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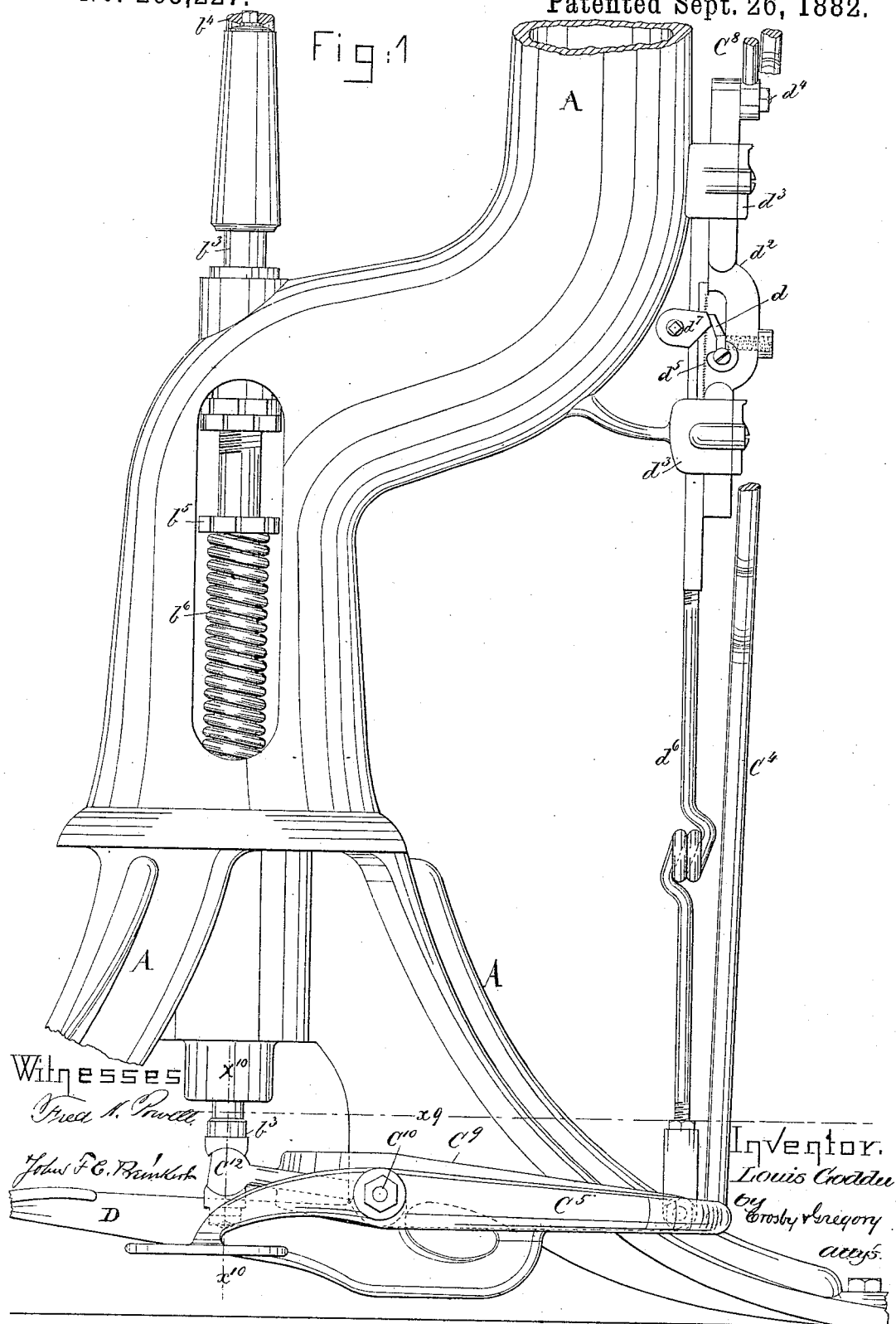
7 Sheets—Sheet 1.

L. GODDU.

MACHINE FOR DRIVING SOLE FASTENINGS.

No. 265,227.

Patented Sept. 26, 1882.



(No Model.)

