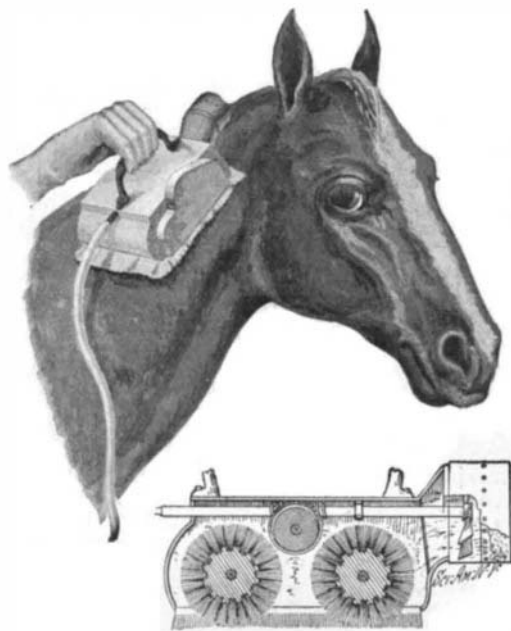


cient rapidity from the smooth surface of the cylinder. However, in order to insure sufficient strength, he retained the ribbed formation on the cylinder heads and the valve casings, for at these points the pressure is, of course, the greatest. A special form of carbureter is used, which comprises a double valve and insures separate control of the gasoline and air supply. Control of the sparking may be had by operating a lever depending from the lower part of the motor. This changes the position of the sparking contacts with relation to their operating cams, and thus advances or retards the time of the spark in the cylinder. A friction clutch and pulley shown at the rear of the motor were added after the motor was built, and these increase the total weight to 33½ pounds. On completion of the motor it was subjected to thorough tests and proved highly satisfactory in every particular.

**MACHINE FOR GROOMING AND SHAMPOOING HORSES.**

Two Western inventors have just received a patent for an ingenious machine adapted to be used for grooming and shampooing horses. The machine is designed particularly with a view to doing the work rapidly and in a cleanly manner, means being provided for confining the dust and sweepings to a specially-constructed dust chamber. The apparatus may be operated by a flexible shaft connection with any suitable motor. The flexible shaft is attached to the main shaft which passes lengthwise through the center of the machine. A worm gear formed on this shaft meshes with a gear on a shorter shaft lying at right angles therewith. At one end of the shorter shaft a friction device of cup-shape is formed, within which the main pulley projects. The diameter of this pulley is smaller than the diameter of the cup so that it may be shifted from one position to another without interfering with its rotation so long as its periphery has frictional contact at some point with the cup. Lying on either side of the shorter shaft are two brushes which are rotated by means of friction disks engaging a large disk connected with the main pulley. Ordinarily both brushes will rotate in the same direction, but by reason of the freedom of movement allowed the main pulley the friction disk directly connected therewith may be shifted, so as to bring it into contact with an "idler," through the medium of which the direction of one of the brushes may be reversed. The entire mechanism is covered by a casing open at the bottom to permit operative contact of the brushes with the animal to be groomed. In order to prevent spread of dust raised by the brushes, the dust is confined to the casing by screens of fringe work which hang from its lower edges. It will be observed that the right-hand end of the main shaft is provided with a suction fan lying in the dust chamber which projects from the main casing. This chamber is closed by a perforated cap provided with a sponge or other dust-absorber, so that when the fan operates to draw out the dust raised by the brushes, the dust will lodge in the absorber while the air passes out through the perforations. In operating this machine the operator needs simply to guide it over the animal's body and the work will be



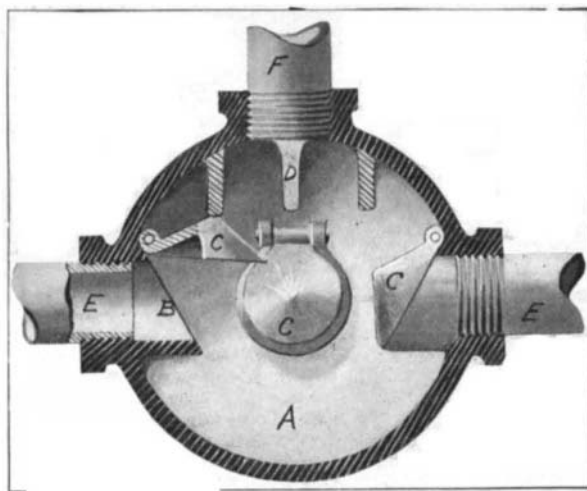
**A HORSE-GROOMING MACHINE.**

easily and expeditiously done. Messrs. Anders and Pehr Bolund, of 16 Hancock Street, East San José, Cal., are the inventors of this grooming and shampooing machine.

