

# The Canadian Engineer

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## The Canadian Engineer.

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MONETARY TIMES PRINTING CO.

OF CANADA (LIMITED).

Per A. W. LAW, Sec.-Treas.

Toronto, June 1, 1893.

C. MEIGS, of Washington, D.C., suggests a method for counting the number of revolutions made per minute by the shafting used for the transmission of power to various machines. It is important to know the number of these revolutions in order that pulleys may be selected which conform well with the varying speed and power of the different machines. The process by which this may be accomplished is quite a simple one. To the extremity of the shaft in question should be fastened a pencil, either directly, or, if the diameter of the shaft does not give a circle sufficiently large for easy enumeration, with an intervening block. The revolution of the shaft will now cause the pencil to mark anything held in front of it, such as a piece of paper, and by moving the latter backward and forward a series of loops, intersecting each other, will be formed. In order now to obtain an accurate record, all that need be done is to time the period of contact and count the number of loops upon the paper.

It is stated that cast gears, with teeth just as they leave the sand, will run with less friction than those which have been rendered true and smooth by machinery. This is owing to the fact that in accurately cut teeth very little of the slush due to lubrication can find a place, whilst, on the other hand, in casting the pores and imperfect spots become a lodging place for oil and slush, thus forming a background for the gears to work upon easily for quite a long period.

A NEW electric derrick has just been put on the market. The electric hoist is attached directly to the derrick mast. The hoist consists of two side frames bolted to the mast, supporting two drums with the usual cone clutches, ratchet pawls, brakes and electric motor. A rheostat controls the speed. The arrangement of levers and pawls is the same as on all steam derricks. The winding drums are placed underneath the broom. A No. 12 railway motor is used, geared down to give a rope speed of from 45 to 70 feet per minute, lifting 3,000 or 8,500 pounds with a single rope.

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THE *Nation's* Car and Locomotive Builder gives the following two ways of annealing steel: It can be heated to a dull red heat, covered with dry, warm sand and left to cool slowly, or heat and cover up in the forge fire and leave it there until the fire is out and all is cold. The other method is to heat the steel red hot; heat gradually, let it "soak," as the smiths say, until it is evenly heated, then remove from the fire and go to some dark corner. Let the steel cool until you lose sight of the dull red in the dark, then cool off in cold water. A good "dark place" may be made by throwing your coat over a barrel, leaving just room enough to look in at the iron. This method is called the "water anneal," and is based upon the theory that steel softens when cooled at a certain temperature.

THE change from the old to the new is in no way more clearly manifested than in the methods of lubricating the cylinders of locomotives. Formerly, a fireman had to crawl along the run-board, and try to oil the valves with the engine rocking from side to side, and, it may be, a strong cross-wind doing its utmost to hurl him from his slender foothold. But *nous avons changé tout cela*: looking at the increasing favor in which sight-feed lubricators are now held, it seems as if in a very short time no locomotive will be without them. Apart from the inconvenience, and sometimes the personal risk saved by using the sight-feed, there is