No. 748,373. PATENTED DEC. 29, 1903.

D. H. HENDERSHOT.

SHAFT COUPLING.

APPLICATION FILED SEPT. 8, 1903.

NO MODEL.

Fig. 1.

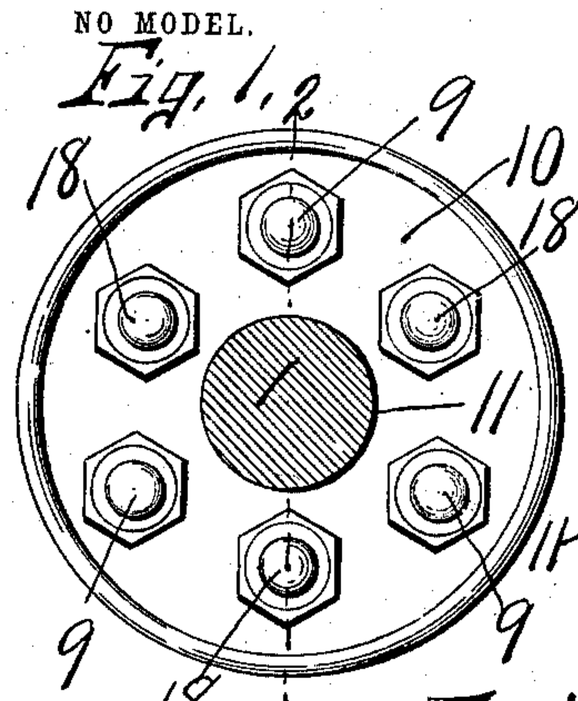


Fig. 2.

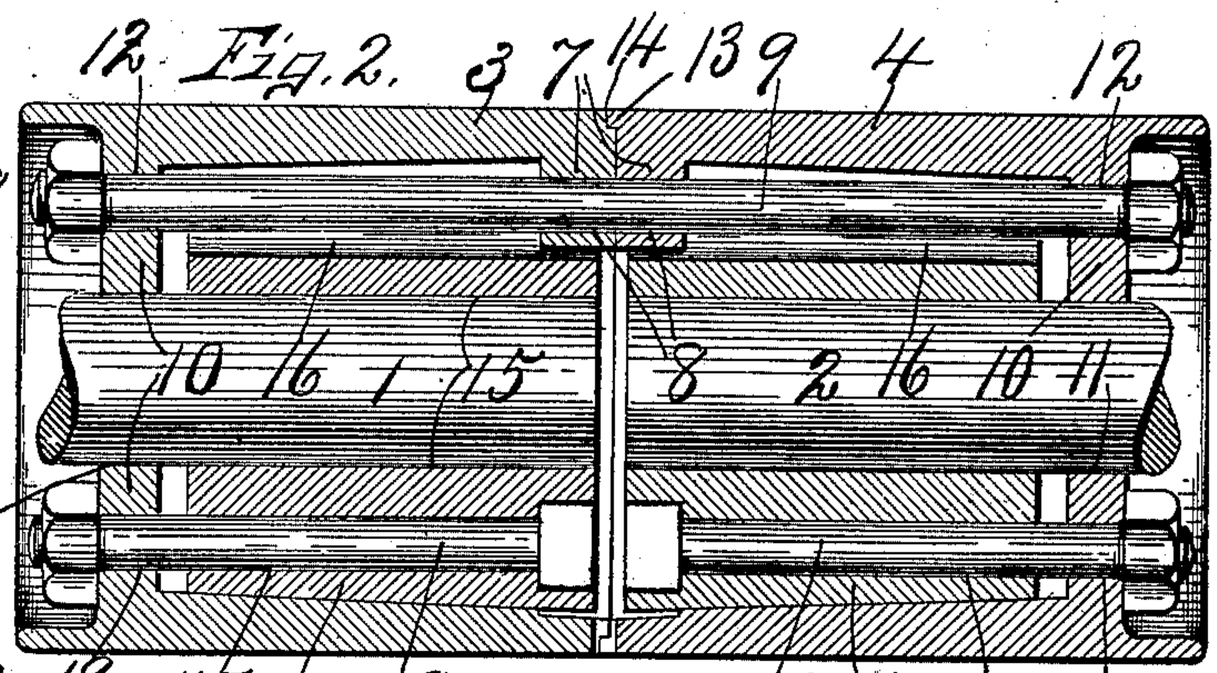


Fig. 4.

