

Sheet 1. 2. Sheets.

H. L. Moulton.
Spinning Jack.

N^o 50,024.

Patented Sep. 19, 1865.

FIG. 1.

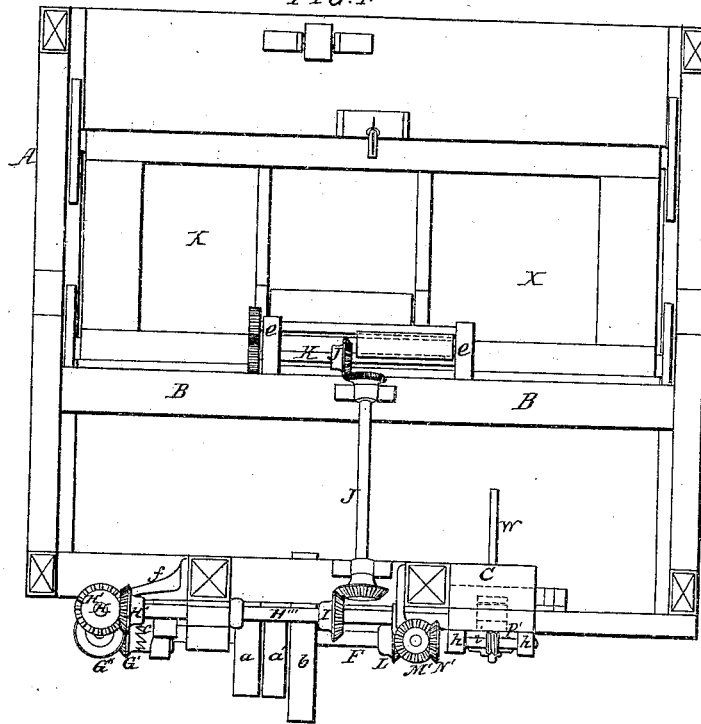
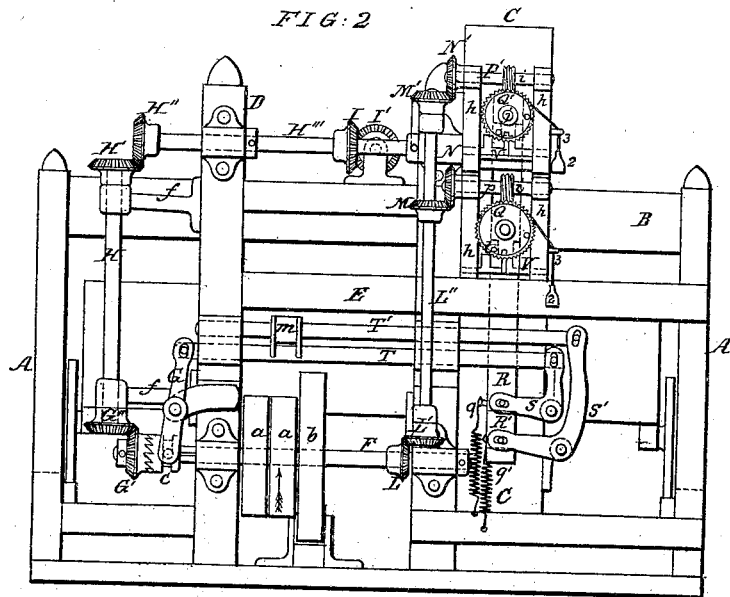


FIG. 2.



