

T. M. S. says: I would like to know how many pounds pressure it takes to burst the head of a barrel off. The head was of white oak, 1 1/2 inches thick, and 1 foot 3 inches across.

J. F. W. asks if there is any way of distinguishing anthracite pig iron from charcoal pig iron? Answer: We do not know of any way to distinguish anthracite from charcoal pig iron, nor do we think it can be done by judging from the appearance of the pig metal.

S. A. T. says: The manner in which a pantograph is to be constructed is very plain (see page 99 of your current volume), but I do not know whether one (for ordinary use) should be 6 inches or 36 inches in length of longest stick.

G. N. A. says: I wish to know how the red and blue lights such as are seen at the casters are produced. I want to light a large room without incurring any danger.

W. K. asks: Which is the best acid or combination of acids that will entirely destroy the fiber of paper? Answer: The best solvent for paper fiber is cupro-ammonium, known as Schweitzer's reagent.

W. R. J. says: The powder I enclose is the remains of an evaporated gallon of well water. Supposing it to be lime I applied the test for that substance, with no indications.

J. J. R. asks: Do pure wood ashes contain mineral matter? Answer: It was the opinion of the ancients that the potash of plants was produced from the air during combustion, but as soon as this alkali was discovered in rocks, it was readily traced to plants and shown to be a necessary constituent of all vegetables.

W. H. F. says: I would like to know if there is any way that I can use to get the grime and dirt off of my hands. I am a machinist and find it very difficult to get my hands clean.

S. R. asks: What proportion should there be between the steam port area of a steam engine, and the area of the piston? Also, what should be the relation between the steam pipe and the cylinder?

A. B. says: A mercurial siphon gage has one leg twenty times the area of the other; what will be the rise of mercury in the smaller leg per pound pressure? Please give rule.

H. P. says: Take a fly wheel ten feet in diameter, with a hollow rim 12 inches depth and 2 feet face (the shell being 1/2 inch thick), and fill the hollow in the rim half full of water.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjects:

- On the Metal Palladium. By G. J. R.
On the Influence of the Moon on the Tides. By W. S.
On the Formation of the Tides. By S. S. G.
On Steam Engine Economy. By C. H. C.
On the Dredging Machines Used at the Bar of the Mississippi River. By E. B. B.

- On Certain Mechanical Enterprises in Newark, N. J. By C. B.
On the Passage of the Sun from one Date to Another. By H. B.
On Lost Arts. By O.
On Perpetual Motion. By W. D. A.
On a Substitute for the Crank and on a Self Operating Water Wheel. By J. B. S.
On Positive and Negative Forces. By E.
On the High Prices of Certain Productions. By J. C. C.
On the Sidereal Day. By J. H.

[OFFICIAL.]

Index of Inventions

FOR WHICH

Letters Patent of the United States WERE GRANTED FOR THE WEEK ENDING

February 4, 1873,

AND EACH BEARING THAT DATE.

(Those marked (r) are reissued patents.)

Table listing inventions and their patent numbers, including items like Anchor, W. W. Smith, Auger, earth, Beach & Hanson, and various mechanical devices.

Table listing inventions and their patent numbers, including items like Harvester cutter, Wasson, Powers & Dungan, and various agricultural and industrial machines.

Table listing inventions and their patent numbers, including items like CENTER PEG, S. Kellett, San Francisco, Cal.

TRADE MARKS REGISTERED.

Table listing registered trade marks and their owners, including HANS, ETC.—Evans Brothers, Cincinnati, Ohio.

SCHEDULE OF PATENT FEES:

Table listing patent fees for various services, including On each caveat, On each Trade-Mark, and On filing each application for a Patent.

CANADIAN PATENTS.

OFFICIAL LIST OF PATENTS GRANTED IN CANADA FROM DECEMBER 13, 1872, UP TO AND INCLUDING FEBRUARY 1, 1873.

Patents taken by citizens of the United States are marked U. S.

[NOTE.—Under the new patent law, now in vogue, American citizens may patent their inventions in Canada on favorable terms. For full particulars, address Munn & Co., Office SCIENTIFIC AMERICAN, 37 Park Row, N. Y.]

Table listing Canadian patents granted, including items like Shoe pegging machine, H. Kuhlman, Ger., Dec. 13, 1900, and Steam engine, C. Ivey, U. S., Dec. 19, 1901.

APPLICATIONS FOR EXTENSIONS.

Applications have been duly filed, and are now pending for the extension of the following Letters Patent. Hearings upon the respective applications are appointed for the days hereinafter mentioned:

EXTENSIONS GRANTED.

23,001.—ELASTIC TOY.—L. P. Porter.
22,990.—MOP HEAD.—L. Taylor.
22,947.—WRENCH.—D. P. Foster.

DESIGNS PATENTED.

6,378.—CARD RECEIVER.—G. Gill, Taunton, Mass.
6,379 & 6,380.—CAKE BASKETS.—G. Gill, Taunton, Mass.