New Inventions.

Knitting Machines.

Brown S. Wood, of Burrillville, R. I., has invented several new and very useful improvements in Knitting Machines, for which he has taken measures to secure a patent. The object of the improvements in such machines have all in view the knitting of ribbed goods by power. The first improvement consists in a certain arrangement of wide and narrow jacks for the purpose of forming a row of long and short loops, which are laid in proper positions to be caught by the needles—the long loops by the *rib* needles, and the short loops by the other set of needles and drawn through similar loops previously formed in the same manner.

A second improvement consists in operating the jacks by means of a double slur, to which the heads of the jacks are so fitted that the narrow jacks are operated upon in advance of the regular turn, in order to prevent the wide jacks in advance of them from taking up the thread necessary to form the narrow loops, which, if allowed, would prevent the proper formation of the loops, and cause breakage of the thread.

There is also an improvement in the arrangement of the movements of the two sets of needles; another for the arrangement of the rib needles in the combination with a creased presser, by which they require to be sprung into the proper position to enter the loops made to receive them. After these needles have entered the loops, and the pressure of the creaser removed, they spring back and draw the loops lightly around them, so that on their retiring from their loops they always pass into their hooks.

The thread carrier on this loom delivers its yarn in a direction perpendicular, or nearly so, to the needles, to prevent its rolling or sinking. There are some more new improvements embraced in this machine, a clear idea of which cannot be obtained without engravings, they are all considered to be very valuable, by the inventor.

Bending Flanges on Wrought Iron Beams.

Julius H. Kroehl, of New Yow City, has taken measures to secure a patent, for an improvement in machinery for bending flanges on wrought iron beams. There is a pair of horizontal, and a pair of vertical rollers; the former pair has one roller with a face of the full depth of the beam, and the other has its face the depth of the beam minus the thickness of the flanges. The vertical rollers are both alike, and are of a width a little greater than the extreme width of the flanges. They are arranged opposite the space between the horizontal ones, and work in close contact with the sides of the roller. In order to give the flanges and their beams, a taper or an elliptic, or other curved form, the vertical rollers have flanges, whose faces bear on the edges of the flanges of the beam, and cause the said rollers to receive such a movement in the direction of their axes, and apply such a force in that direction as bends the flanges of the beam to the desired form.

Clothes Horse or Bars.

Dewey Phillips, of Shaftsbury, Vt., has applied for a patent on a new mode of making bars, on which to hang clothes, for drying, or after they are ironed. He constructs the bars of a series of horizontal slats secured to a vertical standard, which can be folded up into a very small compass, when not used, thus making them more compact and convenient for housewives.

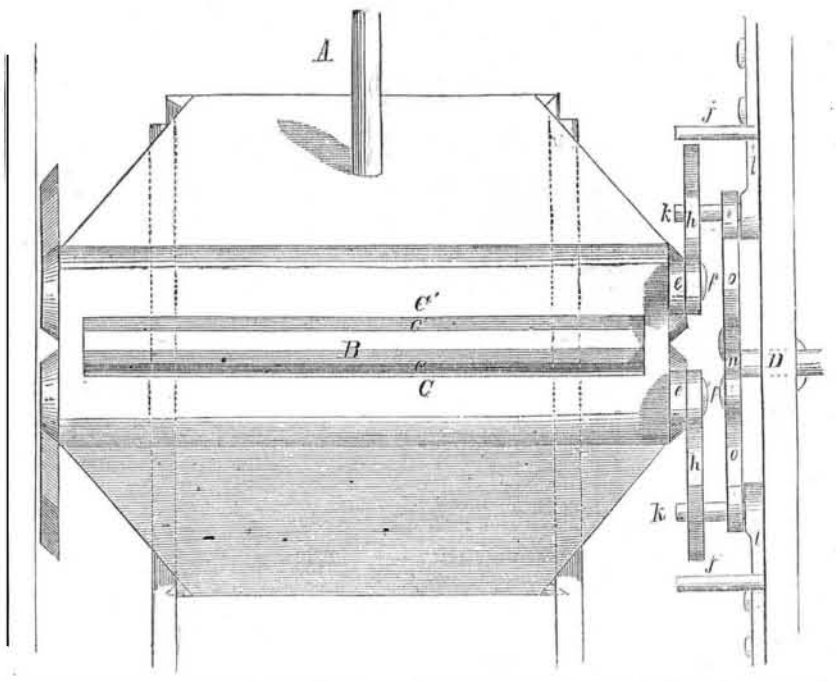
Ventilators.

