

in the usual way to the victims, and if this does not knock out what life there is left in electrical enterprises, let the suffering country be divided into districts, after the manner of inspectors in general, and duplicate these barnacles on the ships of state until the precious craft gets waterlogged. There is also a crying need for an inspector of tallow dips and tin lanterns, for was it not one of these "in combination," as a patent lawyer would say, with Mistress O'Grady's cow that burnt down Chicago. Perish the thought that such a sultry fate should overtake any body or any place in our young and glorious Dominion. Let us have inspectors appointed forthwith—inspectors of cows and deputy inspectors of tin lanterns. In plain words, this inspection business is overdone, even to the extent of trenching pretty severely on the liberty of the subject, and of becoming an hindrance to business and a means of driving it out of existence. It is but too frequently an excuse for foisting upon the public purse a superannuated political hack so as to save him from arrest and imprisonment for having no visible means of support, and certainly results in increasing to the consumer the cost of the commodity "inspected." For instance, a notable specimen of municipal genius in Toronto is proposing to introduce a by-law to compel every load of coal sold in the city to be weighed on the public scales. He is gunning for popularity by imagining that he is after the scalps of the bloated monopolists of the coal ring, but his brilliant intellect must have flown off the handle this time. The cost of hauling to the scale and going back after delivery to weigh the empty cart say fifty cents per load—must of necessity come out of the pockets of the purchaser, with the ultimate result of a tax on the community to pay for more civic pensioners to engineer a further supply of city scales. In the case of the electric light we do not see how it is possible for any standard to be maintained. In every town in the province of any size, there is an electric light plant, frequently two. The current standard of each is different, and unless the machinery is thrown away and new substituted, must remain so. The owner offers to a store keeper or a business man his electric light and asks for it a price commensurate to its size or the hours used—so much per night or per month as the case may be. Nobody is compelled to take it, and if it does not suit they are not long in throwing it out. There are inspectors of gas simply because there are different *qualities* of gas, some bad, some worse, and some villainous, but the Government says nothing about the *quantity*; that is left as a *casus belli* between the consumer and the gas company. There is only one *quality* of electricity, that has yet been brought to our notice, and it is an invariable and unchanging unit, why, therefore, is it necessary to appoint an inspector to determine the quantity? That should be left as a matter of bargain and sale between the producer and consumer. If the intention of the Government is to establish a standard in candle power of certain currents and voltages by which arc lamps may be technically known to the trade, well and good, but the light under similar conditions of current and electromotive force may vary so much from the carbons employed, the state of the atmosphere and unavoidable momentary alterations of conditions in the central station apparatus and the delicate mechanism of the lamp, that an absolute and unvarying standard would become an impossibility. To meet the temporary disability caused by a slipping belt, an over-heated annature or a defective lamp, the customer usually makes a point of claiming a rebate for the shortage in quantity, and owing to the absence of ability to store electricity or keep a quantity in hand as it were for emergencies, this item of rebates is considerable with most stations, and is usually provided for in the contracts. All the inspection in the world will not prevent the broken belt, the temporary disarrangement in the mechanism of the steam engine or the crossing of some vagrant bell wire with the aerial circuit outside. If a Government official can produce an infallible panacea for these evils, electric light companies would hail his advent with psalms of thanksgiving, but being only mortal, and probably a poor specimen at that, his office would simply become an elegant sinecure at the expense of his more industrious and practical fellow-men.

THE attention of engineers is directed to the particulars of a competition printed in another part of this paper. The publisher of the NEWS with the object of stimulating research on the part of engineers in charge of steam plants throughout Canada, offers prizes in cash for the solution of certain problems in steam en-

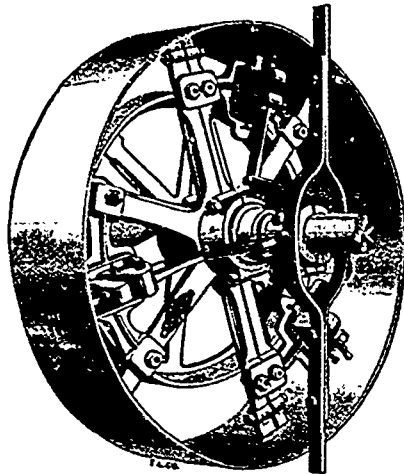
gineering. It will be noticed that this competition has been limited to those actually engaged as operative engineers, and the questions are such as every competent engineer should be capable of answering. Should satisfactory interest be manifested in this competition, others designed to serve a like object will be announced from time to time in the future.

