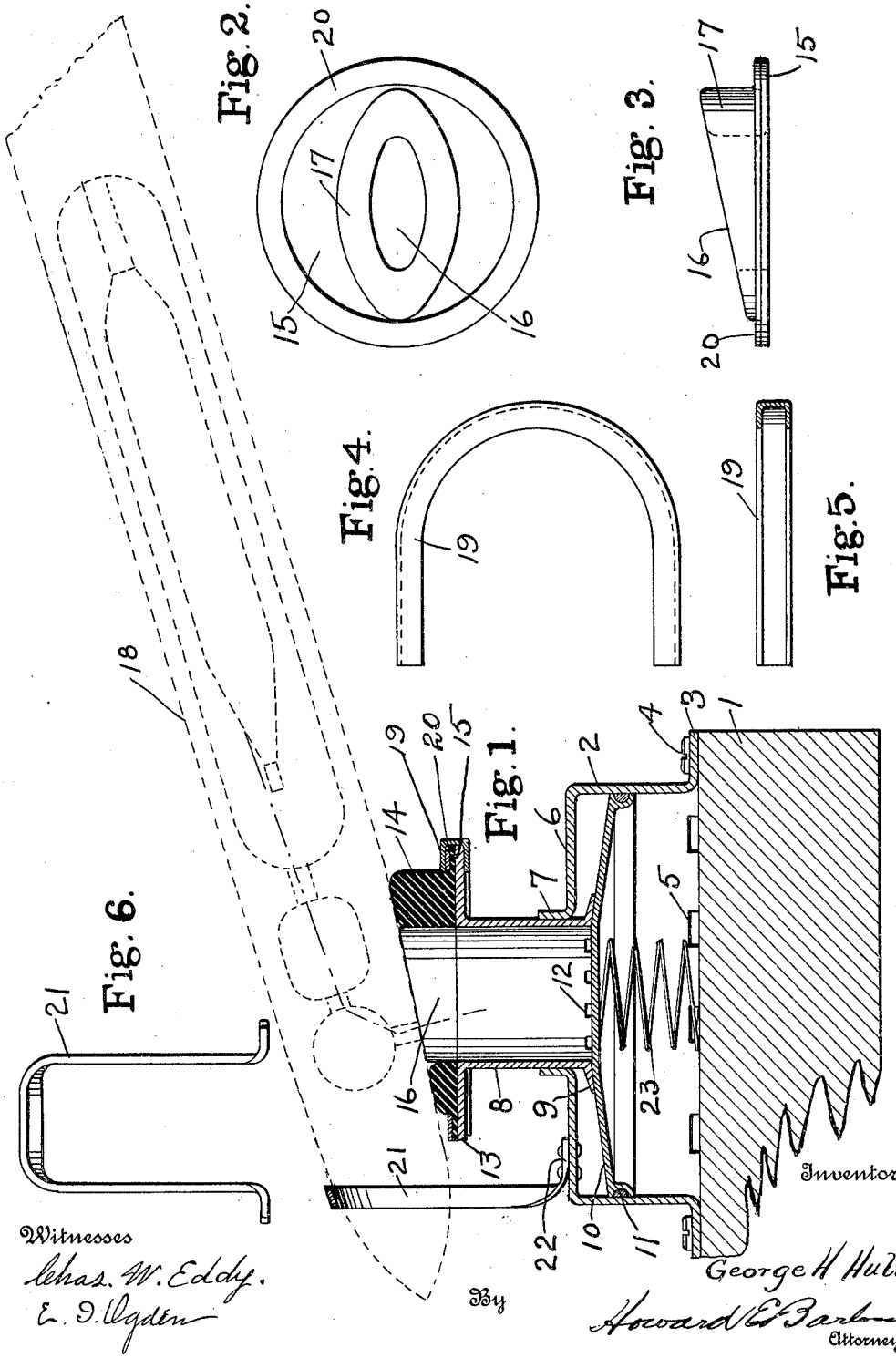
G. H. HULL.

SHUTTLE THREADER.

APPLICATION FILED MAR. 23, 1911.

1,067,247. Patented July 15, 1913.



UNITED STATES PATENT OFFICE.

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SHUTTLE-THREADER.

1,067,247. Specification of Letters Patent. Patented July 15, 1913.

Application filed March 23, 1911. Serial No. 616,407.

To all whom it may concern:

Be it known that I, GEORGE H. HULL, a citizen of the United States, and resident of Cranston, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Shuttle-Threaders, of which the following is a specification.

