

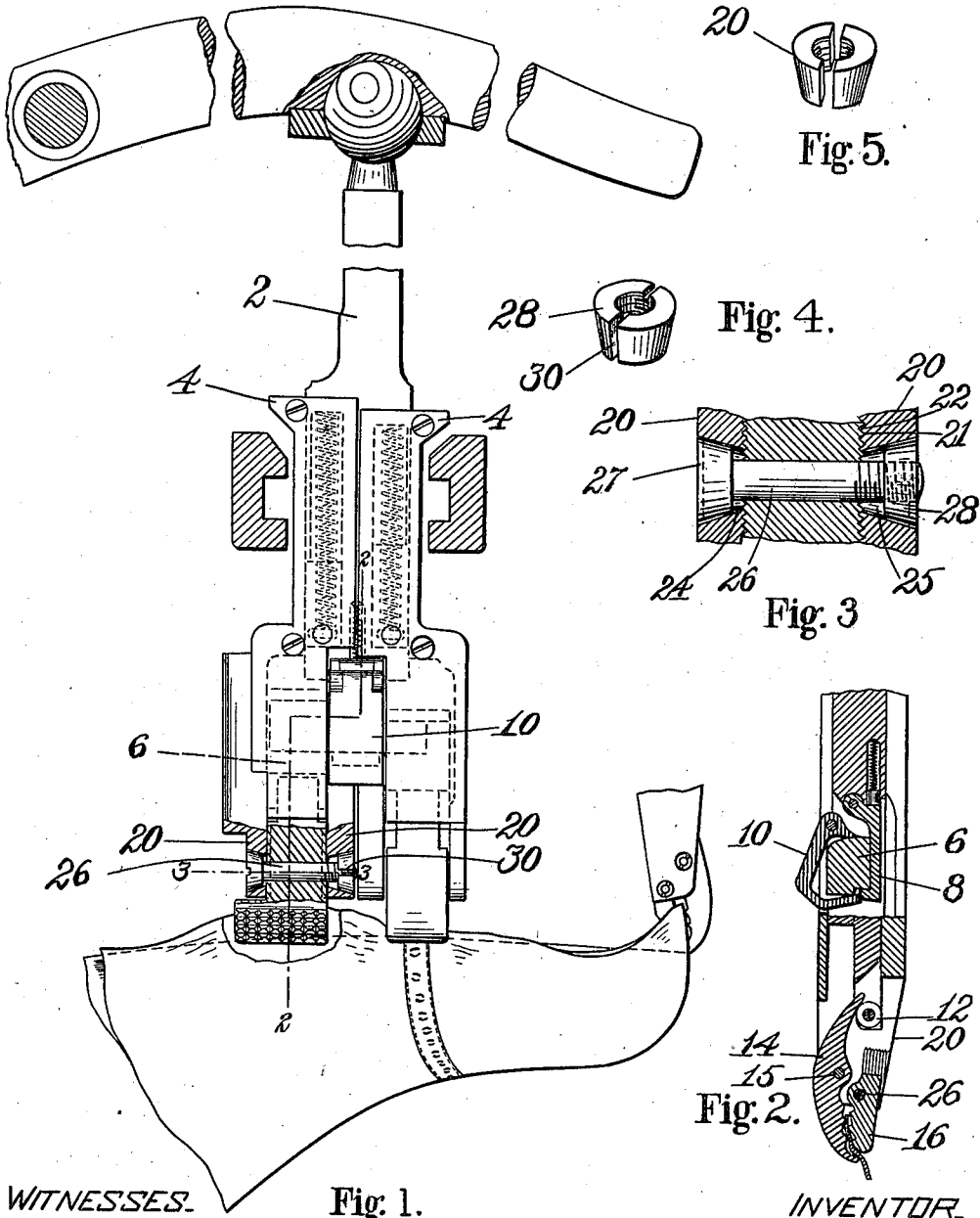
A. C. SPENCER.

GRIPPER.

APPLICATION FILED AUG. 15, 1907.

1,001,701.

Patented Aug. 29, 1911.



WITNESSES.
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Fig. 1.

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UNITED STATES PATENT OFFICE.

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GRIPPER.

1,001,701.

Specification of Letters Patent. Patented Aug. 29, 1911.

