

WEAVING.—No. XVI.

THE JACQUARD LOOM — *continued.*

The griffe is shown separately, and detached from the machine, in Fig. 135. In this figure the slide N fixed at the ends of the block E are shown. Fig. 136 is an end view of same, and Fig. 137 is a plan. In the latter figure the ends of the frame A A are shown in dotted lines with the groove into which the slides N N work. This plan is often used in Jacquards for hand looms, and is approved merely for its simplicity. Fig. 138 shows another plan in common use for hand-loom Jacquards also. In this case, the slide works upon round bars fixed into

coming into contact with the hook or catch it still moves until the cylinder is turned. In Fig. 128 a "lantern" I is shown fixed on the end of the cylinder C, which is provided with four pins, which the hook catches in order to turn the cylinder. The action of the cylinder will be best seen in Figs. 140 to 142. In Fig. 140 the cylinder is shown when pressing the card against the needle-board and needles. In these diagrams the catches are shown upon a different principle to that shown in Figs. 130 and 131, where they are simply catches connected with a cord at their ends. The cord *m* is attached to the top catch, and when the weaver requires the cylinder to reverse or "turn back," he pulls the handle,

spring fixed at the end of it, as shown. When the cylinder is being turned the catch V gives way, in consequence of the spring, and then resumes its normal position, as shown. Now, it will be evident that in the case of the cylinder being placed in position, Fig. 141, the lower pin in the lantern would come into contact with the point of the catch V, and would, therefore, be turned "square on."

The cylinder is kept in position by means of a presser K K, shown in the diagram, and this presser or as it is technically called the "hammer"—is forced down by means of the spiral spring as shown.

On referring to Fig. 129, the three cards represented show the way the cards are laced together. The large holes *eee* are for the purpose of fitting upon the pegs *eee* of the cylinder as shown in Figs. 130 and 131. (See page 467 of our last volume.) These pegs are made adjustable, for the slightest movement of the card would prevent its coming into exact position against the needle-board, therefore it requires very exact and sure means to press the cards against the needles correctly.

It will be noticed in Fig. 131 that the cards N' hang loosely, and do not touch the cylinder on the side next the needles. Thus there would be a great liability for the card to strike the needles out of their proper position. This is in power looms an important though simple matter, for the cards would

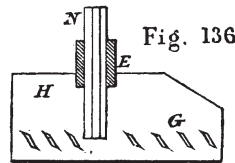
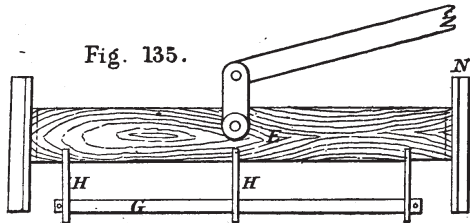


Fig. 137.

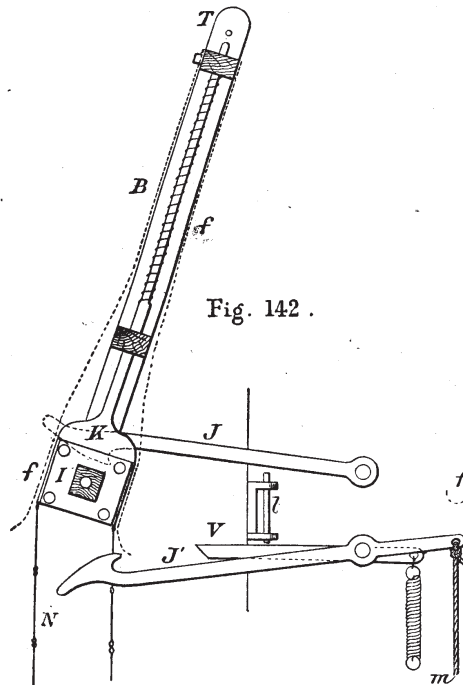
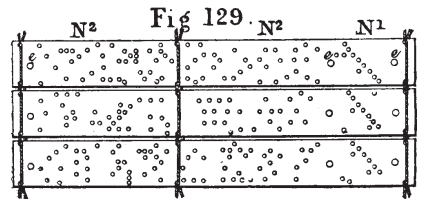
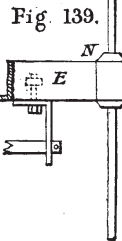
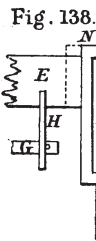
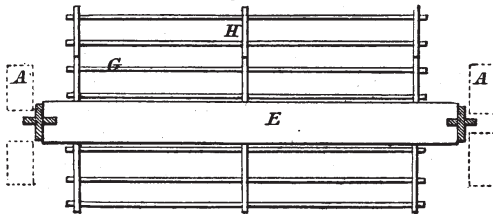


Fig. 142.

