

No. 686,977.

Patented Nov. 19, 1901.

J. S. KIDD.
DRIVING CHAIN.

(Application filed Feb. 16, 1899.)

(No Model.)

Fig. 1.

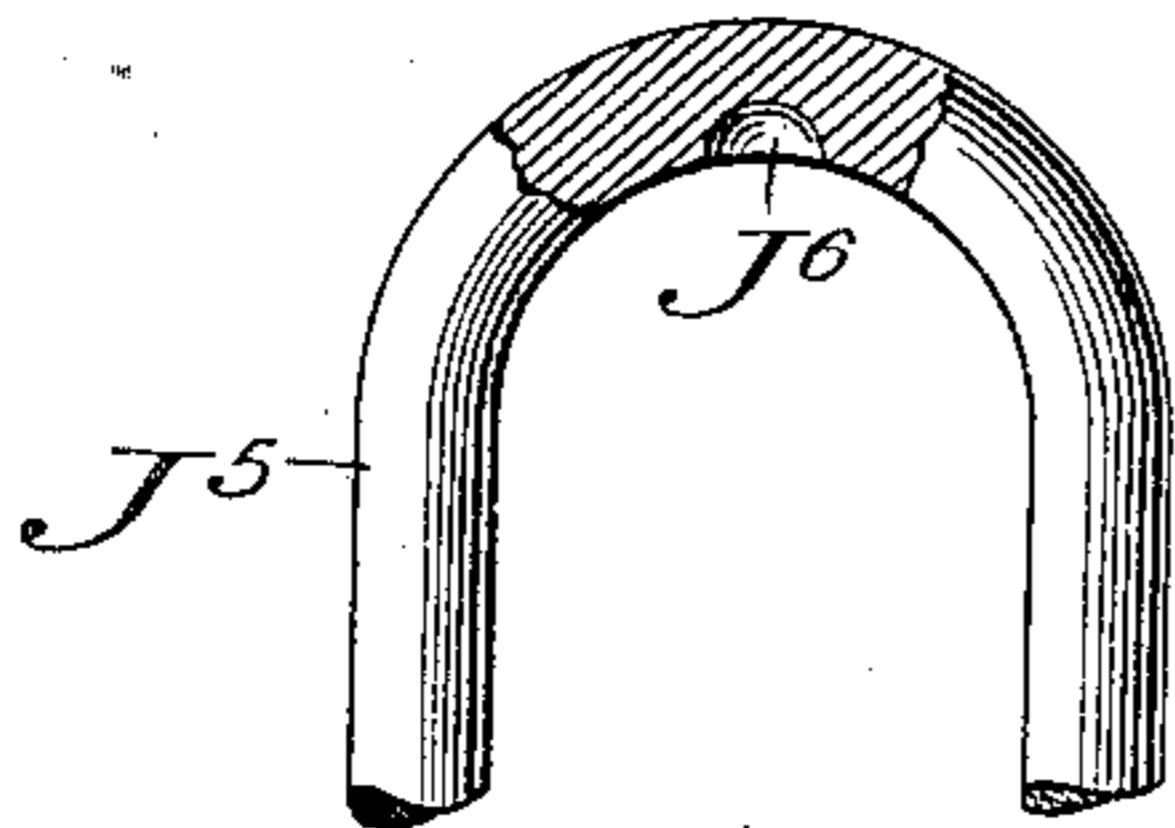


Fig. 2.

