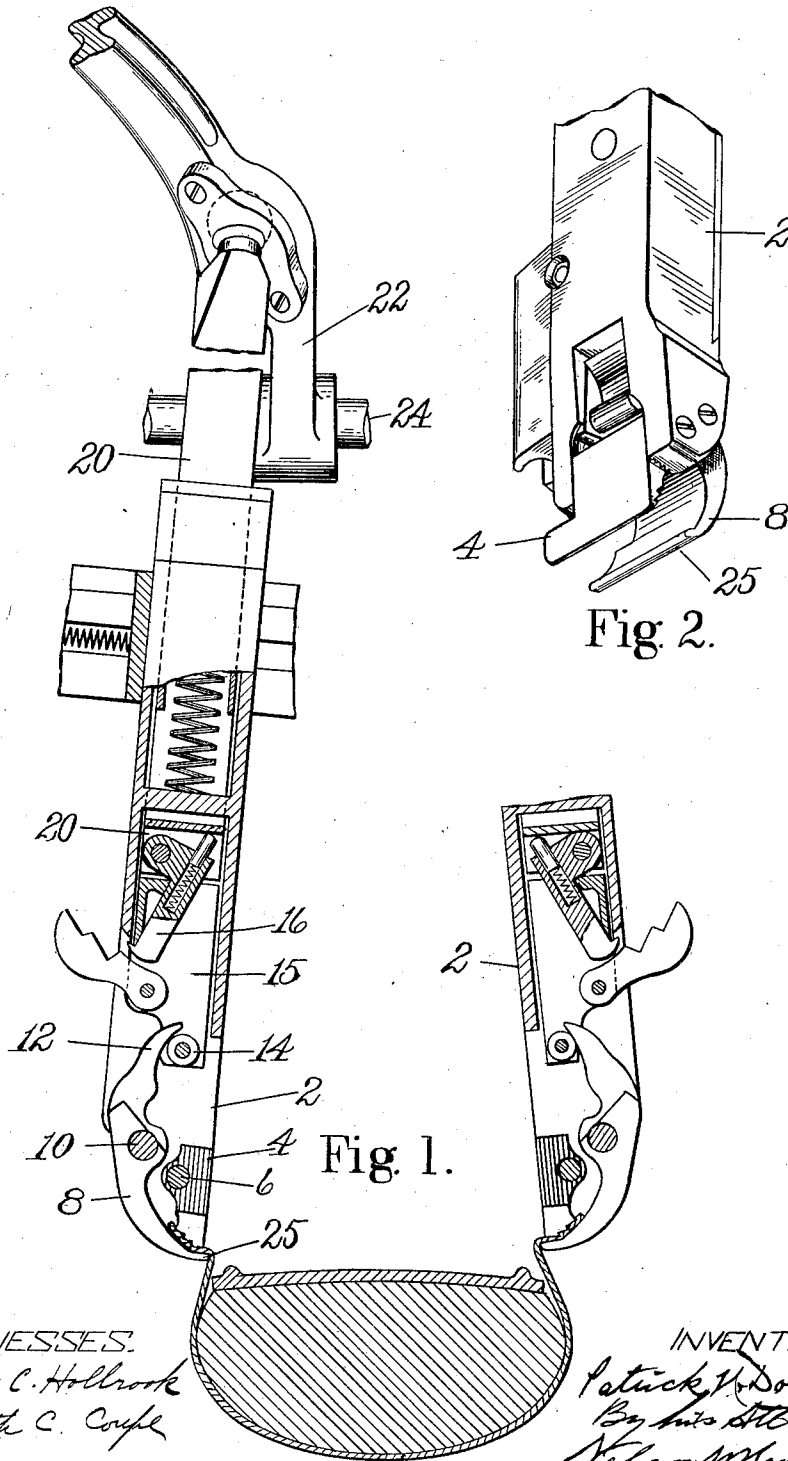


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GRIPPERS.
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1,002,828.

Patented Sept. 12, 1911.



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UNITED STATES PATENT OFFICE.

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GRIPPERS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, PATRICK H. DOHERTY, a citizen of the United States, residing at Avon, in the county of Norfolk 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 gripper mechanisms and particularly to pulling grippers adapted for use in the manufacture of boots and shoes for working an upper over a last. Grippers used for this purpose are often required to apply heavy pulling strains to the shoe stock and must therefore grip and hold the stock securely. Difficulty has been experienced in obtaining the required degree of security without injuring the stock by marring or cutting its finished surface or causing the gripped portion to be torn or bitten out.

An object of this invention is to provide a gripper mechanism that will pull and hold stock, as for example shoe upper material under the conditions prevailing in the operations of pulling-over and lasting a shoe, with great security and without liability of damaging the stock.

With this object in view an important feature of this invention consists in providing a pulling gripper with means, in addition to the gripping faces of the jaws, for engaging the stock to assist in holding it from pulling out of the grippers, thus rendering it unnecessary to grip the stock with the jaws as hard as has heretofore been required for the purpose of holding it. As herein shown this means is formed as a projection or lip on one of the jaws located below the gripping faces and in position to cause the stock, as it extends from the gripping faces to the last or other support for the stock, to be bent over the lip in the pulling operation. This lip thus shares the pulling strain with the gripping faces of the jaws and by engaging the stock below said faces relieves the stress upon the gripped portion of the stock. With this provision it is not necessary to clamp the stock so firmly between the gripping faces and therefore the gripped portion of stock is not so liable to be marred or cut by the conforma-

tion of the gripping faces, and the gripped portion of stock need not be compressed so severely as to weaken its connection with its adjacent portions of the stock to an extent which might cause it to be torn out. This projection or lip over which the stock is bent below the grippers in the pulling operation will for convenience be herein sometimes referred to as a "snubbing lip" in recognition of its functional similarity to what is called a snubbing post.