This invention relates to vacuum shuttle threading device and has for its object to provide an extremely simple, inexpensive and practical device of this character comprising a piston operatively mounted in a cylinder, said piston being adapted to be forced inward through a tubular piston rod communicating with the interior of said cylinder, a fulcrum member being also provided under which the end of the shuttle is placed so that the shuttle itself when positioned serves as a comparatively long lever to easily press inward the enlarged piston to quickly draw the thread through the eye of the shuttle. It is found in the practical operation of a device of this character that the same must be quick and positive in its operation, and therefore must have a large piston area whereby a very short stroke will produce sufficient vacuum to quickly draw the thread through the eye of the shuttle. To operate so large a piston quickly requires considerable force, therefore I have provided a fulcrum member whereby the shuttle itself may be employed as a comparatively long lever when positioned on the threader to quickly and easily press the piston inward and produce the required vacuum to draw the thread through the eye thereof.

Another feature of this invention is the provision of a mouth piece having an elongated opening sufficiently large to receive any or all of a plurality of shuttle eyes arranged a short distance apart along the side of the shuttle as is the case in some makes of shuttles, and to provide a raised cushion lip around this opening adapted to yield and shape itself to the contour of the shuttle as the same is pressed against it to form an air-tight mouth about the shuttle eye or eyes.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1— is a sectional side elevation of my improved shuttle threader showing the shuttle in dotted lines in position to serve as a lever to operate the threader. Fig. 2— is a top view of the mouth piece showing the elongated opening therethrough with the raised lip around it. Fig. 3— is a side elevation of the mouth piece showing the annular face of the raised lip. Fig. 4— is a plan view of the binding member adapted to fit around the edge of the mouth piece plate and to removably secure the same to the flange of the tubular piston rod. Fig. 5— is a central sectional elevation of the yoke. Fig. 6— is a front view of the binding member.

Referring to the drawings, 1 designates a portion of the loom frame and 2 a cylinder preferably formed of thin metal having a flange 3 on its lower edge secured in position to the frame by means of screws 4. The lower edge of this cylinder is provided with openings 5 through which the air may pass when the piston is forced inward. The outer end of this cylinder is provided with a head 6 having an outwardly turned neck portion 7 through which a hollow piston rod 8 is adapted to reciprocate. The inner end of this piston rod is flanged as at 9 and connected to a piston 10, the latter having a packing 11 and being adapted to reciprocate in the cylinder 2. The inner end of this tubular piston rod is provided with openings 12 into the cylinder above the piston whereby when the piston is depressed the air is sucked through the hollow rod and holes into the cylinder. The outer end of this piston rod is provided with a large outwardly turned flange 13 upon the face of which rests a mouth piece 14 of rubber or other suitable flexible material. This mouth piece comprises a thin circular plate 15 corresponding in size to the outer diameter of the flange 13. The center of this plate is provided with an elongated opening 16 of a length sufficient to cover either one, two, three or four shuttle eyes whereby any or all of the eyes in the shuttle of this character may be threaded by application to my improved vacuum shuttle threader. A raised flexible lip 17 is formed all around this opening on an angle to the body of the plate, as illustrated in Figs. 1 and 3, for the purpose of permitting the shuttle 18 to be ap-

plied thereto on an incline as illustrated in Fig. 1 as the most natural position in which to engage the threader when in the hand of the operator.

The plate or flange 15 comprising the body of the mouth piece is comparatively thin and I therefore reinforce the same about its outer edge by a thin steel ring or washer 20. It is found in practice that when these flexible lips become worn, as they will by constant use, it is desirable to readily remove the same and replace the mouth piece with a fresh one. In order to readily effect this change I have provided a coupling or binding member 19, see Fig. 4, the same being formed in substantially a U-shape from end to end, and also in a U-shape in cross section, as illustrated in Fig. 5, whereby it is adapted to be passed over both the edge of the washer 20 on the flange 15 of the mouth piece and under the edge of the flange of the tubular piston rod whereby the mouth piece is firmly secured in position. A fulcrum member 21, see Figs. 1 and 6, is provided with feet 22 and extends outward from the cylinder 2, or other convenient place, in position to engage the end of the shuttle, the shape of the fulcrum member being such as to perform a double function, first to limit the forward position of the shuttle so as to insure the proper positioning of the eye or eyes to be threaded over the opening through the mouth piece, and second, it provides a fulcrum against which the end of the shuttle may rest whereby the body of the shuttle itself may be used as a lever for pressing inward the piston against the pressure of the spring 23 and the vacuum in the cylinder.

I claim:

1. A shuttle threader comprising a pump having a movable member formed with an opening over which the eye of a shuttle is adapted to be placed, and a relatively stationary fulcrum member adjacent said movable pump member to engage an end portion of the shuttle and hold it stationary to enable the shuttle to be used as a lever to actuate said movable member to reduce atmospheric pressure within the pump.

2. A shuttle threader comprising a cylinder, a piston in said cylinder, a tubular piston rod opening into said cylinder, a cushion mouth piece on the outer end of said rod and provided with an aperture over which the eye of the shuttle may be placed, and a relatively fixed fulcrum member for engaging the end of the shuttle to be threaded whereby a leverage may be obtained to force the piston inward.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE H. HULL.

Witnesses:
HOWARD E. BARLOW,
E. I. OGDEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."