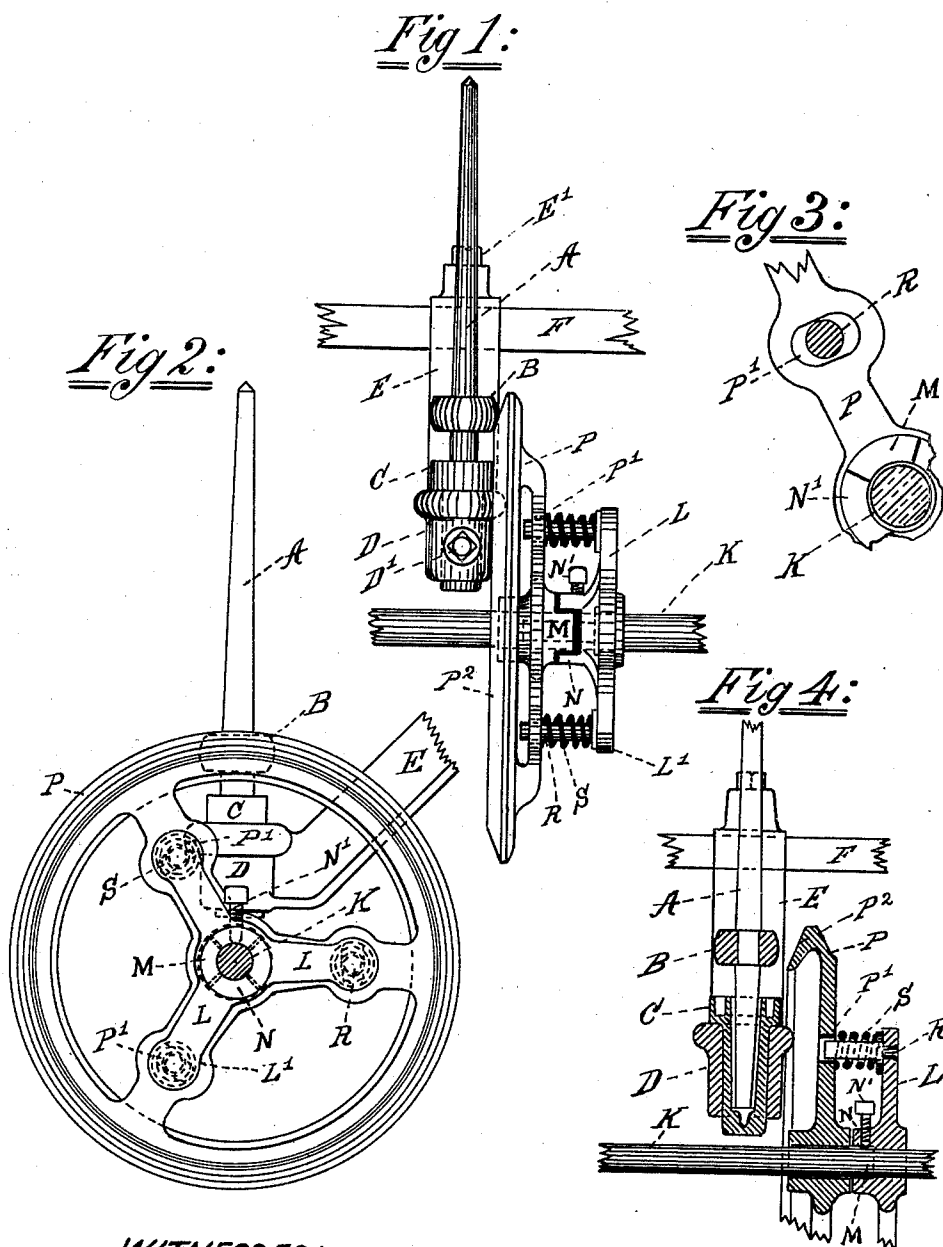


C. SCHREPPER.
MECHANISM FOR DRIVING SPINNING SPINDLES.

No. 465,001.

Patented Dec. 15, 1891.



WITNESSES:

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William M. New

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(No Model.)

