

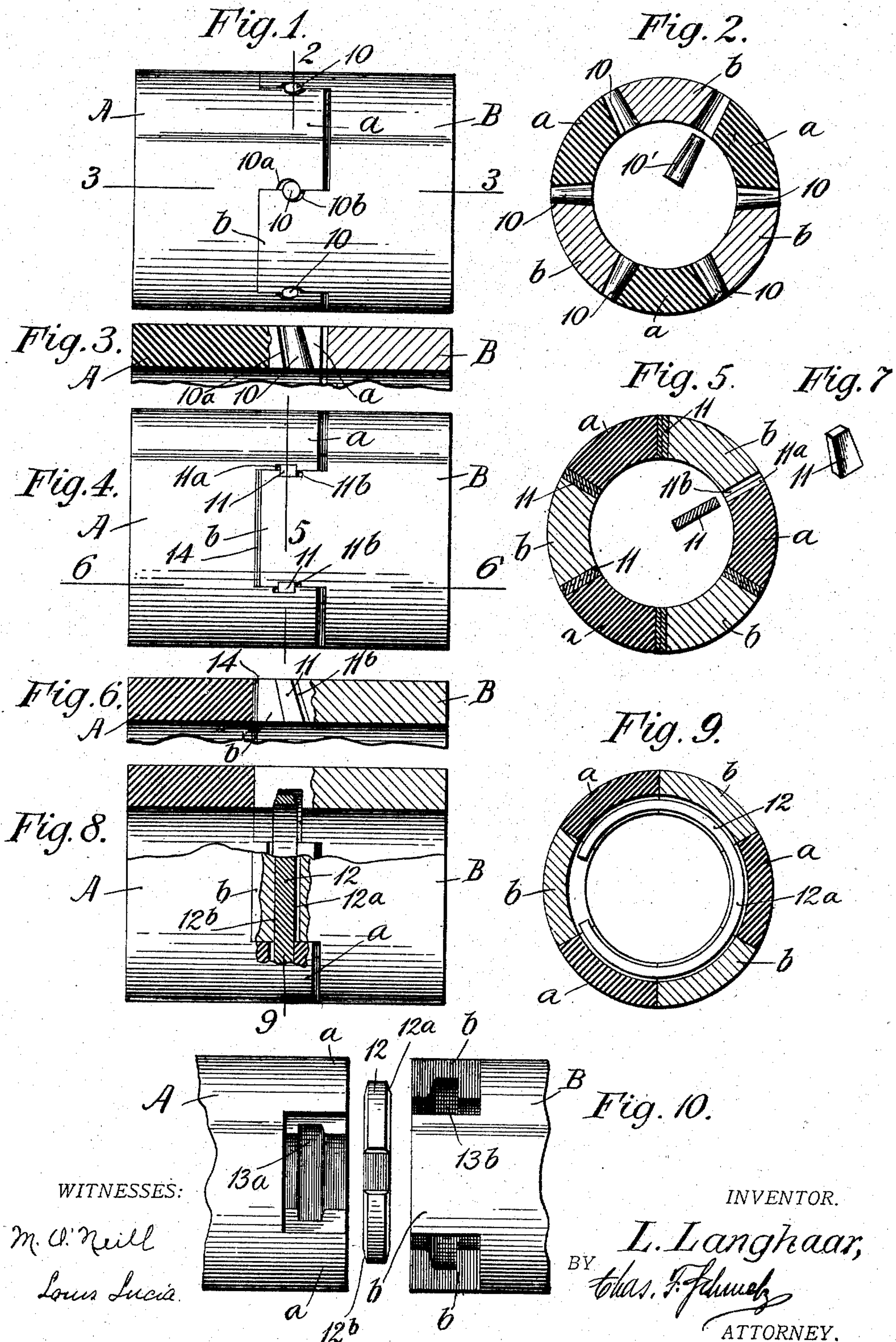
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COUPLING.

