

as I wish it to be perfectly safe? A. Make the gun for 1 inch bore, 16 inches long over all, 2 inches of metal at breech, 5 inches diameter behind trunnions, and taper to 3 inches at muzzle.

(5097) D. T. S. asks: Suppose you take two iron balls, one weighing one hundred pounds, one weighing fifty, elevate both to the height of 200 feet from the earth, and drop both at once, which will strike the ground first? A. The large ball will reach the ground first, owing to less air friction in proportion to the weight.

(5098) A. W. G. asks for the formula for making the compound used by rubber stamp makers to make matrix or mould of. A. Soapstone (powdered) 1 pound 3 ounces; dental plaster, 1 pound; finely powdered kaolin, 1 pound; mix dry, sift and mix with the following solution, which is made by dissolving 5 ounces of dextrine in 1 quart of hot water. This solution is to be used cold and is made in advance. The composition should be about as stiff as putty or a little stiffer.

(5099) L. G. E.—Soft brass castings are easy to make if you use good copper 2 parts, zinc 1 part, by weight. This is called 8 ounces brass or 8 ounces of zinc to a pound of copper. The "Brass Founder's Manual," by Graham, will probably set you all right. \$1 mailed.

(5100) F. C.—You should be able to maintain 12 pounds vacuum per square inch upon the largest piston of your compound engine. The connecting pipe and pump should be a little larger than is necessary for discharging the water of condensation, as it has also to discharge the air in the feed water of the boiler.

TO INVENTORS.

An experience of forty-four years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequalled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

May 23, 1893

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Table listing inventions with patent numbers, including items like 'Abdominal supporter, J. A. Marvin', 'Album stand, G. J. Kraushaar', 'Alcoholic liquid method of analysis, apparatus for treating, C. Bullock', etc.

Table listing inventions with patent numbers, including items like 'Carrier. See Bicycle basket carrier. Cash carrier. Elevator carrier.', 'Cart, dumping, A. Voelke', 'Cart, speeder, E. E. Brown', etc.

Table listing inventions with patent numbers, including items like 'Loos, take-up mechanism for narrow ware, O. W. Schaefer', 'Lubricator, A. J. Rogers', 'Match box, Korb & Krug', etc.

Table listing inventions with patent numbers, including items like 'Telegraph return signal key, district, J. M. Bell', 'Telephone, electric controlled lock for, P. Cooke', 'Therapeutic applicator, electric, C. Royer', etc.

DESIGNS.

Table listing designs with patent numbers, including items like 'Axle box frame, W. S. Adams', 'Axle box frame, J. A. Brill', 'Box, O. D. Rodgers', etc.

TRADE MARKS.

Table listing trade marks with patent numbers, including items like 'Banjos, guitars, and mandolins, W. W. Knight & Son', 'Beer, lager, Quant Brewing Company', 'Bicycles, Gibson & Prentiss', etc.

A printed copy of the specification and drawing of any patent in the foregoing list, or any patent in print issued since 1883, will be furnished from this office for 25 cents. In ordering please state the name and number of the patent desired, and remit to Munn & Co., 361 Broadway, New York.