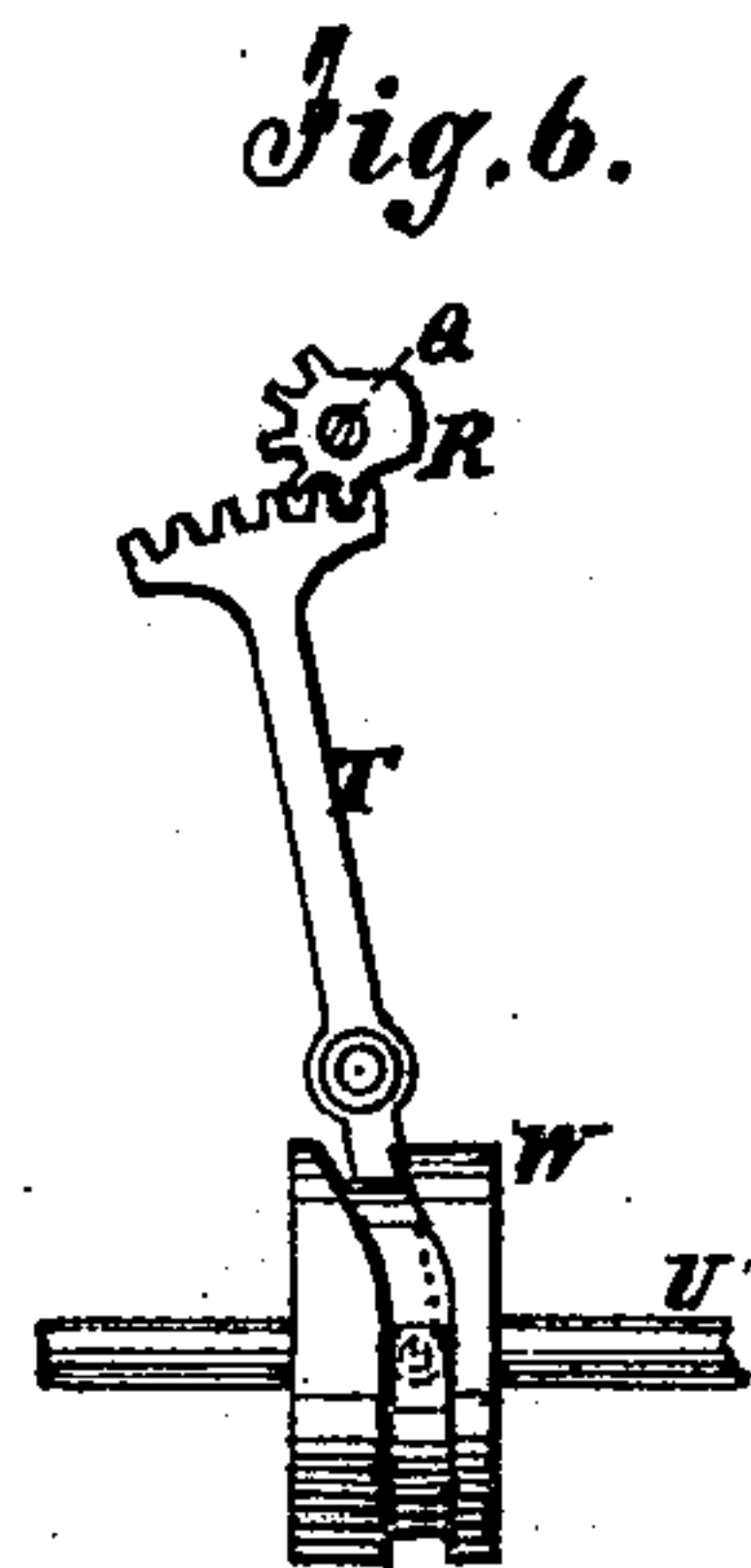
