



## New Inventions.

### Apparatus to Prevent Conductors on Railroad Cars being struck down by Bridges.

Mr. J. Milton Benham, of Wilmot, Racine Co., Wisconsin, has invented an apparatus to be attached to the front of Railroad bridges for the purpose of preventing careless conductors from losing their lives, as has sometimes happened, when standing or walking on the car, forgetful of the bridge. The apparatus consists of graduated springs projecting like armson bars from the bridge, which if a person be standing on the car will grasp him in a moment and lay him flat upon the car to pass under the bridge. The invention is a humane one, and is worthy of a patent, to secure which the inventor has taken the usual measures.

### Improvements in Ship Apparatus.

Mr. E. C. P. Andrews of East Boston, Mass., an old inventor, has lately made a splendid improvement in the construction of windlasses, and another on his improved steering apparatus. His late steering apparatus so well and favorably known, will at once be superseded by his improved one. The improvement consists in having a worm screw on the wheel shaft meshing into a cog wheel fixed upon a shaft at right angles to the wheel shaft, and to the extremities of which are attached universal joints, connected to cranks and shaklebars (one on each side,) extending to and secured to universal joints on, and near to the tiller head. The wheel therefore, the screw, wheel and the side levers exert a tremendous power in a compact space, to operate the tiller. It is an arrangement of parts, which by putting the helm *hard down*, it does not require at any time to be lashed, and on vessels, when short of hands, the helmsman can in an exigency, thus leave the wheel to give a strong pull, without any fear or trouble from the helm.

The other ship apparatus, is a compound windlass and horizontal capstan, and a new way of operating the windlass by a capstan placed on the deck above it. The windlass is divided into sections, one part can be coupled or uncoupled with the other at pleasure, and the horizontal capstans can be used in connection with, or without the windlass, just by coupling them together. The windlass (or it may be called two, for they are in sections and can be operated by the capstan above, singly or together) is worked by reciprocating rods and palls, which are moved up and down by inclined planes fixed around on the base of the capstan. Some of our best Sea Captains have expressed themselves highly pleased with these inventions, and they are about to be introduced into some of the newest and finest vessels in Boston and this City. Measures have been taken to secure a patent.

### New Engine Governor.

Mr. James W. Chapman, an old inventor in Washington, Davis County, Ia. has made a new improvement in the Governor for engines, which may be denominated the "pendulum governor" and which has been highly recommended as a valuable invention. Its construction is very novel and it is represented to operate very beautiful and it is well worthy of attention. See advertisement in our advertising page.

### New Cotton Press.

The Alabama Planter says that Mr. D. Mc Comb is the inventor of a Cotton Press which requires less than a horse power to reduce five hundred pounds of cotton to shipping size, and less than one hour's work of the horse in making fifty bales, or less than one minute to the bale.

[It is not in our power to explain the principle of this press or we would.

### Machine for Letter Envelopes.

A patented machine has been put in operation in Birmingham, England, for the manufacture of Envelopes, the number produced by which, in complete form, is said to be astonishing. Supposing it to be turned by manual labor, one man, with the aid of three or four young girls or boys to gather the envelopes, would, it is calculated, by its means, be able to manufacture 30,000 to 35,000 in an ordinary working day, the paper being cut beforehand; while an expert hand, in the ordinary way, exclusive of the cutting, cannot upon the average, make more than 2000 in the same manner as those in question, which have a device stamped upon them at the point where the seal is usually placed.

### Artificial Leech.

The Courier des Etats Unis, quoting from the Journal des Debats of Paris, describes an important discovery, which it says "is likely

to be of the greatest service to humanity, and occupies at this moment the attention of the French scientific world. It is a mechanical leech (*sangsue mécanique*) which M. Alexander, civil engineer, already celebrated for his useful discoveries, has submitted to all the scientific bodies, which, after satisfactory trials, have caused this *sangsue* to be adopted in all the hospitals, after having proved not only the immense economy of its use, but, what is better, the decided advantage which it has over the natural leech, always repugnant to the patient, and sometimes dangerous. The President of the French Republic has given orders for the supply of the apparatus in every community where it may be found serviceable by indigent patients."

