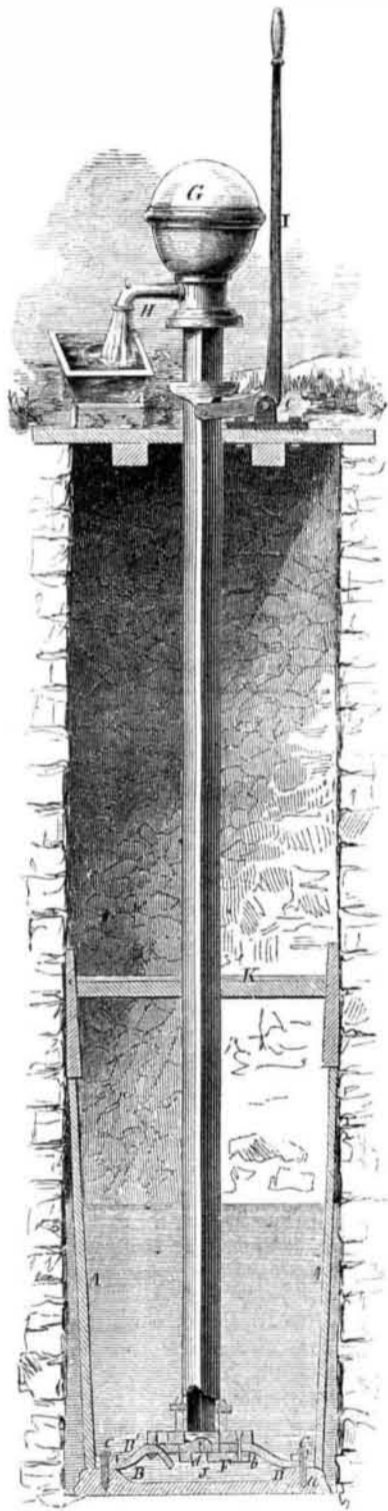


New Inventions.

Burnham's Improved Diaphragm Pump.

The pump illustrated by the accompanying engraving was patented by Mr. James S. Burnham, of Yorkville, this city, on the 13th of January last. It is one of the simplest and most easily constructed pumps with which we are acquainted. It is particularly well adapted to be used as a portable pump or garden engine, and for such purposes can be fitted up very lightly, employing simply a small tinned iron or sheet copper air chamber, and some strong tough leather. It is represented as serving in a well or cistern, in which application it requires a long rigid tube of some kind to connect the lever and air chamber at the top, with the flexible diaphragm at the bottom.



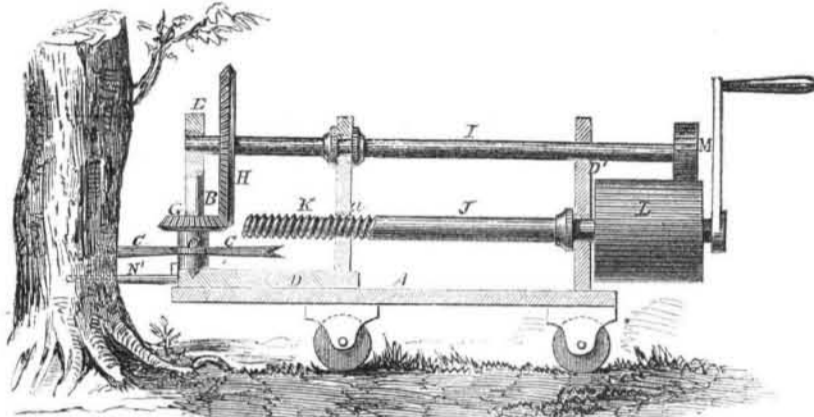
We may commence the description by premising that A and K are not parts of the pump, but only of a very convenient means of confining the lower part, *a*, in its place at the bottom of the well. Strips of wood, A A, resting on the edge of *a* are confined at the top by the wedges represented, which in turn are held in place by the pressure produced by K. The base piece, *a*, has a hollow, J, in its upper surface, and is covered by the flexible diaphragm, B. To the central portion of B is attached the whole upper portion, including the air chamber, G, and the spout, H, (in fact all the working parts of the pump, except the hand lever, I,) are connected directly to B, and are moved up and down at each stroke of the handle. There is a valve, as represented,

which opens downward through the broad flange at the base, and another, denoted by *d*, opening upward into the perpendicular tube. With each stroke of the handle, the tube with all its attachments rises and falls. At each rise the cavity, J, is enlarged, the valve, *d*, closes, and the other valve opens to admit a supply from the well. At each fall of the pump, the water in J is compressed, which thus forces it up through *d* into G, from whence it may be discharged either through the spout, H, as represented, or through a hose and nozzle as may be desired.

