

No. 838,279.

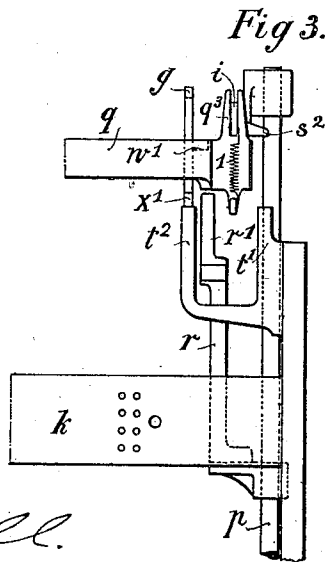
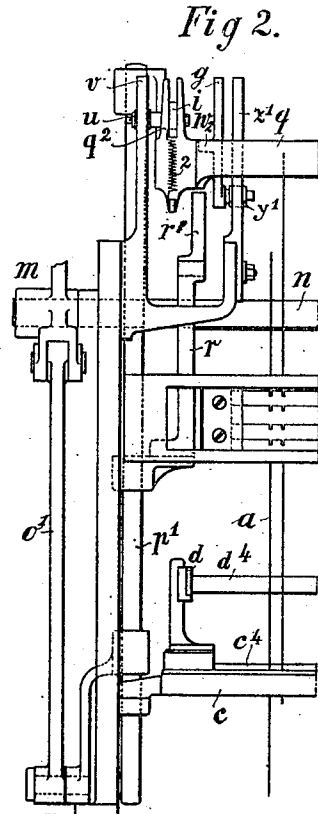
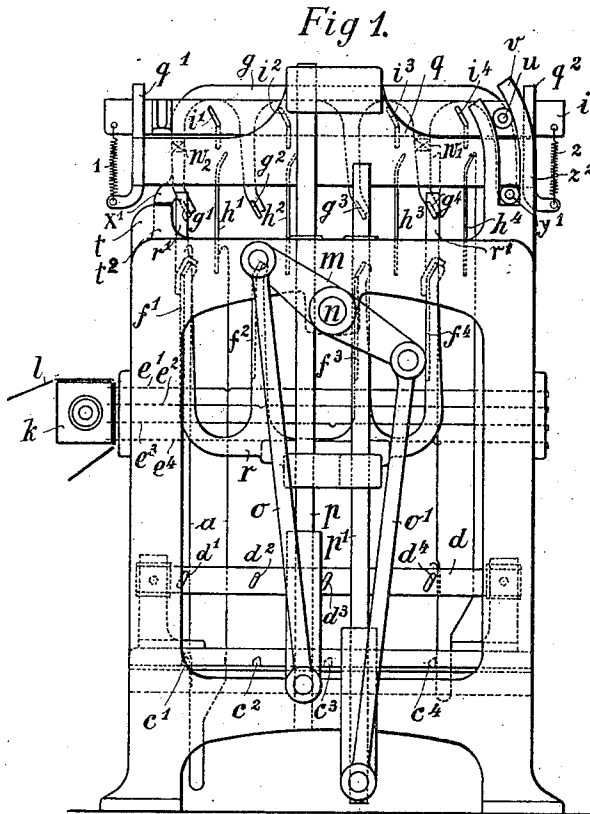
PATENTED DEC. 11, 1906.

C. SENN.

DOUBLE LIFT OPEN SHED JACQUARD MACHINE.

APPLICATION FILED JUNE 19, 1905.

3 SHEETS—SHEET 1.



WITNESSES

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3 SHEETS—SHEET 2.

Fig 4.

