F. KOHL.

SPINNING AND TWISTING MACHINE.

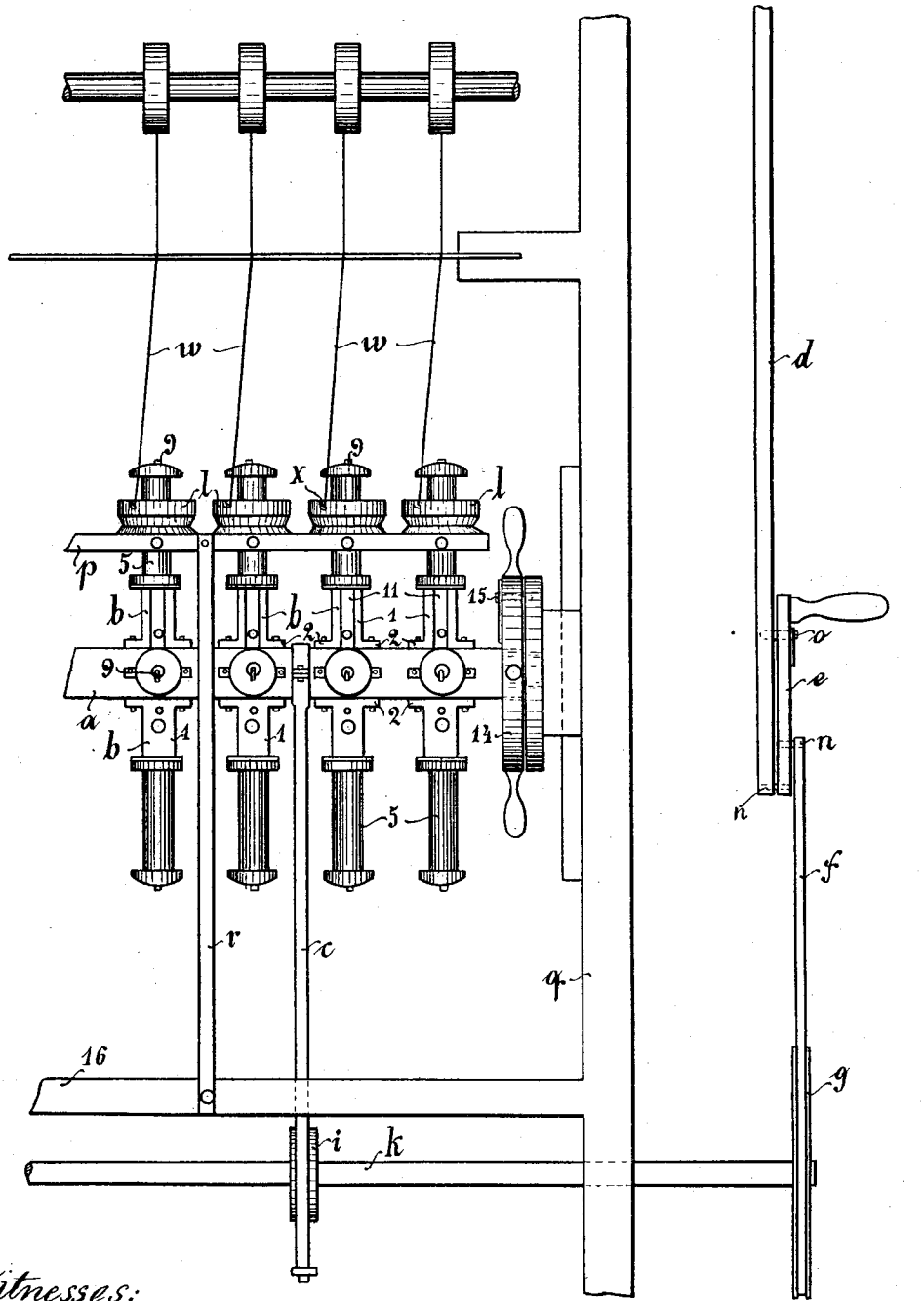
APPLICATION FILED JAN. 9, 1911.

1,051,504.