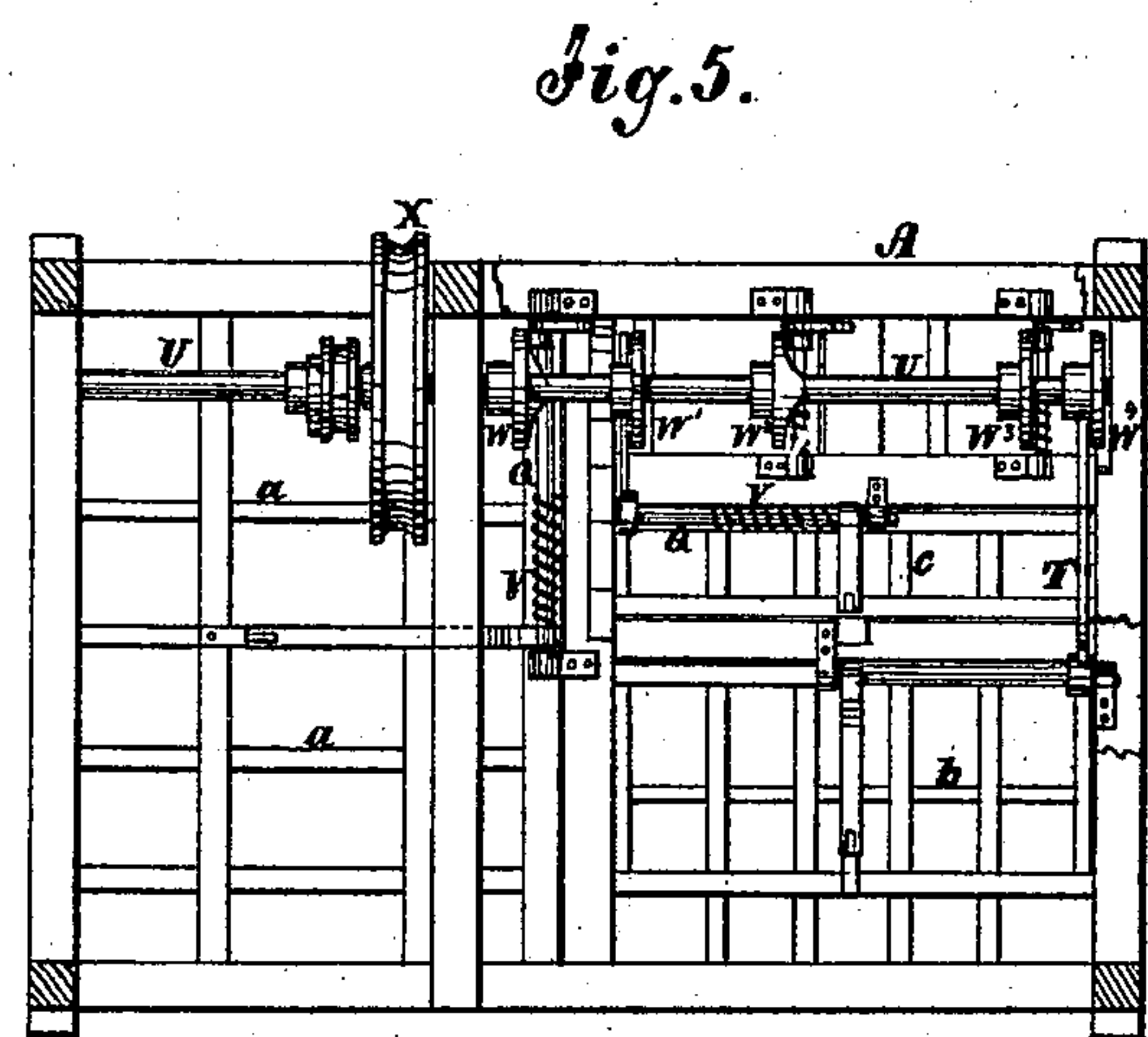
