

liabilities at the time of his death amounted to \$191,100-73, but what his assets were is not so definitely stated. It also appears that, after the patent had been extended, the net result of the collection of tariffs averaged less than \$30,000 per annum—equal to \$210,000 for the extended term. We have not all the figures of the receipts and expenditures of Mr. Goodyear under his patents; and we are willing to concede hardships and sufferings on the part of himself and family. We desire not to reflect upon any business management of the dead or to wound the feelings of the living; but it must be apparent to the most casual observer that out of the gigantic operations which have sprung up and are now being carried on, under protection of these valuable patents, somebody has made vast amounts of money. Admitting the poverty of the Goodyear family, we cannot shut our eyes to the dangerous tendency of legislating for private interests, when the result will be to enrich wealthy capitalists by extracting tariffs for their benefit from the pockets of the people.

The petition to Congress is supported by the combined interests of the various manufacturers of india-rubber goods. The extension bill before Congress provides that all persons or corporations, who now hold licenses under the patent, shall, if they continue to make such india-rubber goods, pay to the executor not to exceed five per cent of the net amount of sales of goods or articles manufactured under such licenses. Here we have the whole thing in a nut-shell. All the various manufacturing establishments which hold licenses from the executor of Charles Goodyear are to be allowed to maintain the monopoly for another term of seven years on and after June 15, 1865, and are to pay five per cent of their sales to said executors. No other parties are to be allowed to enter the combination. Under such protection these manufacturers can adjust their own tariff of prices, "none daring to molest them or make them afraid;" and with such exclusive power they can go on and do just about as they please, and the public can have no possible remedy. If rubber shoes, coats and other necessary articles don't pay *satisfactorily* at the present prices, those exclusive manufacturers can add on five, ten, fifteen or fifty per cent, as suits their interests; and the consumers must quietly submit, being privileged only to "growl" at high prices. To confer power by special legislation, whereby a few wealthy capitalists are enabled to tax the resources of the whole country, is unjust and entirely opposed to the spirit of our institutions. If Charles Goodyear's heirs had gone before Congress, and petitioned for the extension of the patents in question on their merits and without reference to the present licensees, every one of the latter would have combined against the heirs. They would have shaken the foundation-stones of the Capitol, and the iron image of Justice which crowns that noble building would have been invoked to descend and lay its metallic hand upon the petitioners and all who favored their pretensions; but so long as the licensees are to gather the lion's share of the revenues, the petition bears to them a very different aspect.

We have no wish or purpose to injure any one of these profitable manufacturing establishments—we rejoice in their abundant prosperity; but it appears to us that they are "laying it on rather thick" when they appear before Congress for an act of special legislation which confers upon them such enlarged and dangerous powers of levying taxation upon an indulgent people. We have no wish to injure the interests of the petitioner—we would cheerfully accord to him a just reward for his father's beneficial labors and for the early trials which his family endured in consequence of his poverty; but "five per cent net," over and above manufacturers' profits, on all sales, for seven years after 1865, would, we submit, be a much greater compensation than they ought to receive. They may well covet so rich a treasure; but the people have a right to protest against such an onerous system of double taxation.

If Charles Goodyear, Jr., will present a claim to Congress for a *fixed* compensation, and can support it by the proper vouchers, we doubt not that the public generally would feel willing that Congress should pay to the heirs a reasonable reward. This plan, we feel well assured, will not suit any of the parties in interest; but it is the only one that merits or should receive any favor. The Government could well afford

to make such an appropriation; it consumes very largely of india-rubber goods, and it would be much the best plan of the two, to reject the petition and make an appropriation. The Government must pay 5 per cent to the heirs, under the extension, upon all its rubber purchases in addition to a large manufacturers' profit; therefore, in a mere pecuniary sense, it would be much better to reward the heirs by giving them a fixed amount. We commend this subject to the attention of Congress.

#### LUBRICATING THE STEAM-ENGINE.

So much waste is continually going on in the very costly item of oil that we are prone to think the cause of it is ignorance and not wholly carelessness, for the most reckless person would hardly be guilty of such criminal waste as is too often manifested. In the matter of supplying the furnaces of a boiler with coal there seems to be little hope of radical reform, for the quantity of half-burned fuel, clinker, and needless waste we have seen thrown out with ashes is astonishing. This neglect shall not claim our attention at present; and in this article reference is made only to the use of oil and lubricants generally.

Oil is not a motive power, and possesses no impulsive energy whatever; but to judge from the manner in which it is slopped about, one would suppose that it had some peculiar virtue hitherto undiscovered. Moreover, the amount of oil which a bearing will carry is limited, and after the surface of it and the brass is once covered, every drop poured on is wasted, for the journal throws it off, just as the stomach does food when overloaded. The proper quantity for any given bearing can be learned only by experience, and engineers will find that they can economize very greatly by a little observation and practice. In addition to this test there are automatic or self-regulating devices for limiting the supply of oil to bearings, these consist of oil-cups, but the use of them if not abused is greatly misunderstood. An oil-cup is not simply a funnel to pour oil into so that it will run down on a bearing, but it is intended for a feeder, or to gauge the quantity supplied as exactly as a cock admits water to a boiler. This function is performed by one of the most simple arrangements it is possible to conceive of—namely, a length of cotton wick and a tube. The tube is always fitted in every properly made oil-cup, and the wick only remains to be supplied by the engineer. No engine should be without a cup on every bearing, for it is impossible to judge as accurately what the journal requires as the wick will feed when once properly adjusted. The tube in the oil-cup must not be filled too tight with the wick or it will not feed, and by regulating the size and fit of the wick the oil may be fed fast or slow. Besides the wick there are many other self-feeding oil-cups working on scientific principles which perform very well, and we have merely alluded to the simplest one—that with a wick, as an example of a self-feeding arrangement.