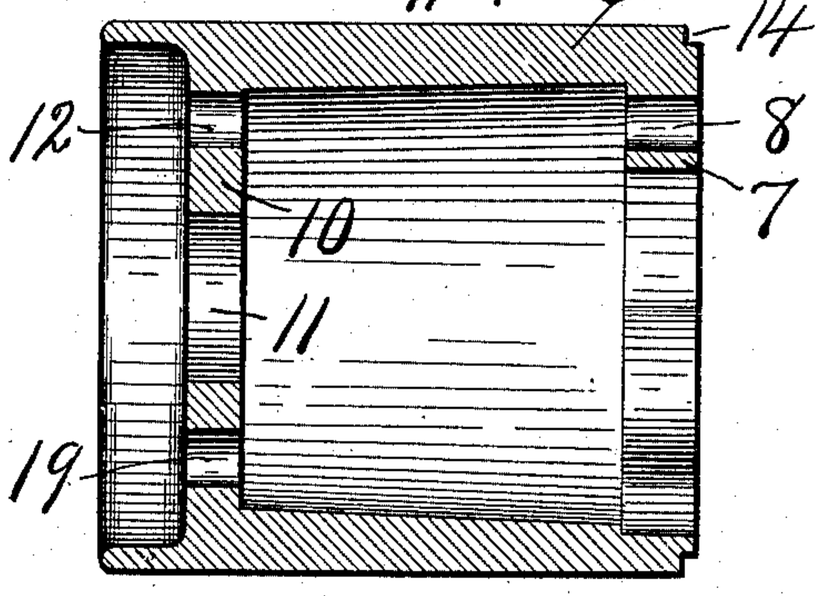


Fig. 3.

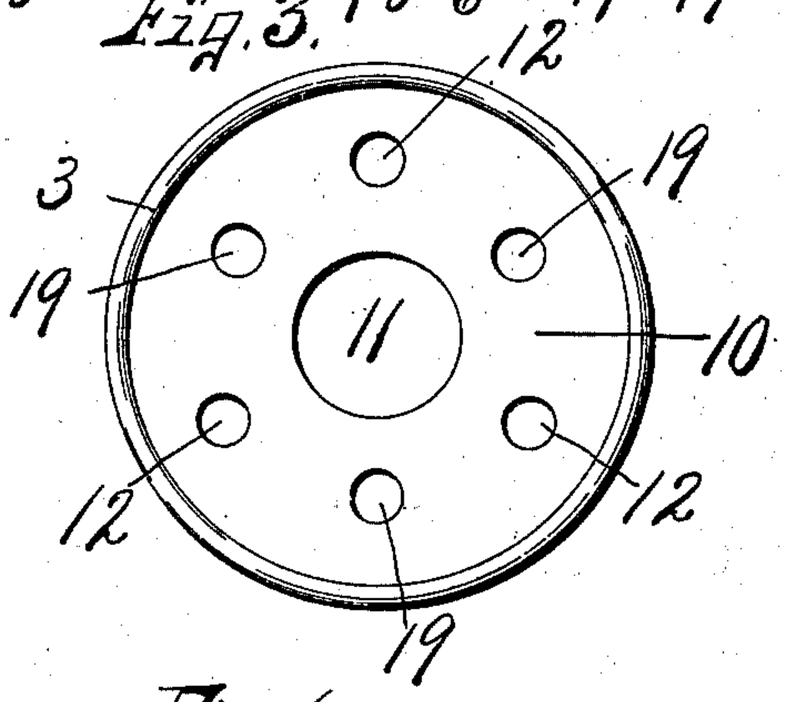


Fig. 5.