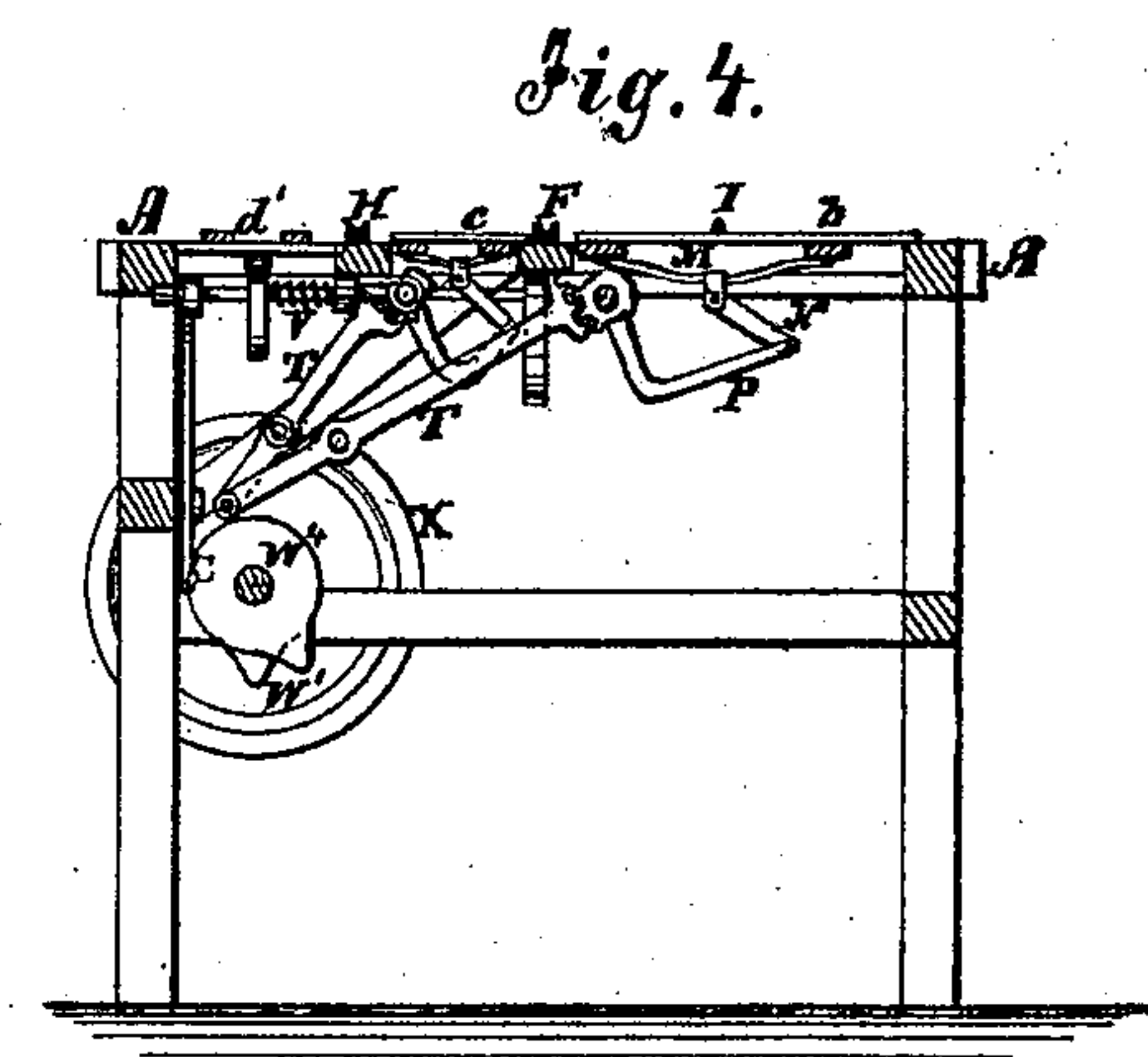
