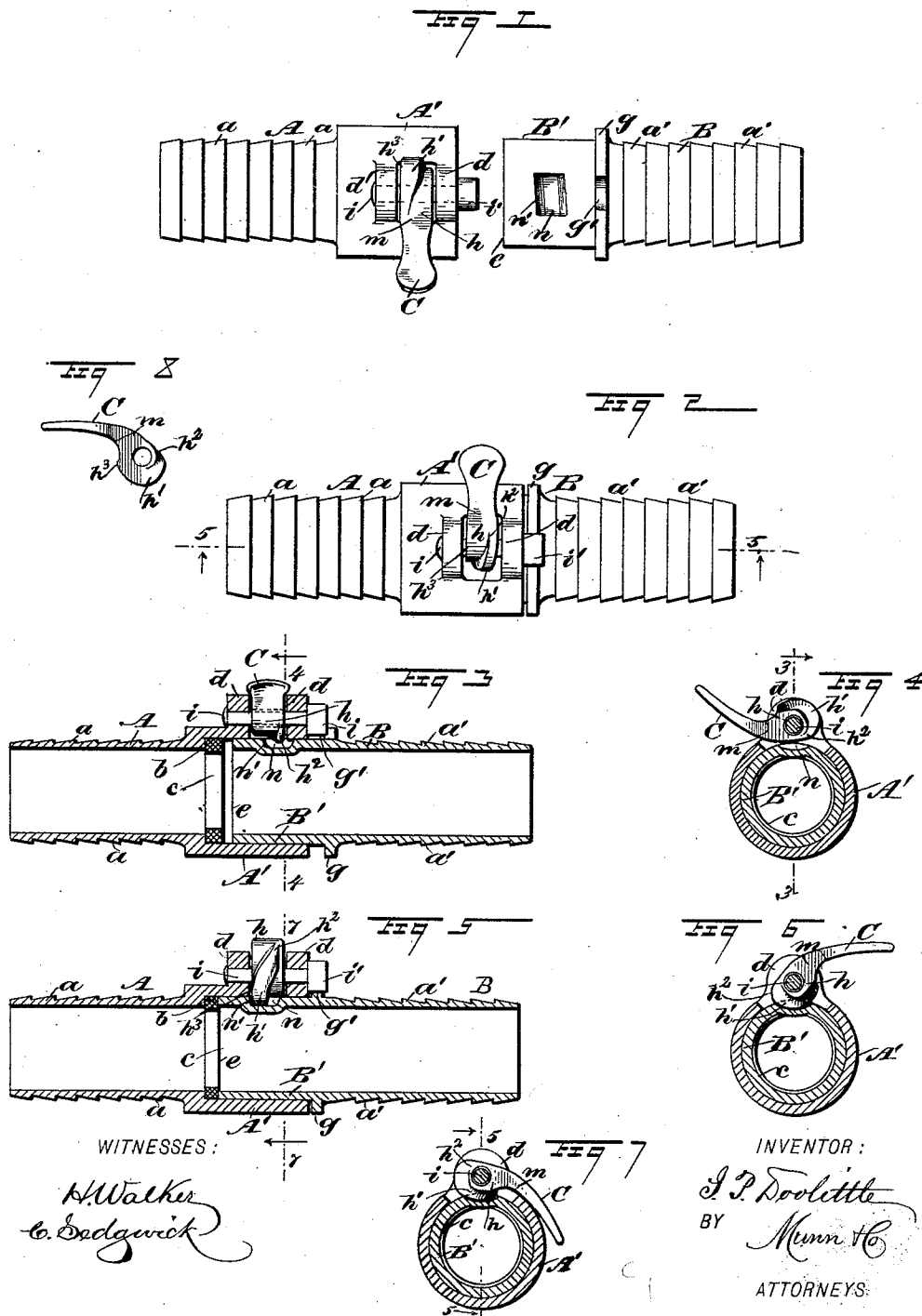


(No Model.)

I. P. DOOLITTLE.
COUPLING.

No. 484,656.

Patented Oct. 18, 1892.



WITNESSES:

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IRVIN P. DOOLITTLE, OF REDLANDS, CALIFORNIA.

