

Self-Stripping Carding Machine.

(Continued from First Page.)

on it and holds the plate down, and keeps the brush in position for operation. The incline, *t*, is for the purpose of throwing up the brush again, the stud, *z*, passing upon it after the waste is swept from the cards; no stop is shown in connection with *t*, to release the catch as it can be dispensed with.

The operation of stripping, and all the operations connected with it, are performed by the movements of the sweeps, *I I*; the means by which these movements are produced will now be described:—

Attached to the sweeps or to their hubs are toothed sectors, *L L*, in dotted lines, figure 1, which gear into other toothed sectors, *M M*, secured upon a shaft, *N*, below the main cylinder; these sectors are shown. All the mechanism which has now been described requires to be attached to every carding machine to which the improvements are applied: but the remaining portion of the mechanism which is yet to be described, will serve for as many carding machines as can stand in one line, if their shafts, *N*, are all connected, and may serve for a still greater number by adding gearing to give the necessary motions to the shaft, *N*. The sectors, *M M*, receive their motion through a lever, *O*, which is secured upon their shaft, the motion being communicated to the lever by a train of mechanism upon a frame, *P P*, which is distinct from the frame of the carding machine; of this train of mechanism, *Q*, is the driving shaft, receiving motion through a band running over the pulley, *R*, and communicating the same through a toothed pinion, *S*, and wheel, *T*, to a shaft, *U*; on this shaft is secured a boss, *V*, having two arms, *4 4*, and also an endless screw gear, *W*; and fitting loosely on it there is a boss, *X*, having one projecting arm, *5*, to which, parallel with the shaft, is secured a stud, *6*, which passes through holes bored in the arms, *4 4*, and causes the boss, *X*, to revolve with the shaft; this stud, *6*, when the bosses are close to each other, projects beyond the back face of the fixed boss, *V*. The endless screw gear, *W*, gears into a toothed wheel, *Y*, on a vertical axis; this toothed wheel carries on its upper face a number of vertical studs, *7, 7*, corresponding with the number of cards in the machines. Each of the studs, in its revolution with the wheel, comes in contact with a stud, *8*, secured to one end of a bent lever, *9*, whose fulcrum, *10*, is in an arm, *11*, secured to the front top rail of the frame. The opposite end of the lever to that carrying the stud, *8*, bears against the side of a lever, *12*, which works on a fixed fulcrum, *13*, and is furnished at its end with a pin or stud, *14*, which fits in a groove, *15*, in the boss, *X*. A spring, *16*, is attached to the lever, *12*, and to the frame, which always keeps it forward, and slides the boss, *X*, on the shaft, *U*, so as to bring the end of the stud, *6*, within the back arm of the fixed boss, *V*, and leave none of it projecting through excepting at such times as the studs, *7, 7*, are bearing upon the stud, *8*, when the tension of the spring is overcome and the lever, *12*, is forced back by the bent lever, *9*, so as to slide the boss, *X*, forward, and cause the stud, *6*, to project beyond the back arm of the fixed boss. At a suitable distance from the shaft, *U*, and parallel with the said shaft, there is a shaft, *Z*, which carries a circular disc, *E*, having a number of slotted openings, *17, 17*, in its periphery, the number of the said slotted openings being two more than the number of cards in the machine or machines. Upon the same shaft, *Z*, at the extreme back end, outside the frame, *P P*, there is a cam, *Æ*, in which there is a slot extending all round, and in this slot works a stud, *18*, which is secured in one end of an arm, *19*, whose opposite end is hung on a fixed pivot, *20*, secured in a post of the framing. The stud, *18*, is connected by a rod, *21*, to a stud, *22*, which is secured, but adjustable in the lever, *O*, on the sector shaft, *N*. In the slot in the cam, *Æ*, there are a number of undulations or steps, the number being one more than the number of cards on the machine or machines, and the said undulations or steps being of suitable form to give the required motion through the stud *18*, rod, *21*, stud, *22*, lever, *O*, and sectors, *M M* and *L L*, to the sweeps to turn over or open, strip, and close every card in succession—to perform which there is one undulation or step, *30*, for every

