

**Different Kinds of Money Recognized by the Government as Legal Tender.**

Although people talk glibly and wisely about the national currency, the vast majority of them have but a superficial knowledge of the functions of the various issues. On account of the present general discussion on the subject, a few facts are briefly given that may afford a clearer understanding of the present condition of the national finances.

The official definition of the term "legal tenders" is "money of a character which by law a debtor may require his creditor to receive in payment, in the absence of any agreement in the contract or obligation itself." In government transactions the gold coins of the United States are a legal tender in all payments, at their nominal value, when not below the standard weight and limit of tolerance provided by law for the single piece, and when reduced in weight below such standard and tolerance are a legal tender at valuation in proportion to their actual weight.

Standard silver dollars are a legal tender at their nominal value for all debts and dues, public and private, except where otherwise expressly stipulated in the contract. The silver coins of the United States of smaller denominations than \$1 are a legal tender in all sums not exceeding \$10 in full payment for all dues, public and private.

Minor coins, whether of copper, bronze or copper-nickel, are a legal tender at their nominal value for any amount not exceeding twenty-five cents in any one payment.

United States notes, otherwise known as "legal tender notes" and "greenbacks," are a legal tender in payment of all debts, public or private, within the United States, except duties on imports and interest on the public debt.

Treasury notes, issued in payment of purchases of silver bullion under the Sherman act of 1890, are a legal tender in payment of all debts, public or private, except where otherwise expressly stipulated in the contract, and are receivable for customs, taxes and all public dues.

Columbian half dollars are a legal tender to the same extent as subsidiary silver coin—that is, \$10 in any one payment. Columbian quarters are also a legal tender to the same extent as subsidiary silver coin.

Gold certificates are not a legal tender. They are, however, receivable for customs, taxes and all public dues. Silver certificates have precisely the same standing as gold certificates.

National bank notes are not a legal tender. They are, however, receivable at par in all parts of the United States in payment of taxes, excises, public lands and all other dues to the United States, except duties on imports; and also for all salaries and other debts and demands owing by the United States to individuals, corporations and associations within the United States, except interest on the public debt and in redemption of the national currency.

Trade dollars are not a legal tender. By the act of February 12, 1873, they were a legal tender at their nominal value for any amount not exceeding \$5 in any one payment, but under date of July 22, 1876, it was enacted that they should not thereafter be a legal tender.

By the act of March 3, 1863, fractional currency was receivable for postage and revenue stamps, and also in payment of any dues to the United States, less than \$5, except duties on imports; but they are no longer a legal tender to any extent whatever.

The Treasury Department has also decided that foreign gold and silver coins are not a legal tender in payment of debts. The question has been raised and disputed as to whether what was called the "Continental currency," issued during the war of the rebellion by the old government, was or was not a legal tender. The facts appear to be that while the Continental Congress did not by any ordinance attempt to give it that character, they asked the States to do so, and all seem to have complied, except Rhode Island. The Continental Congress only enacted that the man who refused to take the money should be an enemy of his country. This currency, as now classified at the Treasury Department, is not a legal tender.

By law, Treasury notes are redeemable in coin. The

kind of coin employed is optional with the Secretary of the Treasury. Secretary Carlisle has directed their redemption in gold whenever that coin is demanded. In case the holder has no preference, he will receive silver in exchange, but such cases are extremely rare. United States notes are also redeemable in gold.

There is no standard in the matter of government bonds. Each loan stands on its own bottom. During the war legal tender notes were accepted in payment for bonds, but since then all government loans have been negotiated in gold or its equivalent—gold certificates. The recent issues of bonds were for the purpose of replenishing the dwindling gold reserve, in order to enable the government to maintain the parity of the two metallic standards of value. Consequently, no other currency was receivable in payment of the bonds. Bonds are redeemable in coin, either gold or silver, at the option of the government.—Evening Telegram.

**FENNECS IN THE BERLIN ZOOLOGICAL GARDEN.**

We publish herewith an engraving—for which we are indebted to the *Illustrirte Zeitung*—of some little fennecs (*Canis zerda*) reared in the Berlin Zoological Garden. The parents were brought from the Sahara in Tunis, and they are the first of these delicate children of the desert that have lived for a length of time in captivity. Great surprise has been expressed that the young ones have been successfully raised.

