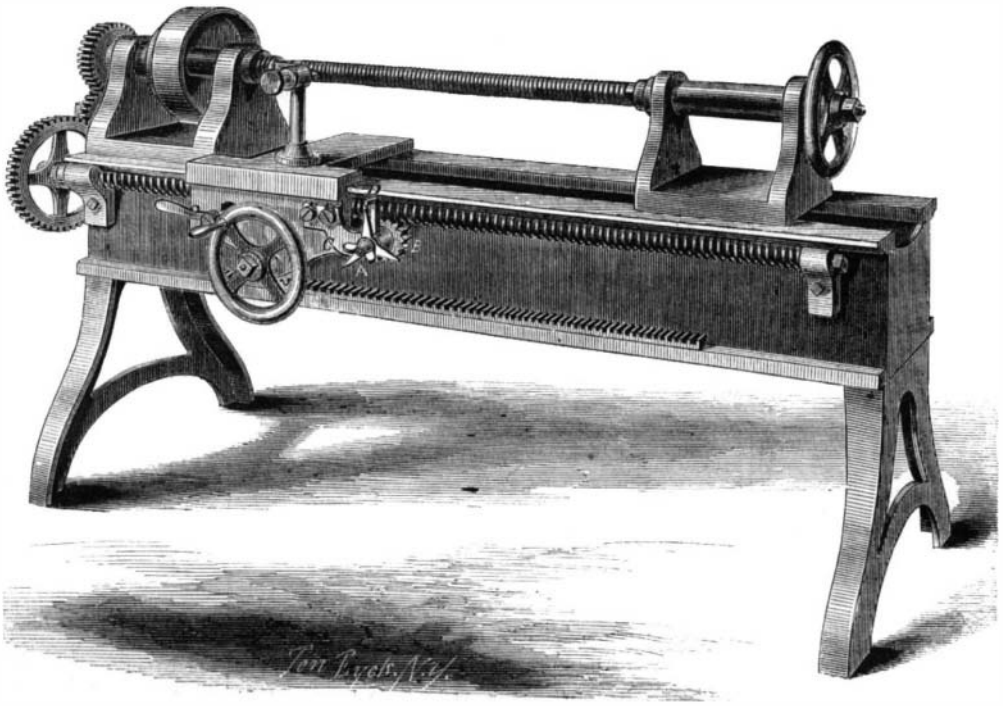
Improved Screw Cutting Index.

All lathemen who have cut screws know that the tool sometimes rides on the top of the thread unless it happens to come in exactly the right place. When the carriage is run back by a cross belt, the tool always comes in the right place, for the relative positions of the tool and the thread are unchanged. It consumes time, however, to do this, and very many mechanics prefer to throw the feed out, run the carriage back by the hand wheel, and jump the tool in as the thread comes round.

The object of this invention is to make the operation certain, for it sometimes happens that the most skillful workman hits the top of the thread and strips it off for a turn or so before he can run the tool back. The index here illustrated consists in affixing a three fingered pointer, A, to a shaft, whereon a wheel, B, is keyed. This shaft runs in a bracket, C, bolted to the apron of the lathe. The wheel is in contact with the lead screw, and when this is in operation the pointer remains stationary.



Now supposing the cut to be started, the pointer will be opposite the vertical arm, D, also on the bracket, and will remain fixed while the feed is in. When the tool has traversed the length of the work the feed is then thrown out and the carriage run back by hand, and when any one of the pointers come opposite the vertical arm the feed is thrown in and the tool can be run in with a certainty that it will also strike the center of the space. This is a very convenient arrangement and can be applied to any lathe in a short time; when not in use it can be detached and laid on one side.

It saves half the time, also the use of an extra belt and one or more pulleys on the counter shaft, and is not liable to derangement. It was patented on Nov. 1st, 1864, through the Scientific American Patent Agency, by J. G. Baker, of the firm of Henry Asbury & Co.; for further information address the above firm, at Nos. 67 and 69 Laurel street, Philadelphia, Pa.

Gunpowder Explosive by Percussion.

Knapp, in his Chemical Technology, says,

"The inflammability of dry powder by a mere blow without fire is a well known fact, and has more than once been the cause of accidents. That this property is not always due to an accidental mixture of other matters, as sand, &c., but is really a property of the powder itself, was proved by the experiments instituted at Freiberg with blasting powder made from chemically pure ingredients, namely, 63.3 saltpetre, 20.0 sulphur, and 16.7 charcoal. Out of ten samples, which were wrapped in paper, and struck upon an anvil with a heavy hammer, seven of the corned powder exploded, and nine of the powder in the form of flour. Other kinds of powder behaved in the same manner. It is of importance, in the construction of powder mills, to know that the explosion occurs most easily by a blow from iron upon iron, iron upon brass, brass upon brass, even lead upon lead, and lead upon wood, but not so easily from copper upon bronze or upon wood."

