(No Model.)

E. ATWOOD.

SPINDLE DRIVING MECHANISM.

No. 567,064. Patented Sept. 1, 1896.

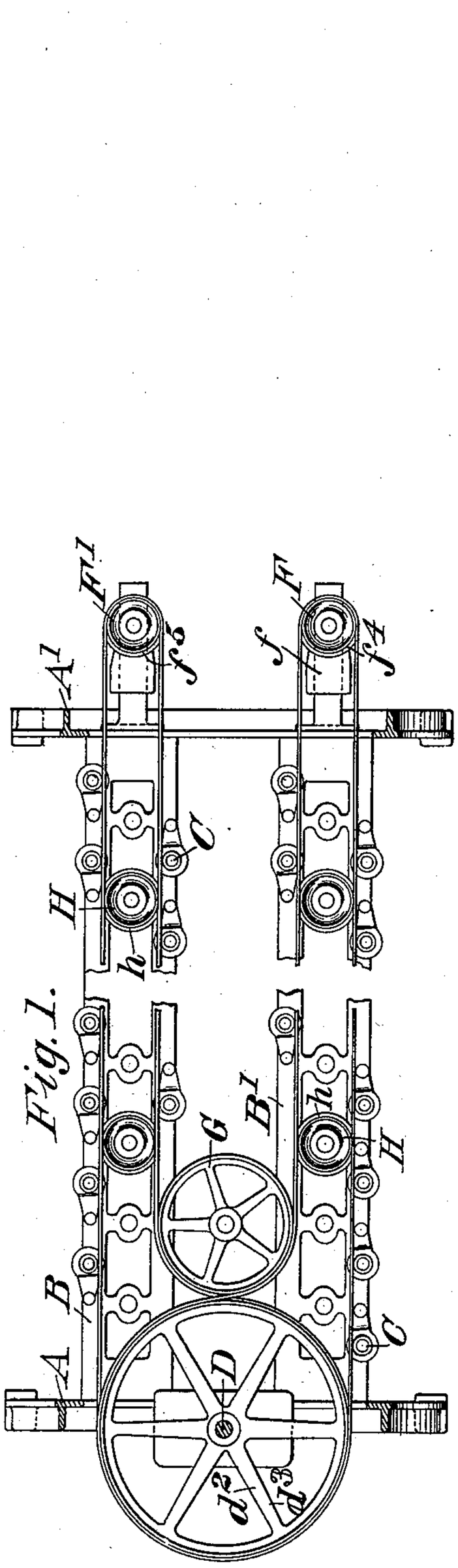

Fig. 1.

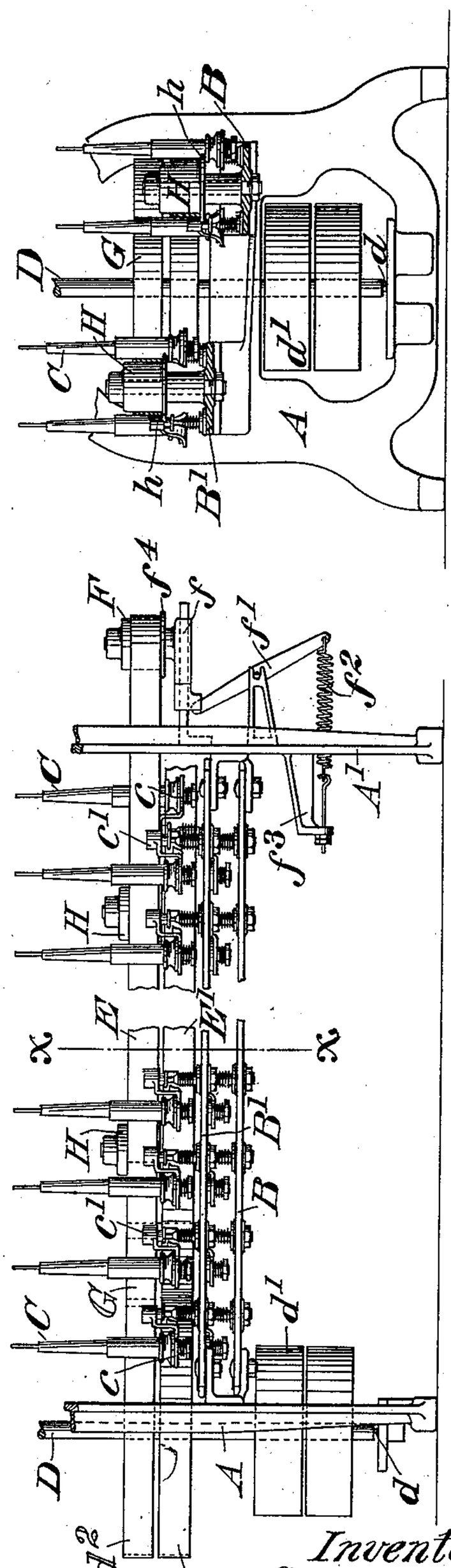

Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

EUGENE ATWOOD, OF STONINGTON, CONNECTICUT, ASSIGNOR TO THE ATWOOD MACHINE COMPANY, OF SAME PLACE.

SPINDLE-DRIVING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 567,064, dated September 1, 1896.

Application filed October 12, 1895. Serial No. 565,471. (No model.)

