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APPARATUS EMPLOYED FOR FASTENING SHOE UPPERS BY MEANS OF WIRE.

APPLICATION FILED JULY 31, 1907.

965,438.

Patented July 26, 1910.

2 SHEETS—SHEET 1.

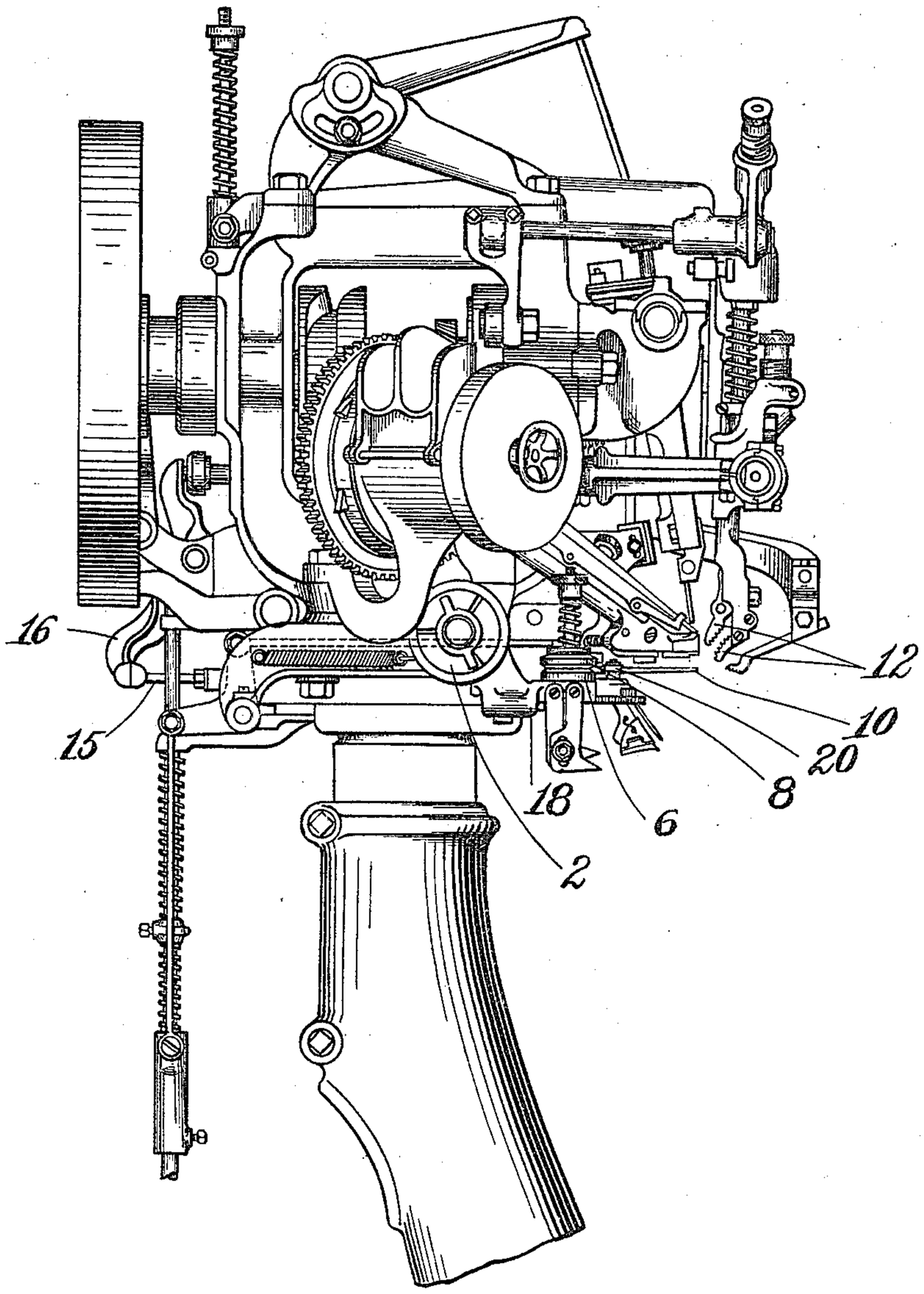

FIG. 1.