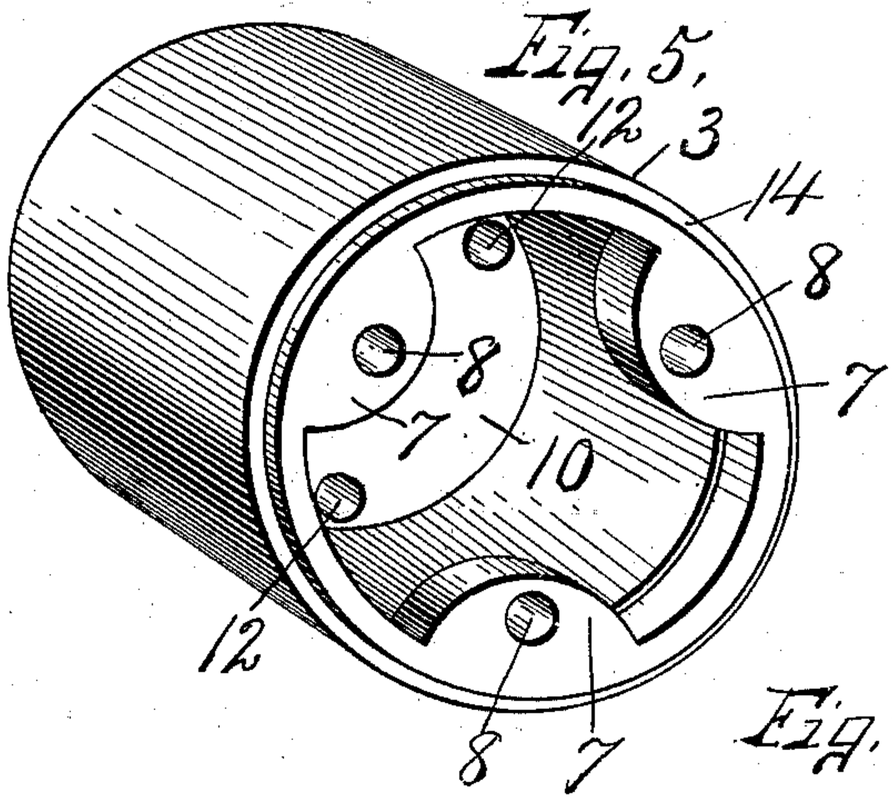


Fig. 6.

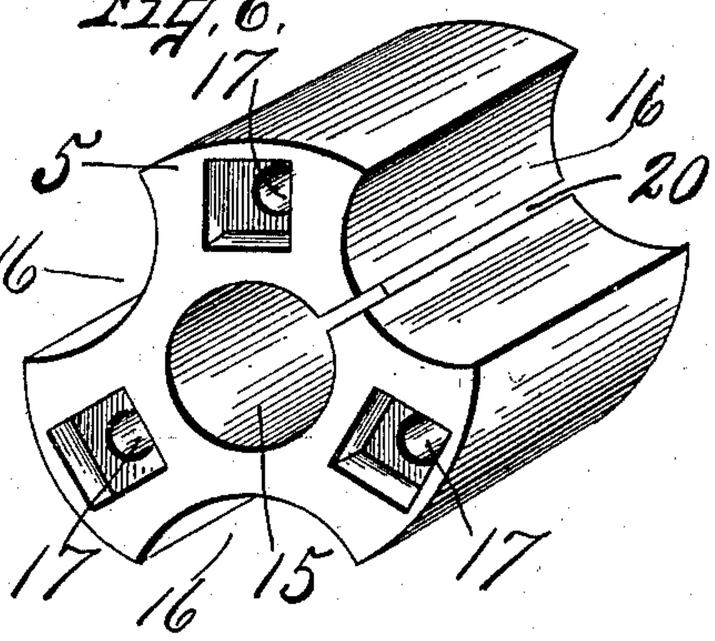
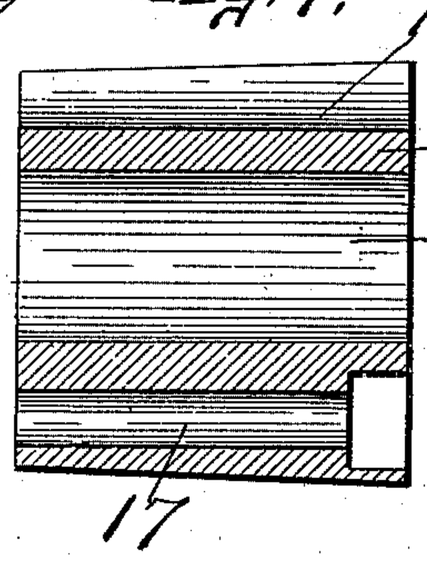


Fig. 7.



