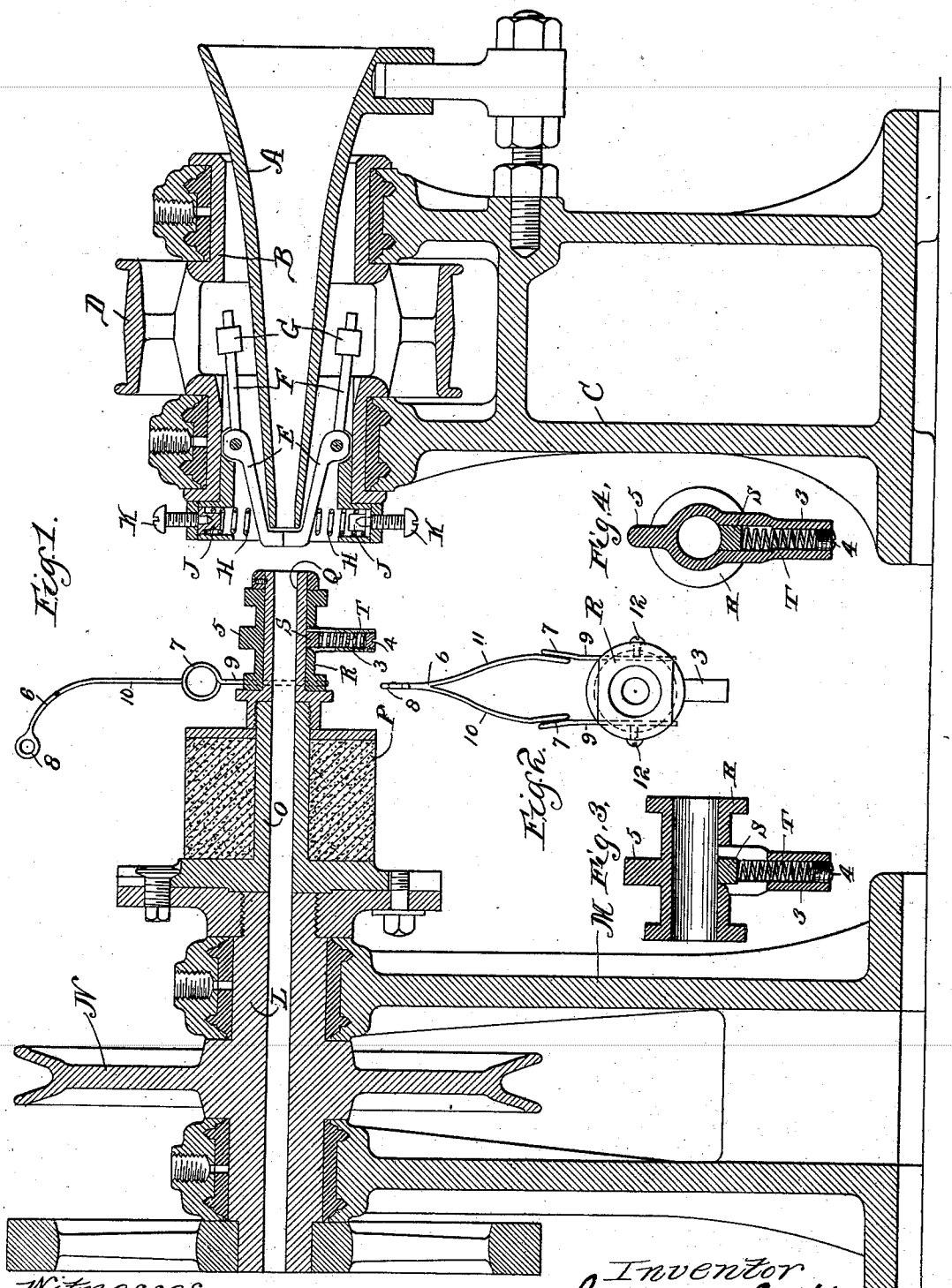
No. 664,561. Patented Dec. 25, 1900.

J. LATTIN.

MACHINE FOR MAKING GRASS TWINE.

(Application filed Apr. 26, 1899.)

(No Model.)



Witnesses.
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UNITED STATES PATENT OFFICE.

JUDSON LATTIN, OF ST. PAUL, MINNESOTA, ASSIGNOR TO THE NORTHWESTERN GRASS TWINE COMPANY, OF SAME PLACE.

