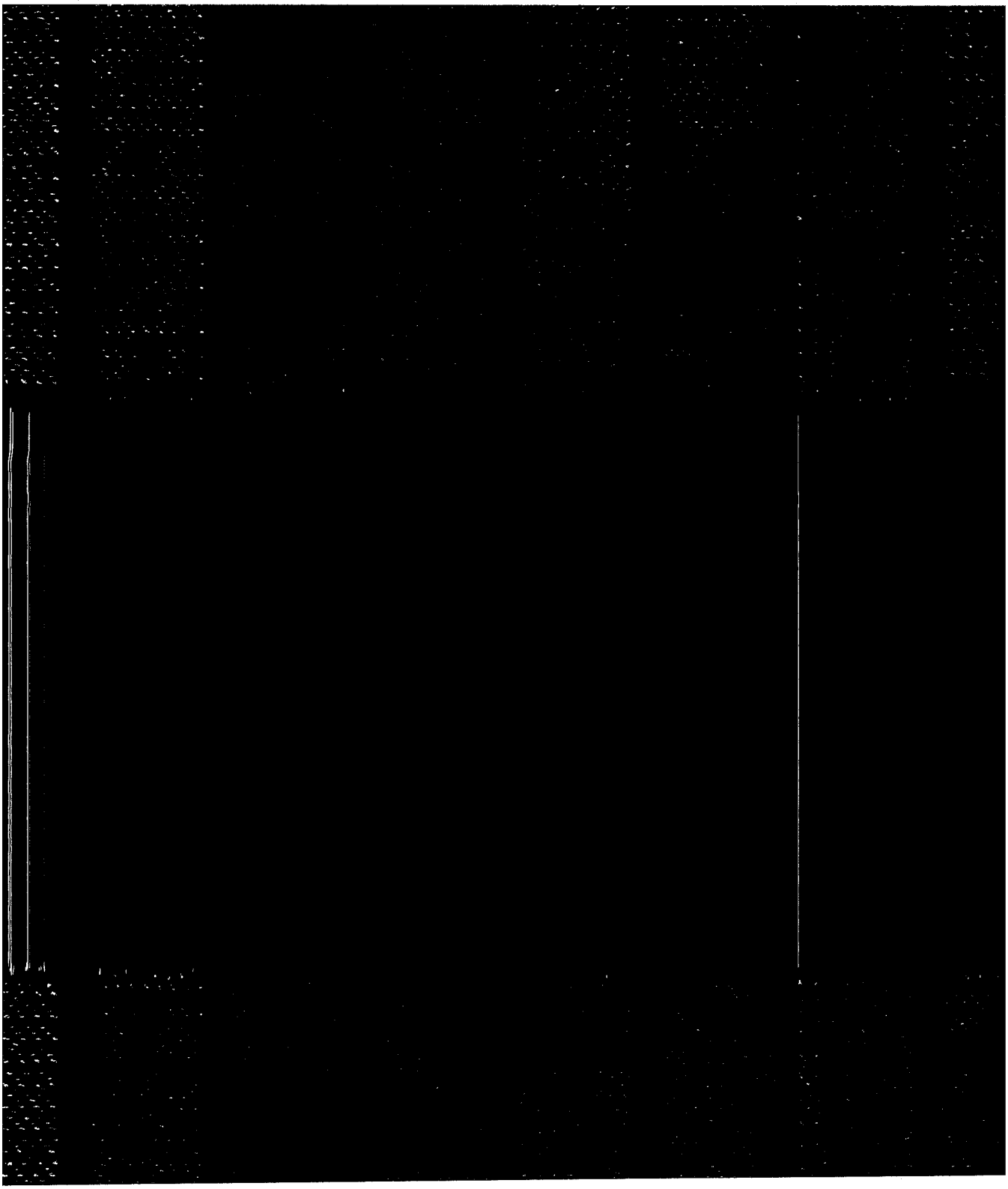


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DOBBY MECHANISM

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Fig. 2.