COUPLING.

SPECIFICATION forming part of Letters Patent No. 484,656, dated October 18, 1892.

Application filed December 29, 1891. Serial No. 416,460. (No model.)

To all whom it may concern:

Be it known that I, IRVIN P. DOOLITTLE, of Redlands, in the county of San Bernardino and State of California, have invented a new and useful coupling, of which the following is a full, clear, and exact description.

My invention relates to an improved means for speedily and firmly connecting sections of pipes, hose, or solid rods at their ends in a manner that will allow them to be detached when this is desired; and it consists in the peculiar construction and combination of parts, as is hereinafter described and indicated in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the views.

The drawings show the preferred form of the coupling, which is adapted to detachably connect flexible hose-sections, similar letters of reference indicating corresponding parts in the several views.

Figure 1 is a side view of the device in opened adjustment. Fig. 2 shows the parts of the coupling in a coupled condition. Fig. 3 is a longitudinal section of the male and female coupling-sections partly connected, the section being taken on the line 3 3 in Fig. 4, viewed in the direction of an arrow in said figure. Fig. 4 is a transverse section of the two coupling-pieces assembled but not locked together, the section-line being indicated at 4 4 in Fig. 3. Fig. 5 is a longitudinal section of two coupling-sections in closed adjustment, the line of section being shown at 5 5 in Figs. 2 and 7. Fig. 6 is a transverse section of the male and female sections of the coupling engaged, the locking device for said parts being shown partly adjusted to hold said sections united. Fig. 7 is a cross-section of the two coupling-sections in coupled condition, taken on the line 7 7 in Fig. 5; and Fig. 8 is a side view of the locking device used to hold the male and female coupling-sections together in a clamped condition.

Two coupling-sections A B are provided, the first named being designed to receive the other when parts to which the sections are joined or form a part of are to be connected. The female piece A of the coupling is cylindrical, and upon its main portion ribs *a* are

formed to assist in retaining the piece within a tubular hose when the latter is secured upon it by wire-wrapping or other means. 55

The part A' of the coupling-section A is diametrically enlarged, producing an internal shoulder at *b*, whereon a leather or gum washer *c* is seated. A sufficient proportionate length is given to the socket portion A', and on its outer side two ears *d* are projected therefrom in parallel planes and suitably separated, and between said ears a transverse slot is formed in the wall of the socket to permit a locking device to be inserted, as will be explained. 60 65

The male piece B has ribs *a'* formed radially upon its body, similar to the ribs *a* on the coupling-section A, and for a like purpose. There is a cylindrical end portion B' formed on the male section B that is of such a relative diameter as will allow it to slide within and loosely fit the socket-portion A' of the coupling-section A. At a proper distance from the end *e* of the male piece B a collar *g* is radially formed on the latter, which collar will lie adjacent to one of the ears *d* when the male and female sections are connected, and the end *e* of the male portion B' is made to bear upon the washer *c*. 70 75

The device for detachably holding the male and female sections B A in locked condition, so that a water or air tight joint is produced where each part impinges on the joint-washer *c*, consists of a lever C, whereon a substantially-cylindrical hub-enlargement *h* is formed at one end. The hub portion *h* of the lever C is of such a thickness as will adapt it to freely rock between the ears *d*, to which it is pivoted by a fulcrum-bolt *i*, that passes through aligning holes in the ears and hub portion named. 80 85 90

Upon the exterior of the hub *h* a spiral rib *h'* is formed, which starts on one side edge of the hub, as at *h²*, and crossing diagonally, terminates at the other side edge of the same, merging into an integral radial flange portion *h³*, that extends a proper distance along the side of the hub *h*, thus increasing its frictional bearing-surface on the adjacent ear *d*. 95

The limb of the lever C is extended of a length sufficient to afford the necessary leverage for its vibration manually and is preferably flattened to facilitate manipulation, a curve being produced at *m* to cause the lever

to lie in close contact with the exterior of the socket portion A', as shown in Fig. 7, when it is folded toward said piece.

