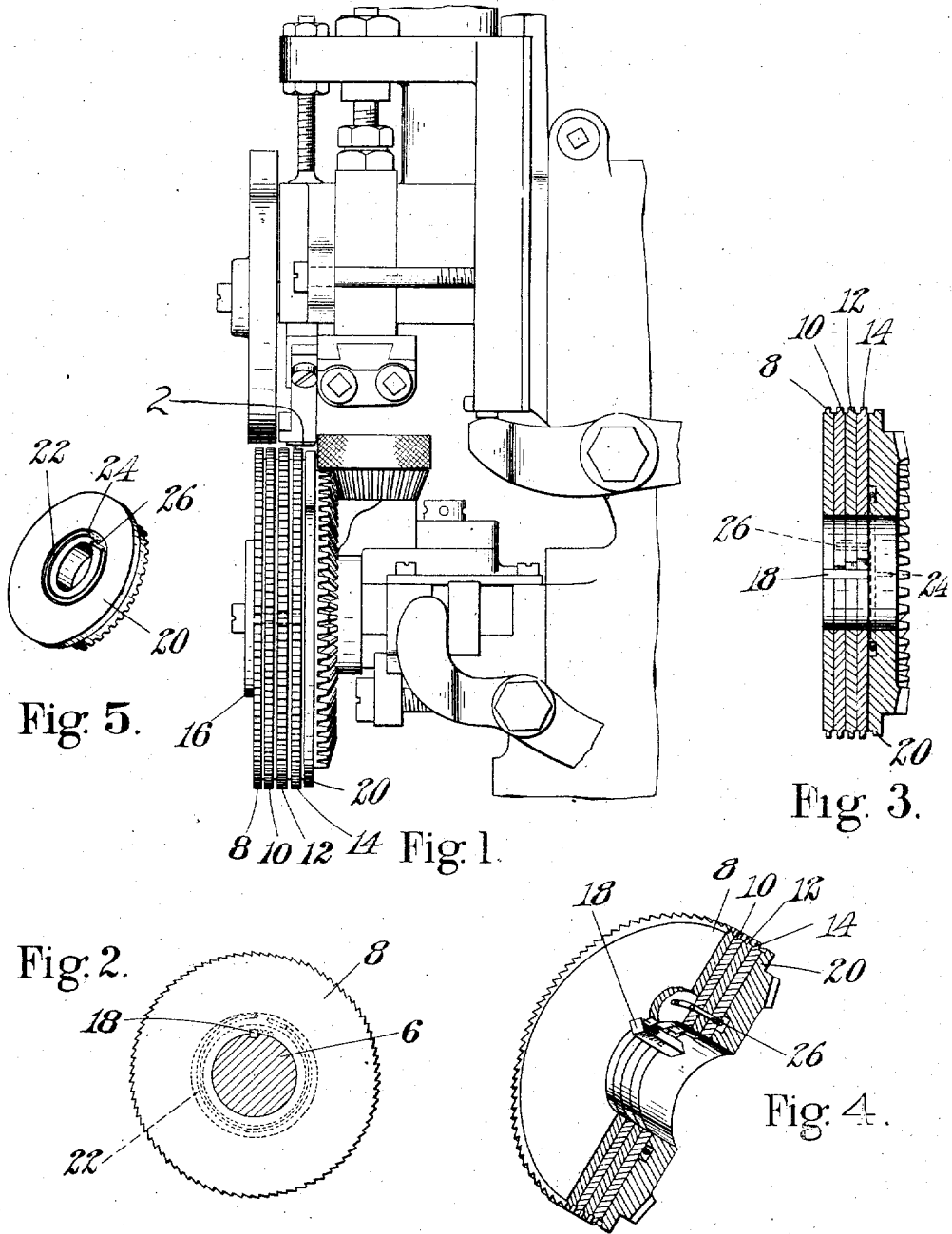


F. M. FURBER.
MACHINE FOR OPERATING UPON SOLES.
APPLICATION FILED MAY 14, 1909.

1,007,685.

Patented Nov. 7, 1911.



WITNESSES.

Elizabeth C. Coupe
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INVENTOR.

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UNITED STATES PATENT OFFICE.

FREDERICK M. FURBER, OF REVERE, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR OPERATING UPON SOLES.

1,007,685.

Specification of Letters Patent.

Patented Nov. 7, 1911.

Application filed May 14, 1909. Serial No. 496,051.

To all whom it may concern:

Be it known that I, FREDERICK M. FURBER, a citizen of the United States, residing at Revere, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Machines for Operating upon Soles, 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 machines for operating upon soles and is shown embodied in a channeling machine.

The primary object of the invention is to provide an improved form of feeding mechanism of the type of that covered by an application for U. S. Letters Patent filed September 28, 1908, by Henry W. Winter, Ser. No. 455,113. It will be understood that the feeding mechanism herein illustrated may be advantageously used upon any machine wherein a sole is advanced against an operating tool by mechanism which engages progressively the marginal portion of the sole.

