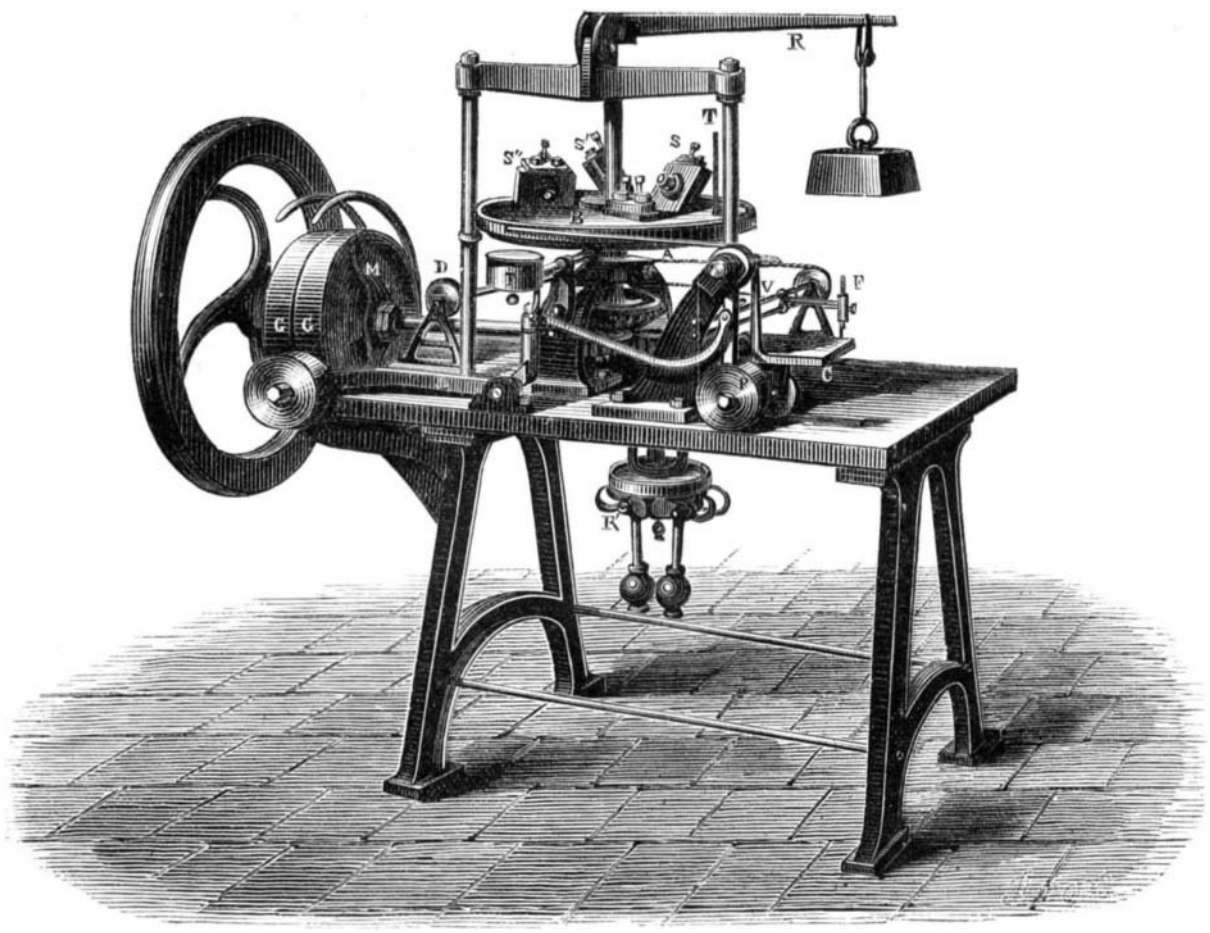
NEW LUBRICANT-TESTING MACHINE.

We illustrated quite recently Professor Thurston's apparatus for testing lubricants. We now present another machine for the same purpose, the invention of MM. Deprez and Napoli, which also serves for purposes of comparison of various oils, etc., by giving for each a distinctive trace on suitably ruled paper.

A, in our engraving, is a plate, adjusted perfectly level and polished. It is rotated by gearing from the pulley, G. This plate supports a second plate, B, by the intermediation of three pieces of bronze, S, S′, S″, which make an angle of 30° with the vertical, and of each of which the surface in contact with plate, A, is of precisely similar dimensions, namely, one square inch. From this it results that the pressure exercised on the plate, B, by the lever, R, is equally distributed over the three pieces.



DEPREZ AND NAPOLI'S LUBRICANT TESTER.