At first the little things, with their snub noses and rather short, limp ears, looked like pug pups. They were covered with thick light gray wool. When they were five weeks old they began to try to crawl about,



**YOUNG FENNECS IN THE ZOOLOGICAL GARDEN AT BERLIN.**

Drawn from life by Anna Held.

as shown in the round picture in the upper part of the engraving, but did not begin to develop their fox-like shape until they were eight weeks old, when their noses began to become pointed and their ears to grow longer, and soon the little creatures tried to hold their ears stiff. Then they left their mother's side to play together, and soon learned to chase a live mouse when one was given to them, playing with it as kittens would. They grew very fast, and in ten weeks were almost as large as the old fennecs, but their tails had not yet the long, bushy hair like that on the tails of their parents. Our illustrations show clearly the changes in the shapes of the young fennecs that occurred as they developed.

**London Prices of Silver, Tin, Copper and Lead.**

Messrs. Vivian, Younger & Bond, London, have issued a diagram showing the prices of various metals at the beginning of each month for 19 years. The diagram is most instructive, and the fluctuations can be seen at a glance. Taking first the case of silver, the price in 1875 is shown to have been 57½d. per oz.; in 18 months it dropped 18d., recovering in six months. Since 1877 the tendency has been downward, with the exception of a sharp recovery and subsequent drop in the autumn of 1890; and now the price is 27¼d., a drop in 19 years of 2s. 6d. per oz. The influence of the *Societe des Metaux* is seen in the line representing copper, but the cornering was of short duration, the rise from £40 to £87 per ton lasting only 16 months—sufficient, however, for fortunes to be made and lost. The price now, £42, is only half what it was in 1875. Foreign tin has fluctuated more than the others, but still the price now, £61, compares with £95 in 1885. Tinplates have dropped 20 per cent.

**A Forest 3,000 Miles Long by 1,700 Miles Wide.**  
"Where is the greatest forest in the world?"

The question was asked in the Forestry section of the American Association for the Advancement of Science, at its recent annual meeting. The importance of forests for equalizing the climate and the rainfall of the globe was under discussion, and the purpose of the question was to show where the great forest tracts of the world are situated.

One member, replying offhand, was inclined to maintain that the greatest continuous tract of forest lies north of the St. Lawrence River, in the provinces of Quebec and Ontario, extending northward to Hudson Bay and Labrador; a region measuring about 1,700 miles in length from east to west, and 1,000 miles in width north and south.

A professor from the Smithsonian Institution rejoined that a much larger continuous area of timber lands was to be found, reckoning from those in the State of Washington northward through British Columbia and Alaska. But he limited his statement to North America, for he added that, in his opinion, the largest forest in the world occupied the valley of the Amazon, embracing much of northern Brazil, eastern Peru, Bolivia, Ecuador, Colombia, and Guiana; a region at least 2,100 miles in length by 1,300 in length.

Exception was immediately taken to this statement by several members who, in the light of recent explorations, have computed the forest area of Central Africa in the valley of the Congo, including the head waters of the Nile to the northeast, and those of Zambesi on the south. According to their estimates,

Central Africa contains a forest region not less than 3,000 miles in length from north to south, and of vast although not fully known width from east to west. Discussion, in which the evidence afforded by travels and surveys was freely cited, seemed favorable to the defender of the Amazonian forests.

Later in the day the entire question was placed in another light by a member who was so fortunate as to be able to speak from some knowledge of still another great forest region of the globe. This gentleman gave a vivid picture of the vast, solemn taigas and urmans, the pine, larch, and cedar forests of Siberia.

It appears that Siberia, from the plain of the Obi River on the west to the valley of the Indighirka on the east, embracing the great plains, or river valleys, of the Yenisei, Olenek, Lena, and Yana rivers, is one great timber belt, averaging more than 1,000 miles in breadth from north to south—being fully 1,700

miles wide in the Yenisei district—and having a length from east to west of not less than 4,600 versts, about 3,000 miles. Unlike equatorial forests, the trees of the Siberian taigas are mainly conifers, comprising pines of several varieties, firs and larches. In the Yenisei, Lena, and Olenek regions there are thousands of square miles where no human being has ever been. The long-stemmed conifers rise to a height of 150 feet or more and stand so closely together that walking among them is difficult.