APPLICATION FILED JUNE 28, 1909.

967,395.

Patented Aug. 16, 1910.





# UNITED STATES PATENT OFFICE.

LOUIS LANGHAAR, OF BRISTOL, CONNECTICUT.

## COUPLING.

967,395.

Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed June 28, 1909. Serial No. 504,652.

*To all whom it may concern:*

Be it known that I, LOUIS LANGHAAR, a citizen of the United States, and resident of Bristol, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Couplings, of which the following is a full, clear, and exact specification.

This invention relates to couplings, and more especially to that class of devices which consist of tubular members which are to be united for corotation, and which at the same time are to be held in position relative to each other longitudinally of the rotation axis, and it has for its object, the provision of interlocking means on said members, respectively, so as to lock them against rotative movement relative to each other, and also in the provision of means whereby said members will be drawn together and prevented against longitudinal separation.

The invention has been clearly illustrated in the accompanying drawings, in which similar characters denote similar parts, and in which—

Figure 1 is a side view of a pair of members coupled in accordance with my invention. Fig. 2 is a section on line 2 of Fig. 1. Fig. 3 is a partial longitudinal section on line 3, 3 of Fig. 1. Fig. 4 is a side view corresponding to Fig. 1 but illustrating a modification. Fig. 5 is a section on line 5 of Fig. 4. Fig. 6 is a partial section on line 6, 6 of Fig. 4. Fig. 7 is a perspective view of one of the devices whereby the members are held against longitudinal displacement. Fig. 8 is a side view partially in section illustrating another modification of the invention. Fig. 9 is a section on line 9 of Fig. 8, and Fig. 10 illustrates a side view of the members shown in Fig. 8 but in a separated condition.

Briefly stated, the present invention consists substantially in the combination with a pair of tubular members which comprise interlocking crown-portions for causing both of said members to move simultaneously, of a plurality of wedge-shaped devices which engage the interlocking portions of the members and have a tendency of pulling said members tightly together; while at the same time the position of these members relatively to each other longitudinally of the axis may be gaged to any desired degree, so that all freedom between the members will be absolutely avoided and the danger of

the loosening of the parts be reduced to a minimum.

The formation of the members shown in the drawings is to all intents and purposes the same throughout in the several views, and they comprise the clutch members A and B, both being made in tubular form and having projections *a* and *b*, respectively, in each case.

In the preferred form shown, I have illustrated each member as having three projecting prongs so spaced as to receive between them, and interlocking with, the projections of the other member somewhat after the manner of an ordinary "crown clutch."

As above stated, both members are preferably tubular in order to permit another member, such as for instance a shaft, etc., to pass therethrough, while at the same time, the hollow tubular space established will enable me to place the holding members above referred to into position by entering the same from the inside of these members rather than from the outside thereof, so that consequently the centrifugal force exerted on these devices during the rotation of the members will tend to seat the same more firmly rather than to loosen them. On the other hand, the devices may be readily removed therefrom when desired by pushing them toward and into this tubular space.

Referring to Fig. 1, it will be seen that the holding members consist of a series of tapered pins 10 which may be inserted in correspondingly shaped apertures provided on each adjacent pair of interlocking members A and B on the joint line thereof, and which are preferably so disposed that one-half of such aperture, as for instance 10<sup>a</sup>, will be engaged by the wedge-pin 10 on the right side, while the aperture 10<sup>b</sup> will be engaged by said pin on the left side, it being understood that the apertures 10<sup>a</sup>, 10<sup>b</sup> are slightly larger than the pin 10 so that for this reason, the pin 10 will engage the interlocking members A and B at its diametrically opposite sides only, and a clearance will be established between the pin and the other side of the aperture. From this it is evident that the harder the pin is driven in, the closer and tighter the longitudinal contact between the members will be.

