No. 619,203. Patented Feb. 7, 1899.

J. MISSONG.

COUPLING.

(Application filed Dec. 30, 1897.)

(No Model.)

Fig. 1.

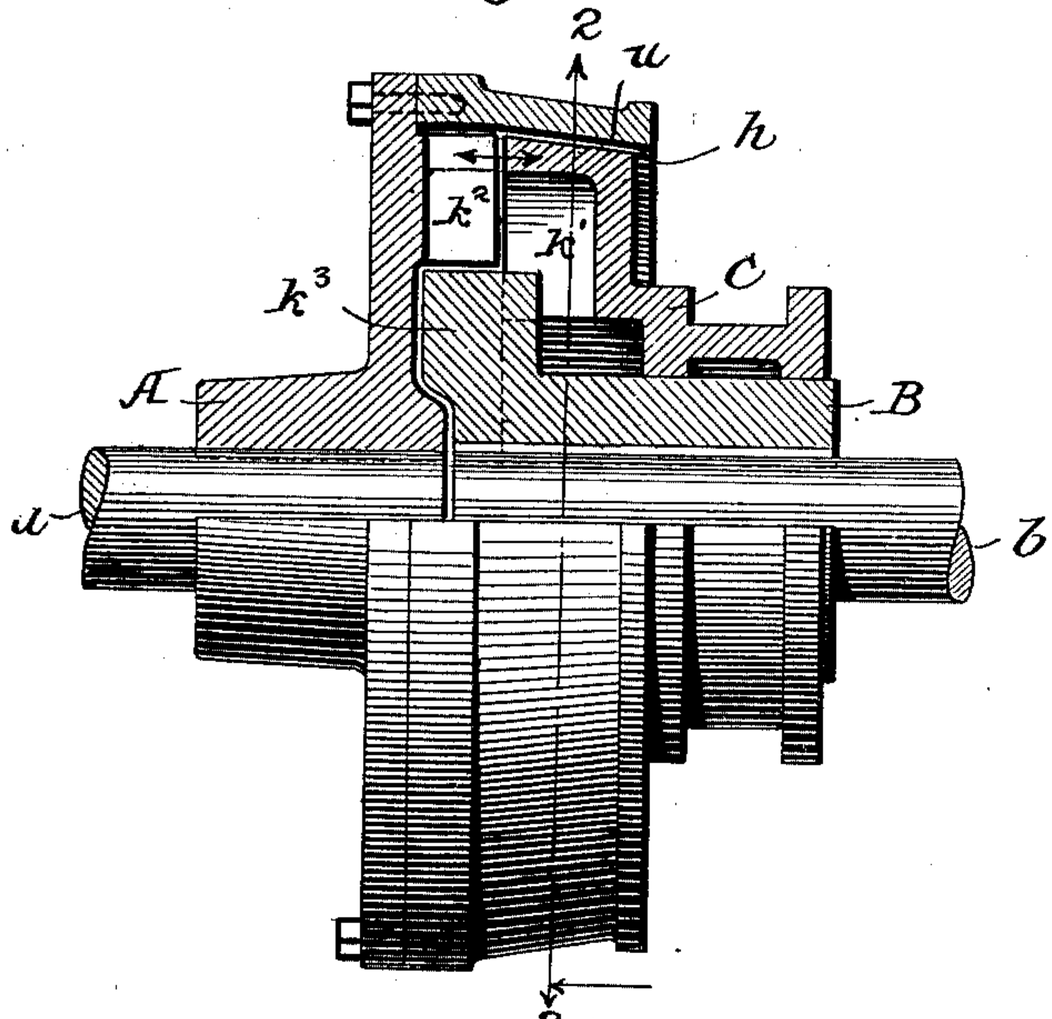
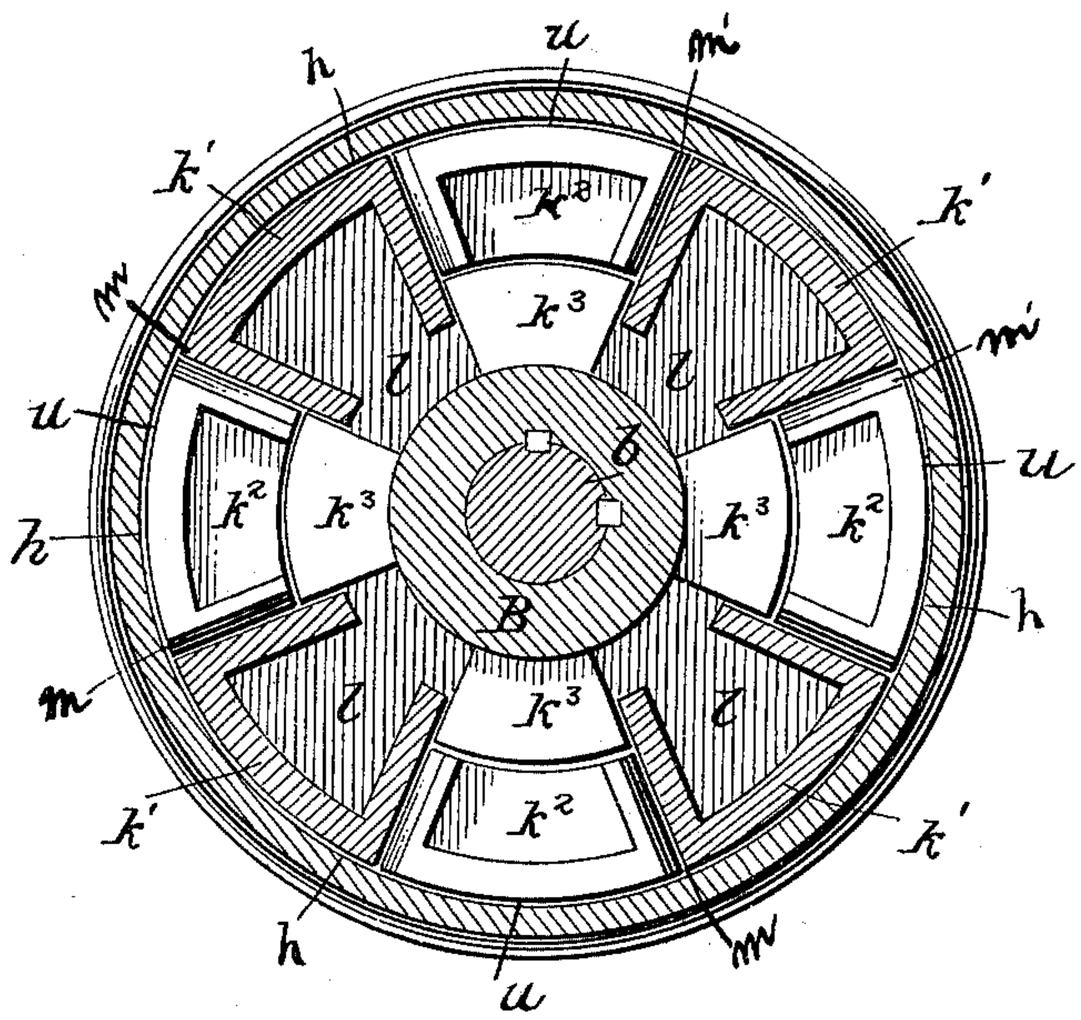


