New Inventions.

Traveling Steam Railroad.

Our foreign English cotemporaries are loud in their praises of the steam carriage of Jas. Boydell, of London, for drawing heavy loads over bad roads, for plowing, and for many other purposes. It has detached parts of flat rails on its wheels, and as these turn, the rails form bearings which prevent the wheels sinking into the soft soil. It is stated to have been very successful in plowing. The farmers on our prairies, who are anxious to get steam plows, will derive some information respecting the nature of this tramway steam engine by examining an engraving of such a carriage, illustrated on page 353, Vol. 3, Scientific American.

Perpetual Motion.

We have frequent inquiries respecting a prize said to be offered by the British Government to the person who first discovers perpetual motion. No such reward has been offered —and if it were offered it never could be obtained for such a discovery will never be made. A perpetual motion is a machine which has an inherent power, to set and maintain itself in motion—a mechanical impossibility.

Improved Blower Engine.

The invention herewith illustrated is now on exhibition at the great American Institute Fair, Crystal Palace, New York. It refers to blower or pumping engines, and consists in actuating the valve rod by a yoke and weights as follows:—

Fig. 1 is a perspective view of the entire machine. Fig. 2 is an enlarged sectional view of the yoke, and adjuncts. G is the air cylinder discharging into chamber H, from which the blast proceeds to the furnace. F is the steam cylinder. The piston rod, *f*, operates in the usual manner, and has in its center a cross-head, C, which is furnished with a head plate, *i*. The lower part of cross-head C carries a roller, *m*. On the inner face of yoke D are cams, *t t' t''*. The yoke is so formed that the head piece, *i*, of the cross-head will move in the grooves of said cams.

Passing through the extremities of the yoke, D, are rods, *r r*, to the lower ends of which are attached weights, *c' c''*, the rods passing through the short arms of levers, *d' d''*, and connecting the weights therewith. These levers have a common fulcrum at *e*, and have weights, *f' f''*, hung to their long arms, The rods, *r r'*, are prevented from slipping through the levers by nuts, *i'*, and the upper ends of these rods are provided with threads on which are nuts, *i'*, to regulate the downward movement of the said rods through the ends of the yoke. The roller, *m*, passes beneath and in contact with the levers.

The head piece, *i*, by pressure on the under edge of cam *t*, lifts the right hand end of yoke D, and through rod E, opens the valve and lets on the full head of steam. The piston continuing its movement, the head piece, *i*, leaves cam *t*, passes up cam *t'*, mounts upon the upper edge of cam *t''*, and passing on, encounters the under edge of rim *w*, against which it presses, slightly, lifting the left hand end of the yoke in its course and producing a movement of rod *r*, which cuts off the steam, the weight, *c''*, acting with it to depress the opposite end of the yoke. As the head piece, *i*, leaves cam *t''*, the weight, *c''*, falls to its seat, depressing the end, *r'*, of the yoke sufficient to permit the cam, *t''*, to clear the head piece, *i*, and at the same time producing a movement of rod *r*, which lets on a small quantity of steam to the opposite side of the piston, which then begins its reverse travel; the upper edge of head piece *i*, by action on the under edge of cam *t''*, lifting end *x*, of yoke, and causing the full head of steam to be let on. The head piece is then passed over cam *t*, strikes rim *w*, lifting the other end *x*, of yoke, and effecting the cutting off of the steam. Then leaving cam *t*, weight *c'* drops to its seat, depressing end, *x*, of yoke sufficient to produce the letting on of steam to the opposite side of the piston, and bringing the head piece to the under edge of cam *t*, where it effects the lifting of that end of yoke D first mentioned.

The quantity of steam let to the piston at each end of the yoke at the termination of its upward movement. By this construction, the weights, *c' c''*, are elevated to the position necessary for their action, the roller, *m*, acting on the under edges of the long arms of the levers, causes the cross-head to lift the counterpoise of the weight about to be brought into action.

If the engine be a vertical one, springs may be used instead of the weights, and other modifications made in the construction which will adapt the several parts to the new condition without affecting the principle of action. This construction may also be applied to pumping engines.

The advantages of this engine are numerous and important, and will be readily appreciated by those acquainted with blast furnaces; the most prominent being the maintaining of a more uniform blast than can be effected by fly wheel engines: the sinking at the change of motion being appreciable.

