

No. 889,752.

PATENTED JUNE 2, 1908.

T. BRIGGS.
MACHINE FOR INSERTING FASTENINGS.

APPLICATION FILED JULY 7, 1908.

3 SHEETS—SHEET 1.

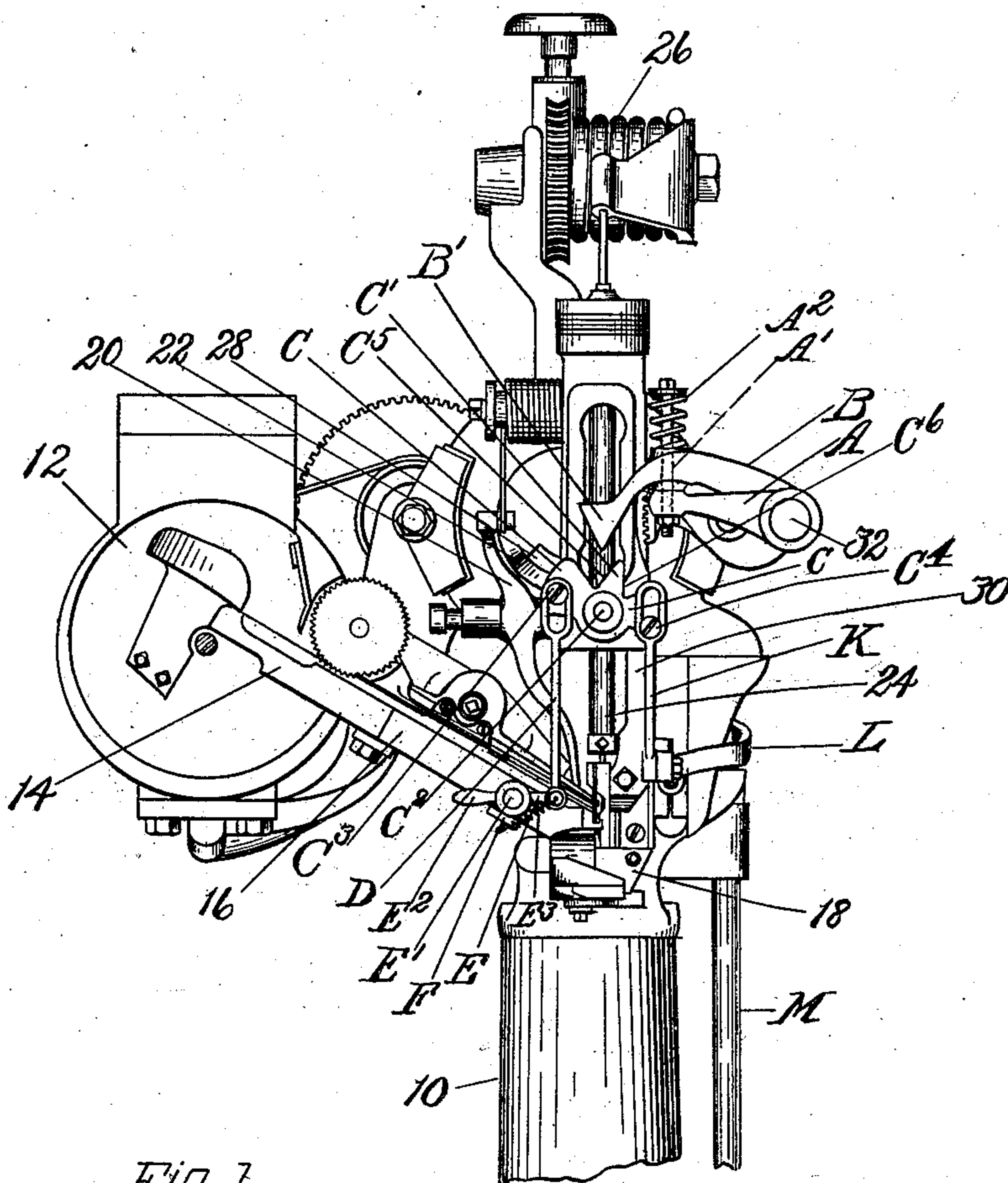


Fig. 1.

