: the **radius** of the pitch circle in which the tension element travels, in. The internal frictional rigidity of the tension element causes a ng at the driving end T_1 of the lever arm R an amount h_1 in inches, and llowing end a lengthening of the lever arm R an amount $= h_2$ in. Then, taneous winding on and off, $T_1(R - h_1) = T_2(R + h_2)$. Approximately, $= h$, whence $h_1 + h_2 = 2h$ (approx.) and $T_1 = [1 + (2h/R)]T_2$. If the element is only wound on the drum, $h_1 = 0$ and $T_1 = [1 + (h/R)]T_2$. **hains** the coefficient of friction between the link faces or pivots is to 0.3; and when d = the diam. of the link pin, $h = fd/2$. **nemp ropes** $h = 0.03d^2$ to $0.09d^2$ according to the construction, l and condition of the rope. In the absence of reliable values for **wire** those for chains may be tentatively used.

elastic rigidity of the material, *i.e.*, the work performed in changing pe of the tension element, is not a factor in simultaneous winding on and ce the lever arm R is increased equally at the points of winding on and e work expended in bending the tension element as it is wound on is red as it straightens out in unwinding. But if there is only winding on, ne lost work due to the bending is to be taken into account.

t Work Due to Creeping. Creeping is due to the elastic elongation tension element and must not be confused with the **slip** due to insuffi- rictional grip on the pulley or drum.

ng to a change in tension from the winding-on to the winding-off end, ngth of the tension element varies in such a way that the driving pulley on a greater length than it winds off, the reverse being true for the driven r. This causes a loss of relative velocity which is equal to the lost-work V. Assuming a uniform distribution of the tension over each cross- n of the tension element, there results for the entire drive system, *i.e.*, for riving plus the driven pulley, $V = k(T_1 - T_2)/A = kP/A$, where P is in lb., area of cross-section of element in sq. in., and $k = 1/E$, E being the modu- f elasticity of the tension element in lb. per sq. in. Since P is trans- ed at the inner face of the tension element (belt), the tension (and therefore longation) is materially greater on the side of the belt in contact with the y than T_1k/A, also $V > kP/A$. It is further to be considered that k de- ses with increasing tension, thus reducing the value of V. ach recognizes the lack of uniform tension distribution and the variation by the use of an empirical constant m, thus: $V = mkP/A = mP/AE =$ E, where $p = P/A$. He gives the following values of m, p, E and V.

	m	p, lb. per sq. in.	E, lb. per sq. in.	V mp/E, per cent.
ther belt, new....	2.00	140	17,800	1.6
ther belt, used.....	2.00	140	32,000	0.9
np rope*..........	1.25	137	107,000	0.16
e rope, new*......	1.50	4300	10,000,000	0.065

Efficiency of Rope and Chain Sheaves at low speeds, including journal ction (180-deg. contact):

For fixed sheaves, chain and wire rope, e = 0.94 to 0.96.

For floating sheaves, chain and wire rope, e = 0.97.

Hemp rope sheaves:

Rope diam., in.....	⅝	1	1½	1¾	2
Fixed sheaves: e =	0.95–0.96	0.91–0.96	0.89–0.93	0.84–0.92	0.85–0.91
Floating sheaves e =	0.97	0.96	0.95	0.94	0.93

* p and E are based on the actual cross-section of the strands and wires, *i.e.*, for hemp pe, $A = 0.66\pi d^2/4$, and for wire rope $A = 0.42\pi d^2/4$, where d = diam. of rope in ches.