

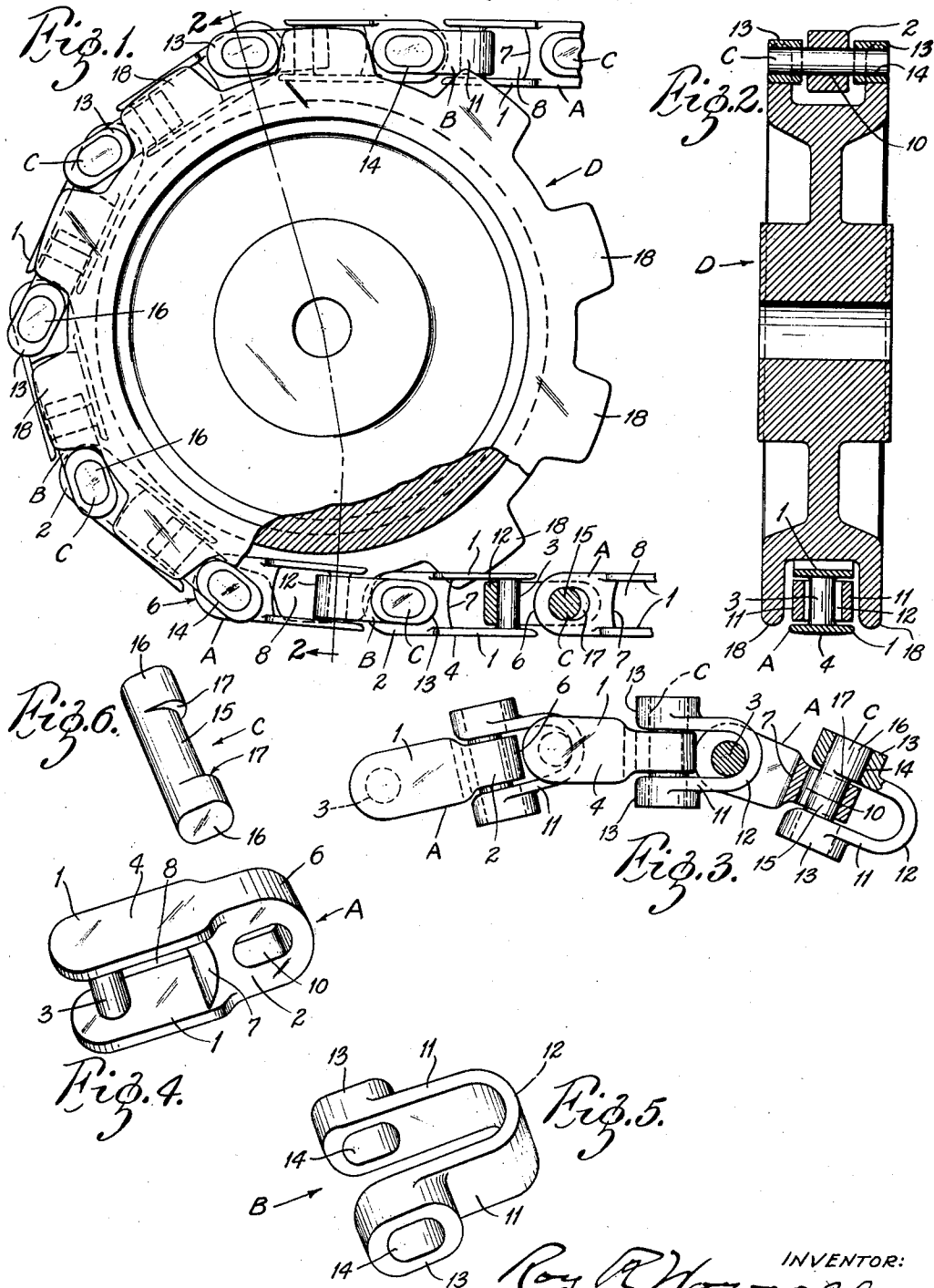
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CONVEYER CHAIN

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CONVEYER CHAIN

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This invention relates principally to conveyer chains of the drag chain type wherein the articles are carried along by the moving chain. The invention has for its principal objects to produce a drag can that will follow a path that does not lie in a single plane, that can be readily assembled and disassembled, and which will be strong and durable and of simple and economic construction. The invention consists in the drag chain hereinafter described; and it also consists in the construction, combination and arrangement of parts hereinafter described and claimed.

In the accompanying drawing, wherein like symbols refer to like parts wherever they occur,

Fig. 1 is a side elevation of a portion of a drag chain embodying my invention, a sprocket wheel being shown in driving engagement therewith.

Fig. 2 is a transverse section through the chain and sprocket wheel on the line 2—2 in Fig. 1.