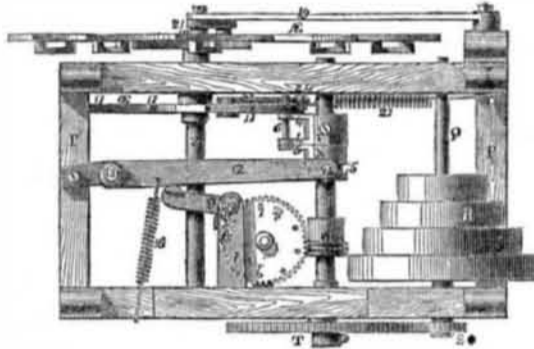
card, and afterwards to return the sweep ready again for commencing operation, to perform which there is one greater undulation or step, *31*; the latter undulation or step is shown by dotted lines, as are also all parts of the slot that are concealed. The cam, *Æ*, receives a part of a revolution every time one of the studs, *7*, on the wheel, *Y*, comes into operation on the stud, *8*, of the lever, *9*, and causes the stud, *6*, to move backward, as every time the stud, *6*, is forced forward it is brought, by the revolution of the shaft, *U*, into one of the openings, *17*, of the disc, and caused to give part of a revolution to the disc. In order to hold the cam steady at those times when it is not in motion, a pawl, *23*, is hung on a pin, *24*, in a

standard, *25*, below the disc, and a lever, *26*, is attached to the pawl, and connects by a spring, *27*, to the frame; the spring acting on the lever holds the pawl up and causes it to catch in one of the slot openings, until the stud, *6*, is coming into operation on the disc; the said stud, *6*, previous to entering an opening comes into contact with the lever, *26*, and throwing it forward, releases the pawl, and holds it clear of the disc, until it is itself leaving the disc, when the spring, *27*, is allowed to operate.

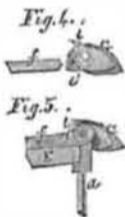
The several parts having been described, and their duties explained, we will proceed to explain the manner in which their operation is conducted.

The carding process is the same as in other

Figure 3.



carding machines, therefore it is not necessary to describe it. We will suppose the operation of stripping to commence with the first card or the one nearest the doffer. The sweeps must be brought to their most forward position, which would be to the left hand in figure 1; the cam, *Æ*, would then be in such a position as to bring that part of its slot marked *X'*, to the stud, *18*. As it is only necessary that the top cards should be stripped at certain intervals—say once in fifteen minutes—the cam is not required to revolve continuously, but only to move a sufficient distance to cause one card to be stripped, at such intervals as to make each entire revolution occupy that space of time. The driving pulley revolves continuously, and so do the shafts, *Q* and *U*, and the wheel *Y*; but as the stud, *6*, is drawn forward by the lever, *12*, and spring, *16*, except when a stud, *7*, is in contact with the stud, *8*, under the bent lever, it (the stud, *6*) passes the disc, *E*, without touching it, until a stud, *7*, acts on the stud, *8*, and bent lever, *9*, and drives back



the lever, *12*, and stud, *6*, after which the stud, *6*, as it revolves, comes into a slot in the disc, and gives part of a revolution to it and the cam; the distance moved by the cam being just sufficient to make one undulation or step, *30*, pass the stud, *18*. As the first or rising part of the step passes the stud, *18*, it raises it, and the rod, *21*, raises the lever, *O*, which causes the sectors to give motion to the sweeps in the direction of the arrow, *32*, in fig. 1.

As the sweep moves, it brings the stud, *O*, on the lever, *K*, in operation on the upper side of the front part of the tumbler, *G*, of the first top card, *E*, and carries it up or along it, depressing the forward end of it and bringing the angular projection, *i*, to bear under the hinge plate, *f*, causing the top card to be opened or thrown upwards. Almost as soon as the stud, *O*, commences running up the tumbler and depressing it, the spring, *p*, at the hooked end of the lever, *K*, runs over the first stud, *g*, on the arch, *D*, and raises that end of the lever depressing the stud, *O*, and causing it to throw down the tumbler still further, until at last it (the stud) turns the tumbler so far round as to turn the top card completely over with its teeth upwards and then pass under it. The turning over of the top card is illustrated in figs. 1 and 2; fig. 1 showing one of the cards in the act of turning over, and fig. 2 showing it turned completely over; all the cards except the first one fall over on the next card in front; the first one falls on a screw, *33*,

