

IMPROVED WAGON JACK.

We give herewith an engraving of a very simple and inexpensive wagon jack, which has lately been patented and is being manufactured and introduced by Messrs. R. S. Hartzell & Co., No. 235 South Third street, Philadelphia, Pa. The cut shows the jack with one side removed to show the internal construction. The lifting device consists of three parts: the lever, A, the intermediate piece, B, and the follower, C. These parts are arranged in relation to each other, so that when the lever, A, is pressed down the follower, C, rises, and when in its highest position is locked

**NEW WAGON JACK.**

automatically by the short arm of the lever, A, and the intermediate piece, B, being then placed so as to take the full weight of the load on their pivots.

The standard, base, follower, C, and lever, A, are made of wood. The intermediate piece, B, and the shoes at the ends of the follower and at the end of the lever, A, are made of cast iron, and the cover which incloses the working parts is made of rolled iron. The jack is substantial, serviceable, and cheap.

Any further information in regard to this useful invention may be obtained from the manufacturers, whose address is given above.

NEW AUTOMATIC CLAMPING AND PNEUMATIC PAPER CUTTING MACHINE.

Our engraving shows an improved paper cutting machine, invented by H. P. Feister, M.E., and manufactured by Rex & Bockius, No. 614 Filbert street, Philadelphia, Pa.

This machine in its construction is a new departure, and differs from former paper cutting machines chiefly in the use of compressed air to operate the automatic clamps for holding the paper while being cut, the compressed air being so applied that the same pressure which clamps the paper, also acts as a power, in an equal ratio, to help in the process of cutting, thereby relieving the gearing of a portion of the strain while making the cut, and avoiding the breaking of gear teeth so common to other machines.

Persons familiar with this class of machines will readily understand its working from the engraving, as it does not differ essentially from other machines of the kind, except in the application of compressed air to clamp the paper, and at the same time assist in cutting. It consists simply of a driving shaft, with a pinion and clutch, an air pump, and a large gear having a crank to impart an upward and downward motion to the table, the motion of the table also giving a lateral or draw cut to the knife bar as it rises upward in the operation of cutting. Secured to the table is an arched or curved yoke, fitted with pistons which have an upward and downward movement in cylinders secured to the paper clamp on its rear side, the clamp resting on pins slightly below the cutting edge of the knife. The knife is arranged to traverse to the right and left between rollers in the housings, and it has neither an upward nor downward movement.

In working the machine the operator pulls toward him the inclined lever, seen at the side of the machine, which throws

in gear a clutch, starting in motion the large crank gear, which imparts an upward motion to the table, carrying with it the paper against the clamp, the clamp being held down firmly against its seat by the air pressure between the pistons and bottoms of the two air cylinders, the same movement of the lever which started the clutch having at the same time admitted air through a suitable valve to the two cylinders and underneath their pistons, and also at the same time to the cylinder on top of the machine, all the pressure entering the upper cylinder assisting in pulling upward on the table, by means of the connecting rod attached to the tongue on the yoke, and helping the gearing to force the paper against the knife, thus aiding in cutting the paper, while, at the same time, the two cylinders are holding it firmly in position to be cut. To make the process of clamping still more plain, it may be stated that the air clamp, being held down firmly against its seat, the upward movement of the table carries the paper against the clamp, it of course cannot move the clamp until the paper is pressed upward firmly against the clamp, after which the clamp, cylinders, yoke and table all move upward together until the end of the stroke is reached and the cut made, when they again move downward together until the lower end of the stroke is reached, when the clutch is automatically unshipped and the valve opened, releasing the air from their respective cylinders and loosening the paper from the clamp. The manufacturers claim that this machine will do twice as much work as other paper cutting machines with the same power applied.

What is Space?

