should be joined in such a manner that it will run smoothly over the pulleys. This is easily accomplished by wire lacing, as the joints are not any thicker than the rest of the belt.

EFFICIENCY OF BELTS.

With reference to the efficiency of leather belts, it is a well known fact that in order to obtain the best results, the conditions under which the belts work, play an important part. Experiments have shown that the average breaking strain of leather is 3,200 pounds per square inch of cross-section, but a belt when in use should not be subjected to a greater strain than one-eleventh of this, which would equal about 55 pounds for each inch of width in a single belt three-sixteenths thick. The strain can of course be increased in direct proportion as the thickness of the belt is increased. Knowing, therefore, the limit of strain beyond which it is undesirable to go, it naturally follows, that if this be exceeded, while for a short period the belt may perform its work, its strength becomes impaired and its efficiency to a great extent lost. Where the appliance for indicating tension at the time, is not at hand, its service can be dispensed with approximately by shortening the belt half an inch for each ten feet of its length. As previously remarked, the flesh side of the belt is the stronger and constitutes about one-third of the thickness of the belt. It is of much importance that the grain side of the belt should be the one coming in immediate contact with the surface of the pulley. Were it otherwise, the flesh side, which constitutes the principle strength of the belt, would be exposed to a wear and tear which would in a comparatively short time, reduce the lasting quality of the belt. Therefore, in all cases the grain side should be kept next the pulley. Another point, the grain side possesses a surface of greater smoothness, which is conducive to increased driving power, estimated at thirty per cent. It is generally supposed that the larger the pulley, the greater the transmitting power. This theory may appear on the surface plausible, but it should be remembered, that the horse power transmitted by a belt is dependent upon the number of degrees contained in the arc of contact on the pulley, and the number of feet it travels per minute. It matters not whether the pulley be 36 inches or 72 inches in diameter, provided that the tension and the number of feet travelled per minute be the same. This is based on the fact that the co-efficient of friction is the same on all pulleys of like material, having the same arc of belt contact. We have seen cases in actual practice where smaller pulleys were replaced by larger ones, and an increased belt power followed, but this increased belt power was the result solely of the higher velocity at which the belt was run. I suppose it will not be questioned, that within certain limits,