S. W. WINSLOW, Jr.

GRIPPER.

APPLICATION FILED DEC. 14, 1910.

1,053,958. Patented Feb. 18, 1913.

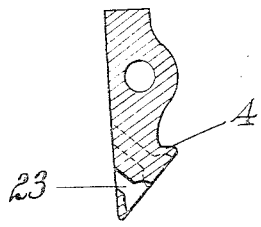


Fig. 3.

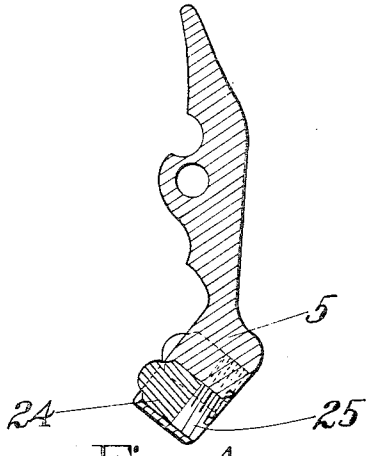


Fig. 4.

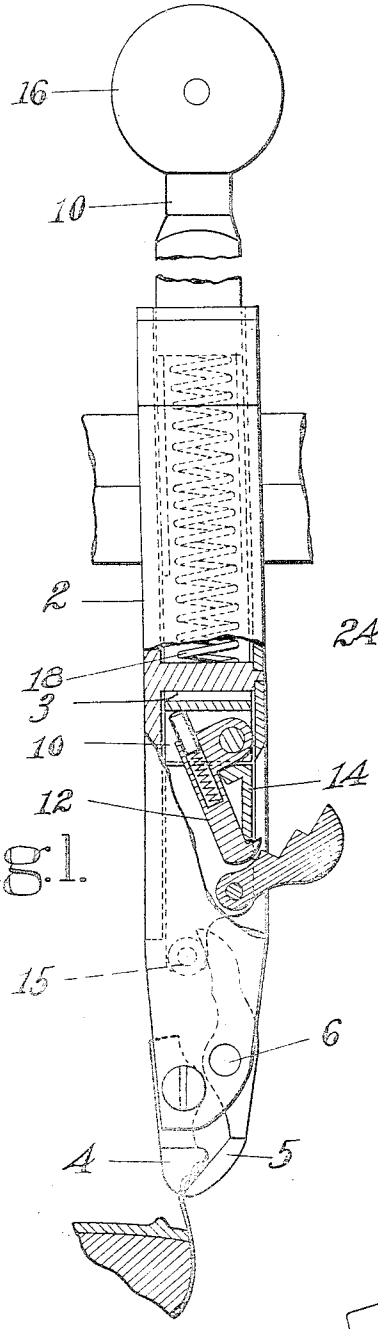
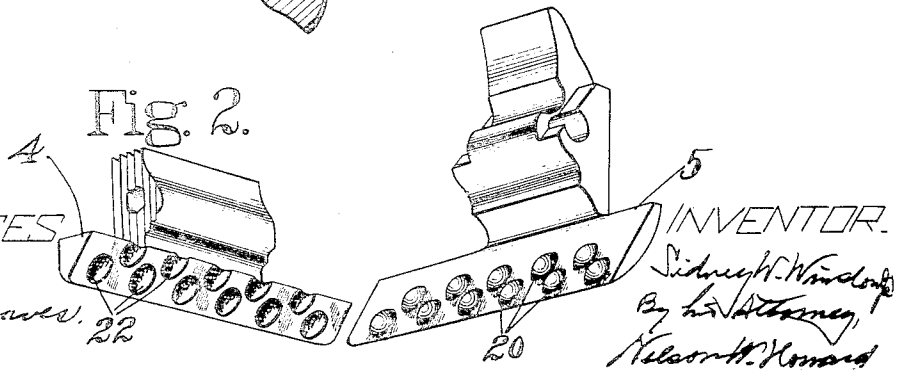


Fig. 1.

Fig. 2.



WITNESSES

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GRIPPER.

1,053,958. Specification of Letters Patent. Patented Feb. 18, 1913.

Application filed December 14, 1910. Serial No. 597,195.

To all whom it may concern:

Be it known that I, SIDNEY W. WINSLOW, Jr., a citizen of the United States, residing at Beverly, in the county of Essex and State 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 upper stretching grippers and particularly to grippers of power-operated shoe machines, such as the pulling-over machines.