A transverse channel *n* (see Fig. 1) is formed in the portion B' of the male coupling-section B by a depression of the material in the cylindrical wall, the side edges of which channel are substantially parallel and range diagonally with regard to the axis of the coupling-section B. The position given to the channel *n* is such as will allow it to lie directly below the hub *h* of the lever C, when the two coupling-sections A B are slid together, the edge *n'* of the channel *n* that is nearest to the end *e* of the male section B being such a proportionate distance removed from said end as to permit the spiral cam-rib *h'* to engage with it and enable the cam-lever C by its vibration in a proper direction to force the end *e* against the joint-washer *c*, so as to produce an air-tight or water-tight joint between the joined coupling-sections.

On the end portion of the fulcrum-bolt *i* that is nearest to the radial flange or collar *g* a preferably-cylindrical head *i'* is formed, and in the collar named a scalloped notch *g'* is cut, that is properly located to receive a part of the bolt-head when the coupling-sections A B are joined and about to be locked together by a manipulation of the lever C, as has been explained.

It will be seen that when the male section B is slid within the socket portion A' of the other coupling-section the sliding engagement of the bolt-head *i'* with the notched collar *g* will retain the sections from rotatable movement when the lever C is vibrated. Furthermore, the head *i'* and notch *g'* serve as guides to indicate the proper alignment of the channel *n* below the hub *h* of the lever C, so that the coupling-sections may be readily coupled and secured in the dark by aligning said guides as the parts are brought together.

As before mentioned, the spiral cam-rib *h'* is prolonged on one side edge of the hub *h* as a radial flange *h''*, which has its flat side face brought into contact with the inner side face of the adjacent ear *d* when the lever C is rocked into the position shown in Fig. 7, so as to effect a tight joint between the male and female coupling-sections, whereby the friction of contact serves to retain the lever in folded adjustment until it is manipulated to release the coupling-sections from each other.

It will be apparent that by a slight and obvious change in form the coupling-sections A B may be adapted for attachment upon metal tubing or solid rods, such as shafting or pump-rods, or the coupling portions may be formed integrally therewith, if desired, and thus afford ready and reliable means for the quick attachment of tube or rod sections together endwise, such modifications of form and use being manifestly within the scope of the invention.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a coupling, a spiral-cam locking-lever which is pivoted in a slot on the female coupling-section and has an adjustable interlocking connection with a channel-shoulder on the other or male coupling-section, substantially as described.

2. The combination, with a male coupling-section and a female coupling-section, of a spiral-ribbed cam-lever pivoted to vibrate transversely on the female section and adapted to interlock its rib with a transverse shoulder on the male section, substantially as described.

3. The combination, with a male coupling-section having a diagonal channel on it near one end and a female coupling-section whereon two parallel transverse ears are formed with a slot between, of a lever having a hub-enlargement on one end pivoted between the ears, a spiral rib on the hub, and a joint-washer between the coupling-sections, substantially as described.

4. The combination, with a male coupling-section having a diagonal channel formed near one end and a radial collar near said end having a single scalloped notch, of a female coupling-section having two parallel transverse ears thereon and slotted between said ears, a lever having a hub on one end, a spiral cam-rib on the hub, a fulcrum-bolt passing through the ears and hub, and a head on said bolt which enters the scalloped notch of the collar when the sections are assembled, substantially as described.

5. A coupling comprising a male section diagonally channeled near one end, a female section, two transverse ears thereon near one end, spaced apart and slotted between, a locking-lever, a cylindrical hub on said lever, which is pivoted between the ears, and a spiral cam-rib on said hub which merges into a radial flange along one side edge of the hub, substantially as described.

6. The combination, with a cylindrical male coupling-section having a diagonally-transverse channel in it near one end and a radial collar on this section near the same end, having a single scallop in its edge, of a female coupling-section, a pair of spaced ears thereon between which a slot is formed, a bent lever pivoted between the ears and provided with a hub at one end, a spiral rib on the hub which merges into a radial flange on one side of the hub, a fulcrum-bolt passing through the ears and hub, and a head on the fulcrum-bolt, which engages the scallop on the male coupling-section when the coupling-sections are connected, substantially as described.

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Witnesses:

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