provided to receive it. The sweep moving on after the card is turned over, carries the comb, *F*, past it, but owing to the inclination of the teeth it does not yet strip it. By this time the comb has passed the card, the cam has brought the stud, *18*, to the top of the undulation or step, and it then causes it to descend the opposite or falling side, which depresses the rod, *21*, and lever, *O*, causing the sectors and sweeps to return a short distance. During the return of the sweep, the comb strips the waste from the open top card, and as soon as it has passed it, the pin, *O*, (the spring, *p*, of the lever, *K*, having previously passed over the stud, *g*) is brought into operation on the tumbler so as to make the angular projection, *i*, act on the upper side of the hinge plate and throw over or close the card. By this time the cam has turned so far, that the stud, *18*, will have descended the falling side of the first step, or undulation, and at this moment the stud, *6*, will, by its revolution, become free from the slot in the disc, and the disc and cam will become stationary, the stud, *7*, will also work clear of the stud, *8*, and the spring, *16*, will draw forward the lever, *12*, and draw the stud, *6*, forward so that it will not gear into the disc until the proper time for stripping the next card. The waste is deposited on the top of the machine, and on the backs of the cards, and should any hang in the comb it is loosened by the next top card as it passes over it the first time, preparatory to stripping it. When the next stud, *7*, on the wheel, *Y*, acts on the stud, *8*, of the bent lever, *9*, the cam will make another movement and carry the pin, *18*, over the next undulation or step, *30*, this will bring the sweeps, *I I*, and their appendages, including the comb, in operation on the next card, and turn or open it, strip, and return or close it, in precisely the same manner as the first. Thus the operation proceeds, every step, *30*, of the cam causing a card to be stripped, until the cards have all been acted upon, and the commencement of the long undulation or step, *31*, arrives at the stud, *18*. One of the studs on the wheel, *Y*, marked for distinction, *7'*, is elongated in the direction of its revolution, so that it remains in contact with the stud, *8*, on the bent lever, *9*, for a considerable time, long enough to cause the stud, *6*, to operate in two slots of the disc without being withdrawn forward; it being necessary to give two movements of the same length as all the others to the disc and cam, in order to carry the whole of the step, *31*, past the stud *18*. As the first or ascending part of the step, *31*, passes the stud, it raises it, and causes the sweep to move on in the direction of the arrow, *33*, and bring the catch, *x*, against the step, behind the sweep, fig. 1, to release the plate, *J*, and then carry the stud, *z*, down the incline, *u*, which draws down the plate, *J*, and brings the brush into a position for operating, as described. When the top of the step, *31*, passes the stud, *18*, the descending part comes into

operation on it, and carries it down, depressing the rod, *21*, and lever, *O*, and moving the sectors sufficiently to carry the sweeps back to their first described position, sweeping all the waste on to the cover of the doffer. During the latter part of this last described movement of the sweeps, the stud, *z*, travels along the incline, *u*, and raises the brush. The next movement of the cam is the same as that first described, and the succeeding operations of the machine are repetitions of those just explained.

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

Improvement in Railroad Cars.

We had the pleasure, a few days ago, of examining a new and beautiful car, recently put on the New York and New Haven Railroad, and constructed by Messrs. Bradley & Co., of Worcester, Mass. The improvement consists in the ventilating arrangements. The windows are so constructed that they are made to act the part of ventilators, by having two leaves, the front one is set to stand out, with its inner end forming the apex of a cone, the outside being the base. The air impinges on this window, as it is set angularly to the side of the car, and it therefore forms a partial vacuum at its outer edge. This draws the air from the inside and thoroughly ventilates the car, allowing nothing to come in from the outside. The other leaf of the window, is set behind the first leaf to sustain the current of air from the inside, to perpetuate the partial vacuum. There are ventilator cones in the roof, which prevent sparks from entering, but allow a fresh supply of air to enter the car continually. To keep railroad cars free from smoke and dust is a grand desideratum. The invention was explained to us by Mr. H. M. Paine. The improvement can be applied to the cars now in general use at a very trifling expense. We believe that upon a more extended trial than has yet been had, everything that is claimed will be accomplished, and that these cars will be almost universally adopted upon our railways.

Improved Hot-Air Register.

Mr. George Garrett, of this city (New York), has taken measures to secure a patent for an improvement in Hot-Air Registers, the nature of which improvement consists in operating the leaves of the Register by a slide, which works against one of the inner sides of the case, a horizontal screw or stud passing through an oblong slot in the slide. The leaves are placed longitudinally at the bottom of the case, and are attached to it by pins, which fit loosely in holes near the bottoms of two of the sides. These pins are placed in the centres of the leaves, so that the leaves work like Venetian blinds; each leaf has a lug on its upper surface near its ends, and a horizontal arm projects from each lug. These lugs work in two vertical slots in the slide. By moving the slide either backward or forward, the vertical slots act upon the horizontal arms, and these are entirely or partially opened or closed, as desired. A spring is attached to the slide, which bears against the side of the case, and keeps the slide, and consequently the leaves, in the desired position.

To Prevent Accidents on Railroads.

Mr. H. D. Taylor, of Newark, N. J., has taken measures to secure a patent for two improvements to prevent accidents on railroads. One relates to the construction of the cars, and the other to an improvement on the cow catcher. A frame is secured on elastic levers extending down close to the track, and on this the car is secured. The trucks are of the ordinary construction and are combined with this frame. The said frame rests on four small wheels independent of the ordinary running wheels. These small wheels are placed angularly and have broad grooved faces.—These bite upon the inner edge of the rails, therefore, although the running wheels were lifted up by an obstruction on the rails, the cars would be prevented from running off, as the small grooved wheels would still retain their hold upon the rails.

The cow catcher is so formed that it vibrates on an axis behind the front axle of the locomotive, and it has two india rubber bands on its front, which front rises or is lifted up when it meets with an obstruction, thus lifting it—the obstruction—from the track.