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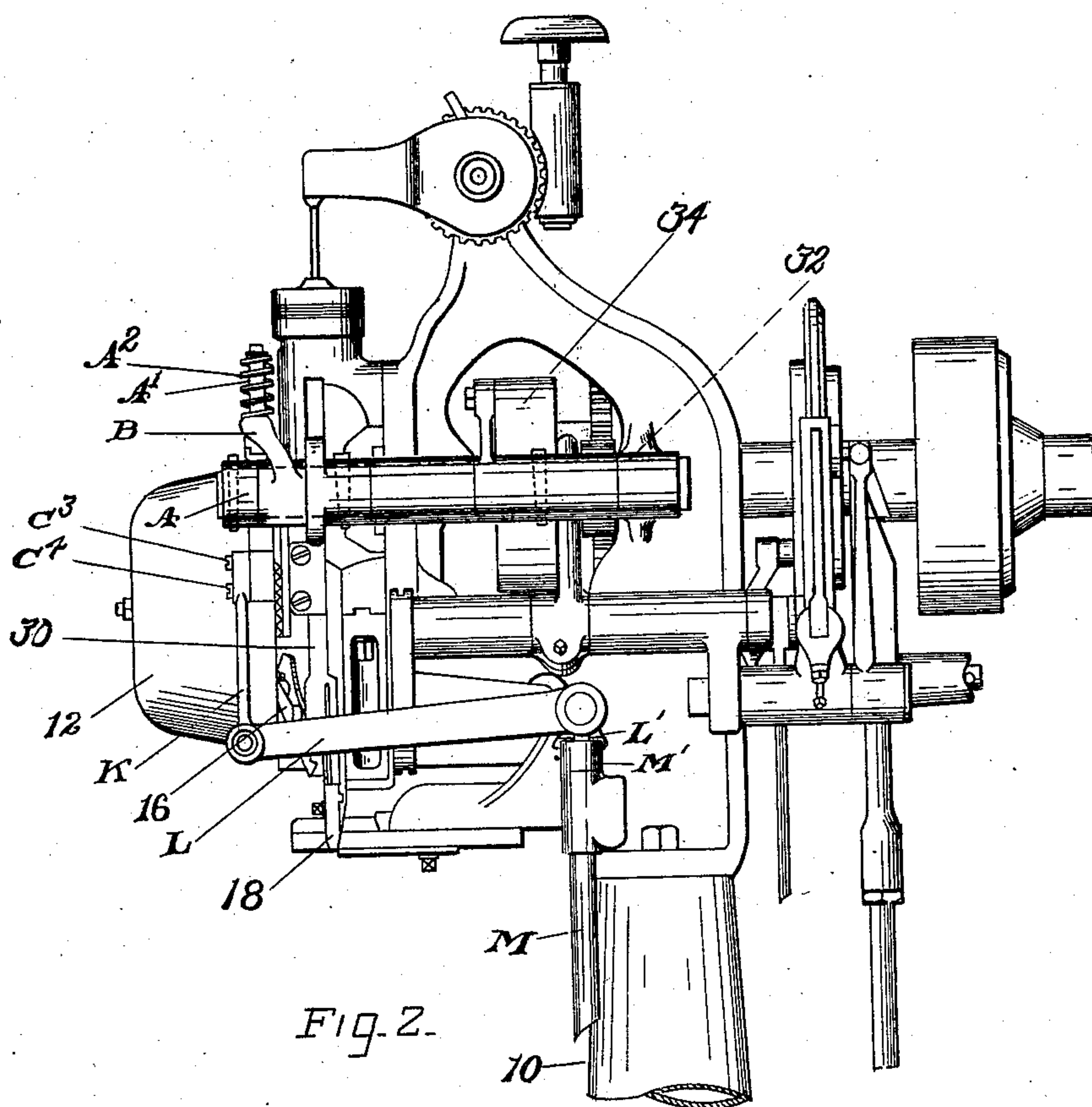