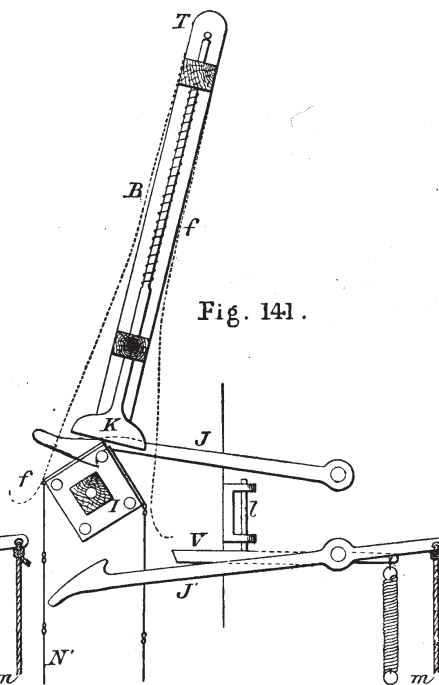


Fig. 141.

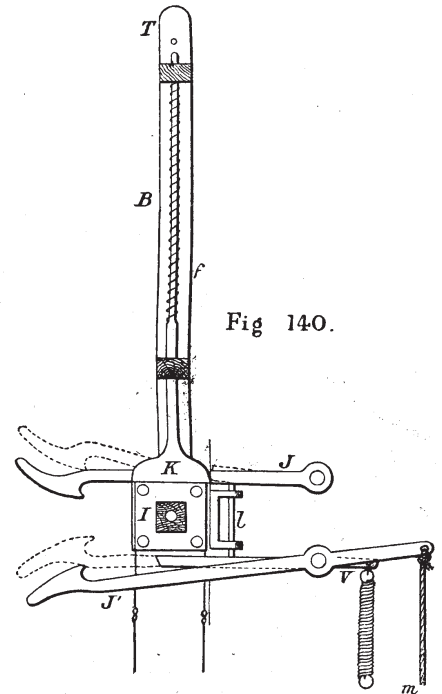


Fig. 140.

the ends of the machine, in the position of the slots or grooves shown at A A in Fig. 137. The plan shown in Fig. 139 is that generally used for power-loom Jacquards. In this instance the griffe E is made of cast iron, and the slide bars are firmly fixed into the ends as shown.

This plan is by far the most perfect and the best adapted for steady and rapid motion required in power-loom weaving.

The cylinder C, upon which the cards revolve, is supported or carried in a "batten" or frame B B B, which is suspended on centre pins T T, Fig. 128. (See page 467 of our last volume). It has sufficient extent of vibratory motion to enable it to move the requisite distance from the needle-board *b* of the machine, and after

and it raises both the catches, thus throwing the bottom catch into contact with the lantern and reversing its motion. But for power-loom Jacquards the plan shown in Fig. 140 is preferred.

In this case the bottom catch raises the top one by means of the pin *l*, as shown by the dotted lines. Fig. 141 shows the cylinder thrown about half-way out, and Fig. 142 when it is turned a quarter of a revolution. Now it often happens that before the cylinder completes the turn, and stops on edge similar to the position shown in Fig. 141, that the edge of the cylinder would be brought into contact with the needle-board, and produce more or less damage. To prevent this from occurring an additional catch, V, is placed upon the same fulcrum as the lower catch J'. This catch is held up by means of the

be liable to stick upon the pegs, if forced against the needle-board wrongly, they would possibly get wound round the cylinder, and not only get torn or destroyed, but in their motion the needles would suffer. To avoid accidents of this kind flat springs are used, of just sufficient strength to hold the cards against the cylinder on both sides. The position of these springs is shown by the dotted lines in Figs. 141 and 142.

When not more than 100 or 200 cards are used, they are allowed to fall into a curved tin frame placed beneath the cylinder, but when larger numbers are used they are made to fold into a "festoon" form. This is done by attaching a wire about 2 in. longer than the cards at the junction of about every 20 cards. The cards fall between two curved wires,

but the wires attached to the cards being longer than the cards themselves cannot pass between the curved wires, consequently the cards remain suspended, and fold together in a very compact manner.

This will be observed in the drawing of the ordinary silk loom, Fig. 143. (See page 24.)

In Fig. 128, it may now be mentioned, that the hooks P P correspond to the purpose of the leashes shown at C, Fig. 115 (see page 337 of our last volume), and the hooks P' correspond to the purpose of the healds, as shown at D in the same figure. In the case of the Jacquard machine, now described, means for working the compound harness of the draw loom is thus provided for, as we shall hereafter find. But these additional hooks are by no means applied to all Jacquards, and they are shown here in order that a complete machine should be represented. Thus a glance at the cards Fig. 129 will show at the part N¹ a consecutive order of arrangement, while the portion N² is irregular. This arises from the fact that the part N¹ forms the "ground" of the cloth, and the part N² the outline or figure.

