

NOTES ON BELTING.

A LARGE proportion of the so-called accidents to belts, in which they jump from one cone to another, or run into neighboring gears, are due to excessive pliability. Owing to their greater lateral stiffness, thick belts are much to be preferred to thin ones. So much do I believe that the property of stiffness increases the life of belts that I make it a rule to use as thick a belt in all cases as the diameter of the pulleys will permit. A manifest advantage of belts made of two or more thicknesses of leather lies in the fact that imperfection of the leather will produce but little effect in a double or triple belt, while in a single it is fatal. Messrs. Lewis Bancroft have, in their experiments, demonstrated the fact that "no marked difference could be detected in the power required to run a wide double belt or a narrow light one for the same tension as modern speeds." And again, we see ropes up to two inches in diameter transmitting power with great efficiency, and with apparently but little loss of power owing to their thickness. Therefore a thick belt will be practically no less efficient than a thin one on account of its stiffness.

Many experiments have shown that the pulling power of belting for a given area of contact is almost independent of the area of the belt in contact with the belt, and that it depends chiefly upon the sectional area of the belt, and its total tension; so that a triple belt will transmit about as much power as a single belt three times its width.

With wide belts, and belts running at high speed, it is especially desirable that the thickness should be increased. If thin belts are used at high speed, they almost invariably run in waves on the slack side, particularly if the load which they are transmitting changes suddenly. These waves frequently continue in the belt while it is rounding the driven pulley, so that one can sometimes even see light in places between the belt and pulley rim when standing in the proper position. This wrinkling of belt, and the snapping that occurs as the waves straighten out, wears it very fast, and causes the splices to part, frequently in a few months. The remedy for this trouble I have invariably found to be an increase in the thickness of the belt. When a sufficient thickness is used, the belt settles down on the same pulleys and under the same conditions to a long, steady curve on the slack side, and the wrinkling and snapping cease.

It would seem also as though a certain ratio of thickness to the width of belt should be maintained, particularly in high-speed belts, otherwise the belt is apt to chase from side to side on the pulleys. This chasing could seem to be due chiefly to the oscillation of the

belt around its longitudinal axis on the slack side, the belt being thereby tightened, first at one edge and then at the other, each side as it is tightened tending to run toward the center of the pulley. This oscillation, and the resultant chasing, are almost sure to cease when the thickness of the belt is increased in proper proportion to its width. As an illustration of this principle, the writer has in mind the case of a belt 78 inches wide and 9 16 inches thick, running about 5,500 feet per minute, which could never be prevented from chasing from side to side on its pulleys for any length of time without the use of an idler pulley. This chasing was due to the oscillation about its longitudinal axis, which was caused by the small thickness of the belt in relation to its width. A belt 3/8 inches thick and 72 inches wide, used on the same pulleys, was almost entirely free from the chasing, and I am convinced that an increase to 1 1/2 inches in thickness would have rendered it sufficiently stiff to permanently remove the trouble. It should be noted that the thicker belt proved to be far more economical, durable, and satisfactory in every way than the thin belt. If the principle is correct, of using thick belts on account of their lateral stiffness and consequent durability, it becomes of the utmost importance to determine the minimum diameter of pulley which can be used with a given thickness of belt, and still have the belt last well. The writer is quite sure that the double leather belts 3/8 inch thick will last well and give excellent satisfaction on pulleys as small as 12 inches in diameter, as he has had many belts in use for years under these conditions. For some time past he has had a triple leather belt 12 inches wide, 0.56 inch thick, running about 4,500 feet per minute, with an idler pulley pressing lightly upon it, and transmitting about 100-horse power to a pulley 12 inches in diameter. This belt has up to date given excellent satisfaction, and has already lasted much longer than the two double leather belts which preceded it.

Regarding the question of fastening the two ends of the belt together, I think it is safe to say that the life of belting will be doubled by splicing and cementing the belt, instead of lacing, wiring, or using hooks of any kind. When belts are subjected to the most severe usage, the spliced portion should be riveted, iron burrs being preferable to copper. For double belting, the rule works well of making the splice for all belts up to 10 inches wide, 10 inches long; from 10 inches to 18 inches wide the splice should be the same width as the belt, 18 inches being the greatest length of splice required for double belting.

STEAM PUMPS



Duplex AND SINGLE Steam AND POWER Pumps



If you require a pump for any duty, of the latest and most improved pattern, and at close prices,

WRITE US



NORTHEY

M'FG CO.

LIMITED

TORONTO - ONT.

J. F. EBY

HUGH BLAIN

SNOW GONE

Of course you will want **CAMP SUPPLIES**. Your Fall orders must be nearly exhausted. BEFORE ordering your Spring Supplies write us for samples and quotations. We quote **CURRENTS** and **RAISINS** 'WAY DOWN, and our JAPAN TEAS are special value. Just drop us a line.

EBY, BLAIN & CO.

WHOLESALE GROCERS - TORONTO, ONT.