Fig. 3 is a plan view of a section of the chain showing the shape taken by the chain in making a lateral or sidewise bend,

Fig. 4 is a perspective view of one of the main or article supporting links,

Fig. 5 is a perspective view of one of the connecting links; and

Fig. 6 is a perspective view of one of the link connecting pins.

The conveyer illustrated in the accompanying drawing comprises links of two kinds, A and B, alternating with each other. Each main link A is of substantially D-shape; that is, it comprises relatively wide, vertically spaced, parallel plates or flanges 1 integrally connected at one end by a relatively narrow flat-sided connecting web 2 and adjacent to the other end by an upright cylindrical stud 3 of a diameter corresponding substantially to the thickness of said connecting web. The top or article supporting flange of the link A is preferably provided with a convexly curved upper surface 4, which reduces the area of contact between said flange and the article resting thereon, thus making the article slide easily on and off the link. The upright web 2 of the link A has a convexly curved outer end 6 of semicircular form; and the inner end of said web is concavely curved, as at 7, and cooperates with the spaced, parallel plates 1 and the stud 3 to form a substantially D-shaped opening 8 that extends through said link from side to side thereof. At the stud end of the link A, the spaced, parallel plate portions have their ends rounded in arcs of circles described from the center of the connecting stud 3. The spaced, parallel flange portions 1 of the link A merge into the web 2 short of the convex outer end 6 thereof;

and said web has a central opening 10 extending therethrough from side to side thereof which is elongated in a direction lengthwise of the link.

Each connecting link B is substantially U-shaped and of slightly less depth than the depth of the openings 8 in the links A; that is it comprises horizontally spaced parallel branches or legs 11 that are integrally connected at one end by a curved portion 12. At the open end of the link B, the branches or legs 11 thereof are provided on the outside faces with outstanding bosses 13. The outstanding bosses 13 of the link B are provided with central longitudinally elongated openings 14 that extend horizontally through the branches 11 crosswise of said link. The elongated openings 14 in the open end of the link B are of substantially the same size and shape as the elongated openings 10 in the flat webs 2 of the links A.

Each D-shaped main or article supporting link A is connected to a U-shaped connecting link B by means of a pivot pin C having a cylindrical intermediate portion 15 adapted to loosely fit the elongated slot 10 in the web end of the link A and widened end portions 16 adapted to snugly fit the registering elongated openings 14 in the open end of the link B. The ends 16 are widened out on one side of the pin C, and shaped to snugly fit the elongated openings 14 in the open ends of the link B. The intermediate portion of the pivot pin C is of a diameter corresponding substantially to the thickness of the pin, thereby forming a notch 17 on that side of said pin intermediate the enlarged ends thereof.

The drag chain is assembled by passing one of the branches of a U-shaped connecting link B through the D-shaped opening 8 in the main link A, with the closed or curved end of the connecting link astraddle the stud 3 of said main link. Another main link B is then placed with its web 2 between the two free ends of branches of the connecting link B with the elongated opening 10 of said link B in register with the elongated openings 14 in said connecting link; and the two links are then connected together by passing a pivot pin C through said registering openings with its enlarged end portions 16 snugly fitting the openings 14 in the connecting link and with its smaller intermediate portion 15 loosely engaging the elongated opening 10 in the main link.

The chain is driven preferably by means of a sprocket wheel D provided on its opposite sides with opposed teeth 18. The main body portion of the chain runs between the two series of sprocket teeth, while the outstanding bosses on

opposite sides of the connecting links B project between and are driven by the teeth adjacent thereto.

By the arrangement described, the links A and B are capable of free pivotal movement relative to each other in both vertical and horizontal planes, thereby enabling the chain to make both lateral and vertical bends of relatively short radii. By reason of the notches 17 formed by the enlarged ends of the pivot pins C, said pins can be removed only when the pin receiving openings in the main links are brought into exact register with the enlarged end portions of said pins. The enlarged ends of the pivot pins are non-rotatably seated in the connecting links B, thereby preventing relative motion between said connecting links and said pins and the consequent wear and looseness resulting therefrom.

The chain is of extremely simple construction and any single link can be removed from the chain without disturbing the remaining links thereof. In addition to being lighter, more flexible and much stronger and more durable than the ordinary chain, my chain has the additional advantage of being well adapted to manufacture by forging or casting. It also permits the use of proper material for the parts. For instance, the links may be made of malleable iron and the pins may be made of hardened steel. The laterally projecting bosses at the open ends of the connecting links provide positive contact with the teeth of the sprocket wheel on opposite sides thereof and thus prevent slipping of the chain thereon.

