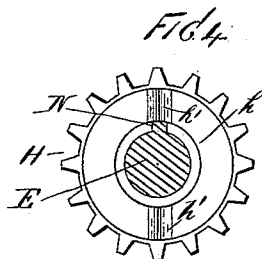
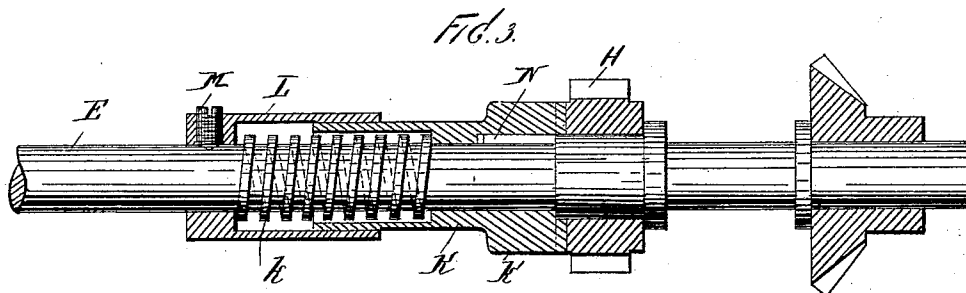
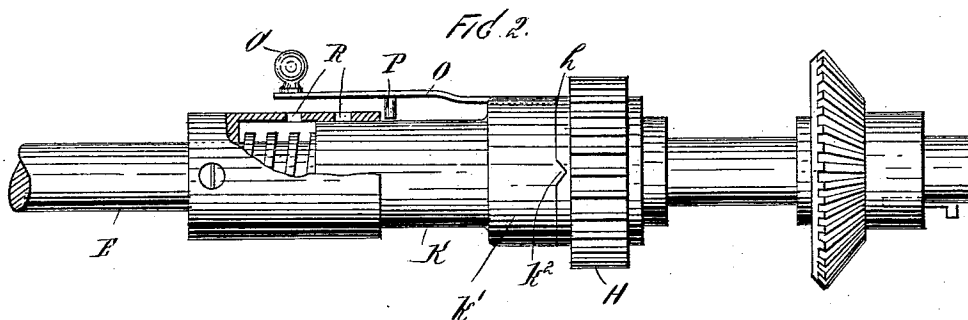
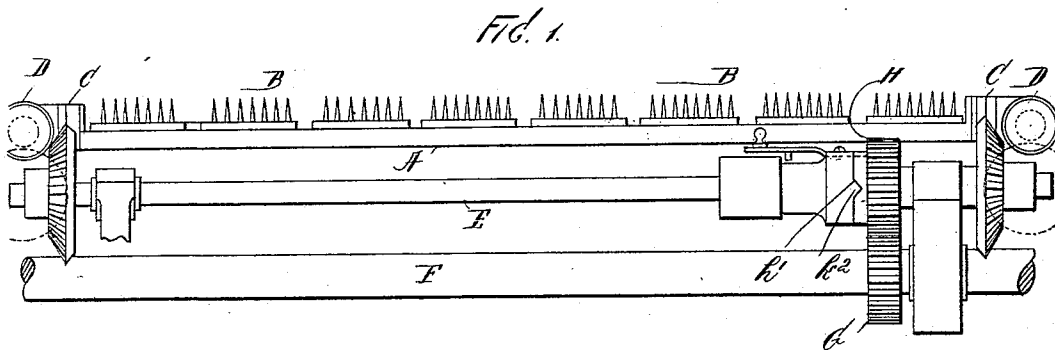


(No Model.)

J. ANNAN.
AUTOMATIC SAFETY SPRING CLUTCH.

No. 569,396.

Patented Oct. 13, 1896.



WITNESSES:

John Buckler,
C. Gersh.

INVENTOR

John Annan,
BY
Edgar Tate & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN ANNAN, OF BROOKLYN, NEW YORK.

AUTOMATIC SAFETY SPRING-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 569,396, dated October 13, 1896.

