

No. 640,962.

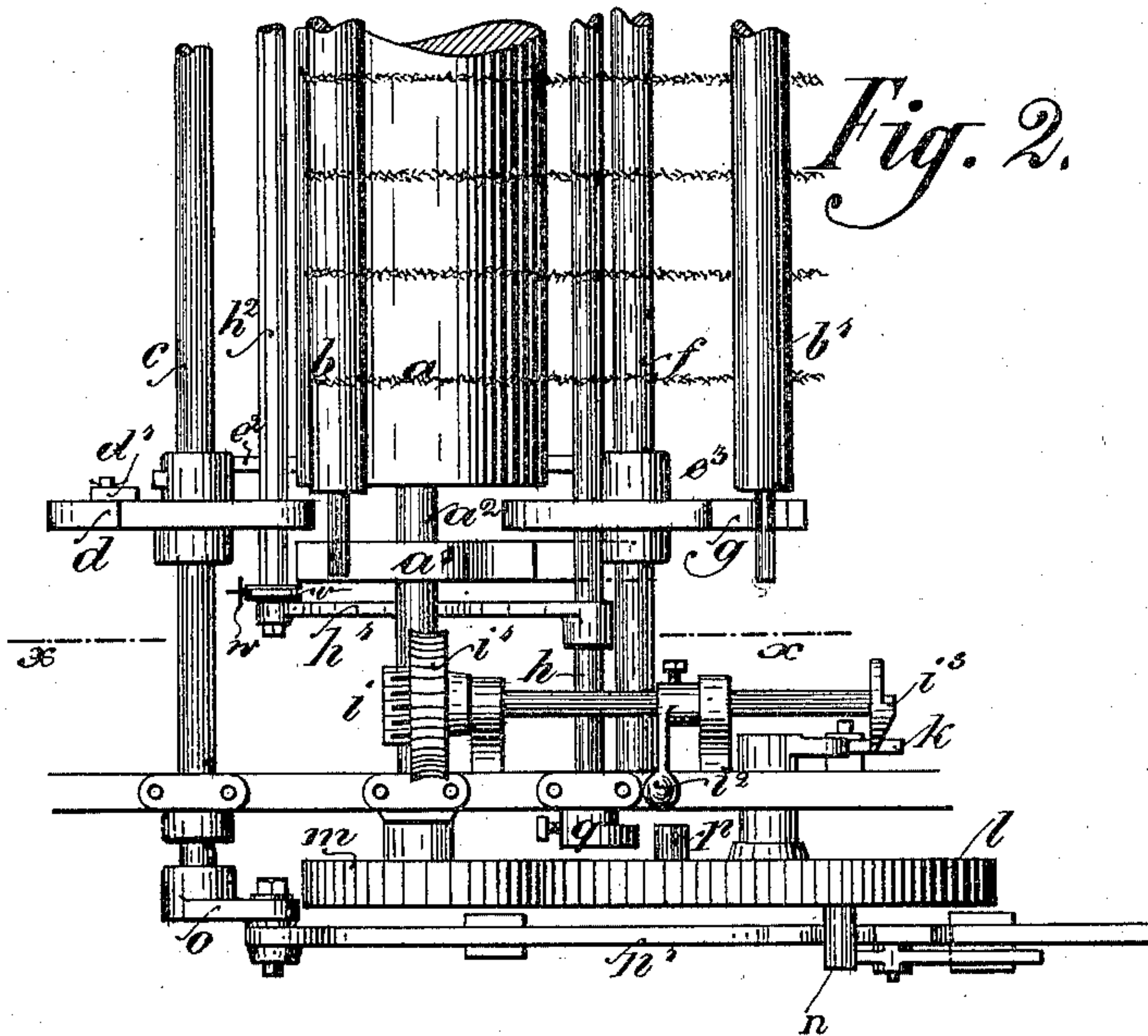
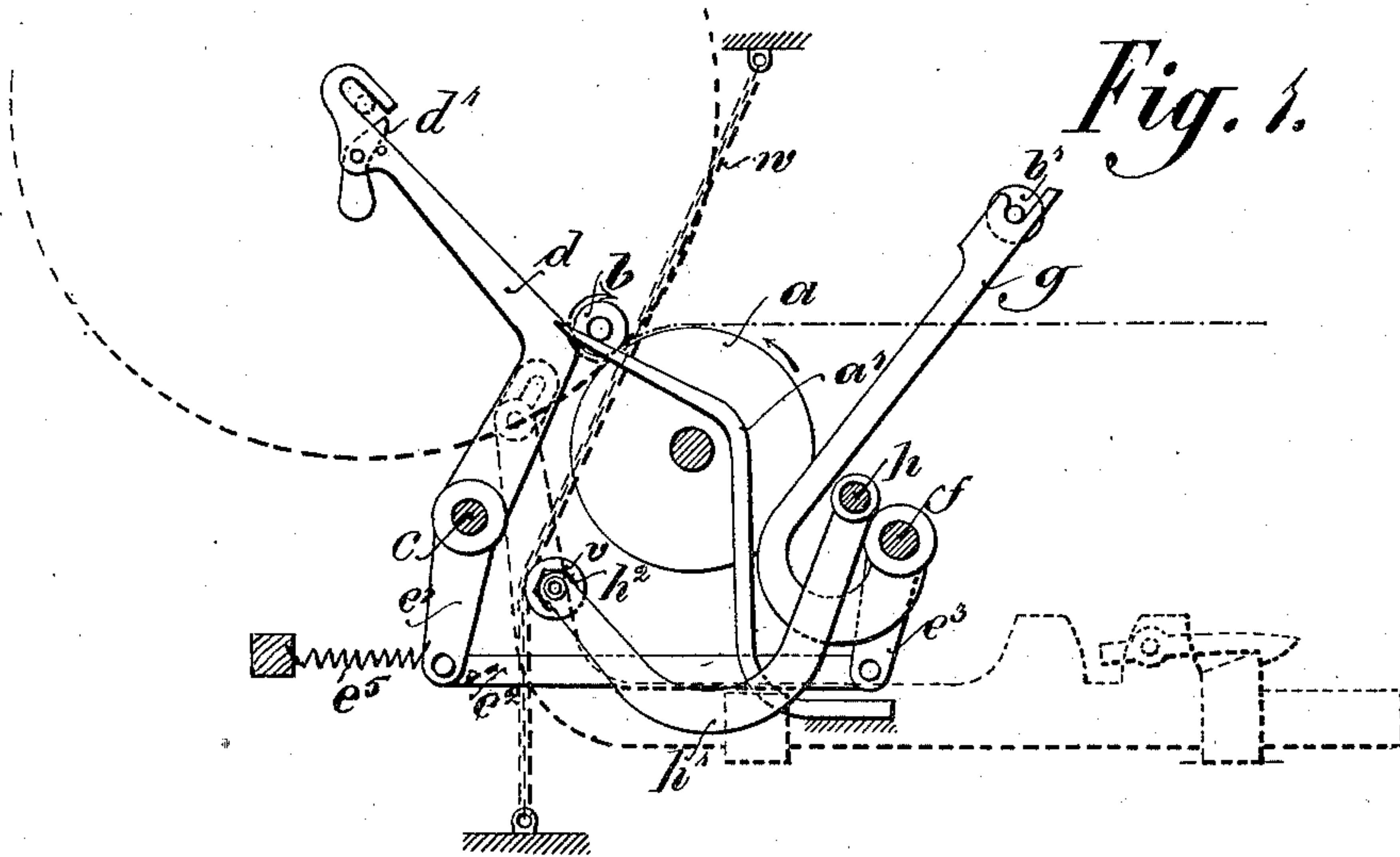
Patented Jan. 9, 1900.

