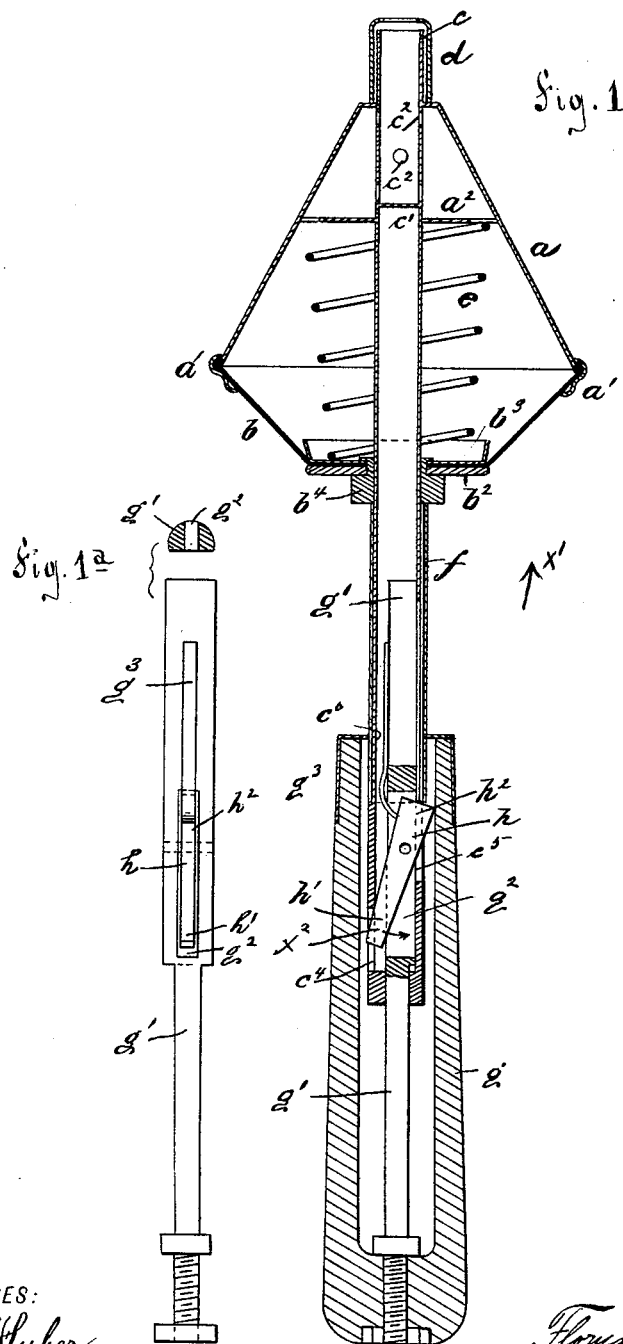


F. GRUBINSKI.

LOOM SHUTTLE THREADING DEVICE.

No. 386,816.

Patented July 31, 1888.



WITNESSES:
Henry Huber.
Martin Petry.

INVENTOR
Flores Grubinski
BY *James P. Penger*
ATTORNEYS.

(No Model.)

