

F. L. MORSE.
 PROCESS OF MANUFACTURING PLATE LINKS FOR DRIVE CHAINS.
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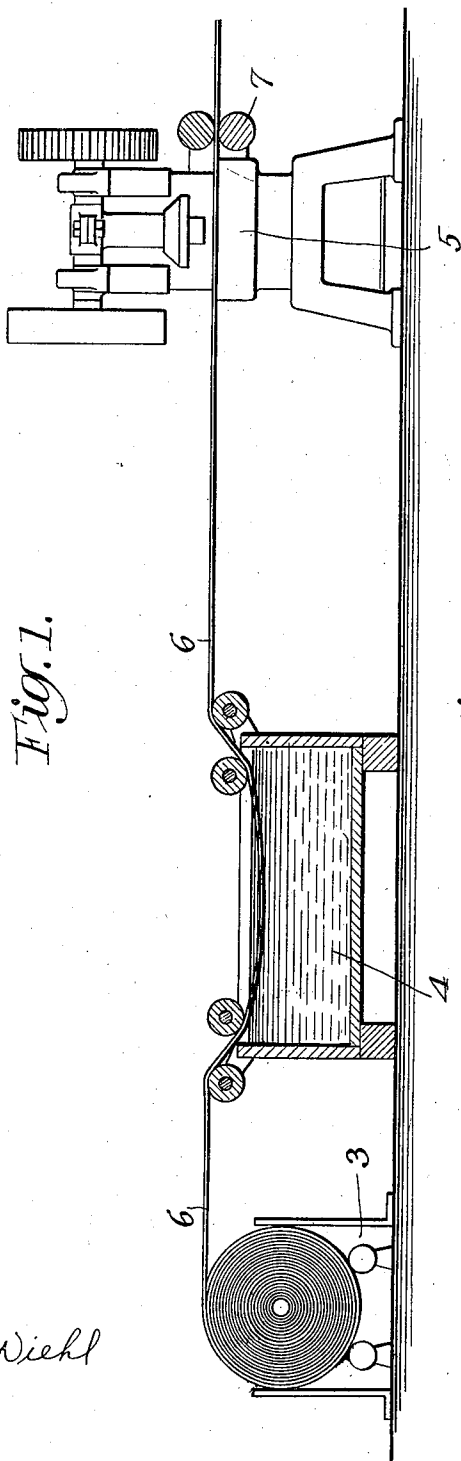
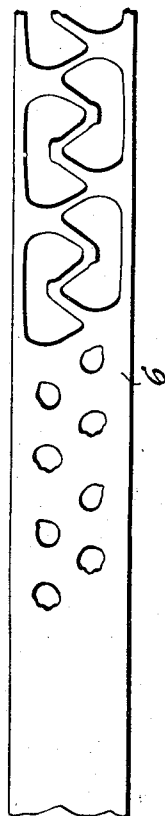


Fig. 1.

Fig. 2.



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PROCESS OF MANUFACTURING PLATE-LINKS FOR DRIVE-CHAINS.

1,127,072.

Specification of Letters Patent.

Patented Feb. 2, 1915.

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To all whom it may concern:

Be it known that I, FRANK L. MORSE, a citizen of the United States, residing at Ithaca, in the county of Tompkins and State of New York, have invented a certain new and useful Improvement in the Process of Manufacturing Plate-Links for Drive-Chains, of which improvement the following is a specification.

This invention relates to the manufacture of links for drive chains of that type in which the links are formed of plates stamped or punched from sheet metal. In this type of chain the link plates are connected by hardened steel pintles extending through and bearing within openings punched in said plates, and the edges of the link plates engage the teeth of the sprocket wheels in driving. It is therefore important that the metal at the outside edge of the link plates where the same bear against the sprocket teeth and the edge at the pintle openings which is engaged by the pintles should be hardened in order to increase the wearing qualities and prolong the useful life of the chain. It is desirable, however, that the side surfaces of the link plates should not be hardened as this tends to make the plates brittle, and more difficult to work, and the object of my invention is to provide an improved process of manufacture, whereby the hardening is localized or limited to the desired points, such process comprising coating both sides of the metal sheet or strip with a protective covering before the link plates are stamped or punched out, then stamping and punching said plates, thus leaving the raw metal edges and pintle holes exposed, and then case-hardening the link plates, such hardening process being thus limited to the exposed edge in the pintle holes and to outside edges of said link plates since the sides of said link plates are protected by the coating, and will not be affected by the carbonizing action of the compound.

The preferred method of applying the protecting coating to both sides of the metal sheets or strips is to immerse the same in the liquid of an electro-plating device in which the metal coating, such as copper, is deposited upon the strip or plate as it passes through the liquid. By using a tank of sufficient length, the strip of metal will be sufficiently coated with copper during its

regular rate of movement to the stamping or punching machine, and no time will be lost in applying the protective coating. The link plates are then punched out in the usual way and embedded in the ordinary carbonizing material of the case-hardening device in which the copper plating protects the sides of the links from being affected while the exposed surface of the freshly punched edges of metal in the pintle openings and at the outside edge of said link plates is readily acted upon by the carbonizing material and the hardening occurs upon these exposed surfaces only.

In the accompanying drawing: Figure 1 is a view showing an apparatus for plating and punching the metal strip comprising the link stock; and Fig. 2, a plan of a piece of the metal strip showing some of the links punched out.

According to the construction shown in Fig. 1, the link stock or strip, 6, is formed in a coil supported on a frame or casing, 3, from which it is adapted to unroll and pass through a suitable electro-plating bath in a tank, 4, where it receives the desired coating of copper during its movement at the usual rate to the punching machine, 5, where it passes between the feed rollers, 7. The punching machine operates in the usual way to first punch the holes for the pintles of the chain links and then to punch out the link plates themselves, as indicated in Fig. 2. This leaves exposed the freshly formed surfaces of the edges of the link plates and the pintle holes, while the side surfaces of the link plates are protected by the copper coating, and the plates are then embedded in the carbonizing material of the case-hardening device where these exposed surfaces are readily hardened, as above described.

It will be seen that by means of my improved process, the link plates may be readily and cheaply manufactured with hardened surfaces at the pintle holes and edges of the links where these parts are subject to great wear during the operation of the chain.

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

1. The method of manufacturing link plates for drive chains, which consists in coating a sheet metal strip with a thin pro-

protective covering, then punching out the link plates from said sheet, thus leaving the edges of the link plates exposed, and then case-hardening the links.

- 5 2. The method of manufacturing link plates for drive chains, which consists in coating both sides of a sheet metal strip with a thin protective covering, then punching out the link plates from said sheet and
10 punching the pintle holes therein, thus leaving the edges of the plates and pintle holes exposed, and then embedding said link plates in case-hardening material and carbonizing the exposed surfaces in the pintle
15 holes and at the edge of the plates.

3. The method of manufacturing link plates for drive chains, which consists in electro-plating a blank sheet metal strip, then punching out the link plates from said

sheet, thus leaving the edges of the link plates exposed, and then embedding said link plates in case-hardening material and carbonizing the exposed edges of the metal.

4. The method of manufacturing link plates for drive chains which consists in
25 copper plating a blank sheet metal strip, then punching out the link plates from said sheet leaving the edges of the pintle holes and the outer edge of the link plates exposed, and then embedding said link plates
30 in case-hardening material and carbonizing said exposed edges of the same.

In testimony whereof I have hereunto set my hand.

FRANK L. MORSE.

Witnesses:

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A. S. FOWLER.