From the foregoing it will be understood that the tapered pins act in reality in the capacity of wedges; on the other hand, it



will be readily understood that if desired screws may be substituted for the pins illustrated. Attention is called also to the fact that in the present instance the axes of the pins are disposed at an angle less than 90° relative to the axis of rotation, in fact the preferred form is such that, referring to Fig. 3, the left edge of the pin is thus angularly disposed, so that any force tending to pull the members A and B apart will have no tendency to loosen said pins. Furthermore, by virtue of this inclination I am enabled to present a larger cross sectional shearing surface, and at the same time, the matter of inserting the pin is considerably facilitated.

In Figs. 4, 5, 6 and 7 I have illustrated a modification of the holding members which in this instance consist of tapered wedge blocks 11 which fit into correspondingly shaped recesses 11<sup>a</sup> and 11<sup>b</sup> of the members A, B, respectively.

In Figs. 8, 9 and 10 is illustrated another modification of the holder member which here consists of a resilient split ring 12 having tapered side faces 12<sup>a</sup> and 12<sup>b</sup> adapted to engage the correspondingly shaped walls 13<sup>a</sup> and 13<sup>b</sup> of recesses or grooves 13' provided in the projections *a, b* of the members A, B, respectively. In this instance, it will be noted that the ring may be compressed so as to be inserted in the tubular space within the members A and B, and when said ring then comes opposite the grooves 13, 13', it will spread outward and draw said members A, B together by virtue of its cam faces 12<sup>a</sup>, 12<sup>b</sup>.

Under ordinary conditions, the members A and B will be drawn together until the outer faces of one of said projections will come in contact with the bottom face between the projections of the other member; but inasmuch as in some instances it may be desired to locate or limit this contracting movement, washers, or pads, such as are illustrated at 14 in Figs. 4 and 6 may be employed to accurately gage this movement and thus position the members A and B to the desired degree.

In some instances it may be practicable to dispense with the wedge-form of the locking devices, and straight-side members may be employed instead, so that in such cases a tight fit between the locking devices and coupling members will result in positioning the latter relatively to each other without any clearance play in either direction. In other words, while the tapered form may be considered the most desirable, the invention is not by any means confined to this form, the principal feature of which consists in the provision of locking devices whereby

longitudinal movement of the coupling members relative to each other is prevented. Furthermore, it should be noted that, while I have illustrated in the drawings the holding devices as being insertible into place from the inside of tubular coupling members, this construction is not by any means essential inasmuch as similar results may be achieved by an essential adaptation of these devices in the proper manner.

In recapitulation it may be stated that the present invention comprises as one of its essential features, the members for holding the two coöperative coupling members together longitudinally irrespective of the means employed whereby both of said members are coupled or connected for corotation, and, furthermore, irrespective of the particular shape which such members may have, that is, whether they be in the form of straight or tapered pins or screws, or wedge blocks, or the ring illustrated in the drawings.

I claim:—

1. The combination with a pair of coupling members having interlocking projections for locking said section together for corotation, and having recesses in said projections, of wedge-devices narrower in width than said recesses and disposed therein and having its opposite faces engaging the diagonally-opposed walls of said recesses, respectively, for drawing said members together longitudinally.

2. The combination with a pair of coupling members having interlocking projections for locking said sections together for corotation, and having in said projections outwardly-tapered recesses, of a wedge device disposed in said recesses and engaging both of said members and movable outwardly for drawing the same together longitudinally.

3. The combination with a pair of coöperative tubular coupling members, having annular grooves overlapping each other and means for uniting said members for corotation, of a resilient member engaging the opposed walls respectively of said grooves for drawing said members together longitudinally.

4. The combination with a pair of coöperative tubular coupling members having interlocking projections and inner annular overlapping grooves, of a resilient compressible ring member having a wedge-shaped cross-section and engaging the opposed walls of said grooves, respectively, for drawing said members together.

LOUIS LANGHAAR.

Witnesses:

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