A working engine, on a small scale, is exhibited at the Palace, and attracts much attention by its beauty of finish and exactitude of movement. The invention has been in practical use for some months past, at a furnace in Pennsylvania, and we are informed, has proved to be greatly superior to the common blower engines. For further information apply at the Palace, or address the inventor, J. P. Ross, Lewisburg, Union Co., Pa. Patented Jan. 22, 1856.

IMPROVED BLOWER ENGINE.

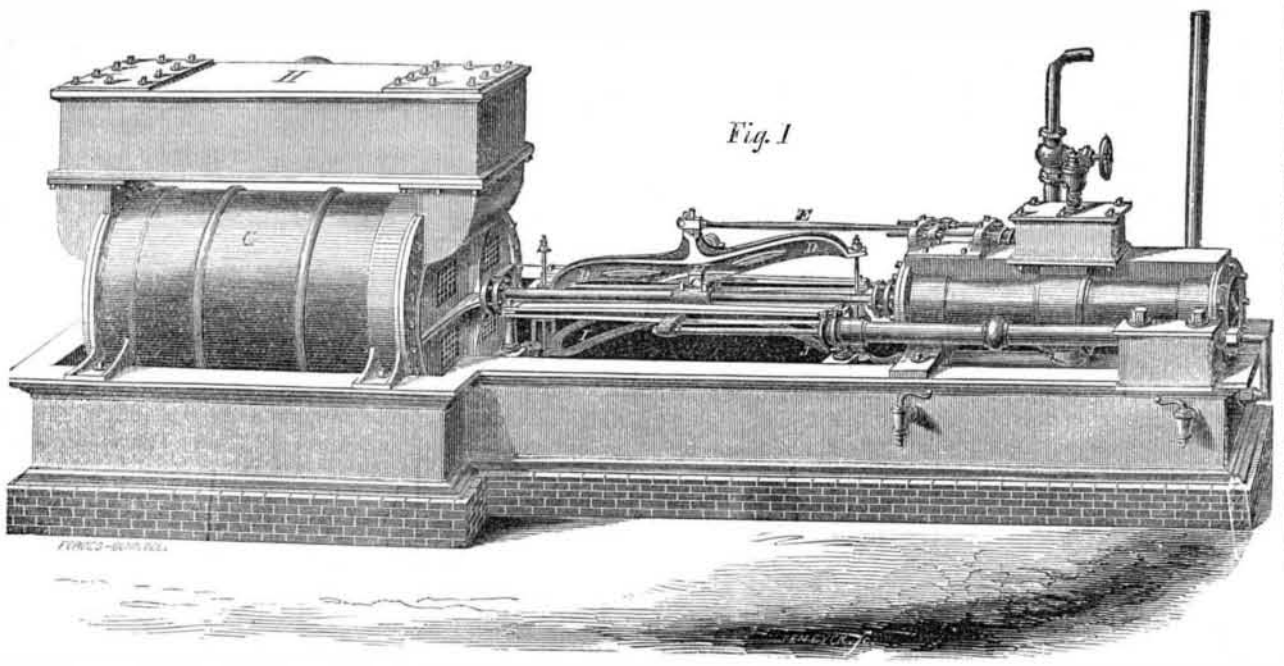


Fig. 1

as the weight drops to its seat. If the nut be far removed from the end of the rod, the fall of the weight must carry the yoke with it, and a greater opening of the valve be produced. It will therefore be seen that by means of the nuts, *i'*, the quantity of steam first let to the opposite side of the piston is regulated.

The weights, *f' f''*, lift the weights, *c' c''*, and elevate the rods, *r r'*, as their respective ends of the yoke rise, so that the nut of the elevated rod will just come in contact with the

