effect exerted by the blank upon the sheathing to prevent the opening of the seam or joint upon subsequent bending of the article.

In carrying out the method commercially, I preferably first form the blank or core and so fashion the same that it will be capable of exerting a maximum clamping effect upon the sheathing when reduced, and this without cutting the abutting portions of the covering. The core I make preferably of soft iron, and in the form shown in Figs. 3 and 4, which I find is the best shape to produce the results desired. It will be seen that the blank, indicated by the reference-letter *a*, is practically of half-round metal, channeled longitudinally as at *b*, having the tops of its side portions or walls flat, as indicated at *a'* *b'*, and each top provided with sharp marginal edges *c' d'*. Further, the core is of such substance or thickness that it will be capable of being folded longitudinally in the manner described, and subsequently reduced without being crushed.

The strip of covering material or sheathing *c* is applied by suitable mechanism hereinafter described to the exterior of the blank, and the strip is preferably of such width that it will extend not only over the flat tops of the blank sides but partially within the channel *b*. Subsequently, the blank is folded longitudinally upon it, the flat top portions meeting and clamping therebetween the marginal portions of the covering. The inner marginal edges *d'* serve to first grip during the folding movement the sheathing sides, and prevent the same from slipping until the operation of folding is completed. The sharp outer edges *c'* are then in close proximity, and serve to form a joint of minimum size. Finally, the covered blank passes through suitable mechanism to reduce the core,—preferably a drawing die,—which operation forces the flat top portions against each other, thus tightly clamping the marginal portions of the sheathing to such an ex-

tent that subsequent opening of the joint by bending is absolutely prevented. Further, the flat meeting portions of the blank, in addition to producing the maximum clamping effect desired, prevent the cutting of the sheathing during the reducing of the core.

It will be obvious from the steps of the method described that the reduction of the core, in addition to increasing the clamping effect of the latter upon the sheathing, also serves to minimize the size of the joint, the more tightly the meeting portions of the core are brought together the less conspicuous the seam. After the covered body has been reduced in the manner described, it is in readiness to be bent into any desired form without opening at the joint. If, however, it is desired that the joint or seam shall entirely disappear so as to give a seamless appearance to the body, it may be again reduced, which will produce the desired result.

Any suitable mechanism may be used to carry out the method described, and for the purpose of illustration I have shown a preferred form. The core and the covering or sheathing are arranged preferably upon suitable reels, as *d* and *e*, in such relation to one another that as the material passes to the dies the sheathing may be properly applied over the core.

f represents the form of die employed for folding the sheathing over the core, consisting of upper and lower die plates, indicated by the numerals 10 and 11, suitably secured together by bolts *g*. The die plates are formed respectively with channels forming a passage, indicated at *h*, through which the core and covering plate or strip are drawn, the arrangement of the parts being such that as the core and covering pass through the die the marginal edges of the latter will be bent over the edges of the core and between the meeting faces of the side tops, as illustrated, and the core folded on its longitudinal axis.

To produce the additional clamping required to prevent the seam opening, the core is passed through a drawing or narrowing die *i* provided with an orifice *j*. The dies may be mounted upon a suitable bed, as *k*, which in turn is provided with a flange *l* against which the drawing die *i* engages, said flange being provided with an orifice *m* through which the completed work is drawn. Afterwards, the article may be coiled upon a suitable drum or reel indicated at *n*. The die *f* is provided with a positioning or guide plate, indicated at *q*, constructed with a suitably-shaped channel *r* which serves to make the initial fold of the marginal edges of the securing strip in starting the strip or cover upon its passage through the dies. The positioning member also serves to keep the work from vibrating sidewise, and hold the parts so that the core will be exactly in the center of the covering strip.

It will be readily understood from the foregoing description of the method that the finished article need not necessarily be a solid rod or bar, as the hollow or tubular rod indicated in Fig. 10 can as well be produced. It is merely essential that the core or blank should be of sufficient substance to permit of its being finally reduced in diameter to obtain the additional clamping effect without its being crushed. It is also to be understood that the form of blank described is the one I preferably employ, but that it is susceptible of various modifications without in any manner departing from the spirit of my invention. For instance, the inner edges, as *d'*, may be dispensed with, but I prefer to use the same in order to obtain the best results. Also, the sheathing need not necessarily extend entirely over the top portions of the blank or into the channel, but this is preferable as a better gripping of the sheathing by the blank or core is obtained. Attention is further directed to the fact that the sheathing or covering, while in most instances of a metal different from the core, is not necessarily so, it being immaterial from the standpoint of the invention as to what metal the blank is sheathed with.

What I claim as my invention is,—

1. The herein-described method of making compound metal bodies, consisting in forming a channeled blank, in applying a metal covering strip about the exterior of the blank and over the blank edges, folding the blank along its longitudinal axis and abutting and clamping the marginal portions of the covering strip, and finally reducing the covered blank by pressure.

2. The herein-described method of making compound metal bodies, consisting in forming a blank, in applying a metal covering strip about the exterior of the blank and over the blank edges, folding the blank along its longitudinal axis and abutting and clamping the marginal portions of the covering strip, and finally reducing the covered blank by pressure.

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

CARL HELLMICH.

Witnesses:
N. S. WRIGHT,
E. M. SPIELBURG.