Witnesses.
Wm. Albert Steel
John Parker

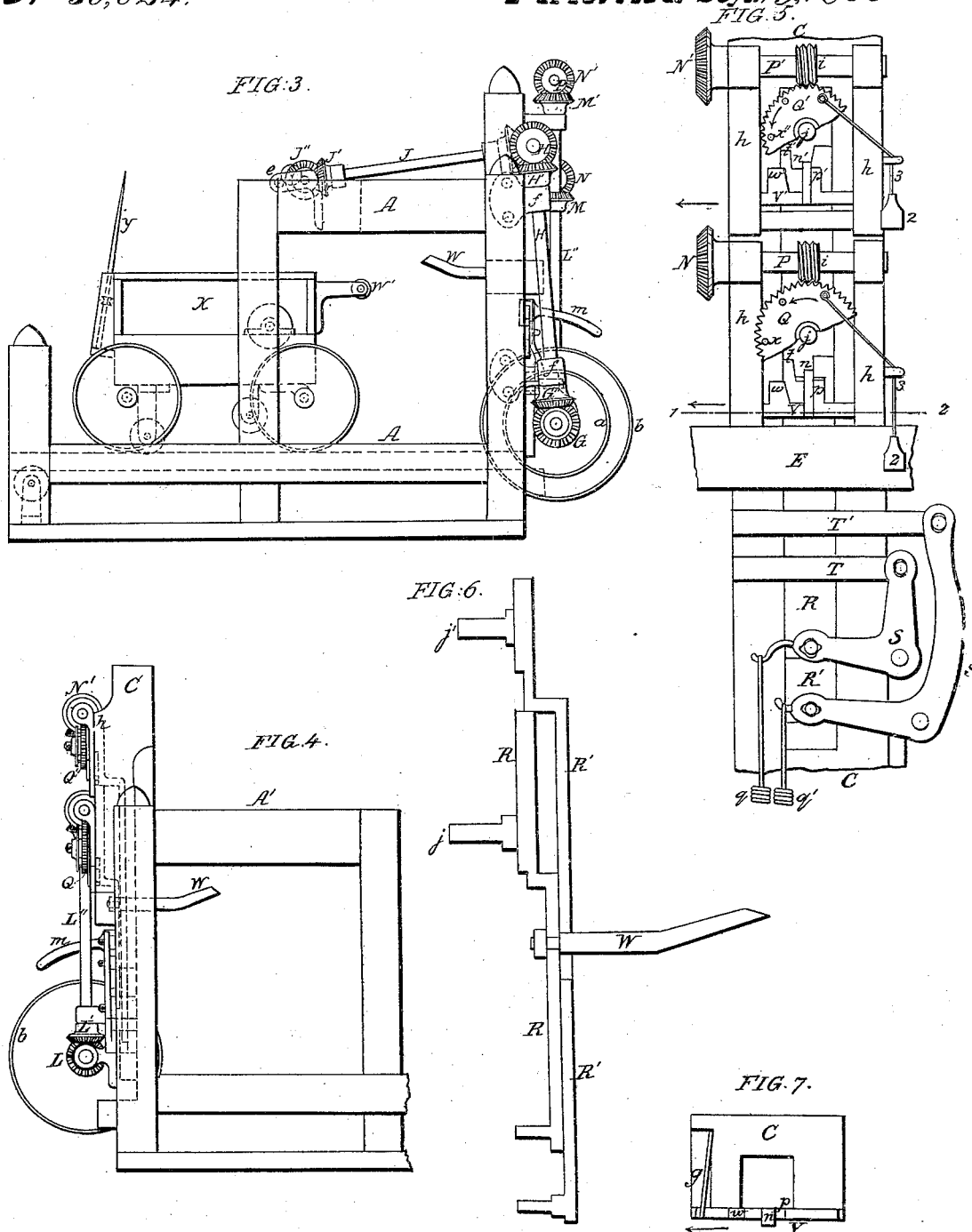
Inventor.

H. L. Moulton
By his Attor
H. Howson

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Witnesses.

Wm. Albert Steel
John Parker.

Inventor.

H. L. Moulton
By his Atty
H. Rowson

UNITED STATES PATENT OFFICE.

H. L. MOULTON, OF CAMDEN, NEW JERSEY.

IMPROVEMENT IN SPINNING-JACKS.

Specification forming part of Letters Patent No. 50,024, dated September 19, 1865.

To all whom it may concern:

Be it known that I, HAMILTON L. MOULTON, of Camden, New Jersey, have invented certain Improvements in Spinning-Jacks; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists of certain improvements, fully described hereinafter, in jacks for spinning yarn, the said improvements having been designed with the view of insuring the simultaneous starting of the delivering, stretching, and twisting operations, and of permitting the delivering operation to cease at any point during the outward movement of the carriage and while the stretching and twisting of the threads are continued, the mechanism employed having also been designed with the view of obviating defects alluded to hereinafter as being common to ordinary spinning-jacks.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a plan view of my improved spinning-jack; Fig. 2, a rear view; Fig. 3, a view of one end of the jack; Fig. 4, a view of the opposite end of the same; Fig. 5, an enlarged view of part of Fig. 2; Fig. 6, an edge view of the operating-bars; and Fig. 7, a sectional plan on the line 1 2, Fig. 5.

Similar letters refer to similar parts throughout the several views.

A and A' are the opposite end frames of the machine, and are connected together by the longitudinal beam B. Midway or thereabout between the opposite end frames are two vertical beams, C and D, which are connected together and to one or both of the said end frames by a longitudinal beam, E, and by any other beams which may be found convenient.

In suitable boxes on the vertical beams C and D turns the driving-shaft F, which is furnished with a loose pulley, *a*, and fast pulley *a'*, and the pulley *b* for driving the spindles and assisting to operate the carriage, as in other spinning-jacks. A clutch, *c*, is arranged to slide freely on and to turn with the shaft. This clutch, which is controlled by a lever, G, alluded to hereinafter, has teeth adapted to similar teeth on the hub of a bevel-wheel, G',

which is loose on the driving-shaft, this wheel gearing into a similar wheel, G'', on a vertical shaft, H, which turns in brackets *ff* secured to the beam D.

