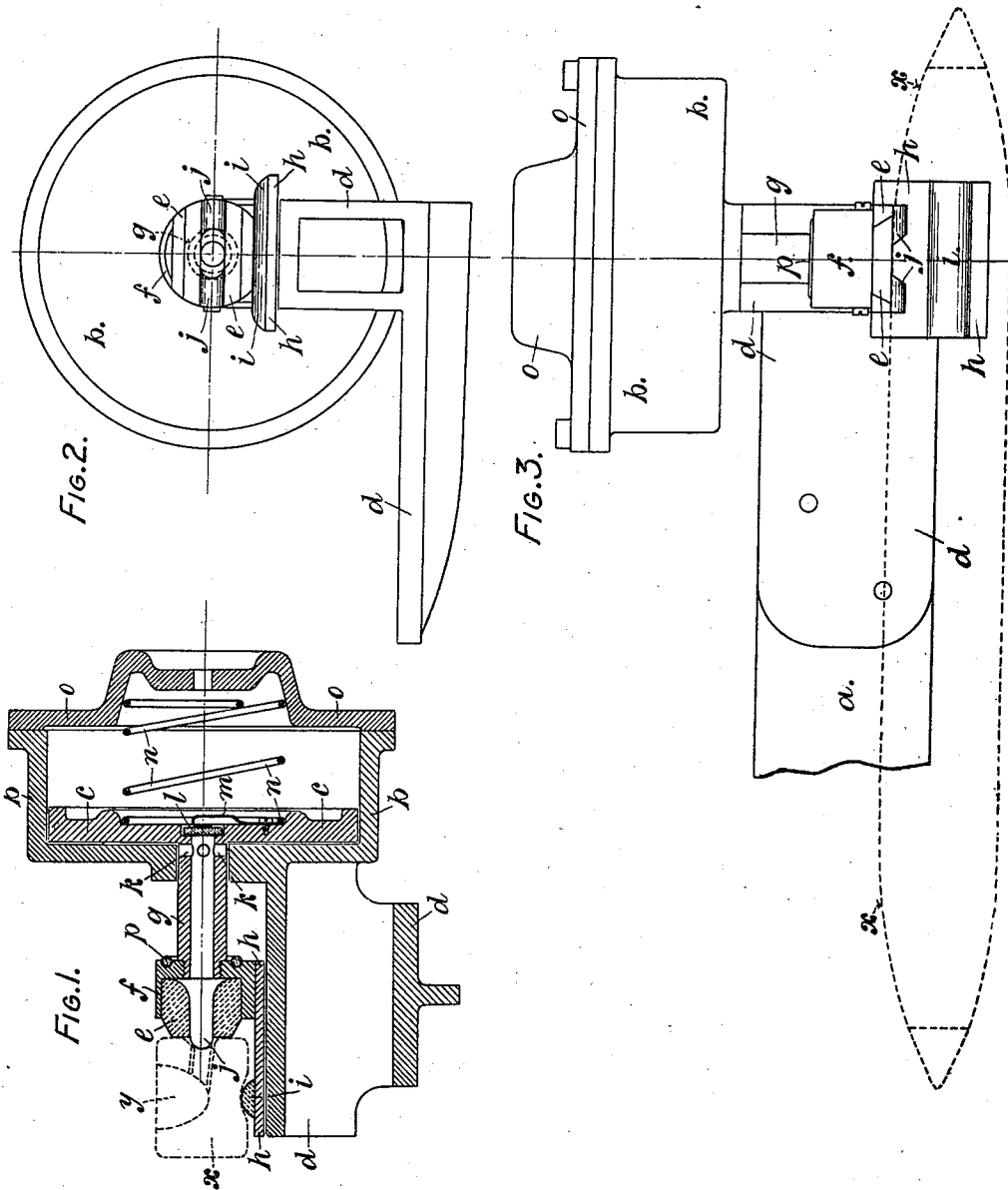


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SHUTTLE THREADING DEVICE.
APPLICATION FILED APR. 21, 1911.

1,013,425.

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HARRY ALBERT MURPHY AND JOSEPH FITZALAN SIMPSON, OF FULWOOD, PRESTON,
ENGLAND.

SHUTTLE-THREADING DEVICE.

1,013,425.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, HARRY ALBERT MURPHY and JOSEPH FITZALAN SIMPSON, subjects of the King of England, residing at Fulwood, Preston, in the county of Lancaster, England, have invented certain new and useful Improvements Connected with Shuttle-Threading Devices, of which the following is a specification.

10 This invention has reference to the threading of shuttles, that is to say the passing of the cotton or textile weft or thread from the spool or cup within the shuttle, through the hole in the body of the shuttle through
15 which it has to be passed by means of a current of air created by air exhaustion effected through artificial means, that is by means other than by the weaver drawing the thread through his mouth by placing it over the
20 said hole and taking in a sharp breath, and so avoiding the detrimental effect to the health of weavers, and its general objectionableness and uncleanness.

The object of the present invention has
25 been to provide an improvement or improvements in connection with means of the kind referred to, or an improved arrangement and construction of parts which will render the action of the threading of the shuttle
30 such as will be practical and convenient (besides being effective), and avoid the drawbacks or objections hitherto met with.

The invention is illustrated in the accompanying drawings, and is hereinafter described with the aid of them.

Figure 1 of the drawings is a sectional elevation of the apparatus; Fig. 2 is an end view; and Fig. 3 is a plan.