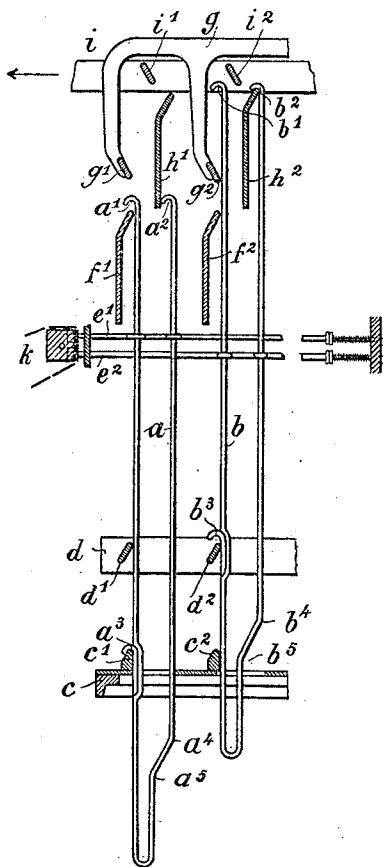
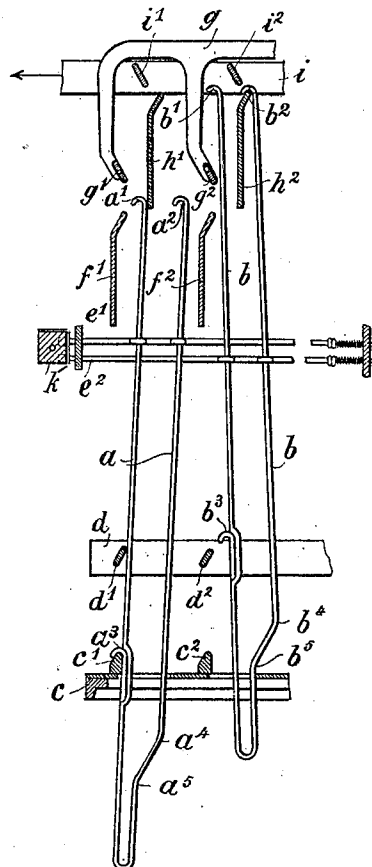


Fig 5.



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3 SHEETS—SHEET 3.

Fig 6.

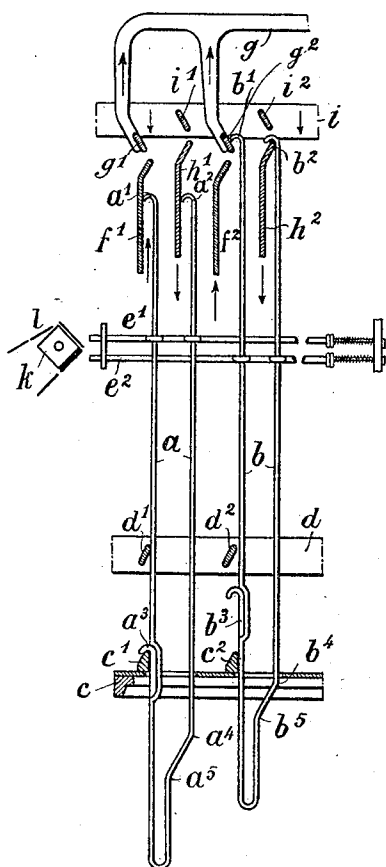
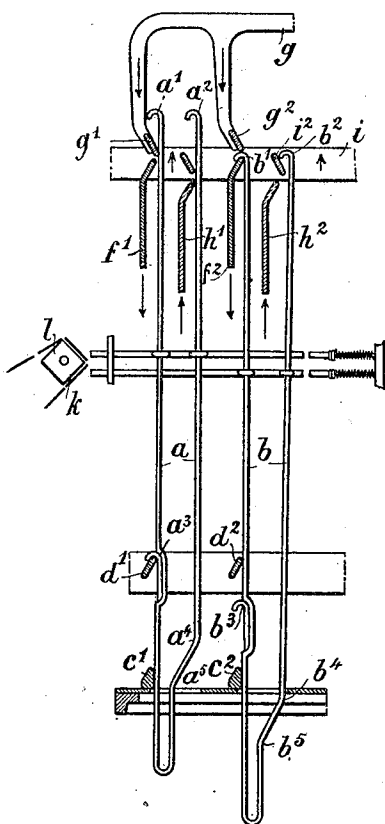


Fig 7.



