

Power Transmission in Textile Mills

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FLEXIBLE COUPLINGS.

These are especially adapted for transmitting power and connecting two shafts which are not in perfect alignment, absorbing sudden shocks between driving and driven members and maintaining provision for slight end play or longitudinal movement. While largely used between direct-connected outfits of generators, fans, blowers, pumps, etc., with steam and gas engines, and electric motors, they are also employed in dividing line-shafts where expansion and

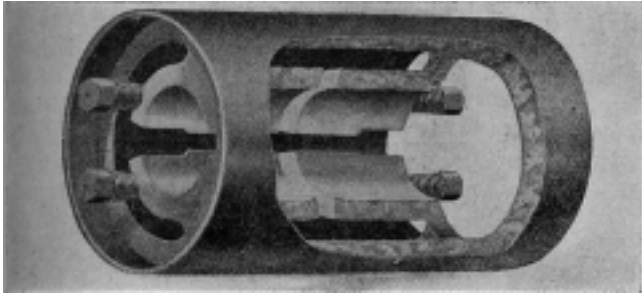


FIG. 23. INTERNAL CLAMP COUPLING

contraction have to be contended with, and in connecting shafting or machinery which requires perfect alignment not easily maintained with various types of bearings.

A flexible coupling of the disc type, shown in Fig. 24, consists essentially of a flange coupling of the general form illustrated in Fig. 20, but having the flanges separated for a short distance with a number of thin steel discs, as indicated in the cut. Collars or washers on the connecting bolts spring the discs slightly out of true and thus provide the necessary tension or rigidity.

The single coupling shown in Fig. 24 permits a deflection of 3 degrees in the alignment of the shaft. The heavy pattern, double coupling, shown in Fig. 25, permits a deflection of 6 degrees in shaft alignment and a displacement of 1-32 to 1/2 inch in shaft centers. The various patterns are made in sizes ranging from 3/4-inch up to 16-inch, having a power transmitting capacity up to 10,000 h.p.

Another form of flexible coupling is shown in Figs. 26, 27 and 28. This is of the flange type, but the usual bolts are replaced by flexible pins, shown in Fig. 28. The action, when the shafts are out of line, is indicated in Fig. 26, the pins sliding in slots provided for this purpose. When the shafts are out of line part of the flexible pins pivot about

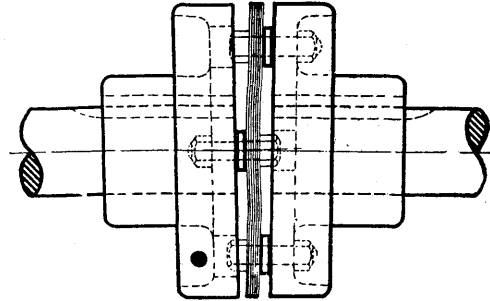


FIG. 24. SINGLE FLEXIBLE COUPLING

the others, a slight bending of the springs allowing for the misalignment. In either case each shaft runs independently of the other upon its own bearings and center.

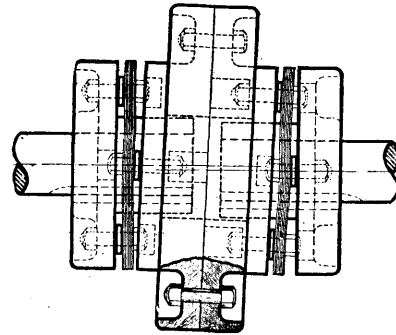


FIG. 25. DOUBLE FLEXIBLE COUPLING

A flexible coupling known as the "link coupling" is shown in Fig. 29, the construction and operation of which being clearly indicated in the cut.

Another coupling making use of an endless belt wound

over pins, which alternate first on one flange and then on the other, is shown in Fig. 30. This coupling is made in standard sizes to fit shafts up to 8 inches in diameter.

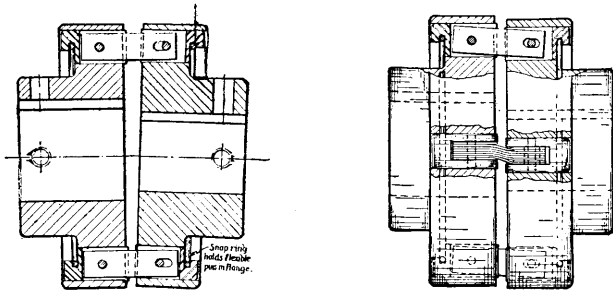


FIG. 26.—FLANGE FLEXIBLE COUPLING FIG. 27

In case of direct motor drives and in the connection of electric generators with the shafts of engines and turbines,

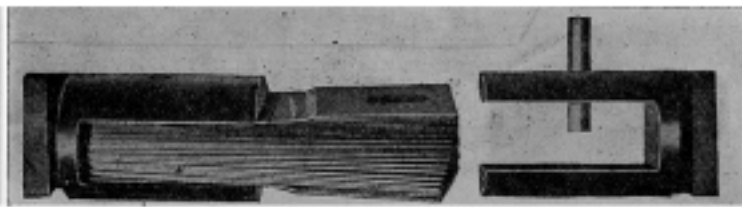


FIG. 28.—FLANGE FLEXIBLE COUPLING.

it is desirable to use an insulated coupling in order to prevent any possibility of the electric current passing through the shafting. A coupling of this type is shown in Fig. 31, the insulation consisting of a heavy rubber plate between the flanges, rubber bushings around the bolts, and fibre washers under the nuts.

