ROPE TRANSMISSION—Fig. 16, continued

◆ ◆ OUR illustration of Manilla Rope Transmission for this month is one of great interest to all manufacturers, inasmuch as it demonstrates the simplicity with which a shaft may be run at right angles to the driver and with little or no loss of power. It is a well known fact, however, that with gears there is a great loss of power from friction, and many other disagreeable points of contention; also with a belt and set of mule pulleys, there is a great loss by imperfect contact of the belt with the pulleys, journal friction, and other annoyances sufficient to condemn it. On the contrary, with the Manilla Rope System, under the Dodge Patents,* a shaft may be driven at right angles to another with the same efficiency as two parallel shafts are ordinarily driven.

The right angle transmission consists of a series of Wood Split Pulleys with grooves for the rope, and an ordinary manilla rope, (tallow laid.)

The power is taken from the main line which makes 250 RPM. and transmits about 20 HP.

The driver A and driven B, and mule pulleys CC each have four grooves, and the carriage pulley D has one groove. It will be noticed that the driver A and driven B act as winders, and the rope is wound from one to the other to get surface in contact; the mule pulleys CC are simply carriers, carrying the rope around the corner, and are so placed that the travelling carriage always keeps the rope at an even tension, so that the ropes will always follow the grooves, and the rope is thus guided to and from the driven, always keeping its allignment.

* Dodge Manufacturing Co., Mishawaka, Ind.

The carriage above referred to, or device for taking care of the slack and giving proper tension to the rope, is the same as those illustrated in former issues of *Power and Transmission*, and is shown at E, with impelling weight at G; the slack side of the rope being paid directly from the driver to the travelling carriage, leading back on to the driven. The tension weight serves a double purpose, taking care of all slack caused from the stretch of the rope or from atmospheric changes, and for a proper tension on the rope. Should a change occur whereby more power should be required, simply adding more weight would increase the power in proportion to the foot pounds carried, which multiplies with the number of wraps used.

The merits of this system are its simplicity, great efficiency, cheapness and wonderful saving in journal friction as compared with gears or a heavy belt with mule pulleys.

This particular transmission has been running constantly for 4 months, and never has given a minute's trouble. The rope shows no signs of wear and looks as though it would last for years. The rope is an ordinary $\frac{1}{2}''$ diameter, and travelling at a velocity of 3140 FPM.

We make the following mathematical summary: Velocity of the rope 3140 FPM, transmits as above 20 HP. The tension on the rope is therefore $\frac{33000 \times 20}{3140} = 211 + 30$ pounds, (one-half the weight in the weight box) equals 241 pounds, the total strain on all the ropes; there being 4 pulley ropes, hence the strain will be divided 4 times, equals $\frac{241}{4}$ equals 60 pounds, which is 3 per cent. of the breaking strain of the rope: it being estimated as safe to use 10 per cent. of the breaking strain of the rope in practice, with this system.

The breaking strain of a $\frac{1}{2}''$ manilla rope is 2250 pounds.—*Power and Transmission Journal.*