Sept. 29, 1942. K. I. ROBINSON ET AL 2,297,167

COUPLING

Filed June 27, 1941

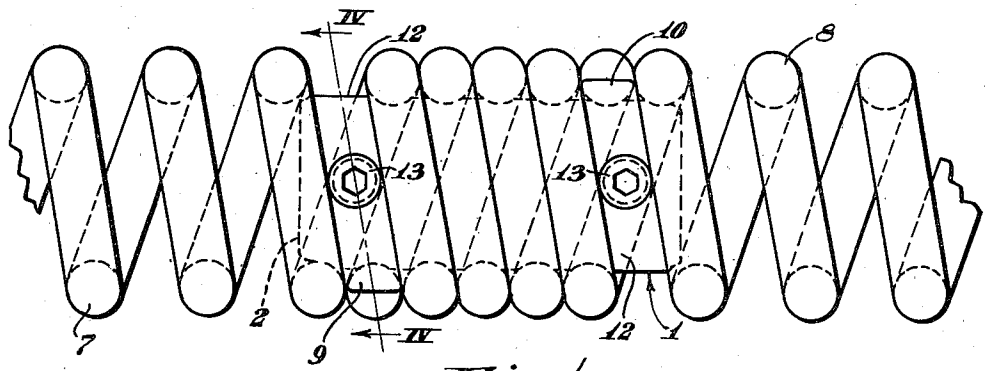


Fig. 1

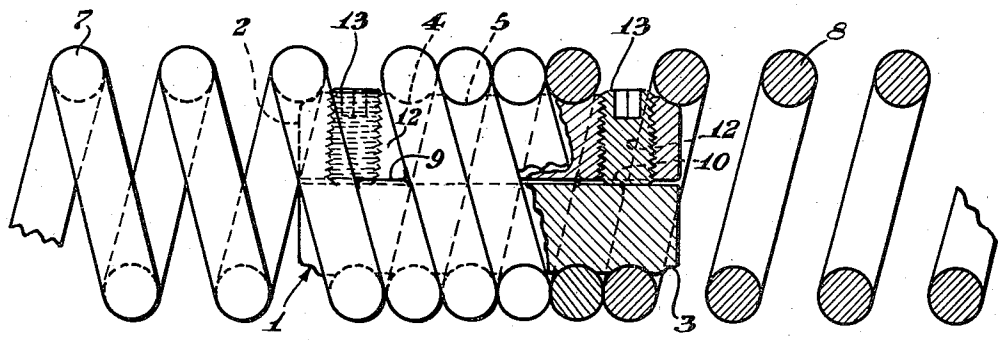


Fig. 2

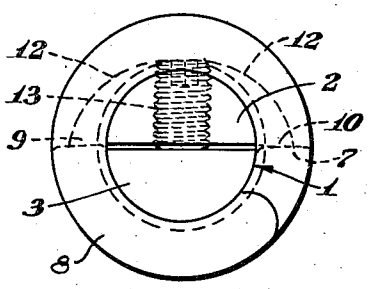


Fig. 3

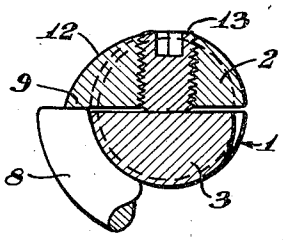


Fig. 4

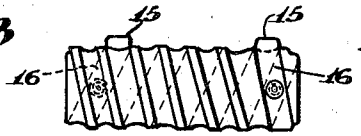


Fig. 5

INVENTORS
Kyle I. Robinson
Lawrence R. Robinson
BY Brown, Critchlow & Flick
their ATTORNEYS.

Patented Sept. 29, 1942

2,297,167

UNITED STATES PATENT OFFICE

2,297,167

COUPLING

Kyle I. Robinson, Bolivar, and Lawrence R. Robinson, Zelienople, Pa., assignors to Pittsburgh Pipe Cleaner Company, Pittsburgh, Pa., a corporation of Pennsylvania

Application June 27, 1941, Serial No. 400,010

10 Claims. (Cl. 287—75)

This invention relates to couplings for helically coiled driving members, such as used for rotating pipe cleaning tools and the like, and more particularly to the type of coupling shown in Patent No. 2,234,504 to Kyle I. Robinson et al.