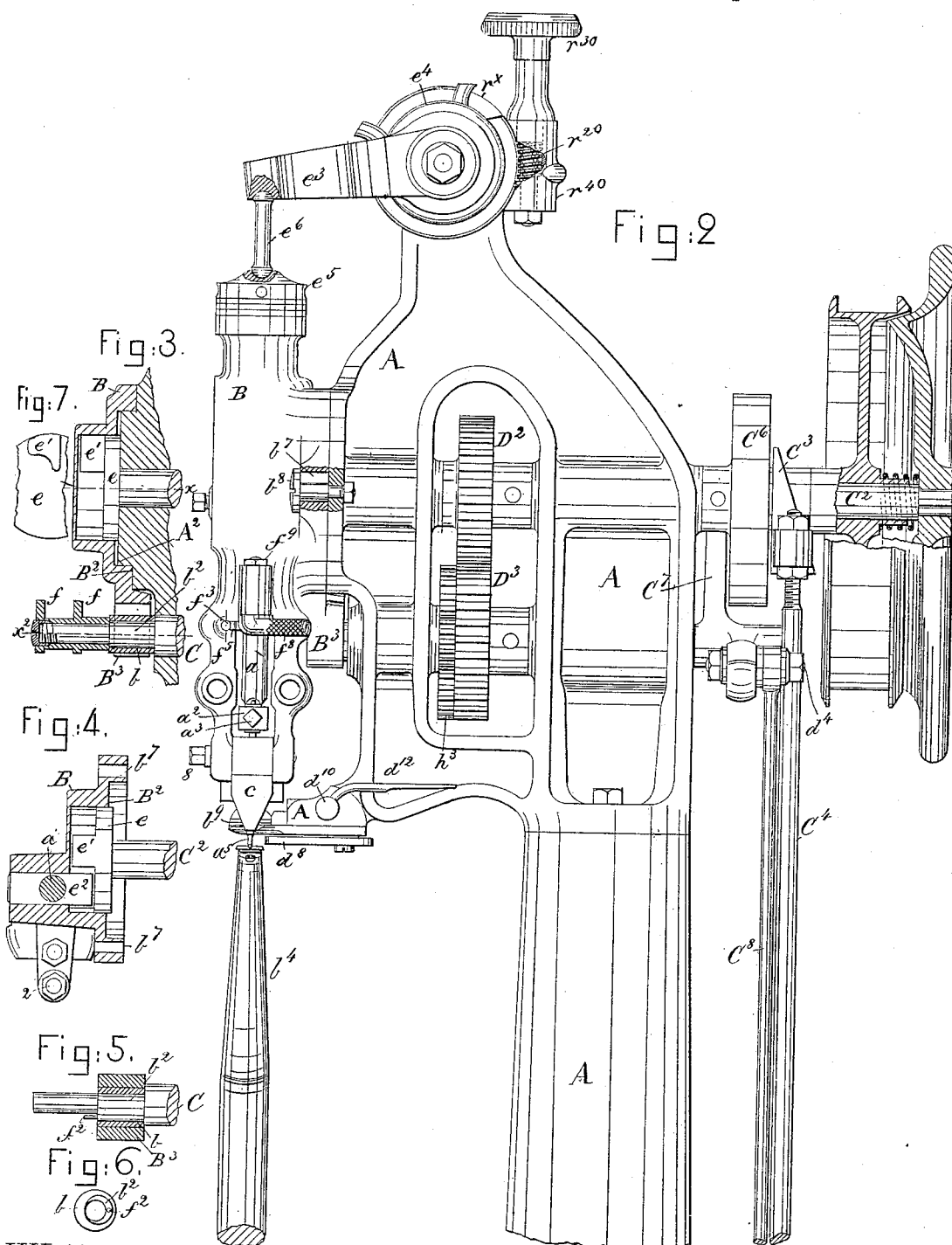
7 Sheets—Sheet 2.

L. GODDU.

MACHINE FOR DRIVING SOLE FASTENINGS.

No. 265,227.

Patented Sept. 26, 1882.



Witnesses.
Fred H. Powell
John F. C. Preunkert.

Inventor.
Louis Coddin
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L. GODDU.

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Fig:9.

