

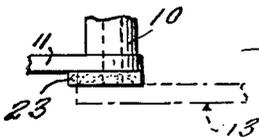
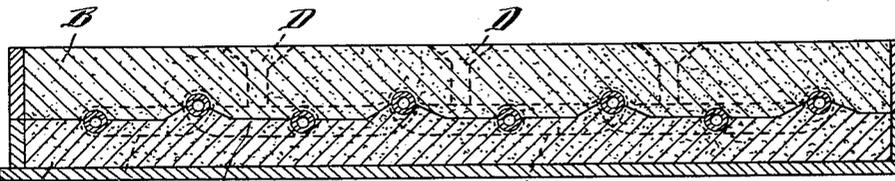
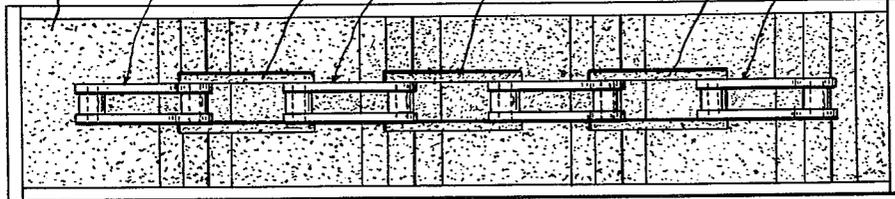
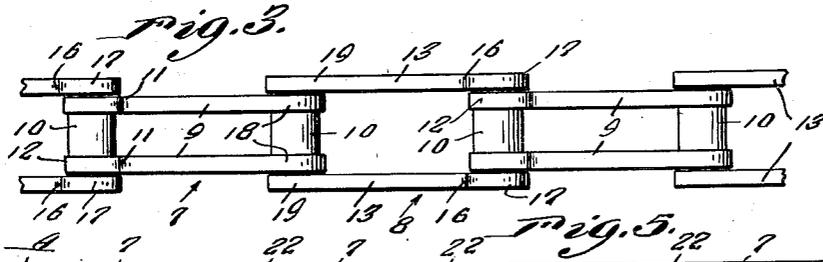
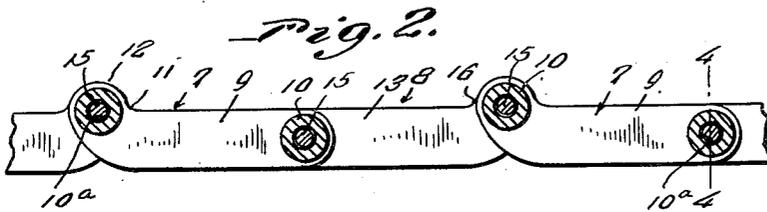
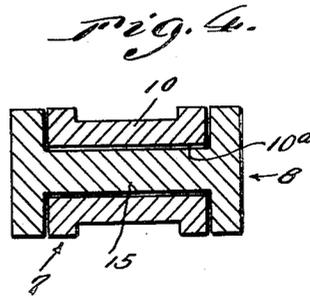
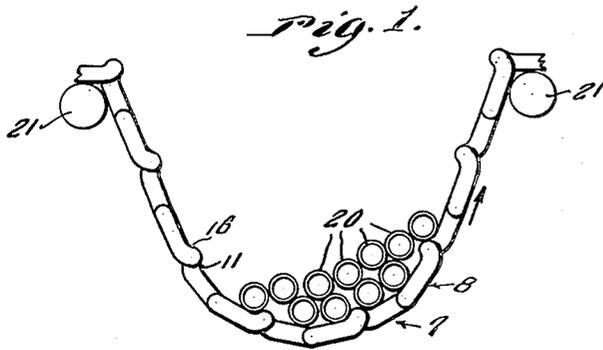
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J. S. ANDERSON

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PICKLING CHAIN

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Inventor

J. S. Anderson

By Clarence R. Borman

Attorney

UNITED STATES PATENT OFFICE

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PICKLING CHAIN

Joe Shreve Anderson, Bellaire, Ohio

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7 Claims. (Cl. 266—7)

My invention relates to an improvement in chains, and in particular to chains used in the pickling of metal bars, rods and the like, and to the process of manufacturing the same.

5 It is well known in the art that pickling chains are provided with projecting lugs or dogs which engage the metal bars, to cause the latter to roll and tumble as the chains move through the pickling solution. These projecting lugs or dogs are made as parts of the chain by being cast at spaced intervals as separate links in the chain.

10 It has been ascertained that by so casting these projecting lugs as separate links in the chain, the weight of the chain has been substantially increased, and the strength of the same materially decreased by the formation of shrink holes or cavities in the chain.

15 It has been further ascertained in the manufacture of pickling chains, that the method of milling and riveting the pins which join the links together, necessitates the use of expensive machinery; and that these riveted joints are the greatest points of wear of the pickling chain, and at the same time, the weakest points thereof.

20 In overcoming the above disadvantages, I attain the objects of my invention, the principal object of which is to provide a pickling chain which will eliminate separate links carrying the projecting lugs, and still provide a chain which will turn and tumble the metal rods, etc., as the chain is drawn through the pickling solution.