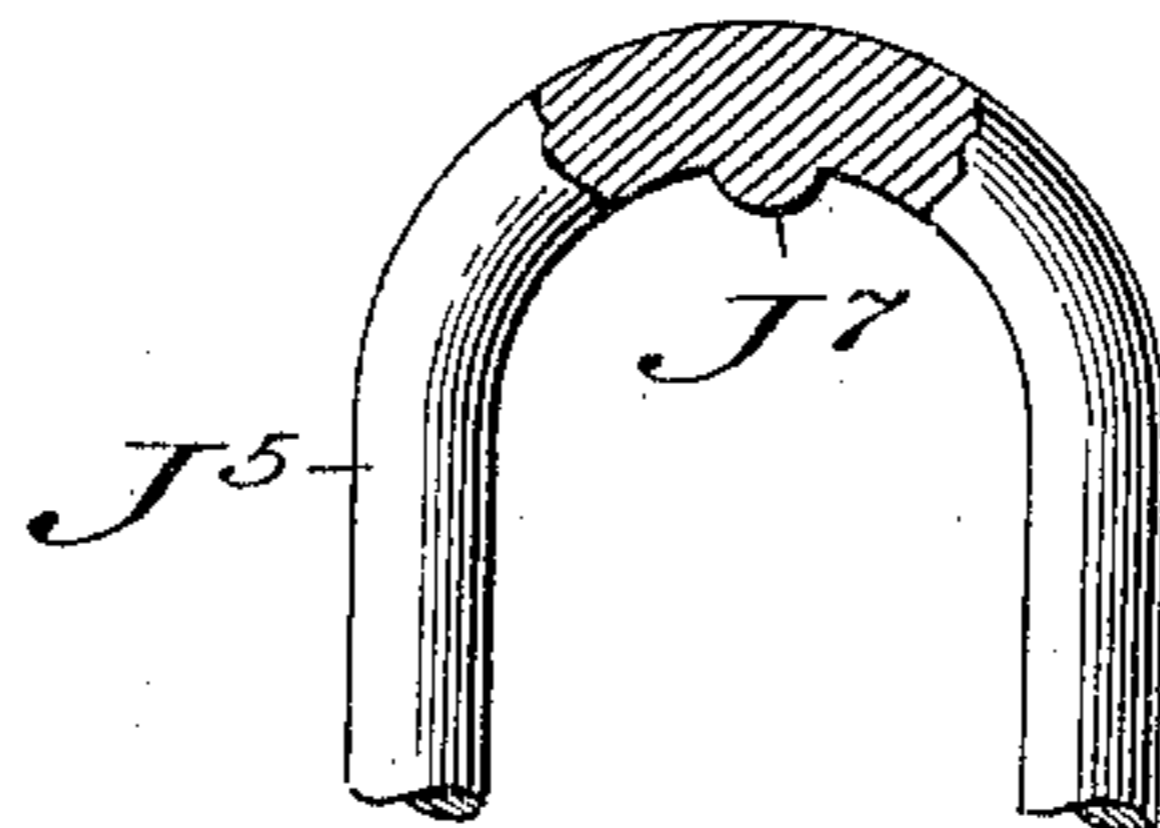


Fig. 3.

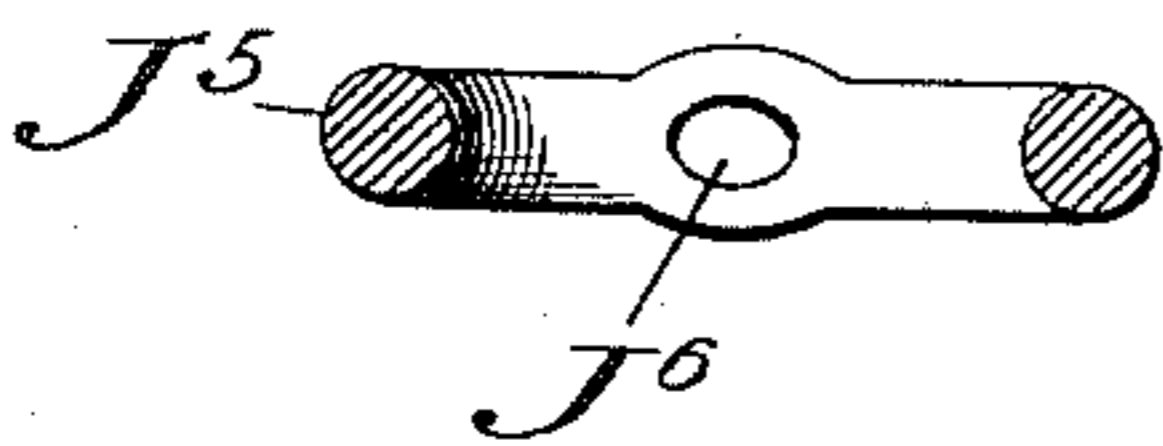


Fig. 4.