In the prior application above referred to is shown a feed wheel comprising a plurality of peripherally toothed sections arranged for relative movement under the action of a sole to accommodate swinging movement of the sole required in operating along a curved line. This prior construction is such that free forward movement of some or all of the feed wheel sections is permitted, but rearward movement thereof is prevented by mechanism transmitting movement to the sections from a driving shaft. I have discovered that by arranging the independently movable sections for both free forward movement and free rearward movement between predetermined limits such relative movement of the sections is permitted as may be desired to accommodate swinging movement of the sole, and at the same time the sole is advanced against the operating tool without being mutilated along the surface engaged by the free wheel. In the use of the present embodiment of the invention the inner feed wheel sections ad-

jacent the edge of the sole are moved forwardly different amounts by the sole in swinging the sole, for example, in going about the toe, as occurs in the use of the mechanism shown in said prior application. According to the present invention, however, after the toe portion has been finished and the machine reaches the substantially straight portion at the side of the sole the forward movement of the sole is at first effected by the outer section or sections. The lost motion which must be taken up by the inner sections before they exert any feeding action is taken up without objectionable mutilation of the sole caused by slipping of the outer sections upon the sole. Such relative movement in the line of feed between the work and outer sections as occurs while the inner sections are taking up the lost motion is evidenced merely by slightly longer indentations made in the sole by the outer sections. In this way the lost motion referred to is gradually taken up and the forward movement of the sole is effected by an increasing number of sections until all of the sections come into action.

While it would be within the present invention to arrange all of the feeding sections for free movement independently of each other within substantially the same limits, I prefer to so construct the feeding mechanism that the independent movement of the respective sections is restricted to amounts increasing progressively from the outer section toward the inner section. In the construction shown, the outer section has no free movement under the action of the work so that at all times it acts as a positive work advancing member. If all of the feeding sections were arranged for free forward movement in removing a sole from the machine, the withdrawal of the sole would advance some or all of the sections to the limit of their forward movement. This would necessitate a preliminary movement of the feeding mechanism in operating upon the next sole before the lost motion occasioned by the withdrawal of the previous sole would be taken up. By limiting the free movement of the outer section to a

small amount or preventing such movement entirely, this objection is avoided since forward movement of the inner sections is prevented by the engagement of the sole with the outer section. If desired, the lost motion occasioned in the withdrawal of a sole may be prevented in other ways, and I have also illustrated herein yielding means for returning the sections to driving position after the withdrawal of the sole.

Other features of the invention will be hereinafter described.

In the drawings,—Figure 1 is a view in side elevation of a portion of a channeling machine having applied thereto a feed wheel constituting one embodiment of the present invention; Fig. 2 is a view in side elevation of the wheel shown in Fig. 1; Fig. 3 is a sectional view taken diametrically through the feed wheel with the supporting shaft removed; Fig. 4 is a perspective view showing the feed wheel in diametrical section and with the shaft removed as in Fig. 3; Fig. 5 is a perspective view showing a detail.

Referring to the drawings, the reference numeral 6 indicates a rotatory shaft of a channeling machine carrying upon its outer end a feed wheel to be presently described. The several parts of the channeling machine shown, other than the feed wheel, may be the same in construction and function as the corresponding elements of the machine shown in the prior application above referred to, and they will therefore not be herein described. It should be noted, however, that the channeling tool herein shown as a knife is indicated at 2.

The feed wheel shown in Figs. 1 to 4 inclusive comprises four circular peripherally toothed sections 8, 10, 12 and 14, mounted upon the outer end of the shaft 6 and held thereon by a washer 16. Each of the several sections is provided with an opening upon its inner edge which is entered by a key 18 arranged in a groove formed in the shaft 6. The opening in the section 8 is of the same width as the key so that rotatory movement of this section upon the shaft 6 is prevented. The openings formed in the sections 10, 12 and 14 are of increasing width as shown in Figs. 2, 3 and 4. The sections 10, 12 and 14 are thus free to have a limited amount of turning movement upon the shaft 6, independent of each other, and the amounts of movement permitted these sections increase progressively from the section 10 to the inner section 14.

The reference numeral 20 indicates a bevel gear section provided with a work engaging rim of slightly less diameter than the sections 8, 10, 12 and 14. Within the outer face of the section 20 is formed a circular groove in which is received a spring 22. One end of the spring is inserted in a socket in the section 20 and the opposite end of the

spring passes through slots formed in the sections 10, 12 and 14, as indicated in Fig. 2. The arrangement of the spring 22 is such that it tends to maintain the sections 10, 12 and 14 at the rearward limit of their movement upon the supporting shaft 6. It will be seen that should the sections 10, 12 and 14 be advanced upon the shaft 6 in withdrawing a sole from the machine, the spring 22 will act to return these sections to their rearmost position. The slots in which the end 26 of the spring is received are sufficiently long to permit the independent movement of the sections above referred to.