2 Sheets—Sheet 2.

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Fig 5:

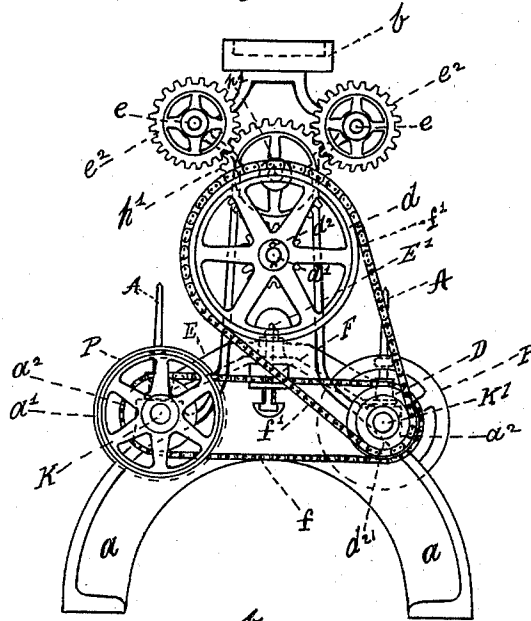
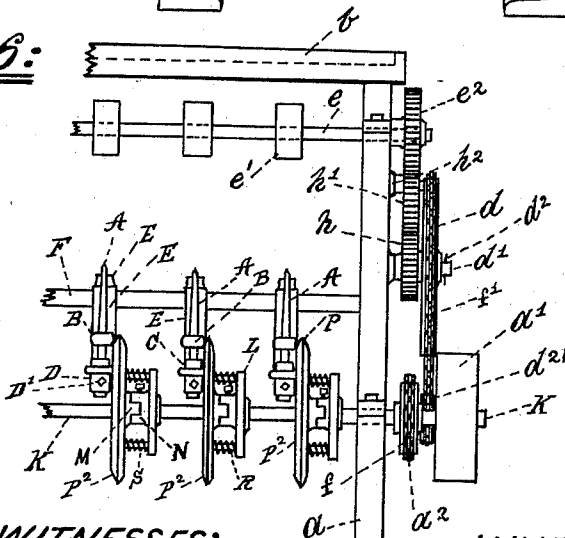


Fig 6:



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UNITED STATES PATENT OFFICE.

CONRAD SCHREPFFER, OF PATERSON, NEW JERSEY.

MECHANISM FOR DRIVING SPINNING-SPINDLES.

SPECIFICATION forming part of Letters Patent No. 465,001, dated December 15, 1891.

Application filed August 5, 1891. Serial No. 401,741. (No model.)

To all whom it may concern:

Be it known that I, CONRAD SCHREPFFER, of the city of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Spindles for Spinning and Mechanism for Driving the Same, of which the following is a specification.

My invention consists in an improvement in mechanism for driving spinning-spindles, whereby an accelerated velocity at a regular uniform rate may be obtained without the use of driving cords or belts, as is the case with those in present use. With this arrangement of driving it is obvious that a greater amount of product is obtained of a much superior degree of quality with regard to the equal and regular twist given to the strands than is usually obtained; also, I attain by my improvement a longer life for the spindle and its bolster and lessen the amount of power requisite to impart motion and to continue the same at high velocities by reason of the amount of contact-pressure given to the friction-pulley of the spindle by a face-wheel operated by springs attached to a driving-spider keyed to a driving-shaft located on each side of the frame; also, I gain an equality of motion to the spindles on each side of the frame by the gear-wheels and endless chains with their sprocket-wheels located on the end of the frame or system of spindles.

Another advantage I obtain is the facility with which a single spindle can be removed and replaced when so desired without stopping the frame or any of the other spindles, it being necessary only to force the face driving-wheel back on the springs and closer to the spider, which will permit the spindle to be withdrawn with ease, the springs pressing against the face-wheel with sufficient force to cause the same to drive the spindles and not forcibly enough to throw a violent pressure against the bolster.

Another advantage I obtain by my invention is dispensing with the longitudinal rails and substituting in their place transverse saddles, which are formed to receive a spindle at each extremity, and which may be easily removed and replaced by loosening a single bolt. With the rail in use at present, in the event of an accident, the whole frame has to

be stopped to repair it when broken. I obtain these advantages by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a part front elevation of a single spindle in engagement. Fig. 2 is a side elevation of the same, part sectional. Fig. 3 is a part elevation of one arm of the face driving-wheel, showing hole in arm to receive the pin guiding or holding in position the tension-spring. Fig. 4 is a sectional view of part of the spindle-bolster and the driving mechanism, showing the face driving-wheel forced back to allow the withdrawal of the spindle. Fig. 5 is an elevation of the end of a frame, showing the mechanism for communicating motion to each side and the winding-bobbins. Fig. 6 is a part front elevation of a frame, showing the driving-shafts and spindles in their relative positions.

