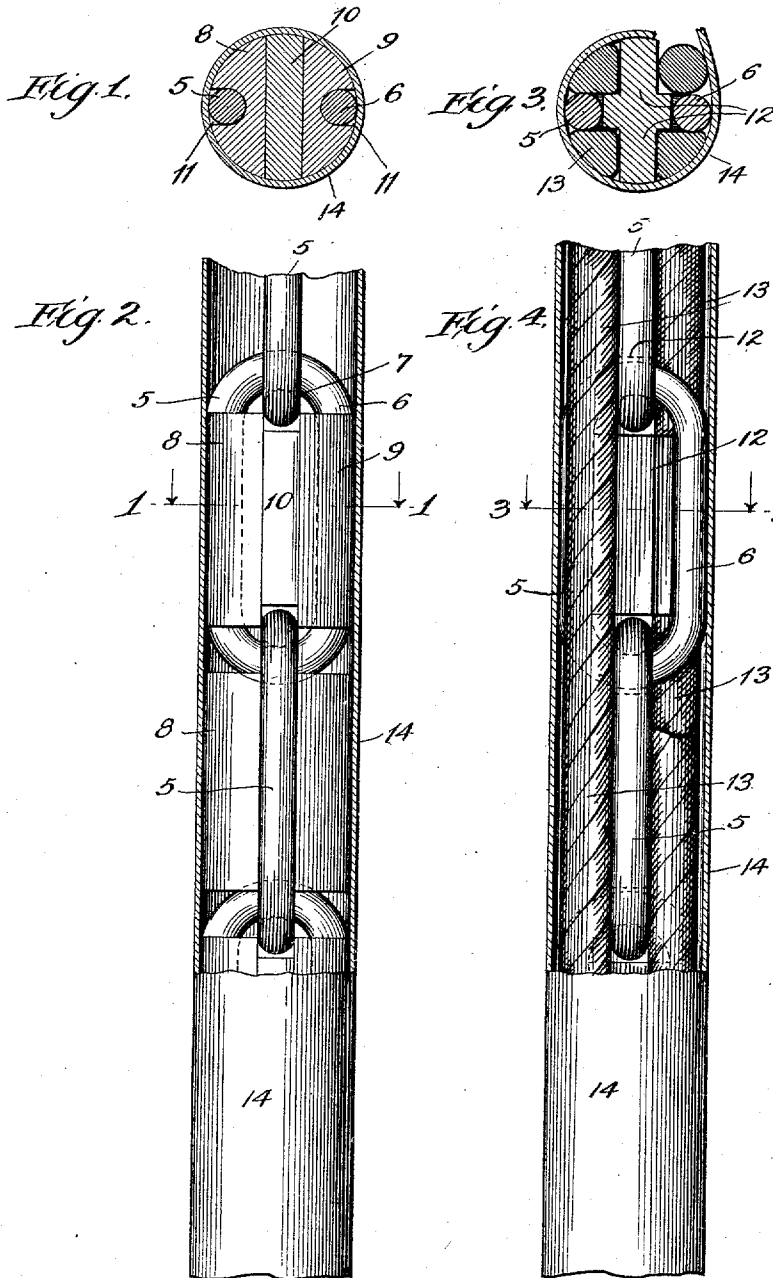


H. K. HOLSMAN & C. H. BRYAN.
 ROPE FOR POWER TRANSMISSION PURPOSES.
 APPLICATION FILED AUG. 11, 1906.

956,578.

Patented May 3, 1910.



Witnesses
 Ray White.
 M. H. Olsen.

Inventors.
 Henry K. Holzman
 and Clarence N. Bryan
 By John Howard McElroy
 Atty

UNITED STATES PATENT OFFICE.

HENRY K. HOLSMAN AND CLARENCE H. BRYAN, OF CHICAGO, ILLINOIS.

ROPE FOR POWER-TRANSMISSION PURPOSES.

956,578.

Specification of Letters Patent.

Patented May 3, 1910.

Application filed August 11, 1906. Serial No. 330,139.

To all whom it may concern;

Be it known that we, HENRY K. HOLSMAN and CLARENCE H. BRYAN, citizens of the United States, and residents of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ropes for Power-Transmission Purposes, of which the following is a full, clear, and exact specification.

Our invention is concerned with a novel rope having a chain center for power transmission purposes, the object being to produce a rope that shall have sufficient flexibility and such engagement with small pulleys as will enable it to transmit all the enormous power that its chain center will stand. To this end we employ an ordinary chain, flexible in all directions, preferably composed of links having their length about twice their width. In the angles formed by the intersection of these links we place a filling preferably composed of some fibrous material, which fills out the cross section to the form desired, which is usually circular. About this filling, which extends outward at least to the edges of the links, we place an outer cover, preferably of canvas belting, which serves to hold the filling and chain in the proper relationship and to furnish a suitable friction bearing surface on the rims of the pulleys with which it co-operates.