The Pennsylvania Railroad tunnel under the Hudson River was begun on June 25. The tunnel work is divided into two sections, known as the northern and the eastern sections. The first drill holes for first shaft were started at noon at the foot of 32d Street and Eleventh Avenue, New York.

**IMPROVED VALVE MECHANISM.**

The accompanying engraving illustrates an improved valve mechanism which is especially adapted for connecting a battery of boilers with a main steam pipe. The valve has been designed with a view to effecting a great saving of fuel and to act as a safeguard against explosion of the boiler. A patent for the improved construction has recently been obtained by Mr. Thomas Simpson, of New Iberia, La. The valve mechanism comprises a casing *A*, and opening into this are a number of passageways *B*, preferably four in number. These are threaded to receive the pipes *E*. The end walls of the passageways are beveled or inclined and over them the conical valve caps *C* are situated, being hinged to the casing. The passageways are arranged diametrically opposite each other,



**VALVE MECHANISM FOR A BATTERY OF BOILERS.**

so that when one of the valves is open and steam is passing therethrough, the valve directly opposite will be held in its closed position unless the steam pressure in this closed pipe is sufficient to overcome the pressure from the opposite steam duct. The main steam pipe *F*, which is formed at the upper portion of the valve casing, is adapted to permit the escape of the steam from the casing. A number of lugs *D* are formed on the interior of the casing. These serve as stops for the valve caps when they are suddenly forced upward by the pressure in the pipes. In large sugar refineries explosion of the boilers frequently occurs, due to the fact that when a connection is made between boilers the pressure of one battery exceeds the pressure of the other. This may be obviated by the use of Mr. Simpson's improvement. It will be observed that an excess of steam in the boiler is immediately relieved and is permitted to escape through the valve mechanism, without the necessity of an attendant being present to regulate the same, and such an advantage is obviously very important.

**Across the Continent by Automobile.**

The crossing of the continent of North America in sixty-one days is the latest achievement of the automobile.

The test was undertaken by the Packard Motor Car Company in order to demonstrate the trustworthiness and ability of their 12-horse power standard touring car. Mr. T. E. Fitch, their most experienced operator, was chosen to run the car, and he was accompanied by M. C. Krarup, an newspaper man. The start was made from San Francisco on June 20, and the mud-covered car, christened "Pacific," reached New York at 8.30 P. M., August 21—just two months and one day later. The route followed was across the Rocky Mountains to Carson City, Reno, Battle Mountain, and Wells, Nev.; Tacoma, and Salt Lake City, Utah, the latter place being reached on the 4th of July; Glenwood Springs, Buena Vista, Colorado Springs, and Denver, Col., Denver being arrived at July 20; then through Nebraska to Omaha, which was reached on July 31 and stopped at till August 2; Des Moines, Iowa, was reached on August 4, and Chicago, Ill., on August 10; while ten days were consumed in covering the last 1,000 miles from Chicago to New York. Aside from tires, but one serious breakdown occurred on the machine, which consisted in the breaking of a front spring. A new spring was obtained *en route*. One of the original tires on the machine at the start is said to have survived to the finish. Beside this tire, seven new outer casings were used in replacing the other three. The weight of the machine complete was about 2,700 pounds.

Regarding the character of the roads traversed, Mr. Fitch is reported to have said that neither Utah desert nor Colorado mountains were half as bad as the common mud met with in all sorts of places. In Iowa the mud was so bad that with chains on the wheels it was difficult to get sufficient traction to run through it. The shortest day's run in the entire journey was twenty-four miles in this State. The roughest going was in Colorado, between Grand Junction and Colorado Springs.

