

(No Model.)

2 Sheets—Sheet 1.

E. E. BRADLEY.
SPINNING AND TWISTING MACHINE.

No. 504,861.

Patented Sept. 12, 1893.

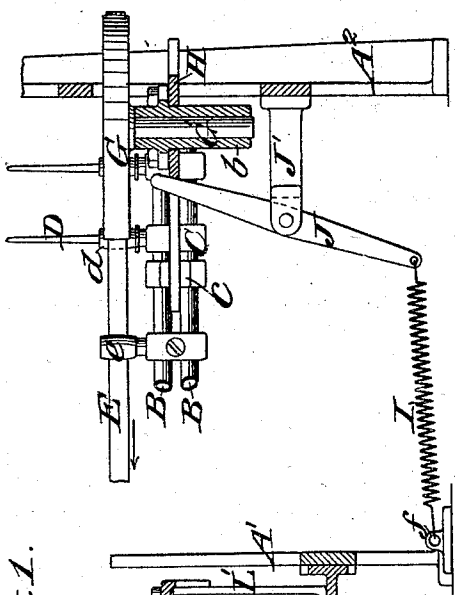


Fig. 1.

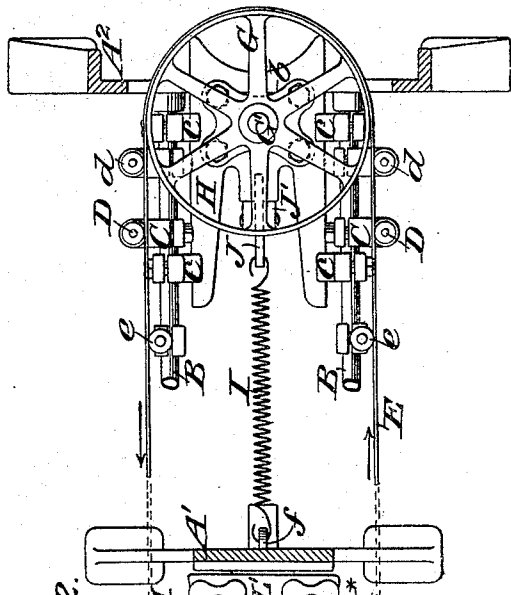
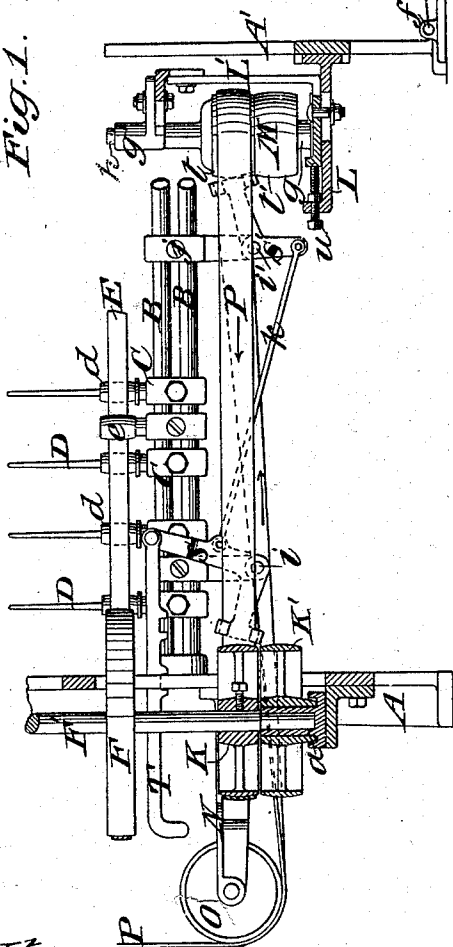
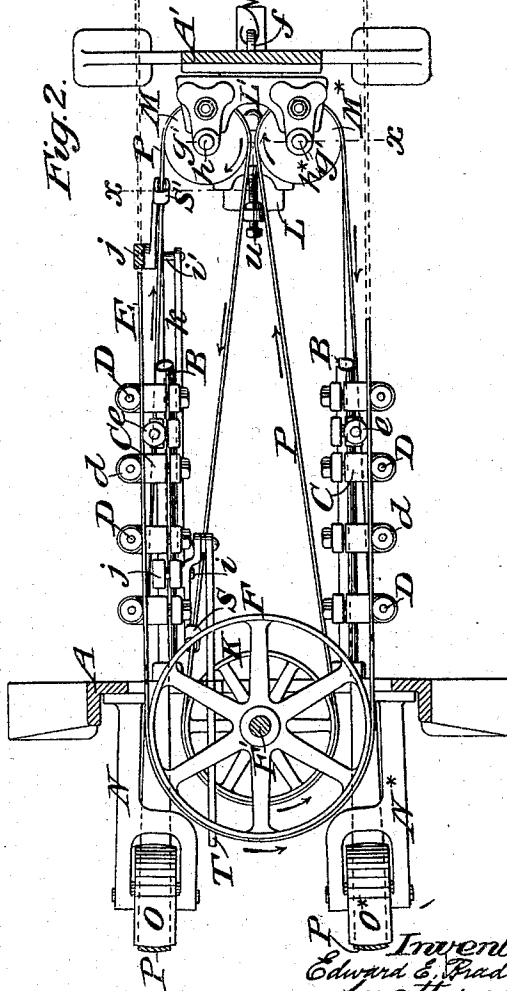