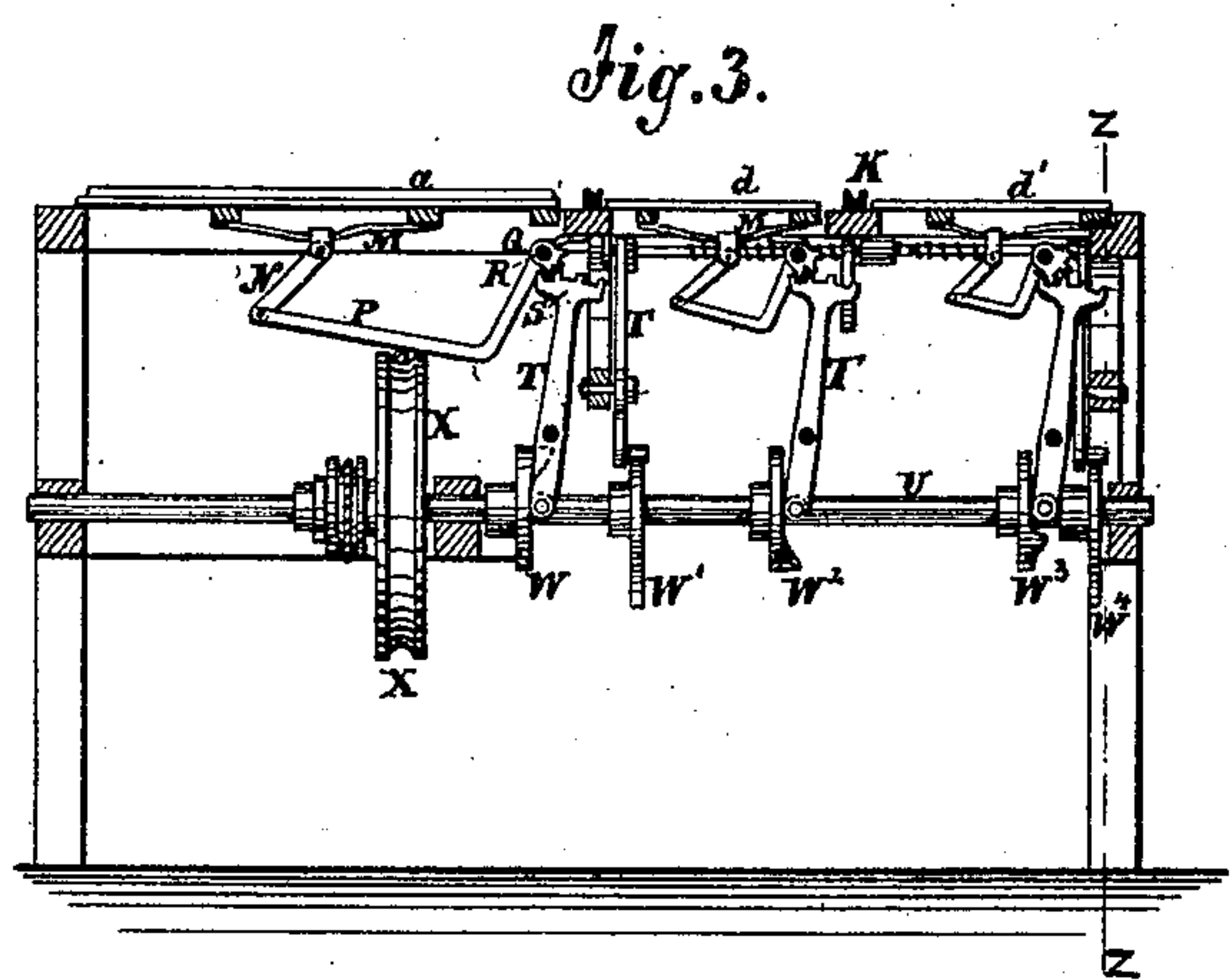
