No. 778,378. PATENTED DEC. 27, 1904.

G. SCHWABE.

SHUTTLE OPERATING DEVICE.

APPLICATION FILED JUNE 12, 1902.

2 SHEETS—SHEET 1.

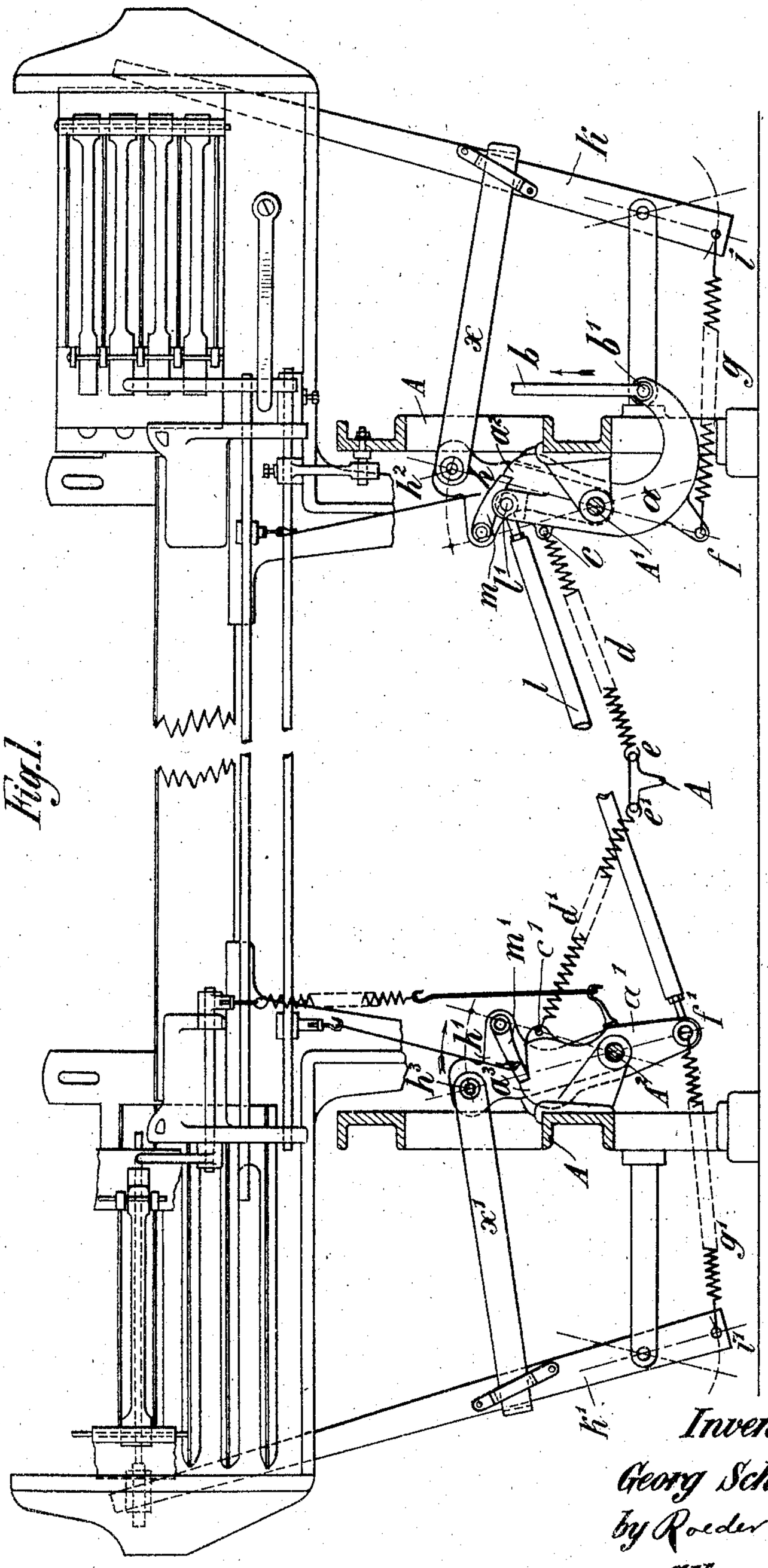

Fig. 1.