In order to measure the co-efficient of friction of any oil, a certain quantity is placed between the two plates; the friction developed by their relative movement tends to draw the plate, B, and this tractile force is as much greater as the lubricating quality of the oil is the less. In order to measure the extent of the drawing, to the plate, B, is attached a very thin steel ribbon, connected at its other extremity to a very easily moved pulley, which is mounted on points, and to the axis of which is secured the pendulum, P. Representing by L the distance from the center of gravity of this pendulum to the axis of suspension, by t the angle which the right line joining these points makes with the vertical, by R the radius of the pulley over which the steel ribbon passes, and by P the weight of the pendulum, the relation between these five quantities is expressed by the equation: (1) $fR = PL \sin. t$, whence (2) $\frac{f = PL \sin. t}{R}$

But the rod, R, of the pendulum carries, at any point of its length, a roller which engages upon a vertical piece, V, attached to a carriage, C, the latter mounted on wheels which traverse rails. If we represent by y the displacement of the carriage, corresponding to a deviation, t, of the pendulum, by l the distance of the roller fixed to the pendulum from the axis of suspension of the latter, we evidently have $y = l \sin. t$. This, compared with (2), gives $y = \frac{flR}{PL}$; or, in other words, the displacement of the carriage is proportional to f, that is to say, to the rubbing friction.

The carriage carries a sheet of paper, against which is pressed at will a pencil, F, which has a very slow motion of translation proportional to the number of turns of the platform, A, and the direction of which is perpendicular to that of the movement of the carriage. The curve traced on the paper by the composition of these two movements is then the curve representing the value of the friction in terms of the number of turns made by the platform, A. Simple inspection of the curve, therefore, is all that is needed to determine at once the intensity of the friction at each instant, and its quadrature will give the total work absorbed by the machine. The chart on which the curves are described is suitably divided and marked, horizontally to show number of turns, and vertically to indicate effort in lbs. or kilograms. Each variety of oil gives a clearly distinct curve from other varieties, so that its relative lubricating power may be readily estimated.

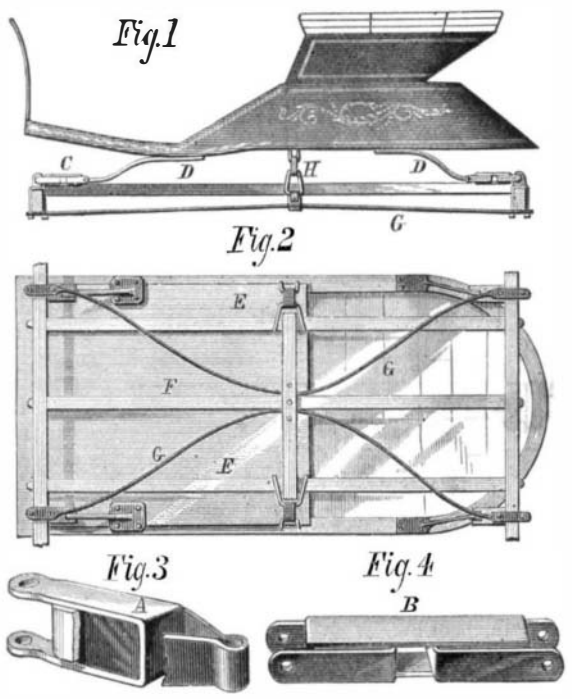
Discontent.

How universal it is! We never knew one who would say "I am contented." Go where you will, among the rich and the poor, the man of competence, or the man who earns his bread by the daily sweat of his brow, and you hear the sound of murmuring and the voice of complaint. "The other day," said Freeman Hunt a good while ago, "I stood by a cooper, who was playing a merry tune with his adze around a cask. 'Ah!' said he, 'mine is a hard lot—for ever trotting round like a dog, driving away at a hoop.' 'Heigho!' sighed our neighbor, the blacksmith, in one of the hot days, as he wiped the drops of perspiration from his brow, while his red hot iron glowed on the anvil; 'this is life with a vengeance, melting and frying one's self over the fire.' 'Oh, that I were a carpenter!' ejaculated a shoemaker, as he bent over his lapstone; 'here I am, day after day, working my soul away in making soles for others, cooped up in this little seven by nine room.' 'I am sick of this out-door work,' exclaims the carpenter, 'broiling and sweating under the sun, or exposed to the inclemency of the weather—if I only was a tailor!' 'This is too bad,' perpetually cries the tailor, 'to be compelled to sit perched up here, plying my needle—would that mine was a more active life!' 'Last day of grace—the banks won't discount—customers won't pay—what shall I do?' grumbles the merchant; 'I had rather be a dray horse—a dog—anything!' 'Happy fellows!' groans the lawyer, as he scratches his head over some perplexing case, or pores over some dry record—'happy fellows! I had rather hammer stone than cudgel my brain on this tedious, vexatious question.' And through all the ramifications of society, all are complaining of their condition—finding fault with their particular calling. 'If I were only this or that, or the other, I should be content,' is the universal cry—'anything but what I am.' So wags the world, so it has wagged, and so it will wag."