Previous to describing the action of the machine upon the warp, we have given in Fig. 143 a representation of a hand-loom, such as is used in Spital-fields, and other figured silk-weaving districts. It will be observed the machine occupies the position of the pulley box of the old draw loom. In fact, it has simply replaced the draw loom apparatus. It was first placed in this position by Vaucanson in 1746, and he at the same time invented the griffe, and the self-acting motion for pressing the card against the needles.

The needle wire is generally made of No. 15 or 16 B.W.G., and the hooks of No. 14 and 15. Formerly the Jacquard maker straightened the wire from the ring or coil, but the wire-drawer now supplies, in a much more perfect manner, the straight lengths out as required.

The needles are placed at about $\frac{1}{4}$ in. apart. The holes in the spring box, &c., are very truly drilled by means of almost self-acting drilling machines, and the various hooks, eyes, and bends, are made by very simple and ingenious tools which insure them to be exactly of a size, and taken altogether, with the thousands of wires, it forms a wonderfully compact and perfect machine.

There are several matters concerning the working of the Jacquard that we have purposely left unnoticed until the machine itself was described. Let it be supposed that the griffe be raised without any hooks upon it. Now when it is lowered, and the hooks are not pushed back, the inclined face of the griffe bars will strike against the face of the hook and force it backwards until the bars have passed below the points of the hooks. Then upon raising the griffe it carries the hooks up with it. Upon lowering the griffe again, let it now be desired that all the hooks should be pushed off by means of a blank card placed upon the cylinder. It will be found that the card strikes the needles before the hooks have landed upon the bottom board, consequently the weight upon the hooks adds to their friction, and they require a greater force to push them off the bars. The most perfect action would be if the griffe could be allowed to drop to its full extent before the cylinder was pressed against the needles, for it would save much wear of the needles and the cards also. But to accomplish this two motions are required, viz., a rotary motion, by a cam, or crank to raise the griffe, and another cam upon the same shaft to press the cylinder; by this means the objectionable action would be overcome. This plan has for some time past been adopted in power loom Jacquards, as we shall hereafter show.

In Fig. 130 (see page 467 of our last volume) at *h*, one of the brasses, into which the cylinder works, is shown. It is held in the slot made in the batten by means of the pin *i*. In Fig. 128 slots are shown in front of batten at *b b*. The cylinder is placed or taken from the batten by the gudgeons being passed through these slots. The dotted lines show the position of the brasses, and the adjusting screws to regulate their height. The screw centre pins at the top of the machine, upon which the batten is supported, afford the means of adjustment in a lateral direction. The hammer is held up by means of a small catch which is placed in a notch in the hammer bar when the cylinder is removed, otherwise the hammer would be forced out of the frame by the spring.

Jacquard machines have various names applied to them, such as "machine," "engine," "jigger" (ex-

pressive of its noise when working), &c. They are modified in a great variety of ways; but after we have shown the system of working the machine, these modifications will be easily understood.

PARLIAMENTARY PRIVATE BUSINESS. IN THREE PHASES.

THE COMMITTEE ON THE BILL.

(Continued from page 469, vol. xviii.)

THE fact that one side of a story is very convincing until you hear the other, is frequently exemplified in the proceedings upon a railway Bill, as the following example will testify.

The counsel for one of the petitioners has been upon his legs for about an hour, inveighing against the Bill by every argument which his ingenuity and experience can suggest. He has enlarged upon the hardships of a private gentleman having his property severed, his ancestral domain and family associations destroyed, and various other evils he will sustain if the line is sanctioned, for which no amount of compensation can recompense him; he has insisted upon the utter inutility of the railway in a public point of view, the impossibility of constructing it for the amount estimated, and he has reached that part of his case where he will not shrink from the painful duty imposed upon him of stigmatising the promoters as speculating blacklegs, little better in fact than returned convicts, who have invented a new and safer mode of raising the wind, when he is tapped smartly on the shoulder from behind. He turns his back upon the committee for a few minutes, and holds a short conversation with the solicitor instructing him, the result of which is, that his address is resumed in the following terms: "He has now the pleasure of informing the committee, that his client has made satisfactory arrangements with the promoters of the line, part of the terms being that he will give evidence in favour of the Bill, so the committee will now have an opportunity of hearing the other side of the question from his own mouth."

The game of question and answer as played in parliamentary committee rooms is not always trammelled, as it generally is elsewhere, by some connexion between the two, especially when the witness is an experienced traffic manager. Counsel asks what he wants to know, the witness answers what he chooses to tell, often adding to it an amateur speech in favour of or against the Bill, according to the side he is speaking on; thus they perform their respective functions, and the committee are left to sift out the relative bearings for themselves.