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To all whom it may concern:

Be it known that I, ALVAH C. SPENCER, a citizen of the United States, residing at Beverly, in the county of Essex and Commonwealth of Massachusetts, have invented certain Improvements in Grippers, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to apparatus for use in the manufacture of boots and shoes and particularly to grippers employed for working a shoe upper over a last. These grippers usually comprise one rigidly mounted jaw and a cooperating relatively movable jaw by which the upper is gripped and then pulled to strain it about the last and conform it to the contour of the last. These gripper jaws are subjected to severe strains which tend to cause the connections between the parts to work loose. Particularly is this difficulty found with the connection of the rigid jaw with its mounting. Looseness of this jaw is very objectionable because it not only tends to render the grip of the jaws upon the stock insecure but an excessive movement of the cooperating jaw is required to compensate for the looseness of the normally rigid jaw and thus an extra force is usually applied for actuating the other jaw in an endeavor to minimize the insecurity of the grip on the upper and this causes other connections to wear rapidly and soon become loose.

An important object of this invention is to provide an improved construction of grippers by which the rigid jaw is held more securely than heretofore so that the gripper stock may be held more firmly and the excessive straining of other parts of the grippers and the consequent wear upon them is avoided.

To this end a feature of the invention consists in a gripper mechanism comprising a casing formed to receive the shank of a gripper jaw and provided with aligned recesses adapted to receive a holding member. One of the recesses is tapered to receive a wedge shaped locking member which has operative engagement with the holding member and is so constructed and arranged that when it is forced into said tapering recess it will clamp the casing upon the

shank of the gripper jaw and will be automatically locked in adjusted position with relation to the holding member.

In the preferred embodiment of the invention the recess which receives the locking member is tapered from its outer larger end inwardly and the locking member has screw threaded engagement with the holding member and is slotted or divided. By rotating the two members relatively the locking member may be drawn into the tapering recess, clamping the casing against the shank of the gripper jaw, and at the same time will be compressed circumferentially and caused to grip and lock itself upon the holding member so as to retain its position thereon. For preventing the holding member from rotary movement during the use of the grippers said member is provided with a tapering portion which engages walls that are inclined oppositely to the walls of the recess which receives the locking member. The tapering recesses which receive the locking member and the tapering portion of the holding member are preferably formed in resilient edge plates which extend downward from the grippers casing, and when these edge plates are drawn together by the two members to clamp the shank of the gripper jaw they react upon the tapering parts of the holding and locking members and cause them to be tightly wedged together, and prevent relative rotation of the two members and hence the working loose of the parts.

The invention will be more fully explained in the following description of the preferred embodiment thereof and will be pointed out in the claims.

Figure 1 is a side elevation, partly in section, of grippers embodying this invention; Fig. 2 is a section on line 2—2 of Fig. 1; Fig. 3 is a section on line 3—3 of Figs. 1 and 2 on a larger scale; Fig. 4 is a detail; Fig. 5 is a modification.

The gripper mechanism comprises an operating bar 2 movable lengthwise in two complementary casings 4, 4 containing gripper controlling devices 6, 6 to which the bar is detachably connected by a hook 8 which may be disengaged from the controlling devices by a tripper 10. Each controlling device slides freely in its casing and has at its lower end a roller 12 which engages the inclined rear face of a gripper jaw 14 which is pivoted to its casing at 15, as shown in Fig. 2,

whereby it may be rocked against the co-operating jaw 16 with great force to grip and hold the stock with the firmness necessary for straining the upper about the last,—for example in the pulling-over operation performed by pulling-over machines of the type shown in United States Letters Patent No. 663,777 granted on the application of Ronald F. McFeely, for which machine the present invention has been especially devised.

