G. A. PARENT & E. & L. ARTUSSE.

PROCESS OF MANUFACTURE OF ROLLED HINGES IN WHICH THE KNUCKLES ARE ROLLED WITH THEIR LEAVES.

APPLICATION FILED DEC. 28, 1909.

1,011,998. Patented Dec. 19, 1911.

FIG_3_

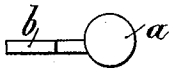


FIG_5_

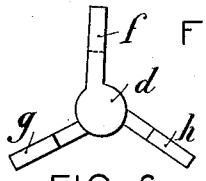


FIG_4_

FIG_6_

FIG_7_

FIG_1_

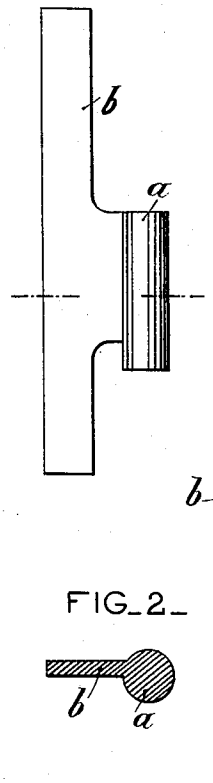
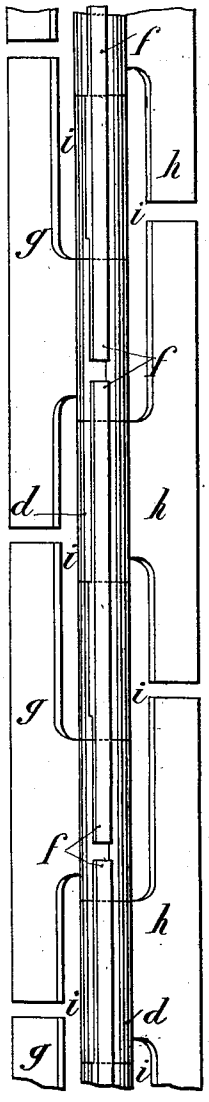
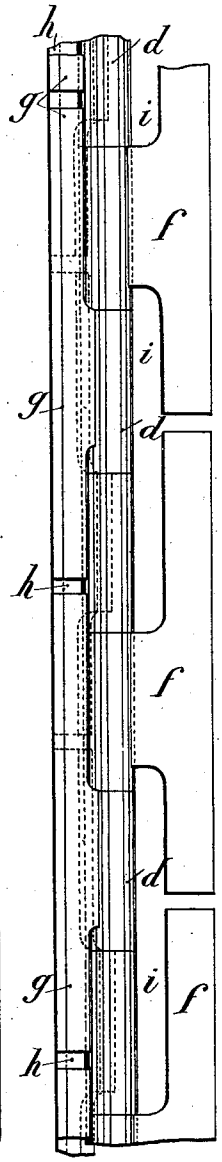


FIG_2_





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UNITED STATES PATENT OFFICE.

GEORGES ADOLPHE PARENT, OF PARIS, AND EMILE ARTUSSE AND LUCIEN ARTUSSE, OF FORGES-DE-SEDAN, SEDAN, FRANCE.

PROCESS OF MANUFACTURE OF ROLLED HINGES IN WHICH THE KNUCKLES ARE ROLLED WITH THEIR LEAVES.

1,011,998. Specification of Letters Patent. **Patented Dec. 19, 1911.**

Application filed December 28, 1909. Serial No. 535,304.

To all whom it may concern:

Be it known that we, GEORGES ADOLPHE PARENT, residing at 52 Rue St. Georges, Paris, France, and EMILE ARTUSSE and LUCIEN ARTUSSE, residing at Forges-de-Sedan, Sedan, Ardennes, France, citizens of France, have invented new and useful Improvements in Processes of Manufacture of Rolled Hinges in which the Knuckles are Rolled with Their Leaves, of which the following is a specification.

Rolled hinges in which the knuckles are rolled with their leaves are much stronger than hinges in which the knuckles are formed by bending the leaves of the hinge back on to themselves, but they have the disadvantage, when manufactured in the usual way, of being much more expensive to make, owing to the very great waste in their manufacture.

