

Bramford, Ont. W. L. GOVAN

Resurface Flywheel

YEARS AGO I saw a rider belt on a drive similar to that mentioned by IM. It was in a plant of the John-Manville Co in Brooklyn. The rider belt did stop the slip. But belt dressing was also applied, and I believe it was partly responsible for the result.

Another method is to apply a friction facing on the flywheel. This friction material can be nothing more than thin duck canvas, glued securely on the surface of the pulley.

Usually it is the smaller pulley that slips, not the large one. In this case the idler pulley very likely takes care of the smaller pulley, giving it sufficient arc of contact. This suggests the use of another idler pulley as shown above. This will increase the arc of contact on the flywheel. I have never seen two idlers on a single drive but see no reason why they would not be practicable. I believe the friction loss would be less than with a rider belt.

My suggestion is this: First use a high-grade belt dressing. If that doesn't solve the problem completely, give the flywheel a friction surface. I believe that would cost less than a second idler pulley. Cost, these days, is important.

Newark, N. J. J H SQUIRES

Belt Is Heavy Enough To Pull the Load

I CHECKED IM's PROBLEM to see if his belt is good for the horsepower it must deliver. I used the following formula:

$$H_p = \frac{v \times T_1 \left(\frac{\log_e \mu \alpha}{\log_e \mu \alpha} - 1 \right)}{33,000}$$

v = velocity of belt in ft per min
 T_1 = Maximum tension of belt
 μ = coefficient of friction, which is 0.3 for leather to cast iron
 α = arc of contact in radians. For convenience, $\log_e$ can be changed to $2.3026 \times \log_{10}$.

The arc of contact is obtained from the formula shown on the sketch above, and is found to be 215 deg.

Since we do not know the diameter of the idler, which would add some to the arc of contact, we will omit it.

$T_2 = T \times A - T_c$
 T = allowable unit tension of 1 sq in. of leather belt; it is 425 lb per sq in.,
 and A is the area
 T_c = centrifugal tension of belt, obtained by

$$T_1 = \frac{W \times d}{\dots}$$

W = weight of a ft length of belt, obtained by multiplying 0.43 by the cross-sectional area of the belt.
I assume 3-ply belt is $\frac{3}{4}$ in. thick.
 v = belt velocity in ft per sec squared.
 g = the force of gravity = 32.2.

I worked this out, and found the belt good for over 400 hp. Since it is equal to the job, let us see where the trouble is. The only thing we can alter is the friction between flywheel and belt.

The practical way is to clean the contact side of the belt thoroughly. Re-

move all oil and gum with a good cleaner or fuller's earth. After this thorough cleaning, coat the surface freely with neat's-foot oil. The process should be repeated regularly. I believe this will stop all slipping.

I cannot see how a rider belt will help.

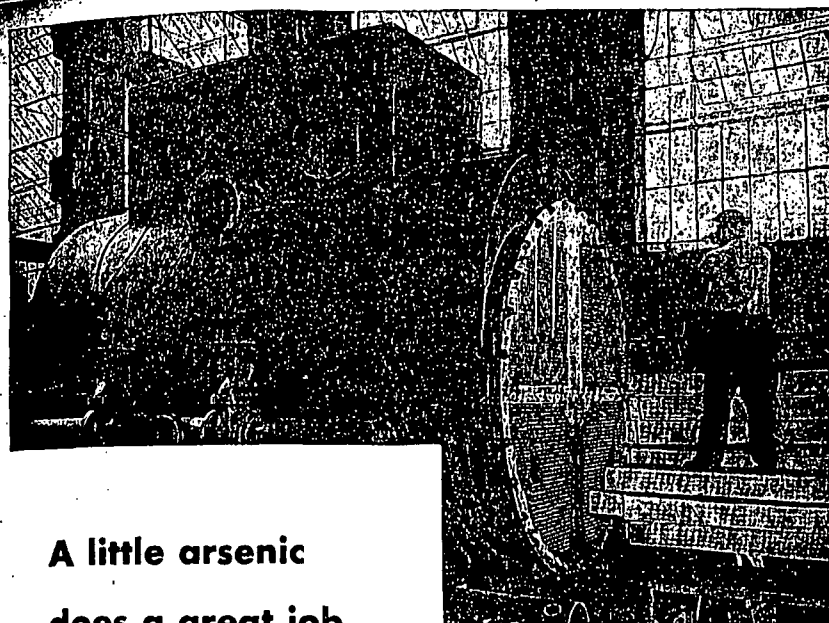
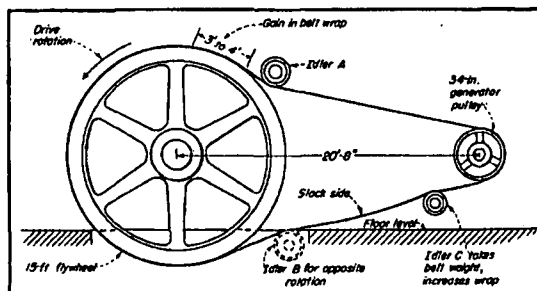
BRONX, N. Y. GEORGE GRIPPEL

Put Idler at Flywheel

IM COULD PROBABLY ELIMINATE some slip on flywheel by using a rider belt. Usually the slip between belts offsets any gain because of excessive wear on both belts.

His idler pulley should be placed at *A* or *B*, as in sketch below, depending on rotation of flywheel to increase belt wrap or contact on flywheel. To get best results don't have belt too tight before applying the idler. Neither should belt be too slack, as this will put an excessive load on the idler. This is especially important on heavy multiple leather belts like *IMT* as they are hard to flex. I recommend using a small amount of good-quality-stick belt dressing to increase belt grip on flywheel. If outside of belt is rubbed with a little neat's-foot oil every few months it keeps belt from

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