Application filed October 12, 1895. Serial No. 565,485. (No model.)

To all whom it may concern:

Be it known that I, JOHN ANNAN, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Automatic Safety Spring-Clutches, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar letters of reference indicate corresponding parts.

This invention relates to automatic safety spring-clutches for drawing and roving frames, such as are used in jute, flax, and hemp mills, or mills for preparing such substances or similar long-fibered substances for spinning and for what is known as "gill-spinning."

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 represents a front view of a machine provided with my improved automatic safety-clutch; Fig. 2, a similar view of the clutch and the shaft on which it is mounted, part of the clutch being broken away to better show the interior construction; Fig. 3, a similar view showing the clutch in section and mounted on the operating-shaft of the machine, and Fig. 4 is an end view of a detail of the construction.

In the class of machines referred to the drawing and roving frames are in divisional part commonly known as "heads," and these heads contain "gill-bars," to which pins are attached, said bars being driven by spiral screws, and these screws are driven by gearing from a main shaft, by which the machine is operated. A "pitch-pin" passes through this collar and gear, the main object of which is to drive the head of the gill-bars and to break in time, should a "choke" occur, in order to save the heckle-pins from being broken. When the gill-bars are in motion, the "sliver" or material of the jute, flax, or other material in the natural or rough state is passed over the heckle-pins and thence through the conductor and drawing rollers. Should the sliver contain waste or become jammed between the heckle-pins and conductor, the choke hardens and the strain being too great

for the heckle-pins they give way and are badly broken, and if the pitch-pin fails to break in time the result is great damage to the heckle-pins.

A certain strength of pitch-pin is required to drive the gill-bars, but if said pin is too strong it does much damage by not breaking, and if too weak by breaking too frequently, thus causing delay and loss of time in replacing said pins. Sometimes the pitch-pin will bend between the collar and the gear instead of breaking clean off, and when this happens, as it very frequently does, the twisted pitch-pin drives the head of the gill-bars in an irregular way, making them jerk and bend, thus forming thin and uneven parts in the product. These thin and uneven parts may not be noticed until the "rove" is on the spinning-frame, and this results in uneven and irregular yarn.

The object of this invention is to avoid the foregoing objections to machines of the class referred to as now constructed, and this object I accomplish by means of my improved spring-clutch, which is designed to be substituted for, or to take the place of, the pitch-pins hereinbefore referred to.

In the accompanying drawings, A represents the gill-bars, on which are mounted the heckle-pins B, which are preferably arranged in sections, each section being connected with or formed on a separate head which is in turn connected with a bar. These gill-bars are provided at their opposite ends with projections or heads C, which are adapted to operate in connection with transverse shafts D, which are screw-threaded, and said shafts D are operated by means of a shaft E, each end of which is provided with a beveled gear-wheel by means of which the shafts D are operated.

The shaft E is operated by a power-shaft F, at one end of which is mounted a gear-wheel G, and the gear-wheel G is adapted to operate in connection with a gear-wheel H, which is loosely mounted on the shaft E.

My improved spring safety-clutch is mounted upon the shaft E and adapted to operate in connection with the gear-wheel H, said gear-wheel being provided with a hub *h*, in which are formed notches or recesses *h'*, which

are adapted to be engaged by corresponding projections formed on the head K, which constitutes a part of the clutch.

The clutch comprises a tubular head L, one end of which is open and directed toward the gear-wheel H, and the other end of which is provided with a bore through which passes the shaft E, and said head L is held in place by means of a set-screw M, and the sliding sleeve K', which constitutes a part of said clutch, is adapted to enter the tubular head L, as clearly shown in Fig. 3, and mounted on the shaft E within said sleeve and head is an expansive spring k, which operates to project said sleeve and the clutch-head K in the direction of the gear-wheel H. Attached by one end to the sleeve K is a spring-bar O, which is provided with a depending pin or finger P and extends partly over head L, in whose periphery are one or more sockets R, and when it is desired to throw and hold the clutch out of gear with the driving mechanism the operator moves the sliding sleeve K forward out of gear with the gear-wheel H and presses down on the bar O to force the pin P into a socket P' of the fixed head I.