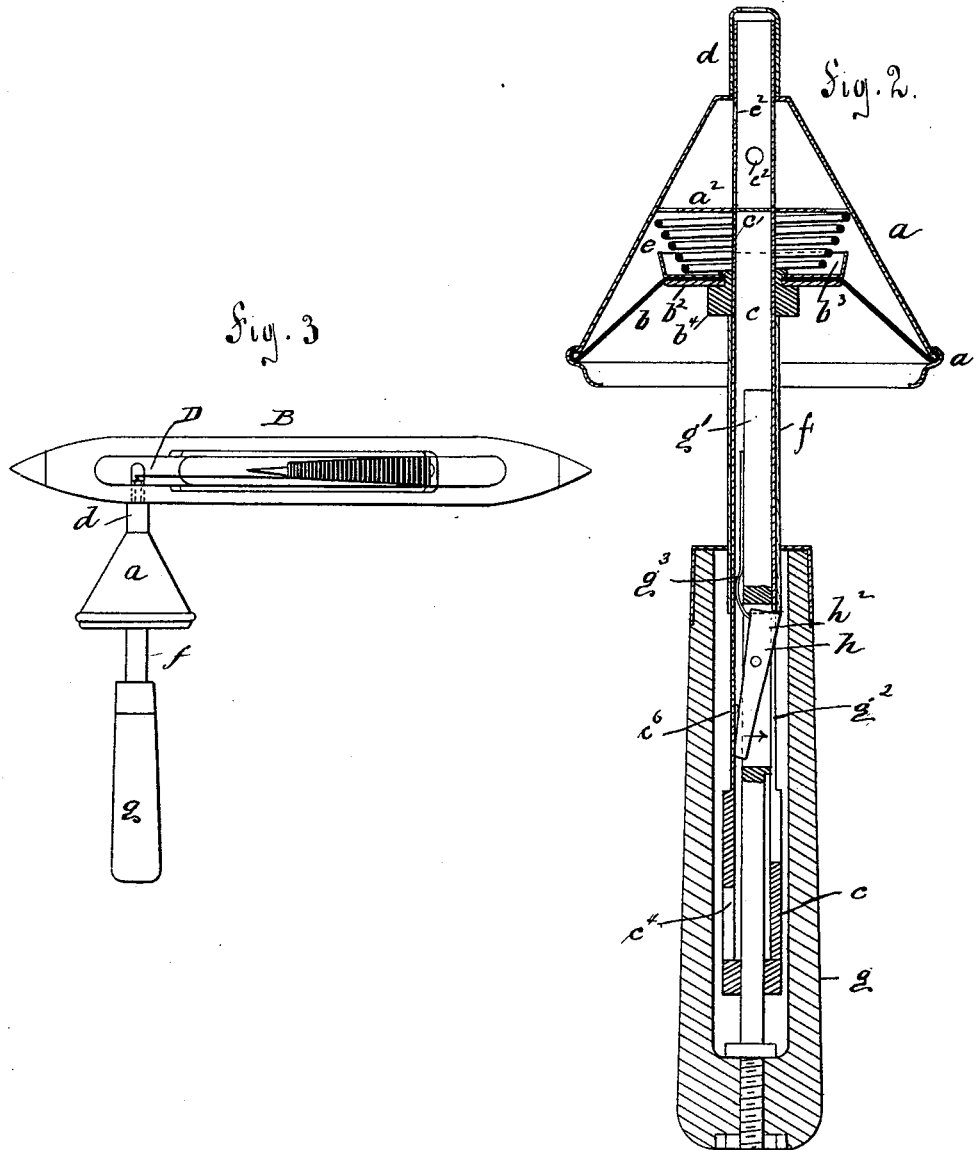
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

FLORYAN GRUBINSKI, OF WARSAW, RUSSIA.

LOOM-SHUTTLE-THREADING DEVICE.

SPECIFICATION forming part of Letters Patent No. 386,816, dated July 31, 1886.

Application filed August 24, 1887. Serial No. 247,698. (No model.)

To all whom it may concern:

Be it known that I, FLORYAN GRUBINSKI, a subject of the Czar of Russia, residing at the city of Warsaw, in the Empire of Russia, have invented certain new and useful Improvements in Loom-Shuttle-Threading Devices, of which the following is a specification.

Heretofore it has been customary to draw the end of the thread in a shuttle through an aperture in the side of the shuttle by placing the end of the thread at the inner end of the aperture in the shuttle, placing the lips on the outside of the shuttle at the opening, and then drawing in the breath, whereby the thread was drawn through the aperture. This has the disadvantage, however, that particles of the thread, fibers, dust, &c., are also drawn into the throat and lungs of the operator, and cause diseases.

The object of my invention is to provide a new and improved device for drawing a thread through the aperture of the shuttle from the inside to the outside, which device is simple in construction, can be easily applied, and works automatically.