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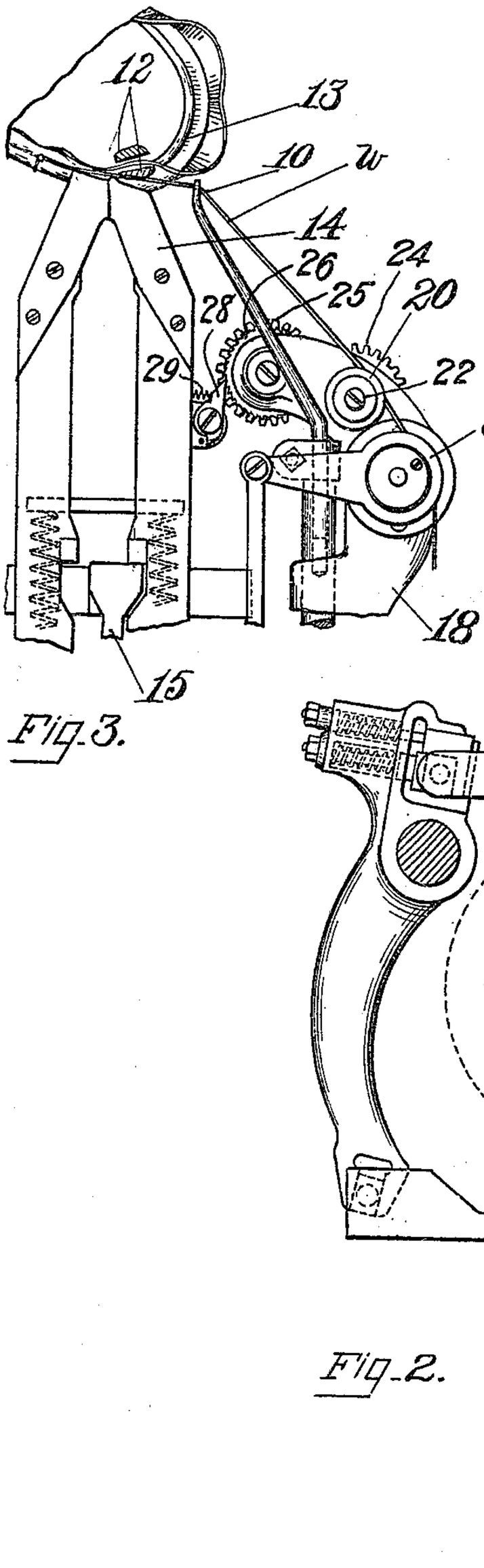

Fig. 3.