Referring now to the drawings, *a* represents a part of the frame of the loom to which the apparatus is fixed; as for instance, the part of the frame at one side and front of the loom; this part being most convenient for the manipulation and use of the
45 shuttle by the operator.

b is the cylinder of the apparatus; and *c* is the piston working in it; the cylinder being formed in one with or connected with a carrier or bracket *d*, which is bolted or suitably fastened horizontally, on the upper surface of the part *a* of the loom.

The position of the cylinder and piston is horizontal; and the stroke of the piston is short, and the diameter relatively large, so

that in action, only a short movement of the shuttle and the piston is required, to produce a displacement and in-draft of a relatively large volume of air.

The rubber or flexible mouth which makes joint with the shuttle—which is shown in dotted lines and marked *e*—is designated *e*; and it fits in a metal socket *f* on the outer end of the hollow piston rod *g*, connected with the piston *c*. The socket *f* is provided with a plate *h* below, which extends out in front of it, and serves as a support or rest to the shuttle when being threaded; and in action this plate *h* slides on the upper surface of the carrier bracket or bed *d*. Thus, the shuttle, and the mouth *e* are relatively stationary, when the apparatus is in action.

The mouth *e* has a hole through it, and it is provided on each side of this hole with a projecting ridge *j*, which fits into the groove usually formed on the side of the shuttle, in line with the threading pot-eye or aperture.

The piston rod *g* is hollow, and is provided with holes *k* for the free escape of air from the front end of the cylinder, in the return stroke of the piston and on the inner end of the bore of the piston rod, at the back of the piston *c*, a leather or other valve *l* is provided, it being normally pressed up to its seat by a very light spring *m*; and the piston *c* itself is normally pressed to a position of rest by the spring *n*; the outer end of which rests against the cover *o* of the cylinder *b*. A ring of rubber or like material *p* is fitted on the back of the mouth socket *f*, and forms a buffer to the socket and moving parts, when pressed in during the action of threading. The valve *l* closes when the piston *c* is moved back in the action of threading the shuttle; and the space between the front of the piston, and the closed end of the cylinder, is a closed one at this time; while when it is pressed in the opposite direction by the spring *n*, at the back, the air drawn into the cylinder by the piston in the threading action can escape by way of this valve as well as through the open end of the piston rod *g* and mouth *e*; and the return action, therefore, of the apparatus can be quickly effected.

Shuttles of the kind indicated in the drawing are of the commonest kind; that is, they have a groove in one side, at one

end, where the threading or pot-eye is placed, and the thread from the cop to be passed through the pot-eye, will, if this groove be uppermost, as is the case with this apparatus, be placed and lie in this groove; and thus when it is placed by the operator near the inlet of the threading eye, it will rest and remain naturally in this position, so that when the threading action takes place, and a sudden rush of air through the pot-eye takes place from inward, outward, the thread is sure to be in the right position to be drawn through.

In action, the shuttle is placed on the plate *h*, with the groove *y* at the end of the shuttle, uppermost, and with the pot-eye over or coincident with the opening in the mouth *e*; the projections *j* of the mouth making a joint or closure on each side of this opening with the surface of the shuttle in the side groove, and the parts of the rubber above and below the opening, make joint with the side of the shuttle. When so placed in position, the shuttle is quickly pushed inward, with the result that the whole movable parts, consisting of the plate *h*, socket *f*, and the piston *c* are moved backward, and an exhaustion is created in the front end of the cylinder *b*, and the thread lying in the groove *y* is carried by the rush of air thereby created through the threading or pot hole. The stroke provided is only short, and this is convenient and advantageous in itself; while at the same time, the volume of air moved and pressed through the pot-eye, is relatively large. The shuttle is then taken away, and the return action of the piston and movable parts, by the spring *m*, as above described, takes place. In case of shuttles having double eyes it is necessary to close one of the eyes in threading and this may be accomplished by the projection *i*.

What is claimed is:—

1. In a shuttle threading apparatus, the combination of a cylinder *b* having its axis

horizontal; the piston *c* working in said cylinder, the hollow piston rod *g* on the piston; a flexible joint making mouth piece *e* disposed at one end of said hollow piston rod and having projecting ridges which take into the groove in the side of the shuttle; and a spring pressed valve *l* at the other end, normally pressed on the opening in said rod end, substantially as set forth.

2. In a shuttle threading apparatus, the combination of a cylinder *b* having its axis horizontal; the piston *c* working in said cylinder; the hollow piston rod *g*; a flexible joint making mouth piece *e* at one end of said hollow piston rod; a spring pressed valve *l* at the other end, normally pressed on to the opening of said rod end; a slide *h* connected with the mouth *e* and adapted to serve as a rest to the shuttle, and move with the mouth; and a platform or bed *d* on which the slide *h* moves; substantially as set forth.

3. In a shuttle threading apparatus the combination of a cylinder *b* having its axis horizontal; the piston *c* working in said cylinder; the hollow piston rod *g*; the flexible joint making mouth piece *e* at one end of said hollow piston rod, having a ridge at each side of the aperture in the mouthpiece; a valve *l* at the other end, normally pressed on the opening of said rod end; holes *k* on the opposite side of the piston to the valve *l*; a spring *n* adapted to press the piston to the end of the cylinder, and the piston rod out; and a platform for the slide having a flexible ridge thereon; substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

HARRY ALBERT MURPHY.

JOSEPH FITZALAN SIMPSON.

Witnesses:

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