MACHINE FOR MAKING GRASS TWINE.

SPECIFICATION forming part of Letters Patent No. 664,561, dated December 25, 1900.

Application filed April 26, 1899. Serial No. 714,486. (No model.)

To all whom it may concern:

Be it known that I, JUDSON LATTIN, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented a new and useful Improvement in Machines for Making Grass Twine, of which the following is a specification.

This invention relates to improvements in machines for making grass twine, and is designed as an improvement upon the construction set forth, described, and claimed in the application of George A. Lowry for a machine for making grass twine, filed July 7, 1897, Serial No. 643,768.

One object of the invention is to simplify and improve the construction of the twister-jaws whereby the tension thereon may be adjusted.

A further object of the invention is to provide means whereby the wrapping-cord is more efficiently applied to the twine.

Other objects of the invention will appear more fully hereinafter.

The invention consists, substantially, in the construction, combination, location, and arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally specifically pointed out in the appended claims.

Referring to the accompanying drawings, and to the various views and reference-signs appearing thereon, Figure 1 is a vertical central longitudinal sectional view of the twisting and wrapping mechanism of a grass-twine-making machine. Fig. 2 is a detached detail view showing the means for adjusting the wrapping thread or cord guide. Figs. 3 and 4 are detail views, in longitudinal and transverse section, of the thread-guide supporting casting or sleeve and its brake-block.

Reference-sign A designates a funnel adapted to receive the stalks, strands, or stems of grass which are to be formed into the twine. This funnel is stationarily mounted and is inclosed within a sleeve B, suitably journaled in a support C and having formed therewith or connected thereto a drive-pulley D, by which a rapid rotary movement is imparted to such sleeve. Adjacent to the rear end of sleeve B are pivotally mounted the levers E, provided at their rear ends with gripping-jaws arranged to grip the material between them as such material emerges from the smaller end of the stationary tube A. The levers E are provided with forwardly-projecting arms F, having weights G thereon, which through the centrifugal force developed in the rapid rotation of sleeve B impart a tension to the clamping-jaws of gripping-levers E directly proportional to the speed of rotation.

The parts of the twister mechanism so far described may be substantially the same as those disclosed and claimed in the application above referred to.

In the application mentioned suitable leaf-springs are employed and arranged to operate upon levers E to press the same yieldingly in a direction for the jaws thereof to clamp the material as it emerges from the funnel A. In order to secure an efficient operation of this feature of the construction, it is desirable to provide means whereby the tension of the springs acting upon the gripping-jaws may be adjusted. This is one of the features of the present invention, and in carrying the idea into practical operation I dispense with the leaf-springs shown in the application mentioned and in lieu thereof employ springs H, which are arranged for adjustment of the tension thereof. This result may be conveniently accomplished by providing seats or recesses adjacent to the rear end of sleeve B, in which seats or recesses are mounted the sliding blocks J, engaged on the outer ends thereof by adjusting-screws K, tapped through the casting in which the seats or recesses are formed, and I arrange the springs H in said seats or recesses to bear at one end upon the levers E and at the other end upon the blocks J. By this construction I am enabled to adjust the tension of springs H easily and readily by suitably turning or setting up the set-screws K. This is a desirable feature in the construction of grass-twine-making machinery, for the reason that by adjusting the tension of springs H the gripping action of the jaws of levers E may be adjusted, thus regulating the degree of grip of the jaws upon the material to be twisted, and hence regulating the degree of twist imparted to the material. It is sometimes desirable to impart to the material a greater twist than at other times, de-

pendent upon the purpose and use to which the twine when completed is to be put. In the machine as heretofore constructed it has been impossible to change the machine in this respect except with difficulty, and then only by removing the springs and replacing them with others of a different tension. This involved a delay in the operation of the machine and difficulty in effecting the replacement. By the construction above described these objections are avoided and the tension upon the gripping-jaws may be changed or varied as occasion requires readily and easily and without the necessity of removing or replacing any of the parts.