IMPROVED VEHICLE SPRINGS.

We illustrate herewith a new construction of springs for vehicles, which is light, easily applied to any style of carriage, and not costly. The springs, we are informed, weigh but one lb. each, and they are connected to the wagon body and frame by a simple arrangement of brackets. The manner in which the springs are made will be understood from Figs. 3 and 4 of the engraving. Fig. 3 consists of two interlocked metal pieces, A, between which rubber is inserted. This is termed a single spring. In Fig. 4, which is a double spring, two half boxes are interlocked with a third piece, B, thus making two spaces, both filled with rubber. The latter may completely fill the space, or may be notched or cut away to regulate the elasticity of the spring.

It will be seen from Fig. 1 that double springs are attached at one end to the upper parts of the hind axle tree and rocker, C, by means of bolts. Their opposite ends are fastened to brackets, D, which are secured to the body so as to support the same; thus holding the rubber in the springs in a state of compression. On the lower frame of the buggy are represented two parallel longitudinal bars, E, strengthened by a cross girt, F. There are also two metal braces, G, extending diagonally from the corners to the center, these being secured to the lower sides of the hind axle tree and rocker, and also to the cross girt, F′, in the center. These prevent either axle tree or rocker from being turned over by the action of the springs and load. On each side of the lower frame, secured thereto and to the body, is a link, H, which prevents the body being tipped sideways on the occupant's getting in or out. This link is made of metal, and consists of two brackets and an intermediate connection. The brackets are attached respectively to frame and body; and the bolt holes on the link are elongated so as to allow of some freedom of action. The remainder of the body is constructed in the usual way. The device is well calculated to add to the lightness of vehicles, both in appearance and in actual weight; while it is also neat and compact.



Patented through the Scientific American Patent Agency, February 13, 1877. For further information, address the inventor, Mr. Lucius A. Fogg, Parker City, Armstrong county, Pa.

More Mysterious Clocks.

M. Cadot, of Paris, has recently invented a curious clock which deserves a prominent place among the number of similar ingenious devices which we lately described. It has two apparently free hands placed in the center of a double pane, the two sheets of glass composing which are held in an ornamental frame. The clock is operated by concealed mechanism in the frame, which once a minute causes a slight and nearly invisible motion of one of the glasses. This causes the movement of the minute hand, and a minute train of gearing concealed in the pivot of the latter actuates the hour hand.

Mr. Robert Heller, the conjurer, has lately been exhibiting a clock of his own invention, the mystery of which no one, we believe, has yet fathomed. It is a clear disk of glass, marked with the usual numbers. The hands have no bulb or other enlargement at the center, where it might be imagined mechanism could be concealed, and appear to be simply pivoted to the face. A ring like that of a watch suffices for the support of the clock from two cords suspended from the ceiling. At the command of its owner, the clock marks any hour, moves backward or forward, and otherwise behaves in an astonishing manner. The use of the cord naturally suggests concealed wires and electricity, which is probably the secret of the movement. But this theory is somewhat damaged when the magician removes the clock from its cords, and, holding it with two fingers at arm's length, carries it in the midst of his audience and causes it to continue its performances under the very eyes of the people, allowing the closest inspection. One clock like that would serve as an invaluable aid to an exhibiting spiritualistic medium, and would cause widespread rejoicings among the elect.

A Dog Show in New York.

We are informed that a dog show of considerable magnitude is to be held at the Hippodrome in this city in May next. A number of sporting and non-sporting dogs are expected from England and Canada to compete for the prizes, which will be numerous and valuable. The foreign contributions will add interest to the exhibition. It is expected that this will be the largest show of the kind ever held in this country. Messrs. Tiffany & Co. head the list of those offering special prizes, which is a guarantee that they will not be of a cheap or inferior quality.

Mr. C. Lincoln, who may be addressed at P. O. Box 2832, N. Y., is Superintendent of the exhibition, and of him all information may be had. Entries are not to be received after April 25, except from abroad. Foreigners are allowed till May 1.

To SOFTEN metal castings, bury them in sawdust in an iron box. Make it airtight with clay, and subject to a red heat for several hours. Let the whole cool before taking out the castings.

CUTLER'S cement, for fastening blades of dinner knives in ivory handles, consists of rosin 4 parts, beeswax 1 part, plaster of Paris or brickdust 1 part. Fill the hole in the handle with the cement, heat the tang of the blade, then press it in.