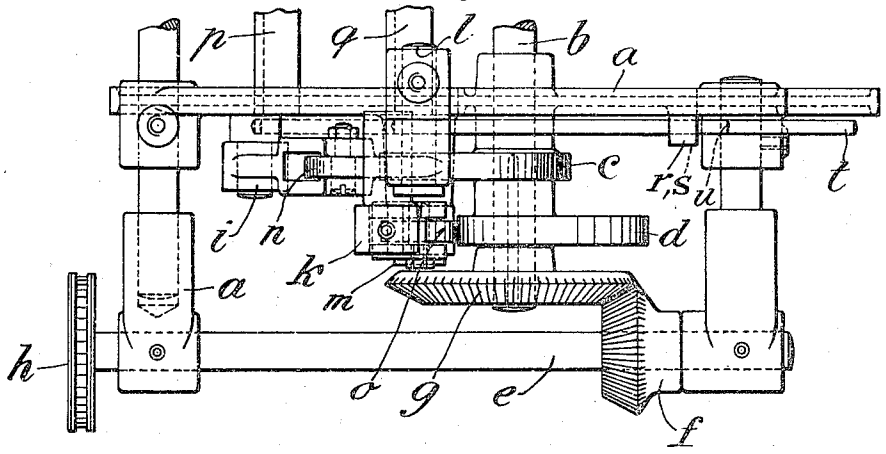
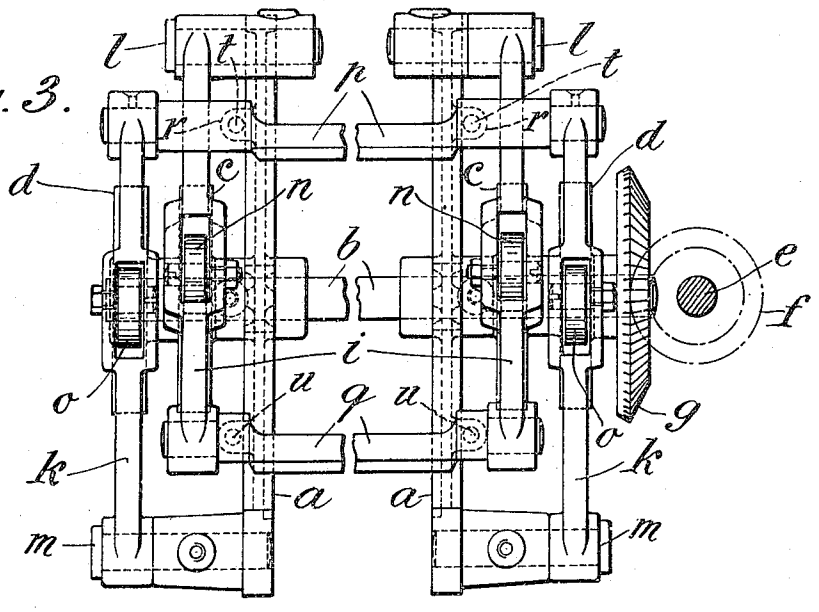


Fig. 3.



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UNITED STATES PATENT OFFICE.

HERMANN STÄUBLI, OF HORGEN, SWITZERLAND.

DOBBY MECHANISM.

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To all whom it may concern:

Be it known that I, HERMANN STÄUBLI, a citizen of the Republic of Switzerland, residing at Horgen, in the Canton of Zurich, Republic of Switzerland, have invented certain new and useful Improvements in Dobby Mechanism, of which the following is a specification.

This invention has for its object to provide an improved dobby mechanism. This improved mechanism has the advantages of a compact arrangement of its various mechanisms, steady running of the mechanism, and an excellent shedding. These results are attained by mounting the griff bars in levers to which rocking motion is imparted by means of cams mounted on a shaft arranged between the said levers and the ordinary rocking beams.

The accompanying drawings illustrate by way of example a practical form of this invention applied to a double lift shedding machine, only such parts being shown as are necessary for the understanding of the invention.

In these drawings:—Figure 1 is a front elevation of the improved dobby mechanism. Figure 1ª is a view drawn to a smaller scale of the adjacent parts of the right hand side of the loom in Figure 1.

Figure 2 is a plan of Figure 1, and

Figure 3 is a partial side elevation.

