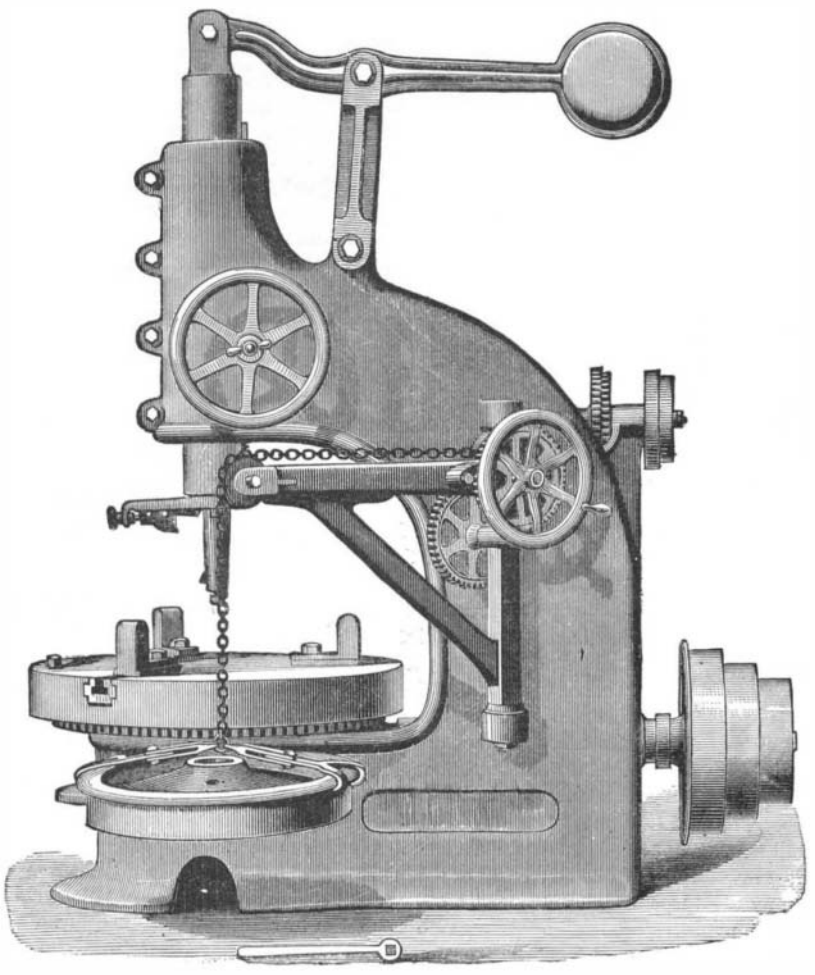
VERTICAL CAR WHEEL BORER.

The vertical car wheel borer, shown in the accompanying engraving, is made by the Putnam Machine Company, of Fitchburg, Mass. It is of heavy construction, combining with good proportions the proper strength for the work it has to perform, and its capacity includes all sizes of wheels from fifteen to forty-eight inches in diameter. The work is held by a four-jawed chuck, the jaws of which, while having independent adjustments to an accurately graduated scale on the slide, are set up or tightened on the work by means of a wrench giving a simultaneous or universal movement. The bearings upon which the chuck revolves are of the form of a double parabola with the concave faces turned in as the journal, while the seat or lower bearing is lined with Babbitt metal, producing an excellent bearing and distributing the pressure over a large area, thus, when properly lubricated, preventing contact and wear of the metal and reducing the running friction to a very small amount. These journal bearings are surrounded by and attached to a rigid circular case, which admits of adjustment for boring either straight or tapering, without changing the vertical line of the boring spindle. The chuck spindle is hollow and allows chips to fall into the interior of the frame, from whence they may easily be removed. The boring spindle is of large proportions, is counterbalanced, and is raised or lowered by a rack and pinion in the back, giving a very quick motion. The feed has four changes, two by belt and two by gears, and the latter admits of being changed instantaneously, independently of the former, for roughing out and finishing operations, by means of a stop rod, while the machine is in motion. The cutter mandrel is of steel, three and one half inches in diameter, and has a taper bearing in the spindle, twelve inches long. An independent head for squaring the hubs of truck wheels is quickly adjusted to, or removed from the spindle as required. A powerfully geared swing crane is attached to the side of the machine, and provided with chain and grappling irons for lifting and swinging wheels on and off the chuck. The driving cone is large and has three changes of speed, and by the arrangement of the countershaft pulleys, admits of two speeds for each cone shift without change of belt.