Witnesses:
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By
Howard P. Denison
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No. 748,373. Patented December 29, 1903.

UNITED STATES PATENT OFFICE.

DANIEL H. HENDERSHOT, OF BALDWINSVILLE, NEW YORK.

SHAFT-COUPLING.

SPECIFICATION forming part of Letters Patent No. 748,373, dated December 29, 1903.

Application filed September 8, 1903. Serial No. 172,350. (No model.)

To all whom it may concern:

Be it known that I, DANIEL H. HENDERSHOT, of Baldwinsville, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Shaft-Couplings, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in shaft-couplings in which two outer sleeves are clamped together end to end and inclose a pair of clamping-collars, which are drawn into frictional engagement with the shaft-sections and sleeves for locking the parts together.

The primary object of this invention is to enable the shaft-sections to be readily and easily uncoupled and still afford a simple and reliable coupling when the parts are assembled upon the shaft-sections.

It is well known that after a coupling has been in use for a considerable period of time during which it is subjected to severe torsional and endwise strains the shaft-sections frequently become cut and burred or roughened to such an extent as to render the loosening and removal of the parts very difficult and that the jaws frequently become set or corroded onto the shaft, which also materially interferes with the disconnection of the coupling from the shaft-sections. I have sought to remove these difficulties in the structure shown in the drawings, in which—

Figure 1 is an end view of the parts of the couplings assembled in the shaft-sections. Fig. 2 is a sectional view taken on line 2 2, Fig. 1. Figs. 3 and 4 are respectively an outer end view and a lengthwise sectional view of one of the sleeves. Figs. 5 and 6 are perspective views of one of the outer sleeves and one of the inner clamping-collars. Fig. 7 is a lengthwise sectional view of one of the clamping-collars.

Loosely fitted upon the shaft-sections, as 1 and 2, are the hollow cylindrical sleeves 3 and 4, which are arranged end to end, there being one sleeve for each shaft-section, and each is movable endwise along the shaft toward and away from the other to permit the insertion and removal of inner split clamping-collars 5 and 6, which impinge directly upon their respective shaft-sections. The inner meeting ends of these sleeves 3 and 4 are open to receive the collars 5 and 6 and are formed with radial lugs or ears 7, having apertures 8 to receive clamping-bolts, as 9, by which the sleeves 3 and 4 are drawn together.

Each of the sleeves is formed with a transverse wall 10 near its outer end, and each of these walls is provided with a central shaft-opening 11 and with apertures 12, which receive the outer ends of the bolts 9.

There are preferably three of the apertured lugs 7 on each sleeve equidistant from each other, and the end wall of each sleeve is formed with a corresponding number of apertures 12, which are alined with the apertures in the lugs, so that when the bolts are passed through the alined apertures 8 and 12 and the nuts and heads engage with the outer end faces of the end walls 10 the sleeves are firmly drawn together, the meeting faces of one being formed with an annular tongue 13, which enters an annular groove 14 in the other meeting face for the purpose of holding the sleeves in axial alinement and additionally strengthening the coupling against lateral strain.

The inner surface of each sleeve between the lugs 7 and end wall 10 is circular in cross-section, but tapering longitudinally from its inner or meeting end and is engaged by similar tapering surfaces on the inclosed clamping-collar. These collars are duplicates and are interchangeable and are each provided with a central shaft-opening 15 and with lengthwise grooves 16 in its periphery to receive the lugs 7 and bolts 9.

After the sleeves 3 and 4 are placed upon their respective shafts the collars 5 and 6 are inserted into the inner open ends of their respective sleeves and upon the meeting ends of the shaft-sections, so that when the collars are in operative position the lugs 7 are seated in their respective grooves 16 and further lock the sleeves and collars from independent rotation. The peripheries of these collars taper in opposite directions from their meeting ends and engage the tapering inner surfaces of the sleeves, and the portions of the collars between the grooves are formed with lengthwise apertures 17 for receiving clamping-bolts 18, the inner ends of the aper-

tures 17 being enlarged and angular or square in cross-section for receiving similarly-formed heads on the bolts 18. The lengthwise grooves in each collar correspond in number to the number of bolts 9, in this instance three, and are arranged equidistant from each other circumferentially, the grooves of one collar being alined with those of the other collar to receive said clamping-bolts 9 and also the lugs 7. The bolt-openings 17, in this instance three, are also arranged equidistant from each other and between the grooves 16 and are alined with similar apertures 19 in the end walls 10 for receiving the outer ends of the bolts 18. It is now apparent that the apertures 12 in the end walls 10 are alined with the grooves 16 and receive the bolts 9 and that these bolts and the lugs 7 normally lie in the grooves 16, while the bolts 18 of one collar are alined with similar bolts in the other collar and are arranged equidistant from each other between the bolts 9.

