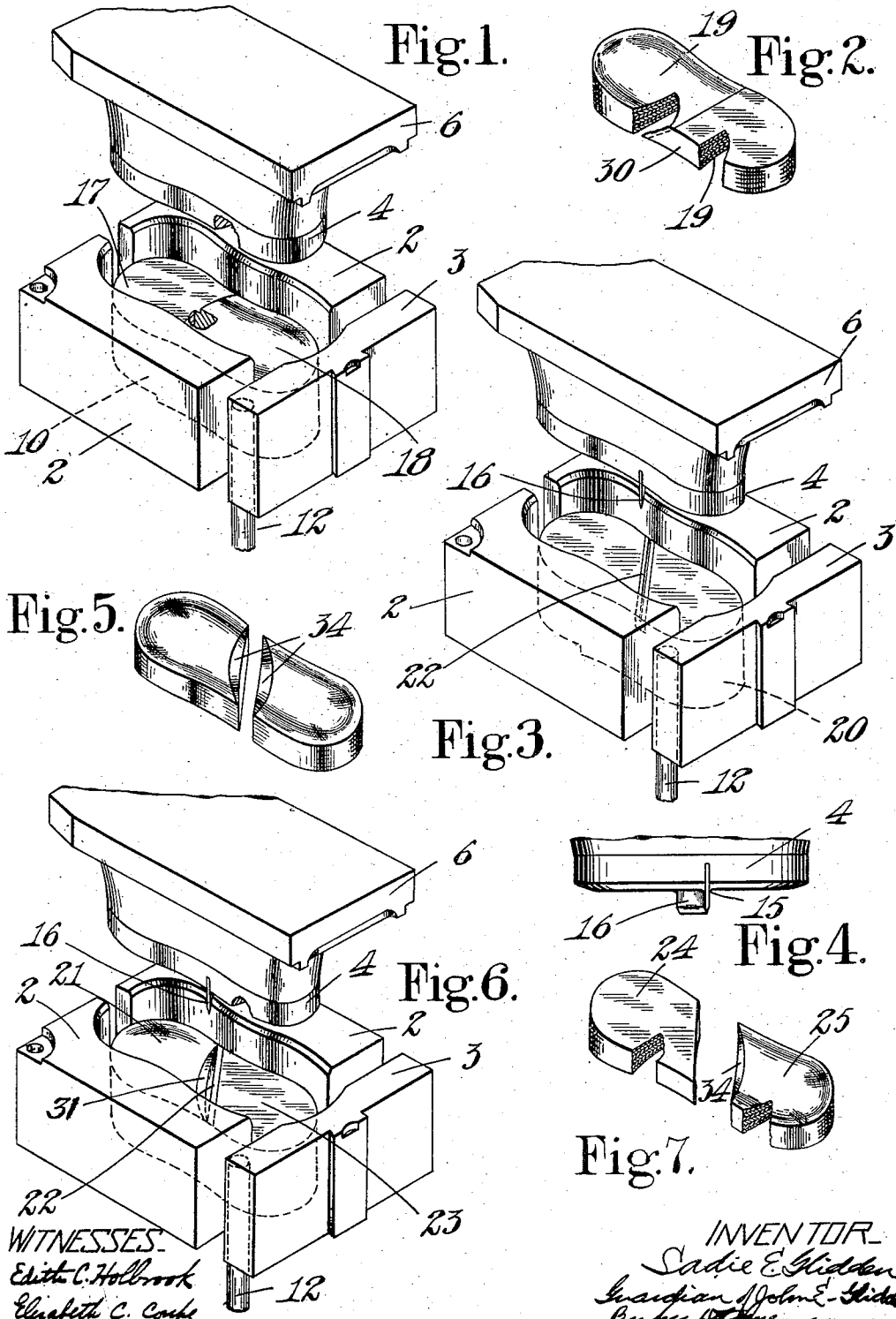


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HEEL COMPRESSOR.
APPLICATION FILED JULY 13, 1910.

1,017,406.

Patented Feb. 13, 1912.



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UNITED STATES PATENT OFFICE

JOHN E. GLIDDEN, INSANE, OF BEVERLY, MASSACHUSETTS; SADIE E. GLIDDEN, GUARDIAN; SAID SADIE E. GLIDDEN, ADMINISTRATRIX OF SAID JOHN E. GLIDDEN, DECEASED, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

HEEL-COMPRESSOR.