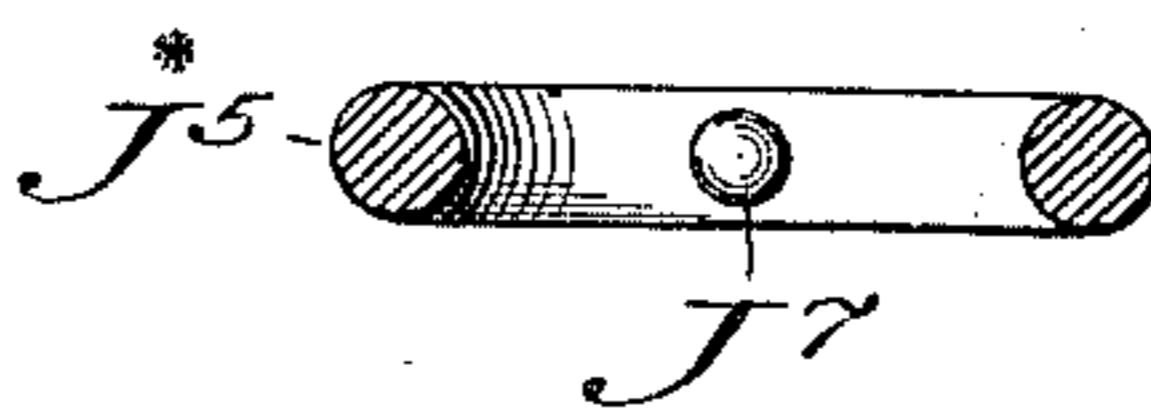


Fig. 5.

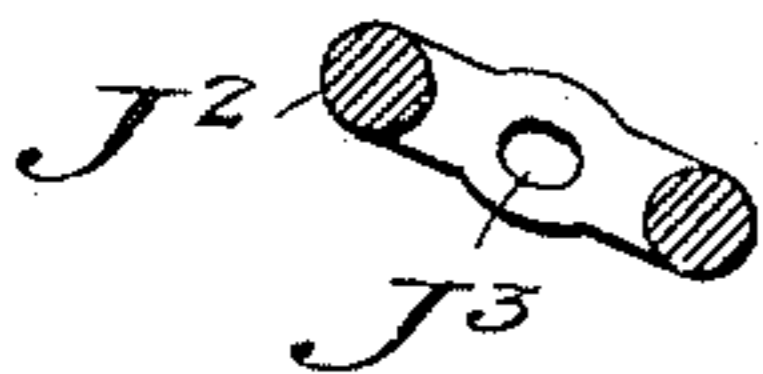


Fig. 6.

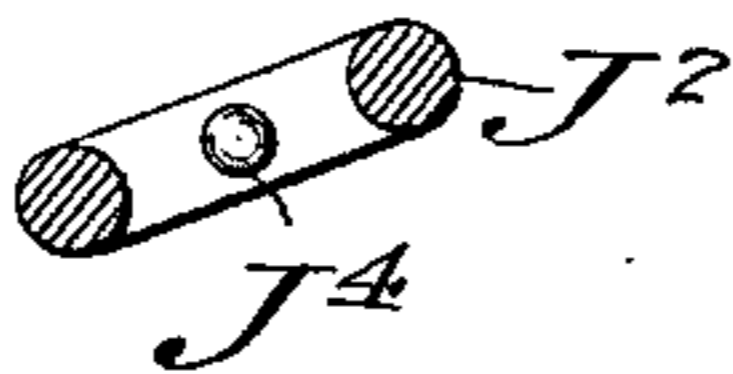


Fig. 7.



Fig. 8.

