

This horizon is probably 400 feet below the Bradford sand, and has not yet been tested thoroughly. At present it is non-productive.

Petroleum has never been found in the three groups of oil measures in the same locality. Since the oil sands of the southwestern and western districts come to the surface in the northern district, we may never expect to find oil in them north of the Philadelphia and Erie Railroad. The question as to whether the northern district oil will ever be found in the western district, and the oil of both these districts in the southwestern district, is yet to be determined. If future explorations should prove this to be the case, it is safe to assert that, at the present price of crude oil, the wells would be too deep and too expensive to warrant their development.

IMPROVED PIPE TONGS.

We illustrate herewith an improved adjustable pipe tongs, so made that no smith's work is needed for dressing up, a few minutes' grinding being all that is required to keep the implement in good working order.

The gripping edge consists of a cylindrical piece of best cast steel, which is quickly adjusted to the pipe by the thumbscrew, and which, as shown in the illustration, has two edges. When the edge in use has become dull, the bit can be reversed, and it will be found that the friction on the lower edge has sharpened the one not hitherto used. The bits are easily removed, and may be re-ground until worn away, when they can be replaced by any mechanic, being simply pieces of round cast steel with an obtuse chisel edge. The thumbscrews have square threads, and are case-hardened to insure durability and prevent spreading at the point, and generally the tool is made in an excellent and substantial manner.

For further particulars address the manufacturers, Messrs. Pancoast & Maule, 243 and 245 South Third street, Philadelphia, Pa.

IMPROVED RECEIVER AND STENCH TRAP.

We illustrate herewith a new receiver and stench trap, made of cast iron, and fixed upon a level with the street gutter. It is connected with the sewer, and constructed as follows: A is a basin which is always full of water to the level of the bottom of the sewer. B. C is a door dipping three inches into the water in the basin, and resting upon a flange each side and along the top. Upon this flange packing is laid, and the door is closed and compressed upon the packing and flanges by a crossbar, D, which is forced by an inclined plane against the door. The door thus aids in forming a trap, which prevents the escape of any foul gas from the sewer into the street. The earth being excavated to the shape of the outside of the receiver box, the latter is lowered and fixed in its proper place, level with the gutter; and grout, composed of sand and hydraulic cement, is poured underneath and around the bottom, giving to the basin a firm bed. The space between the sides and ends of the receiver box is filled in with concrete.

The street gutter is covered with a flat cast iron grate, F, which conducts the water from the street gutter into the receiver box. The grate, E, is fixed in the line level with the top part of the curbing, and is anchored at both ends on the top into the curbstone, and also on each side of the cast iron receiver.

In case the flat grate gets choked with leaves and street washing, the water will pass through the upright grate into the receiver box, thereby preventing the overflow of the street with water. That part of the receiver underneath the sidewalk is covered with a cast iron plate, connected with the horizontal grate.

The receiver is constructed in such a manner as to be self-cleansing. The front end being made at an angle, and that part of the basin which receives the water near the bottom of the door being contracted to equal the size of a fifteen inch sewer, the water, falling four feet from the level of the street gutter to the level of the water in the basin, will force all the sand and silt out of the trap and wash it through the sewer.

In order to take out obstructions and clean the sewer, it is necessary to remove the crossbar, D, and open the door or trap; when this is done, by using rods about four feet long, each with union joints, any tool necessary for cleaning the sewer may be connected to the rods, and the sewer can be cleansed from the receiver box to its connection with the main without breaking up the street.

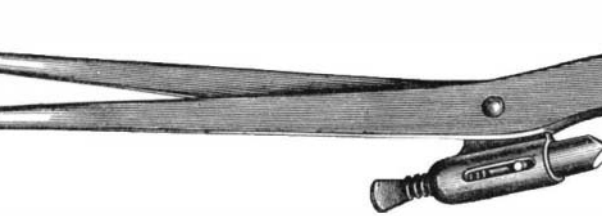
The device is stated in numerous testimonials by city engineers and others to be exceedingly efficient in operation, and effectually to prevent any escape of sewer gas. For further particulars as to rights, etc., address the inventor, Mr. Thomas Dark, 408 North Division street, Buffalo, N. Y.

The ordinary work of a horse is stated at 22,500 lbs. raised one foot in a minute for eight hours a day.

INFLUENCE OF COSMICAL MATTER.