The collars 5 and 6 are somewhat shorter than the distance between the end walls 10 and the meeting faces of their respective sleeves 3 and 4 to permit the collars to be drawn endwise a limited distance by the bolts 18 when the sleeves are clamped together by the bolts 9, it being understood that the outer ends of the bolts 18 are provided with suitable nuts, which engage the outer end faces of the heads or end walls 10 to be engaged by a wrench or similar tool. Each of these collars 5 and 6 is split longitudinaly at 20 and at the base of one of the grooves where the stock is comparatively thin, so that when the collars are drawn endwise from each other the wedging effect due to the engagement of the tapering surfaces of the collars with those of the sleeves operates to compress the collars onto the shaft-sections, and thereby firmly couples the shaft-sections together, this movement being effected by the bolts 18 irrespective of the bolts 9.

When it is desired to uncouple the shaft-sections, it is simply necessary to release the bolts 9 and 18 and to then slide the sleeves 3 and 4 endwise from each to uncover and release the collars 5 and 6, which movement may be facilitated by inserting a suitable drift-tool in an opening 21 or between the meeting faces of the sleeves, whereupon the jaws of the collars automatically spring out of engagement with the shaft-sections, and the latter may then be withdrawn.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A shaft-coupling comprising two separate hollow cylindrical sleeves arranged end to end and having their inner faces tapering longitudinally from their meeting ends, the outer ends being formed with transverse walls, means within the sleeves for drawing the sleeves endwise toward each other, separate and independently-movable split collars inserted into the meeting ends of the sleeves wholly between the transverse walls and inclosed by said sleeves, the collars having lengthwise-tapering surfaces engaging the tapering inner surfaces of the sleeves and separate devices for drawing the collars endwise from each other to cause the tapering surfaces to wedge against each other and thereby compress the collars onto the shaft.

2. A shaft-coupling comprising two separate hollow sleeves arranged end to end and having their meeting ends open and provided with radially-projecting apertured lugs and their outer ends formed with end walls having shaft-openings and apertures alined with the apertures in the lugs, said sleeves being movable endwise toward and from each other, clamping-bolts passed through alined apertures in the lugs and end walls for drawing the sleeves together, separate split collars arranged end to end within the sleeves and having central shaft-openings and outer surfaces tapering lengthwise from their meeting ends and engaging the inner faces of the sleeves, said collars having lengthwise grooves in their peripheries receiving the lugs of the sleeves, and separate devices engaged with the collars and with the end walls of the sleeves for drawing the collars endwise from each other to wedge the collars in their sleeves and thereby compress said collars on the shaft.

3. A shaft-coupling comprising two hollow sleeves arranged end to end and having their inner faces tapering lengthwise from their meeting ends, said meeting ends having an intermeshing tongue and groove and apertured lugs and the outer ends having transverse walls formed with shaft-openings and with apertures alined with the apertures in the lugs, split collars within the sleeves having central shaft-openings and outwardly-tapering surfaces wedging with the tapering surfaces of the sleeves, said collars being formed with lengthwise grooves in their peripheries receiving said lugs, clamping-bolts passed through the alined apertures in the lugs and end walls of the sleeves for drawing them together, said end walls being formed with additional apertures and the collars having apertures alined with the additional apertures in the sleeves, and separate clamping-bolts for each collar passed through the apertures in said collars and also through the additional apertures in the end walls of the sleeves for drawing the collars endwise from each other for the purpose described.

In witness whereof I have hereunto set my hand on this 2d day of September, 1903.

DANIEL H. HENDERSHOT.

Witnesses:

H. E. CHASE,

HOWARD P. DENISON.