

Improved Gage Cock.

It is a great annoyance and loss to have gage cocks continually leaking steam and water, or sputtering and fizzing so that one can hardly hear himself speak in their vicinity. Many gage cocks are so poorly made that, even if tight when first put in, they soon wear leaky and cause the annoyances before mentioned.

The gage cock here shown is designed to obviate these troubles, and be not only efficient, but much more durable.

In the engraving, A represents the chamber or shell of the cock, and B a valve therein. This valve is a plug, as may be seen, and has a very long bearing in the body itself, so that it is sure to work true to its seat. The valve is also larger at the head and has a spiral spring, C, fitted around the neck which bears against it and the body of the cock. The tendency of this is to force the valve off its seat and not depend on the steam or water pressure to effect the object. The head of this valve is rounded over on the exterior, and bears on a cap, D, so that by slacking off the same, the valve will be free to rise and open the passage leading from the boiler to the nozzle, and thus indicate the height of water. By making the head of the valve rounded, a very small bearing is given on the cap; this causes the valve to remain stationary when in contact with its seat, while the cap alone rotates, thus preventing any uneven grinding of the valve on its seat and preserving it from injury. It will be seen that this gage cock gives a valve entirely independent and free of the handle, and admits of its being reground to its seat in a few minutes without the use of tools; and it is in other respects easily cleaned or got at for inspection when necessary.

It is durably constructed, and a patent is now pending through the Scientific American Patent Agency by John Broughton. Manufactured and for sale by Broughton & Moore, No. 41 Center street, New York.

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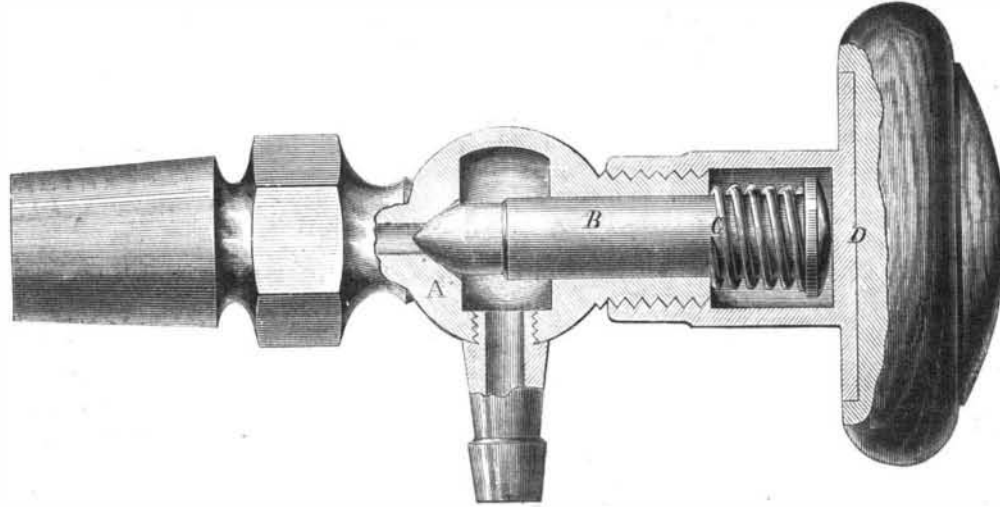
AN ENGLISH TANK ENGINE.

A new locomotive of a peculiar pattern has recently been constructed in England. It is a tank engine, without a tender, and is designed to haul heavy trains up grades. According to the *Engineer*, it is a cumbersome, ugly-looking machine, as our readers will surmise from the following details.

The firebox occupies the center of the engine, and there are, so to speak, two boilers, or rather, one boiler formed like two, set with the fireboxes touching each other. There are two funnels, one at each end of the machine, and two bogey trucks, with

wheels 4 feet 6 inches diameter. The cylinders are four in number, 15 inches diameter, by 22 inch stroke, and the weight of the whole machine is 42 tons. The firebox is 6 feet 6 inches long, by 3 feet 3 inches wide; and the boiler is 48 inches diameter, and has 198 brass tubes, 2 inches diameter and 9 feet long. The aggregate fire surface is 2,000 feet.

