July 3, 1934. C. A. RUDQVIST 1,965,109

CLUTCHING DEVICE

Filed Aug. 14, 1929

Fig. 1.

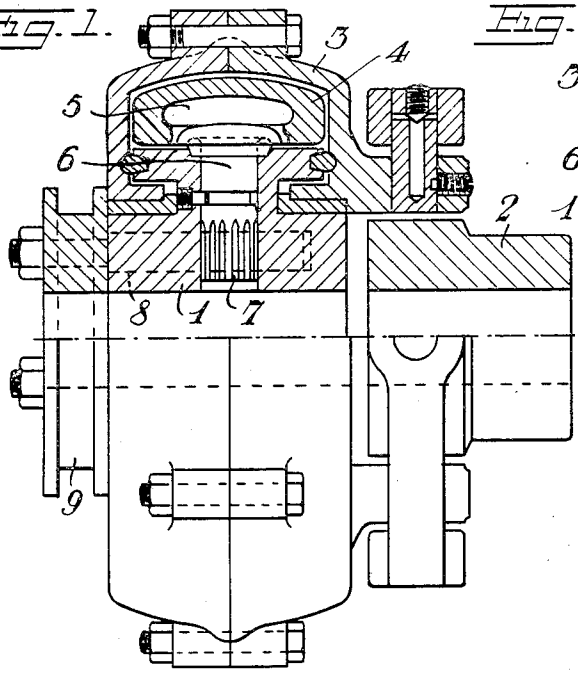


Fig. 3.

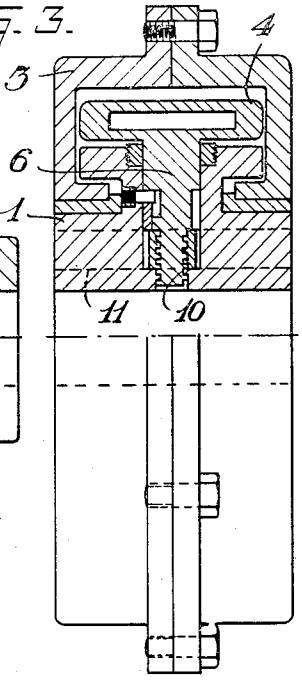
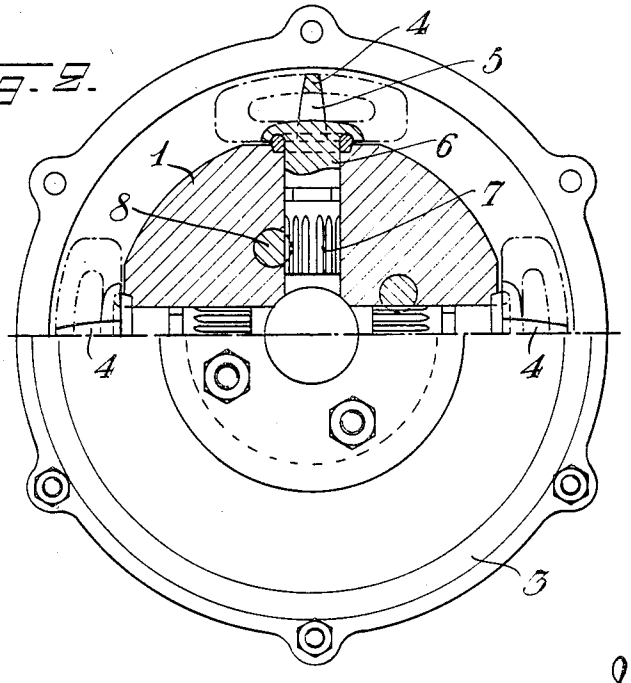


Fig. 2.



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1,965,109

CLUTCHING DEVICE

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Application August 14, 1929, Serial No. 385,822
In Sweden October 24, 1928

2 Claims. (Cl. 192—58)

This invention relates to a cushioned or yielding clutching device and particularly to that type of such devices which comprises as one clutch member a casing or drum partially filled with a powdered, grainy, or similar material and as the other clutch member a wheel rotatably mounted within said casing or drum and carrying blades adapted to take said material with them. A clutch of this type is disclosed in my U. S. Pat. No. 1,830,564, granted November 3, 1931.