In the manufacture of shoes under present conditions the upper is thoroughly stretched in conforming it to the last and for the purpose of avoiding waste of expensive leather the upper is cut only large enough to overlie the shoe bottom the required amount when it has been so stretched. These facts preclude the pulling-over machine which is the initial upper stretching machine from obtaining a deep grip on the upper. This is particularly the case at the sides of the shoe and it has become important to devise gripper jaws which can, with a shallow grip, seize and securely hold the upper without tearing or otherwise injuring it while subjecting it to the required severe stretching.

To provide grippers which will successfully meet these conditions is the object of the present invention.

With this and other objects in view, an important feature of this invention is found in gripper jaws that have what is herein termed "ball and socket" gripping formations on their upper seizing faces. These faces have substantially hemispherical projections on one jaw, which is preferably the jaw that engages the finished side of the leather, and correspondingly shaped recesses or sockets formed in the opposed jaw and arranged to have the leather forced thereinto by the projections. Such jaws are found to be peculiarly effective for holding the shoe upper without tearing or otherwise damaging it while it is being thoroughly stretched by the operation of the powerful commercial pulling-over machine which is of the type represented in United States Letters Patent No. 663,777. Preferably the projections, and of course coöperating depressions, will be spaced a substantial distance apart so as to form distinctly separate holding points along the edge of the upper with intervals between them in which the upper is gripped by the plane faces of the jaws. These local holding points may advantageously be arranged in two rows to engage along the edge of the upper and be staggered.

The projections have been referred to as hemispherical but they may be any spherical segment or the functional equivalent thereof. They are preferably formed as integral protuberances from the body of the jaw, but may be made as separate devices inserted in the face of the jaw, and in one embodiment of the invention these projections are shown as the rounded heads of pins or blocks and as backed up by screws that permit adjustment to vary the projection of the heads. When the projections are non-integral with the body of the jaw they may be formed of a different kind of material, as for example, a material that has a greater coefficient of friction or holding power against the upper material than does the material of the jaw the primary requirement for which is strength. Hard rubber and fiberoid are holding materials of this class and I have shown one of these materials in an illustrated embodiment of the invention. Herein are to be seen further features of this invention and still another feature is to be found in provision for clearing the sockets. One of the practical conditions that reduces the efficiency of grippers is that depressed portions fill more or less with particles of leather, lint, dressing and other foreign material which tend to make the gripping faces smooth. I have provided the jaw that has the recesses in its gripping face with clearance openings through from said recesses to permit the escape of foreign material. The projections on the other jaw force the dirt into and through the clearance openings and so keep the recessed jaw clear. The clearance openings are preferably of smaller diameter than the sockets, this construction having the effect of truncating or cutting off the narrow portions of the sockets, so that gripping of the material is avoided at the points or tops of the projections, where it might become too intense when thin stock is being

treated, and takes place only about an annular area or zonary surface of such projections, the pressure being thus distributed over a larger area and undesirable marking of the stock prevented. Some of the advantages of this invention might, however, be obtained if the openings were substantially of the same size as the projections on the opposed jaws, this construction tending to concentrate the gripping effect about a narrower annular area than is the case when the openings are of smaller size. In jaws made in accordance with this invention in which the projections and sockets are relatively large and not numerous, it is practical to provide the clearance openings without objectionably weakening the jaw.

The several features of the invention will be more fully understood from the following description of an illustrative construction and then the invention will be more definitely pointed out in the claims.

Figure 1 is a side elevation, partly in section, of a gripper for the pulling-over machine of said patent and which is equipped with the present invention. Fig. 2 shows in perspective the gripping faces of the coöperating jaws. Fig. 3 is a section showing clearance openings. Fig. 4 is a section showing a construction in which the projections are non-integral with the jaw and are adjustable, the shading indicating that the projections are of a different material from the body of the jaw.