The upper end of the shaft H is provided with a bevel-wheel, H', gearing into a similar wheel, H'', on a horizontal shaft, H''', which turns in boxes on the vertical beams C and D, a bevel-wheel, I, on this shaft gearing into a similar wheel, I', on the inclined shaft J, which turns in suitable boxes secured to the frame of the machine, and which has at its outer end a bevel-wheel, J', gearing into a bevel-wheel, J'', on one of the usual system of delivering rollers, to which a positive motion is thus imparted from the driving-shaft F, the said rollers turning in brackets *ee* secured to the front of the longitudinal beam B, as in other machines of this class.

To the driving-shaft F is secured a bevel-wheel, L, gearing into a similar wheel, L', on the vertical shaft L'', which turns in suitable boxes on the frame of the machine, the said vertical shaft having two other bevel-wheels, M and M', the former of which gears into a similar wheel, N, on the horizontal shaft P, the wheel M' gearing into the wheel N' on the horizontal shaft P'. These two shafts P and P' turn in brackets *h h* secured to the vertical beam C, and each shaft is furnished with a worm, *i*, that of the shaft P gearing into a worm-wheel, Q, hung to a pin, *j*, and that of the shaft P' gearing into a worm-wheel, Q', hung to a pin, *j'*. The pin *j* is secured to a vertical bar, R, and the pin *j'* to a vertical bar, R', both bars being arranged to slide freely in a recess in the vertical beam C.

One arm of a bell-crank lever, S, is connected to the lower end of the bar R, the other arm being connected to one end of the horizontal rod T, which is arranged to slide in guides on the frame of the machine, and the opposite end of which is jointed to the lever G, which has previously been alluded to as a means of controlling the clutch *c*.

To the lower end of the vertical bar R' is connected the short arm of the bell-crank lever S', the long arm of the latter being connected to one end of the horizontal bar T', which is also arranged to slide in guides on the frame, and which is furnished with the usual strap-guide, *m*. Spiral springs *q q'*, connected to the bell-crank levers S and S' and to the frame of

the machine, serve to insure the proper depression of both of the vertical bars R and R' when they are released in the manner and under the circumstances described hereinafter.

Beneath the worm-wheel Q a rod, V, is arranged to slide horizontally in the frame, a similar rod, V', being situated beneath the worm-wheel Q', and both rods being forced in the direction of the arrows by suitable spring *g*. (See Fig. 7.)

As shown in Fig. 5, a projection, *n*, on the vertical bar R rests on the projection *p* of the horizontal rod V, and a projection, *n'*, on the vertical bar R' rests on the projection *p'* of the horizontal rod V', so that the two wheels Q and Q' are held up in the gear with their respective worms.

On moving the rod V in the direction contrary to that pointed out by the arrow, the vertical bar R will fall until its shoulder *t* strikes the projection *w* of the said horizontal rod V. In like manner, when the rod V' is moved in the same direction the vertical bar R' will fall until its shoulder *t* strikes the projection *w'* on the said horizontal rod V', and when the vertical bars are thus depressed both the wheels Q and Q' will be out of gear with their respective worms.

The movements of the two horizontal rods are effected by pins *x* and *x'*, projecting from the wheels Q and Q', which have a number of holes, into any of which the said pins can be inserted, for a purpose described hereinafter.

From the vertical bar R, and through a slot in the vertical bar R', projects an inclined rod, W, so situated in respect to a roller, W', Fig. 3, at the rear of the carriage X, that when the latter is moved back the said roller will strike the under side of the rod, elevating the same, and with it the two vertical bars R and R' simultaneously, thus moving both of the wheels Q and Q' into gear with their respective worms. It should be here understood that the two vertical bars are so constructed that the former cannot be elevated without the latter, although the bar R can fall independently of the other bar, R'.

The carriage X differs in no respects from those of ordinary spinning-jacks, but is provided with the usual system of spindles, *y*, and flanged wheels for traversing rails secured to the frame of the machine and to the floor, the outward movement of the carriage being assisted by a strap passing round the pulley *b* of the driving-shaft, and the inward movement being effected by the attendant, as usual.