The dense, lofty tops exclude the pale Arctic sunshine, and the straight, pale trunks, all looking exactly alike, so bewilder the eye in the obscurity that all sense of direction is lost. Even the most experienced trappers of sable dare not venture into the dense taigas without taking the precaution of "blazing" the trees constantly with hatchets as they walk forward. If lost there the hunter rarely finds his way out, but perishes miserably from starvation or cold. The natives avoid the taigas, and have a name for them which signifies "places where the mind is lost."

The discussion was closed very appropriately by Prof. Fernow, of Washington, with an illustrated lecture, which showed how, in the earlier ages, forests had covered all the continental areas, and had rendered the climate equable to a degree now unknown.

At first human beings battled with the forest in a fitful manner, making small clearings for themselves; but gradually, by the aid of fire and of their own increasing numbers, they have so far prevailed in the struggle for supremacy that the forests are hopelessly conquered. But grave evils follow their extermination; and now the question is, how to foster, protect, and preserve them.—Youth's Companion.

**"Argon"—the New Gas Discovered by Lord Rayleigh and Professor Ramsay.**

A large audience assembled January 31 in the theater of the University of London to hear Professor Ramsay read the paper on "Argon, a New Constituent of the Atmosphere," communicated to the Royal Society by Lord Rayleigh and himself. The London Times says:

The meeting was noteworthy as being the first devoted to the discussion of a single subject and thrown open to the general public. In a former paper it had been shown that nitrogen obtained from chemical compounds is about one-half per cent lighter than atmospheric nitrogen. A great many experiments were described made upon nitrogen obtained from various sources. The details of these experiments have no interest for the general public, but the result is to show that nitrogen, from whatever chemical source it may be derived, has a constant density, differing from the density of atmospheric nitrogen by a constant quantity. It whatever way the atmospheric nitrogen may be separated the result is the same, and it was to solve the interesting problem thus presented that Lord Rayleigh and Professor Ramsay embarked upon the laborious experiments which have led to the discovery of a hitherto unrecognized substance. As that substance exists in great quantity in the atmosphere, it is decidedly singular that it has been so long overlooked, and all the more so when we consider that it was undoubtedly isolated by Cavendish, although neither he nor those who have followed him observed the significance of the irreducible gaseous residue from his classical experiment. When the discrepancy in weights between chemical and atmospheric nitrogen was first encountered, attempts were naturally made to explain it by contamination with known impurities, but finally it became clear that the difference could not be accounted for by the presence of any known impurity.

By considerations drawn from the ratio of specific heats, the authors are led to regard argon as a monatomic gas like mercury, and its atomic weight is therefore not 20, but 40. The substance is thus removed from among electro-negative bodies like fluorine, where its density would seem to locate it, to a place among such metallic bodies as potassium and calcium. This gets rid of a serious difficulty, but involves the hardly less formidable one of grouping it with such apparently dissimilar bodies as those just mentioned. In this dilemma the authors are almost disposed to regard

argon as a mixture of two unknown elements. However, balancing arguments for and against, they seem, on the whole, to incline to the belief that argon is a single element; but the conclusions which follow are, they admit, of a somewhat startling character. Many attempts have been made to induce it to combine, but they have all as yet proved abortive. In dealing with a substance of so absolutely inert and exceptional a character speculation must necessarily proceed upon rather abstract lines. So far as we have reached at present, argon stands entirely unrelated with any other substance in nature, and every theory of its constitution must accordingly be accepted with extreme caution. As to its physical properties, we have a little more information. Its solubility in water is relatively high, being  $2\frac{1}{2}$  times as great as that of nitrogen. Its spectroscopic examination has been conducted by Mr. Crookes, who contributed a supplementary paper dealing with that portion of the subject. It has two distinct spectra, as has nitrogen itself. But while the nitrogen spectra are of different characters, one being a line and the other a band spectrum, the two spectra of argon are of the same type. According to Professor Olszewski, of Cracow, the critical point of the new gas is—121 degrees; the critical pressure, 50.6 atmospheres; the boiling point, —187 degrees; the melting point, —189.6 degrees; and the density of the liquid, 1.5.

Professor Armstrong, President of the Chemical Society, said that the case for the existence of the new constituent was strong, though it had not been brought forward in such logical order as it might have been. There was a body of evidence that there is in the atmosphere a constituent which has long been overlooked. Nitrogen was regarded as a very inert form of matter, and apparently argon was like it, only more so. Conceivably it was diatomic; the atoms might be so firmly connected as to take no notice of anything but each other. The spectroscopic evidence did not justify the conclusion that argon is a mixture of two gases—a point upon which Mr. Crookes evidently wavered.

