(No Model.) 2 Sheets—Sheet 1.

J. L. BROOK.

SHUTTLE MOTION FOR LOOMS.

No. 400,742. Patented Apr. 2, 1889.

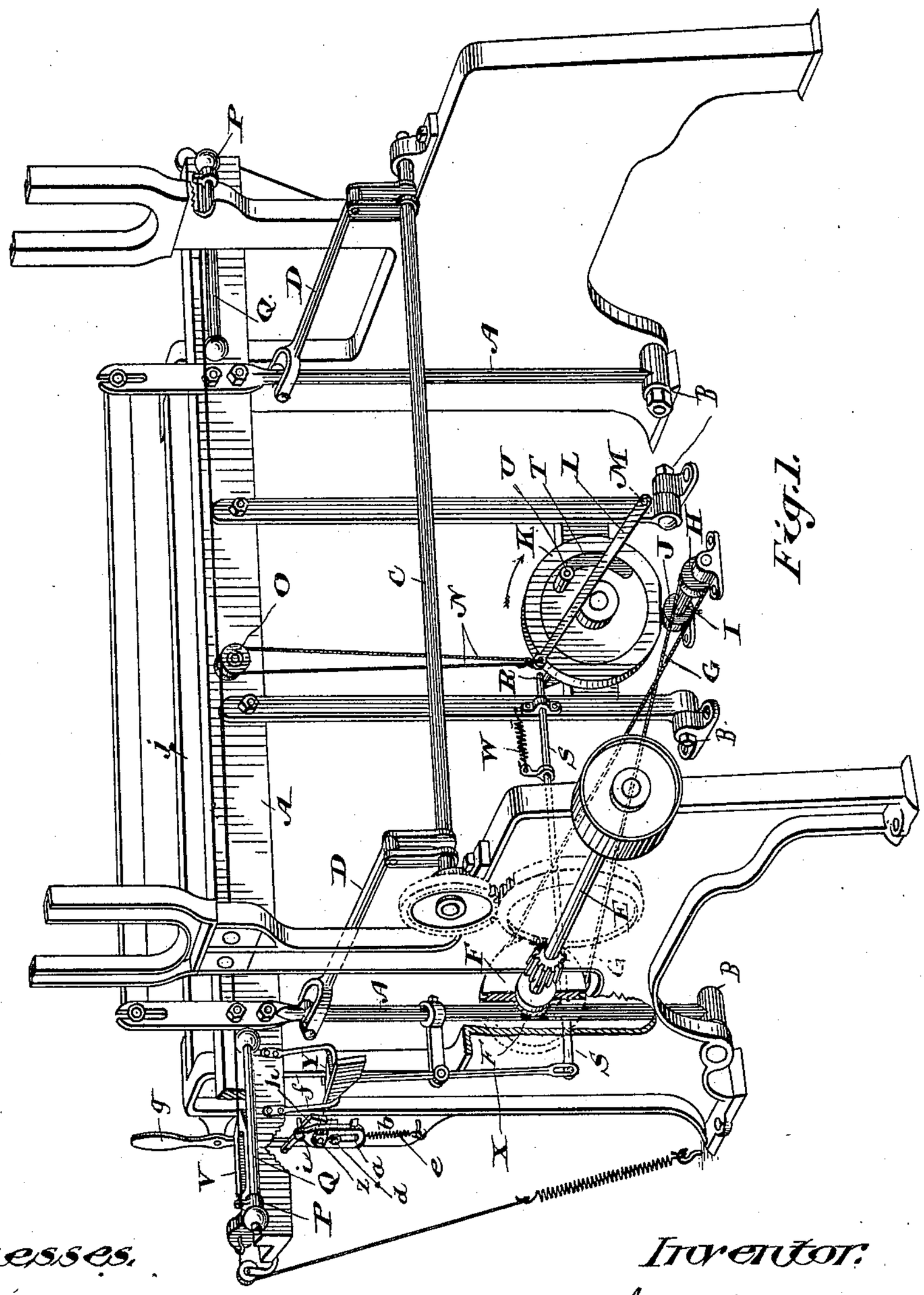

Fig. 1.

Witnesses.