Obviously, the hereinbefore described drag chain admits of considerable modification without departing from the invention. Therefore, I do not wish to be limited to the precise construction shown and described.

What I claim is:

1. A chain comprising main links substantially D-shape in side elevation and with its top adapted for supporting articles alternating with connecting links substantially U-shape in plan, each of said connecting links being loosely shackled to one adjacent main link with its open end straddling the end of the other adjacent main link and horizontally pivoted thereto, said connecting links being provided adjacent to their pivoted open ends with outstanding bosses adapted for cooperation with a sprocket wheel.

2. A chain comprising main links alternating with U-shaped connecting links, each of said main links having its top adapted for supporting articles and having two longitudinally spaced openings extending therethrough from side to side thereof, each of said U-shaped connecting links extending through one of the openings in one adjacent main link and having its closed end loosely engaged with the outer end wall of said opening, and a pivot pin connecting the open end of said U-shaped connecting link with the other opening in the other adjacent main link, said connecting link being provided on opposite sides with outstanding bosses adapted for cooperation with a sprocket wheel.

3. A chain comprising main links alternating with U-shaped connecting links, each of said main links having two longitudinally spaced openings extending therethrough from side to side thereof, each of said U-shaped connecting links having its closed end loosely engaged with one of the openings in one adjacent main link, and a pivot pin connecting the open end of said U-shaped connecting link with the other opening in the other adjacent main link, said connect-

ing link being provided on opposite sides with outstanding bosses adapted for cooperation with a sprocket wheel, said bosses being provided with openings adapted to nonrotatably receive the ends of said pivot pin.

4. A chain comprising main links alternating with U-shaped connecting links, each of said main links having two longitudinally spaced openings extending therethrough from side to side thereof, each of said U-shaped connecting links having its closed end loosely engaged with one of the openings in one adjacent main link, and a pivot pin connecting the open end of said U-shaped connecting link with the other opening in the other adjacent main link, said connecting link being provided on opposite sides with outstanding bosses adapted for cooperation with a sprocket wheel, said bosses being provided with openings adapted to receive the ends of said pin, said pin receiving openings and the portions of the pin therein being shaped to prevent relative rotation of said pin and said connecting link.

5. A chain comprising main links alternating with connecting links, each of said main links comprising relatively wide vertically spaced parallel plates connected at the one end by a relatively narrow web and adjacent to the other end by a cylindrical stud, each of said connecting links being substantially U-shaped, said links being arranged with the stud at one end of a main link positioned in the closed end of an adjacent connecting link and with the web of the other adjacent main link extending into the open end of said connecting link, and a pin for pivotally securing the open end of said connecting link to the web of said last mentioned main link, each of said connecting links being provided with laterally extending outstanding lugs adapted for driving engagement with the teeth of a sprocket wheel, said lugs being provided with openings for receiving the ends of said pivot pin.

6. A chain comprising main links alternating with connecting links, each of said main links comprising relatively wide top and bottom plate portions integrally connected at the one end by a relatively narrow web and adjacent to the other end by a cylindrical stud, each of said connecting links being substantially U-shaped in plan, said links being arranged with the stud at one end of a main link positioned in the closed end of an adjacent connecting link and with the web of the other next main link extending into the open end of said connecting link, and a pin for pivotally securing the open end of said connecting link to the web of said last mentioned main link, said pin having enlarged end portions nonrotatably fitted within said connecting link.

7. A chain comprising main links alternating with connecting links, each of said main links comprising relatively wide top and bottom plates connected at the one end by a relatively narrow web and adjacent to the other end by a cylindrical stud, each of said connecting links comprising horizontally spaced branches connected at one end by a curved portion, said links being arranged with a stud at one end of a main link positioned between the branches of an adjacent connecting link near the closed end thereof and with the web of the other adjacent main link extending between said branches at the open end of said connecting link, and a pin extending horizontally through the branches of said connecting link and the web of said other main link, the pin receiving opening in said links being elongated, said pin being movable lengthwise of the elongated open-

ing in said main link and the portions of the pin in engagement with the elongated openings in the connecting link being of a size and shape corresponding to the size and shape of the elongated openings therein.

8. A conveyer chain comprising main links with tops adapted to support articles alternating with connecting links, said main supporting links comprising relatively wide spaced plates connected at one end by a relatively narrow web and adjacent to the other end by a cylindrical stud, said connecting links being of substantially U-shape

and being provided adjacent to their open ends with outstanding bosses that extend on opposite sides of said main links and are adapted for driving engagement with the teeth of a sprocket wheel, said links being positioned with the U-shaped connecting links in engagement with the studs of the main links and with the webs of the main links positioned in the open ends of said connecting links, and pivot pins extending through the bosses of said connecting links and the webs of said main links.

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