"Space is a real, objective, immaterial, extended, continuous, infinite, immutable, eternal, and absolute whole of capacity to receive extended substance, existing in trine extension of infinite length, infinite breadth, and infinite depth, which is ideally divisible in each dimension, into finite wholes of locality, all of possible forms and sizes, possessing the relations of similarity, difference, ratio, direction, distance, contiguity, and conjunctibility; and comprising units of trine extension, surfaces, lines, and points, each of which is infinitely divisible; trine extension into surfaces, surface into lines, lines into points, and points into infinitesimal fractions of position, which compose the infinitude of space, in a number which is formed by the involution of relatively infinite number to the seventh power."

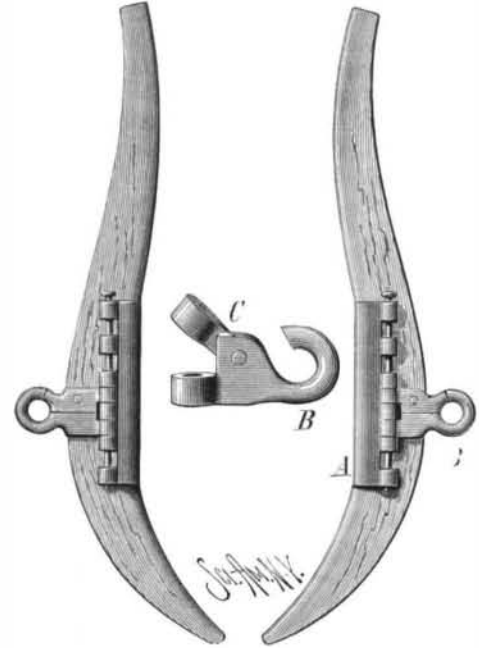
This simple and lucid description is furnished by Rev. H. L. Gear, in an article on "The Concept of Space," in the Cincinnati Baptist Review. We trust that all our readers will be careful to bear it in mind always when they have to think of that fundamental concept. No end of intellectual

difficulties arise from a neglect to form and hold just views of such important elements of right thinking.

IMPROVED HAME.

The engraving shows an improved hame lately patented by Mr. James M. Davis, of Peach Orchard, Ark. The invention relates principally to the irons for connecting the traces with the hames, the object being to permit of shifting the pressure on the horse's shoulder when necessary to avoid galling and irritation.

Plates, A, which are fitted to the convex face of the hames, have a series of jaws with recesses between them, and a hole through them to receive a pin which passes through them all. The hook, B, which connects the traces, is fitted to one of the recesses in the plate, A, and

**DAVIS'S IMPROVED HAME.**

is provided with a pivoted part, C, which fits in the adjacent recess and has an extension which meets the end of the hook and forms, when the hook is in place on the hame, a complete eye, from which the trace fastening cannot escape. The hook is thus made perfectly safe, and being entirely closed it is prevented from catching into the harness of another horse.

Should the horse's shoulders become sore the hook, B, may be readily shifted up or down by simply withdrawing the pin and placing the hook in a different position and replacing the pin.

This device is very simple and serves a very useful purpose in adjusting the draught to the best advantage, thus relieving the horse of a great deal of discomfort and in many cases actual suffering.