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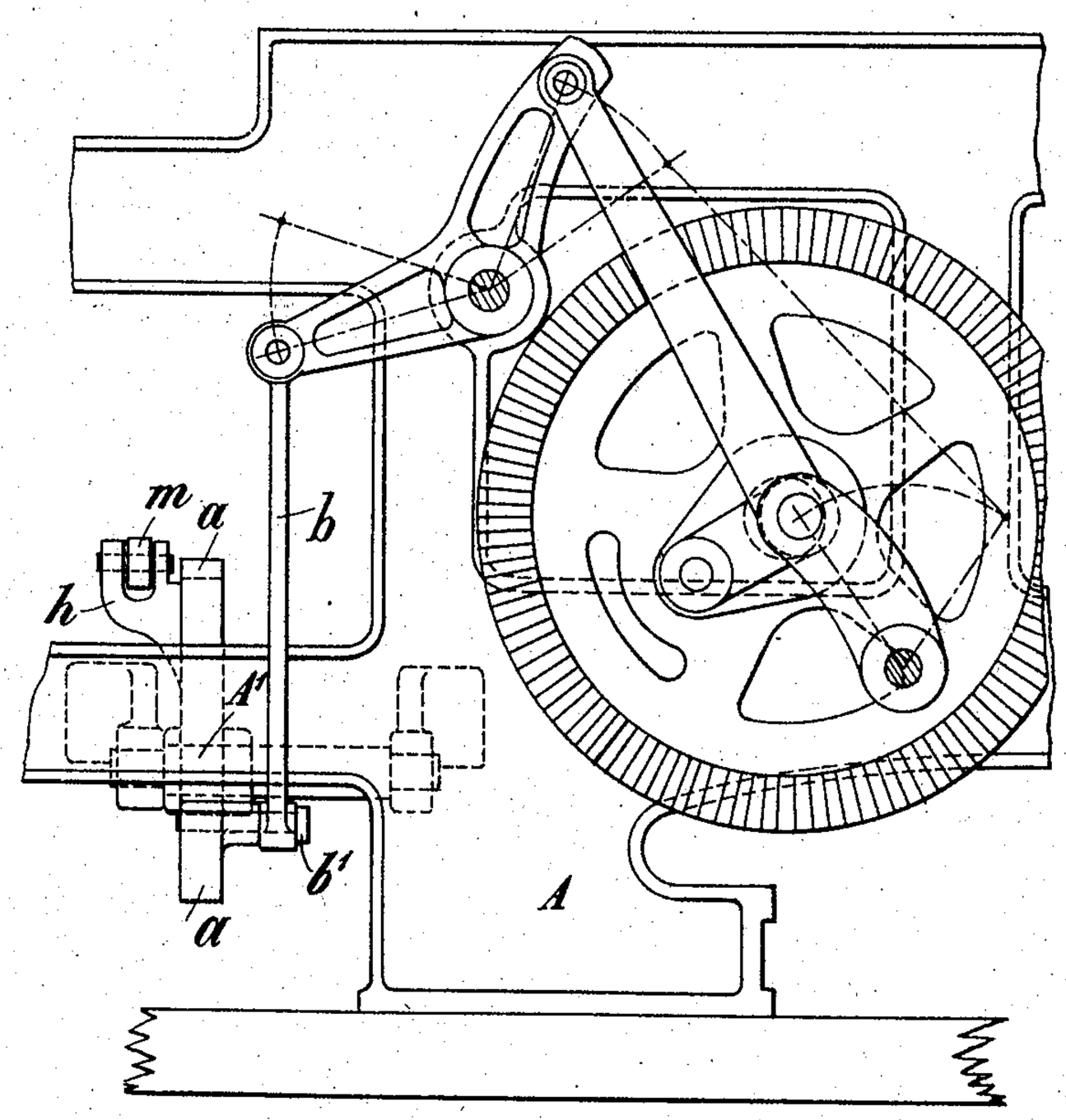
2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

GEORG SCHWABE, OF BIELITZ, AUSTRIA-HUNGARY.