WITNESSES.

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UNITED STATES PATENT OFFICE.

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DOUBLE-LIFT OPEN-SHED JACQUARD-MACHINE.

No. 838,279.

Specification of Letters Patent.

Patented Dec. 11, 1906.

Application filed June 19, 1905. Serial No. 265,909.

To all whom it may concern:

Be it known that I, CASPAR SENN, a citizen of the Republic of Switzerland, residing in Rüti, in the Canton of Zurich, Republic of Switzerland, (whose post-office address is Rüti, Canton of Zurich,) have invented certain new and useful Improvements in Double-Lift Open-Shed Jacquard-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

I have applied for patent in Germany on March 3, 1905; in France, on May 19, 1905; in Italy, on May 23, 1905; in Austria, on May 23, 1905; in Switzerland, on May 24, 1905; in Hungary, on May 26, 1905, and in Great Britain on June 1, 1905.

Double-lift open-shed jacquard-machines in which the hooks passing from the highest to the lowest position are prevented from engaging with the rising griff-blades in that the hooks at the moment in which they would engage with the rising blades are pressed aside by bars from these blades are known. In this arrangement, however, the bars must accompany the blades throughout their whole movement and at the right moment are pushed so far aside as is necessary to press aside the descending hooks proper, so that the latter are enabled to pass by the rising blades unhindered. In order to obtain the necessary space for the displacement of the bars, either the usual space between the series of hooks must be increased or the griff-blades, instead of being arranged as usual the one behind the other, must be arranged the one above the other. The first-mentioned arrangement necessitates a greater depth of the jacquard-machine, and therefore longer needles, while the latter arrangement requires a greater height of the jacquard-machine and correspondingly longer hooks. Both arrangements restrict the rapid working, and consequently the efficiency, of the machine.

In an open-shed jacquard-machine according to the present invention the deviating bars do not accompany the griff-blades down

to the lowest position, and therefore at the moment of the pushing aside of the hooks make no side movements. The side movements of the deviating-bars are completed after the deviation of the hooks and solely for the purpose of giving room to the hooks proper in the raised position for suspension on the rising griff-blades. This enables the griff-blades to be arranged one beside the other—as, for example, in the ordinary double-lift machine—without it being necessary to have longer needles or longer hooks of complicated construction, whereby, above all, a greater speed in the working and a corresponding increase in efficiency of the machine is attained.

One form of construction of the invention is shown in the accompanying drawings, in which—

Figure 1 shows a front view; Fig. 2, the half of a side view, and Fig. 3 the other half of the same. Figs. 4, 5, 6, and 7 diagrammatically illustrate the method of working.

The machine has double hooks *a* and *b*, the hooks proper of which are designated by *a'* *a*² and *b'* *b*². *e'* *e*² *e*³ *e*⁴ are the corresponding needles; *k*, the cylinder; *l*, the cards.

The griff-blades *f'* *f*² *f*³ *f*⁴ are arranged in the usual way in the griff *r*, and the griff-blades *h'* *h*² *h*³ *h*⁴ in the griff *q*. Both griffs are moved up and in common by a rocking lever *m*, fitted to a shaft *n* and connected to the frames by connecting-rods *o* *o'* and rods *p* *p'*, suitably guided in the frame of the machine, the arrangement being such that when the one frame is lowered the other is raised, and vice versa. The shaft *n* is operated in the usual way.