FRICTION CLUTCH PULLEYS.

FRICTION clutch pulleys are designed to supersede tight and loose pulleys, drop tightners, etc., and to avoid the unnecessary work and consequent wear imposed by them upon belts while the machinery is idle. They are extensively used in electric lighting and are very desirable when frequent or abrupt stoppage of machinery is necessary. They are being very extensively adopted in mills and factories of every description, and are especially suitable for high speed service and heavy work. The friction rim only is keyed to the shaft, the pulley and grip mechanism is free or loose thereon. Therefore, when not "in grip," the driving pulley remains motionless, while the shaft revolves freely in the babbitted pulley sleeve. Immediately upon being gripped the power is transmitted to the pulley through the grip and ring. When the grip is attached to the driven pulley (located on machine or counter shaft) the pulley revolves freely upon the shaft until the clutch engages with it and causes it to drive the shaft.

The accompanying cut shows a friction clutch pulley made by the Waterous Engine Works Company, of Brantford, Ont. It is claimed to be simple, compact and durable, engages and disengages gradually, thereby preventing any possible injury. The operation of this friction grip pulley and friction grip cut off coupling will be understood from the following description.

The grip ring or rim, instead of being cast to the arms of the pulley, as in ordinary clutch pulleys, is a pulley by itself, securely keyed or fastened with set screws to the shaft transmitting the power, or in the case of a driven pulley, to which the power is transmitted. The grip mechanism is



fastened to the arms of the pulley or coupling. In the case of a pulley, the friction rim is made about half the diameter of the pulley. In operating the pulley or coupling, this grip mechanism stands motionless when the pulley is not driving or when the connected shaft is cut off. To bring it into work, the sliding sleeve on the shaft "D" is forced with a lever toward the friction pulley rim, and readily passes beyond the diametrical centre or grip arms, which causes two, four or six sets of friction grips to grasp the rim with an irresistible, vise-like grip.

From the peculiar mechanism of the grips it will be readily seen that the pressure of the inside and outside jaws upon the friction rim is always exactly equal. When desired, the power may be applied by degrees and the pulley started gradually, or the sliding sleeve can be thrust in instantly by a quick movement of the shifter, when the pulley or coupling immediately starts at full speed. The friction grips are adjustable. The end of lever is of cast steel, tempered, and engages a small block of cast steel, tempered, let into the under side of top grip arm. This steel block is adjustable, being hung from the inner end and adjusted by a set screw working from the upper side of grip arm. By this means, any strain desired can be put on the frictions to take up the wear of the friction shoes. The friction shoes are shod with thoroughly seasoned maple, set end on to their work, and will wear many years. The maple is easily renewable, and requires no oiling. When the sliding sleeve is withdrawn, the point of lever engaging the steel block in grip arm at once works into a recess formed in the steel block to receive it, and permits top grip arm to leave pulley, releasing immediately the grip from the friction rim. All parts subject to wear are renewable at a very slight expense, and without trouble or loss of time, it being unnecessary to remove the pulley from the shaft in order to renew or adjust any worn parts. There is absolutely no contact or frictional surfaces when not in grip. Owing to the short travel of the sliding sleeve, and the fact that it passes the diametrical centre of grip arms, the operation of gripping and releasing is so easy that it can be readily accomplished, and when once the sleeve is thrown into position there is no strain upon it what ever, nor can it possibly get out of grip without being forced by the lever. When desired, these friction grip pulleys and cut-off coupling can be promptly brought to a standstill, even when running at a high rate of speed. This in case of accident may prevent much damage or perhaps loss of life or furthers particulars address the manufacturers.