Fig. 2.

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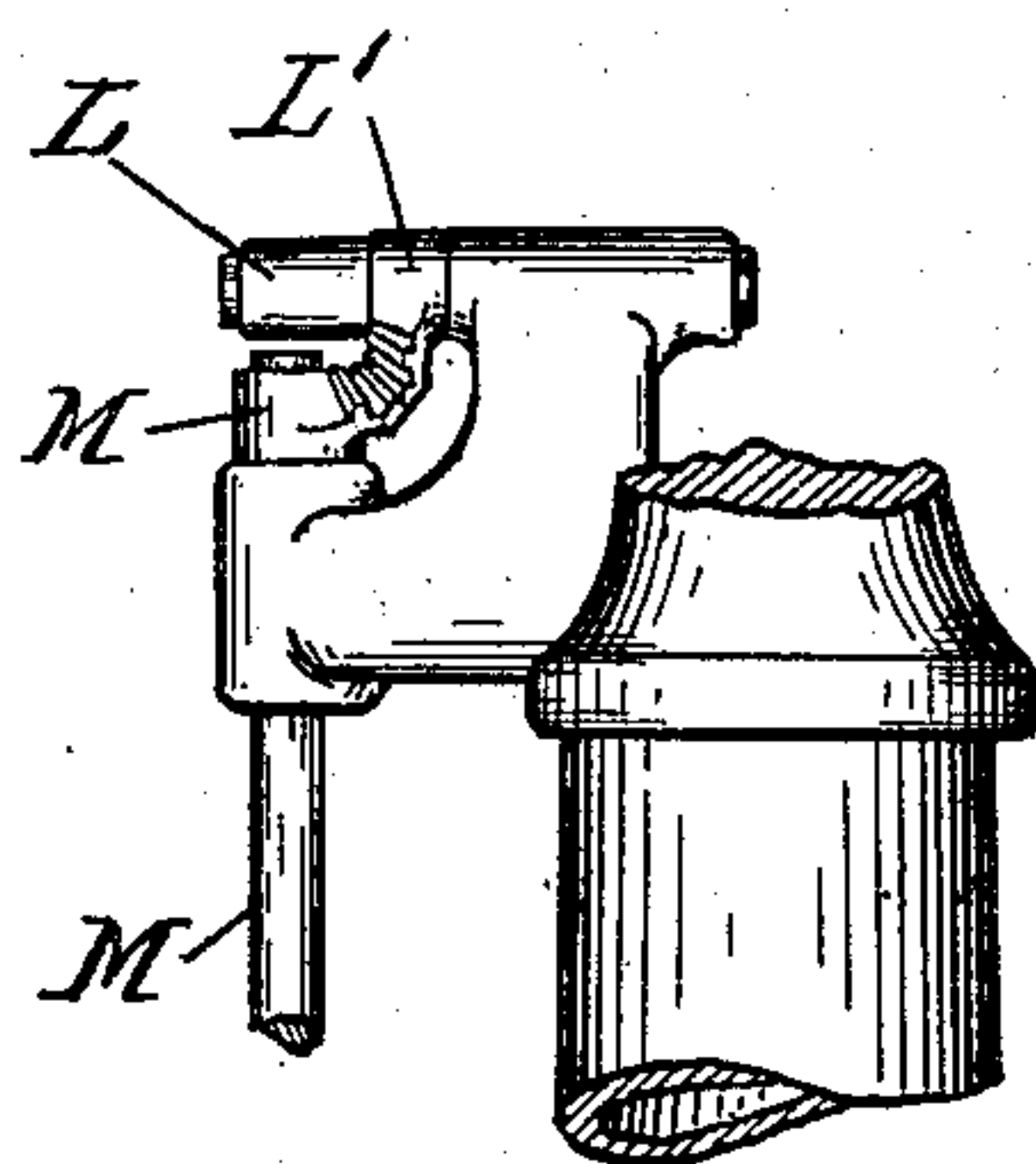