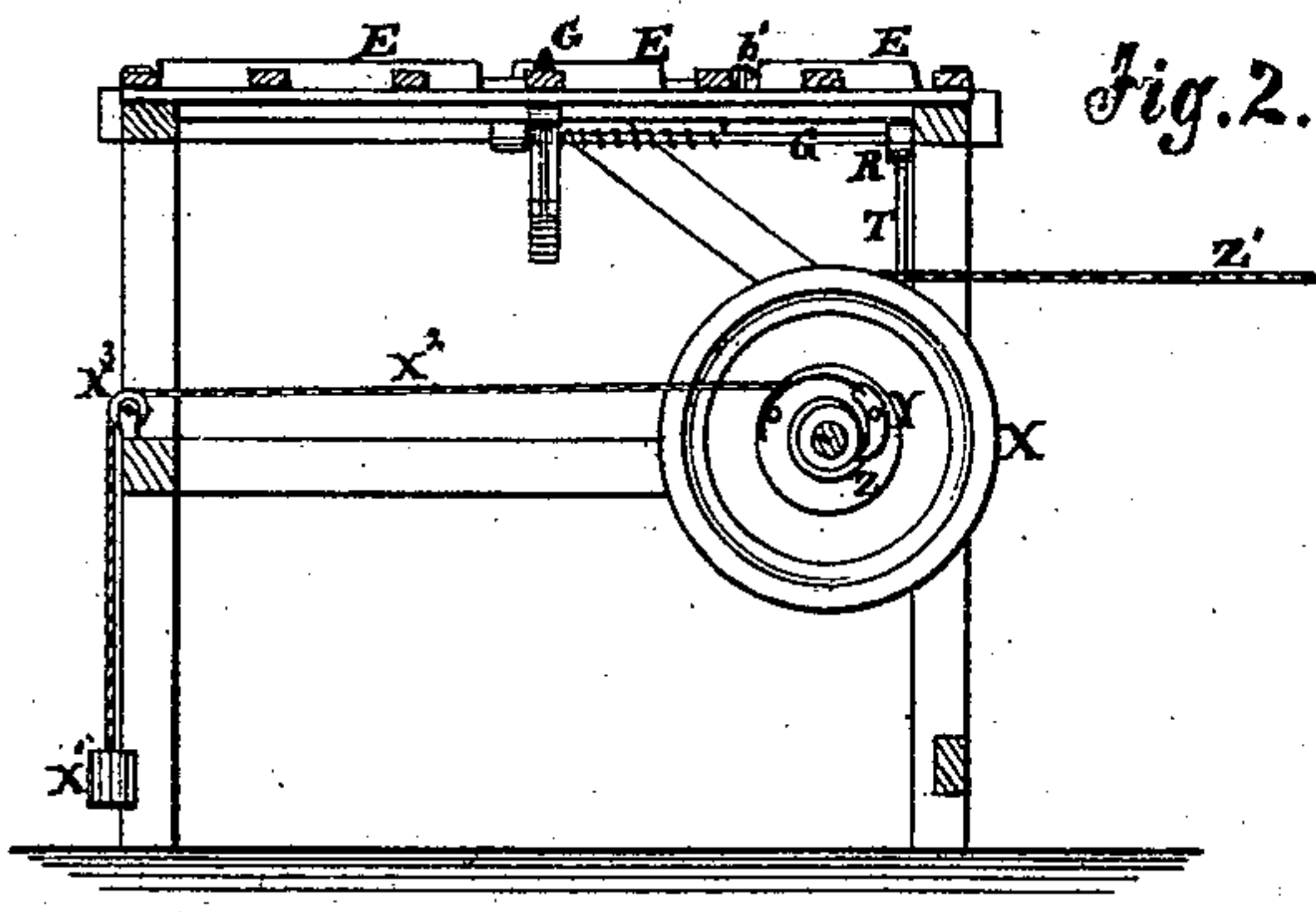