1,017,406.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that JOHN E. GLIDDEN, insane, of Beverly, in the county of Essex and State of Massachusetts, invented certain
5 Improvements in Heel-Compressors, 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
10 several figures.

This invention relates to heel compressing machines and has particularly for its object the production of such a machine for operation upon a double heel or top lift blank.

15 In cutting lifts or heels from a good grade of leather it may not always be economical to cut a double blank and then divide this into two separate lifts or heels inasmuch as single blanks can be cut from
20 smaller pieces of leather, but in dealing with heels composed of leather skivings, fleshings or some substitute for leather, it is both economical and convenient to build a blank in the form of a double heel and
25 then to compress and solidify this blank into a hard, dense mass suitable for use as a shoe heel. In this way a double blank can be cut out, built up and molded with the same number of operations required for a single
30 blank and at practically the same cost, thus greatly reducing the cost of manufacture of each individual heel.

It is an object of the present invention to provide for a heel compressing machine of
35 any commercial type molding devices for forming a double heel blank. In a preferred form of the invention these molding devices may consist of side and end compressing dies together with a top lift pressure plate and a suitably formed follower
40 or heel seat forming die, the pressure plate and follower exerting vertical pressure upon the blank while the side and end dies act to compress the blank laterally. By properly
45 forming the faces of the top lift plate and the follower, a concave heel seat face may be formed upon each half of the double blank.

It is a further object of the invention to so mold the double blank that it may be
50 separated into two single heels, each having

a forwardly and upwardly inclined breast surface, this being the type of heel commonly known as the Woburn heel.

A further important feature of the invention consists in the provision of means
55 for dividing a double blank, forming two separate lifts or heels, the division or separation of the blank being accomplished at the same time that the said blank is being compressed. An advantage of this feature
60 of the invention consists in the fact that the compressing and severing operations are both accomplished during a single cycle of operation in the machine, both the results being brought about by a single movement
65 of one of the reciprocating parts. In a preferred embodiment of the invention, this is accomplished by inserting a knife in the heel seat forming die or follower and providing a cooperating slot in the pressure plate into
70 which the knife may pass at the completion of the cutting operation. This knife will be arranged in proper relation to the follower and the blank to be operated upon to give the desired angle to the breast of the
75 heel. By mounting the knife at a suitable inclination to the main axis of the blank and forming those parts of the follower and top lift plate on one side of the separating
80 knife as reversed with respect to the corresponding parts upon the other side of the knife, a right and a left heel may be formed from the double blank at each operation of the machine. In other words, the mold may
85 be so formed that the follower forms a heel seat on one half of the double blank and a tread surface upon the same side of the other half thereof.

In attaching heels to soles the heels are commonly forced upon the sole with such
90 pressure that a defacing mark which is exposed to view after the heel is breasted is frequently formed in the sole by the breast edge of the heel. In order to prevent such
95 defacement and to allow for the passage of the shank of a molded sole, it has been the practice to bevel the upper breast edge of a heel so as to form a lip at this point. This lip also allows a slight air space between the heel and sole shank so that the
100

breasting knife may make a clean cut without danger of defacing said shank. In accordance with the present invention the bevel may be molded by the compressing dies simultaneously with the operation of dividing the double blank. Preferably this may be effected by forming sloping elevated portions upon the heel seat forming surface of the mold adjacent each side of the knife.

Devices for carrying out the present invention may be employed conveniently in a heel compressing machine of the type shown in United States Letters Patent No. 776,787, granted to S. D. Leland, December 6, 1904, and for purposes of illustration the invention will be described as embodied in a machine of this type, although it should be understood that the invention is in no wise restricted to compressing machines of this or any other particular type.

In the drawings,—Figure 1 is a view in perspective of molding dies for operating upon a double heel blank; Fig. 2 is a view in perspective of a double heel blank; Fig. 3 is a view in perspective of molding dies equipped with a knife for dividing a double blank; Fig. 4 is a view in side elevation of the follower shown in Fig. 3; Fig. 5 is a view in perspective of two completed heel blanks formed by the mold shown in Fig. 3; Fig. 6 is a view similar to Fig. 3 showing a modified form of mold forming a right and a left heel; and Fig. 7 is a view in perspective of two completed heel blanks formed by the mold shown in Fig. 6.