J. SHAEFER.
CARDING ENGINE.

(Application filed Dec. 31, 1897.)

(No Model.)

2 Sheets—Sheet 1



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UNITED STATES PATENT OFFICE.

JOSEF SHAEFER, OF FORST, GERMANY.

CARDING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 640,962, dated January 9, 1900.

Application filed December 31, 1897. Serial No. 664,960. (No model.)

To all whom it may concern:

Be it known that I, JOSEF SHAEFER, a subject of the King of Prussia, German Emperor, residing at Forst, Lausitz, in the Kingdom of Prussia, Germany, have invented new and useful Improvements in or Relating to Carding-Engines, of which the following is a specification.

My invention relates to carding-engines and similar machines, and more particularly to devices for automatically lifting out the full rollers and supplying their places with empty rollers and with means for directing the material being wound over the latter to start the same.

To these ends it consists in the various features of construction arranged and operated substantially as hereinafter more particularly set forth and which forms the subject-matter of German Patent No. 93,652, dated March 27, 1896; Austrian Patent No. 46/4,408, dated October 30, 1896, and Belgian Patent No. 120,682, dated April 2, 1896.

Referring to the accompanying drawings, wherein is shown an embodiment of the invention, Figure 1 is a vertical section on the line $x x$, Fig. 2. Fig. 2 is a plan view of sufficient of one end of the machine to illustrate the invention. Fig. 3 is a detail view showing the engaging and releasing devices. Fig. 4 is a similar view showing the lever-actuating devices; and Fig. 5 is a sectional view similar to Fig. 1, showing the parts in a different position.

The invention comprises, generally stated, what may be termed an "active roving-roller," on which the rovings or other materials are to be wound, which is so arranged that when it receives a sufficient quantity of the material it automatically swings by the weight of the roller and its contained thread or rovings and operates a holder carrying an empty roller, so that the empty roller is automatically placed in proper position for receiving the rovings or threads and at the same time the thread-guide is automatically operated to direct the thread on the empty rollers, so that all the operations are automatic.