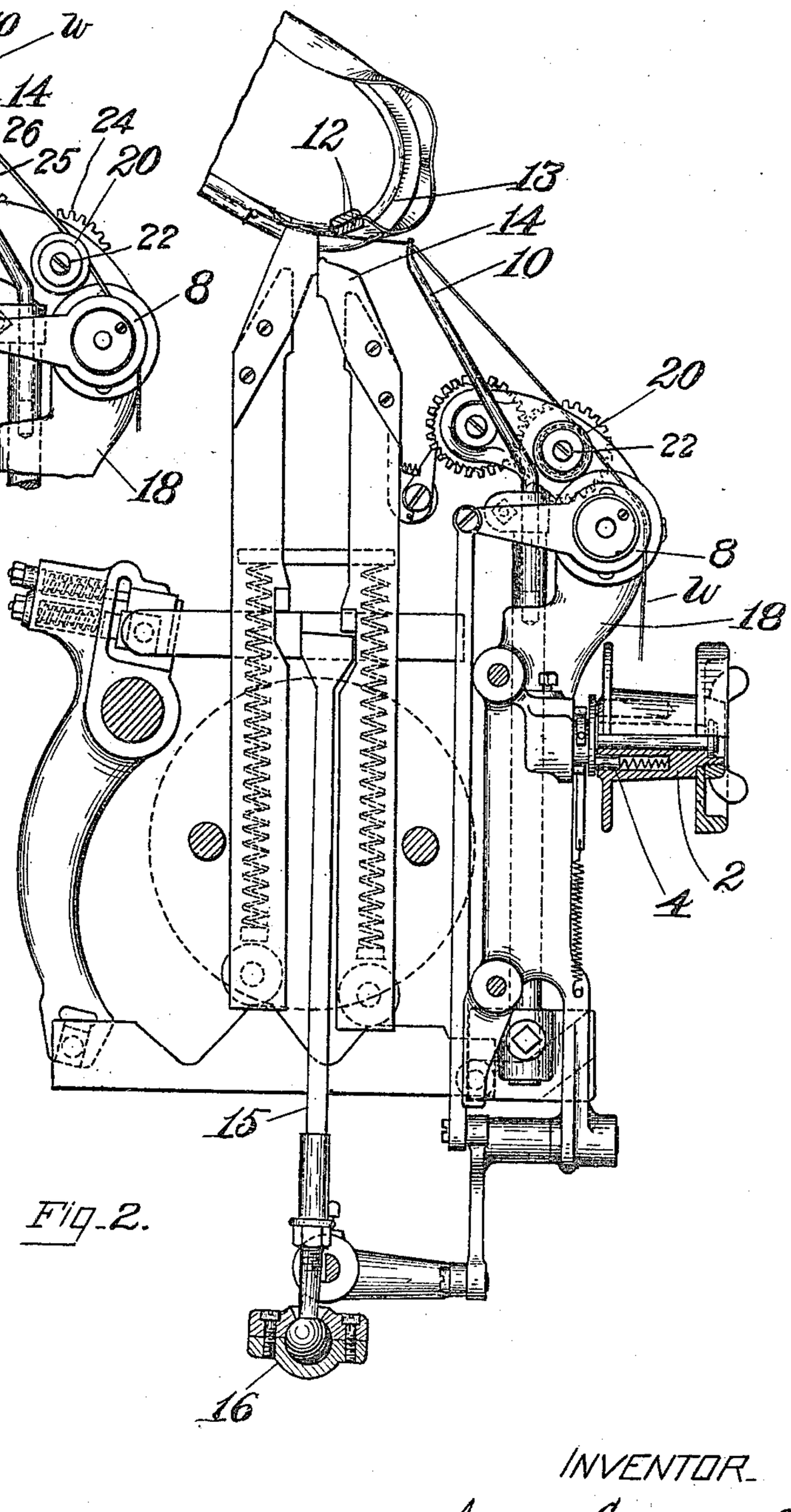

Fig. 2.

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UNITED STATES PATENT OFFICE.

JAMES CAVANAGH, JR., OF BOSTON, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

APPARATUS EMPLOYED FOR FASTENING SHOE-UPPERS BY MEANS OF WIRE.

965,438. Specification of Letters Patent. Patented July 26, 1910.

Application filed July 31, 1907. Serial No. 386,371.

To all whom it may concern:

Be it known that I, JAMES CAVANAGH, Jr., a citizen of the United States, residing at Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented certain Improvements in Apparatus Employed for Fastening Shoe-Uppers by Means of Wire, 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 wire presenting mechanism and more especially to wire supplying and superimposing mechanism used in connection with lasting machines for securing the upper in lasted position about the forward portion of a shoe.

The invention will be herein explained in connection with the toe wiring mechanism shown in United States Letters Patent to Ladd, No. 696,740, upon which it is an improvement. In the machine of that patent, in which lasting pincers work the upper into lasted position over the shoe innersole and a reciprocating presser forces the upper into the angle of union between the lip and feather edge of a welt innersole and assists in superimposing the wire in positions to bind the upper in place, wire presenting mechanism is employed comprising a reel, a tension applying device and a guide which occupies a stationary position adjacent to the shoe during the operation of the machine. In the use of the machine of that patent the end of the strand of wire is anchored to a tack driven into the innersole, the shoe being usually held in the hands of the operator. As the lasting proceeds step by step about the forward portion of the shoe the wire is drawn through the tension applying device by the operator and superimposed in binding position upon the overworked upper. It is essential that the tension device apply sufficient tension to the wire so that the latter will firmly bind the upper into the angle of union referred to. It therefore requires a substantial force applied by the operator to pull the wire through the tension applying device as it is needed and this portion of the work is fatiguing.

