G. C. McGLASHAN & D. WILLIAMS.

MANUFACTURE OF CHAINS.

APPLICATION FILED SEPT. 19, 1911.

1,050,370. Patented Jan. 14, 1913.

*Fig: 1.*

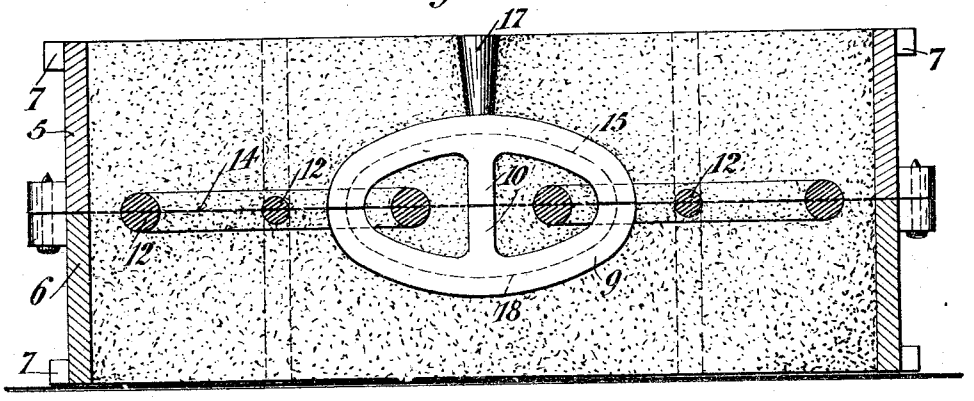



*Fig: 2.*

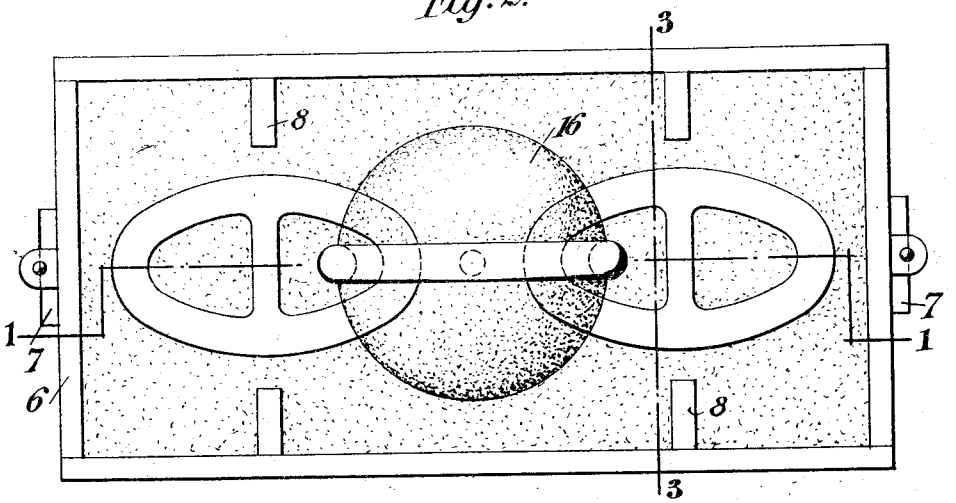



*Fig: 3.*

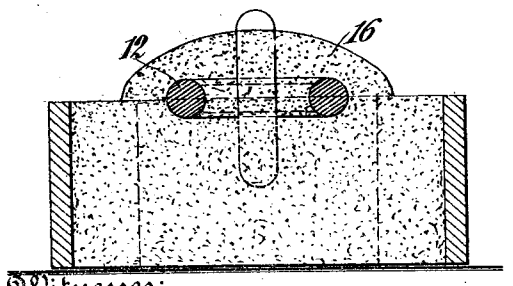
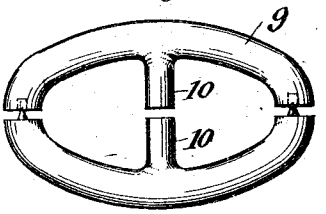



*Fig: 4.*




Witnesses:
Cornelius Hoving
M. Kilpatrick

Inventor
G. C. McGlashan and D. Williams
By their Attorney
H. H. Bennigan

# UNITED STATES PATENT OFFICE.

GEORGE COTTON McGLASHAN, OF DUNEDIN, AND DAVID WILLIAMS, OF GREYMOUTH, NEW ZEALAND.

## MANUFACTURE OF CHAINS.

Specification of Letters Patent. **Patented Jan. 14, 1913.**

**1,050,370.**

Application filed September 19, 1911. Serial No. 650,291.