Referring more particularly to the construction illustrated, there is a drum a , which is rotated in any suitable way, and the roving-roller b bears against its surface and is

supported on the bearing-surface a' . A bent lever d , pivotally mounted on the shaft c , has an inclined surface and is provided with a pawl d' near its upper hooked end. Suitably mounted in relation to the drum is a shaft f , carrying forked arms g , supporting in their outer ends the empty roller b' , and the shafts c and f are connected by cranks e' e^3 and connecting-rod e^2 . A thread-guide in the form of a prismatic rod h^3 is mounted in levers h' , secured to the shaft h . In order to operate these devices, the shaft a^2 of the drum a is provided with a worm i , gearing with a worm-wheel i' , a portion of the teeth of which wheel is cut away, and of course the number of teeth cut away can be varied according to the desired length of thread or other material to be wound upon the roller. A weight i^2 , arranged on the shaft of the worm-wheel i' , causes the shaft to rotate through the portion of its revolution covered by the toothless portions of the worm-wheel i' . The shaft of the worm-wheel is provided with a nose i^3 , shown as having a beveled face engaging the beveled end of a weighted lever k , pivoted at k' and provided with a stop-piece to engage the cam l' . This cam l' is mounted on a shaft carrying a toothed wheel l , which is provided with a toothless gap and which is adapted to engage with a continuously-revolving wheel m , secured to the shaft a^2 of the drum a .

Mounted on the wheel l is a stud n , which is adapted to disengage a pawl n^2 , connected to and holding in its normal position a rack n' , which rack slides in the frame of the machine and the upper bent end of which is connected to a crank-arm o on the shaft c . Also mounted on the toothed wheel l is a cam p , adapted to engage a curved arm q , secured to the shaft h of the thread-guide h^2 .

On the ends of the axis of the thread-guide h^2 is a chain-roller v , over which passes a chain w , fastened to the frame of the machine, so that when the prismatic rod h^2 of the thread-guide is raised it is put into rotation.

Any suitable means for restoring the parts to their normal positions may be provided—as, for instance, a spring e^5 , connected to the crank e' , or a weight on the shaft c or f .

Such being the general construction of the device, its operation will be readily under-

stood, and in Fig. 1 the parts are shown with the roving-roller *b* in position to receive the thread and the empty roller *b'* in its forked arms *g*. As the roving-roller increases in size it gradually ascends the inclined face of the bent lever *d*. Meanwhile the worm *i* on the continuously-rotating shaft *a*² of the drum has partially rotated the worm-wheel *i'*, so that the nose *i*³, impinging on the inclined surface of the lever *k*, has forced it away, so as to release the cam *l'*. The gear-wheel *l*, the toothless portion of which has been opposite the constantly-rotating wheel *m*, is now permitted to become engaged with said wheel *m* and is rotated thereby, and the stud *n*, impinging on the pawl *n*², releases the rack *n'*, and the stud impinging upon a shoulder on said rack moves it to the left, Fig. 4, rocking the crank-arm *o* on the shaft *c*. This throws the bent levers *d* and their connections into the position shown in Fig. 5, the full roller being carried away from the drum and the empty roller being brought into position to take its place. Meanwhile the cam *p*, impinging on the curved arm *q*, has raised the thread-guide *h*² to the position shown in Fig. 5, the prismatic rod being rotated through the medium of the chain *w*, engaging the chain-roller *v*, placing the thread around the empty roller *b'*, where by the friction produced between the roller and the thread the thread is wound upon the roller. The thread is broken between the raised thread-guide and the empty roller, and the full roller can then be removed. The parts then are moved back to their normal positions, (shown in Fig. 1,) and the toothed wheel *l* assumes the position with relation to the toothed wheel *m* shown in Fig. 3, with the toothless portion of the former opposite the latter, and the parts are locked in position by the pawl *n*² until the empty roller is filled, when the operations are repeated.

I claim—

1. The combination with a pivoted support for an active roving-roller, adapted to be swung upon its pivot by weight of the roller and its contained thread, of means for rotating said active roller, a holder for an empty roller, and means actuated from the support of the active roving-roller for automatically replacing the active roving-roller by the empty roller at a predetermined time, substantially as described.

2. The combination with a pivoted support for an active roving-roller adapted to be swung upon its pivot by the weight of the said roller and its contained thread, of means for rotating the active roller, a pivoted holder for an empty roller and connections between the roller-support and holder whereby the holder is caused to swing upon its pivot simultaneously with the support to deposit an empty roller into position to be moved upon the support, substantially as described.

3. The combination of the pivoted levers *d*, pivoted arms *g*, intermediate drum *a* and its rotating means and connections intermediate the levers *d* and arms *g* whereby they are caused to swing simultaneously upon their pivots, substantially as described.

4. The combination of the pivoted levers *d*, pivoted arms *g*, intermediate stationary bearing *a'* and driving-drum *a* and connections intermediate the levers *d* and arms *g* whereby they are caused to swing simultaneously upon their pivots, substantially as described.

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

JOSEF SHAEFER.

Witnesses:

GUSTAV HÜLSMANN,
CARL MÜLLER.