Fig. 3.

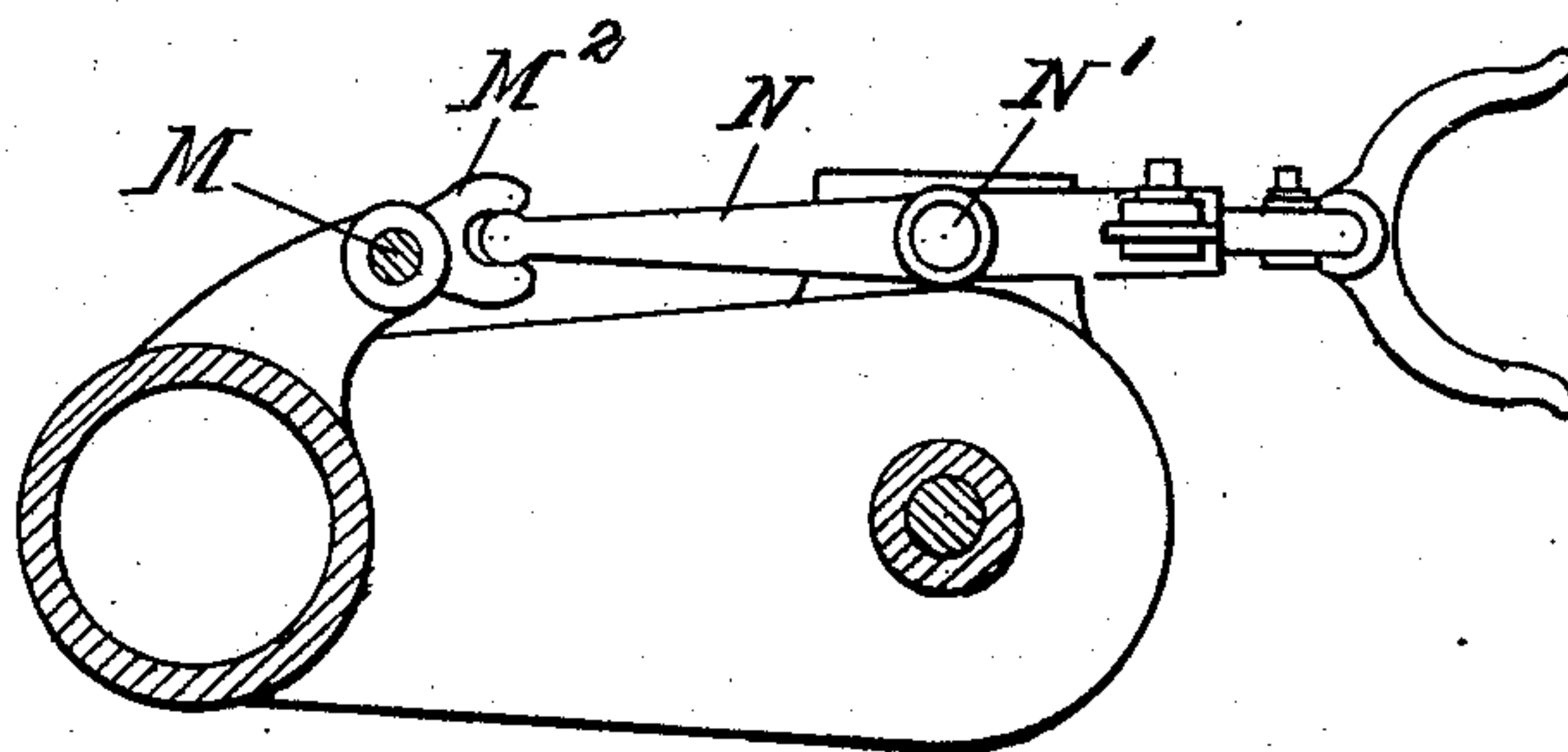


Fig. 4.

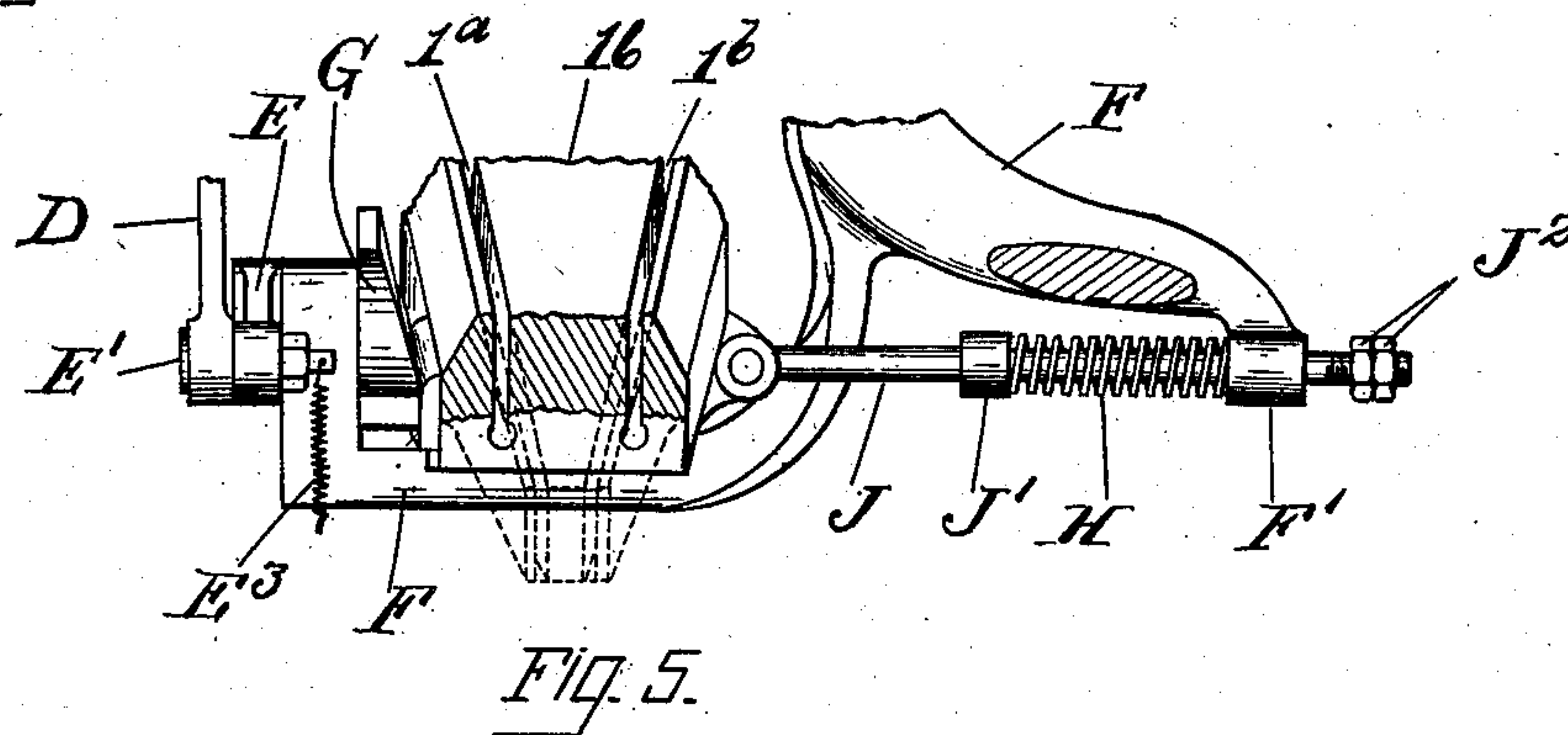


Fig. 5.