The invention consists in the combination, with a spring suction apparatus, of an automatic latch for releasing the spring suction device automatically after the desired compression, whereby a vacuum is suddenly produced, which draws the thread through the aperture in the side of the shuttle.

The invention also consists in the construction and combination of parts and details, as will be fully described and set forth hereinafter, and then pointed out in the claims.

In the accompanying drawings, Figure 1 is a longitudinal sectional elevation of my improved device for drawing threads through the apertures of shuttles, showing the same extended—that is, in position before it has been applied. Fig. 1^a is a longitudinal view and cross-section of the fixed stem in the handle. Fig. 2 is a longitudinal sectional view of the device, showing the suction part compressed. Fig. 3 is a top view of the shuttle and my device, showing the manner in which the same is applied.

Similar letters of reference indicate corresponding parts.

The truncated cone *a* is made of sheet metal

and is provided at a short distance from its upper end with a transverse apertured partition, *a*². The tube *c* is passed longitudinally through the cone and projects a short distance from the upper end of the same, said tube being securely fastened in the upper truncated part of the cone and to the partition *a*². A short distance above the partition *a*² the tube *c* is provided with a transverse partition, *c*¹, closing the tube *c*, and above said transverse partition *c*¹ the tube is provided with a series of apertures, *c*², so as to establish communication between the upper part of the tube *c* and the upper part of the cone. A ring, *b*⁴, fitting snugly on the tube *c*, is mounted to slide on the same, and on said ring *b*⁴ a circular plate, *b*², is held, and on the same the middle portion of a disk, *b*, of leather, rubber, or other tight elastic material is placed and is held on the same by a metal cap, *b*³, placed upon the central portion of said disk of rubber or leather. The upper edge of the said disk of rubber or leather is placed on the lower edge of the cone *a*, and is held on the same by a clamping-ring, *a*¹. A spiral spring, *e*, surrounds the tube *c* within the cone, one end of the spring resting against the under side of the partition *a*², and the other end resting on the cap *b*³.

To the ring *b*⁴ a tube, *f*, is secured, which projects downward and fits snugly on the outside of the tube *c* in such a manner that it can slide on the same. The lower end of a square stem, *g*¹, fitting within the tubular handle *g*, is screwed in the bottom of the said tubular handle, that part of the stem *g*¹ within the upper part of the tube *c* being rounded, but flattened on one side, the rounded part resting against the inner rounded surface of the tube *c* and being adapted to slide on the same. The tube *c* is provided at its lower end at one side with the slot *c*⁴, and some distance above the same in the opposite side with the longer slot, *c*⁵.

The latch *h* is pivoted in the longitudinal slot *g*² of the stem, and on the upper end, *h*², of said latch a spring, *g*³, acts, which spring is fastened to the flattened side of the stem *g*¹. On the inside of the tube *c* a projection, *c*⁶, is provided, which is located from the lower end of the tube *c* a distance equal to the distance which the apparatus is to be compressed. On the upper end of the tube *c* a nipple or tip, *d*,

of rubber or other suitable material is placed.