The object of this invention is to provide a clutching device of the above type in which the position of the blades may be readily adjusted to vary the effect of the device.

In the accompanying drawing two embodiments of the invention are illustrated. Fig. 1 is a side elevational view, partly in cross-section, of a clutch according to one embodiment. Fig. 2 is an end view, partly in cross-section, of the same clutch. Fig. 3 is a side elevational view, partly in cross-section, of a clutch according to another embodiment.

With reference to the embodiment shown in Figs. 1 and 2, the numeral 1 indicates the hub of the blade wheel. Situated to the side of said hub is the hub 2 of the casing 3 in which said blade wheel is enclosed. The casing 3 and its hub 2 are manufactured separately and connected together in any appropriate way, not shown. The casing is rotatably mounted on the hub of the blade wheel, as will appear from Fig. 1. The blade wheel is provided with a number of blades or wings 4 formed with apertures or ports 5 to allow the powdered or granular material to pass from one side of the blade to the other when the clutch is in operation.

The blades are not secured directly to the hub 1 but are carried by bolts or stems 6 rotatably mounted in radial borings in the hub. The innermost portion of each of said bolts 6 is formed with longitudinally extending teeth 7 engaged by a toothed rack 8 axially movable in the hub 1. Said rack projects outside one end of the hub 1 and is there secured to a ring 9 capable of axial displacement on the shaft carrying the blade wheel, as by means of a fork, not shown. Said displacement will cause all of the bolts 6 with their respective blades to rotate and in this manner the blades may be moved from the axial position shown in Fig. 1 to a position at right angles thereto, as shown by dotted lines in Fig. 2. In the said first-mentioned position the blades will have their highest effect, and in the said last-mentioned position they will have their lowest effect or be practically out of action. It is to be noted that the blades may be also set to any intermediate position, according as a higher or lower degree of cushioning is desired.

In Fig. 3 only such parts of the clutching device are shown as are necessary to illustrate the modification in question. Said modification consists in that the blades are movable radially. Also in this embodiment the blades 4 are carried by radial bolts 6. The innermost portion of said bolts is provided with a set of transversally extending worm wheel teeth 10. Each such set of teeth 10 is provided with a member 11 for moving the same and the structure for producing such movement may be, for example, similar to that shown in U. S. patent to Dann, No. 893,455, granted July 14, 1908. By radially moving the blades the distance between the blades and the periphery of the casing 3 may be changed within certain limits to vary the effect of the blades or render the blades in-operative. It is to be noted that during the operation of the clutch the layer of powdered or granular material is of a very little radial thickness only, as measured from the periphery of the casing.

What I claim is:—

1. A clutch comprising relatively rotatable coaxially mounted driving and driven members, the driven member comprising a drum, the driving member comprising a hub portion positioned to rotate within said drum, a plurality of stems mounted in said hub and blades attached to said stems, a quantity of finely divided solid material partially filling said drum and of such nature as to form a mass having an appreciable coefficient of internal friction and of such a nature as to collect in a drift in front of the blades on rotation thereof relative to the drum and to present increasing resistance to relative rotation due to centrifugal force caused by rotation, said drifts providing the sole path of power transmission through the clutch and acting to transmit power in synchronous drive relation, said blades being constructed to permit said material to move past the blades when the clutch is in operation, and means for manually moving said stems to move said blades to vary the size of the drifts formed by rotation of the blades.

2. A clutch comprising relatively rotatable coaxially mounted driving and driven members, the driven member comprising a drum, the driving member comprising a hub portion positioned to rotate within said drum, a plurality of radially extending stems mounted in said hub and blades attached to said stems, a quantity of finely divided solid material partially filling said

drum and of such nature as to form a mass having an appreciable coefficient of internal friction and of such a nature as to collect in a drift in front of the blades on rotation thereof relative to the drum and to present increasing resistance to relative rotation due to centrifugal force caused by rotation, said blades being constructed to permit said material to move past the blades when the clutch is in operation, and means for moving said stems to rotate said blades about the axes of the respective stems to vary the size of the drifts formed by the rotation of the blades.

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