As shown, *a* is the frame of the dobby mechanism; *b* is a shaft mounted therein on which are fixed two cams *c* and *d*. Each of these cams has two eccentric portions I—II and III—IV (Fig. 1) and two concentric portions II—III and I—IV between the outer ends of the eccentric portions I—II and III—IV. When the cams turn only the eccentric portions I—II and III—IV are operative while the concentric portions II—III and I—IV are inoperative. Shaft *b* is driven by means of bevel wheels *f*, *g* from a shaft *e* driven continuously and positively by means of a chain wheel *h* from a constantly rotating shaft (not shown) of the loom h^1. The griff bar levers *i*, *k* are supported in a rotary manner on the frame *a* by means of pins *l* and *m*. Each of said levers carries an anti-friction roller *n*, *o* of which each bears upon one of the cams *c*, *d*. On each side of the mechanism there is provided a lever *i* and *k*. In each of the griff barrels *p*, *q* carried by the levers *k*, *i*, there is fixed one end of a rod *t* or *u*. These rods are guided at their other ends each in an eye *r* and *s* of the frame *a*. These bars cause these griff bars to maintain substantially their inclined position during the rocking movement of the levers *i* and *k*.

The upper needle hooks *v* are arranged in the usual manner within the path of the griff bar *p*, whereas the lower needle hooks *w* are situated in the path of the griff bar *q*. Both groups of needles are actuated in a known manner by chains of cards (not shown). Each needle hooks *v* or *w* engages at its rear end a rocking beam *x* which, in the position shown in Figure 1, bears with its rear side against the two cross beams *y* and *z*. Each rocking beam engages at its centre with a rocker 1 which is in its turn pivotally mounted on a rod 2 of the machine frame *a*, and engages by means of a bar 3 a three-armed rocking lever 4 fixed on a shaft 5 mounted in the loom framing (Fig. 1ª). The rocking lever 4 is connected by means of an arm 6 and rod 7 to an arm 8 of a rocking lever 9. The two rocking levers 4 and 9 also carry by means of toothed arms 10 and 11 the cords 13 that carry the shafts or harness 12. The harness 12 is constantly being pulled downwards by springs 14.

The parts *v*, *w*, *x*, *y*, *z*, are well known to the men skilled in the art and form no parts of the invention, for that reason they are not represented especially in the Figs. 2 and 3.

The starting of the loom acts through the chain gear *h*, the shaft *e* and the bevel gear *f*, *g*, to rotate also the operating shaft *b* with the cams *c* and *d* mounted thereon, with the result that the two griff bar levers *i*, *k* are caused to rock in opposite directions.

In Figure 1 it is assumed that the cams *c* and *d* rotate in the direction of the arrow shown in this figure and that the upper needle hook *v* is in engagement with the griff bar *p* of the lever *k*, whilst the lower needle hook *w* is out of engagement with the griff bar *q* of the lever *i*. During the time in which the eccentric portion I—II of the cam *d* acts upon the lever *k*, the needle hook *v* is drawn to the left by the griff bar *p* carried by the lever *k*, so that the upper part of the rocking beam *x* is swung to the left, with the result that by means of the rocker 1 and the bar 3, the rocking levers 4 and 9, the rod 7 and the cords 13, also the harness 12 is moved up into its highest position. During the time in which the concen-

tric portion II—III of the cam *d* runs over the roller *o* of the lever *k* the latter is stationary and the harness remains in the highest position, so that the shuttle may pass through the open shed without touching the warp treads. During the time in which the eccentric portion III—IV of the cam *d* acts upon the lever *k* (assuming that the hook *w* remains outside the path of the griff bar *q*), the heddles are depressed and the shed is closed chiefly by the action of the springs 14. From the foregoing it will be easy to understand the operation in the case where the needle hook *w* is brought into engagement with the griff bar *q*.

As will be perceived from Figure 1, the griff bars *p* and *q* are carried by the levers *i* and *k*, and the latter are in their turn rocked directly by the cams *c* and *d*. Compared with known arrangements, the improved apparatus of the present invention has the advantage that no intermediate parts are required between the rocking levers and the griff bars, or between the former and the needle hooks *v*, *w*, and that the shed is forcibly opened quickly and kept in open position by the cam *c* or *d* until the shuttle has passed the shed and then the shed is closed.