To illustrate our invention, we annex hereto a sheet of drawings in which the same reference characters are used to designate identical parts in all of the figures, of which:

Figure 1 is a cross-section of one embodiment of our invention, the section being taken upon the line 1—1 of Fig. 2; Fig. 2 is a plan view of the form shown in Fig. 1, with a portion of the cover removed; Fig. 3 is a cross section on the line 3—3 of Fig. 4, illustrating a second and preferred embodiment of our invention; and Fig. 4 is a top plan view shown in Fig. 2 with a portion of the covering removed.

The chain, which forms the basis of the rope and gives it its great strength, is composed of the links 5, which are of ordinary construction, and are preferably proportioned so as to be about twice as long as their width. This form of chain, of course, gives flexibility in every direction, constituting an inelastic and universally laterally flexi-

ble member. The filling in the form shown in Figs. 1 and 2 is preferably composed of two substantially semi-circular blocks 8 and 9, which are of proper length to fit in one of the links between the adjacent links, and are provided with grooves 11 in which the sides of the links extend when the blocks 8 and 9 are properly spaced apart and secured from movement by the key block 10, which is slipped in between them after they are in position to hold them, and which in turn is secured from displacement by the cover 14, which may be of any desired construction and serves primarily to hold the filling in place, but which also acts as a wear-resisting protector to oppose the wear of the chain and present a continuous unitary outer surface. The blocks 8, 9 and 10 are preferably composed of wood or woody fiber, or any other suitable material, the fibers of which are preferably arranged longitudinally. The cover 14 is preferably made of canvas belting.

In Figs. 3 and 4 we illustrate a preferred form of our invention in which the blocks 8 and 9 are replaced by four ropes 13, which are preferably arranged in the angles of the links and parallel thereto as shown. Where these ropes are of considerable length, as is preferred, in addition to their primary function of acting as a filling, they also constitute a plurality of auxiliary strengthening strands independent, but disposed lengthwise, of the chain. In this construction the key blocks 12 are not absolutely essential, but we prefer to employ them, in which case they have the cross section indicated in Fig. 3, and serve to take up the space in each link which is not occupied by the ropes. When the parts are assembled, and before the cover is applied, the ropes project outside of the periphery of the circle occupied by the inside of the cover, as indicated in Fig. 3, where the cover is not completely brought into place, but when the cover is secured and the parts properly pressed together the rope meshes in the angles, as shown, so that the chain and ropes together combine to produce a cross section which is substantially uniform throughout, and which, for the ordinary circular rope, is substantially that of a circle.

We have found by actual experiment that our invention is capable of transmitting great power and being used for driving pur-

poses with driving pulleys having a very small diameter, and this is a great desideratum, especially in connection with the driving ropes of automobiles of the type shown in the patent to Holsman, No. 697,720, for which our invention was specifically designed. It will be understood, however, that it is capable of use in many other forms of machinery, and also that it is capable of some modifications, and that we do not desire to be limited in the interpretation of the following claims, except as may be necessitated by the state of the prior art.

We are aware that it has been proposed to utilize a sprocket chain having a covering wrapped about it, but such an arrangement does not produce a rope that is flexible in all directions, as is necessary, and, moreover, unless a very considerable cover is wrapped upon it, the cross section does not closely approximate the circle which is usually desired. It has also been proposed to employ an ordinary log chain with a cover wrapped about it, but with this arrangement the sides of the links soon wear through the covering and make it very short-lived, and, moreover, there is no traction surface except on the sides of the links. It has further been proposed to employ a chain for a core, which chain is provided with special bearing surfaces far exceeding in diameter the width of the links, the outer surfaces of which are concaved longitudinally of the chains to fit the diameter of the wheel they are especially designed for. Such a structure is obviously objectionable as one chain cannot be used to connect up wheels of different diameters. We do not claim any of these proposed constructions, but

What we do claim and desire to secure by Letters Patent of the United States is:

1. A rope for power transmission purposes composed of the linked chain flexible in all directions, with the four parallel ropes fitting in the angles formed by the links and extending in straight lines when the chain as a whole is straight, and a covering surrounding the chain and filling to hold them together in proper relationship and furnish a suitable engaging surface for the cooperating pulley.

2. A rope for power transmission purposes composed of the linked chain flexible in all directions, with the four ropes fitting in the angles formed by the links, the blocks passing through said links, and a covering surrounding the chain and filling to hold them together in proper relationship and furnish a suitable engaging surface for the cooperating pulley.

3. A rope for power transmission purposes composed of the plain straight link chain flexible in all directions, with the four parallel ropes fitting in the angles formed by the links and extending in straight lines when the chain is straight, and a covering surrounding the chain and ropes to hold them together in proper relationship and furnish a suitable engaging surface for the cooperating pulley.

In witness whereof, we have hereunto set our hands this 8th day of August, 1906.

HENRY K. HOLSMAN.
CLARENCE H. BRYAN.

In the presence of witnesses:

JNO. G. ELLIOTT,
E. K. MANCHESTER.