Not only is the waste, that is, the metal which is cut away from the knuckle part of the bar blank, taken from the thickest part of the latter, but also, since the knuckle is very short relatively to the length of the leaf or strap of the hinge, it will be easily understood that this thick waste is of great weight compared to the total weight of the hinge. As a general rule this waste amounts to about 50 per cent. of the weight of the blank, and as the value of the waste metal is less than one half of that of the metal in the blank, it is easy to realize that the cost of manufacture of hinges made in this manner must be very high owing to this considerable waste.

The present invention has now for its object to reduce the cost of manufacture of such hinges by reducing the aforesaid waste very considerably and it consists in providing an improved form of blank which can be cut up into knuckle hinge parts with a waste of not more than about 14 per cent. without increasing otherwise the cost of manufacture. Thus the total cost of manufacture of such hinges is very considerably reduced.

According to this invention, instead of the usual form of bar blank composed of a cylindrical portion and a flat portion, an improved form of bar blank is employed, composed in cross section of a central cylindrical portion having three flat portions extending therefrom in star-fashion. This cross section presents no special difficulties in rolling.

This invention will now be described more fully with reference to an example thereof illustrated in the accompanying drawings in which:

Figure 1 is an elevation, and Fig. 2 is a cross section of a knuckle hinge part cut from a bar blank; Fig. 3 is an end view, and Fig. 4 is a plan of a usual form of blank as employed hitherto; Fig. 5 is an end view of one form of the improved three-branched blank. Fig. 6 is a plan, and Fig. 7 is a side view of the improved blank shown in Fig. 5. The last two figures illustrate the manner of cutting the blank and the distribution of the waste resulting therefrom.

In the manufacture of knuckle hinge parts of the kind shown in Fig. 1, comprising a knuckle *a* and a leaf or flat portion *b*, by cutting up a bar blank, the blank employed heretofore for that purpose has had the form shown in end view in Fig. 3 consisting of a continuous cylindrical portion *a* corresponding to the knuckles, and a continuous flat branch *b* corresponding to the leaves of the hinge parts.

Since the hinge knuckle *a* as above stated, has only about one third the length of the hinge leaf, the waste produced by cutting up a blank of the kind shown in Fig. 3 is very considerable, as indicated at *c* in Fig. 4.

Now according to the present invention the improved form of blank shown in end view in Fig. 5 is employed, which has a continuous cylindrical central portion *d* corresponding to the hinge knuckles and three continuous flat branches *f*, *g*, *h*, corresponding to the leaves of the hinge parts, radiating in star-fashion from the central cylindrical portion *d*. This improved blank is cut up as indicated in Figs. 6 and 7, the central cylindrical portion *d* being cut so as to form a continuous series of knuckles, and each of its flat branches is cut into a continuous series of leaves in such a manner that each knuckle has its leaf formed from one of the three branches *f*, *g*, *h*. This is rendered possible by the circumstance that each knuckle is about one-third of the length of its leaf. There is thus no waste in cutting the knuckles, and the only waste beyond that produced in cutting away the flat portions of the blank for the purpose of off-

setting each knuckle from its leaf as indicated at *i* in Figs. 6 and 7, is the waste incurred in cutting the leaves to the required ordinary size.

The cutting out of the hinge parts is effected in the usual way by means of a punching machine, the three flat branches of the blank being first operated on in succession. Then the central cylindrical portion is cut. Each hinge part is then finished in the usual way.

Having now described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A process of manufacture of rolled hinges in which the knuckle is rolled with its leaf, said knuckle having about one-third the length of the leaf and being placed between the ends of the hinge, said process consisting in employing a blank having three flat branches radiating from the cylindrical knuckle portion and in cutting up the blank so that the knuckles of the successive hinge parts touch one another and that each leaf is in direct alinement with every third leaf of the hinges as cut from the blank substantially as described and for the purpose set forth.

2. A process of manufacture of rolled hinges in which the knuckle is rolled with its leaf, said knuckle having one-third the length of the leaf and being arranged between the ends of the hinge in such a manner that the space free at each side of the knuckle is longer at one side than the other, said process consisting in employing a blank having three flat branches radiating from the cylindrical knuckle-portion and in cutting up the blank so that the knuckles of the successive hinge parts touch one another and that each leaf is in direct alinement with every third leaf of the hinges as cut from the blank substantially as described and for the purpose set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEORGES ADOLPHE PARENT.
EMILE ARTUSSE.
LUCIEN ARTUSSE.

Witnesses to the said Georges Adolphe Parent:

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