The shaft E is provided with a spline or rib N, which is adapted to fit in a corresponding slot or groove formed in the head of the sleeve, by means of which, as will be understood, the said sleeve is prevented from revolving independently of the shaft while being capable of a slight motion thereon, and the head k' of the sleeve K is provided with projections or shoulders k², which are adapted to engage with notches or recesses h' in the hub of the wheel H.

The operation will be readily understood from the foregoing description when taken in connection with the accompanying drawings. The sides of the notches or recesses h' are each inclined, as shown in Figs. 1 and 2. The sides of the projections or shoulders k² are similarly inclined, as shown in said figures, and if in the operation of the machine a choke should occur or the heckle-pins become clogged, as hereinbefore described, the increased pressure or power necessary to revolve the shaft E will operate to force outwardly the sliding sleeve K against the operation of the spring k, and said gear-wheel H will revolve without revolving the shaft E, and this operation will continue until the choke is removed, and it will thus be seen that I accomplish the object of my invention by means of a device which is simple in construction and operation and one which is well adapted to produce the result for which it is intended.

In the foregoing operation it will be seen that by means of my improvement I avoid the breaking of the heckle-pins and when the choke or other obstruction is removed and the machine set in motion the clutch springs back into operative position, and the necessity of removing the gill-bars and replacing

new pitch-pins is avoided, and among other advantages which result from my improvement are steadiness of motion in the operation of the machine and increased production and also the better and more even product.

My invention is not limited to the exact form, construction, and arrangement of parts shown and described, and I therefore reserve the right to make all such alterations and modifications thereof as fairly come within the scope of the invention.

Having fully described my invention, I claim and desire to secure by Letters Patent—

1. The combination with a power-shaft, of a gear-wheel mounted thereon, an operating-shaft provided with a gear-wheel, which is revolutely mounted thereon, and adapted to operate in connection with the gear-wheel on the power-shaft, a clutch secured to said operating-shaft which comprises a tubular head mounted on said shaft, a sliding sleeve mounted therein, and provided with a clutch-head which is adapted to operate in connection with the revoluble gear-wheel, a spring within said tubular head, and adapted to project said sleeve, said sleeve being also provided with projections or shoulders which are adapted to operate in connection with notches or recesses formed in the gear-wheel, and said sliding sleeve being provided with a spring-arm on which is formed a pin or projection which is adapted to operate in connection with openings or holes formed in the tubular head, substantially as shown and described.

2. The combination with a shaft, provided with a gear-wheel revolutely mounted thereon, and having notches or recesses in the hub thereof, of a clutch, comprising a tubular head which is secured to said shaft, and one end of which is open and directed toward said gear-wheel, a spring-operated sleeve mounted in said tubular head, and adapted to be projected in the direction of said gear-wheel, said sleeve being provided with a head on which are formed projections adapted to operate in connection with notches or recesses formed on the hub of the wheel and said head of the sleeve being also provided with a spring-arm having a pin or projection on the lower side thereof adapted to operate in connection with holes or openings in the tubular head of the clutch, substantially as shown and described.

3. The combination with a shaft provided with a gear-wheel which is revolutely mounted thereon, of a clutch comprising a tubular head which is secured to said shaft and one end of which is open, and directed through said gear-wheel, a spring-operated sleeve mounted in said tubular head and adapted to be projected in the direction of said gear-wheel, said sleeve being provided with a head, and said head and the hub being provided, one with projections formed thereon, and the other with corresponding notches or recesses, said projections being adapted to engage with

said notches or recesses, and the head of said sleeve and said tubular head in which the sleeve is mounted being provided with means whereby they may be locked together, substantially as shown and described.

ence of the subscribing witnesses, this 8th day of October, 1895.

JOHN ANNAN.

Witnesses:

C. GERST,
N. J. SUNESON.

5 In testimony that I claim the foregoing as my invention I have signed my name, in pres-