Jan. 16, 1923.

1,442,037.

J. W. BAMFORD.

ENDLESS BELT DRIVE.

FILED FEB. 11, 1922.

Fig. 1

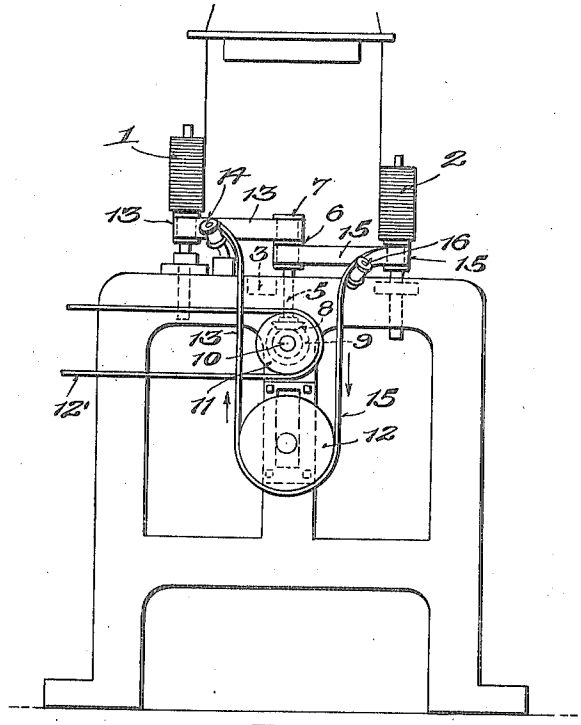
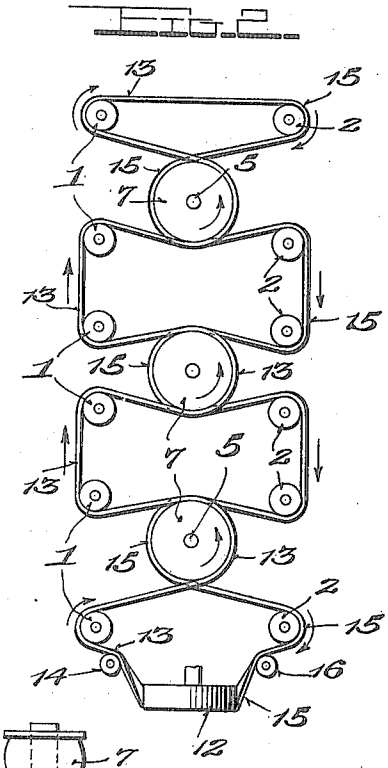


Fig. 2



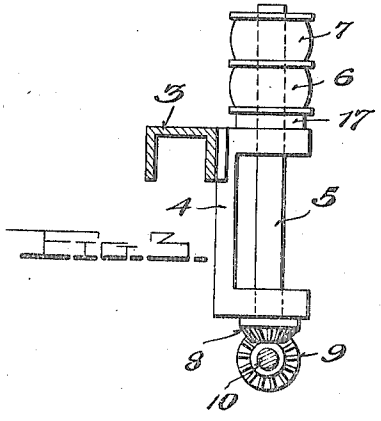


Fig. 3

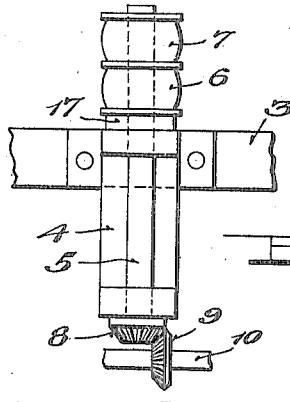


Fig. 4

John W. Bamford

INVENTOR.

BY

Joseph A. Miller

ATTORNEY.

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UNITED STATES PATENT OFFICE.

JOHN W. BAMFORD, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO JOHN W. BAMFORD & SON INC., OF PROVIDENCE, RHODE ISLAND.

ENDLESS-BELT DRIVE.

Application filed February 11, 1922. Serial No. 535,728.

To all whom it may concern:

Be it known that I, JOHN W. BAMFORD, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented new and useful Improvements in Endless-Belt Drives, of which the following is a specification.

This invention relates to certain new and useful improvements in endless belt drives and pertains more especially to drives of this character employed in connection with spinning, twisting, winding, and similar machines.

The primary object of the invention is to provide an endless belt drive which is positive in its action and which also requires but slight variation in the heights of or elevations in which the two sets of spindles are located.

A further object of the invention is to provide positive drive means for the set of double pulleys which latter are arranged intermediate the two sets of spindles, and to also provide drive means common to all of the double pulleys, which drive means is of simple character.

Further and other objects will be later set forth and manifested in the course of the following description.

In the drawings:—

Figure 1 is an end elevation of a spinning or winding machine having the present invention applied thereto;

Figure 2 is a diagrammatic view of the belt arrangement;

Figure 3 is a detail end elevation of one of the double pulleys and its driving means, and.