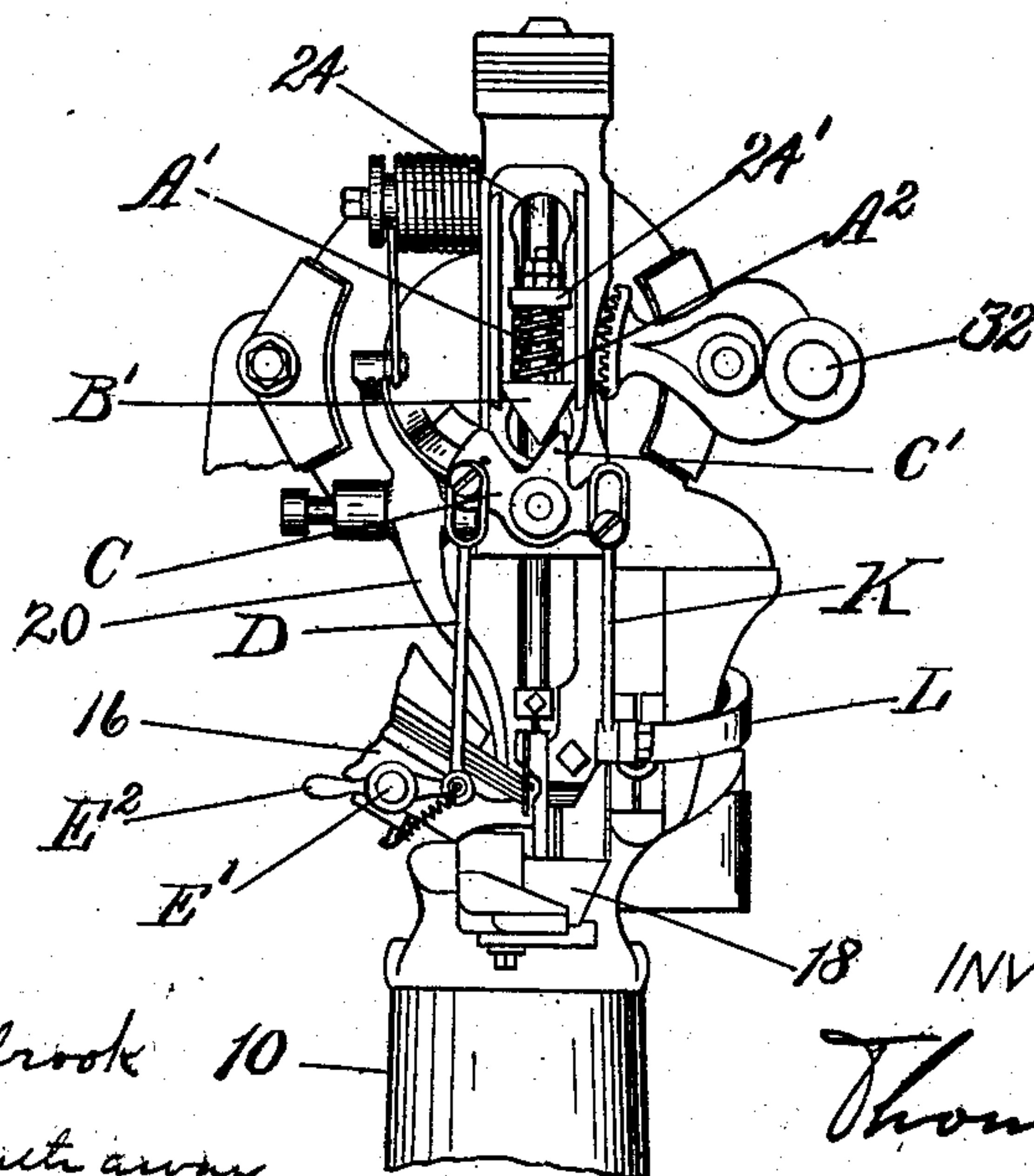


Fig. 6.

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UNITED STATES PATENT OFFICE.

THOMAS BRIGGS, OF LEICESTER, ENGLAND, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR INSERTING FASTENINGS.

No. 889,752.

Specification of Letters Patent.

Patented June 2, 1908.

Application filed July 7, 1906. Serial No. 325,174.

To all whom it may concern:

Be it known that I, THOMAS BRIGGS, a subject of the King of England, residing at Leicester, in the county of Leicester, England, have invented certain Improvements in Machines for Inserting Fastenings, 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 inserting fastenings and its object is to provide an alternative mechanism to that illustrated in British Letters Patent No. 4471 of 1903, granted to A. J. Boulton, and there shown as applied to a loose-nailing machine. In the machine of the British patent a plurality of sources of fastening supply are provided, each containing preferably a different kind of nail, and leading from each source of supply to the inserting mechanism is a nail guide. These guides, together with the driver, awl and nail receiver, which is in this instance the driver passage in the nose, are carried by a moving head which is adapted to feed the stock after it has been penetrated by the awl, and means under control of the operator are provided for setting a movable device in such position that the engagement of connections from the nail guides with said device during the movement of the head in one direction operates to change the relative positions of the nail guides and receiver to bring one or another of the guides into position to deliver the desired kind of nails to the receiver.