SHUTTLE-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 778,378, dated December 27, 1904.

Application filed June 12, 1902. Serial No. 111,426.

To all whom it may concern:

Be it known that I, GEORG SCHWABE, a subject of the Emperor of Austria-Hungary, residing at Bielitz, Silesia, Austria-Hungary, have invented certain new and useful Improvements in Shuttle-Operating Devices, of which the following is a specification.

This invention relates to an improved shuttle-operating device for looms which economizes power and reduces wear.

In the accompanying drawings, Figure 1 is a front view of part of a loom embodying my invention, and Fig. 2 a detail side view thereof.

To the right-hand side of the loom-frame A is pivoted at A′ a segment *a*, that receives oscillating motion from a pitman *b*, pivoted to the segment at *b*′. To segment *a* is secured at *c* one end of a first spiral spring *d*, the other end of which is connected to frame A at *e*. Further, there is secured to segment *a* at *f* one end of a second spiral spring *g*, the other end of which is connected to the picker-stick *k* at *i*. Upon pivot A′ oscillates an arm *h*, carrying a pawl *m*, that engages a tooth a^2 of segment *a*. To arm *h* is pivoted at h^2 one end of a strap *x*, the other end of which is connected to the picker-stick in the usual manner.

The mechanism described is duplicated substantially for the left-hand side of the loom. To segment *a* is pivoted at *l*′ a rod *l*, that in turn is connected at *f*′ to a segment *a*′, pivoted at A^2 to frame A. A spiral spring *d*′ is connected to pin *c*′ of segment *a*′ and to pin *e*′ of frame A. A second spring *g*′ is connected to segment *a*′ at *f*′ and to picker-stick *k*′ at *i*′. Upon pivot A^2 is free to turn an arm *h*′, carrying a pawl *m*′, that is adapted to engage a tooth a^3 of segment *a*′. To arm *h*′ is connected at h^3 the strap *x*′ of picker-stick *k*′.

The operation is as follows: If pitman *b* moves in the direction of the arrow, Fig. 1, segment *a* will turn on pivot A′ and rod *l* will impart a corresponding movement to segment *a*′, so that both segments move simultaneously in opposite directions—*i. e.*, inward with their upper ends. As teeth a^2 and a^3 are in engagement with pawls *m* and *m*′ of arms *h* and *h*′, respectively, the motion of segments *a* and *a*′ will be transmitted to the arms *h* and *h*′. These arms in turn transmit motion by straps *x* and *x*′ to the picker-sticks *k* and *k*′, so as to throw the shuttle.

Fig. 1 illustrates the position of the parts when the picker-sticks are in their extreme outward position. In this position springs *d* and *d*′ are distended, and consequently they tend to swing the picker-sticks inward and assist the pitman in driving the shuttle. During the operation described springs *g* and *g*′ retain their original tension.

After the picker-sticks have arrived at their extreme inward position the pitman *b* descends, so that segments *a* and *a*′ return to their original position. At the same time the picker-sticks are swung outward by means of the springs *g* and *g*′. During their outward movement the picker-sticks run empty, and consequently require less operative power than when moving inward. The surplus of operative power acting upon the outwardly-moving picker-sticks is consequently stored up in the springs *d d*′, and thus utilized for assisting the pitman in moving the picker-sticks inward and driving the shuttle. In this way the power required for operating the loom is equalized and reduced to a considerable extent.

What I claim is—

1. In a loom, the combination with a driving-gear, two rocking shafts, two picker-sticks, and link connections between the sticks and the shafts, of a curved spring-influenced segment on one of said rocking shafts, a pitman and connections thereof with the driving-gear and with one end of said curved segment, a two-arm lever on the other rocking shaft, and a connecting-rod linked respectively to the other end of the curved segment and to one end of said two-arm lever, substantially as specified.

2. In a loom, the combination of a frame with an oscillating segment, a pivoted picker-stick, a first spring between segment and frame, a second spring between segment and picker-stick, and means for connecting the segment to the picker-stick, substantially as specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

GEORG SCHWABE.

Witnesses:
SAM. KRAMER,
CARL SCHMIDT.