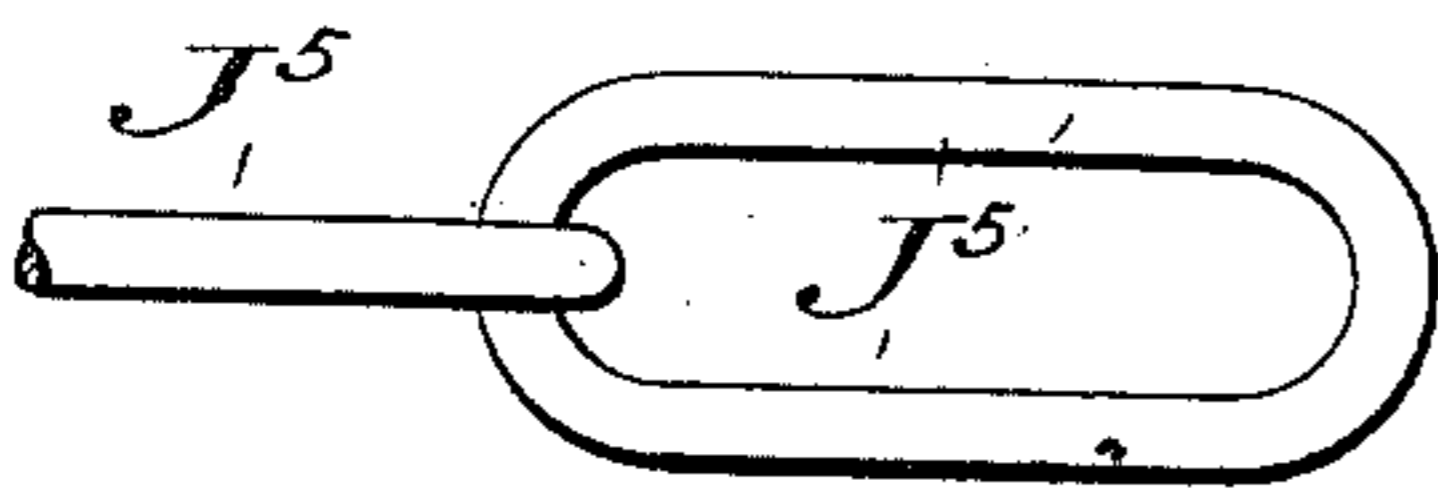
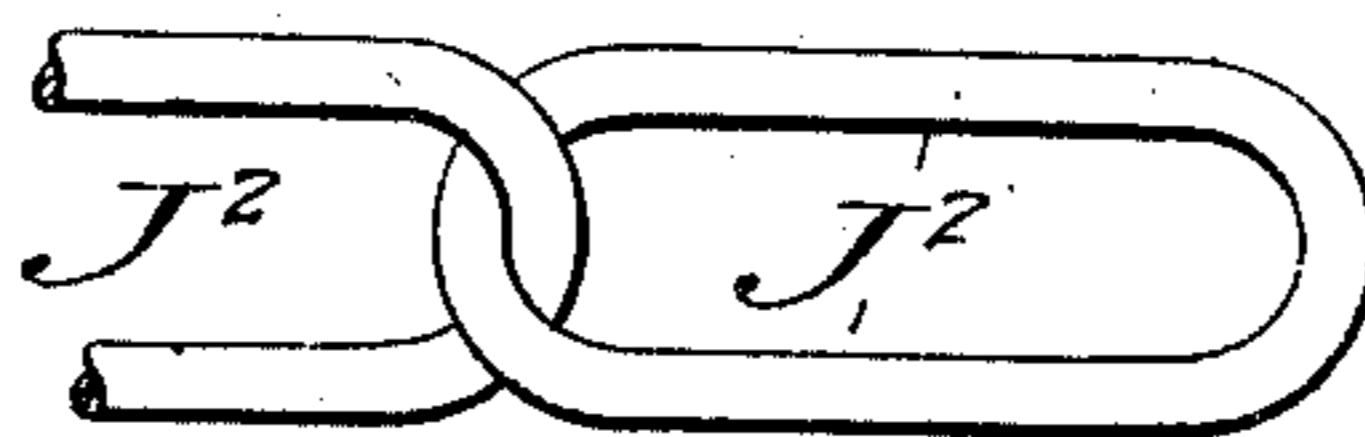


Fig. 9.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN S. KIDD, OF DES MOINES, IOWA.

DRIVING-CHAIN.

SPECIFICATION forming part of Letters Patent No. 686,977, dated November 19, 1901.

Application filed February 16, 1899. Serial No. 705,712. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. KIDD, a citizen of the United States of America, and a resident of Des Moines, Polk county, Iowa, have invented certain new and useful Improvements in Driving-Chains, of which the following is a specification.

My invention relates to driving or sprocket chains, and is an improvement upon the forms and connections of the links thereof in respect of the relations of said links to each other.