Professor Rucker, President of the Physical Society, said that beyond all question a new constituent of the atmosphere had been discovered.

Lord Rayleigh observed that, though not unaccustomed to difficult investigations, he had never had a harder task than that which he had carried through with the assistance of Professor Ramsay. He discussed shortly the evidence which seemed to him and

his colleague to lend high probability to the belief that the new substance resembles mercury in being monatomic. He found it difficult to conceive how two atoms could be so intimately combined as to suit a diatomic theory of its constitution, but did not deal with the difficulties involved in supposing it monatomic.

Lord Kelvin joined the presidents of the Chemical and Physical Societies in congratulating the authors on the brilliant success of their investigations.

**Remarkable Volcanic Eruption.**

Details of the remarkable volcanic upheaval which occurred recently on Ambrym Island, in the New Hebrides, have been published in the Sydney Morning Herald, furnished by an officer of the British warship Dart, who says:

"We were lying off Dip Point on the morning of the 16th of October last when it broke out. We steered along the southeast coast, and could then see a dense mass of smoke arising near Benbow Mountain, and could hear a heavy rumbling sound just like distant thunder. In an hour we were abreast where the stream of rushing lava was making its way through the forest of trees. As it came on, filling up valleys on its course toward the sea, the rush and roar became louder. Every now and then, amid the dense smoke caused by the lava setting fire to everything, would arise a volume of steam as it rushed into the streams of water. The lava stream must have traveled several miles before reaching the sea, which it did, completely sweeping the cliff away for about 30 yards wide. It rushed into the sea with a tremendous roaring and hissing noise, and sent up an immense volume of steam until it reached a height of 5,000 or 6,000 feet."

**A New Treatment of Whooping Cough.**

Lyon Medical for January 13 publishes an abstract of an article from the *Medicine Moderne* for December 26, 1894, in which M. De Chateaubourg describes a new treatment of whooping cough, which consists in injecting, subcutaneously, two cubic centimeters and a half of a ten per cent solution of guaiacol and eucalyptol in sterilized oil. After the third injection the fits of coughing diminish noticeably, the appetite returns, and, as the vomiting rapidly ceases and the general condition begins to feel the good effects of the treatment, the whooping cough disappears at the same time. The author reported five cases.—N. Y. Med. Jour.

**RECENTLY PATENTED INVENTIONS.**

**Railway Appliances.**

**BRAKE.**—Simon P. Mitchell and Carl L. Schuppe, Van Buren, Ark., and Max B. Schuppe, New York City. These inventors have devised a mechanism which may be set for the control of the brakes from the engine, or operated by the ordinary hand brake shaft, and set by the shaft to operate automatically, the mechanism being applicable to either freight or passenger cars. Pivoted levers are connected with spring-pressed buffers, a rod connecting the levers, while a second set of levers connected with the brakes is engaged by the connecting rod, the rods having one end secured to the levers and their other ends slidably connected with the buffers.

**Electrical.**

**CUT-OFF MECHANISM FOR STAND PIPES.**—Robert McGowen, Washington, Ind. Two patents have been granted this inventor, one relating more especially to cutting off the pumping engines when the water reaches a certain height in the pipe, the cut-off being automatically effected by the water through electro-mechanical means, and the devices being automatically reset to normal position after the cut-off has been effected. Connected with the cut-off valve is a magnet and reciprocating bar moved in one direction by gravity, a trigger mechanism holding it elevated, while a counterbalance actuated by the stand pipe overflow releases the trigger. The other invention relates more particularly to cutting off the stand pipe from the water mains which have fire plug laterals, whereby the full pressure in the main may be instantly utilized in case of fire, the stand pipe being again placed in communication with the main when desired. It provides a combined electrically and gravity operating mechanism for cutting off the main from the stand pipe, electro-hydraulic operating means for restoring the mechanisms to their normal position, and mechanically operated tripping devices operated by the cut-off means. The entire operation of turning off or turning on the valve in the stand pipe lateral, as well as the automatic resetting of all of the mechanism, can be effected by a mere turning of the crank of an electromagnet to energize the electric operating devices.