Fig. 2.



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by attorneys
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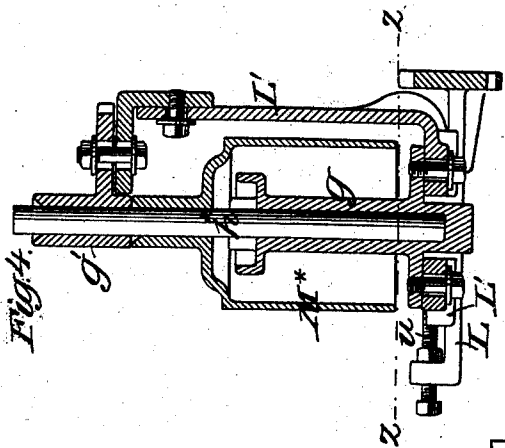


Fig. 4.

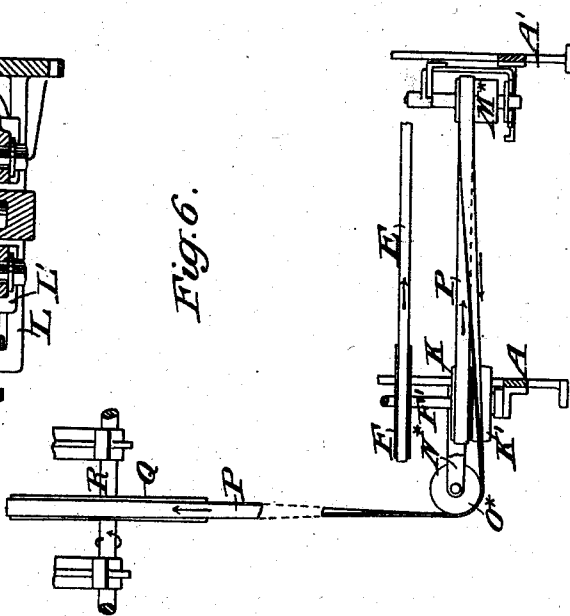


Fig. 6.

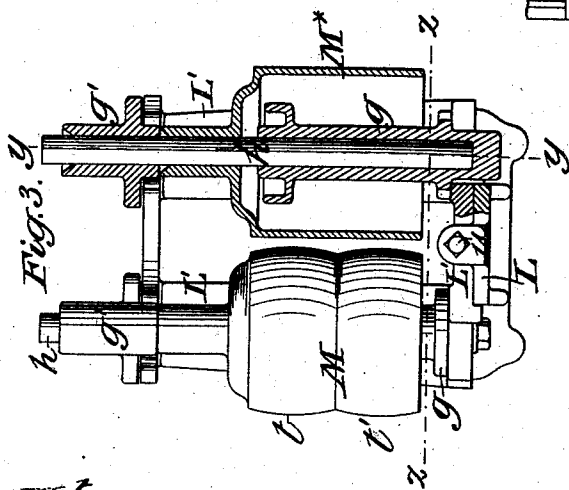
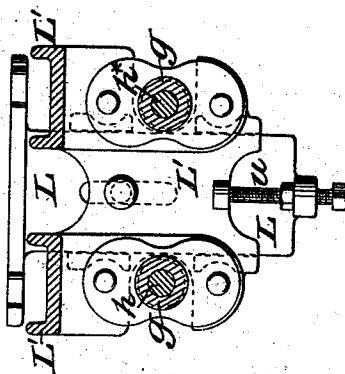


Fig. 3.