There are several important advantages pertaining to this pump besides simplicity and facility of repairs. Among them may be in-

stanced the very important fact that the valves are always wet, and sure to act with efficiency until worn out, without a possibility of trouble in starting the water. Another is its freedom from freezing, as a very small hole provided in the tube, or the ordinary leakage will prevent such a possibility, until the well or cistern itself is frozen. Requiring also no metal cylinder or rubbing action of any surfaces, it is not damaged in any way by pumping dirty or gritty water. For a garden engine, it may be secured with ease in any tub or bucket. Further information may be obtained of the inventor, who is a practical and skillful pumpmaker, by applying as above.

MACHINE FOR FELLING TREES BY HAND POWER.

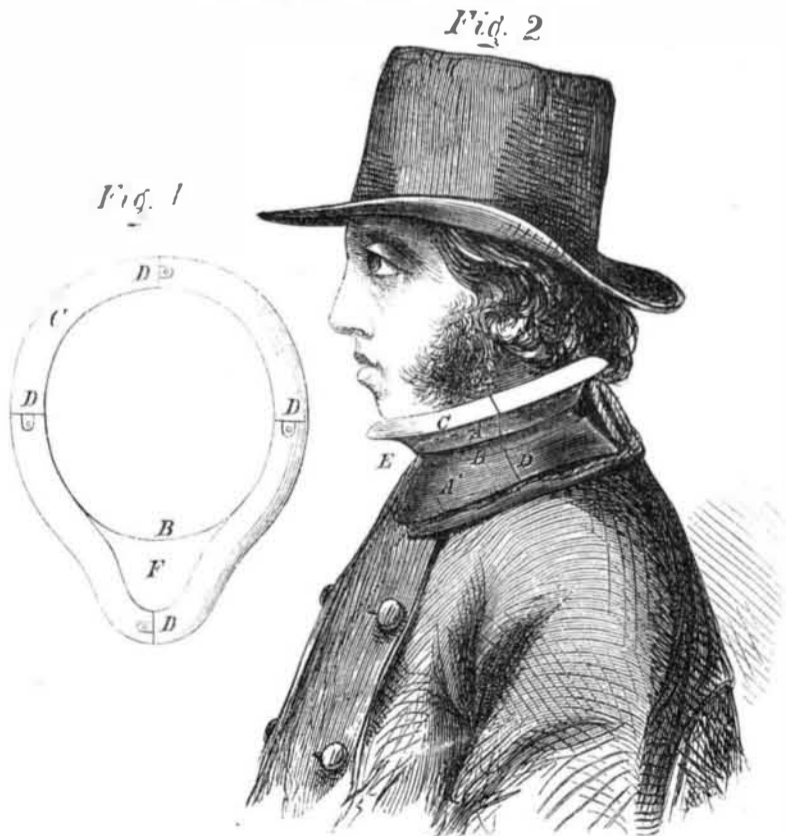


Power machinery for cutting down forest trees is objectionable on account of the difficulty generally experienced in moving it about, and also, when steam power is applied, in supplying the boiler with water in sufficient quantities. In fact, this latter difficulty is a serious objection to the use in some otherwise good locations, even of portable saw mills, which do not require to be moved until all the timber on a square league or more is disposed of.