The gripper mechanism as a whole is of well known commercial construction fully described in a prior United States Letters Patent No. 1,030,264, granted June 18, 1912, on application of Ronald F. McFeely. This comprises a jaw carrier 2 on which jaw 4 is rigidly mounted and jaw 5 is pivoted at 6. Within the jaw carrier moves longitudinally a bar 10 from which is suspended a hook 12 that engages a slide 14 to pull it upwardly. The slide has a roll 15 that contacts with the upper arm of pivoted jaw 5 to rock said jaw toward the fixed jaw and by its wedging action on said upper arm to close the jaws powerfully upon the stock. The bar 10 has on its upper end a head 16 by which it is raised to close the jaws, against the downholding force of a spring 18 that rests on a shelf 3 of the jaw carrier, and is then further uplifted by a power actuated lever mechanism to stretch the upper. In accordance with this invention one of the jaws, which will preferably be the jaw 5 that engages the outer or finished side of the upper leather, is provided with a series of projections 20. These projections are substantially hemispherical in appearance, although obviously they may form less than a hemisphere. In the opposed jaw 4 are formed correspondingly shaped or counterpart sockets or depressions 22 which are located opposite to the projections on jaw 5 and into which the stock is deflected by said projections as by a ball into a socket when the jaws are closed to grip the upper. The projections, and likewise the depressions, are arranged in a row along the lower edge of the jaw, being spaced a substantial distance apart to provide plane gripping faces between them. A second row of gripping formations is provided above the first row and in staggered relation therewith. The sockets may have clearance openings outwardly through the jaws as at 23, Fig. 3. The projections may be formed on pins or blocks 24 as in Fig. 4 and be backed up and positioned adjustably by screws 25. In this construction the projections are formed by the rounded ends of blocks of hard rubber or it might be fibroid or other material having a high coefficient of friction against the upper and thus adapted to hold the same frictionally. This provision of jaws presenting gripping areas of one kind of material for engaging the upper and areas of a different kind of material for engaging a lining will result in holding the upper from slippage with greater security than the lining is held. These projections, when made of material other than metal will be less liable than a harder material to mark the edge of the upper permanently. The gripped area of leather need not, with this formation of jaws, however, extend deeply into the upper and no disadvantage ordinarily results even if the upper is permanently marked. The extent to which the blocks 24 project can be changed by the screws 25 and the blocks can be advanced to compensate for wear as may be needed.

Having explained the nature of the invention and described how it may be used I claim as new and desire to secure by Letters Patent of the United States:—

1. A shoe upper stretching gripper having, in combination, opposed jaws and means for actuating them, said jaws having a plurality of coöperating ball and socket formations on their gripping faces.

2. A shoe upper stretching gripper having, in combination, coöperating jaws and means for actuating them, one of said jaws having on its gripping face a plurality of hemispherical projections and the other jaw having in its gripping face sockets arranged opposite to the projections on the first jaw.

3. A shoe upper stretching gripper having, in combination, coöperating laterally extending jaws and means for actuating them, one of said jaws having an otherwise plane face from which extend a plurality of blunt projections separated by a substantial distance from one another and the other of which jaws has an otherwise plane face into which extend recesses corresponding in location to the projections of the opposed jaw.

4. A shoe upper stretching gripper having, in combination, coöperating jaws and means for actuating them, said jaws having a row of coöperating blunt projections and recesses along their lower edges spaced a substantial distance apart and constituting a series of separate and distinct gripping points at opposite lateral sides of which the stock is less securely held.

5. A shoe upper stretching gripper having, in combination, coöperating jaws and means for actuating them, one of said jaws having on its gripping face a plurality of blunt projections arranged longitudinally of the edge of the upper and the other of which jaws has recesses opposed to the projections and having clearance outlets.

6. A shoe upper stretching gripper having, in combination, coöperating jaws and means for actuating them, one of said jaws having on its gripping face a plurality of projections and the other of which jaws has counterpart sockets into which the stock is deflected by the projections, and clearance openings of smaller size than the sockets extending from the base of the sockets through the jaw.

7. A shoe upper stretching gripper having, in combination, coöperating jaws, and means for actuating them, one of said jaws being provided in its gripping face with a plurality of blocks of hard rubber spaced apart to form separate gripping areas.

8. A shoe upper stretching gripper having, in combination, coöperating jaws, and means for actuating them, one of said jaws being provided with a plurality of recesses, blocks of friction material set in said recesses, and means for adjusting said blocks toward and from the plane of the gripping face.

9. A shoe upper stretching gripper having, in combination, coöperating jaws and means for actuating them, one of said jaws having hard rubber blocks 24 mounted in its gripping face and screws 25 for adjusting said blocks, and the other jaw having recesses 22 opposed to said blocks and clearance outlets 23 of relatively smaller diameter than the recesses and leading from the recesses through the jaw.

10. A shoe upper stretching gripper having, in combination, opposed jaws and means for actuating them, one of said jaws being provided with a plurality of spherically rounded projections and the other with coöperating bottomless recesses whereby the gripping pressure is applied to annular areas of the stock.

11. A shoe upper stretching gripper having in combination opposed jaws and means for actuating them, one of said jaws being provided with spherically rounded projections and the other jaw with similarly shaped truncated recesses whereby gripping action is avoided about the tops of the projections.

12. A shoe upper stretching device, having in combination, opposed gripping surfaces, said surfaces being contoured to grip the stock over a plurality of annular areas only.

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

SIDNEY W. WINSLOW, Jr.

Witnesses:

Everett W. Varner,

Arthur L. Russell.