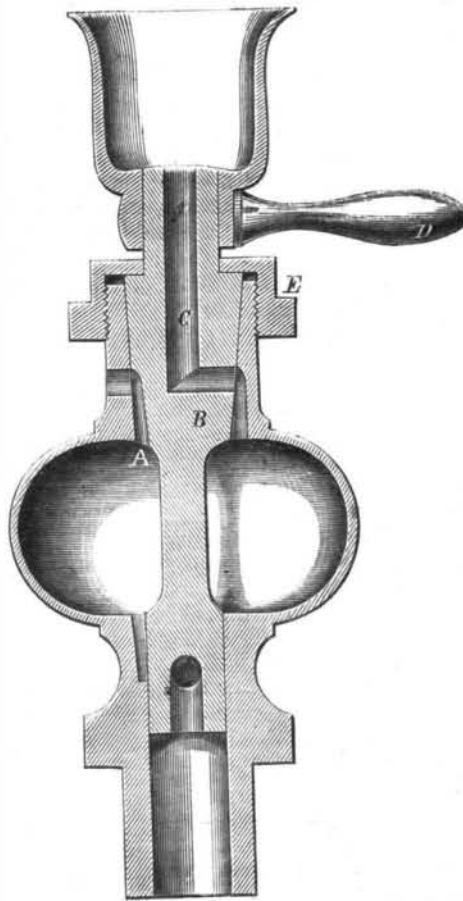
This engine was tried under adverse circumstances, being taken from the shop just as the workmen put it together, without any adjustment, and took a load of 300 tons up an incline of 1 foot in 77 feet, the pressure being 100 pounds; and again, with the same load, it raised an incline of 1 in 85, but stuck nearly at the summit from the steam falling. When it rose a few pounds, the engine readily ascended to the top.

**BROUGHTON'S GAGE COCK.**

It also easily ran round curves of 190 feet radii, and is accounted to be in general an improvement in engines of its class.

HARE'S OIL CUP.

The very many recent improvements on vessels or instruments for supplying oil to steam cylinders have



rendered them nearly perfect. In place of the old-fashioned globe cock, with its two faucets and troublesome arrangements, there are cups which, by pouring in oil and turning a handle, admit the lubricant to the engine. The cup here shown is simple in detail and very efficient. Many of the instruments

alluded to are defective in the following respects: When the oil is admitted to the cylinder a quantity of steam rises and fills its place, so that when the communication is closed, this steam is shut up in the globe and blows the oil out, or burns the hand. Moreover, the globe being air-tight prevents the cup from filling properly. These difficulties are avoided in the present invention by making a small channel, A, in the upper end of the plug, B, so that while the oil is poured in, as shown by the holes, C, the air or steam issues through the other aperture. On turning the handle, D, again, the upper holes are closed, and the lower one, E, opened, which allows the oil to enter the cylinder. This cup is provided with a stuffing box on top, so that the plug is always kept in its seat.

This invention was patented some time ago through the Scientific American Patent Agency, by James Hare, whom address for further information, at No. 155 Gold street, Brooklyn, N. Y.

A Large Yield of Whisky.

Mr. H. G. Dayton, of Maysville, Ky., recently produced from 30 bushels of corn and rye—two-thirds of the former and one-third of the latter—97 gallons of proof whisky, in his improved still, for which a patent was obtained through this office not

long ago. This, we believe, is the largest yield from "double distilled copper whisky" ever produced from the same quantity of grain. It is conceded by all distillers and large dealers in whisky, that the greater the product from a given quantity of grain, the better is the product.

A Steam Car Upon Ice.

The Master Mechanic of the Peninsula Railroad of Wisconsin has in process of construction an ice car, which is expected to afford unusual facility for travel upon the frozen rivers in that region. An exchange gives the following description of the vehicle:

"It will be built like a common passenger car; a pilot-house will be put at the forward end of the car, and immediately back of that will be two engines 6x12. Back of these will be a 10-foot boiler, 62 flues, and in the rear of that will be the passenger apartment. There will be four bob sleighs on which the car will rest—two at each end—with 15 feet space between the forward and rear bobs. In the center of the car will be a wheel, something similar to a cog-wheel, which will cut the ice and thus propel the machine. A wheel will be in the rear to steer it by some means we did not learn. They seem to be sanguine that they can make the thing work. It will require the ice, we should presume, to be quite smooth and even, to run this car, and although we hope they may make it work, yet we think we won't take passage on the first trip."

Mr. Norman Wiard constructed a similar car many years ago. In Russia, an English-built locomotive, weighing 12 tons, ran regularly on the rivers, transporting goods and passengers. The cylinders were 10 inches diameter and 22 inches stroke. The drivers were 5 feet, shod with steel spurs. The general construction was the same as any other locomotive except that the forward truck was removed, and a sled placed underneath the boiler.—Eds.

The Philadelphia Photographer.

This is one of the most elegant and pleasing specimens of the typographic art ever issued, and it is as truly excellent in its contents as it is handsome in its appearance. It contains a large amount of original photographic information by the best writers upon the subject. Every number is also embellished with a fine photographic picture. The number for January contains a photograph done at night by means of the magnesium light. We see that the editor is laboring under the effects of bromide of potassium. He says it was a bitter pill. No doubt, as it seems to have been a full dose. Benner & Wilson, Publishers, Philadelphia. \$5 a year.

The total area of the United States and its territories is 3,230,572 square miles.