F. B. Fetherstonhaugh

J. M. Jackson

Inventor:

J. L. Brook

by Donald C. Ridout & Co

Attys

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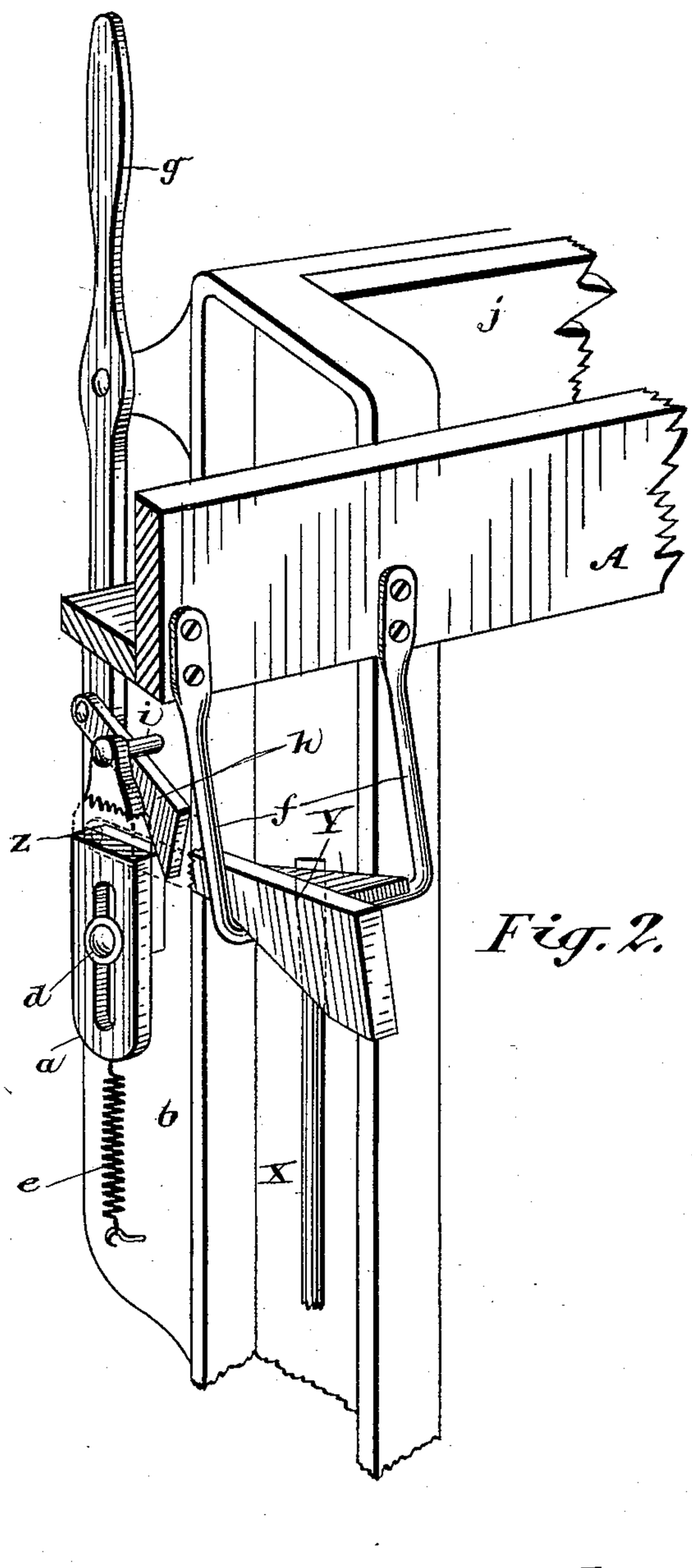

Fig. 2.

Witnesses.

F. B. Fetherstonhaugh

J. M. Jackson

Inventor:

J. L. Brook

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UNITED STATES PATENT OFFICE.

JOSEPH L. BROOK, OF SIMCOE, ONTARIO, CANADA.

SHUTTLE-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 400,742, dated April 2, 1889.

Application filed May 21, 1888. Serial No. 274,575. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH L. BROOK, manufacturer, of the town of Simcoe, in the county of Norfolk, in the Province of Ontario, Canada, have invented a certain new and useful Improvement in Shuttle-Motions for Looms, of which the following is a specification.

The object of the invention is to provide simple and effective mechanism for operating the pickers of a loom; and it consists, essentially, in connecting each picker by a cord to a lever arranged to be put into motion by friction-gear which moves only at stated intervals, substantially as hereinafter more particularly explained.

Figure 1 is a perspective view of a loom-frame and its parts connected with the mechanism involved in my invention. Fig. 2 is an enlarged detail of the shifting mechanism.

In the drawings, A is the lay of the loom, suitably pivoted at B in the usual manner, and operated by the crank-shaft C, to which it is connected by the rods D. This crank-shaft derives motion from the main driving-shaft E through suitable gearing. On this driving-shaft E, I fix a grooved pulley, F, and connect this pulley by a cord, G, to a grooved pulley, H, fixed to the counter-shaft I. This counter-shaft I is carried in suitable bearings and has fixed to it a friction-pinion, J. A grooved friction-pulley, K, is journaled on a stud extending from a cross-piece fixed to the lay A. The grooved friction-pulley K engages with the friction-pinion J, the former being grooved, so that the motion of the lay shall not disengage the contact between the two pulleys.