To all whom it may concern:

Be it known that I, EUGENE ATWOOD, of Stonington, in the county of New London and State of Connecticut, have invented a new and useful Improvement in Spindle-Driving Mechanism, of which the following is a specification.

The object of my invention is to drive a plurality of rows of spindles upon the opposite sides of the frame by means of a single driving mechanism.

In the accompanying drawings I have shown a double row of spindles upon each side of the machine-frame, the four rows being driven by two belts engaged by belt-driving pulleys on the head-shaft of the machine.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 is a top plan view of the double spindle-driving mechanism, so much of the frame being shown as is necessary for a clear understanding of the operation of the parts. Fig. 2 is a side view of the same; and Fig. 3 is a section on the line $x\,x$ of Fig. 2, looking toward the front of the machine.

The frame consists of suitable end uprights A A′, connected by suitable cross-plates B B′, which cross-plates form supports for the spindles and their supporting-boxes.

The spindles are denoted by C and are mounted in boxes c, in which are located the bearings for the spindles C. Two rows of spindles C are mounted upon each of the plates B B′ upon opposite sides of the machine, the two rows upon each of the plates being spaced a short distance apart. The spindles C are supported upon the plates B and B′ by suitable spring-actuated brackets c', which brackets yieldingly hold the double row of spindles upon each of the plates at the limits of their inwardly-swinging movements toward each other.

The vertical head-shaft D is mounted at the front of the machine in suitable fixed bearings, the lower one of which d is shown, and upon the said head-shaft is secured a suitable drive-pulley d', whereby the shaft D is driven from a source of power. (Not shown.) There are also secured to rotate with the head-shaft D a pair of belt-driving pulleys d^2 d^3.

A spindle-driving belt E extends around one of the belt-driving pulleys d^2 d^3—in the present instance the pulley d^2—and from thence extends along between the double row of spindles upon the plate B′ and around a loose pulley F, mounted in a suitable moving support f at the rear of the machine. This pulley F is forced away from the head-shaft D for tightening the belt E by suitable spring mechanism, which mechanism in the present instance consists of a two-armed lever f', the upper arm of which engages the sliding support f of the pulley F and the lower arm of which is engaged by a spring f^2, the opposite end of which spring is secured to a suitable bracket f^3 on the upright A′ of the frame. The belt E after passing around the belt drive-pulley d^2 passes partially around an idler-pulley G, located in close proximity to the pulleys d^2 d^3, so as to direct the belt E along between the two rows of spindles upon the plate B′. The spindles C are held against the face of the belt E by the spring-actuated brackets c', so that as the belt E is driven the spindles are rotated by frictional engagement with the belt.

The belt for driving the double row of spindles upon the opposite side of the machine is designated by E′, and it passes around the drive-pulley d^3 and from thence along between the two rows of spindles to a stretching idler-pulley F′, which holds the belt E′ taut in a manner similar to that in which the idler-pulley F holds the belt E taut. The inner portion of the belt E′, just after it leaves the belt-driving pulley d^3, passes partially around the idler-pulley G, before mentioned, for directing the belt E′ between the double row of spindles upon the plate B.

The double row of spindles upon one side of the machine is located in a plane above the double row of spindles upon the opposite side of the machine, so as to allow the belts E and E′ to run exactly horizontally and at the same time properly engage the two double rows of spindles to produce the best results, and also doing away with the necessity of forming the spindles upon one side of the machine of different length from those upon the opposite side of the machine. For still further holding the belts E E′ in contact with all of the spindles I locate at different distances between the double rows of spindles

spacing idler-pulleys H. The pulleys H, F, and F′ are provided with suitable flanges *h*, f^4, and f^5, respectively, for supporting the belts E E′ in their proper planes.

The mechanism as above described enables me to double the capacity of a spinner-machine and at the same time utilize only a single head-shaft.

It is evident that slight changes might be resorted to in the form and arrangement of the several parts without departing from the spirit and scope of my invention. Hence I do not wish to limit myself strictly to the structure herein set forth; but

What I claim is—

1. In combination, a suitable frame, two rows of spindles upon each side of the frame, the spindles upon opposite sides of the frame being in different planes, a vertical head-shaft, means for operating it, a pair of belt-driving pulleys on said shaft, and a pair of horizontally-moving belts driven by said pulleys for operating the spindles, each belt being located in a plane corresponding to the plane of the two rows of spindles which it operates, substantially as set forth.

2. In combination, a frame, two rows of spindles upon each side of the frame, a vertical head-shaft and means for operating it, belt-driving pulleys carried by said shaft, spindle-driving belts driven by said pulleys, each of said belts extending between the two rows of spindles and idler-pulleys for supporting the belts in their horizontal position and also holding them in engagement with the spindles, substantially as set forth.

3. In combination, a suitable frame, two rows of spindles upon each side of the frame, a vertical head-shaft and means for driving it, a pair of belt-driving pulleys on said shaft, spindle-driving belts driven by said pulleys, an idler-pulley located between the rows of spindles upon opposite sides of the frame for directing the inner portions of each of the belts between the two rows of spindles which it operates, an idler-pulley for each belt at the opposite end of the frame from the head-shaft, and idlers located between the rows of spindles for holding the belts in engagement with the inner sides of the spindles, substantially as set forth.

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