An object of this invention is to relieve the operator by providing mechanically actuated means for advancing the wire. To this end an important feature of the invention consists in the combination with a tension applying device and a wire guide, of wire feeding means. As herein shown the wire feeding means is separate from the guide and the tension applying device and is actuated to advance the wire as it is needed in time relation with the mechanism for overworking the upper and superimposing the wire.

It is a characteristic feature of this invention that the wire feeding means is constructed and arranged to advance the wire without straining the wire between the shoe and said device, thus avoiding the necessity for the operator to hold the shoe against a pulling strain of the feeding device upon the wire. This allows the shoe to be easily held and subjects the anchor tack to no unnecessary straining.

In the illustrated embodiment of the invention the wire feeding device is a roll about which the wire is passed one or more times as may be necessary to cause it to bind upon the roll with enough friction to be advanced as the roll is turned. Means is provided for turning the roll, this movement being preferably effected intermittently in time relation with the overworking and superimposing means. As shown a pawl is carried by the reciprocatory presser and engages a ratchet during the stroke of the presser in one direction, the ratchet being operatively connected with the feeding roll.

The wire guide is constructed and arranged to hold the strand of wire adjacent to the shoe in such position that the portion of wire superimposed by each succeeding operation of the machine will remain in binding position while the reciprocating presser is retracted and the shoe is advanced a step to present the next portion of upper material in position to be operated upon. It is an important feature of this invention that this function of the wire guide is not disturbed or interfered with by the wire feeding means. As herein shown the guide remains stationary or in suitable wire guiding position at all times during the operation of the machine.

These and other features of the invention including certain details of construction and combination of parts will be more fully ex-

plained in the following description and then pointed out in the annexed claims which indicate the scope of the invention.

In the drawings which represent a preferred embodiment of the invention, Figure 1 shows a lasting machine equipped with this invention; Fig. 2 is a plan view of the wire superimposing and presenting mechanism; Fig. 3 is a similar view showing the parts in a different position.

The wire *w* is carried by a reel 2 having a spring-pressed friction pin 4 to restrain too free rotation. The wire passes from the reel through a tension applying device comprising a fixed plate 6 and a spring-pressed plate 8. A guide 10 which is stationary during the operation of the machine projects into position to support the wire adjacent to the shoe and to assist in superimposing the wire in position to bind the upper in overworked position. The upper is manipulated over the last by the grippers 12 and is forced into position in the angle of union 13 between the lip and feather of the innersole of the shoe by a presser 14. The presser is reciprocated endwise through mechanism comprising the plunger 15 and the lever 16 which is actuated by one of the cams on the driving shaft of the machine. These parts may be all substantially as shown and described in said patent.

The tension applying device is carried by a bracket 18 which is extended to provide a support for a roll 20 which is located in the path of the wire from the tension device to the guide 10 and is mounted on a short vertical shaft 22. The periphery of the roll is grooved to receive the wire and allow it to be wrapped one or more times around the roll to produce sufficient frictional contact with the roll to cause the wire to be fed whenever it is held taut about the moving roll. The shaft 22 supports a pinion 24 which engages a pinion 25 provided with a ratchet 26. A pawl 28 is mounted upon the reciprocating presser 14 in position to engage the ratchet and turn the roll 20 when the presser is moved forwardly. The pawl is held against the ratchet by a spring 29 which allows it to slide over the ratchet on the reverse stroke of the presser. The pawl might be mounted upon an actuator independent of the presser 14 and operated to turn the roll for feeding the wire intermittently in any desired time relation with the presser and the grippers.