I will now proceed to describe the construction of my invention relating to spinning-spindles. Arranged on and attached to an end stand or frame *a*, one of which is located at each end of the machine, (and in case of machines of great length or number of spindles others are placed intermediate,) is a longitudinal bar *F*, on the upper edge of which are secured by suitable bolts *E'* the transverse saddles *E*, with their holders *D* formed to receive the bolsters *C* of the spindles *A*, and which are secured by the set-bolts *D'*. The saddles are located on the bar *F* at such a distance apart as to allow a sufficient space between the driving-spider *L* of one spindle and the bolster of another to permit freedom of access, as shown in Fig. 6. On each side of the frame *a* and journaled in bearings formed to receive them are the longitudinal driving-shafts *K*, to which and upon which are arranged the driving-spiders *L*, secured by the set-screws *N'* firmly to the shaft *K*. The hub of the spider is formed at one end with two projecting lugs *N* to engage similar projections or lugs *M* on the hub of the face driving-wheel *P*. On the three arms of the driving-wheel *P* guide-pins *R* are located, projecting outward a sufficient distance to enter loosely into the elongated holes *P'*, formed in the arms of the face or plate wheel *P* to receive them, as shown in Fig. 3. On the guide-pins *R* are arranged spiral springs *S*, one end

in pressing contact against the back of the face driving-wheel P and the other against the arm of the spider L, as shown in Figs. 1, 4, and 6. The face driving-wheel P has an angular face P² turned true and smooth, which face is forced against the friction-pulley B of the spindle A by the springs S, the wheel P being bored somewhat larger, so that the diameter of the shaft K slides freely into engagement. The friction-pulley B is preferably made of hard rubber and is turned rounding on the edge, as shown in Figs. 1 and 4. The spindle A is of the usual form and held in position by the bolster C, which is secured in the bracket E, as before described. On the extreme end of one of the shafts K' is affixed a driving-pulley a', secured by any suitable means, and on both the shafts K K' close to the end of frame a are the sprocket-wheels a², which are both of the same diameter and fastened in any suitable manner. The peripheries of the wheels a² are provided with projections to interlock with indentations in a flexible metallic endless chain f, formed with suitable links, which connects the two wheels a², as shown in Figs. 5 and 6. On the shaft K' is secured a sprocket-wheel d²¹, of smaller diameter than the sprocket-wheels a², with similar projections to engage the links of a flexible endless chain f'. Located on a stud d', secured to the side of the end frame a and fastened by the pin d², is a larger sprocket-wheel d, with projections on the periphery to engage the endless chain f', as before described. Attached to and forming part of the wheel d is a toothed pinion h, which, with the wheel d, revolves freely on the stud d². On the stud h², similarly located on the side of the end frame a, is an intermediate pinion h', which gears into the pinion h and the gear-wheels e² and communicates motion to them. The gear-wheels e² are keyed on the ends of shafts e, arranged longitudinally in suitable bearings on each side of the upper part of the frame a, as shown in Figs. 5 and 6. Arranged at a suitable distance apart on the shafts e are located friction-pulleys e' in line vertically with the spindles A, which engage the winding-bobbins when placed in the frame. On top of frame a and extending its whole length and secured by suitable bolts or screws is a table b to hold bobbins, and to the under side of which are hung the cradles in which the winding-bobbins are held when the machine or frame is in operation, as shown in Figs. 5 and 6.