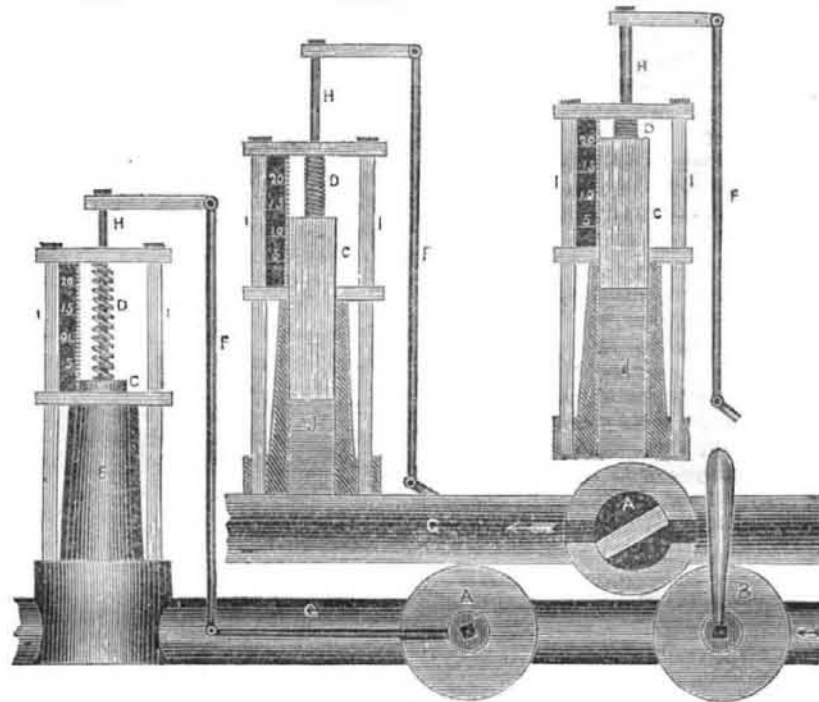
[This artificial leech is described and illustrated in No. 41 this vol. Scientific American, and we must say that we think the scientific bodies of Paris are sometimes behind the lighthouse; in this case they certainly are.

## BAKER'S STEAM GOVERNOR.

FIG. 1.

FIG. 2.

FIG. 3.



This is a new Steam Governor, invented by T. Baker, Esq. of Stillwater, N. Y., who has taken measures to secure a patent for the same. The main feature of the improvement is its perfect controlling power, and being much cheaper than any other kind now in use. It is very simple in construction, and not likely to get out of repair. It is attached to the steam pipe leading from the shut off valve to the engine, being a small piston balanced by a spring, which rises and falls by the pressure of steam on the engine, opening and closing a valve, which regulates the quantity of steam, and therefore the velocity of the engine. The less power required the less steam given; the more power, the more steam will be given, regulating the velocity to perfection.

DESCRIPTION.—Figures 1, 2 and 3 are sectional views, showing the operation of the Governor by the pressure of steam required to act upon the piston of the engine. A, Governor valve. B, shut off valve. C, small piston by which the steam operates the Governor valve, through the piston rod H, and connecting rod F. D, is a spiral spring to balance the pressure of the steam. E, is the

cylinder. G, the steam pipe; and the graduated scale shows the pressure of steam on the piston. I, are rods to hold the parts together. J, density of steam in the cylinder of the Governor, being the same as that acting upon the piston of the engine.

OPERATION.—Suppose the piston of the Governor to be one inch, and the safety valve be placed at 25 pounds to the inch, (or whatever is the pressure graduated on the Governor,) the valve B, being open, and the piston of the Governor being at its greatest height, opening the Governor valve entirely, all the steam is then acting upon the engine, driving whatever machinery it is intended, at a certain velocity, fig. 2. Then if some of the machinery is detached, it is evident that the tendency of the engine is to run faster, the aperture being the same will lessen the pressure or density of the steam, by which the Governor will fall to the pressure required, as at fig. 3, closing the valve to suit the velocity. On attaching the machinery again the density will be increased, opening the valve accordingly.

