the cranks causes the beam to be moved out of the centre alternately, so that the beam is placed in such a position that it tends to fall alternately on opposite sides, and must be moved from its lowest to its highest position by the action of what is termed a slight auxiliary force. It is thus claimed that by virtue of the geared cranks or rolling centres there is always a certain proportion of gain in the work done by the overbalancing of the beam, as compared with the auxiliary force required to what is termed "rock" the beam. The effect is claimed to be produced by utilising the force of gravity. The claim is almost plausible at first sight, complicated as it is by the inventor's talk of rolling centres and their wonderful power, and more especially since the downward motion of the beam is very direct and observable. The action of the auxiliary force, on the other hand, takes place whilst the upward motion of the beam is produced by an inclined plane, and is not so obvious. In this way a nice mare's-nest, in our opinion, has been devised by the unfortunate inventor, and for anybody who may be foolish or ignorant enough to waste time or money on it.

And now to demonstrate our opinion on the matter. Analyse the force that is sought to be utilised, the attraction of matter. It is not a body in motion, such as the air or that of rivers. It is not a pressure which can be confined, and directed such as steam. It is not a force which is being continually generated and given off, such as the sun's heat. But it is simply an attraction, never more or less under similar circumstances. How, then, can it be utilised as matter in motion, overcoming resistances — i. e., generating heat? It must, in such case, lose a corresponding portion of its energy, and to be kept constant must be continually receiving accession of strength. This, we know, is not the case. The only case we know of in which attraction of matter usefully affects matter in motion is the case of the planetary systems In these the motion is neither produced, accelerated, nor retarded by gravity, but simply governed, and any resistance encountered would undoubtedly produce a corresponding retardation.

The potential energy of any mass on the earth's surface is exactly estimated in foot-pounds by the product of its weight into its distance from the earth's surface; and no more can be obtained from it except an equivalent of any work which may be done upon it. Magnetism will rank with gravity as a constant attraction, which cannot be utilised to set matter in constant motion. So-called magnetic engines are simply the utilised effect of chemical combination of acids and bases, caused to produce an intermittent force in electro-magnets. The force of electro-magnetism is simply the mechanical equivalent of the work done to produce the rotation of coils before the poles of a magnet. This is sufficient at once in our mind to stamp the inventor's claim as an impossibility.

To analyse the motion of the machine itself. Suppose the beam to start in its highest possible position, a slight motion of the fly-wheel causes the supporting centres to shift, so that the beam overbalances and falls heavily on one side, completing thereby half a revolution. Now, at this point the inventor lays great stress upon the leverage of the falling weight. But it is not a question of leverage at all. The work done by the descending beam is measured exactly by the weight of the beam, multiplied into the vertical distance through which the centre of gravity of the beam has fallen. Now, in the second half-revolution, if the beam has to be returned to its original position, by whatever complicated motions it may be effected, the work to be done will be exactly measured by the weight of the beam, multiplied into the vertical height through which it has to be raised. The deduction is obvious There can be no possible gain in such a machine, but merely a loss equivalent to the frictional resistance. The deception may arise in this way:—The weight is very heavy, descending through a small vertical distance; the rise is by means of the wedge principle, in which a small effort, through a long distance, will effect the replacement of the beam in its original position; but the work is not lessened. The production of perpetual motion does not, at first sight, appear as the object of the above-described machine, and, as we have before said, the inventor purposely keeps such a claim in the background, as it would of itself be sufficient, with many minds, to show its impossibility.

Perpetual motion would, however, be a logical consequence of the utilisation of an unlimited and ever-constant force, such as gravity or magnetism. For instance, in the above machine with a single beam, there is the dead point, so to speak, in which the auxiliary force is required to complete the revolution. But if the work done by that falling weight be in excess of the work done by the auxiliary force, two or more beams might be easily so adjusted on the same shaft that one beam or other should always be falling. Hence perpetual motion would ensue. This would be at once the simplest and cheapest mode of testing the working of the theory, instead of building, as the much to-be-pitied inventor has done, a single beam machine with auxiliary engine to work it. It is surprising that any man could be so foolish as to go to such expense without first obtaining a practical result with a model. In this case this practical result would, we feel sure, support our opinions.—*Iron.*

HOW TO MAKE COARSE WOOD LOOK LIKE POLISHED MAHOGANY.

The following process is recommended in *Wiederhold's Trade Circular.*—The coarse wood is first coated with a coloured size, which is prepared by thoroughly mixing up in a warm solution of one part of commercial glue in six parts of water, a sufficient quantity of the commercial mahogany brown, which is in reality an iron oxide, and in colour stands between so-called English red and oxide of iron. This is best effected by adding in excess a sufficient quantity of the dry colour with the warm solution of glue, and thoroughly mixing the mass by means of a brush until a uniform paste is obtained, in which no more dry red particles are seen.

A trial coat is then laid upon a piece of wood. If it is desired to give a light mahogany colour to the object, it is only necessary to add less, and for a darker colour more, of the brown body-colour. When the coat is dry, it may be tested, by rubbing with the fingers, whether the colour easily separates or not. In the former case, more glue must be added until the dry trial coat no longer perceptibly rubs off with the hands. Having ascertained in this way the right condition of the size colour with respect to tint and strength, it is then warmed slightly, and worked through a hair sieve. After this it is rubbed upon the wood surface with the brush, which has been carefully washed. It is not necessary to keep the colour warm during the painting Should it become thick by gelatinising, it may be laid on the wood with the brush, and dries more rapidly than when the colour is too thin. If the wood is porous and absorbs much colour, a second coat may be laid on the first when dry, which will be sufficient in all cases. On drying, the size colour appears dull and unsightly, but the following coat changes immediately the appearance of the surface. This coat is spirit varnish. For its production three parts of spirits of wine of 90° are added in excess to one part of red acaroid resin in one vessel, and in another ten parts of shellac with 10 parts of spirits of wine of 80°. By repeated agitation for three or four days, the spirit dissolves the resin completely. The shellac solution is then poured carefully from the sediment, or, better still, filtered through a fine cloth, when it may be observed that a slight milky turbidity is no detriment to its use. The resin solution is best filtered into the shellac solution by pouring through a funnel loosely packed with wadding.

When filtered, the solutions of both resins are mixed by agitating the vessel, and letting the varnish stand a few days. The acaroid resin colours the shellac, and imparts to it at the same time the degree of suppleness usually obtained by the addition of Venetian turpentine or linseed-oil. If the varnish is to be employed as a coat, the upper layers are poured off at once from the vessel. One or two coats suffice, as a rule, to give the object an exceedingly pleasing effect. The coats dry very quickly, and care must be taken not to apply the second coat until the first is completely dry

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The *Daily British Colonist* says:—"The S.S. California arrived in Esquimalt at 12 30 o'clock last night, from the North. She reports things as very lively at Cassiar, and the miners making from $12 to $30 a day to the hand. There are between 700 and 800 men at the mines. Weather mild, river expected to be open about 1st May; Sylvester, of Barnard's Express arrived in three and a half days from Buck's Bar on the ice, with about $7,000 in dust for Martin & Co.'