L is a lever pivoted to the lay A at M, and, extending across the face of the friction-pulley K, is supported by the cords N, which are attached to its end, and after passing around the pulleys O the said cords are connected at their other ends to the pickers P, carried on the guide-rods Q on opposite sides of the machine. When the pulley K is in the position indicated in the drawings, a flat side on its periphery is opposite to the pinion J. Consequently there is no contact between the two, and the pulley K remains stationary, although the pinion J is revolving continuously during the operation of the machine.

R is a pin extending from the face of the pulley K below the end of the rod S. A weight, T, fixed to the pulley K, causes the pulley K to revolve in the direction indicated by arrow the moment that the end of the rod S is removed away from the pin R, carrying the flat portion of the pulley K away and bringing the said pulley K into contact with the pinion J, and thus causing it to revolve until the pin R once more comes in contact with the rod S, when the pulley K will be held stationary until the rod S is withdrawn from the pin R in the manner hereinafter described. A stud, U, extends from the face of the pulley K, and is designed to strike and push down the lever L when the pulley K revolves, as described. When the lever L is thus pushed down, the pickers P are caused to move quickly toward the center of the machine, and the shuttle V is instantly thrown across the lay by the picker with which it may at the time be in contact.

With the view of causing the rod S to move from the pin R at the proper periods to operate the shuttle V, I provide the following simple mechanism: The rod S is held in suitable bearings, so that it may be moved longitudinally, a spring, W, being provided to hold the rod in its normal position in the path of the pin R. The other end of the rod S engages with a pivoted lever, X, the upper end of which passes a double-wedge-shaped plate, Y. The end of this wedge-shaped plate is connected to a stud, Z, which is fixed to the link, *a*, supported on the frame *b* by a stud, *d*, which passes through a vertical slot in the link *a*. The bottom of this link *a* has a spring, *e*, connected to it, the lower portion of which spring is fixed to the frame *b*.

f is a bail fixed to the lay A and passing below the double-wedge-shaped plate Y. One wedge of this plate Y is horizontal, while the other wedge is vertical, the former being in contact with the end of the lever X, while the latter is in contact with the bail *f*.

g is the lever by which the loom is put into and out of motion. To this lever *g*, I connect a wedge-shaped block, *h*, which projects below a pin, *i*, extending from the link *a*. When the lever *g* is moved so as to throw the machine out of motion, the wedge-shaped block *h* presses upwardly on the pin *i*, thereby raising the link *a* and with it the double-wedge-

shaped plate Y, lifting the horizontal wedge of the plate Y clear of the end of the lever X, and thus allowing the lay to be moved to and fro without interfering with the mechanism by which the shuttle is operated. When the lever *g* is moved so as to start the machine, the block *h* is moved away from the pin *i*, and the spring *e* pulls the link *a* down until the horizontal wedge of the plate Y is opposite to the lever X. When the lay is rocked away from the breast-beam *j*, the end of the lever X, which is pivoted on the lay A, is forced against the incline of the horizontal wedge formed on the plate Y. Consequently the said lever will be pushed over and its opposite end moved so as to pull the rod S clear of the pin R, thereby permitting the weight T to carry the pulley K in the direction of the arrow in Fig. 1, thus carrying the flattened portion of said pulley away from the pulley J and bringing the periphery of said pulley into gear with the pinion J, whereby the stud U is caused to strike the lever L and throw the shuttle, as before described. As the pulley K is to make one revolution at each stroke of the lay, I provide the vertical wedge on the plate Y, so that the bail *f*, which is fixed to the lay A, presses against the said vertical wedge and raises the plate Y, so that the horizontal wedge of the plate Y is carried clear of the end of the lever X, leaving the said lever free to be acted upon by the spring W, which pulls the rod S back into the plane of the pin R, which strikes against it and holds the pulley K until the next stroke of the lay, and so the motion goes on with regularity and precision.

What I claim as my invention is—

1. In a loom, the combination, with the main driving-shaft, a pulley having a flattened portion, as shown, and provided with a fixed projecting stud on its face, a pivoted lever extended across the face of said pulley, and the pickers connected by cords to said lever, of a friction-pinion revolving in contact with said pulley and connected with the main driving-shaft, substantially as and for the purpose specified.

2. The lay A, the weighted and flattened friction-pulley K, journaled on a stud fixed to the lay, the friction-pulley J, the main driving-shaft, connections between said pulley J and said shaft, the longitudinally-movable rod S, the stud U, extending from the face of the pulley K, and a pin, R, extending from the opposite side of the pulley K and passing the rod S, combined with the lever X, connected to the rod S, the bail *f*, fixed to the lay, the wedge-shaped plate Y, pivoted in the frame of the machine and extended through said bail, the pickers, the pivoted lever L, extending across the face of the pulley K, and the cords N, connecting said lever L to the pickers, substantially as and for the purpose specified.

Toronto, April 27, 1888.

JOSEPH L. BROOK.

In presence of—

CHARLES C. BALDWIN,

CHAS. H. RICHES.