Fig. 5.



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UNITED STATES PATENT OFFICE.

EDWARD E. BRADLEY, OF STONINGTON, CONNECTICUT, ASSIGNOR TO JOHN E. ATWOOD AND EUGENE ATWOOD, OF SAME PLACE.

SPINNING AND TWISTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 504,861, dated September 12, 1893.

Application filed February 1, 1893. Serial No. 460,550. (No model.)

To all whom it may concern:

Be it known that I, EDWARD E. BRADLEY, of Stonington, in the county of New London and State of Connecticut, have invented a new and useful Improvement in Spinning and Twisting Machines, of which the following is a specification.

This invention relates to spinning and twisting machines of that class in which a single horizontal spindle-driving belt is used for driving a number of spindles arranged in a row.

The nature of my improvement is herein-after fully described with reference to the accompanying drawings and set forth in the claims.

Figure 1 represents a longitudinal sectional elevation of as much of a spinning machine as is necessary to illustrate my invention. Fig. 2 is a plan view corresponding with Fig. 1 with portions of the framing in section. Fig. 3 is a vertical sectional view on a larger scale taken approximately in the line *x x* of Fig. 2 of some of the details of the system of pulleys. Fig. 4 represents a vertical sectional view in the line *y y* of Fig. 3. Fig. 5 is a horizontal sectional view in the line *z z* of Figs. 3 and 4. Fig. 6 is a diagram on a smaller scale than Figs. 1 and 2, showing a view of the belt and pulleys which constitute essential features of the invention.

Similar letters of reference designate corresponding parts in all the figures.

A A' A² are the uprights and B B are horizontal rails which constitute parts of the fixed framing of the machine, the rails having secured to them the boxes C C which contain the bearings for the spindles D D, the said spindles being arranged in the usual manner in two rows, one row on each side of the machine and all represented as driven by the single horizontally running belt E. The spindle driving belt E runs on and is driven by a pulley F on the upright shaft F' known in such machines as the head-shaft, arranged centrally to the width of the machine at one end thereof, and the said belt also runs on a pulley G on an upright shaft G' at the other end of the machine, the said pulley G being only a carrying pulley and driven by the said belt. The head-shaft F' runs in fixed bear-

ings one of which is shown at *a* in Fig. 1, secured to the upright A, and the shaft G' of the pulley G runs freely in a box *b* which is carried by a carriage H which is fitted to slide horizontally toward and from the head-shaft F' in guides *c c* secured on the rails B B. This carriage is represented as constantly pushed away from the head-shaft, for the purpose of keeping the spindle-driving belt E tight, by means of a spring I and lever J, the said lever having its fulcrum in a stationary bracket J' and having its lower end connected with a suitable fixture *f* by the spring I, in such manner as to press against the inner ends of the said carriage H. The belt E runs against the inner sides of the whirls *d d* of the spindles and, to insure its proper contact with the whirls, idler pulleys *e e* are arranged on the rails B B at suitable intervals to bear against the inner face of the said belt.

The parts thus far described are not of themselves claimed as my present invention which consists more particularly in the means employed in combination with the said parts for driving the head-shaft F' and which I will now proceed to describe.

On the head-shaft F' there is a fast pulley K and immediately below and concentric with the said pulley K, a loose pulley K' of the same size as K is fitted to turn freely on the exterior of the bearing *a*. On a bracket L secured to the upright A' is mounted a stand L' on which are secured the bearing boxes *g g* for the upper and lower ends of two short upright shafts *h h** on which are two guide pulleys M M*, the centers of the latter shafts and pulleys being at equal distances from the longitudinal center of the machine. The faces of the guide pulleys M M* are each of a breadth or height equal to the combined height or breadth of the two pulleys K K', and the said pulleys M M* are so arranged that a belt may run horizontally between them and either of the two pulleys K K'.