### New Rice Pounding Machine.

The Camden, S. C. Journal says that Colonel Bossard has made valuable improvements in machinery for pounding rice, which it describes as follows:—"This machine operates with a shaft of eight squares which is eighteen inches in diameter, in every alternate square there are fixed two lifters parallel to each other, placed far enough apart to pass up the interior sides of the pestle. The lifters are just thirteen inches long, when measured from the surface of the shaft outward, and in each of the other squares of the shaft, there is a single lifter of equal dimensions, placed in a central position to the former ones. Pinions are placed on the outer sides of the pestle, in horizontal position to the centre of the

shaft, at which point the parallel lifters are in the revolving of the shaft to receive the pestle and bear it up while the single lifter entering a mortice in the centre of the pestle while ascending, receives its weight at the instant the parallel lifters are at the elevation required.

The instant the pestle falls into the mortar, say in a second of time, the pinions are again taken by a parallel lifter, and thus the process is continued producing four blows of the pestle to each entire revolution of the shaft.

Three lifters are therefore employed to each entire lift of the pestle; producing in all, twelve lifters in the whole circumference of the shaft to each pestle."

[We do not know but this machine differs

from all others, in all likelihood it does, or it would not be described as a new improvement, but the description given above conveys to our mind the exact idea of the old stamping mills.

### Copper Type.

Foreign papers state that a Mr. Pettit, of Holborn, London, has discovered the power of making type, of infinite durability, from copper, at a less expense than that now produced from lead, and that a font of this type will last for years, and is far more beautiful than any in present use.

[The best types at present in use, are those which have a small amalgum of copper in them, and we believe that in the long run they will be found better than those of copper, just as it has been with the sheathing metal of ships—the pure copper does not answer so well as an alloy.

### Preservation of Life from Wrecks.

Lieut. John Mc. Gowan has been appointed by the Secretary of the Treasury to superintend the establishment of the several stations on the sea coast between Little Egg Harbor and Cape May, authorized by the act of March 3d, 1849, for the prevention of wrecks, and for the saving of the crews and passengers of vessels when blown ashore. Six stations are to be established within the sixty miles alluded to, each of which is to be furnished with surf boats and life cars, and lines, rockets and carronades.

The method to be adopted (says the Philadelphia Ledger,) in saving lives from wrecks is similar to that which has been successfully used on the coast of England, viz:—To throw lines on board the wreck either by means of rockets or by attaching them to balls fired from carronades. When this is accomplished the persons in danger can be brought on shore by means of the life cars, which are furnished with rings so that they can be hauled along the line to and from the wreck. They are made sufficiently large to contain two or three persons, with openings in the decks for the purpose of ventilation. The surf boats and life boats are both to be constructed of galvanized iron, and will be furnished with floats of India rubber, so that they cannot be capsized, no matter how heavy the surf may be. The rockets used in this service have heretofore been imported from England, but Mr. Samuel Jackson, the pyrotechnist of Philadelphia is about to manufacture some for the purpose of experimenting, which, it is expected, will be better than the foreign article.—Lieut. Mc. Gowan is acting in this matter in connection with the Board of Underwriters of this city.

### Assaying Metals.

The assaying is the most curious and scientific of all the business in the mint. The melterstake the gold dust, melt it, and cast it into a bar, when it is weighed accurately, and a piece is cut off for the assayer. He takes it, melts it with twice its weight of silver, and several times its weight of lead. It is melted in small cups made of boneashes which absorb all the lead; a large part of the silver is extracted by another process, and the sample is then rolled out to a thin shaving, coiled up, and put in a sort of glass vial called a matrass, with some nitric acid. The matrasses are put in a furnace, and the acid is boiled some time, poured off, a new supply put in and boiled again. This is done several times, till the acid has extracted all the silver and other mineral substances leaving the sample pure gold. The sample is then weighed, and by the difference between the weight before assaying and after, the true value is found. All the silver over and above five pennyweights for each lot, is paid for by the mint as its true value. The gold, after it has been assayed, is melted, refined, and being mixed with its due proportion of alloy, is drawn into long strips (not unlike an iron hoop for a cask) the round pieces cut out with a sort of punch, each piece weighed and brought to right size and put into a stamping press, whence it comes forth a perfect coin.

Although gold will not dissolve in nitric acid, yet it soon dissolves in *aqua regia*, a mixture of nitric and muriatic acids. In this case gold becomes a transparent liquid.