To withstand the pressure of the pivoted gripper jaw and prevent it from working loose under the severe intermittent straining to which it is subjected the jaw 16 requires to be fastened in its casing with special strength and security. To this end the casing is provided with edge plates 20, 20 spaced apart to receive snugly the jaw 16. The inner adjacent faces of the edge plates 20 have alternate grooves and ribs 21, 22 as shown in Fig. 3, while the outer edges of jaw 16 are provided with complementary ribs and grooves as also appears in that figure. The edge plates extend below the cross plates or body of the casing, as appears in Fig. 2, and are slightly resilient so that they may be sprung inwardly to clamp the jaw. The edge plates are also provided with aligned recesses 24, 25, which taper from the outer toward the inner sides of the plates. The jaw 16 has a transverse recess and through these openings extends a holding member 26. This member has a conical head 27 at one end adapted to be drawn and wedged into the recess 24. At its opposite end the holding member is screw threaded to receive a locking member 28 formed as a ring or collar having a tapering outer side face for engagement with the walls of the recess 25 and a screw threaded inner face for engagement with the threaded end of the holding member. The locking member is also slotted, as at 30, whereby as it is drawn toward the contracted inner end of the recess 25 by relative rotary movement of the two members it will be compressed by the wedging action of the walls of the tapering recess and will be caused to grip or clamp the threaded portion of the holding member and become securely locked thereon. The resilient edge plates are drawn together by the two members and the reaction causes them to become wedged upon the conical head of the holding member and the tapering outer face of the locking member to restrain relative rotary movement of the two members which would permit the jaw to work loose. The locking member and the head of the holding member may be each formed to be engaged by a tool by which these members can be relatively rotated. It is found in practice that grippers constructed as herein described can be used for several months without removal of parts or loss of efficiency while with the constructions formerly em-

ployed the rigidly mounted jaw would usually begin to work loose in a few days causing the grippers to hold and pull the stock imperfectly and occasioning unusual strain and wear upon the pivoted jaw and its operating mechanism. This made it necessary to renew both jaws as well as other parts at frequent intervals.

In the modification shown in Fig. 5, the locking member is divided into two parts. It may be formed as a single piece and divided by cutting it longitudinally, removing a portion of the material so that the two parts will be separated by two slots when they are in position of use.

Having explained the nature of this invention and described the best form thereof at present known to me, I claim as new and desire to secure by Letters Patent of the United States:—

1. A gripper mechanism comprising a casing having resilient edge plates, a gripper jaw movably connected with the casing, a cooperating gripper jaw adapted to be received between said edge plates, a holding member having a head seated in one of said edge plates, a locking member seated in a recess in the other edge plate and having screw-threaded engagement with the holding member and a tapering side face formed and arranged for wedging engagement with said recess, said edge plates being arranged to act yieldingly outward against said members to hold them in locking engagement.

2. A gripper mechanism comprising a casing having resilient edge plates, a gripper jaw having a shank formed to fit into the casing, a holding member engaging the shank and arranged in alinement with a tapering recess in one of said plates, and a compressible locking member located in a recess in the other of said plates constructed and arranged to be operatively engaged with the holding member by force exerted through the resilient edge plates acting outwardly and to be wedged into the recess and clamped thereby upon the holding member.

3. In a mechanism of the class described comprising a casing having resilient edge plates, a jaw having a shank formed to fit between said plates, a holding member arranged in aligned, oppositely tapering recesses in said plates and passing through the shank, a tapering head formed on said holding member to fit into one recess, and a split locking member having screw threaded engagement with the holding member and tapered to fit the other recess, said plates being compressed and thereby clamped against said shank and by their reaction serving to hold the locking member yieldingly into engagement with the screw thread upon the holding member.

4. In a mechanism of the class described, a casing having resilient edge plates, a jaw

fitted into the casing, a holding member extending through the casing and jaw, and a split locking member provided with tapering side faces and having screw threaded engagement with the holding member and arranged to be compressed through engagement with one of said resilient plates which plates when drawn together react and cause the locking member to be clamped upon the holding member, said holding member being formed with a tapering head to fit a similarly shaped recess in one of said edge plates and shaped and arranged to permit it to be engaged for screwing it into the locking member.

5. In a gripper mechanism, a casing having resilient edge plates, a gripper jaw pivotally connected to the casing, a cooperating jaw adapted to be received between said edge plates, and complementary ribs and grooves formed on the adjacent faces of said jaw and plates; combined with a holding

member extending through the edge plates and jaw, and a locking member having screw threaded engagement with the holding member for clamping the edge plates upon the jaw, said locking member comprising a slotted sleeve located wholly within one edge plate and having a tapering side face to be wedged into a recess in the adjacent edge plate whereby it is compressed into locking engagement with the holding member, said wedging engagement being maintained by the reaction of the resilient edge plates against the holding member and locking member.

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

ALVAH C. SPENCER.

Witnesses:

ARTHUR L. RUSSELL,
JAMES R. HODDER.

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