25 Another object of my invention is to increase the strength of the pickling chain and to reduce the weight thereof.

30 A further object is to reduce the cost of production, and yet produce a more efficient and durable chain.

Other objects will be apparent from the following detailed description, taken in connection with the accompanying drawing, wherein

35 Fig. 1 is a side elevational view of the improved chain moving in the direction of the arrow, and carrying metal tubing;

40 Fig. 2 is a longitudinal, cross-sectional view of the links of the chain;

Fig. 3 is a top plan view of a section of the chain;

45 Fig. 4 is a sectional view, taken on the line 4—4 of Fig. 3;

50 Fig. 5 is a top plan view of the drag;

Fig. 6 is a longitudinal sectional view of the combined cope and drag.

55 Fig. 7 is a fragmentary view of the collapsible core positioned between the links.

In the drawing, wherein for the purpose of il-

lustration, is shown a preferred embodiment of my invention, the improved chain consists of a series of complementary links 7 and 8, arranged alternately with respect to each other. The link 7 consists of sides 9, the corresponding ends of which are rounded and are connected by a sleeve or bearing 10, and are further provided with openings which are in alignment with each other and with the opening in the sleeve.

Each of these sides is curved adjacent one end thereof as at 11, and is offset at this end to terminate in a plane above the plane of the body portion of the link 7 to form projections 12.

The link 8 consists of sides 13, the corresponding ends of which are rounded and are joined by pintles 15, which are integral with said sides. Each of these sides is curved adjacent one end thereof as at 16 and is offset at this end to terminate in a plane above the plane of the body portion of the link 8 to form projections 17, similar to those formed in the link 7, and designated by the numeral 12.

In assembling the links to form the complete chain, the curved, projected, rounded end 12 and the opposite end 18, of the link 7, is connected to the curved, projected, rounded end 17 and the opposite end 19, respectively, of the link 8, by means of the pintles 15, which are cast integrally with the link 8, and which are received by the sleeve or bearing 10 of the link 7. It is apparent from this construction that the chain is adapted to support metal bars, rods, tubing and the like 20, when these articles are being subjected to the pickling process. As the chain moves about a suitable support 21, in the direction of the arrow, as shown in Fig. 1, the rounded projected ends 12 and 17 of the links engage the metal bars, tubing, rods, and the like, 20, and carry the same a short distance upward, until gravity causes them to roll off the projected ends of the links, toward the trough of the chain, thereby effecting a rolling and tumbling movement of the bars, etc., to better eliminate the scale therefrom.

In order to cast the pintles 15 integrally with the link 8, and to connect the link 7 thereto, the required number of links 7, with their sleeves 10 and bearing holes 10a, are first formed by casting. These precast links are placed in line in a sand mold A, which consists of the conventional cope B and drag C, and are separated from each other by molds 22 for the connecting links 8. Gates D are provided in the cope B, in direct communication with the molds 22, which gates are adapted to receive the molten metal which flows into the link-forming molds. These gates are

adapted to contain sufficient molten metal to take-up shrinkage of the link and to prevent an undersized and porous link. Collapsible cores 23, made of sand and oil, are placed between the outside of one side of the precast link 7 and the inside of the spreader of the connecting link to be cast.

Molten metal is then poured through the gates D into the molds 22 to form the connecting links 8. The metal fills the molds and runs inside the bearing holes 10a of the precast links 7, and thereby forms the connecting pintles 15. When the metal forming the pintles cools, the same contracts, thereby freeing the pintles from the walls of the sleeves or bearings 10, and breaking down the collapsible cores. Accordingly, there is produced between each link of the pickling chain, a connection which permits the proper movement of each link, and which prevents the free play between links, thereby eliminating the wear on the chain caused by such free play.

It is to be understood that various changes may be made in my invention, and in the process of manufacturing the same, within the scope of the appended claims.

What is claimed is:

1. A pickling chain for metal bars and the like comprising a series of links, and means integrally formed at one end of each link to engage said metal bars to rotate the same during the movement of the chain.

2. A pickling chain for metal bars and the like comprising a series of links, each link having integrally formed therewith a projection to engage said bars to cause the same to roll and tumble during the movement of the chain.

3. A pickling chain for metal bars and the like comprising a series of links, each link having integrally formed therewith at one of its ends a

projection to engage said metal bars to cause the same to roll and tumble during the movement of the chain.

4. A pickling chain for metal bars and the like, comprising a series of links, each link having one end thereof off-set to terminate in a plane above the plane of the body portion of the link, said ends being connected together to form a series of projections to engage the metal bars to cause said bars to roll and tumble during the movement of the chain.

5. A pickling chain for metal bars and the like comprising a series of complementary links, each side of each link being curved adjacent one of its ends to terminate in a plane above the plane of the body portion of each link to form rounded projections, the rounded projection of one link being connected to the rounded projection of a complementary link, whereby the metal bars are engaged by said connected projections to cause the bars to roll and tumble during the movement of the chain.

6. A pickling chain for metal bars and the like comprising a series of complementary links, each side of each link being curved adjacent one of its ends to terminate in a plane above the plane of the body portion of each link to form rounded projections, the rounded projected ends of one link being connected by a sleeve, the rounded projected ends of the complementary link being connected by a pintle integral with said complementary link, said pintle passing through said sleeve, thereby connecting together the projected ends of both links.

7. A pickling chain for metal bars comprising a series of links, one end of each of said links protruding to engage said metal bars for rotating the latter during movement of the chain.

JOE SHREVE ANDERSON.