

**Improved Variable Exhaust.**

A number of ingenious arrangements for adjusting the apertures of exhaust pipes on locomotives have been invented and put in operation, but the one here-with illustrated promises features not heretofore furnished. The object is to contract or expand the mouth of the pipe so as to increase or diminish the force with which the exhaust rushes upward, and thereby directly affect the intensity of the blast, upon which the evaporating power of the boiler depends very greatly.

The device here shown represents a novel and easy working apparatus for the purpose alluded to. Both the exhaust pipes lead into one opening, A, which is composed of a series of thin steel plates, B, lapping over each other at the top and rivetted at the bottom to the case, C. Over these plates the cap, D, is neatly fitted. The levers, E, connect to the arms, F, and when the latter are worked the cap slides up and down on the plates, B. This causes the plates to spring in at the top and narrow the orifice; when the cap is lifted the reverse occurs. In Fig. 2 the cap is shown removed and the plates fully disclosed. This arrangement is intended to be worked from the foot-board, or cab of the engine, and the exhaust opening, A, can be changed instantly at will, by merely moving a lever. It is not liable to be clogged by cinders, and has no parts likely to get out of order. This arrangement was patented through the Scientific American Patent Agency on July 12, 1864, by John Dykeman and John Bolton; further information may be had by addressing Mr. Dykeman at Harlem Railroad Machine Shop, Greenbush, N. Y.

**Trace Hook and Hold-back.**

Very many serious accidents have been caused by traces slipping off the whiffletrees, or breeching straps slipping out from the hold-back fastenings, or other parts of the harness, which are usually attached by straps, buckles or hooks, of one kind or another, working loose, falling down, and thus frightening the team so that it becomes unmanageable.

In Fig. 1 a new arrangement (which dispenses with the use of buckles on the yoke strap) ordinarily used with a double team, is shown. The yoke, A, is attached to the pole or tongue of the wagon, as usual, but the hold-back straps are buckled round the shank, B, of the stirrup, C, and remain permanently without requiring to be unbuckled whenever the team is unharnessed, as is the case with ordinary harnesses. To get the hold-back straps off, the stirrup is turned round on the yoke until the slot, a, in it comes opposite the spur, D; the stirrup then slips over it and is left hanging to the strap. Another arrangement to effect the same object is shown in Figs. 2 and 3. The casting, E, sets in the yoke, and has an arm, F, cast solid on it. There is, in addition, a tongue, G, which has a spring under it (see section Fig. 2) which forces the tongue against the arm before-mentioned. When this tongue is depressed, the strap may be inserted and cannot come out, for the tongue is always pressed upward by the spring below.

These fixtures may be used either for whiffletrees or yokes. A trace connection of ingenious design is

shown in Figs. 5 and 6. The strap slips over the horn, H, and the link, I, which is hinged to the shank, J, falls down against the end of the horn, as in Fig. 5, and keeps it in place. For a single team the breeching straps are attached to the fixture shown in Fig. 4. This is fastened to the thills as usual, and the strap slips through the square eye, K, and hooks over the horn, L, which keeps the strap securely in position.

These fixtures were patented through the Scientific American Patent Agency, by H. W. Catlin,

if pulled up before frost comes, and hung under shed fronting the south, the fruit will continue to ripen for weeks.

**WEBSTER'S ILLUSTRATED DICTIONARY.**

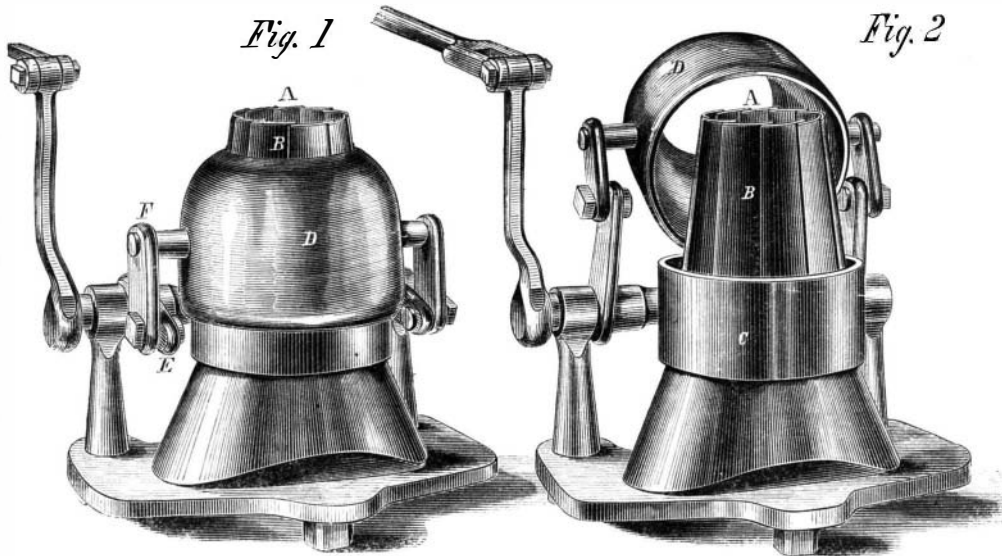
Before the London *Times* had been sold to stock-jobbers, and when it possessed some measure of impartiality and fairness, the great "Thunderer" pronounced Webster's Dictionary the best dictionary of the English language ever published. Since that verdict was given the work has increased enormously in extent and value.