The mechanism of the British patent referred to and of the present invention for changing the relative positions of the guides and receiver for the fastenings, for convenience of illustration, are shown as embodied in a loose nailing machine of the general type exemplified in U. S. Patent No. 490,624, January 24, 1893, granted to Louis Goddu, in which a moving head in conjunction with an awl is employed for feeding the stock, but in this embodiment the movement of the head is not utilized to effect the desired change. Preferably there is provided an actuating mechanism, in the form of a setting device and its connections, which may be set by the operator, without changing the relation of the guides and receiver, in such position that when thereafter engaged by an au-

tomatically moving member traveling in proper timed relation to the fastening-separating mechanism it will be given a further movement in such direction that, through its connections with one of the relatively movable parts, the desired relative change is accomplished between the time of separation of two successive fastenings.

In this class of machine, when an awl is used to pierce and then feed the stock, the preferable timing of the moving parts is as follows: The awl first descends and penetrates the stock, the head carrying the awl is then moved laterally so that the stock is fed forward, a fastening is then separated in any convenient manner from the supply in one of the guides and later placed in position to be driven, the awl is then withdrawn and carried to its initial position by the return movement of the head, and upon the driver reaching a position over the hole pierced by the awl it descends and inserts the fastening then beneath it. With such a cycle of operations, to change from one kind of fastening to another, the relative movement between the guides and receiver should occur at a time which will not interfere with the separation of the fastening and which will give sufficient time for such separation. With this object in view, according to the present invention, this is accomplished by utilizing the movement of the awl or driver, either of which moves in proper timed relation to the movement of the fastening separator, to control the final or acting movement of the setting device and to thereby effect a relative movement between the guides and receiver without interference with the separation of the fastening.

As herein shown, a setting device is first set by the operator and the movement thus begun manually is completed mechanically by the device being thereafter engaged by a moving member connected to the awl or driver bars, or their actuating mechanisms. The moving member is preferably mounted yieldingly, thus providing against breakage of parts should the setting device not be correctly set when initially moved by the operator.

The initial movement of the setting device by the operator determines when the relative change in the positions of the guides and receiver is to occur, and the direction and

amount of movement of the manually controllable means determines the nature of the change, that is, which particular kind of fastening from the various sources of supply is to be used. Means is also provided so that a proper amount of lost motion is present in the connections between the manually operable means and the relatively movable parts, whereby the manual setting by the operator may be accomplished without involving any movement of the relatively movable parts, and vice versa, that is, the movement between the guides and receiver is controlled entirely by the engagement of the automatically moving member with the setting device.

In the accompanying drawings which illustrate the preferred construction and arrangement of parts to accomplish the desired results, Figure 1 is a front elevation of the head of one type of fastening-inserting machine, showing one form of the invention in which the movement of the awl controls the relative movement of the fastening guides and receiver; Fig. 2 is a side elevation of Fig. 1; Fig. 3 is a detached detail of a part of the mechanism under control of the operator; Fig. 4 is a sectional plan of one form of actuator for the mechanism under the control of the operator; Fig. 5 is a view, partly in section, of the movable raceway member used in the type of machine illustrated, and adjacent mechanism; Fig. 6 is an elevational view of a portion of Fig. 1 showing the relation of the parts when the driver is utilized to control the relative movement of the fastening guides and receiver.

Referring to the drawings, mounted on a column 10 is a suitable head having mechanism for selecting and inserting fastenings, including, among other devices, sources of supply for a number of different kinds of fastenings, (for example, cut nails,) here shown as hoppers 12, nail guides 14 leading from each of the hoppers and pivotally connected to a movable raceway member 16 down grooves in which the nails pass to a receiver which may be in the form of any of the well-known constructions, and is here shown as the driver passage in the nose 18. The head also carries a nail separator mounted on a lever 20 actuated from a face cam 22. The head further carries a driver sustained by a bar 24 actuated downwardly by a spring 26 and upwardly by the rotation of a lug 28, and an awl sustained by a bar 30 actuated in both directions by connections from a rockshaft 32 oscillated by means of a cam 34 on the main shaft. These parts are and may be all substantially as described in British Letters Patent No. 4471 of 1903, hereinbefore referred to, it being supposed that the improvements now about to be described have been put substantially upon the machine there described. Other parts of the machine not described herein may be as in said patent.

Referring more particularly to Figs. 1 and 2, according to one form of the present invention the rockshaft 32 is provided with an arm A secured to it and also with a lever B loosely mounted upon it. The arm and lever are yieldingly connected in any suitable manner, as by means of a bolt A' which passes through both the lever and the arm and is surrounded by a spiral spring A² which is normally in compression between a boss on the lever B and the head of the bolt. A nut screwed upon the lower end of the bolt engages the arm A. The free end of the lever B is preferably formed as a V-shaped cam projection B' adapted in its movement to engage one or other of the flanks C⁵ C⁶ of a wedge C' formed upon an actuator in the form of a setting device C which may be pivoted at C² on the machine frame.