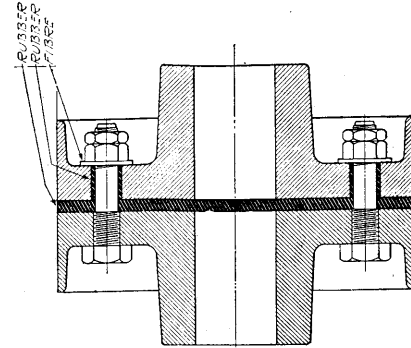


FIG. 31.—INSULATED COUPLING.

The first of these is usually of the form shown in Fig. 32, the jaw at the right being attached solidly to the shaft upon which it is placed, while that upon the other shaft at the left, slides upon a keyway so that it may be thrown in or

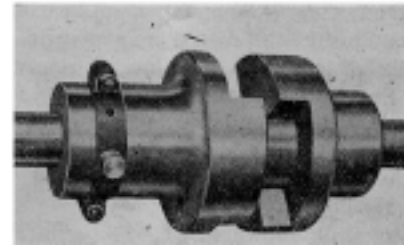


FIG. 32.—CLUTCH COUPLING.

out of mesh with the other jaw. A lever, not shown in the cut, is attached to a loose collar for making the shift.

When it is desired to throw the coupling in and out frequently, as may be the case under certain conditions, it is best to employ one of the friction type, which may be operated while the shafts are in motion. A device of this

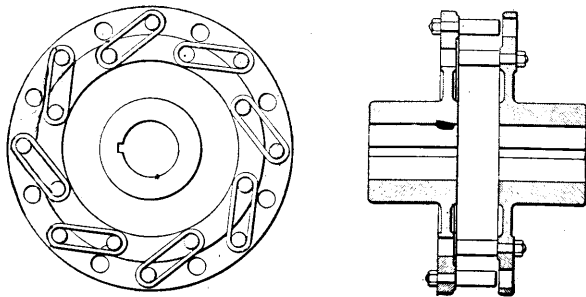


FIG. 29.—FLEXIBLE LINK COUPLING.

CLUTCH COUPLINGS.

These are used for sub-dividing a line-shaft into sections so that parts may be easily cut out for repairs or other purposes without stopping the remainder of the shaft. It some-

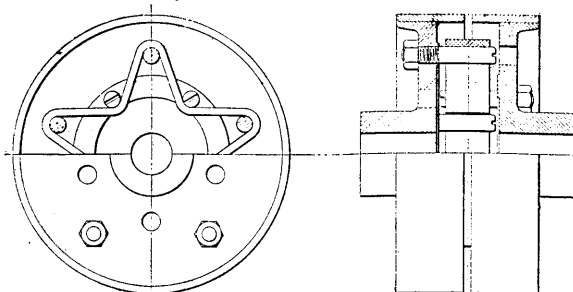


FIG. 30.—FLEXIBLE BELT COUPLING.

times happens that certain departments in a mill do not need to run continuously to keep up with the others, or may be shut down temporarily for one reason or another. In cases of this kind the shafting may be so arranged that the

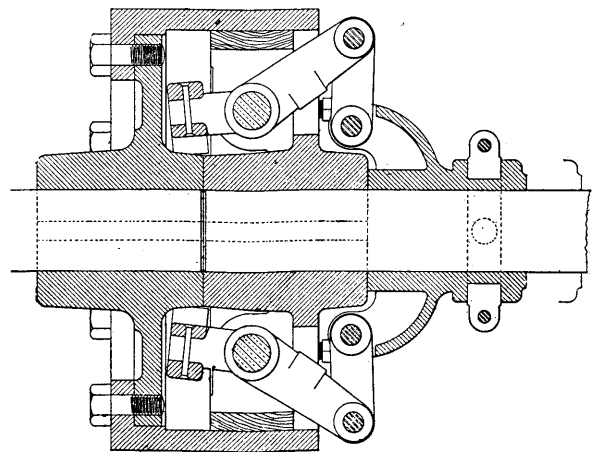


FIG. 33.—FRICTION CLUTCH COUPLING.

type is shown in Fig. 33, which clamps the two parts of the coupling together by means of wooden-faced jaws pressed tightly against the inner surface of a shell or rim. Clutches of this kind and other applications will be described later in some detail.