Some weeks ago we noticed Professor Doolittle's suggestion that shooting stars may have played an important part in determining planetary velocities. Immediately Professor Winchell entered a claim of priority, and sustained it by citations from a lecture delivered last December. Professor Doolittle promptly acknowledged the justness of the claim, but insisted that he was first in the deduction of consequences and relations. "So far as I can learn," he wrote, "Professor Winchell has the honor of having been the first to furnish a demonstration thereof whose soundness no scientific man can question. I think, however, that I may fairly claim to have preceded him in forming an approach to a proper estimate of its importance. Otherwise, I should regard him as inexcusable for having dismissed the subject with so brief a paragraph in a popular lecture, without making any other attempt to bring it to the attention of the scientific world."

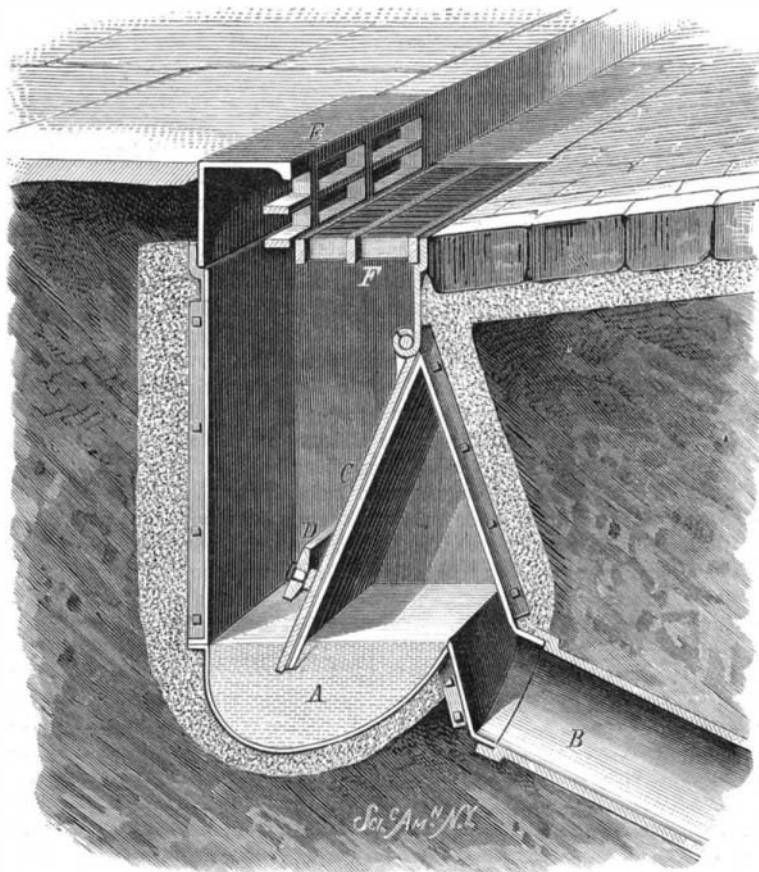
Professor Doolittle "formed the conception of aerolithic acceleration of planetary velocities" in February last: Professor Winchell announced the same conception in December, 1877. Now there arises a new claimant in the person of Rev. S. Parsons, who discussed the same idea in an article on the nebular hypothesis, in the *Methodist Quarterly*, January, 1877. While showing that cosmical dust must, in



THORNTON'S ADJUSTABLE PIPE TONGS.

the course of ages, present a sensible resistance to the motion of bodies through the universe, Mr. Parsons said:

"Professor Newton, of Yale College, estimates the number of shooting stars encountered by the earth during each year at about 400,000,000 (not for each day as Professor Winchell states). Calculations based on their apparent magnitude, as viewed from different points of the earth's surface, give them a diameter ranging from 80 to 120 feet. Supposing their density to be the same as hydrogen, the lightest known substance, the earth during the past 100,000,000 years has encountered and absorbed into itself a mass of matter equal to about one twelve thousandth ($\frac{1}{12184}$) of its own mass. Such an amount of resistance would be sufficient to change the earth's orbit from an extreme oval into its present shape, since in addition to diminishing the mean distance, and accelerating the velocity, the effect of the resisting medium is



DARK'S CAST IRON RECEIVER AND STENCH TRAP.

much greater in aphelion when the motion is slower, than it is in perihelion."