Joseph Cooley, of New York, City, has applied for a patent for an improvement on ventilators, which consists in exhausting the impure hot air from apartments, by applying a ventilator of peculiar construction to the chimney in the inside of the room above the mantlepiece. This ventilator is under the control of persons in the apartment. It has a revolving fan which takes the hot air from the room, but suffers no draught to come from the chimney back through it.

Improved Candlestick.

T. Rose, of Cortlandville, N. Y. has made a very useful improvement in candlesticks; the nature of which consists in enlarging the inner sliding tube of the candlestick, and providing it with a concave grease tight socket, for the purpose of receiving and retaining all the melted tallow that may run down the candle during the time it is burning, and in connection with this arrangement there is a series of sharp pins on the concave socket, to enable the candlestick to receive and hold firmly, candles of various thicknesses. Measures have been taken to secure a patent.

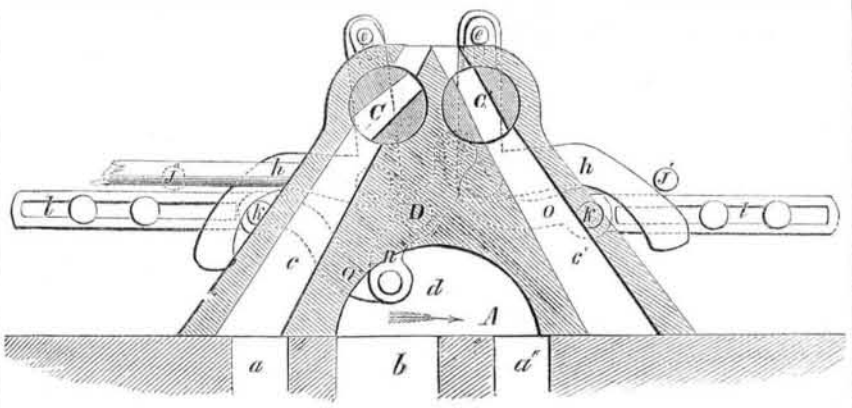
STEAM ENGINE--NEW CUT-OFF.---Fig. 1.



The annexed engravings are views of an improvement in the Cut-Off of steam engines, invented by James Montgomery, of Bridgeport, Conn., who has taken measures to secure a patent for the same. Figure 1 is a plan view of a steam chest with a slide valve and cut-off, constructed according to the improvement, and figure 2 is a longitudinai section of the same; figure 3 is an elevation of the mechanism, by which the action of the cut-off is regulated. The same letters refer to like parts.

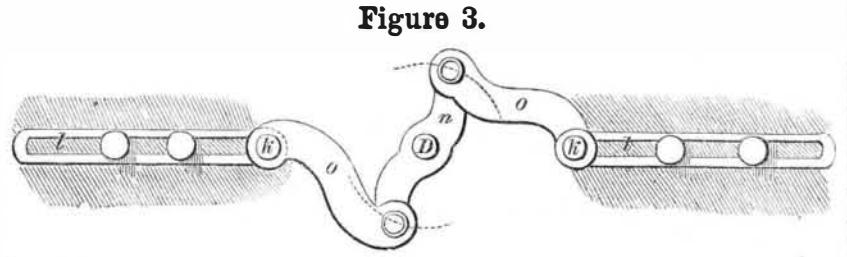
The nature of this invention consists in the employment—as a cut-off—of two cocks which are fitted to the slide valve in such a way as to be capable of opening and closing the passages in the valve through which the steam passes to the steam ports of the cylinder, and which are moved at suitable times to open and close the said passages by means of levers with which they are furnished; these levers are brought in contact—by the motion of the slide valve—with certain fixed and adjustable stops in the steam chest. These cocks constitute a perfectly balanced cut off, and the great friction produced by a slide or slides on the back of the valve is obviated.

Figure 2.



