

A Cone Clutch in a South African Mill

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I thought readers of HMG Newsletter might be interested in an elegant mechanism I came across for engaging and disengaging runner stones in a stoneground flour mill in South Africa. It must represent an example of the peak of German mill engineering in the late 19th century.

The mill concerned is at Reichenau Mission, Underberg, Natal. The mill machinery was manufactured by Ferdinand Strauss of Germany and commissioned in 1896. There are two sets of millstones both driven off the same drive shaft. A large cone clutch on each stone spindle allows the runner stone to be individually engaged and disengaged from the drive without the need to disconnect the belt.

The clutch consists of two conical surfaces brought together to transmit torque by friction. A male cone, covered in sections of friction material (see picture A), is keyed to the runner stone spindle but is movable (by handwheel operation) in the vertical plane. Inside the large-belt driven pulley (see pictures B and C), is a mating female cone. The female cone/pulley freewheels on a thrust bearing supported by a shoulder on the vertical shaft. By adjustment of the handwheel the male cone can thus be made to engage with the female cone, which in turn will cause the runner stone to rotate.

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Picture A



Picture B



Picture C