The history of this conception is worth preserving, since it is one of the most important of recent contributions to the science of astronomy. According to Professor Doolittle it helps to furnish the most satisfactory explanation of the following classes of phenomena: 1. The want of coincidence between the solar equatorial plane and the planetary orbital and equatorial planes. 2. The eccentricities of the planetary orbits. 3. The position of the inner moon of Mars. 4. The irregularities of the periods of Encke's comet.

From the shifting of the planetary planes, Professor Doolittle estimates that the earth, so far from being born full-grown, has more than doubled its mass since it commenced its career; but from geological considerations it must be supposed that by far the greater part of this acquisition was made before it solidified into a record-keeping condition. While geological confirmation of the theory is, therefore, not essential, it is still very desirable; and he infers that the theory will add new interest, and, perhaps, to some extent, give new direction to geological investigation.

American Horses in England.

The exportation of horses from this country to England, for use on street railways, began two years ago, and already over 5,000 of the Canadian and Morgan breeds have been shipped from this port and from Quebec. The English cart horse is too heavy and slow for tramway service, and as English breeders have given their attention almost exclusively to cart horses and blooded saddle and coach horses, they could furnish no animals suitable for the new want. The supply of light-built and enduring horses had been drawn chiefly from Ireland, but this source is almost exhausted. The American horses were at first used only on street railways, but they are now becoming favorites for family use. The Anglo-Russian complications have largely increased the demand this year, and it is expected that the exportation will amount to many thousands more than ever before.

New Agricultural Inventions.

Mr. W. K. Hill, of Brush Creek, Iowa, has patented a convenient apparatus for Cooking Feed with Steam, which is claimed to be especially economical of fuel. The fire chamber is entirely surrounded by water except at its door, the feed water is warmed before entering the steamer, and the supply is regulated automatically by a float valve.

A portable Scale for Weighing Bales has been patented by Mr. G. R. Williams, of Dardanelle, Ark. It is a beam scale suspended from the center of a yoke-shaped axle of the supporting wheels. From the beam are suspended, by crossbar and chains, V-shaped hooks, which take hold of the bale and are operated by guiding cords. The bale is raised by depressing the handle frame of the apparatus, the lever-aging rendering this easy.

Mr. G. C. Clark, of Freehold, N. Y., has patented an Improved Horse Potato Fork, consisting of a head attached to a tongue, and provided with adjustable teeth, and with spring catches for securing the handles of the implement to the head.

Mr. A. A. Russell, of Polo, Ill., has invented an Implement for Cleaning Horses, which is made by uniting a horse brush and currycomb in such a manner that the teeth of the currycomb may be caused at will to project beyond the face of the brush, by pressure applied by the fingers of the hand by which the brush is held and operated. Thus the comb may be brought into action whenever desired, and applied gently or forcibly. There is also a cleaning device in connection with the brush.

Mr. Jacob Künstler, of Thomas Hill, Mo., has invented an instrument for Paring Horses' Hoofs. It consists of a pair of hinged jaws, one ending in an arm, which rests against the hoof, and the other in a knife of suitable shape, and operated by lever handles.

Mr. E. J. Camp, of Alpharetta, Ga., has made an improvement upon the Plow forming the subject of letters patent No. 58,119. The invention consists in the construction of the standards, by which they may be attached to the beam on different sides, and thus adapt the plow for use as a subsoiler, or for "breaking up," and other purposes.

In a new Cultivator, the invention of Mr. T. J. Brown, of Fairfield, Texas, the essential feature, a circular rotating frame, carrying plows and rollers on caster wheels, is supported in guides in the main frame, and is directly attached to the tongue, so as to turn with it.

An Improved Seed Planter, invented by Mr. T. B. Swan, is claimed to possess important advantages, among which is its adaptability for use in planting seeds of different sizes and kinds.

Mr. Benjamin Slusser, of Sidney, O., has patented an improved Earth Scraper, the novel feature of which consists in arranging the forward end of the handle in a socket attached to the scraper, and fastening the handle by a clamp, which is also attached to the extended ends of the tie rod, which holds together the sides of the scraper.

A Revolving Earth Scraper, patented by the same inventor, possesses some new points, designed to lessen the liability to revolve and empty itself while being filled or transported. The scraper is pivoted to the handles well back and near its center of burden, and right angled catches are attached to the rear ends of the bail, which operate in conjunction with two circular locking irons on the forward sides of the scraper, so that the scraper cannot revolve until the position of the handle is so changed at the will of the driver as to effect the disengagement of the locking devices.