

OCTOBER, 1897

### PULLEYS.

ONE of the greatest objections to the fast running of shafting and belts is the want of pulleys properly constructed. Experience has led some of the best engineers to the conclusion that it is not safe to run an iron pulley four feet in diameter 400 turns per minute, owing to the unequal shrinkage of castings in cooling, and other imperfections. In one of the discussions before the New England Cotton Manufacturer's Association, it was stated by a well known engineer that, running slow, the centrifugal force has but

little effect; but as the centrifugal force is as the square of the velocity, it is not so easily overcome in rapid motions. If the rim of the pulley is much thicker, the centrifugal force increases with the thickness, and consequently nothing is gained by the extra iron. The centrifugal force of material is as the specific gravity, and as the specific gravity of cast iron is thirteen times that of pine, hence, the centrifugal force must be thirteen times greater; but the tensile strength of cast iron is only two to one of that of pine, therefore, the rim of a pulley made of white pine

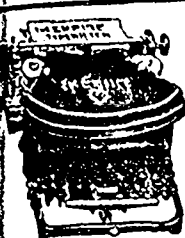
felloes will sustain from four to six times the centrifugal force of a rim made of cast iron. That is, the same diameter of white pine felloes will run more than double the velocity without being torn asunder. It is less likely to be broken by jar or blow, and less than one-half the weight, and of course takes less power to run. A pulley made in this way has been run, sixteen feet diameter, four feet wide, ninety turns per minute, for eighteen months. With quick shafting, wood must take the place of iron pulleys. —Textile World.

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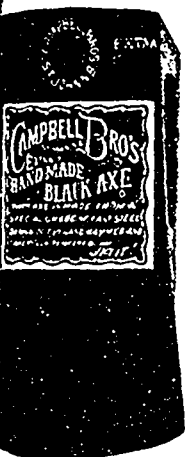
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