In the use of a machine equipped with a feed wheel, such as is illustrated upon the drawings, the sections 8, 10, 12 and 14 of the wheel are free to move relatively when the sole is swung laterally to maintain its edge in proper relation to the edge gage of the machine. As will be apparent, in swinging the sole for example in going about the toe, the section 14 is moved forwardly upon the shaft 6 a greater amount than either of the sections 8 and 10. Similarly the section 12 is moved ahead upon the shaft 6 a greater amount than the section 10. Since the section 8 is fixed upon the shaft it serves to advance the sole while the remaining sections are moved forwardly upon the shaft 6. When the curved portion of the path of operation of the machine is completed and the substantially straight portion at the side of the sole is reached, the forward movement of the sole is at first effected by the indentations formed in the sole by the section 8 under these circumstances will be longer than those produced by the momentarily idle sections 10, 12 and 14. This permits the section 10 quickly to take up its lost motion and assist the section 8 in advancing the sole against the operating tool. It will be observed from Fig. 2 that the teeth of the feed wheel sections are angularly arranged and project forwardly. This feature may facilitate the taking up of the lost motion by the freely movable sections. In the manner thus described the several sections of the wheel successively come into action until all of them assume their operative positions upon the shaft 6.

As is above pointed out, the spring 22 may be provided, if desired, to return the freely movable feed wheel sections to their operative positions. This spring, however, may be omitted without departing from the present invention. The arrangement according to which the outer feed wheel section is fixed upon the shaft and also the arrangement according to which the sections 10, 12 and 14 are permitted different amounts of movement upon their shafts possess an advantage similar to that of the spring 22 inasmuch as they tend to reduce

the forward movement of the sections occasioned in withdrawing a sole from the machine.

Variations in the construction shown may be made without departing from the present invention.

It will be understood that the present embodiment of the invention is shown by way of example and not by way of limitation.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A machine for operating upon soles, having in combination, an operating tool and a plurality of rotary feeding sections for direct engagement with the sole to advance it against the tool arranged side by side and constructed for free relative movement in the line of movement of the sole, and means for restricting within predetermined limits the relative movement of the sections.

2. A machine for operating upon soles, having in combination, an operating tool and means for advancing the sole against the tool comprising an outer rotary section restrained from movement under the action of the sole and one or more inner sections arranged for free movement within predetermined limits under the action of the sole in the line of movement thereof.

3. In a machine of the class described, a feed wheel comprising a plurality of rotary disks provided with openings extending transversely therethrough and a common driving member for the disks arranged in said openings, said openings and said member being relatively formed to permit free movement of each section within predetermined limits in the line of movement of the work.

4. A machine for operating upon soles, having in combination, an operating tool and a plurality of rotary feeding sections for advancing the sole against the tool arranged side by side and constructed for free movement within predetermined limits under the action of the sole in the line of

movement thereof, and means for returning the sections to the rearward limit of their movement upon the withdrawal of the sole from the machine.

5. A machine for operating upon soles, having in combination, an operating tool and a plurality of rotary feeding sections for advancing the tool against the sole arranged side by side and constructed for free movement independent of each other in the line of movement of the sole, and means for restricting the independent movement of the respective sections to amounts increasing progressively from the outer section toward the inner section.

6. A machine of the class described comprising an operating tool, a shaft, a key carried thereby, a plurality of toothed disks arranged side by side on said shaft, said disks being provided with key-ways of different cross-section, and means for rotating said shaft.

7. A machine of the class described comprising an operating tool, a shaft, a key carried thereby, a plurality of toothed disks arranged side by side on said shaft, the outer disk being provided with a key-way to fit said key, the remaining disks from the outer to the inner being provided with progressively larger key-ways, and means for rotating said shaft.

8. A feed wheel for advancing stock to be operated upon comprising a plurality of sections, a shaft by which said sections are driven there being provision for angular movement in the forward direction of certain of said disks with respect to said shaft, and yielding means opposing such forward movement.

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

FREDERICK M. FURBER.

Witnesses:

BERNARD BARROWS,
ALLAN H. BARROWS.

It is hereby certified that in Letters Patent No. 1,007,685, granted November 7, 1911, upon the application of Frederick M. Furber, of Revere, Massachusetts, for an improvement in "Machines for Operating upon Soles," an error appears in the printed specification requiring correction as follows: Page 1, line 48, for the word "free" read *feed*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 5th day of December, A. D., 1911.

[SEAL]

C. C. BILLINGS,

Acting Commissioner of Patents.

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Correction in Letters Patent No. 1,007,685

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C. C. BILLINGS,

Acting Commissioner of Patents.