It is among the objects of this invention to provide an improved coupling of the above-mentioned character which is of simplified construction, which is held tightly in place by the pressure of the coiled driving members against it, which gives a very secure connection, and which is strong and dependable.

In accordance with this invention the adjacent ends of a pair of helically coiled driving members or wires, of the type used for rotating and driving a clean-out tool through a pipe, are threaded on the opposite ends of a threaded coupling block. The block preferably is divided lengthwise into a plurality of parts with means in one of the parts for expanding the block to cause it to tightly engage the encircling coiled members. Projecting from opposite sides of the block, preferably from the opposite edges of one of its parts, are stop means which engage the ends of the driving members to transmit the driving force from one member to the other. The thread of the block most suitably is a double thread so that the end portions of the two driving members can extend past each other toward the opposite ends of the block near which the stop means, preferably in the form of lugs, are located. Each of these lugs may be backed up and supported by an integral rib extending across the block and having a set screw extending through it for expanding the block.

The invention is illustrated in the accompanying drawings in which Fig. 1 is a plan view of the coupling in operative position; Fig. 2 is a side view thereof partly in section; Fig. 3 is an end view of the coupling; Fig. 4 is a transverse section taken on the line IV—IV of Fig. 1; and Fig. 5 is a plan view of a modified embodiment of the invention.

Referring to Figs. 1 and 2 of the drawing, a coupling member is formed from a generally cylindrical block 1 which is divided lengthwise along its axis into two halves or parts 2 and 3. The block is encircled by a double thread 4 and 5 formed in its surface so that each unit of the thread can receive an end portion of one of the two helically coiled driving wires 7 and 8 that are to be connected by the coupling. Although a single thread can be used, a double thread is preferred because it allows the ends of the two wires to be threaded past each other toward the opposite ends of the block.

To permit one wire to be driven by the other, means is provided for limiting their rotation around the coupling so that the wires and coupling must rotate as a unit. This stop means consists of two lugs 9 and 10 integral with one half 2 of the block and projecting from the opposite edges of its flat side at substantially diametrically opposite sides of the block. As shown in Fig. 1, the lugs are disposed closely adjacent the ends of the block so that the two coiled wires can be extended past each other substantially the full length of the coupling to thereby give maximum engagement with each other and with the block. To provide enough metal and support for the lugs each one is formed as the laterally projecting end of an integral rib 12 (Fig. 4) that extends across the block half 2 and takes the place at that point of a segment of one of the thread units. The central portion of each of these ribs is provided with a threaded opening that extends through that half of the block, and threaded in each of these openings is a set screw 13 the inner end of which engages the flat face of the opposite half 3 of the block. After the coiled wires have been threaded on the block these screws are turned inwardly by a wrench to cause them to force the two halves of the block apart and thereby expand it tightly against the surrounding coiled wires, as shown in Figs. 2 and 3.

When one of the wires, wire 7 for example, is driven, the end of it at the coupling exerts pressure against lug 10 and thereby rotates the coupling. The lug 9 at the opposite end of the rotating coupling exerts pressure against the abutting end of the other wire 8 and thereby rotates that wire. Wire 8 resists rotation because of its frictional engagement with the inside of the pipe and because the cutting tool on the end of the wire has to cut away deposits in the pipe. Driving wire 7 presses against lug 10 while driven wire 8, through its resistance to turning, presses against lug 9. The two wires thus pressing in the same direction against the flat sides of the two lugs force part 2 of the block radially outwardly (upwardly away from part 3 of the block in Fig. 2) into very tight engagement with the coiled wires so that there is little chance of the coupling working out of position or becoming disconnected from the wires. By having both lugs project from the same half of the block, the other half of the block can be made symmetrical with no projections, thereby reducing the cost of producing the coupling. The ribs 12 thicken that

portion of the block so that ample metal is provided for the set screws.

In the modification shown in Fig. 5 one lug 15 and rib 16 are formed integral with each half of the block and at opposite ends thereof, so both lugs must project from the same side of the coupling in order to be engaged by the ends of two coiled driving members as in Fig. 1. The pressure of the coiled members against the flat faces of the lugs tends to expand the block and hold it tightly against both members.