The next feature of my invention is in the construction and arrangement of guide for the wrapping thread or cord. In the application above referred to is disclosed a construction wherein a tubular sleeve L is suitably journaled in a frame M in position for the bore thereof to be in alinement with funnel A. A rapid rotation is imparted to the tubular sleeve through pulley N and in a direction the reverse of that in which the sleeve B of the twister mechanism revolves. The sleeve L is provided with a tubular extension O, forming a support for the spool of wrapping cord or thread P. Upon extension O is carried a tubular block Q, upon which is loosely sleeved a casting R. The parts of the wrapping mechanism so far described may be substantially the same as those set forth in the application referred to. The end of the wrapping thread or cord in the construction referred to was led through a guide carried by loose casting R and to a point between the adjacent front end of tubular portion Q and the rear end of funnel A. By this construction and by reason of the rotation of the wrapping mechanism and the twisting mechanism in opposite directions a twist is imparted to the grass which forms the twine, and such twisted material is wrapped in the opposite direction with the thread or cord. In view of the fact that a rapid rotation is imparted to the winding or wrapping mechanism I have found it desirable, in order to impart a desired tension to the wrapping thread or cord, to provide means for braking the loose casting R. This result is accomplished by arranging a loose braking-piece S therein, of wood, fiberite, or other suitable material, said braking-piece arranged to bear against the peripheral surface of portion Q. This braking-piece S is held to contact with the peripheral surface of said piece Q by means of a spring T, carried in a tubular socket or chamber 3, threaded internally to receive the adjusting-nut 4. By this construction a desirable adjustable tension may be imparted to the braking-block S, by which the desired braking effect may be secured, thus securing a desired tension of the wrapping cord or thread. In order to efficiently balance the casting R, as a rapid rotation is designed to be imparted thereto, it is desirable to compensate for the weight of the chamber 3, which is formed on one side of such casting. This counterbalance is effected by providing a lug 5 on said casting diametrically opposite the chamber 3 and so proportioned as to weight as to nicely counterbalance the weight of said chamber 3, spring T, and adjusting-screw 4. By this construction not only is a desirable tension imparted to the wrapping thread or cord, which tension is adjustable to suit the exigencies of any desired speed at which the machine is to operate, but the casting is nicely counterbalanced, thus securing evenness and steadiness in the operation of the apparatus.

It sometimes happens that a kink or knot forms in the wrapping thread or cord as it is reeled from spool P and before it reaches the eye of the guide-arm through which such wrapping thread or cord is led and which by reason of the rapid rotation of the apparatus and the consequent rapid feed of the wrapping thread or cord causes a violent jerking or pulling upon the guide through which said wrapping thread or cord is led. In order to avoid the breaking of or injury to the said guide or the breaking of the thread or cord, it is desirable that the guide be so constructed and arranged as to yield readily to a pull exerted thereon in this manner. To accomplish this result, I provide a guide 6, which is constructed of wire, rod, or the like, of suitable size and having one or more coils 7 formed therein, as clearly shown, whereby the desired bending of the guide may be secured in case an undue jerk or pull is exerted upon such guide by reason of the binding thread or cord passing through the eye 8 of such guide. It is also desirable to provide a construction wherein the guide 6 may be adjustable transversely of its supporting-casting R, whereby the eye 8 in the free end of such guide and through which the thread or cord is led may be adjusted toward the surface of spool P—as, for instance, when the spool is diminished in size. To accomplish this result, the stem or portion 9 of the guide is arranged to pass transversely through a hole or socket drilled through casting R, said stem or portion being adjustably mounted and held in such transverse socket. In the form shown in Fig. 2 the guide 6 is provided with the two legs 10 11, arranged to straddle the casting R, said casting being provided with holes drilled transversely therethrough on opposite sides thereof, each adapted to receive one of the legs 10 11, said legs being adjustably held in position therein by means of the set-screws 12. By the construction above described the guide may be transversely adjusted with respect to its supporting-casting, thus causing the eye 8 thereof to be brought into closer relation to the surface of the spool of thread or cord.

While I have shown and described specific

constructions embodying the features of improvement constituting my invention, I desire it to be understood that many changes therein and variations therefrom would readily suggest themselves to persons skilled in the art and still fall within the spirit and scope of my invention. I do not desire, therefore, to be limited or restricted to the exact details shown and described; but,

Having now set forth the object and nature of my invention and a form of construction embodying the principles thereof, what I claim as new and useful and of my own invention, and desire to secure by Letters Patent of the United States, is—

1. In a machine of the class described, a twister including a rotatable sleeve, arms pivotally mounted thereon and carrying clamping-jaws, weights carried by said arms and so arranged relative to said jaws that as the speed of rotation of said sleeve increases the clamping effect of said jaws correspondingly increases, in combination with an auxiliary tension imposed upon said clamping-jaws, and means for adjusting said auxiliary tension, as and for the purpose set forth.

