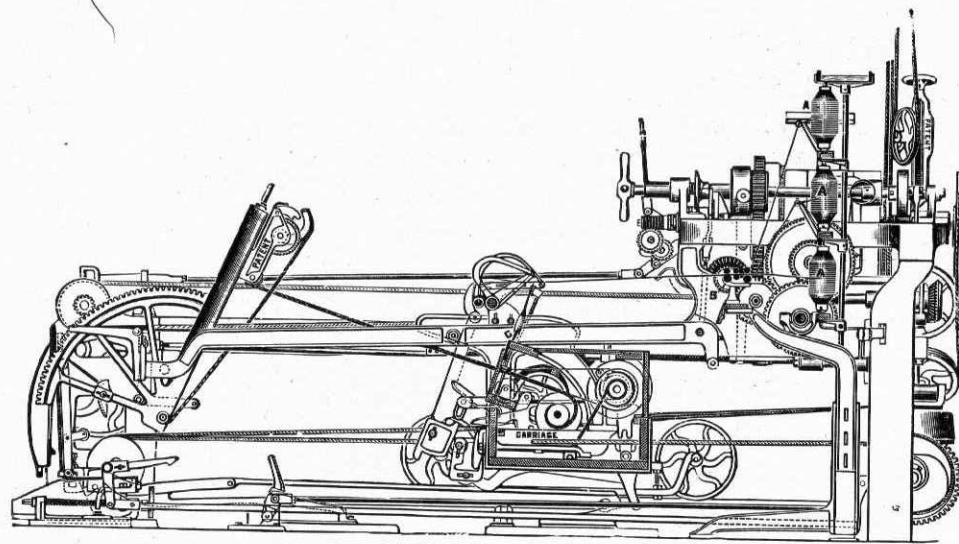


principal mechanism. The carriage contains the spindles on which the yarn is wound, the fallers, and the tin roller to drive the spindles ; and the square contains the winding-on drum, &c. From the bobbins A A, placed in the creel, the roving, either single or double as the case may be, passes through the draft rollers B to the spindles C, and by appropriate mechanism the carriage is made to travel outward from the roller beam, the tin roller being driven by ropes and the spindles by bands. The spindles are placed at an angle to the base line of the carriage, inclining towards the rollers, so that during the drawing out of the carriage when



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the yarn is receiving the required twist from the rapid revolution of the spindles, the yarn may slip off the point of the spindle, and no winding take place. Towards the completion of the outward run of the carriage certain changes in the gearing are made ; the motion of the draft rollers B ceases, but the spindles C continue to revolve, and, as the yarn is thus held by the motionless rollers, a further stretch, called "after draft" or

"jacking," may be given if necessary. This motion is, however, used only for certain classes of fine yarns. The spindles are then, by the mechanism of the headstock, made to revolve in the opposite direction to their first motion, thus unwinding the spiral coils of yarn on the spindles whilst the faller wire is being depressed to the proper position for guiding the thread on the spindle. In the final, or third movement, the carriage