Some time ago some persons who were boring for oil in Wirt county, in West Virginia, and had reached a great depth, dragged up with the pump a piece of calico. The operators were very much astonished at the discovery, and the people in the neighborhood were induced to believe that some persons down in China were sending up specimens of their calico printing

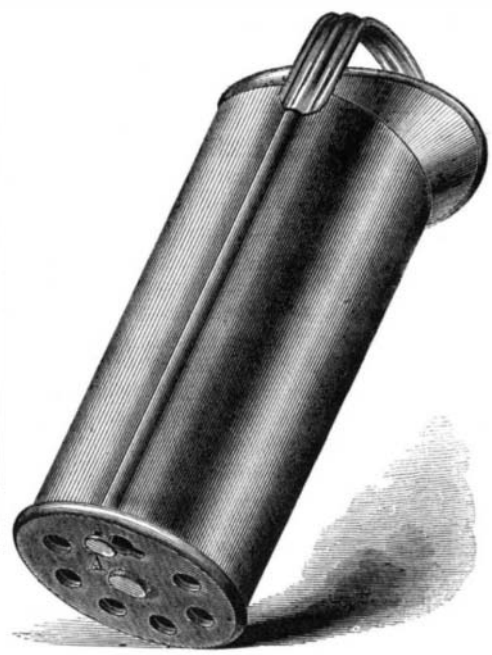
ANCHOR ICE.

Water is at its greatest density at the temperature of 39°·7 above the freezing point. If water, warmer than 39°, is cooled at the surface, this surface water becomes denser than the remainder and sinks to the bottom. By this process the whole body of the water is cooled to 39°, when any further cooling of the surface makes the water less dense, and it remains till it cools to 32°, when it crystallizes into ice. Were it not for this singular property, the whole mass would be cooled to 32°, and frozen solid. Sometimes when water runs in shallow streams over a rocky bed, it is so mixed that the whole may be cooled to 32°, and the freezing may begin at the bottom, producing what is called anchor ice. This we have supposed to be the correct explanation, but a correspondent from Maine speaks of anchor ice occurring in ponds. If it is really observed in deep still ponds some other explanation must be sought.

BAKER'S SCREW-CUTTING INDEX.

CADWELL'S PHOSPHATE DISTRIBUTER.

This utensil is intended to facilitate the distribution of fertilizers on corn, cotton, tobacco, or other



plants; either plaster, ashes, lime, salt or phosphates may be used in it. It can also be employed for depositing guano, bone dust, etc. in the hill before planting.

The quantity let on at once can be graduated from a thimblefull to a handfull, and a simple jolting or shaking motion is all that is required to work it. By the employment of this utensil the fertilizer is scattered evenly instead of in lumps or spots, as is the case in more imperfect methods. The garments and person are also fully protected from contact with the noxious and destructive, as well as disagreeable, agents sometimes used. It also expedites the work and is in other respects advantageous. The arrangement is simply a tin case with a perforated bottom, as shown in this engraving, which is covered with a slide, also perforated. On turning the inner slide by the button, A, the apertures are increased or diminished at will, thus regulating the quantity of fertilizer deposited. Any tin smith can make one in a short time. It was patented, through Scientific American Patent Agency, on the 17th of Nov. 1863, by J. R. Cadwell, Dexter, Mich For information concerning rights, etc., address him at that place.

The Ames Gun.

The wrought iron cannon made by Mr. Ames at Falls Village, after having been fired 700 times to test its strength with such immense charges of powder and balls and shells, that Gen. Gilmore, it is said, stated that it was the most severe test any gun was ever subject to without exploding, it is to be tested still further. It is said the government agents have purchased the gun for the purpose of experimenting upon. They intended first to bore out and enlarge the caliber; this, of course, will tend to greatly weaken the gun, and also to admit still greater charges.

Should it then stand the tests which they design to apply, they think of dissecting the animal by cutting the entire gun into thin slices by means of powerful machinery which is estimated to cost $10,000—these slices to be closely examined with a magnifier, for the purpose of finding whether there are any unwelded spots or flaws in the construction of the gun, and also to find if the severe tests which have been applied have caused any slight cracks, or even separation of the particles of iron, which might not be visible on the outer or inner surface. Mr. Ames has completed 10 or 12 other guns like the one above alluded to, which are to be tested this week near his foundery. It is said that the government has contracted for them, and that they are to be put to immediate use. Jeff Davis will then probably hear something he won't like.

The iron of which these cannon are made is the pure "Salisbury Iron," and was smelted from the ore of Messrs Landon, Botsford & Co., at Chapinville in this town, and is what is known among iron dealers as "cold blast charcoal iron," and was received by Mr. Ames in the form of cast iron pigs, and by him converted first into wrought iron, then into the best cannon ever made in America and probably the whole world.

Emigration a Loss to Cotton Spinners.—Mr Heywood, the Secretary of the Cotton Supply Association, estimated by a division of the margin of wages and profits in 1860, that the sum of £81 would be lost to the trade for every working hand that emigrated. The emigration of 50,000 hands would, at this rate, involve a loss of £4,000,000 a year. He maintained that it would be better to keep 600,000 hands at a weekly cost of 2*s.* 6*d.* each, for three years, with a total expenditure of £12,000,000, than to incur a direct loss in that period of £147,000,000 in wages and profits.

It is claimed that our telescopes are now perfect enough to discover any dwelling over 40 feet high on the moon.