WHY PULLEYS RUN STEADY.

CENTRIFUGAL force has less to do with making a pulley run unsteady than the mere tendency it has of trying to get where it can rotate about its own center of gravity. A wheel is generally looked upon as so much weight and, if held off its center, must go switching about like a heavy stone in a short arm sling, tending to pull the machinery to pieces. This may be well enough at the start, while the wheel is getting up to speed, but the time soon comes when the wheel will try to turn on its own center and let the shaft sling for a while. Just notice how the juggler can seize a dish of any kind, as a dinner plate, for instance, and throw it up in a whirling motion and, while in the air, catch it on the end of a stick and cause it to rotate with ease. At first the plate is switched about by holding it off to one side of the center, but as the speed increases, it gradually brings the point of support near the center, till at last it is allowed to spin on its own center of gravity. In this case all the driving power, supporting force and the resistance of the load were brought to one single point, with nothing to react upon the inertia of the plate. A wheel has recently been fitted up to revolve in a frame with no other force applied to it than what is derived from the vibrations of the frame itself. The wheel, of course, is out of balance, as far as its center of gravity goes.

HORSE POWERS OF SINGLE LEATHER BELTS.

NO one can tell at sight what a leather belt will drive; almost anyone knowing the width, thickness and speed, can figure it out in a minute. This table is to save figuring; and is correct for belts 7/32 inch thick, in good condition, wrapping half way round cast iron pulleys, and joined by single leather lacings.

The rule by which it is got says "the horse power is equal to the width in inches multiplied by the speed in feet per minute and divided by 650." Thus a ten inch belt at 2,000 feet a minute should be good for (10 × 2,000) divided by 650, equals 30.77 horse power; a 20 inch belt at 2,500 feet, for (10 × 2,500) divided by 650 equals 76.92 horse power; and so on.

This table is for leather belts in good condition, wrappings 180° on cast iron pulleys, and joined with single leather lacings:

WIDTH INCHES.	BELT SPEED, FEET PER MINUTE.								
	1000	1250	1500	1750	2000	2250	2500	2750	3000
1	1.54	1.92	2.31	2.69	3.08	3.46	3.85	4.23	4.62
2	3.08	3.85	4.62	5.38	6.15	6.92	7.69	8.46	9.23
3	4.62	5.77	6.92	8.08	9.23	10.4	11.15	12.7	13.8
4	6.20	7.70	9.20	10.8	12.3	13.8	15.4	16.9	18.4
5	7.69	9.62	11.5	13.5	15.4	17.3	19.2	21.	23.
6	9.23	11.5	13.8	16.2	18.5	21.	23.	25.	28.
8	12.3	15.4	18.5	22.	25.	28.	31.	34.	37.
10	15.4	19.2	23.	27.	31.	35.	38.	42.	46.
12	18.5	23.	28.	32.	37.	42.	46.	51.	55.
14	22.	27.	32.	38.	43.	48.	54.	59.	65.
16	25.	31.	37.	43.	49.	55.	62.	68.	74.
18	28.	34.	42.	48.	55.	62.	69.	76.	83.
20	31.	38.	46.	54.	62.	69.	77.	85.	92.
24	37.	46.	55.	65.	74.	83.	92.	101.	110.
30	46.	58.	69.	81.	92.	103.	115.	127.	138.
36	55.	69.	83.	97.	114.	125.	138.	152.	166.
48	73.	92.	111.	129.	148.	166.	185.	231.	222.
60	92.	115.	138.	161.	185.	208.	231.	254.	277.
72	113.	138.	166.	194.	227.	249.	277.	305.	332.