My invention consists in the construction, arrangement, and combination of elements hereinafter set forth, pointed out in my claims, and illustrated by the accompanying drawings, in which—

Figure 1 is a face view, partly in section, illustrating the formation of a seat in one end of a chain-link. Fig. 2 is a face view, partly in section, illustrating the formation of a projection on the inner curved face of one end of a chain-link. Fig. 3 is a cross-section of a chain-link, illustrating the seat or depression shown in Fig. 1. Fig. 4 is a cross-section of a chain-link, showing a projection illustrated in Fig. 2. Figs. 5 and 6 are cross-sections in opposite directions of a twisted link provided with a seat or depression in one end and a projection on the inner curved face of the opposite end. Fig. 7 is a cross-section illustrating the interengagement of two twisted links. Fig. 8 is a face view illustrating two chain-links contacting according to Figs. 1, 2, 3, and 4, looped together, and crossing each other at right angles. Fig. 9 is a face view of two links constructed according to Figs. 5, 6, and 7 and crossing each other at oblique angles.

The chain herein shown and described is in some of its elements similar to and an improvement upon the chain shown and described in Letters Patent of the United States of America granted to me on the 3d day of January, A. D. 1899, and numbered 616,936.

The chain may be of the form shown in Figs. 1, 2, 3, 4, and 8 of the drawings herewith, in which each link J^5 is formed with a depression J^6 in the inner surface of one end and a projection J^7 on the inner face on the other end, which depression and projection are of such shape and dimensions as that in

the assembling or intersuspended association of the links the projection of one link will enter, seat, or engage in the depression of the adjacent link.

The chain may be of the form shown in Figs. 5, 6, 7, and 9 of the drawings herewith, wherein each link J^2 is formed with a depression J^3 in the inner surface of one end and a projection J^4 on the inner surface of the other end and the links are twisted to such an extent that the interengaging end portions thereof cross each other at oblique angles and in the assembling or intersuspending association of the links the projection of one link will enter, seat, or engage in the depression of the adjacent link.

I prefer the form of chain illustrated in Figs. 5, 6, 7, and 9 of the drawings herewith, because in the provision of the ball-and-socket engagement a more perfect rolling contact between the links may be attained, and the contact of the inner convex surfaces of the links on either side of the ball and socket (see dotted lines in Fig. 7) supplementing the contact of the ball and socket provides a more uniform distribution of the strain laterally of the links on and throughout the ends of the links than would seem to be possible in a construction wherein the only contact between the links is at a given point. Furthermore, such ball-and-socket engagement or contact effectually prevents lateral slipping of one link relative to the link interassociated therewith, which slipping is undesirable, as it tends to shorten the working length of the chain slightly and cause the chain when run taut under a strain to bind on the sprockets and not run freely.

For and on account of the virtue of added strength and durability in a given diameter of material I think it advisable to employ the ball-and-socket engagement or contact in chains made of straight links crossing each other at right angles and draft-chains of all kinds, the added strength being attained by reason of the contact of the adjacent ends of the links around and throughout the surface of the projection rather than at a single point, as would be the case if the interengaging projection and depression were omitted. This idea I have illustrated in Figs. 1, 2, 3, 4, and 8, above described, in which the boss or pro-

jection of one link seats in the recess or depression of the next link when the chain composed of such links is drawn taut.

I prefer to stamp or punch the seats or recesses in the links rather than to drill them, since in the stamping or punching none of the material is removed and the end portion of the link is slightly broadened (see Figs. 3 and 5) without weakening the resistance thereof to flexure or breakage.

I claim as my invention—

1. A chain composed of like links, each constructed of a single loop of metal embracing the two adjacent links and formed with a depression on the inner face of one end thereof and a projection on the inner face of the opposite end portion thereof.

2. A chain composed of like links, each constructed of a single loop of metal embracing the two adjacent links and formed with a depression on the inner face of one end thereof and a projection on the inner face of the opposite end portion thereof, said links being twisted and arranged to cross each other at oblique angles and contacting on lines extending in opposite directions from said projection and depression.

Signed by me at Des Moines, Iowa, this 11th day of February, 1899.

JOHN S. KIDD.

Witnesses:

S. C. SWEET,
A. E. RELF.