The setting device C is loosely connected as by means of a pin C³ thereon and a slotted link D engaging the pin, to a lever E carried by a rockshaft E' journaled in a bracket F on the machine frame. Secured to the rockshaft E' is a block G (Fig. 5), preferably formed as a face cam, which is arranged to bear against the raceway member 16 or against a wear block secured to it. Means are provided to retain the raceway member in engagement with the block G, said means preferably comprising a rod J pivoted to the raceway and extending through an ear F' on the bracket F and a spring H surrounding the rod and in compression between the ear F' and a boss J' on the rod. Nuts J² on the rod J limit the movement of the raceway member under action of the spring H.

The setting device C is also loosely connected by a pin C⁴ thereon and a slotted link K with a lever L journaled on a stud in the machine frame. A beveled segment L' (Fig. 3) is mounted upon or secured to the hub of the lever L and gears with a second beveled segment M' on a vertical shaft M. Manually operable means, shown as a knee-lever N (Fig. 4) pivoted at N' on the machine frame, engages at its rear end a fork M² fast upon the vertical shaft M.

In Fig. 6 the means for imparting to the setting device C its final or acting movement is shown as controlled by the movement of bar 24 carrying the driver. The preferable construction is similar to that shown in Fig. 1. The V-shaped cam projection B' is secured yieldingly to an arm or lug 24' on the driver bar 24, through the bolt A' passing through the two parts and carrying spring A² normally in compression, as before described. Any convenient mechanical expedient may be used to insure a proper and constant alinement of the projection B' with relation to the flanks of wedge C' on the actuator or setting device C.

Either of the above constructions is such that a movement given by the operator to

the knee-operated lever N in one direction will move the setting device C by means of the mechanism between it and the knee-lever to bring, say, flank C⁵ of its wedge C' into
 5 coöperative relation with the cam projection B' so that the projection as it moves downwardly with the movement of its controlling member will engage the flank C⁵ and thereby
 10 shown in Fig. 1 and through the mechanism between it and the raceway member 16 will cause the raceway member to move under the influence of the spring H so as to bring the groove 1^b (Fig. 5) into alinement with the
 15 driver passage. As the machine continues in operation nails from this groove will then be inserted in the stock, but when it is desired to insert nails from the other groove into the stock the operator will rock the knee
 20 lever in the direction opposite to that in which it was moved before, thereby moving the setting device C to put the flank C⁶ of the wedge C' into a position in which said flank will be in readiness for engagement with the
 25 cam projection B' at its next downward movement to thereby shift the raceway member into the position shown in Fig. 5 to bring the groove 1^a and driver passage into alinement. It is thus seen that although the au-
 30 tomatically-moving part B' controls the movement of the means for changing the relative positions of the fastening guides and receiver, the manually controllable means determine when the change is to occur and its
 35 nature.

The slotted link D provides for lost motion between the setting device C and the lever E in order that the operator may set the device C without moving the guides. The slotted
 40 link K likewise provides for lost motion between the lever L and the setting device C so that said lever and consequently the knee-operated lever N will not be moved by the action of the cam projection B' upon the
 45 wedge C'.

The yielding connection, comprising the spring A², between the arm A and lever B is for the purpose of preventing breakage of the parts in the event of the setting device C being
 50 improperly positioned by the operator or of any obstruction preventing free movement of the setting device or guides.

The lever E is provided with an extension E² to form a handle by means of which the
 55 relative change between the fastening guides and fastening receiver can be attained by hand if desired. A spring E³ connected to the lever E and to the bracket F prevents the lever from being accidentally moved during
 60 the operation of the machine.

Although the present invention is herein described as embodied in the machine of British Letters Patent No. 4471 of 1903
 65 aforesaid, it will be understood that it is not to be considered as limited to use in such a

machine nor is it intended to limit the invention to the particular construction herein set forth.

Obviously the number of kinds of fastenings which may be used in the machine may
 70 be varied by mere multiplication or modification of the parts herein described, for instance, the race way member could be provided with more nail-guiding grooves than the two herein shown in which case it would be necessary
 75 for the setting device C to have corresponding additional cam surfaces formed upon it.

By the term "kinds" of fastenings is meant fastenings varying in length, size, quality, type, material, configuration, etc.,
 80 and thereby adapted to the varying requirements of the particular class of work for which the machine is to be used. As the particular kind of device inserted is immaterial to a proper operation of machines em-
 85 bodying this invention, the term "fastening" in the specification and claims should be understood as including any kind of device which may be successfully utilized in performing the classes of work for which the
 90 machines are adapted.

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

1. The combination, with a plurality of
 95 sources of fastening supply, a fastening receiver and a fastening guide leading from each source to said receiver, said guides and receiver being relatively movable, of an awl and a driver, actuating mechanisms for said
 100 last-named parts, and means controlled by the movement of one of said parts after the work has been moved into fastening-receiving position for changing the relative positions of said guides and receiver.
 105

2. The combination, with a plurality of sources of fastening supply, a fastening receiver and a fastening guide leading from each source to said receiver, said guides and receiver being relatively movable, of an awl
 110 and a driver, actuating mechanisms for said last-named parts, means actuated by the movement of one of said parts after the work has been moved into fastening-receiving position for changing the relative positions of
 115 said guides and receiver, and means under control of the operator for determining when the change is to occur.