On the outside of the end standard A and at equal distances from the longitudinal center of the machine, there are secured two brackets N N*, which contain the bearings for the horizontal axes of two guide pulleys O O*.

P is the main belt which gives motion to the head-shaft F' for driving the spinning machine, the said belt deriving motion from a pulley on any driving shaft arranged above or below the machine. Such a pulley Q and driving shaft R are shown in Fig. 6. The said belt runs from the driving pulley Q to one of the two guide pulleys O or O*, thence to one of the two guide pulleys M or M*, whence it returns and runs to the fast pulley K or loose pulley K', thence back to the other of the guide pulleys M* or M, whence it returns and runs to the other of the two guide pulleys O O* and back to the driving pulley Q forming three horizontal loops, viz: one around the head-shaft pulley K or K', one around the guide pulley M and the other around the guide pulley M*. The direction of the rotation of the driving shaft R and of the belt may be supposed to be that indicated by the several arrows shown in Fig. 2, the direction of the movement of the main belt F and the spindle belt E being also indicated by arrows in the same figure.

S (Figs. 1 and 2) is a belt-shipper for taking hold, near the head-shaft pulleys K K', of that run of the belt P which runs toward the said pulleys. S' is another belt-shipper for taking hold, near the guide pulley M, of that run of the belt P which, on the same side of the pulleys K or K', runs toward the said guide pulley M. These belt-shippers consist of elbow levers the fulcrums *i i'* of which are in hangers *j j* which are fastened on the rails B B on one side of the machine. These elbow levers are connected by a rod *k* so that both may be moved together to shift the belt by a handle T connected with belt shipper S for the purpose of shifting the belt P from one to the other of the pulleys K K' to stop or start the machine. The guide pulley M is represented as having two crowns *t t'* one opposite the fast pulley K and the other opposite the loose pulley K', to insure the better retention of the belt on the said fast or loose pulley.

In order to provide for the adjustment of the tension of the belt P the pulley stand L' in which the pulleys M M* are supported is made adjustable toward and from the head-shaft F' and a screw *u* screwing through a flange of the bracket L is applied to screw up

against the said stand for the purpose of taking up slack. It is obvious, however, that the slack may be taken up by the adjustment of only one of the said pulleys M M*. Whether the belt P runs on the fast pulley K or loose pulley K', the runs of the said belt between the said pulley and the guide pulleys M M* are parallel with the planes of rotation of the said pulley K or K', and the runs between the guide pulleys O O* and the guide pulleys M M* are of such length that they deviate so slightly from the planes of revolution of the guide pulleys M M* as that the deviation is immaterial, especially if the pulley M toward which the belt runs from the first guide pulley O and from which it runs to the pulley K or K' on the head shaft have a double crown as described.

By the above described system of guide pulleys O O* and M M* in combination with the driving pulley Q on the driving shaft and the pulleys K K' on the vertical head-shaft from which the spindles are driven, I am enabled to properly drive the head-shaft by a single belt from the said driving shaft instead of requiring two belts for that purpose as is most common in machines in which all the spindles are driven by a single spindle-driving belt.

What I claim as my invention is—

The combination with a series of spindles, an upright shaft having a pulley thereon, and a belt on said pulley for driving the said spindles, of a horizontal main driving shaft, a driving pulley Q thereon, a second pulley K fast on said upright shaft, a loose pulley K' on said upright shaft, two guide pulleys O O* having horizontal axes and arranged at opposite sides of said upright shaft, two guide pulleys M M* having vertical axes, and a belt running on said pulleys Q, O, O*, M, M*, and K or K' and forming three loops around said pulleys M M* and K or K' for driving said upright shaft from said horizontal shaft, a shipper for shifting the belt from pulley K to pulley K' and the reverse, and supports for said shafts and pulleys, substantially as herein set forth.

EDWARD E. BRADLEY.

Witnesses:

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WM. A. GILBERT.