Fig. 2.



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UNITED STATES PATENT OFFICE.

JACOB MISSONG, OF HÖCHST-ON-THE-MAIN, GERMANY.

COUPLING.

SPECIFICATION forming part of Letters Patent No. 619,203, dated February 7, 1899.

Application filed December 30, 1897. Serial No. 664,797. (No model.)

To all whom it may concern:

Be it known that I, JACOB MISSONG, a subject of the Emperor of Germany, and a resident of Höchst-on-the-Main, Germany, have invented certain new and useful Improvements in Couplings, (for which I have obtained Letters Patent in Great Britain, No. 7,677, dated March 24, 1897; in Germany, No. 93,639, dated October 22, 1896; in France, No. 265,369, dated March 25, 1897; in Belgium, No. 127,453, dated March 25, 1897, and in Austria, No. 47/4,511, dated November 3, 1897,) of which the following is a specification.

This invention consists of an improvement in combined friction and positively-engaging clutches, and has for its object the provision of means whereby a clutch of this nature is enabled to transmit power at a high rate of speed and under heavy loads without danger of breaking the parts of the coupling.

Hitherto in this class of couplings a sliding member has been mounted directly on the shaft, the result being that the means which were adapted to secure this member against independent rotation were subjected to too great strains in transmitting the power to the shaft. Thus with these devices it has been impossible to prevent the danger of such means being broken, especially when great speed is desired or where the driven parts are connected to a heavy load.

My improvement consists in securing one member of the coupling to the driven shaft, as well against longitudinal movement as against independent rotation. Furthermore, I relieve this member mounted on the shaft of the office of receiving power directly from the driving member by frictional or positive contact therewith. This function is assumed by a member which is mounted upon the aforesaid member to slide longitudinally thereon and engages therewith to transmit power through it to the driven shaft.

In the drawings, Figure 1 is an elevation of the clutch, partly in section. Fig. 2 is a section on the line 2 2 of the same.