According to the provisions of the patent statutes, we have explained the principle and construction of our invention and have illustrated and described what we now consider to represent its best embodiment. However, we desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

We claim:

1. A coupling for a pair of helically coiled driving members, said coupling comprising connecting means provided with a peripheral thread for receiving from both ends the end portions of said coiled members, and stop means projecting from opposite sides of said connecting means for engagement by the ends of said members, whereby when the coiled members are rotated while their ends are in engagement with said stop means the attached connecting means is forced outwardly forceably into contact with said coiled members.

2. A coupling for a pair of helically coiled driving members, said coupling comprising substantially cylindrical connecting means encircled by a double thread adapted to receive from both ends of said means the end portions of said coiled members with said end portions extending past each other, and a projection near each end of said means at substantially diametrically opposite sides adapted to be engaged by the ends of said members, whereby when the coiled members are rotated while their ends are in engagement with said projections the attached connecting means is forced outwardly forceably into contact with said coiled members.

3. A coupling for a pair of helically coiled driving members, said coupling comprising a block divided lengthwise into a plurality of parts and having a thread in its periphery for receiving from both ends the end portions of said coiled members, and stop means projecting from the opposite edges of one of said parts for engagement by the ends of said members, said one part being forced outwardly forceably into contact with said coiled members when the latter are rotated with their ends in engagement with said stop means.

4. A coupling for a pair of helically coiled driving members, said coupling comprising a block divided lengthwise into two substantially semicylindrical parts and having a thread in its periphery for receiving from both ends the end portions of said coiled members, and stop means projecting from the opposite edges of one of said parts for engagement by the ends of said members, said one part being forced outwardly forceably into contact with said coiled members when the latter are rotated with their ends in engagement with said stop means.

5. A coupling for a pair of helically coiled driving members, said coupling comprising a block divided lengthwise into a plurality of parts and having a thread in its periphery for receiving from both ends the end portions of said coiled members, means for spreading said parts of the block apart to tightly engage the thread with said members, and stop means projecting from the opposite edges of one of said parts for engagement by the ends of said members, said one part being forced outwardly forceably into contact with said coiled members when the latter are rotated with their ends in engagement with said stop means.

6. A coupling for a pair of helically coiled driving members, said coupling comprising a block divided lengthwise into two substantially semicylindrical parts and having a thread in its periphery for receiving from both ends the end portions of said coiled members, means for spreading said two parts of the block apart to tightly engage the thread with said members, and stop means projecting from the opposite edges of one of said parts for engagement by the ends of said members, said one part being forced outwardly forceably into contact with said coiled members when the latter are rotated with their ends in engagement with said stop means.

7. A coupling for a pair of helically coiled driving members, said coupling comprising a block divided lengthwise into a plurality of parts and having a double thread in its periphery for receiving from both ends of the block the end portions of said coiled members with said end portions extending past each other, screws threaded through one of said parts closely adjacent its ends and engaging the other part for expanding the block, and a pair of lugs projecting from the opposite side edges of said one part for engagement by the ends of said members, one of said lugs being adjacent each of said screws.

8. A coupling for a pair of helically coiled driving members, said coupling comprising a block divided lengthwise into a plurality of parts and having a double thread in its periphery for receiving from both ends of the block the end portions of said coiled members with said end portions extending past each other, a rib extending across one of said parts closely adjacent each end thereof, and a screw threaded through the central portion of each rib for expanding the block, and one end of each rib projecting laterally beyond the adjacent side edge of said one part whereby lugs are formed for engagement by the ends of said members.

9. A coupling for a pair of helically coiled driving members, said coupling comprising a block divided lengthwise into a plurality of parts and having a thread in its periphery for receiving from both ends the end portions of said coiled members, and a pair of stop means projecting on the same side ofthe block from the adjacent edges of said parts for engagement by the ends of said members whereby said members tend to expand the block when they are rotated.

10. A coupling for a pair of helically coiled driving members, said coupling comprising a block divided lengthwise into a plurality of parts and having a thread in its periphery for receiving from both ends the end portions of said coiled members, and stop means projecting from the block for engagement by the ends of said members, the member-engaging face of each stop lying in a plane substantially parallel to the dividing plane of the block and facing said dividing plane whereby the ends of said members press at least one of said parts tightly against said members when they are rotated.

KYLE I. ROBINSON.
LAWRENCE R. ROBINSON.