The arrangement of the shaft *b* carrying the cams *c* and *d* between the levers *i* and *k* on the one hand, and the rocking beams *x* on the other hand, in conjunction with the aforesaid absence of hitherto required intermediate parts, allows of giving a short overall length to the machine with the advantages of a considerable saving in weight and a substantial saving in superficial area, whereby the loom attendant is enabled to have a much better oversight of the entire loom.

The actuation of the griff bar levers *i* and *k* and consequently also of the heddles by cams, instead of by eccentrics as hitherto, effects a rapid and complete opening and closing of the shed before and after the passage of the shuttle, and enables the shed to remain stationary in its open position during the passage of the shuttle, in addition to obviating the swinging or oscillatory movements in prior machines which cause a breaking of threads by the heddles which were to remain raised during a plurality of shuttle picks. By this means a good shedding and consequently steady running of the entire machine are assured.

As already stated, the invention is illustrated in this application to a double lift shaft machine, but it is applicable also to single lift shaft machines and to jacquard machines.

What I claim is:—

1. In a dobby mechanism the combination of two pairs of levers each of which is supported pivotally at one end on the machine framing, with two griff bars each of which is carried by the free ends of one of said pairs of levers, means for imparting opposite rocking movements to said pairs of levers, and means for maintaining said griff bars constantly in a determined position during and after said rocking movements.

2. In a dobby mechanism the combination of two pairs of levers each lever of which is supported at one end pivotally on the machine framing, with two griff bars each of which is carried by the free ends of one of said pairs of levers, a shaft, a cam for operating said two levers, fixed on said shaft, for the purpose of imparting opposite rocking movements to said two levers, and means for maintaining said griff bars in a determined position during said rocking movements.

3. In a dobby mechanism, the combination of two pairs of levers each of which is supported at one end pivotally on the machine framing, with two griff bars each of which is carried by the free ends of one of said pairs of levers, a shaft, two cams fixed on said shaft, each of which acts upon one of the said levers for the purpose of imparting opposite rocking movements thereto, and means for maintaining said griff bars in a predetermined position during and after said rocking movements.

4. In a dobby mechanism, the combination of two pairs of levers each lever of which is supported at one end pivotally on the machine framing, with two griff bars each of which is carried by the free ends of one of said pairs of levers, a continuously driven shaft, and two cams fixed on said shaft, each of which has two eccentric portions adapted to act upon one of the said levers and two concentric portions adapted to keep the said lever stationary and the shed in open position between two rocking movements of the said lever, so that the shuttle is absolutely free to pass through the shed.

5. In a dobby mechanism, the combination of two griff bars, pairs of levers carrying said griff bars, one of said pairs of levers having its fulcrum at the top, and the other of said pairs having its fulcrum at the bottom, two sets of needle hooks arranged one above the other, each needle hook of which is adapted to be engaged with one of said griff bars, a fixed rod, rocking beams located thereon, each of which is connected at its other end to one of said needles, a continuously driven shaft located between said levers and said rocking beams, and two cams fixed on said shaft each of which acts upon one of said levers whereby the latter are caused to make opposite rocking movements and remains steady between the rocking movements.

6. In a dobby mechanism, the combination

of two pairs of levers of which one pair has an upper fulcrum and the other pair has a lower fulcrum, two griff bars each of which is carried by the free ends of one of said pairs of levers, a rod for each griff bar, one end of which is attached to its griff bar whilst its other end is guided slidably on the machine framing, so as to maintain said griff bars in a determined position during their rocking movements, two sets of needle hooks located one above the other, of which each can be engaged at one end with one of said griff bars, a fixed rod, rocking beams located thereon, each of which is connected to the other end of one of said needles, a continuously driven shaft located between said levers and said rocking beams, and two cams fixed on said shaft, each of which is adapted to act upon one of said levers whereby the latter are caused to make opposite rocking movements to cause a quick opening of the shed and a steady opened shed during the time that the shuttle passes therethrough.

In testimony whereof I have affixed my signature.

HERMANN STÄUBLI.