Above the blades *f'* *f*² *f*³ *f*⁴ are deviating-bars *g'* *g*² *g*³ *g*⁴, which are carried by a common yoke *g*. This yoke is raised on the upward movement of the griff *r* by the arms *r'*, arranged on the latter griff, engaging stops *w'* *w*² on the yoke. Two guiding-rollers *y'*, arranged on the yoke *g*, run in curved tracks *z*², arranged on the frame of the machine, so that the yoke with its bars is displaced toward the left. Above the griff-blades *h'* *h*² *h*³ *h*⁴ there are deviating-bars *i'* *i*² *i*³ *i*⁴, which are also maintained in a common support *i*. This is so guided in fork-guides *q'* *q*², arranged on the griff *q*, that it can be displaced in the same. Rollers *u*, fitted to the sup-

port *i*, engage in curved guides *v*, arranged on the frame of the machine, and effect on the rising or lowering of the support *i* a corresponding side displacement of the support *i*.

5 The springs 1 2 are for pressing the support *i* against the griff *q*. *d'* *d*² *d*³ *d*⁴ are the stationary open-shed blades; *c'* *c*² *c*³ *c*⁴, the bars of the bottom rest or bottom board.

Fig. 4 shows the position of the parts when 10 the griff-blades *f'* *f*² and the hook *a* are in the lowered position and the griff-blades *h'* *h*² and the hook *b* are in the raised position. The needles *e'* *e*² are in holes in the card, while the lowered hook *a* rests on the bar *c'* 15 of the bottom board by means of a hook proper or catch *a*³, and the hook proper or catch *b*³ of the raised hook *b* rests over the open-shed blade *d*². The deviating-bar yoke *g* is in the lowest position. The deviating-bars 20 *g'* *g*² are situated vertically over the blades *f'* *f*². The deviating-bar support *i* and the deviating-bars *i'* *i*² are in the highest position in the position shown. The bars *i'* *i*² are

25 situated sidewise over the corresponding blades *h'* *h*². It is now supposed in Fig. 5 that the cylinder *k* is rotated in the usual manner, pressed against the needles, and both the needles *e'* *e*² are pushed forward. The displacement of the needle *e'* effects a turning 30 or pivoting of the hook *a* on the edge of the bottom rest-rod *c'*, so that the upper hooks proper, *a'* *a*², are out of the reach of the upper edge of the blades *f'* and *h'*. The displacement of the needle *e*² effects a turning 35 of the hook *b* on the edge of the blade *h*², which is rendered possible by the arrangement of a slot in the hook bottom board *c* and by bends *b*⁴ and *b*⁵ in the hook. Fig. 6 shows the position of the parts after the cylinder 40 has been moved back-again, and the blades *f'* *f*² are moving upward and the blades *h'* *h*² are moving downward. The hook *a* remains in the lowest position, while the hook *b*, with the blades *h'* *h*², descends. If the blades *f'* *f*²

45 complete the upper half of their movement, the arms *r'*, &c., strike the stops *w'* *w*², &c., and the yoke *g*, with the bars *g'* *g*², as indicated by the arrow in Fig. 6, proceeds in advance, which causes the hook proper, *b'*, of the descending hook *b* to encounter the sloping surface of the bar *g*², by which it is pushed to the right, so that the hook *b'* cannot engage 50 with the edge of the rising blade *f*². When the blade approaches its highest position, then the yoke *g* performs a side movement relative to the support *i*, as indicated by arrows in Figs. 4 and 5, in order to free the space for the rising blade in the end position. On the frame *q* with blades *h'* *h*² descending 60 the yoke *i* with the corresponding bars *i'* *i*² follows after without working. If the frame *q* has completed about half its course, then the projections *s'* *s*² on the yoke or support *i* strike against the projections *t'* *t*² on the 65 frame of the machine, so that the support *i* is

stopped. During this time, however, the rollers working in guides *v v'* occasion a displacement of the support toward the right.