The annexed engraving represents a device invented by Thomas Durden, of Montgomery, Ala., for attempting this labor by a hand machine in a manner analogous to circular sawing. The radial cutters, C C, perform this duty, and are made in any form best adapted to cut a thin kerf, and also to allow of ready removal, so as to be kept very sharp. These cutters, mounted firmly on the shaft, C', receive motion, as represented, through the gear wheels, G, H, and M, from the broad gear

wheel, L, which, in turn, receives its motion from the shaft, J, to which is attached the driving crank. N represents one of two dogs, which are inserted in auger holes or otherwise attached to the tree to steady the machine and hold it in place. The shaft, C', is hollow, and is mounted on the upright, B, which, together with the upright, *a*, is firmly fixed in the sliding piece, D, carried on the platform, A. The crank shaft, J, is formed into a screw, with a fine pitch, and is tapped through the upright, *a*, in such manner that each revolution urges the sliding piece, D, and consequently the whole of the cutting mechanism moves forward as the work progresses, until the whole trunk of the tree is severed. The wheel is purposely made broad to allow the axial motion of the wheel, M, as the work progresses. This invention was patented Sept. 18, 1856. Any further information can be obtained by addressing the patentee at the above address.

ANTI-GARROTE COLLAR.



Many and "sublime" have been the device to thwart the designs of that ungentle robber the dreaded garroter, who is believed to be a stout man, with keen deep sunken eyes, low

shaggy brows, and empty pocket, a short piece of rope, and one or more accomplices. Mr. Garroter steps softly up behind his victim, and chokes him with the rope, while

Messrs. Accomplices abstract his portmonnaie, his watch, gold studs, gold sleeve buttons, horn-handled jack-knife, wooden pocket combs, quill tooth picks, short lead pencil, a choice recipe copied from the SCIENTIFIC AMERICAN, and all other ornaments which people worth garroting are supposed always to carry about them. Punch has proposed to defend the necks of the careful by stout prongs of iron projecting in all directions, making a man look like an over-grown spider, while others have suggested a small edition of a pocket-pistol, ranging backward from the neck, to be discharged by the pressure in the face of the unsuspecting marauder.

The collar here represented is the invention of Mr. C. Colne, of Philadelphia, and although it might make the wearer somewhat "stiff-necked and rebellious," would probably be as comfortable as the stiff stove-pipe hats which we so long have suffered.

A is the upper part, and A' the lower part of a thin iron collar; B is a groove all around the collar; C is the top turned over; D D D D are four joints at places where the collar can be taken apart; the parts are held together by means of hooks put on the sides. F is a knife blade put in front to cut the garroting rope when it slides in the groove, B. F is the top front part of the collar, made in the shape of the chin. The inside is lined with any suitable material, and the collar may be secured either by hooks or hinges. It can be taken apart and carried in the pocket to be put on when required. The inventor has secured his invention, and any advantage of the apparatus which we have failed to describe, he will explain upon application to him.

Map Adjuster.

Mr. Wm. Stott, of Philadelphia, has invented and exhibited at the last fair of the Franklin Institute, in Philadelphia, an extremely convenient method of hanging maps against the walls of rooms. Large maps cannot be hung at any level which will make every part accessible from the floor by the ordinary means; but Mr. S. hangs them by small pulleys concealed under an ornamental cornice, and balanced by a weight behind, so that the whole may be very readily raised and lowered. When the bottom is to be examined, the map is left at its full height, but when the middle or top is wanted, the map is drawn down at pleasure.

Information Wanted.—A Model Wanting an Owner.

We have in our possession a tin model of what appears to be a furnace. The inventor has taken a good deal of pains to letter the various parts, showing its operation, but he entirely forgot to attach his name to it, something that could have been done in a moment. For the want of this little attention on the inventor's part, we have been obliged to spend considerable time in trying, without success, to hunt up the real father of this apparently bright bantling.

If inventors would only observe two or three things, they would save themselves and us a great deal of bother and some hard cash in the bargain.

First, Never send us a model without prepaying the transit expense on it; then the receipt should be mailed to us without delay. Nearly one half of the boxes delivered at our office are apparently unpaid, and when payment is demanded we cannot refuse it unless we have the receipt of pre-payment actually in our possession. Scarcely a day passes without our being obliged to make a demand upon Express Companies for a return of money twice paid for the same service.

Second, Never allow the model to be sent to us without the name and address of the inventor attached to it. This is a sad and oft-times perplexing oversight. Take a piece of stiff paper and write the name on it, tie it to the model with a string, mark the name on with pen and ink, or scratch it with a pin—anything to relieve us from the uncertainty as to the origin of the model.

We are sometimes censured by our correspondents for neglecting their business, when the real cause of all the delay is owing to some such oversights as we have pointed out.