In Fig. 1 of the drawings, 2, 2 indicate horizontally movable side compressing dies; 3 indicates an end compressing die mounted to move in the same horizontal plane with dies 2, 2. The configuration of the inner walls of these dies is such that when the dies are brought together a heel blank previously inserted therein will be given the outline shown in Fig. 2. Pressure plate 10 is mounted on a post 12. The post 12 may have vertical reciprocatory motion imparted thereto by suitable mechanism, such for instance as that shown for imparting vertical motion to the top lift plate in the patent to Leland, above referred to.

4 indicates a heel seat forming die or follower rigidly mounted on a stationary plate 6 of the machine. This follower is so located with relation to the mold formed by the side and end compressing dies and the pressure plate as to properly register therewith when the mold is moved vertically upward so that a double heel blank inserted in said mold will be compressed between the pressure plate 10 and the follower 4.

The end 17 of the pressure plate 10 is formed with a flat upper surface while the opposite end 18 thereof is convex upon its

upper surface so that in operation it will form a concave heel seat surface upon the blank. The surface of the follower 4 is formed in two portions complementary to those of the face of the pressure plate 10. In other words, above the convex surface 18 the follower 4 has a plane surface while above the plane surface 17 the follower has a convex surface. The convex surfaces of the follower and pressure plate overlap to some extent with the result that a blank compressed therein has a form like that illustrated in Fig. 2, in which the two concave heel seat surfaces 19 are on opposite sides of the double blank and overlap sufficiently that the blank may be cut along the dotted line shown in said Fig. 2, thus producing two similar spring heels of the type commonly known to the trade as Woburn heels.

In the operation of the machine a double heel blank 30 of approximately the outline illustrated in Fig. 2 is first built up out of leather skivings, fleshings or the like. Such material is soft and spongy and is unsuitable for heels in its ordinary condition, but may be used with satisfaction after having been compressed under very heavy pressure into a hard dense mass. Such material can also be made very conveniently and economically into the form of a double blank as shown, where it would not be economical to form double blanks from high grade leather, owing to the fact that larger size pieces of leather are required than where single blanks are cut. The heel compressing machine embodying the present invention, however, is equally effective in handling double blanks cut from good leather and it is to be understood that its use is not in any way limited to any particular material.

The double blank 30 is suitably placed on the plate 10 and the dies 2, 2, 3 are actuated. The dies moving horizontally in unison, cooperate to compress the blank laterally, making it more dense and compact throughout the entire length of the edge and thus better adapted to maintain its form and resist wear. After the dies 2, 2, 3 are brought together they, together with the pressure plate 10 on post 12, are moved vertically upward by suitable mechanism until they embrace the follower which is supported by the stationary plate 6 of the machine forcing the blank into contact therewith under great pressure. The double heel blank is thus first compressed laterally to form the edge of the blank and solidify and make the said edge compact and dense; then, by the vertical movement of the parts 2, 2, 3, 10, the entire blank is compressed vertically between the plate 10 and the die 4 into a hard, dense, double heel which may be divided into two complete heels ready for attachment.

In Figs. 3 and 4, the follower 4 is provided with a transverse knife 16 for dividing the double blank into two heels or lifts. At 15 are shown inclined elevations which
 5 act upon the blank to produce beveled lip portions 34 for preventing defacement of the sole of the shoe when the heel is forced on it while being attached to the shoe. The slot 22 in the pressure plate 20 receives the
 10 knife 16 at the completion of the dividing operation, thus allowing the complete separation of the two heels and preventing damage to the edge of the knife. The said knife and slot may be placed at any desired inclination
 15 to the axis of the pressure plate in order to give the breast of the heel the desired angle. Ordinarily where it is desired that the breast face of the heel shall be substantially perpendicular to the main axis of the double
 20 blank, the knife 16 will be placed at right angles to such axis but it should be clearly understood that any suitable angle at which it is desired that such knife be placed is within the scope of the invention. In the
 25 operation of this form of the device, the double blank 30 is inserted upon the plate 20. The compressing dies 2, 2, 3 are actuated to produce the lateral compression of the blank. The entire mold is then moved
 30 vertically upward until the blank is very heavily compressed between the plate 20 and the heel seat forming follower 4, the knife 16 severing the blank into two separate heels of proper shape and the follower
 35 4 being of such form as to give a proper concavity to each heel seat and to form the beveled lips 34 thereon. After the compressing operation, the mold is lowered and the heel ejected by any suitable mechanism.
 40 such, for example, as that disclosed in the Leland patent above referred to.