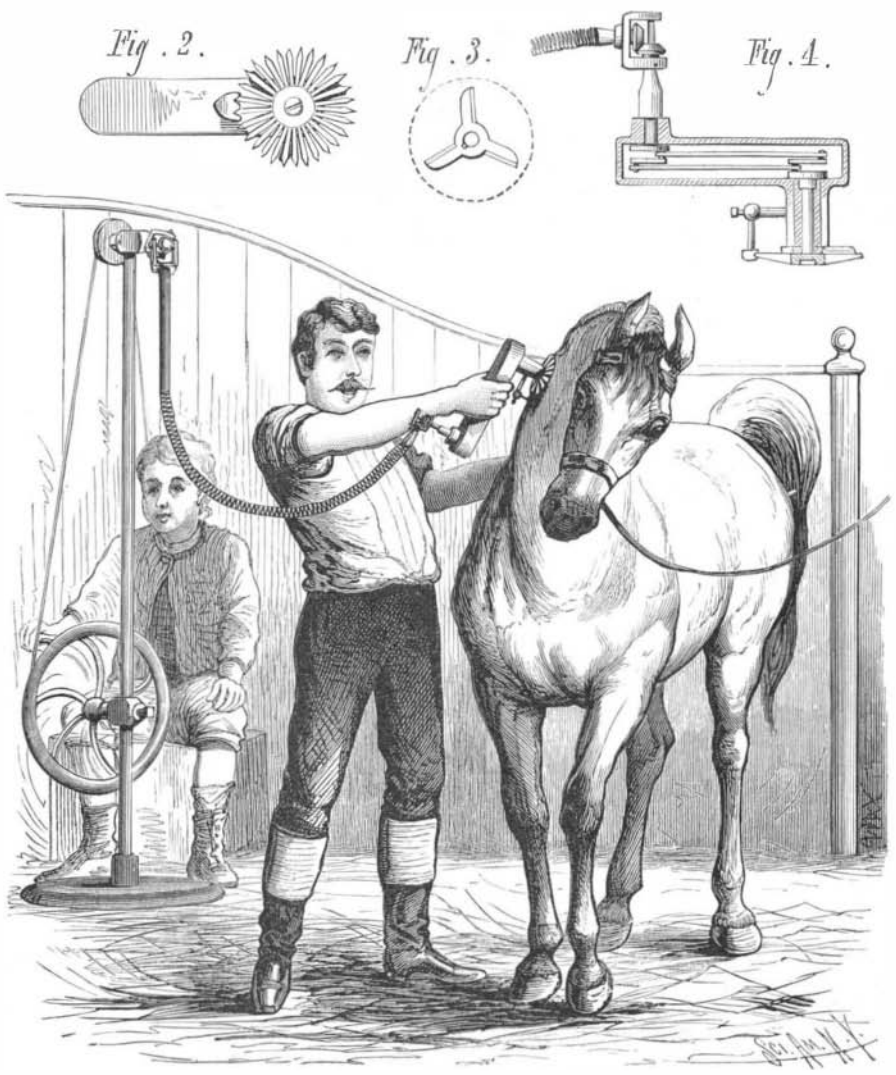


VERTICAL CAR WHEEL BORER.

NEW HORSE CLIPPING MACHINE.

The engraving represents in several views an improved horse clipping machine, recently patented by Mr. Peter Casey, of Providence, R. I. This machine works without noise, and may therefore be used about the head and ears of a horse without frightening him. The driving portion of the machine is connected with the clipper by a shaft having at one end a universal joint, and at the other a flexible portion, which permits of turning the clipper in any required direction. The flexible end of the shaft carries a bevel wheel, which meshes into another bevel wheel on the driving shaft of the clipper.

The construction of the clipper will be understood by reference to Figs. 2, 3, and 4. Fig. 2 shows the side that comes into contact with the skin of the horse; Fig. 3 shows the form of the knife; and Fig. 4 is a longitudinal section of the clipper, showing the connections between the driving shaft of the clipper and the knife spindle. These connections consist of two cranks, placed at right angles to each other, on each shaft, and connected by two links or connecting rods. Underneath the revolving knife there is a guard having radial arms, between which the hair is held and against which it is cut.



CASEY'S HORSE CLIPPING MACHINE.

How India-Rubber is Obtained.

A correspondent of the Boston *Commercial Bulletin*, writing from the Amazon river, Brazil, gives the following account of the method of gathering rubber, as lately observed by him. The process, in many respects, resembles the method of obtaining sugar from the maple trees in Vermont:

"At last we arrived at the encampment, which seemed to be on an island in a vast archipelago. Though the Indians divided the water into river, creek, and lagoon, the latter formed by the overflow in the rainy season, I could not perceive the distinction. In some instances the lagoons appeared to have a current, while the rivers had none, but I accepted their names.