Fig. 1

Patented Jan. 28, 1913.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 2

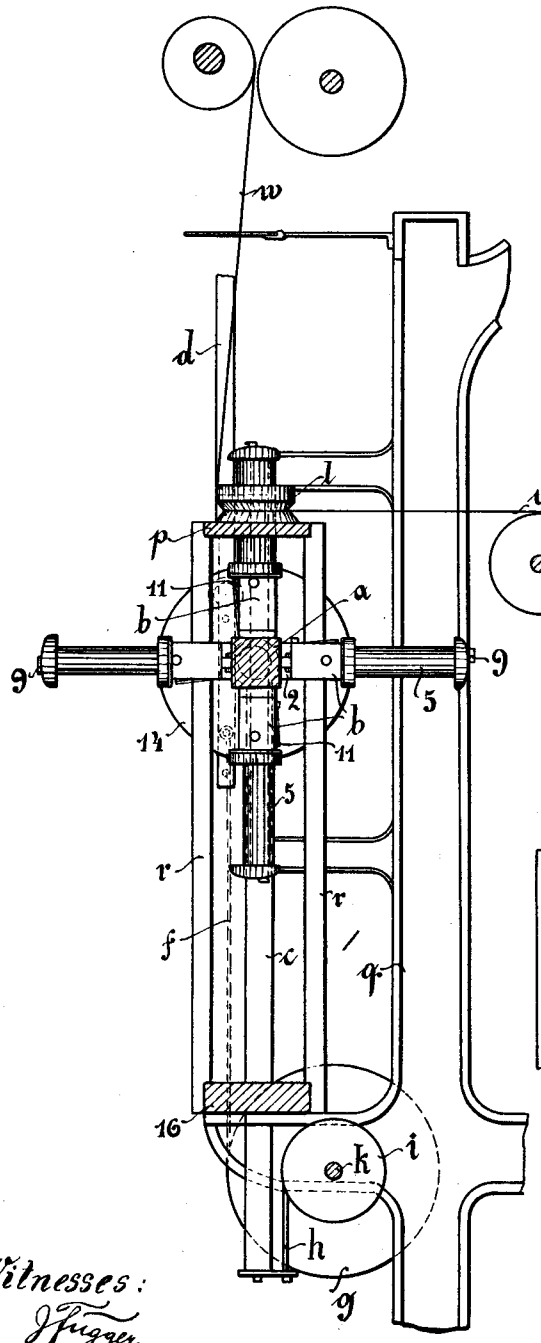
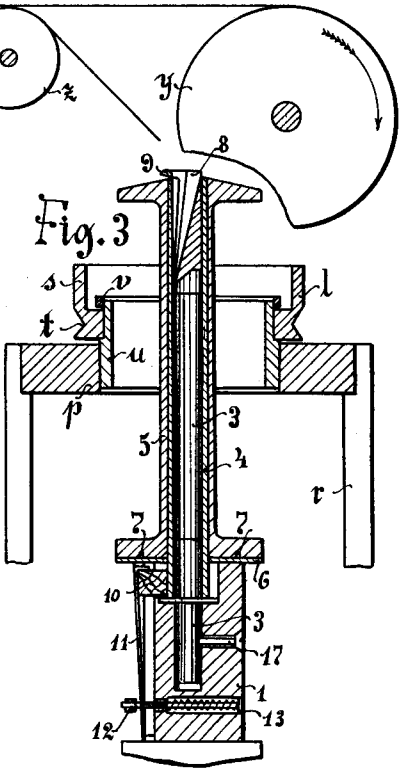


Fig. 3



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SPINNING AND TWISTING MACHINE.

1,051,504. Specification of Letters Patent. Patented Jan. 28, 1913.

Application filed January 9, 1911. Serial No. 601,617.

To all whom it may concern:

Be it known that I, FRANZ KOHL, a subject of the Emperor of Germany, residing at Emsdetten, Westphalia, Germany, have invented certain Improvements in Spinning and Twisting Machines, of which the following is a specification.

The present invention relates to spinning and twisting machines of the kind having several rows of spindles arranged radially along an angular rotatable spindle rail, means being provided for lowering said spindle rail so that the spindles get clear of the fliers or rings and allow the rail to be turned for doffing.

The invention consists in certain improvements, as hereinafter described and claimed, in the construction of the spindles as well as of the mechanism for lowering the spindle rail.

The invention is illustrated in the accompanying drawings, Figure 1 representing a front view of one end of the machine, Fig. 2, a side view of the same, and Fig. 3, a longitudinal section of a spindle and of the rotating whirl.