**Mining, Etc.**

**CANDLE HOLDER, CRIMPER, AND CUTTER.**—Andrew J. Carter, Alma, Col. This is an improved miner's tool for readily cutting a fuse and crimping a cap, while also affording a convenient candle holder adapted to be driven into the mine chamber or hung on a projection from the wall. It resembles somewhat a pair of scissors with one blade, this portion being adapted to be driven into the timber of the mine, and having spring-pressed handles and jaws with cutting and crimping edges. The candle holder is held on the tool by spring attachment, having at one end an open ring for the reception of the candle, its other end being connected with a guide arm on an upward extension of which is a hook, by which the device may be hung on a projection in the mine.

**DUST COLLECTOR FOR METALLURGICAL FURNACE.**—Oliver R. Moffet, Grand Falls, Mo. For

treating waste lead fumes to retain minute particles, this inventor combines with a settling chamber a movable strainer, flexibly held to a definite or normal position, with independent means for agitating it and dislodging the dust. The strainer is pivoted and spring-pressed, but may be rocked against the pressure of the spring by a rock shaft and shaker arm. Any desired number of strainers may be set in the settling chamber.

**Mechanical.**

**WOOD TURNING LATHE.**—David T. Matthew and Albert T. Collier, Tacoma, Washington. This invention relates to lathes with many spindles for turning polygonal forms, and the improved lathe has a revolvable head with revolvable spindles to engage one end of a series of articles to be turned, while a movable knife frame carries knives to cut on their outermost surfaces. For cutting a large number of articles of a stock pattern, the knives may be set to enable the operator to turn out the work with the greatest rapidity and in the best manner, without the exercise of special skill. The top of the knife frame forms a rest for hand tools, to enable a wood turner to cut small orders of special pattern by hand.

**BOX MAKING MACHINE.**—Abner Carey, Cairo, Ill. This is a machine which holds the ends and centers, if any are used, in position, while nailing on the sides and bottom of the box. It has a top plate with transverse slots for the reception of the box ends, there being in the plate movable clamping bars to clamp the ends in place. The several parts are always held in proper position for nailing without gaging or mailing, enabling the operator to rapidly complete the work.

**Agricultural.**

**CULTIVATOR.**—Rene A. Boudreaux, Pugh, La. Two side plows are employed in this cultivator to hill or ridge the earth around the roots of the plants, the plows being readily adjustable as to height and distance from the beam. Near the heel of the beam is held a sweep adapted to break up the center of the row between the plants, a colter following behind in the central furrow to assist in holding the plows to their work. This cultivator is adapted for use upon sugar cane, corn, cotton, and other crops planted in rows.

**COTTON CHOPPER.**—Nicholas H. Newton, Rusk, Texas. This is a machine for cultivating and at the same time thinning out the rows of plants. It has semicircular hoes, with tapered cutting edge, adjustably arranged to regulate the depth they shall enter the ground, the hoes being rotated as the machine is drawn forward by a gear connection with the axle, and acting one after the other to remove the surplus plants from the rows, properly spacing them. Adjustable plow blades are supported at the rear to cultivate the rows at each side.

**PLOW, CHOPPER, AND PLANTER.**—This patent is for another invention of the same inventor, providing a combination machine to open the land and plant and fertilize it, and which may also be adjusted for chopping cotton plants and cultivating rows of plants.

cotton seed is to be planted the distributor is located in the fertilizer chamber, and the furrow opener forms a smooth trough-like trench in which the seed and fertilizer are evenly distributed, the furrows being then covered by the plows at the rear of the machine, the plows also forming furrows at each side of the ridge in which the seed is located.

**ROLLER COTTON GIN.**—James E. Coleman, Jr., Wade, Ga. This invention relates to gins of the McCarthy type, and provides a simple and durable construction which permits of ready access to all parts for repairs and other purpose. Combined with the ginning roller is a vertically adjustable breast carrying stationary knife with concave knife edge, and operating in conjunction with this knife is a movable knife in two parts, of a combined length approximately equal to that of the stationary knife, the parts of the knife being alternately reciprocated by eccentrics on the main driving shaft. The ginning roller is adjustable relative to the vertically adjustable saddle or breast carrying the stationary knife.