It is not alone the exterior working parts that require lubrication; but the valves and piston should occasionally receive attention as well as the others. We are well aware what a disputed point this is in engineering practice, and can ourselves bear witness to very many steam engines that have been running for years without a drop of oil in their cylinders or valve-chests, but it must be borne in mind that these are exceptional cases, and may be due to the state of the steam, the construction of the engine, and nature of the metals in contact. By the state of the steam is meant whether it is high-dried or super-heated from the construction of the boiler, or whether it is moist, as occurs in boilers with small steam room. Therefore, because one engine here and there runs without oil in the parts mentioned, it does not follow, as a rule, that no valve-seat or piston requires to be lubricated. The medicine which is harmless if taken by one man becomes deadly poison to another, and where in one instance oil would not only be wasted but would injure the machine if applied, in the other it is absolutely essential to economy.

The frequency with which oil is to be introduced into the cylinder is a very important point, for the same rule applies here as to the bearing. All that is not essential to the work is thrown away by the engine or carried out with the exhaust. In proof of this the tubes of some surface condensers were re-

cently discovered to be half choked up with tallow; if this fact were not substantiated by the assertion of a competent engineer we should be inclined to doubt it.

Without further digression, it is important to observe that it is not only the waste of grease which occurs by its lavish use, but the injury which those vital parts—the cylinder, valve-face, and packing—sustain that render the employment of tallow a source of damage to the parts mentioned. It is well-known to experienced engineers that there is a peculiar appearance of packing rings and the piston faces where they set, when much tallow has been used. This peculiar appearance may be called "worm-eaten," since it resembles nothing more than it does the track of an insect; it is to the endurance of the metal just what the ravages of the worm is to timber; in a short time it is wholly destroyed. Some pistons that we have seen might have been cut with a knife. This damage is wholly owing to the free use of grease, and is explained by these facts.

In the rendering of rough fats, such as are used for greasing cylinders and pistons, sulphuric acid is freely used. The quantity of the acid used amounts to, at the least, 12 per centum of the weight of fat, and it combines at once with the whole of the fatty matter; a portion of the acid is removed by washing the grease in water at a high temperature; but a certain part remains behind and becomes a constituent of the rendered mass. This acid is set free when introduced to the steam-cylinder by the heat therein, and though necessarily small in quantity to the proportion of grease introduced at once, exerts its evil influence, and slowly but surely destroys the metal; the iron is eaten up, and the carbon alone remains. Where this adulterated or impure grease has been used too lavishly the iron is entirely destroyed, and what remains may be literally cut with a knife like charcoal. Animal fats are themselves acids, chemically speaking; but these are not specially injurious to iron. The best way to avoid this trouble is to use pure grease or beef tallow, rendered by heat alone. A quantity of this placed in a tin pot on the steam chest will gradually resolve into a pure fat, and by pressing the scraps but little or no waste takes place.

The practice of going about with a squirt can and spirting oil at the bearings—not into them—is a most reprehensible one; and no conscientious man in charge of machinery would do it. Oil at \$1.50 a gallon is too dear to be used in this way, to say nothing of the moral nature of the act. Cups that feed themselves require to be watched to see that they do not stop feeding; and, in fact, every department of the engineer's duty requires vigilance, so that the wonderful machine may be kept up to its duty. Too many men regard their positions as sinecures—as so many opportunities to read newspapers, to smoke cigars, or to gossip with idle acquaintance. There is but little time when these matters can be indulged without pecuniary loss to the employer or endangering some part of the machinery; and the best course is for the engineer to give his employer all the time he is paid for, and let "outside issues" rest until work is over.

The profession wants elevating; there are more openings at this moment than there are good men to fill them. A capable engineer is always in request; and if any go about idle, let them ask themselves if it is not because they have not studied their interest by using diligence in the discharge of their duty.

#### Applications for the Extension of Patents.

The patent-extension lobby is in full blast at Washington. Applications are now pending before Congress for the extension of the Goodyear india-rubber patents, Woodworth planing machine, Adam's Janus-faced lock, Fitzgerald's safe; and we presume there are others. We are informed that the parties who support these claims have formed a sort of combination of interests, and mean to "push their cases through," if money will do it. We warn the people to look sharp after these corrupt schemes, and to use their best efforts to defeat them.

A NUMBER of Western capitalists are making arrangements to go extensively and legitimately into the cotton business—both by cultivating abandoned plantations in Louisiana and Mississippi, and by purchasing of the old planters. They mean to demonstrate on a large scale the advantages of free labor.