The rotatable spindle rail *a* is of square cross-section and carries on each side a row of spindle holders *b*. The holders of each row coincide so as to form sets of four radially disposed holders rotating in the same plane. Laterally guided bars *c* support the rail which is moved by means of the bars up and down in known manner to direct the yarn spirally onto the bobbins. This movement is effected by means of a rod *d*, a chain *f* and a pulley *g*, the latter being mounted on a shaft *k* which carries the slidable bars *c* by means of pulleys *i* and chains *h*. The rod *d* is reciprocated by means of an eccentric or the like. When it is raised, the shaft *k* is rotated so as also to raise the bars *c* by means of the chains *h*. At the downward movement of the rod, the shaft is rotated by the weight of the bars *c* and of the spindle rail, these elements being consequently lowered. During these movements of the spindle rail, the spindles and their bobbins remain within the confines of the whirls. To lower the spindles sufficiently for getting clear of the whirls, the following arrangement is provided:—The connection between the rod *d* and the chain *f* is effected by means of a hand lever *e* which is pivoted to both elements, the pivot *m* for the rod being disposed at some distance from the pivot *n* of the chain. In the position shown in Fig. 1, the lever *e* is raised and connected in this position to the rod by means of a pin *o* or the like; the pivot *n* is disposed above the pivot *m;* and the spindle rail is held in its working position. When it is desired to lower the spindles out of reach of the whirls, the lever *e* is released from the rod *d* and turned down so as to reverse the position of the pivots. A larger portion of the chain *f* is thereby fed on the pulley *g* causing a corresponding descent of the spindle rail which can now be turned without being obstructed by the whirls.

The whirls *l* are rotatively held on a carrier bar *p* mounted by means of uprights *r* on longitudinal bars 16 resting in the machine frame *q*. As shown in Fig. 3, the whirls consist in known manner of a ring *s* provided with a groove *t* for the reception of a driving cord *u'* rotated by a pulley *y* and guided over a deflecting roller *z*. The whirls are rotatably mounted on sleeves *u* connected to the carrier bar *p* and are retained on said sleeves by ring nuts *v*. Eyes *x* are provided in the edges of the rings *s* for receiving the threads *w* and guiding the same onto the bobbins.

The spindle holders *b* are composed of a post 1 which is connected by means of flanges 2 to the spindle rail (Fig. 3). An axial bore in the post receives the spindle 3, and a set-screw 17 is provided for securing the latter in position. A concentric tube 4, which is preferably made of red brass, is loosely arranged on the spindle and serves to receive the bobbin 5, the latter being supported on a flange 6 on the tube to which it may be coupled by means of pins 7. In the upper end of the spindle a slot 8 is made to receive a spring catch 9. This catch has a nose which projects over the edges of the tube and bobbin so as to retain these elements on the spindle when the latter points in a downward direction.

To regulate the resistance of the bobbin to the pull of the yarn, a brake-block 10 is provided which acts on the lower part of the brass tube 4. This brake-block is carried by a spring 11 the tension of which may be modified according to need by the adjustment of a nut 12 on a screw spindle passing through the spring 11 and through the post 1. A helical spring encircling the screw

spindle presses the nut 12 against the spring 11 with more or less force according to the position of said nut on the screw spindle. The rail *a* is turned by means of a hand-wheel 14 which is normally locked by a pin 15 for securing the rail and its spindles in their true position.

The *modus operandi* is as follows:—One row of bobbins having been filled with yarn, the machine is stopped and the spindle rail *a* lowered in the above-described manner to get the spindles clear of the whirls *l*. Thereupon the rail is turned through 90° by means of the hand-wheel 14. The turning of the rail brings the full bobbins into a horizontal position and places a fresh row of spindles, provided with empty bobbins, underneath the whirls. The threads are now severed from the full bobbins, whereupon the spindle rail is returned to its working position by turning up and securing the lever *e*. The machine being again set in motion, the thread ends are wound on the fresh bobbins and the spinning continued; meanwhile the operator can remove the full bobbins and replace them by empty ones.

Since the horizontal position of the spindles is the most convenient for the depression of the spring catches 9 and for the exchange of the bobbins, it is advantageous to employ four rows of spindles. Otherwise two, diametrically opposed rows might be employed, one being directed upward and the other downward.

By the above-described arrangement a great saving of time and work is effected, since the machine need only be stopped during the short time necessary for the turning of the spindle rail, and since the whole doffing process may be carried out by one operator alone without retarding the working of the machine.

I claim:—

In spinning and twisting machines of the ring type, a rotatable spindle rail supported on chain pulleys, a chain controlling the pulleys, and a pivoted hand lever holding one end of the chain so that the spindle rail can be lowered by turning the lever from its normal position, substantially as and for the purpose set forth.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."