Operation: On moving the carriage X back its roller W' will strike the inclined rod W, thereby raising the two vertical bars R and R' simultaneously, and moving the wheels Q and Q' into gear with their respective worms. The moment the vertical bars have reached the limit of their upward movement the two horizontal rods V and V' are moved by their springs in the directions of the arrows, so that the projection *p* of the rod V takes its place beneath

the projection *n* of the bar R, the projection *p'* of the horizontal rod V' taking its place beneath the projection *n'* of the bar R'. The two bars are consequently supported by the horizontal rods V and V', and the two wheels Q and Q' maintained in gear with their respective worms after the wheel W' of the carriage leaves the inclined rod W. As the carriage is moved outward the driving-strap is on the fast pulley *a'* of the driving-shaft, which revolves in the direction of the arrow, and the clutch *c* is in gear with the wheel G', and consequently the necessary motion is imparted to the delivering-rollers, while the spindles revolve and impart the desired twist to the threads. At the same time the two wheels Q and Q' are caused to revolve through the medium of the gearing above described. At this point it will be well to remark that in operating with spinning-jacks on certain qualities of wool it is necessary that the delivery out of what is termed the "roping," accomplished by the rollers, should cease before the carriage has reached the limit of its outward movement, and while the stretching and twisting of the threads are continued. It should be also observed here that this cessation of the delivering operation should be discontinued at different points in the movement of the carriage, according to the quality of the wool operated on. When the carriage has traversed some distance on its outward course a pin, *x*, on the wheel Q comes in contact with one side of the projection *p* of the horizontal rod V, moving the same in a direction contrary to that pointed out by the arrow, Fig. 5, and thus releasing the rod R, which falls either by its own weight or by the assistance of the spring *g*, thereby moving the wheel Q out of gear with its worm, and at the same time so operating the bell-crank lever S as to cause the same to draw the clutch *c* out of gear with the hub of the wheel G', the further movement of which, and consequently of the delivering-rollers, is instantly arrested. After this the outward movement of the carriage and the stretching and twisting of the threads are continued until a pin, *x'*, on the wheel Q' comes in contact with the projection *p'* on the horizontal rod V', moves the same in a direction contrary to that pointed out by the arrow, Fig. 5, and thereby releases the vertical bar R', which falls and depresses the wheel Q' out of gear with its worm, at the same time so moving the bell-crank lever S' and strap-guide *m* as to transfer the driving-strap from the fast to the loose pulley, and consequently arresting the further movement of the driving-shaft and other parts of the machine depending upon that shaft for their movements.

It should be understood that, as soon as the wheels Q and Q' are released from gear with the worms, weights 2, suspended to cords or chains 3, restore the said wheels to their former position, the movement of the wheels by the weights being arrested at the desired point by any suitable stop. The point in the move-

ment of the carriage where the wheels Q and Q' release the bars R and R' will depend upon the position of those holes in the wheels in which the pins *x* and *x'* are inserted, and these pins may be adjusted in such holes that the delivering operation controlled by the bar R and twisting process controlled by the bar R' may be continued until the carriage reaches the limit of its outer movement, or that the delivering process shall cease shortly after the commencement of or at any point in the outward movement of the carriage. When the roller W' on the carriage, being again moved back, again strikes the inclined rod W of the vertical bar R, a repetition of the above-described movement will take place.

In spinning-jacks heretofore made the rollers for delivering the roping were stopped and started by moving the bevel-wheel I' in and out of gear with the wheel I, the shaft J having a movable bearing for accomplishing the purpose. This plan is very uncertain and inaccurate in its action, and involves the necessity of using two rollers on the carriage, one for the purpose of arresting the roping-delivery and the other for arresting the movement of the driving-shaft. By the peculiar arrangement of the bars R and R', the former only of which has a projecting rod, W, to be operated by a single roller on the carriage, the two movements are accomplished simultaneously and with precision.

It is of the highest importance that the roping-delivery and the twisting and stretching of roping should be commenced simultaneously; otherwise there is great danger of the threads being broken. In other spinning-jacks the starting of the delivery-rollers and the driving-shaft was accomplished by devices so independent of each other that a simultaneous action could not be always depended on—an evil effectually remedied by the peculiar ar-

rangement of the two vertical bars R and R', the simultaneous lifting movement of which is certain.

I claim as my invention and desire to secure by Letters Patent—

1. The two sliding bars R and R', constructed and arranged in respect to each other substantially as described, and provided with such appliances that they shall be simultaneously elevated as the carriage approaches the limit of its inward movement, while one of the bars is at liberty to be depressed after the carriage has commenced its outward movement without disturbing the other bar, all substantially as and for the purpose herein set forth.

2. The combination of the bars R and R', their wheels Q and Q', operated by the worms *i*, or their equivalents, and having adjustable pins *x* and *x'*, together with the spring-rods V and V', the whole being arranged, constructed, and operating substantially as and for the purpose herein described.

3. The vertical bar R, in combination with the clutch *c* on the driving-shaft and the devices herein described, or their equivalents, through the medium of which the bar R is caused to operate the said clutch.

4. The combination of the clutch *c* on the driving-shaft with the system of delivering-rollers and the intermediate system of gearing described, or its equivalent, whereby a positive motion and certain starting and stopping of the delivering-rollers are effected.

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

H. L. MOULTON.

Witnesses:

H. HOWSON,
W. J. R. DELANY.