Like reference characters indicate like parts in both figures.

Let a represent the driving element, in this case a shaft, and b the shaft to be driven. A bearing-plate A is mounted on the end of shaft a and secured thereto and is provided on its face toward the driven shaft with a series of engaging lugs k^2. These lugs are beveled along their chordal edges. Secured at or near the periphery of plate A is a hollow cylinder whose interior face h forms a truncated cone.

B is an elongated collar mounted upon the driven shaft b adjacent to plate A and is secured to shaft b, so as to allow it no movement independent of said shaft. The collar B is provided at its end nearer plate A with a series of engaging lugs k^3, which may assume positions out of engagement with but adjacent to the lugs k^2 and extend farther in the direction of the shaft b than the lugs k^2. With the lugs k^2 and k^3 in these relative positions a series of spaces l is formed in front of the face of the plate A.

An operating member or shifter C is loosely mounted upon the collar B and is adapted for reciprocal longitudinal movement thereon. This member is so constructed as to be reciprocated by any well-known device, and the other end is of greater diameter, the periphery u of which is in the form of a truncated cone and adapted for frictional contact with the surface h. A series of engaging lugs k' is formed on the face of the member C toward the driving-shaft, having their chordal edges beveled at m to facilitate their engagement with the beveled lugs k^2 at m'. These lugs are always in engagement with the lugs k^3; but when the clutch is in full operation they occupy the spaces t, between the lugs k^2 and k^3, engaging with both series of lugs.

The operation of the clutch is as follows: Normally the operating member or shifter C is out of frictional or positive engagement, but has its lugs k' inserted between the extending parts of the lugs k^3. When now it is desired to rotate the driven shaft b, the operating member C is moved along the collar B until its surface u engages with the surface h, when the shaft b will be rotated and its speed will quickly equal that of shaft a, the power being transmitted through the lugs k' and k^3 directly to the collar B and thence to the shaft b, to which the collar is rigidly secured. The member C is now quickly reciprocated toward the driving mechanism a A and having the same speed thereas, aided by the bevel on the lugs k' k^2, these lugs will

become engaged, the lugs k' occupying the spaces l, and the shaft b will now be positively operated by shaft a through the intermediate mechanism.

As the greatest strain is borne by the lugs, their construction will be governed by the amount and rate of speed of the power to be transmitted.

The invention is capable of embodiment in many other useful constructions than the one herein illustrated, and it is quite obvious that if the bearing-plate A should be provided with lugs instead of the collar B and with proper perforations the operating member C could be mounted thereon as well as upon the collar B.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination with driving and driven elements, of two clutch members secured to said driving and driven elements respectively, a shifter mounted to reciprocate on, and interlocking with, one of said clutch members, and having frictional contact with the opposing clutch member in one position, and positively interlocking with the said member in the opposite position, substantially as described.

2. The combination with driving and driven elements, of a clutch member secured to said driving element and provided with positive engaging means and a friction-surface, a clutch member secured to said driven element and provided with positive engaging means, and a reciprocatory shifter mounted on one of said clutch members and provided with positive engaging means and a friction-surface, substantially as described.

3. The combination with driving and driven elements, of a clutch member secured to said driving element and provided with a friction-surface and with positive engaging means beveled along their chordal edges, a clutch member secured to said driven element and provided with positive engaging means, and a reciprocatory shifter mounted on one of said clutch members and having a friction-surface and positive engaging devices beveled along their chordal edges, substantially as described.

4. The combination with driving and driven shafts, of a bearing-plate secured to said driving-shaft and formed with a concave conical frictional surface and engaging means, a collar secured to said driven shaft and formed with engaging lugs, and a reciprocatory shifter loosely mounted on said collar and formed with a convex conical friction-surface, and with engaging lugs, substantially as described.

5. The combination with driving and driven shafts, of a bearing-plate secured to said driving-shaft and formed with a concave conical friction-surface and engaging lugs beveled along their chordal edges, a collar secured to said driven shaft and provided with engaging lugs, and a reciprocatory shifter loosely mounted on said collar and formed with a convex conical friction-surface and with engaging lugs beveled along their chordal edges, substantially as described.

6. The combination with driving and driven shafts, of a bearing-plate secured to said driving-shaft and provided with a concave conical friction-surface and a series of engaging lugs, a collar secured to said driven shaft and formed with a series of engaging lugs, and a reciprocatory shifter loosely mounted on said collar, and formed with a convex conical friction-surface and a series of engaging lugs, said shifter being limited in its reciprocation to continuous engagement of the lugs thereon with the lugs on said collar, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JACOB MISSONG.

Witnesses:
N. CARL HOFFMANN,
HERMANN BOEDEKER.