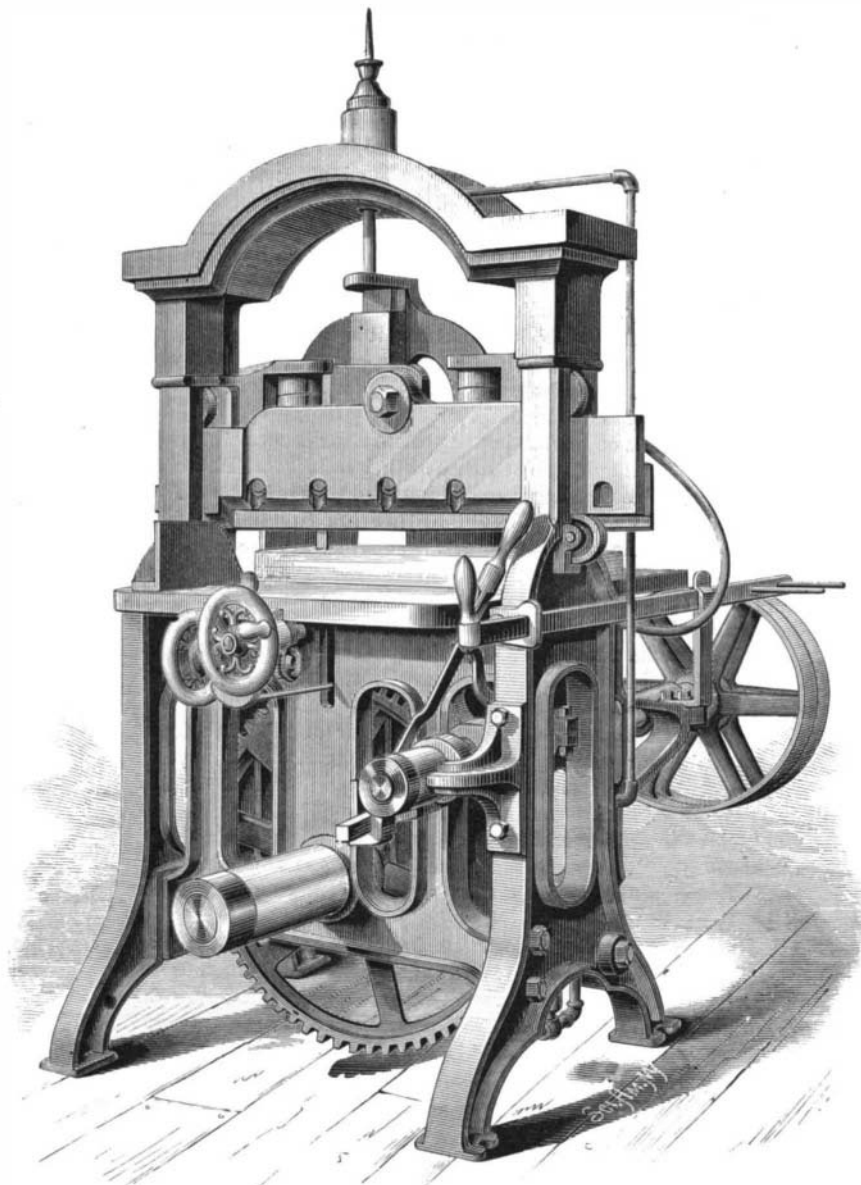
Further particulars may be obtained by addressing the inventor as above.

MECHANICAL INVENTIONS.

An improvement in wagon jacks has been patented by Mr. John Charles, of Clear Spring, Md. This invention relates to certain improvements in that class of wagon jacks in which a lever carrying two pawls or gripping jaws is combined with a lifting bar having a double set of ratchet teeth, whereby the oscillation of the lever is made to cause the travel of the lift bar over the main section, to which the lever is pivoted. The improvement consists in pivoting the pawl jaws to the lever in such relation to springs on the main bar that the lifting bar may be made to travel either up or down without change in the adjustment by simply changing the range of oscillation of the lever.

An improved vehicle wheel hub has been patented by Mr. Lindsey Rossiter, of Port Carbon (Bridgeport P. O.), Pa. The object of this invention is to improve the construction of axles, axle boxes, and hubs, so that they may be conveniently oiled, will not leak or waste oil.

A press for bending rims of pianofortes to the shape required, and at the same time veneering them, has been patented by Mr. Frank Denninger, of New York city. This invention consists in a press bed of rectangular form, having combined with it loose presser blocks of the shape to which the rims are to be pressed, and fitted with clamping shackles and screws for compressing and holding the rims which are placed between the blocks in the press. The presser blocks are also fitted with adjustable gauges for retaining the rims in position.

**FEISTER'S AIR-CLAMPING PAPER CUTTING MACHINE.**