June 11, 1929. L. H. LAWSON 1,716,784

MACHINE FOR WINDING THREADS, TWINE, CORDS, OR THE LIKE

Filed June 25, 1928

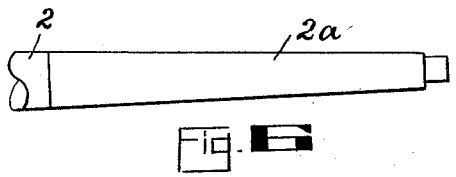


Fig. 6

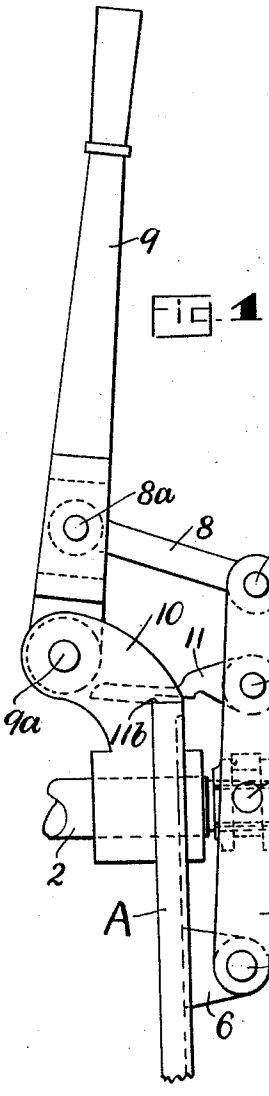


Fig. 1

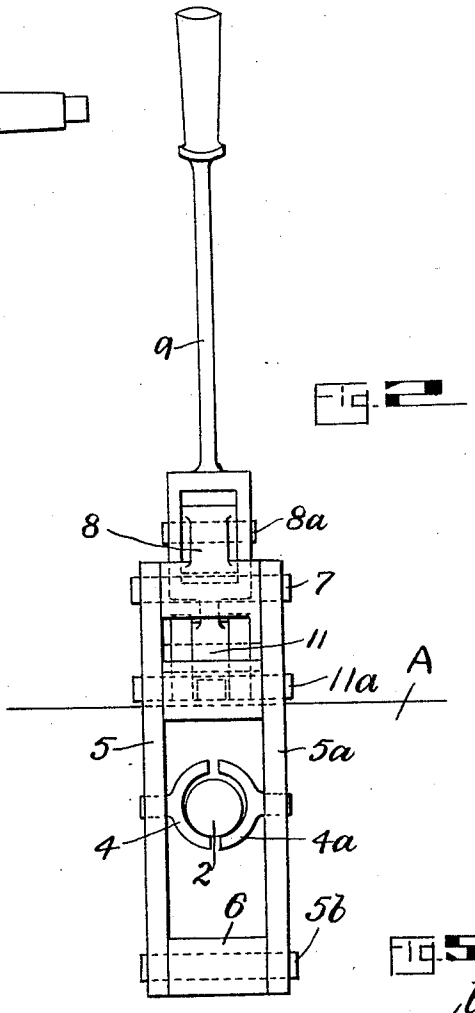


Fig. 2

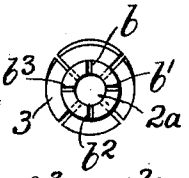


Fig. 5

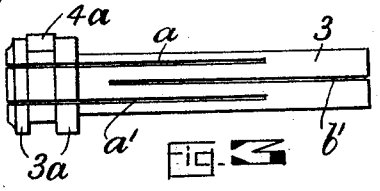


Fig. 3

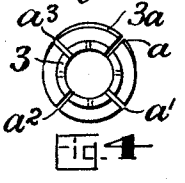


Fig. 4

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UNITED STATES PATENT OFFICE.

LIONEL HALL LAWSON, OF LEEDS, ENGLAND.

MACHINE FOR WINDING THREADS, TWINE, CORDS, OR THE LIKE.

Application filed June 25, 1928, Serial No. 288,107, and in Great Britain June 16, 1927.

In the winding of threads, cords, twine, wire and the like in order to form same into bundles known as "cheeses" or "cones" it is often found that the firmness of grip which the tension of the wound coils of cord or the like exercises over the spindle or body upon which they are wound, is so great that their removal therefrom is a matter of difficulty and the many methods so far made use of for attaining this object do not act efficiently.

My present invention consists in constructing and arranging the member upon which the cord, twine or the like is wound so that by movement of a hand lever or like device (when the winding operations are completed and it is desired to detach the bundle from the spindle or supporting member) the winding can be moved longitudinally of said member and the latter be reduced in diameter for the greater part of its whole length in order that the removal of the bundle may be more readily effected.

In order that my said invention may be readily understood I have hereunto appended a sheet of drawings illustrative thereof to which by figures and letters reference is made in the following description:—

Fig. 1 is a side elevation of certain parts of a well known type of a winding machine and the spindle or shaft thereof with a member thereon constructed according to my invention, and arranged to be operated as hereinafter described.

Fig. 2 is an end view of the parts shown by Fig. 1.

Fig. 3 is a side elevation showing the construction of my improved member.

Fig. 4 is an end elevation of the member shown by Fig. 3 as seen looking from left to right of said figure.

Fig. 5 is an end elevation of the member shown by Fig. 3 as seen looking from right to left of said figure.

Fig. 6 is an elevation showing the shaft or spindle of the machine.

A indicates the end frame of the machine.