Much amusement may be obtained by watching a passage of arms of this kind, both combatants knowing perfectly well what is wanted to be led up to, and each upon his mettle to defeat the other directly an admission is made, or any other weakness in his adversary's armour is detected.

Whenever the chairman, or any other member of the committee, interrupts counsel by a question or suggestion, he is invariably met with the answer, "Certainly, I was coming to that point immediately," and counsel at once proceeds to take advantage of the hint thus offered. We remember an instance of one of them being completely bowled out in trying this manoeuvre. It must be borne in mind that petitioners are bound to specify their grounds of objection to a Bill, and counsel's argument is always confined to the matter contained in his petition.

Mr. Merewether was opposed to Serjeant Wrangham in the matter, and had been making in his usual facetious style the best of a very bad case, when Sir John Hanmer, the chairman, came to his aid with a most damaging suggestion. Mr. Merewether caught the point immediately with the usual "Of course, sir, I was just coming to that," and dilated upon it for a considerable time, warming into the subject as he proceeded until his case presented a very favourable appearance. In the meantime Serjeant Wrangham had been reading the petition, and when the heat of his antagonist allowed him an opportunity, he, in his usual calm and grave way, handed Mr. Merewether a copy of the petition, and requested he would be good enough to point out which particular paragraph set forth the grievance he had been so pathetic about. Mr. Merewether could not find a shred to cling to, and was consequently obliged to drop the argument.

Sometimes an idea will occur to the chairman that he sees his way to a short cut of the whole affair by putting a clinching question which generally produces the following result:

Chairman:—"Now let us understand (to the opponent's counsel), you say they want to use your station against your will?"

Opponent:—"We say the powers applied for by this Bill are of an aggressive and unusual character."

Chairman:—"Yes I know all about that; but what you want to avoid is their taking your station?"

Opponent:—"We object to the Bill generally."

Chairman:—"But cannot you propose some clause embodying your views?"

Opponent (in a huff): "If the committee pass the Bill we shall withdraw, and reserve our opposition for another place;" and this is all the chairman gets by his well-intended motion.

When the case for the promoters has been concluded it is optional with the committee to reject the Bill without hearing the opponents; but it must be a bad case indeed to warrant such a proceeding, the ordinary course is for the several petitioners to be heard, each taking priority according to arrangement among themselves. This is the point at which strong language and violent abuse sets in, each learned friend emulating his predecessor in that direction until vituperation culminates.

When all is done, the room is cleared for the committee to deliberate, and a state of suspense occurs among the community interested, which probably is only equalled by that which pervades the sporting multitude at Epsom or Doncaster while the two great national races are in course of running.

At length the door is opened, the porter shouts "Counsel and parties," a crowded theatrical rush is made into the room; and when silence is obtained, the chairman announces "The committee are of opinion that the preamble of the Bill has (or has not) been proved."

Many practitioners will recollect an honourable member who acted as one of the chairmen of railway committees for many years. He had a hesitating manner of speech, which hardly amounted to a stammer; he was also a great stickler for etiquette, adopting literally the forms of the House on every occasion, going through as much ceremony in passing a clause, as if he were performing in the presence of the Speaker himself. He took wonderful interest in the proceedings before him, always hearing every witness that was brought on either side, generally repeating and weighing every answer as received, and blandly explaining all knotty points. No fear of a case failing for want of evidence where he was concerned; he was thoroughly master of every detail connected with it, and could pick you up and put you straight on any point from the beginning to the end.

On one occasion when a matter had been before him for about three weeks, and there seemed little chance of its being finished before that time had elapsed over again, the promoters and opponents settled their differences among themselves, and withdrew the Bill. When the circumstance was announced, he sighed heavily, and expressed regret that such a consummation should have been arrived at "just as the case was beginning to get interesting."

Considering the intense anxiety which all parties interested in a railway Bill experience at the particular moment when its fate is being decided, it is one of the greatest mercies of providence that this honourable member was never tried for manslaughter, through causing some individual to break a blood vessel while he was delivering the decision of the committee. His mode of doing it was this: "The committee desire me to state that they are of opinion that the preamble of a Bill intitled 'A Bill to incorporate a company for the purpose of constructing a railway from A to B with branches to join the C railway at D, and the E railway at F, with running powers over the G railway system,' and for other purposes, has" (here his unfortunate impediment checked his utterance long enough to run the whole affair over again) "not been proved."

Thus then we reach our second halting-place, and the curtain falls upon the committee on the Bill. Much has been gained when that stage has been successfully passed, but be not too elated, there are many perils yet ahead, for all the House work has to be done over again, with perhaps a little more added to it, when the Bill is in the House of Lords.

(To be continued.)

HAND-LOOM WEAVING: SPITALFIELDS SILK LOOM.

(For Description, see Page 21.)