*To all whom it may concern:*

Be it known that we GEORGE COTTON McGLASHAN and DAVID WILLIAMS, subjects of the King of Great Britain, residing at Dunedin and Greymouth, New Zealand, respectively, have invented new and useful Improvements in the Manufacture of Chains; and we do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to that process of manufacturing cast metallic chains of all kinds without special apparatus in which separate chain links are joined by casting with and through them intermediate links, the matrices of which are formed by sectional patterns. This process has hitherto been conducted as follows: The chain molds have been molded by a modeling plate in an upper and lower box, the cores required for completing the chain molds being molded in a core box with the aid of sectional half link patterns. The cores are then placed in the molds by means of a centering plate and the liquid metal poured into the mold through channels.

The present invention relates particularly to the manufacture of chains having stud bars across the links, and consists in the improved process hereinafter described.

The process will be evident from the following description taken in conjunction with the accompanying drawings, in which—

Figure 1 is a longitudinal vertical sectional view of the mold taken on the line 1—1 of Fig. 2 and showing the patterns and links in place; Fig. 2 is a plan view showing one of the mold boxes with the pattern therein and indicating a dome of sand molded up upon the pattern; Fig. 3 is a transverse section taken on the line 3—3 of Fig. 2 showing the stage of the process shown in Fig. 2, and Fig. 4 is a view of the split pattern.

For carrying out the process an ordinary flask comprising an upper mold-box 5 and a lower mold box 6 is used, which may be supplied with the usual lifting lugs 7 and ribs 8. For forming the connecting links a split pattern 9 comprising separable halves is used, the projections 10 forming the stud bars.

The process is carried out as follows: The pattern 9 is joined up with previously cast links 12 and placed on the sand in the bottom mold box 6, the sand normally extending to the level 14 and being molded up about the pattern to a distance as indicated by the dotted line 15 of Fig. 1, whereby a dome of sand is formed having an appearance as shown at 16 in Figs. 2 and 3, said dome covering all but the upper and end faces of the pattern. The upper mold box 5 is then placed in position and sand is placed therein and rammed, a runner 17 being provided. The molds are then turned over, the mold box 6 coming uppermost and being removed and the sand knocked out. Sand is now again molded up about the pattern until another dome is formed, this dome also having an appearance as indicated at 16 in Figs. 2 and 3. It is to be noted that now a sort of core is formed extending in one direction to the dotted line 15 and in the other to the dotted line 18 as shown in Fig. 1. The mold box 6 is again placed in position and sand rammed therein around said core. The box 6 and the sand therein are carefully withdrawn exposing one side of said core and pattern. The half of the pattern then uppermost is removed and the box 6 and the sand therein carefully replaced. The mold is again reversed, the box 5, now becoming uppermost, is removed, the remaining half of the pattern is removed, and the box 5 with the sand therein is replaced. After being cottered and weighted down, the mold is ready for casting.

In carrying out the invention the separate links are cast in molds or chills in the well known way.

The mold boxes may be made of such an area as to permit of any desired number of patterns and links being arranged therein in the proper manner. Ordinary molders' sand is used.

The boxes used in making the connecting link are provided with openings in their edges to permit of the made sections extending in between the boxes, in the known manner.

We claim as our invention:

1. The herein described process of preparing molds for chain links, said process comprising placing in the sand of the first mold box a divided link pattern, the plane of division of the pattern being substantially flush with the sand; molding up the sand to cover all but the upper and end faces of the pattern; placing the second box

on the first and packing the second box with sand; reversing the mold and removing the first box and then the sand therefrom; molding up the sand in the second box to cover all but the upper and end faces of the pattern; replacing and packing the first box with sand; removing said first box; retaining the sand therein; removing the upper half of the pattern; replacing the first box; reversing the mold; removing the second box and the remaining half of the pattern; and then replacing the second box.

2. In the manufacture of chains and the casting of the links thereof, the herein described process for preparing the molds for the castings, said process consisting in placing, in the sand of the first mold box, a divided link pattern and cast links linked in the link pattern, the plane of parting of the pattern being flush with the level of the sand; molding up the sand to cover all but the upper and end faces of the pattern; placing the second mold box on the first and packing the second box with sand, a runner being provided; reversing the mold so that the first box is on the top; removing the said first box and then the sand therefrom; so that half of the pattern is exposed; molding up the sand so as to cover all but the upper and end faces of the pattern; replacing and packing the first box with sand; removing the same retaining the sand therein; removing the upper half of the pattern; replacing said first box and sand and reversing the mold; removing said second box and the remaining half of the pattern; and then replacing said second box.

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

GEORGE COTTON McGLASHAN.
DAVID WILLIAMS.

Witnesses as to the signature of George Cotton McGlashan:

T. H. THOMPSON.
T. P. MONSON.

Witnesses as to the signature of David Williams:

A. A. WILSON.
A. C. TUCKER.