In carrying my invention into effect I form the spindle or shaft 2 upon which the bundles have to be wound so that its extending end 2^a may be of a tapering or conical shape in order that a hollow member or sleeve 3 having its longitudinal opening of a correspondingly tapering shape, may be made to pass over said spindle 2 in such a manner that when forced thereon the conical opening in said member 3 will fit over the conical surface of the spindle 2.

The said sleeve or member 3 has longitudinal slots a, a^1, a^2 and a^3 formed in it from the end (where the grooved hub 3^a is formed on said member 3) to within a certain distance of the opposite end of said member, while other grooved slots b, b^1, b^2 and b^3 are formed for a similar portion of the length of the member 3 in the opposite direction thus when the member 3 is forced over the conical part 2^a of the spindle 2 the parts of said member 3 which lie between the slots a, a^1, a^2 and a^3 are caused to expand outwardly for a considerable portion of the length of said member 3. In like manner the parts of the member 3 between the slots b, b^1, b^2 and b^3 are also caused to expand from the opposite or outer end of the member 3 for a considerable space over same towards the other end of said member 3. By the sleeve 3 being increased in diameter as described on commencing the winding operations the gripping of the coils of the material that are being wound thereon are resisted by the firmness with which the member 3 is held upon the conical part 2^a of the spindle 2 until the winding operations are completed and the desired size of bundle is produced.

After the winding of the bundle has been completed the member 3 is moved so that it will slide over the conical part 2^a of the spindle 2 by which actions the portions of said members 3 which lie between the slots described are permitted by being free to recoil to move towards each other and converge towards the axis of the member 3 by which converging action the member 3 is released from the gripping of the coils wound upon it.

To enable the attendant to readily actuate the member 3 so as to increase its diameter by forcing it over the conical part 2^a of the spindle 2, said member 3 has a grooved hub 3^a formed upon it in order that spanning members 4 and 4^a may take within the groove of said grooved hub 3^a while swivelling and extending from the two levers 5 and 5^a.

These levers are pivoted upon a stud 5^b supported in a supporting projection 6 which extends from the end frame A.

The levers 5 and 5^a are connected by a pin 7 to a connecting rod 8 which reaches from the upper end of said levers 5 and 5^a

to be connected by a pin 8^a to a hand lever 9. This hand lever 9 is pivoted at 9^a upon a bracket 10 which is fixed to the end frame A of the machine. With the devices arranged as described it will be observed that by the attendant actuating the handle 9 the levers 5 and 5^a may be moved towards the outer end of the spindle 2^a to force from off said spindle the expanding member 3 while when moved in the opposite direction and over the conical portion 2^a of the spindle 2 then the said levers 5 and 5^a will (by clamping devices 4 and 4^a) force the hollow members 3 over the said conical part 2^a thereby causing same to expand as described.

When the attendant has thus forced the hollow member 3 over the tapering part 2^a of the spindle 2 in order to cause same to expand as described, a catch or hook 11 which is pivoted upon a pin 11^a (mounted upon the levers 5 and 5^a) is made, by its hooked part 11^b, to engage with the upper edge of the end frame A where it will retain the levers 5 and 5^a in position so that the hollow member 3 is prevented from leaving the conical part 2^a during the winding operations.

The levers 5 and 5^a by extending vertically as shown, occupy such a position relative to the coils of yarn or the like forming the bundle upon the hollow sleeve 3, that a part of said levers 5^a near or in proximity to where the pin 11^a for the catch 11 is mounted may come in contact with the coils of yarn or the like in order that when the attendant has disengaged the catch 11 and has actuated the handle 9 to force the hollow member 3 from off the conical spindle 2^a the actions of the levers 5 and 5^a upon the wound bundle will force same from off the hollow member 3 thus same is free to be handled or removed by the attendant.

Such being the nature and object of my said invention what I claim is:—

1. In a machine for winding strand material, the combination of a supporting frame, a rotary spindle mounted in said frame, a sleeve adapted to be moved longitudinally of the spindle, means whereby the sleeve will be engaged with the spindle to rotate therewith when in one position, a lever fulcrumed on the frame, and connections between the lever and sleeve for moving the latter to and from the position where it engages the spindle, said lever exerting pressure on one end of a winding on the sleeve to move said winding longitudinally of the sleeve when the latter is moved to disengage it from the spindle.

2. In a machine for winding strand material, the combination of a supporting frame, a rotary spindle mounted in said frame and having one end of taper formation, an expansible sleeve having a longitudinally tapering bore embracing the tapered portion of the spindle, and a lever fulcrumed on the frame and engaging the sleeve to move it longitudinally of the spindle while permitting rotation thereof with the spindle, said lever cooperating with one end of a winding on the sleeve to effect movement thereof longitudinally of the sleeve when the lever is actuated to move the sleeve on the spindle to disengage the sleeve and the spindle.

3. In a machine for winding strand mate rial, the combination of a supporting frame, a rotary spindle mounted in said frame and having its outer end of taper formation, an expansible sleeve having a longitudinally tapering bore embracing the taper portion of the spindle, a bifurcated lever fulcrumed on the frame and having its arms extending on opposite sides of the spindle, means on said lever engaging the sleeve whereby the latter may be moved longitudinally of the spindle without interfering with its rotation, the arms of said lever cooperating with one end of a winding on the sleeve to effect movement thereof longitudinally of the sleeve when the lever is actuated to move the sleeve to disengage it from the spindle, and a latch connected to the lever and adapted to engage the frame to retain the sleeve in position to rotate with the spindle.

LIONEL H. LAWSON.