The Packard single-cylinder car is the second to accomplish the feat of crossing the continent. The first machine to cover the distance was a Winton 20-horsepower touring car driven by Dr. Nelson Jackson, of Burlington, Vt., who arrived about a month ago, accompanied by a chauffeur. Dr. Jackson took a longer and more northerly route, and had a great deal of tire trouble; but, in spite of many difficulties, he succeeded in making the trip in only four days' longer time than the Packard party. A third expedition, with an Oldsmobile light runabout, is now being undertaken by two other men. A motor-cycle driven by George A. Wyman was the first motor-driven machine to ever complete this journey. This arrived in New York several weeks before Dr. Nelson, after having been ridden by Mr. Wyman many miles over railroad ties when no roads were to be had.

**Food Frauds Abroad.**

In Paris snails are popular, and the adulterators mix them with lungs of cattle and horses. Even entirely artificial snails are manufactured. The shells, recoated with fat and slime, are filled with lung and then sold as "Burgundy" snails. Lovers of fresh rooster combs are imposed upon by a substitute cut out of hogs' intestines.

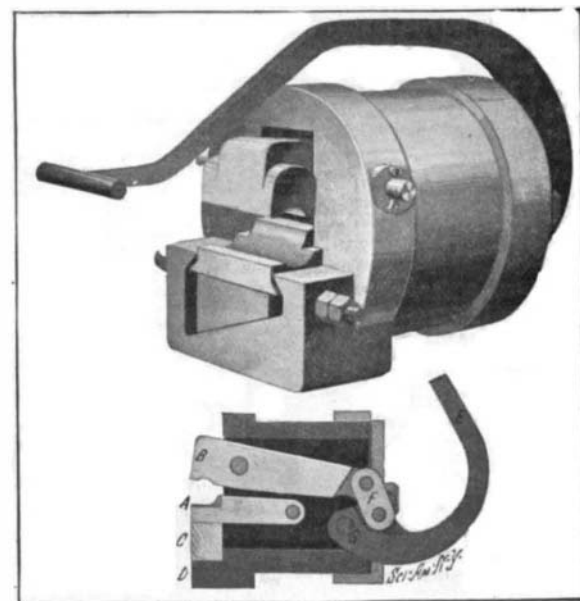
Chopped artificial truffles are made of black rubber, silk, or softened leather, and even whole truffles are made out of roasted potatoes, which are flavored by adding ether. They are said to sell well.

Fish spoiled in spite of ice and borax is treated with salts of zinc, aluminium, and other metals. Rubbing the fish with vaseline to give it a fresh look and coloring the gills with fresh blood or eosin—a coal tar color—is resorted to. The latter is also used to intensify the red color of inferior crabs.

Imparting a greenish color to oysters is another adulteration. An oyster requires about one month in the beds to acquire the greenish color. As this is too long a time, the dealers help them along with an artificial color. The chemists in the Paris municipal laboratories have shown that tomato jelly is adulterated with turnips and powdered pepper contains a large admixture of powdered hardtack.

**CABLE GRIP OR CLUTCH DEVICE.**

Messrs. Ludwig Schuler and Joseph Ericson, of Telluride, Colo., have just obtained a patent on an improved cable gripping device, for use in connection with traveling ropes or cables of traction or other similar railways. The device is very effective and reliable in operation, besides being capable of easy control, and it contains no parts which will get out of order or be easily broken. It comprises a cylindrical block, in which is formed an opening of rectangular cross section which is adapted to receive the two jaws *A* and *B*, as shown in our detail view. The lower jaw *A* is pivoted to the block at its inner end, and at its outer end rests on a wedge *C*. This wedge is provided with screws, one at each end, which project through slots in the corresponding sides of an extension *D* on the block, as shown best in the perspective view of the device. By means of nuts on these screws the wedge *C* may be moved toward the right or the left, thus



**AN IMPROVED CABLE-GRIPPING DEVICE.**

raising or lowering the jaw *A*. The purpose of this adjustment is to adapt the device for gripping various sizes of ropes or cables. The upper jaw *B* is hinged to the block near its gripping end, and at the opposite end is connected to an operating lever *E* by a toggle link *F*. The operating lever is pivoted to the block at *G*, so that when the lever is swung about on its axis, the lower end of the toggle link will be moved inward, raising the inner end of jaw *B* and causing its gripping end to come down with a powerful grip onto the cable resting on the lower jaw *A*.