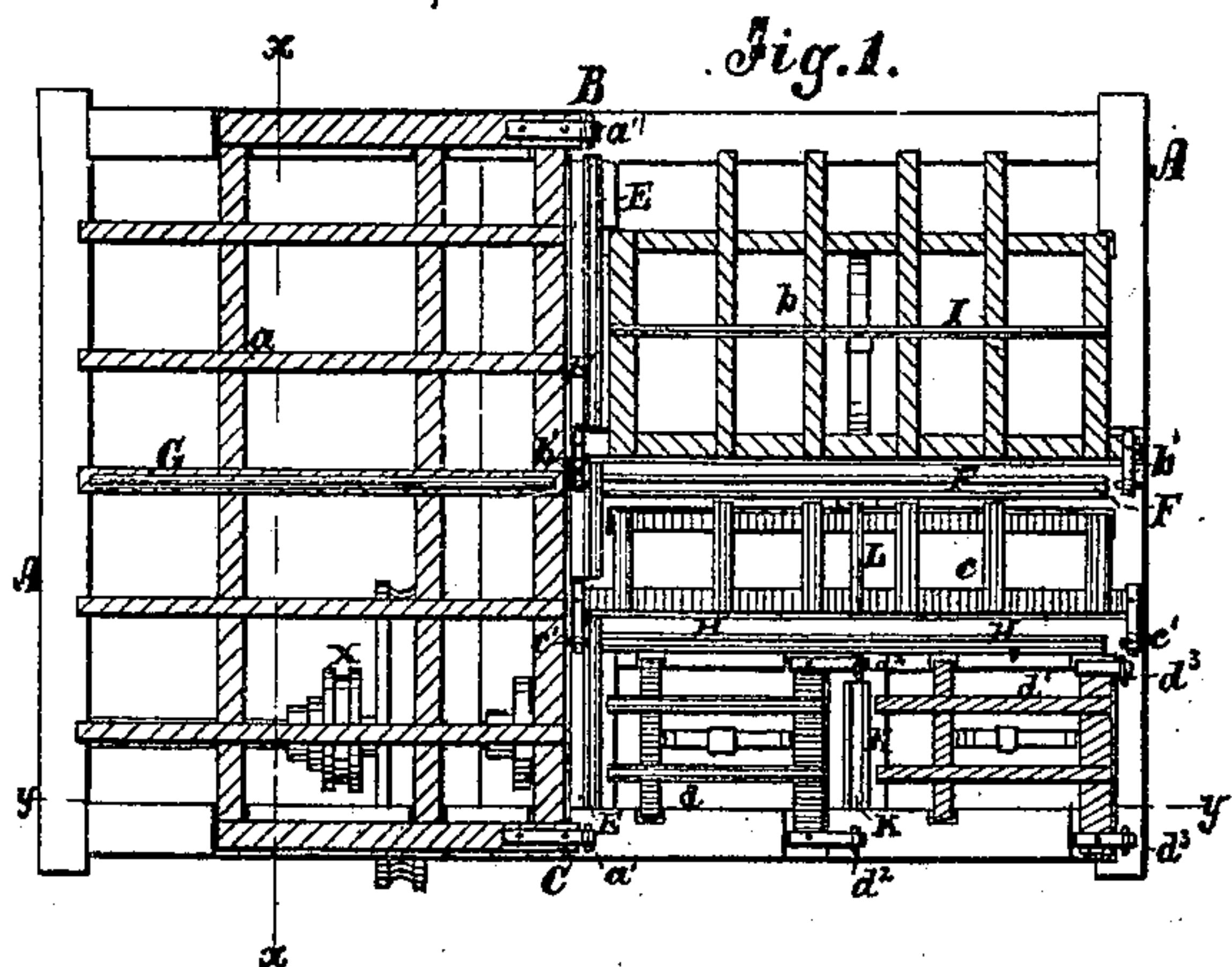