In the modified form illustrated in Fig. 6, in addition to inclining the knife 16 with relation to the longitudinal axis of the mold, that portion 21 of the top lift pressure plate upon one side of the slot 22 is made convex
 45 while that portion 23 of the plate upon the opposite side of the slot is flat or plane. The convex face 21 is also formed with an upwardly inclined convex portion 31, corresponding in function to the inclined elevation 15. In a like manner to the follower shown in Fig. 1, follower 4 is formed with
 50 that portion of its face opposite the convex face 21 plane while that portion of the face opposite the plane face 23 is convex, with the result that two separate heel blanks 24, 25 are produced during one cycle of operation of the machine and these blanks are
 60 symmetrical with respect to each other, that is to say, one of them is a right heel and the other a left. In actual practice, this is a very desirable thing since in the production of heel blanks there must always neces-
 65 sarily be precisely as many rights as lefts

made. Frequently, in the types of machines formerly used for the purpose of compressing heel blanks, owing to carelessness or inattention on the part of the operator, an excessive number of either rights or lefts
 70 would be compressed while an insufficient number of the complementary kind would be made. This of course resulted in considerable confusion and annoyance. In the use of this preferred form of the invention there
 75 is no necessity for preserving a count of the number of blanks of one kind compressed in order to compress the proper number of complementary blanks inasmuch as this is automatically taken care of by the machine.
 80

Having described the invention, what is claimed as new and desired to be secured by Letters Patent of the United States is:—

1. A machine of the class described having, in combination, means for forming a
 85 tread surface and means for forming a heel seat upon the same face of a double blank.

2. A machine of the class described having, in combination, means for forming a tread surface and a heel seat upon one face
 90 of a double blank, and means for forming a heel seat and a tread surface upon the opposite face of said double blank.

3. A machine of the class described having, in combination, means for forming a
 95 tread surface and a heel seat upon one face of a double blank, and means for forming a heel seat and a tread surface upon the opposite face of said double blank, each of said tread surfaces being opposite a corresponding
 100 heel seat on the opposite face of the blank.

4. In a machine of the class described, the combination with means for dividing a
 105 double heel blank to form two heels, of means for subjecting the heels to vertical and lateral pressure.

5. In a machine of the class described, the combination of means for compressing a
 110 double heel blank and means for dividing the double blank into two heels while the compressing operation is taking place.

6. In a machine of the class described, the combination of means for forming a surface
 115 upon a double blank, and a knife projecting from said means for dividing said blank to form two heels.

7. In a machine of the class described, a follower formed to mold a heel seat face on
 120 a double heel blank, and a knife projecting from the follower for dividing said blank to form two heels.

8. A machine of the class described, having, in combination, a follower formed to
 125 mold a face of a double blank, and a knife projecting from said follower for dividing the blank to form two heels or lifts, said knife being inclined with relation to the main axis of the double blank.

9. In a machine of the class described, the 130

combination, with dies formed for engagement with the edge of a blank, a pressure plate for engaging one face of the blank, a follower for engaging the opposite face of the blank and a knife arranged in the follower for dividing the blank into separate heels.

10. A machine for compressing heel blanks or lifts having, in combination, dies for forming the edges of a double blank, a pressure plate for forming one face of the blank, a follower for forming the opposite face of the blank, and a knife for dividing the blank into two separate heels or lifts, said knife being inclined with relation to the longitudinal axis of the double blank.

11. In a machine of the class described, the combination, with means for dividing a double heel blank to form two heels, of means for molding the heels so formed and for producing upon the breast edge of each heel a forwardly inclined lip.

12. In a machine of the class described, the combination, with dies formed for engagement with the edge of a blank, of a pressure plate for engaging one face of the blank, a follower for engaging the opposite face of the blank, a knife arranged in the follower for dividing the blank into two separate heels, and means for molding upon each

heel a forwardly inclined lip at the breast edge.

13. In a machine for compressing heels, a mold having, in combination, side and end dies for applying pressure to the edge of a blank; a pressure plate within the space between said side and end dies, for applying pressure to one face of the blank, a part of the face of said pressure plate being plane for forming a heel tread surface and the remainder of the face of said pressure plate being convex and provided with a convex lip portion for forming a heel seat with a lip, said plane and convex parts being separated by a slot; a follower having a convex face portion, provided with a convex lip, opposite the plane part of the face of the pressure plate and having a plane face portion opposite the convex part of the face of said pressure plate; and a knife mounted upon said follower in position to enter the slot in the pressure plate.

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

SADIE E. GLIDDEN,

Guardian of John E. Glidden.

Witnesses:

GEORGE H. GLIDDEN,

CHESTER E. ROGERS.

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