**Miscellaneous.**

**AIR PURIFYING DEVICE.**—Charles Peters, Brooklyn, N. Y. According to this improvement an air pump is connected with a reservoir in which is a purifying receptacle having inlet and outlet valves, a vessel held in the receptacle containing purifying substances. As preferably arranged, the air from the compressed air reservoir passes through charcoal and then through cotton saturated with salicylic acid, or other purifying agent, before delivery from the outlet valve. The apparatus is more especially designed for use in beer and ale compressors, for supplying the beer and ale in the keg with pure air.

**SPRING WINDING CRANK ARM.**—Gustav A. Brachhausen, Jersey City, and Alfred Wolff, Rutherford, N. J. For preventing overwinding and consequent breaking of the springs in music boxes or other instruments, these inventors have devised a crank arm comprising a spindle or shank engaging a shaft which connects with the spring to be wound, there being a crank arm proper on and normally rotating with the spindle, but which will turn independently of it when the spring has been fully wound up. The device is very compact, and such adjustment may be made that the desired maximum tension on the spring to be wound will not be exceeded.

**MAGAZINE CAMERA.**—August Lundelius, Port Jervis, N. Y. This is a combined magazine hand and detective camera of simple, compact and durable construction, without loose parts or projections on the outside of the casing, although the operator may manipulate it from the outside to make either time or instantaneous exposures, bringing the plates successively into proper position for exposure. The construction permits of filling the camera with simple and independent plate carriers for glass plates or films.

**RIBBON HOLDER.**—Joseph S. Lyons, Pittsfield, Mass. This inventor has devised a holder or case in which rolls of ribbon of different sizes may be displayed, any of the rolls being conveniently removed as desired. Upon the inner face of the top and bottom board of the case is a longitudinal groove, and in these

grooves are held longitudinal standards on which the rolls of ribbon are supported. The standards have each at one end a tubular portion in which is a spring, by which the standards are held in place, although they may be slid from end to end of the case.

**DISPLAY CARD AND HOLDER.**—William F. Jones, Baltimore, Md. A large field or backing card, according to this improvement, is provided with an easel support which forms a background for packages, small cards, etc., while on the front face are smaller layers of stiff cardboard, each one in front smaller than the one behind, forming a series of laps in which thin packages or cards may be stuck, more or less covering the main field card. Any one package may be taken from the support without loosening or affecting the support of the others.

**VAPOR OR GAS STOVE.**—Harry H. Kelley, Elyria, Ohio. This invention provides a simple and durable construction designed to utilize the heat from the burner to the fullest advantage for cooking and for heating a warming oven. It consists principally of an annular heating chamber under the stove top and surrounding the burner, the chamber having at its inner wall inlet openings for the heat and hot gas, there being an adjustable perforated curved band or damper for regulating the size of the openings.

**BATH ROOM BRUSHING MACHINE.**—Edwin Walkers, Amawalk, N. Y. According to this invention a framework to be fastened to the side of the bath tub has vertical guide ways in which vertically sliding brushes may be reciprocated by a pivoted lever having forwardly projecting handles, streams of water at the same time flowing down in the path of the brushes from faucets near the top of the frame. The improvement is designed to enable the bather to conveniently rub, scrub, and wipe dry the back of his body, the water being turned off and the brushes covered with towels for the drying operation.

**THILL COUPLING.**—Delbert B. McCapes, Vermillion, South Dakota. This is a cheap and simple device, attached to the carriage axle by the usual clip, and having at its front end forwardly projecting arms between which the thill iron is held. It is readily applied, and holds the thill or pole so that it cannot become accidentally displaced, although readily released when desired, while it also prevents rattling.

**GATE.**—William B. Whittenberg and Augustus L. Hawkins, Georgetown, Texas. This improvement provides for two separate pivoted gate sections adapted to be conveniently opened and closed by means of cords extended to posts a little distance off at each side of the roadway, there being at the ends of the cords counterbalanced weights. The latches are adapted to support the gates laterally at their meeting edges.

**PLUMBER'S FORCE PUMP.**—George W. Aldrich, Brooklyn, N. Y. This is a pump for forcing water through a sink or spout to remove obstructions, and is easily applied to the ordinary escape of the sink, bath tub, wash basin, etc., for clearing the passage. At the lower open end of the pump barrel is a hollow cone, around the lower edge of which is a rubber packing, and the barrel has ports at its sides which may fill with