As has been above stated it is unnecessary in pulling grippers having a snubbing lip to hold the stock so firmly between the gripping faces of the jaws as has heretofore been required. It is therefore practical to employ jaws having one or both gripping faces comparatively smooth so as not to be liable to mark injuriously the face of the stock. In the construction shown in the drawings, which is a pulling gripper for a pulling-over machine, the jaw which engages the outer, finished side of the upper leather has a smooth gripping face while the jaw which engages the shoe lining or the inner, unfinished side of the leather has a toothed gripping face. These teeth can indent or bite into the lining or the inner surface of the stock without harmful results, while the finished surface of the stock is engaged without injury by the smooth face of the outer jaw.

As will now be understood a further feature of the invention consists in pulling grippers having jaws one of which has a toothed or roughened gripping face to engage one side of the stock while the other jaw has a comparatively smooth gripping face to clamp the other side of the stock, in combination with a snubbing lip to share the pulling strain with the gripping faces of the jaws. The lip will preferably be formed on the smoother jaw and engage the finished surface of the stock. The more extended stock-engaging surface thus provided on the smooth jaw balances in a degree the greater holding power of the toothed gripping face of the other jaw.

In the following description these features of the invention and others, including certain details of construction and combinations of parts will be more fully explained and the invention will be particularly pointed out in the claims.

In the drawings, Figure 1 is a side view

of grippers embodying this invention and shown in operation pulling an upper over its supporting last. Fig. 2 is a perspective view of the grippers.

5 The carrier or casing 2 of the mechanism supports the two jaws and contains the devices for driving and uplifting them to grip and pull the stock. The jaw 4 is rigidly secured to the casing by the bolt 6 while
10 the jaw 8 is pivoted on the pin 10 and has a tail piece 12 that is engaged by a roll 14 on a slide 15 for rocking the pivotal jaw toward the fixed jaw. The slide 15 is connected by the hook 16 to a bar 20 which projects upwardly through the casing and has
15 a ball and socket joint with a lever 22 fulcrumed at 24 by which the bar and slide are uplifted for closing and raising the jaws. The jaw 4 which engages the lining on the
20 inner unfinished side of the upper leather has a roughened gripping face provided with teeth adapted to indent or bite into the stock. The jaw 8 is shown as having a smooth gripping face by which the stock is
25 clamped against the other jaw without danger or injury to the finished surface of the stock. In the broadest aspect of the invention the particular formation of the gripping faces of the jaws, as well as the mechanism for actuating the jaws, is not im-
30 portant.

The jaw 8 carries the projection or snubbing lip 25 which is formed on the lower end of the jaw and is arranged to extend
35 under the jaw 4 and below and beyond the gripping face of jaw 4 as shown in Fig. 1. This snubbing lip sharply bends the upper as it extends from between the gripping faces to the last which supports the shoe. By the frictional engagement of this bending lip with the stock during the pulling
40 operation the lip is caused to share the pulling strain with the gripping faces thus relieving said gripping faces of a portion of the work of holding the stock. For this
45 reason it is found that the improved grippers of this invention will hold the stock securely in the severe strains sometimes applied to it in pulling-over and lasting operations without forming the gripping faces so
50 that they will indent the stock to the extent heretofore required and without applying to the jaws, through the operating mechanism 15, 20 and 22, the heavy clamping pressure
55 which has before been necessary. The lip 25 which engages the finished side of the stock adds to the area of the stock engaging surface of the smooth jaw so that said jaw holds upon the finished side of the stock
60 with a force approximately equal to that of the roughened gripping face of smaller area

presented by the other jaw. The lip acts, in the combination herein shown, in a manner similar to a snubbing post around or against which a line is held to check the
65 motion of a body pulling on the line.

Having explained the nature of this invention and described a preferred embodiment thereof, I claim as new and desire to secure by Letters Patent of the United
70 States:—

1. In a gripper for pulling an upper over a last, a jaw having a roughened gripping face for engaging the inner side of the stock, a jaw having a comparatively smooth
75 gripping face for engaging the finished side of the stock and constructed and arranged to cooperate with the first mentioned jaw to grip and hold the stock, and means carried by the smoother faced jaw located below the
80 gripping faces and extending beyond the inner side of the other jaw for bending the stock between said jaws and the last when the gripper is uplifted to pull the upper.

2. In a gripper mechanism for pulling an
85 upper over a last the combination with a jaw having a toothed gripping face and a jaw having a relatively smooth gripping face and provided with a snubbing lip which extends when the jaws are closed beyond the
90 inner side of the first-mentioned jaw, of means for actuating the jaws to grip and pull stock and to bend it between said faces and the last.

3. In a gripper mechanism the combina-
95 tion with a jaw having a toothed gripping face and a jaw having a relatively smooth stock engaging face extending inwardly beyond the gripping face of the first-mentioned jaw, formed and arranged with rela-
100 tion to the line of strain of the stock to bend the stock, a device for rocking one jaw against the other and lever mechanism for actuating said device to close and then up-
105 lift the grippers.

4. In a pulling and gripping machine the combination with a jaw 4 having a toothed end face, the jaw 8 pivoted adjacent to jaw 4 and extending downwardly along the outer side of the jaw 4 and bent under the toothed
110 end of said jaw and provided with the snubbing lip 25 located when the jaws are closed, at the inner side of the inner face of the jaw 4 for the purpose described.

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

PATRICK H. DOHERTY.

Witnesses:

THOMAS A. AUSTIN,
ARTHUR J. SHEPHEARD.