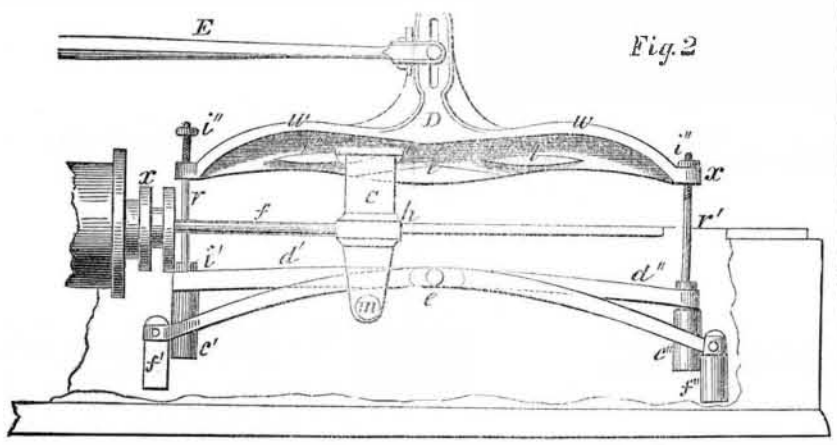
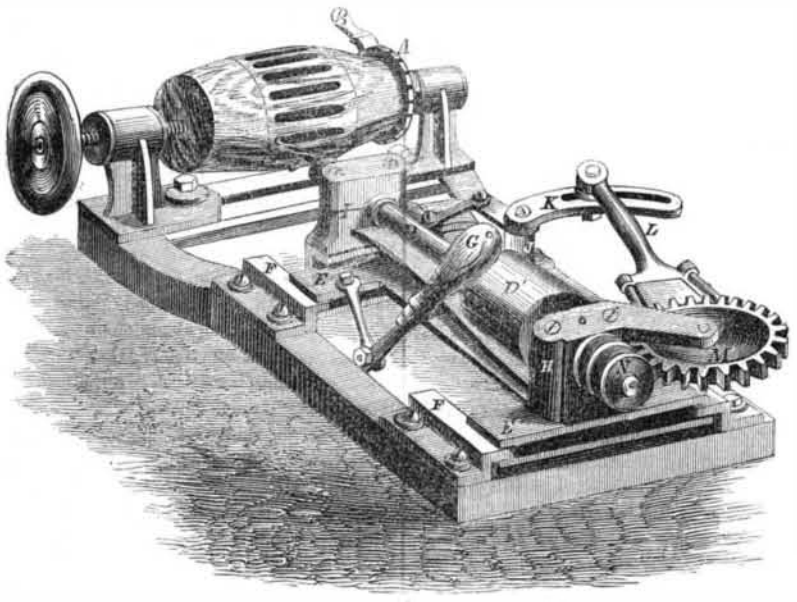


Fig. 2

HUB MORTISING MACHINE.



Hub Mortising Machine.

Our engraving illustrates a machine for mortising hubs, which is now on exhibition at the American Institution Fair, Crystal Palace, in this city. It is the invention of T. R. Bailey, of Lockport, N. Y., and was patented Aug. 5th, 1856.

The hub is centered between two bearings in the ordinary manner. One end of the hub bears against an index wheel, A, whose periphery is notched, and into the notches a spring, B, presses, which holds the index wheel firmly and prevents it from revolving. The hub cannot turn unless the spring, B, is pushed back, out of the notches, for wheel A and the hub revolve together. The notches are equi-distant, and correspond, in number, to the number of mortices to be made in the hub. It is therefore only necessary to move the index wheel, A, for a space of one notch, after each mortise is made, in order to cause the mortises to be all cut at exactly equal distances apart upon the hub.

The mortising tool, C, which has peculiar auger-shaped edges that bore and also cut sidewise, is attached to the pulley shaft, D, and power is applied, by belt, to pulley, D'. The mortising tool, C, and shaft, D, are supported in a carriage, E, which slides forward and back on guides, F. This movement is imparted by the attendant who pushes the lever, G, for that purpose, and thus carries the mortising tool against the hub, or withdraws it, at pleasure.

The proper formation of hub mortises is beveling, *i. e.*, narrower at their inner ends than on the periphery of the hub. In order to cut such mortises, one of the bearings, H, of shaft, D, is pivoted, while the other bearing, I, slides laterally. The required lateral movement of I is caused by a self-acting arrangement of parts as follows: K is a bell crank, having a pivot on standard J. One end of the crank, K, is attached to carriage E; the other end connects with a cam rod, L, the cam being attached to gear wheel M, and located below it. Gear wheel M is revolved by the screw, N, on shaft D. The cam turns with each revolution of M, acts through rod L, on crank K, and thus gives the lateral motion to tool C, necessary to impart a beveled shape to the mortise. Crank K is slotted at that point where it connects with rod L, in order to permit an adustment or variation at pleasure, in the extent of lateral movement given to tool C.

This machine is strong, simple, and compact in all its parts, and does excellent work. Any sized hubs may be mortised with great exactness and rapidity. By removing the standards at the head of the machine on which the hub is centered, a rest or table can be substituted, and the machine used for various species of mortising work. For further information apply at the Palace, or address the inventor at Lockport, N. Y.