The operation is as follows: The parts of the instrument being in the position shown in Fig. 1, the open end of the rubber tip or nozzle is placed against the side of the shuttle B, so as to be in line with the thread aperture C in the side of said shuttle. The handle *g* is then pressed in the direction of the arrow *x'*, Fig. 1, whereby the leather or rubber disk *b* is brought into the position shown in Fig. 2 and the spring *e* compressed. As shown in Fig. 1, the edge of the upper end, *h'*, of the latch *h* rests against the bottom edge of the exterior or sliding tube *f*, and is kept in this position by the spring *g'*. By pressing the handle in the direction of the arrow *x'* the stem *g'* and the latch *h* in the same are moved in the same direction and the end of the latch, acting on the end edge of the tube *f*, moves the said tube in the same direction—that is, the said tube *f* slides on the central tube, *c*. When the parts are in the position shown in Fig. 2 and the handle is pressed still farther in the direction of the arrow *x'*, the projection *c'* acts on the lower end, *h'*, of the latch *h* and presses the same in the direction of the arrow *x'*, Fig. 2, whereby the upper end of the latch *h*—that is, the end resting on the end of the tube *f*—is moved in the inverse direction of the arrow *x'* sufficiently to disengage the upper end of said latch from the end of the tube *f*. The spring *e* expands and throws the plate *b'* and the center of the flexible disk *b* in the inverse direction of the arrow *x'* into the position shown in Fig. 1, whereby a vacuum is produced in the conical casing *a* and the end of the thread D in the shuttle is drawn through the aperture C. All that is necessary to draw the thread through the aperture in the shuttle is to place the tip or nozzle against the aperture in the side of the shuttle and push the handle *g*, whereby the center of the rubber or leather disk is pressed inward, the spring compressed, and the parts then moved automatically in the inverse direction to create a suction.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a vessel containing a spring and having a compressible bottom, of a tube passed centrally through said compressible vessel, a sliding tube mounted on the first-mentioned tube, a sliding handle on the first-mentioned tube, a latch for engaging said handle with the sliding tube, and a latch-disengaging mechanism, substantially as herein shown and described.

2. The combination, with a vessel, of a tube passed longitudinally through the same and fixed therein, a flexible disk secured over the open end of the vessel and to a plate sliding on the tube, and a tube fixed to said plate and

mounted to slide on the outside of the first-mentioned tube that is secured in the vessel, a tubular handle into which the lower end of the tubes can pass, a stem fixed in said handle and passing longitudinally through the same, the upper end of said stem entering into the lower end of the tubes, a pivoted latch on the stem, and a spiral spring in the above-mentioned vessel, which spring can act on the flexible disk, and a latch-disengaging mechanism, substantially as shown and described.

3. The combination, with a conical vessel, *a*, of the tube *c*, passed through and secured in the same, the tip or nozzle *d* on the upper end of the tube *c*, the disk *b*, of leather, secured to the bottom edge of the tubular vessel *a*, the plate *b'*, secured to the central part of the flexible disk *b*, which plate *b'* is mounted to slide on the tube *c*, the cap *b''*, the ring *b'*, the tube *f*, surrounding the tube *c* loosely and connected to the plate *b'*, the tubular handle *g*, the stem *g'*, passing from the bottom of the handle longitudinally through the handle, the latch *h*, pivoted in a slot of the stem, the spring *g''*, secured to the stem and acting on the upper end of the latch, the projection *c'* on the inside of the tube *c*, and the spring *e* within the vessel *a*, and flexible disk *b*, substantially as shown and described.

4. The combination, with the vessel *a*, having the partition *a'*, of the tube *c*, passed longitudinally through the vessel *a* and secured therein, which tube *c* is provided with the apertures *c'* and the partition *c'* near its upper end, the flexible tip or nozzle *d* on that end of the tube *c* projecting above the vessel *a*, the flexible disk *b*, secured at its edge to the bottom of the vessel *a*, the plate *b'*, on which the center part of the flexible ring *b* is held, the cap *b''*, the ring *b'*, the tube *f*, sliding on the tube *c*, the tubular handle *g*, the stem *g'*, projecting upward from the bottom of the handle through the bore of the same and into the lower ends of the tubes *f* and *c*, the latch *h*, pivoted in the stem, the spring *g''*, secured to the stem and acting on the upper end of the latch *h*, the projection *c'* on the inside of the tube *c*, and the spring *e*, surrounding the tube *c* within the vessel *a*, and flexible disk *b*, one end of said spring resting on cap *b''*, placed upon the upper surface of the central part of the ring *b*, and also resting against the partition *a'* of the conical vessel *a*, substantially as shown and described.

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

FLORYAN GRUBINSKI.

Witnesses:

WLADYSŁAW GÓRECKI,
KAJĘTAN MŁODOWSKI.