2. In a machine of the class described, a twister including a rotatable sleeve having seats or recesses formed therein, arms pivotally mounted on said sleeve and carrying cooperating clamping-jaws at one end thereof and weights at the other end, and springs arranged to be received in said seats or recesses and bearing on the clamping-jaw ends of said levers, and means for adjusting the tension of said springs, as and for the purpose set forth.

3. In a machine of the class described, a twister including a rotatable sleeve having seats or recesses formed therein, blocks mounted in said recesses, and set-screws for adjusting said blocks, in combination with arms pivotally mounted on said sleeve and carrying coöperating clamping-jaws at one end thereof and weights at the other end, and springs arranged to bear at one end upon the clamping-jaw ends of said arms and at the other end upon said adjustable blocks, as and for the purpose set forth.

4. In a machine of the class described, a wrapping mechanism comprising a tubular shaft upon which the spool carrying the wrapping thread or cord is sleeved, the material to be wrapped arranged to pass longitudinally through said shaft and spool, a casting loosely mounted upon said shaft, a thread or cord guide carried by said casting, and means for braking the rotative effort of said casting upon said sleeve, as and for the purpose set forth.

5. In an apparatus of the class described, a wrapping mechanism comprising a tubular shaft upon which the spool carrying the thread is sleeved, a casting loosely sleeved upon said shaft, a thread-guide carried by said casting, a braking-block carried by said casting and arranged to bear against the surface of said shaft, and means for exerting a tension upon said block, as and for the purpose set forth.

6. In an apparatus of the class described, a wrapping mechanism comprising a tubular shaft upon which the spool carrying the thread is sleeved, a casting also loosely sleeved upon said shaft, a thread-guide carried by said casting, a chamber formed on one side of said casting, a tension-block mounted in said chamber, a spring also arranged in said chamber and adapted to bear against said tension-block, and a screw-plug for adjusting the tension of said spring, as and for the purpose set forth.

7. In an apparatus of the class described, a wrapping mechanism comprising a tubular shaft upon which the spool carrying the thread is sleeved, a casting loosely sleeved upon said shaft, a thread-guide carried by said casting, a chamber formed on one side of said casting, a tension-block mounted in said chamber, a spring arranged to bear on said tension-block, and a lug formed on said casting diametrically opposite said chamber to counterbalance the said casting, as and for the purpose set forth.

8. In a machine of the class described, a wrapping mechanism comprising a tubular shaft upon which the spool carrying the thread is sleeved, a guide having an eye in the end thereof through which the end of the thread is led, said guide having coils formed therein intermediate its ends, and means for adjusting said guide transversely the length of the spool, whereby the eye in the end of said guide may be moved into closer relation to the surface of the spool as the spool diminishes in size, as and for the purpose set forth.

9. A thread-guide for a wrapping-machine comprising a spring-rod having an eye in the end thereof through which the thread is led, said rod formed into coils intermediate its ends in combination with a loosely-sleeved casting, said rod provided with legs arranged to straddle, and to be supported by said casting, and means for adjusting said legs transversely of said casting, as and for the purpose set forth.

10. In an apparatus of the class described, a wrapping mechanism comprising a support for the spool of wrapping-thread, a guide having an eye in the end thereof through which the wrapping-thread is led, a loosely-sleeved casting for said guide arranged in alinement with the spool-support, and means for adjusting said guide transversely of said spool, whereby the eye thereof may be brought into closer relation to the surface of the thread as the spool diminishes in size, as and for the purpose set forth.

11. In an apparatus of the class described, a wrapping mechanism comprising a tubular shaft upon which the spool carrying the thread is sleeved, a casting loosely sleeved upon said shaft, a thread-guide supported upon said

casting, said guide having an eye in the end thereof through which the thread is led and provided with legs arranged to straddle said casting, and means for adjusting the legs of said guide transversely of said casting, as and for the purpose set forth.

In witness whereof I have hereunto set my hand, this 29th day of March, 1899, in the presence of the subscribing witnesses.

JUDSON LATTIN.

Witnesses:
GRAHAM M. TORRANCE,
VALENTINE FLECKENSTEIN.