Figure 4 is a side elevation of Figure 3.

In proceeding in accordance with the present invention the same is shown applied to a spinning or winding machine, the latter having two sets of spindles 1 and 2 between which a central beam 3 is secured, the latter carrying bearing members 4 in which upright shafts 5 are journaled. As shown in Figure 2 there are three of these shafts 5, due to the fact that there are twelve spindles employed, six in each set. Obviously however the invention is not limited to the number of spindles employed, and consequently corresponding variation in the number of shafts 5 will occur dependent upon the aggregate number of spindles used. Each shaft 5 carries a double pulley 6—7 and has a bevel gear 8 affixed to its lower end, the latter meshing with a like gear 9 mounted on a shaft 10, which latter is common to all of the shafts 5 and may be driven in any suitable manner, for example by a pulley 11 and belt 12′ as depicted in Figure 1 of the drawing. The spindles 1 and 2 are of the ordinary long bolster type and are arranged on each side of the machine. The tension pulley 12 is mounted on the frame and in underlying relation to the pulley 11. The belt has two flights, of which 13 passes up from pulley 12 in engagement with an idler 14 and then passes around the pulley or whirl of the first spindle 1 then around the top pulley 7, around the spindles of the next two pulleys 1 then around the top pulley 7, around the pulleys of the next two spindles 1—1 then around the top pulley 7 of the next shaft 5 and finally around the pulley of the final spindle 1. This gives the course or flight of the belt to the upper pulleys 7. The belt then crosses over and extends downwardly to have its second flight or lower course engage the pulley of the end spindle 2, around the lower pulley 6, thence around the pulleys of the next two spindles 2—2, thence around the lower pulley 6 of the intermediate shaft 5, thence around the pulleys of the next two spindles 2, 2, thence around the pulley 6 of the foremost shaft 5, thence around the pulley of the foremost spindle 2, and finally engaging the idler 16 and passing over the tension pulley 12.

From the foregoing it will be seen that a positive drive is provided for each of the double sets of pulleys 6 and 7, which drive is also common to all of the shafts 5. It will further be seen that the two sets of spindles are located in horizontal planes closely together, and by virtue of the positive drive of the shafts 5 each of the sets of double pulleys give an individual drive to four spindles, and is consequently very positive in its action.

If desired a base washer 17 may be employed or if preferred ball bearings may be used instead, to carry the weight of the double pulley 6 and 7 and shafts 5.

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

1. In an endless belt drive for spinning machines, two spaced sets of spindles, a driving shaft between the sets, vertical

shafts carrying double pulleys arranged between the sets, gearing for driving the vertical shafts from the driving shaft, means to drive the driving shaft, a tension pulley located below the spindles, and an endless belt engaged over the pulley and with each of the spindles of one set and with one of the pulleys of each vertical shaft, and thence crossing over from the final spindle to the final spindle of the other set of spindles and from the latter spindle being engaged about each of the lower pulleys of the vertical shafts and each of the spindles of the other set of spindles and finally engaging the tension pulley.

2. In an endless belt drive for spinning machines, two spaced sets of spindles, a series of shafts each carrying two pulleys arranged between the sets, means to drive all of the shafts in unison, a tension pulley, and an endless belt passing from the tension pulley around each of the spindles of one set and around one pulley of each shaft, then passing to the final spindle of the other set and around each of the spindles of said other set and the other pulleys of the shafts, and thence passed around the tension pulley.

3. In an endless belt drive for spinning machines, two spaced sets of spindles, a series of shafts each carrying two pulleys arranged between the sets, means to drive all of the shafts in unison, and an endless belt passed around each of the spindles of one set and around one pulley of each shaft, thence passed around the final spindle of the other set and around each of the spindles of said other set and the other pulleys of the shafts.

4. In an endless belt drive for spinning machines, spaced sets of spindles, a series of double pulleys arranged between the sets, means to drive all of the pulleys in unison, and an endless belt passed around each of the spindles of one set and around one pulley of each set of pulleys, thence passed around the final spindle of the other set of spindles and around each of the spindles of said other set and the other pulleys of the sets of pulleys.

5. In an endless belt drive for spinning machines and the like, spaced sets of spindles, a series of double pulleys between the sets, and an endless belt engaged with each of the spindles of one set of spindles and with one pulley of each set of pulleys and thence engaged with each spindle of the other set of spindles and with the other pulley of each set of pulleys.

6. In an endless belt drive for spinning machines, two sets of spindles, a series of driving means between the sets, means to drive the driving means, and an endless belt having one flight engaged with each spindle of one set and with each driving means, and having a second flight located in a plane different from the plane of the first flight and engaged with each of the driving means and with each spindle of the other set of spindles.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN W. BAMFORD.

Witnesses:
M. A. KINGSLEY,
J. A. MILLER.