3. The combination, with a plurality of sources of fastening supply, a fastening receiver and a fastening guide leading from each source to said receiver, said guides and receiver being relatively movable, of an awl
 120 and a driver, actuating mechanisms for said last-named parts, means actuated by the movement of one of said parts after the work has been moved into fastening-receiving position for changing the relative positions of said guides and receiver, and means
 125 under control of the operator for determining
 130

when the change is to occur and the nature of the change.

4. The combination, with a plurality of sources of fastening supply, a fastening receiver and a fastening guide leading from each source to said receiver, said guides and receiver being relatively movable, of actuating mechanism constructed and arranged to effect a relative movement between said guides and receiver, an awl and a driver, actuating mechanisms for said last-named parts, and means controlled by the movement of one of said parts after the work has been moved into fastening-receiving position for operating said first named actuating mechanism.

5. The combination, with a plurality of sources of fastening supply, a fastening receiver and a fastening guide leading from each source to said receiver, said guides and receiver being relatively movable, of actuating mechanism constructed and arranged to effect a relative movement between said guides and receiver, an awl and a driver, actuating mechanisms for said last-named parts, and yieldingly mounted means controlled by the movement of one of said parts for operating said first named actuating mechanism.

6. The combination, with a plurality of sources of fastening supply, a fastening receiver and a fastening guide leading from each source to said receiver, said guides and receiver being relatively movable, of a setting device, an awl and a driver, actuating mechanisms for said last-named parts, means controlled by the movement of one of said parts after the work has been moved into fastening-receiving position for engaging and moving said device, and mechanism between said device and one of said relatively movable parts whereby a movement of the setting device changes the relative positions of the guides and receiver.

7. The combination, with a plurality of sources of fastening supply, a fastening receiver and a fastening guide leading from each source to said receiver, said guides and receiver being relatively movable, of a setting device, an awl and a driver, actuating mechanisms for said last-named parts, means controlled by the movement of one of said parts after the work has been moved into fastening-receiving position for engaging and moving said device, mechanism between said device and one of said relatively movable parts whereby a movement of the setting device changes the relative positions of the guides and receiver, and means under control of the operator for determining the direction of movement of said setting device.

8. The combination, with a plurality of sources of fastening supply, a fastening receiver and a fastening guide leading from each source to said receiver, said guides and

receiver being relatively movable, of a movable setting device constructed and arranged to change by its movement the relative positions of said guides and receiver, manually controllable means for initially moving said device without affecting the relation of said guides and receiver, and automatic means for thereafter engaging and moving said device.

9. The combination, with a plurality of sources of fastening supply, a fastening receiver and a fastening guide leading from each source to said receiver, said guides and receiver being relatively movable, of a movable setting device constructed and arranged to change by its movement the relative positions of said guides and receiver, a manually controllable member for initially moving said device, mechanism between said device and one of the relatively movable parts and between said device and said manually controllable member, provisions for lost motion in said mechanisms upon the initial movement of said device, and automatic means for thereafter engaging and moving said device.

10. The combination, with a movable raceway member provided with a plurality of nail grooves, and means for supplying a different kind of nail to each groove, of an awl and a driver, actuating mechanism for said last-named parts, and means controlled by the movement of one of said parts after the work has been moved into fastening-receiving position for automatically shifting the raceway to put one or another of the grooves in position to present nails to the driver.

11. The combination, with a movable raceway member provided with a plurality of nail grooves, and means for supplying a different kind of nail to each groove, of a movable setting device constructed and arranged to shift the raceway by its movement, an awl and a driver, actuating mechanism for said last-named parts, and yieldingly mounted means controlled by a movement of one of said parts arranged to engage and move said setting device.

12. The combination, with a plurality of sources of fastening supply, a fastening receiver and a fastening guide leading from each source to said receiver, said guides and receiver being relatively movable, of a driver, actuating means therefor, and means controlled by the movement of the driver after the work has been moved into fastening-receiving position for changing the relative position of said guides and receiver.

13. The combination, with a plurality of sources of fastening supply, a fastening receiver and a fastening guide leading from each source to said receiver, said guides and receiver being relatively movable, of a setting device provided with a wedge shaped projection, an automatically moving member

arranged to engage said wedge in its movement, manually controllable means for initially moving said setting device to determine which flank of the wedge said moving member will engage, and connections between said setting device and one of said relatively movable parts whereby a movement of the former effects a change in the relative positions of the latter. 20

10 14. The combination, with a plurality of sources of fastening supply, a fastening receiver and a fastening guide leading from each source to said receiver, said guides and receiver being relatively movable, of a setting 25

15 device provided with a wedge shaped projection, an automatically moving member arranged to engage said wedge in its movement, manually controllable means for initially moving said setting device to determine which flank of the wedge said moving member will engage, connections between said setting device and one of said relatively movable parts whereby a movement of the former effects a change in the relative positions of the latter, and provision for lost motion in said connections.

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

THOMAS BRIGGS.

Witnesses:

ARTHUR ERNEST JEVAM,
GRACE HOLMES.