"There were abundant groves of rubber trees in all directions, and men, women, and children were engaged in collecting the rubber, with more method in their labors than I should have expected among such a rude and savage people. Each one had a certain number of trees allotted to him, which he bored with an auger. He then inserted in the hole a piece of hollow cane. To the bark of the tree he fastened with mud a shell of the terrapin, or of a large clam, found in some of these rivers. These serve to catch the liquid. When it drips from the cane it is white as milk, but thicker or with more body.

"A trough dug out of a log is stationed in a central point, and when the trees are all tapped, the man goes his rounds, watching the shells and pouring the contents, when full, into the trough. Toward sunset a fire is made of leaves and twigs, upon which is thrown the fruit of a certain kind of palm, which gives forth a dense smoke.

"A small round-bladed paddle, like those used in the canoe, is dipped into the milk, and turned over once or twice. It is then drawn out, covered with the coating of the liquid gum, and held at once in the smoke of the fire, which hardens and also darkens the coating. It is again plunged into the milk and again smoked, and this process is kept up until the blade of the paddle is covered an inch to an inch and a half in thickness. A knife is passed along one edge of the blade and the mass removed. It appears in shape like a shoemaker's lapstone with a sort of nozzle on one side. In this state it is shipped. From one of these lumps of commercial gum the different coatings may be readily detached."

In this connection we may state that the New York Belting and Packing Company, No. 38 Park Row, New York, have lately placed in their show window a large and splendid living specimen of the rubber tree. The plant is in vigorous condition and attracts much attention.

MISCELLANEOUS INVENTIONS.

An improvement in bottle stoppers, patented by Mr. William Beardsley, of Beacon, Iowa, consists in combining a stopper provided with shoulders, a tubular extension, an orifice, a flanged plug with a bottle neck having a straight bore, and a counterbore for receiving a packing ring and spiral spring.

An improved refrigerator, patented by Mr. Cyrus B. Shaw, of Brooklyn, N. Y., is constructed so as to use less ice than refrigerators made in the usual way, and it can be more easily kept clean and sweet, and may be more easily repaired.

Mr. William Roush, of Yates Center, Kan., has invented an improvement in lanterns which relates to the construction and arrangement of a lamp chimney and frame in a lantern. The object of the invention is to enable the parts to be put together or taken apart easily and quickly, so that the parts can be combined into a lantern adapted for immediate and general use, or the lamp can be taken out and used for ordinary domestic purposes.

Mr. Allen Blewett, of Brookville, Miss., has patented an improved toy pistol, having the barrel and stock or handle made in one piece, the barrel having a slot in its under side, which extends its whole length, to receive the slide, and the stock having a recess in its under side to receive the trigger. In this pistol a rubber spring is used to propel the projectile.

Mr. Joseph H. Stratton, of Beloit, O., has patented an adjustable support for carriage bodies, coffins, and other similar articles while undergoing painting, varnishing. It is arranged so that they can be set in any desired position to accommodate them to the position of the workman. The invention consists of a table or stand provided with devices for holding the body, and pivoted to the end of a lever fulcrumed between two uprights or standards, and with arrangements for securing it in different positions.

An improvement in stiff hat flanges has been patented by Messrs. Lewis L. Smith, Frederick L. Knable, and Henry F. Smith, of Orange, N. J. The flange is made in two parts, with the lines of division at the front and rear, and with the end edges of the one part convex and the end edges of the other part concave, to adapt the flange to be withdrawn from the hat without changing the shape of the hat brim.

Mr. Edmund Kuhn, of New Albany, Ind., has invented an improved grate, which consists of one or more cylindrical revolving grates pivoted horizontally in the lower part of the firebox, and made to shake out the ashes and agitate the fire by turning on their axes.

Mr. John G. Hess, of Guttenburg, N. J., has patented an improvement in spigots or faucets for drawing liquids from barrels. The invention consists in a packing ring of elastic material contained in an annular recess in the spigot around the plug, the aperture of which is concentric with the axis of the plug.

An improved fish trap, patented by Mr. William J. Henderson, of Valdosta, Ga., consists in combining a transparent bottle with a rat trap, so that the fish or animal may be caught without consuming the bait.

Mr. August Buermann, of Newark, N. J. has invented an improvement in spurs, which consists of a stay plate in combination with the heel band of a spur made of two bars and having their rear ends projecting to the rearward, and parallel with each other, to serve as a rowel holder.