Fig. 7 shows the action of the machine if 70 the hook *b* and the blades *f'* *f*² should pass into the lowest position and the blades *h'* *h*² into the highest position. In this case the bar *i*² occasions a deviation of the descending hook proper, *b*², from the edge of the rising blade *h*². When the blades *h'* *h*² approach 75 their highest position, the rest *i* is pushed by the curved guides *v v'* sidewise again for the purpose above mentioned. When the frame *r* on descending has completed about half of its course, the stops *x'* *x*², arranged on the 80 yoke *g*, meet the arms *t*³ *t*⁴ of the frame of the machine and so hold the yoke *g* fast. In the meantime, however, the yoke is again pushed to the right by means of the rollers *y'* *y*², running in the tracks *z*. The displacement of 85 the yokes *g* and *i* may be effected in any other suitable manner.

As the deviating-bars do not accompany the griff-blades throughout their whole 90 course, the arrangement of the ordinary double-lift machine can be retained without increase in the height of the machine or the length of the hooks. As the distance to be traveled over by the blades is short, the speed of the blades and the efficiency of the ma- 95 chine can be increased. The speed of the blades can therefore be comparatively high, as the hooks are not, as it were, submitted to any "springing" and are only exposed to a very slight brake action and friction in the 100 eyes of the needles through which they pass even in the pushed-back position of the needle, so that by downward movement they are always able to follow the blades, even at high speed of the blades. This could not be 105 attained if the lower parts of the hooks did not work loosely in the bottom board.

What I claim is—

1. In a double-lift jacquard-machine, the combination of the griffs, sets of deviating-bars adapted to be raised by the griffs during a portion of their travel, means for imparting lateral motion to the deviating-bars, and means for arresting them during the downward travel of the griffs, for the purpose hereinbefore set forth. 115

2. In a double-lift jacquard-machine, the combination of the griffs, sets of deviating-bars adapted to be raised by the griffs during a portion of their travel, means for imparting lateral motion to the deviating-bars, means for arresting them during the downward travel of the griffs, double hooks, lower catches thereon and a bottom board therefor, the latter being adapted to permit pivoting 125 of the hooks when in the raised or lowered position, substantially as and for the purpose set forth.

3. In a double-lift jacquard-machine, the combination of the griffs, sets of deviating- 130

bars suspended above their respective griffs by common yokes, projections on the yokes adapted to be engaged by the projections on the griffs during the upward travel of the latter, means for imparting lateral motion to the deviating-bars, and stops for arresting the deviating-bars during the later part of the downward travel of the griffs, substantially as and for the purpose set forth.

4. In a double-lift jacquard-machine, the combination of the griffs, sets of deviating-bars adapted to be raised and lowered by the respective griffs during part of their travel, rollers on the yokes supporting the bars, cam-grooves on the machine-frame for receiving said rollers and imparting lateral movement to the bars, and means for arresting the bars during part of the downward travel of the griffs, substantially as and for the purpose set forth.

5. In a double-lift jacquard-machine, the combination of the griffs, two sets of deviating-bars, slotted guides on one griff for the frame-support of one set of bars, springs securing the said frame to said griff, and fixed stops for arresting both sets of bars during the later part of the descent of the griffs and means for imparting lateral movement to the bars, substantially as and for the purpose set forth.

6. In a double-lift jacquard-machine, the combination of the griffs, deviating-bars adapted to be raised and lowered by the griffs, means for arresting said bars for the purpose of preventing them following the griffs into the lowest position, means for imparting lateral movement to the bars, after they have deviated the hooks, for the purpose of leaving room for the rising griff-blades, substantially as described.

7. In a double-lift jacquard-machine, the combination of the griffs, deviating-bars adapted to be raised and lowered by the griffs, means for arresting said bars for the purpose of preventing them following the griffs into the lowest position; means for imparting lateral movement to the bars, after they have deviated the hooks, to clear the rising griff-blades, double hooks having narrow lower ends and a bottom board having spaces to permit pivoting of the hooks when in either the lowest or highest position.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CASPAR SENN.

Witnesses:

HERMANN HUBER,

A. LIEBERKNECHT.