We have before us a copy of the edition of 1864, unabridged and illustrated. It is a large quarto volume of 1,768 pages. The title page states that the work has been thoroughly revised, and greatly enlarged and improved, by Chauncey A. Goodrich, D.D., LL.D., and Noah Porter, D.D., both Professors in Yale College. It is published by G. & C. Merriam, State street, Springfield, Mass., and by Bell & Daldy, 186 Fleet street, London.

This ponderous volume is a vast treasury of knowledge. Its principal purpose is, of course, to

Fig. 1

Fig. 2



**DYKEMAN AND BOLTON'S VARIABLE EXHAUST.**

Burlington, Vt.; for further information address him at that place.

**TOMATOES.**

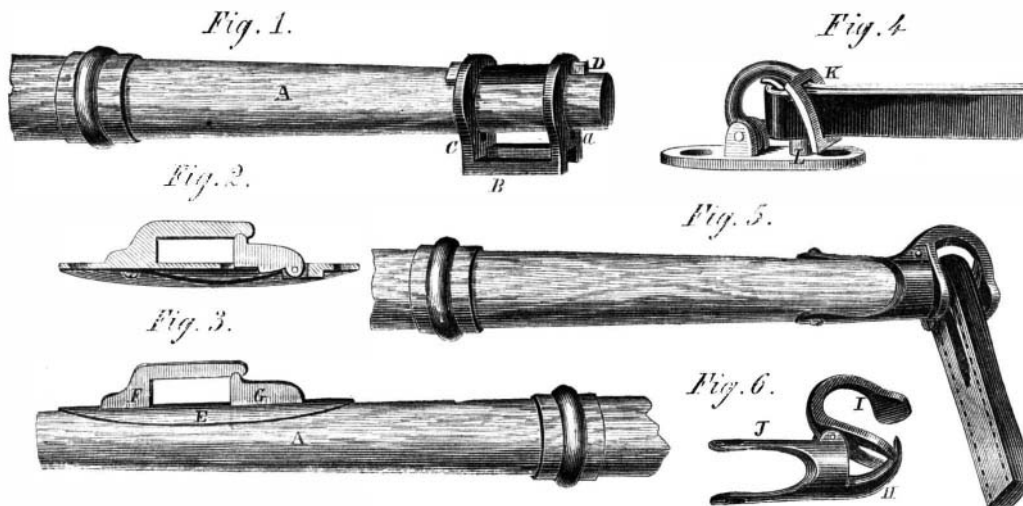
Persons who have not learned to like tomatoes are losing one of the great luxuries of life. Like all acquired tastes, the flavor becomes exceedingly attractive, and this esculent adds materially to the pleasures of the table. But it is from its effects that the tomato is most craved by those who are accustomed to its use. It seems to have the property to cause all other food to be assimilated by the system, and gives comfort after dinner even to dispeptics.

The most common way of cooking tomatoes is to stew them. They are scalded with boiling water,

give the orthography, etymology and signification of all the words in the English language. So large is the number of new words that are constantly being coined in the rapid advance of the sciences, that only a new edition of any dictionary can even claim to have them all. The publishers state that the present edition of Webster contains 114,000 words, which is 10,000 more than any other dictionary. Besides the full and accurate definitions of these words, the meanings of more than 3,000 are made still more clear by admirable wood engravings. These engravings represent objects in the various departments of natural history, the arms and flags of different nations, figures in heraldry, the various implements employed in gunnery and their several parts, the

apet, scarp, and other portions of fortifications, chemical apparatus, and an endless variety of other matters.

This dictionary also embraces a pronouncing vocabulary of Greek & Latin proper names, an etymological vocabulary of modern geographical name, a pronouncing vocabulary of modern English Christian names, and various other matters. It is an encyclopedia in itself, and will doubtless be in the household of every man who can afford to purchase it.



**CATLIN'S TRACE HOOK AND HOLD-BACK.**

which loosens the skin so that they can be readily peeled, the peel is taken off, the fruit is sliced into a saucepan with broken cracker or bread and a little salt, and stewed for twenty or thirty minutes. A better plan is to place the mixture in an earthen dish, and set the dish into a hot oven.

Many persons think that the best way of preparing tomatoes is to pare and slice them cold, and sprinkle them with a little fine loaf sugar, to be eaten raw. Some add salt and vinegar but this is no improvement. For eating cold the tomatoes should be pared without being scalded, as the scalding injures the flavor.

The tomato vine is killed by the slightest frost, but

**ELASTICITY OF CAST-IRON CANNON.**—We find the following statement in the *Artizan* (London):—"Captain Blakely's 11-inch cast-iron gun, hooped with steel, and which broke one of the hoops under proof a short time ago, having been repaired, has again been proved at the Woolwich butt. The gun is 15 feet long, 43 inches in diameter at the breech, and 20 inches at the muzzle. The gun was fired two rounds, with a charge of 52½ pounds of powder, and a cylinder weighing 540 pounds, and showed no signs of strain or damage. The gun, it is stated, is manufactured to the order of the Russian Government, and will now be despatched to St. Petersburg."