A is the valve seat, a, a' are the steam ports, and b is the exhaust port; B is the slide valve with steam passages, c c', through which the steam passes to the ports, a a', and a cup, d, to conduct the exhaust steam to the exhaust port, similar to the common slide valve which has a cut-off slide working at the back of it. The back part of the valve is suitably formed to receive the cocks, C C', which open and close the passages, c c', and is widened so as to increase the length of the passages, and thus enable their width to be reduced so that the cocks may be opened and closed with a less movement. The cocks may be of any well known construction, and each is furnished at one end with a short lever, e, which carries a pin, f, to work in a slot in a bent lever, h, whose fulcrum is on a pin in the side of the valve below the cock. The cocks are opened and closed by moving the levers, h h. These levers receive the necessary motion to open the cocks by coming in contact with fixed stops, j j', within the valve chest, near the termination of every stroke of the valve, and then receive

Figure 3.



the necessary motion to close the cocks and cut off steam by coming in contact with pins, k k, at any desired point in the next movement of the valve. The pins, k k, require to be adjustable to close the cocks and cut off the steam at any desired point, and for this purpose they are attached to two swinging arms, l l, which hang on fixed studs, m m, on the side of the valve chest. They are adjusted by means of a small beam, n, which is connected to the arms l l, by links, o o. The axis of the beam is a spindle, D, which passes through the side of the steam chest, and is connected with a governor or with some device for adjusting by hand. By turning the spindle the pins, k k, are brought nearer together or forced farther apart.

The operation of the cut-off will be understood by reference to figure 2, where the pins, k k, are arranged to cut at half stroke.—The valve is supposed to be moving to the right, as indicated by the arrow, and to have nearly finished its stroke. The engine piston is supposed to be moving in the same direction and to have arrived nearly at half stroke. The lever, h, of the cock, C, is in contact with the pin, k, and the cock is closing. The lever, h, of the cock, C', is in contact with the stop, j', and the cock is opening. By the time the valve reaches the end of its stroke, and the piston is at half stroke, the cock, C', will be wide open, and the cock, C, closed, and the steam cut off. The piston is caused to finish its stroke by the expansion of the steam in the cylinder, while the valve returns half way. The valve having passed its half stroke opens the port, a', to admit the steam for the return stroke of the piston. The weight of the levers, h h, which is very trifling, is supposed to be balanced, or to be counteracted by the friction of the cocks, so that the cocks will remain in the position in which they are left by the pins and stops, and hence the cock, C', has remained open, as it was left by the action of the stop, j, and the steam is free to enter the port, a'. The cock, C, during this time has remained closed, and both cocks remain in the positions now described, until the lever, of C', comes in contact with the other pin, k, and the lever of C, with the stop, j', after which the continued motion of the valve causes the cock, C', to be closed to cut the steam off, and C to be opened ready for the admission of steam when the passage, c, is brought opposite the port, a by the return of the valve. During the return of the valve the above described action is reversed.

By setting the pins, k k, wide apart, it will be understood that the levers, h h, will respectively be brought in contact with them at an earlier point in the stroke of the piston. By setting the pins in such a position as not to be struck by the levers, h h, the cut-off may be made inoperative. The alteration of the position of the pins is effected by turning the spindle, D. In stationary engines it is proposed to connect this spindle with a governor in such a way that the increased speed of the governor shall force the pins farther apart, and the decreased speed draw them towards each other, and thus govern the engine by the cut-off. In locomotives or engines on which no governor is desirable, or can be conveniently employed, the spindle requires to be fixed in the proper position to adjust the pins to cut off at the desired point.

This cut-off is particularly well adapted for use in connection with a governor, owing to its being balanced, and therefore working without sufficient friction to produce any resistance to the operation of the governor whose slightest variations would instantaneously produce the desired effect.

More information may be obtained by letter addressed to the inventor.

Iron Houses.

Charles Mettam, of New York City, has taken measures to secure a patent for an improvement in the construction of iron houses. The nature of the improvement consists in erecting the columns of the upper stories upon chairs, which can be easily adjusted to any desirable position on the breast summers, and which when raised directly over the columns of the lower story to support other upper columns, serve to connect the breast summers in such a manner as to provide for their longitudinal expansion and contraction.

Napping Cloth.

Joseph Weight, of Lawrence, Mass., has taken measures to secure a patent for an improved machine for napping cloth. It consists in the employment of an endless card sheet in combination with a transverse card belt. The latter belt keeps the cloth stretched to its proper width, for the action of the endless card belt, which presents a far larger carding surface than the common card cylinder.