A. WASHBURN.
Paper-Folding Machines.

No. 133,393.

Patented Nov. 26, 1872.



Witnesses:

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UNITED STATES PATENT OFFICE.

ALVAH WASHBURN, OF MEDINA, OHIO.

IMPROVEMENT IN PAPER-FOLDING MACHINES.

Specification forming part of Letters Patent No. 133,393, dated November 26, 1872.

To all whom it may concern:

Be it known that I, ALVAH WASHBURN, of Medina, in the county of Medina and State of Ohio, have invented a new and Improved Paper-Folding Machine, of which the following is a specification:

My invention consists of a series of light folding-frames hinged on the top of a table, and provided with operating-gear actuated by a cam-shaft, which said frames are arranged in such order and sizes relatively to each other that a printed sheet delivered on the table over all the folding-frames by the depositors of a printing-press will be folded in the order of folding it by hand and thrown off the machine by another frame similar to the folding-frames, the said machine being operated in a peculiar way by the printing-press from which it receives the sheets as they are printed, all as hereinafter described.

Figure 1 is a plan view of my improved folding-machine. Fig. 2 is a transverse section taken on the line xx of Fig. 1. Fig. 3 is a longitudinal sectional elevation of the said machine taken on the line yy of Fig. 1. Fig. 4 is a section on the line zz . Fig. 5 is a plan of the bottom of the machine, and Fig. 6 is a modification of some of the driving-gear.

Similar letters of reference indicate corresponding parts.

A represents the table or frame, which will be as large over the top as the paper sheet to be folded, and suitably arranged relatively to the bed of a printing-press to have the sheets delivered upon it by the depositors of the printing-press as they are discharged from the bed. Said table will preferably stand in such relation to the printing-press that the sheets will be delivered either from the side B or C. This table supports a series of folding-frames, a b c d , and a discharging-frame, d^1 , which cover the whole area of the top, or nearly so. The frame a , which is equal to half the area of all the frames, is hinged to the table at a' , and swings over onto all the other frames. The frame b , which is equal to one-fourth of the area, is hinged to the table at b' at right angles to the axis of a , and swings over onto the frames c , d , and d^1 . The frame c , which is equal to one-eighth of the area of the table, is hinged to said table at c' , also at right angles to frame a , and swings over onto frames

d and d^1 . The frame d , which is equal to one-sixteenth of the area of the table, is hinged to said table at d^2 , and swings over onto frame d^1 , which is of the same size as frame d , and is pivoted to the table at d^3 , and swings over the edge of the table to the right, throwing the folded paper off upon the floor or into any suitable receptacle. E represents a long narrow strip or rib of metal traversing the table in the axis of the frame a , with a groove in its upper face, in which it is designed that a creasing-rib on the depositor of the printing-press shall come when it lays the sheet on the table and press it into the groove so as to crease it for the first fold. F is a similar-grooved rib in the axis of the folding-frame b , into which a creasing-rib, G, on folding-frame a , is intended to come for creasing the paper for the second fold. H is another grooved rib in the axis of frame c ; and I, a creaser on frame b for creasing the third fold. K is the grooved rib in the axis of frame d ; and L, a creaser on frame c for creasing the paper for the fourth fold. These frames are connected on the under side by a spring, M, and a link, N, with an arm, P, of a rock-shaft, Q, which is worked by a pinion, R, which is turned by a vibrating lever, T, with a toothed segmental end, S, gearing with said pinion, and operated, in the direction for folding the paper, by a cam on the driving-shaft U, and they are returned by a spring, V, on the rock-shaft. The cams for working the folding-frames are marked W, W^1 , W^2 , W^3 , and W^4 , respectively, and they are so adjusted on the cam-shaft as to work the frames in successive order, beginning with a , as quickly as may be, and so that the whole operation is completed and all the frames are returned ready for receiving another sheet before the completion of a double movement of the table, by which I propose to actuate the said shaft; and for so operating it I have a loose pulley, X, arranged on it with a spring-pawl, Y, to engage the shaft at a notch, Z, when the pulley turns forward, on which pulley I have a cord, Z', which is connected to the bed of the printing-press to turn said pulley forward when the bed moves from the folding-machine, at which time it is required that the folding shall be done. This wheel X will be of such size as is necessary to cause the cam-shaft to turn far enough during the forward movement of the bed of the printing-

press to actuate all the folders; but it is preferred that the cam-shaft make one complete revolution. A weight, X^1 , cord X^2 , and pulley X^3 are used, in the manner shown, for returning the wheel and winding up the cord Z' as the bed of the printing-press comes forward to deliver the paper on the folding-frames.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The arms P of shaft Q and springs M V,

combined with folding-frames, as and for the purpose described.

2. The cam-shaft of loose wheel O, pawl Y, catch Z, rope Z' , and weighted cord X^2 , combined with the bed of a printing-press, as and for the purpose described.

ALVAH WASHBURN.

Witnesses:

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W. A. GRAHAM.