In the use of the machine the upper is pulled over the last by the gripper into the position shown in Fig. 2 whereupon the presser advances and forces it into the angle of union 13. At the same time the wire which has been anchored to a tack, Figs. 2 and 3, is held by the guide in position to bind the upper for securing it in overworked position. The wire may be held in the path of the presser and be forced into position by it. Preferably the guide remains continuously in operative position during repeated operations of the machine and holds the wire in the binding position to which it has been forced by the presser. As the operator pulls the wire taut in feeding the shoe the wire is drawn snugly to the roll 20 which advances it, thus relieving the operator of the work heretofore required in pulling the wire through the tension applying device.

Having explained the nature of this invention and described a construction embodying the same, I claim as new and desire to secure by Letters Patent of the United States:—

1. A lasting machine having means for working an upper over a last into position to be secured by a binder of wire or the like and having, in combination, a wire guide, a device for applying tension to the wire, an independent wire feeding device, and means for actuating the feeding device to advance the wire relatively to the shoe.

2. A lasting machine having means for working an upper over a last into position to be secured by a binder of wire or the like and having, in combination, a device for applying tension to the wire, a device for feeding the wire, means for actuating the wire feeding device to advance the wire through the tension device, and a guide constructed and arranged to hold previously superposed portions of the wire in binding relation to the work during the movement of the feeding device.

3. A lasting machine having means for working an upper into position to be secured by a binder of wire or the like and having, in combination, a wire guide, a tension applying device, a wire feeding device arranged between the guide and the tension device, and means for actuating the feeding device while the guide remains at rest.

4. A lasting machine having means for working an upper over a last into position to be secured by a binder of wire or the like and having, in combination, a guide for the wire, a device for applying tension to the wire, and means frictionally engaging the wire and arranged to be automatically actuated during the operation of the machine to pull the wire through the tension applying device.

5. In a machine of the class described, the combination with a wire guide and a tension applying device, of a roll constructed and arranged to permit the wire to be wrapped around it, and means for turning the roll to pull the wire through the tension applying device.

6. In a machine for working an upper over a last and superimposing wire or like continuous material in position to bind the

upper in lasted position, a guide constructed and arranged to direct the wire into holding engagement with the overworked upper, a device for feeding the wire, and means for actuating said device to advance the wire while the guide continues to hold the wire in superimposed position.

7. In a machine of the class described, the combination with means for working an upper over a last, of a guide for a strand of wire to be superimposed for binding the upper in lasted position, a device for applying tension to the wire, and other means for pulling the wire through the tension applying device.

8. In a machine of the class described, the combination with means for working an upper into lasted position and means for superimposing wire to bind the upper, of a guide for the wire, a device for applying tension to the wire and means located at one side of the wire guide for advancing the wire.

9. In a machine of the class described, the combination with means for working an upper into lasted position including a reciprocating presser, of a wire guide, a tension applying device, and means arranged to engage the wire intermediate the tension applying device and the guide to advance the wire.

10. In a machine for working an upper into lasted position and superimposing a binder of wire or the like to secure the upper, the combination with a device for applying tension to the wire, of means for pulling the wire through the tension applying device, said means comprising a roll about which the wire is wrapped, and means for actuating the roll to advance the wire.

11. In a machine for working an upper into lasted position and superimposing a binder of wire or the like to secure the upper, the combination with a reciprocating presser, and a device for applying tension to the strand of wire, of a roll arranged between the presser and said tension applying device and adapted to receive the wire, of means arranged to be actuated by the presser for turning the roll to pull the wire through the tension applying device.

12. A lasting machine, having means for working an upper over a last into position to be secured by a binder of wire or the like, and having in combination, a device to apply tension to the wire, a device for drawing the wire through the tension device, means for actuating the latter device in time relation with the overworking means, and a guide constructed and arranged to direct the wire into suitable relation to the overworking means and the shoe to effect binding of the overworked upper when the wire is tightened and secured.

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

JAMES CAVANAGH, Jr.

Witnesses:

ARTHUR L. RUSSELL,

JAMES R. HODDER.