I will now proceed to describe the operation of my invention. Motion being given by belt in the usual manner to the pulley a', it rotates the shaft K and by means of the sprocket-wheels a² and the endless chain f the shaft K'. The spiders L, being secured to the shafts K K' by the set-screw N' by means of the lug N being in juxtaposition with the lugs M of the face driving-wheels P, impart a similar rotary motion to the wheels P, the faces P² of which being turned at a suitable angle are forced into contact with the whirls B of the

spindles A by means of the springs S, located on the pins R, which form part of the spider L and impart accelerated motion to the spindle A. When any spindle or its pivotal bolster C requires removing, a slight pressure applied laterally to the wheel P will compress the springs S sufficiently to allow the wheel P to slide back and out of engagement with the friction-pulley B, the wheel P sliding freely on the shaft K or K'. Sufficient frictional tension is given to the springs S to act against the wheel P and spider L by closing in the spider L nearer to the wheel P, compressing the springs S, and when adjusted securing the set-screw N'. A space sufficient to allow for the action of the springs S is left between the ends of the lugs M and N on the plate-wheel P and spider L, as shown in Fig. 1. On the shaft K' in front of the sprocket-wheel a² is secured by a suitable key a smaller sprocket-wheel d²¹, which, being put in motion by the shaft K' by means of the endless chain f', communicates a rotary motion to the large sprocket-wheel d and the pinion h, which revolve on the stud d' and which are held in position by the pin d², as shown in Fig. 6. The pinion h imparts in its turn motion to the idle-wheel h', which is located on the stud h² and upon which it turns freely. The idle-wheel h' imparts on each side of its periphery motion to the gear-wheels e², which are secured to the end of the shafts e, which extend longitudinally the length of the frame on each side, as shown in Figs. 5 and 6. Located on the shaft e at suitable distances and secured with set-screws are the pulleys e', which, being put into revolution by their shafts e, impart motion to bobbins or other mechanism when brought into contact with their faces in the course of the manipulation of the material being manufactured. The diameters of the gear-wheels e², pinion h, sprocket-wheels d and d²¹, and wheels a² are such as will secure a sufficient tension and will remove the material being operated upon as fast as the revolving spindle S will deliver it.

What I claim, and desire to secure by Letters Patent, in spindles and mechanism for operating the same, is as follows:

1. In a spinning-frame, a spindle provided with a friction-pulley, in combination with and operated frictionally by a face driving-wheel having an angular face and a hub provided with lugs, a shaft extending longitudinally along the side of the frame, on which shaft said face driving-wheel is fitted snugly but loosely, a spider which is secured to said shaft, the hub of said spider being provided with lugs which dovetail into the hub (similarly formed) of said face driving-wheel, guide-pins on arms of said spider, which project through elongated openings in the arms of the face driving-wheel, and spiral springs arranged on said guide-pins, one end of said springs in pressing contact against the arm of the spider and the other against the back of the face driving-wheel, the spider being se-

5 cured on said shaft at such a distance from the spindle as to cause the spiral spring to press the face driving-wheel against the friction-pulley of the spindle, constructed substantially as shown and described.

10 2. In a spinning-machine, the combination of the frame, a bar extending longitudinally from end to end of said frame, a series of transverse saddles secured to said bar, the ends of said saddles formed to receive and hold the bolsters of spindles, and a series of spindles, each of the said spindles provided with a friction-pulley, constructed substantially as shown and specified.

15 3. In a spinning-machine, the combination of the frame, a shaft arranged longitudinally in suitable bearings on said frame, a spider and a face driving-wheel with interlocking hubs arranged on said shaft, the spider being secured thereto, guide-pins on said spider, and springs on said guide-pins, all constructed substantially as shown and described, and for the purposes specified.

20 4. In a spinning-machine, the combination of the frame, two upper and two lower shafts arranged longitudinally in suitable bearings on said frame, a series of face driving-wheels and spiders with spiral springs arranged as

shown, and interlocking hubs on said lower shafts, a driving-pulley on the end of one of the lower shafts, sprocket-wheels on said shafts near one end thereof, a sprocket-chain engaging said sprocket-wheels, an additional sprocket-wheel near the end of one of said shafts, a stud secured to the frame above said shafts, a sprocket-wheel thereon, a sprocket-chain connecting the two last-named sprocket-wheels, a toothed pinion on the stud, to which the last-named sprocket-wheel is secured, toothed pinions on the ends of the two upper longitudinal shafts and connecting-gearing between the pinion on the stud and the pinions on the ends of the upper longitudinal shafts, a longitudinal bar extending from end to end of the frame, a series of transverse saddles secured to said longitudinal bar, the ends of said saddles constructed to receive and hold a bolster of a spindle, and a series of spindles provided each with a friction-pulley, arranged and constructed substantially as shown and described, and for the purpose specified.

CONRAD SCHREPFFER.

Witnesses:

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WM. M. DREW.