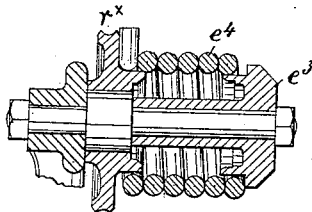
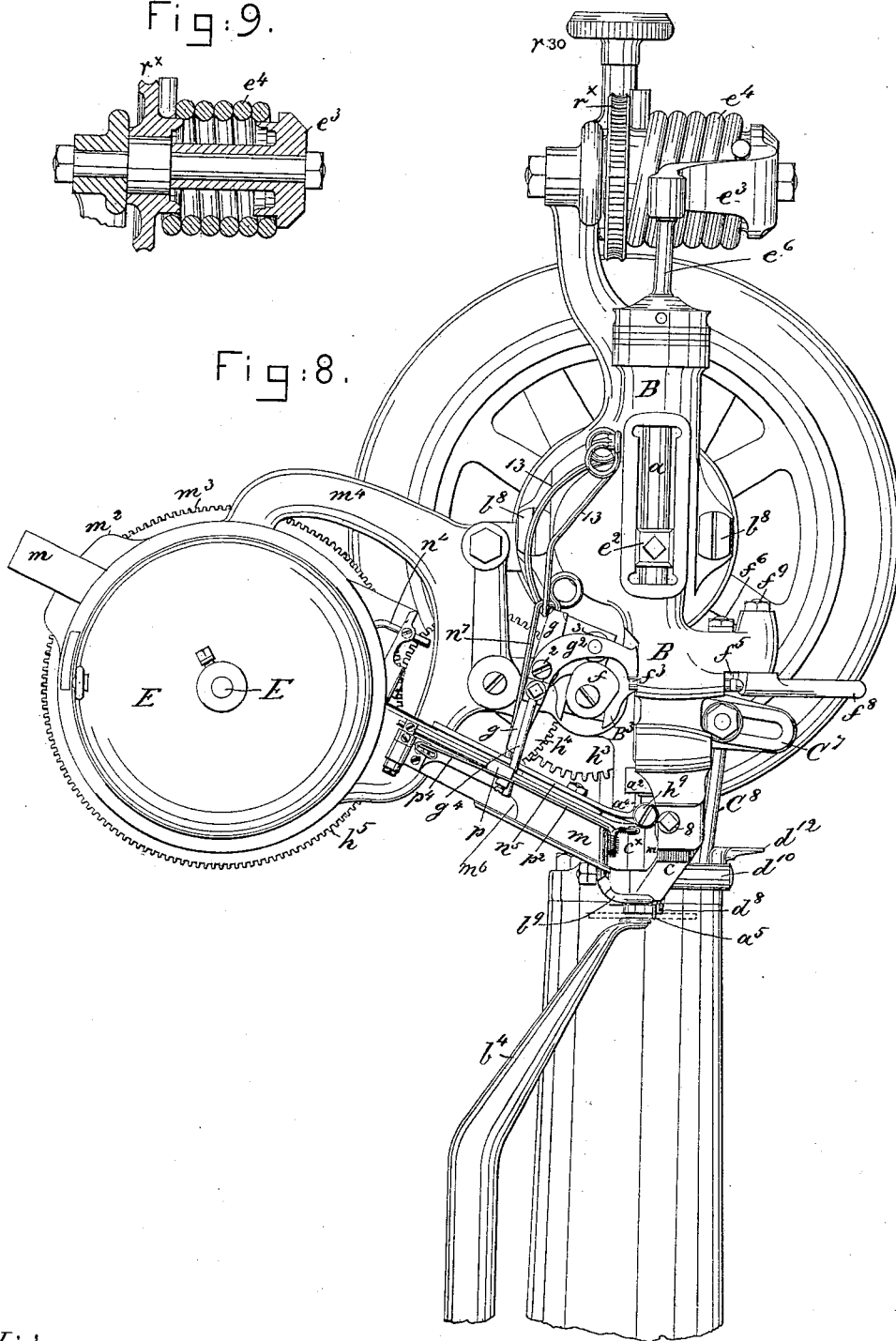


Fig:8.



Witnesses

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(No Model.)

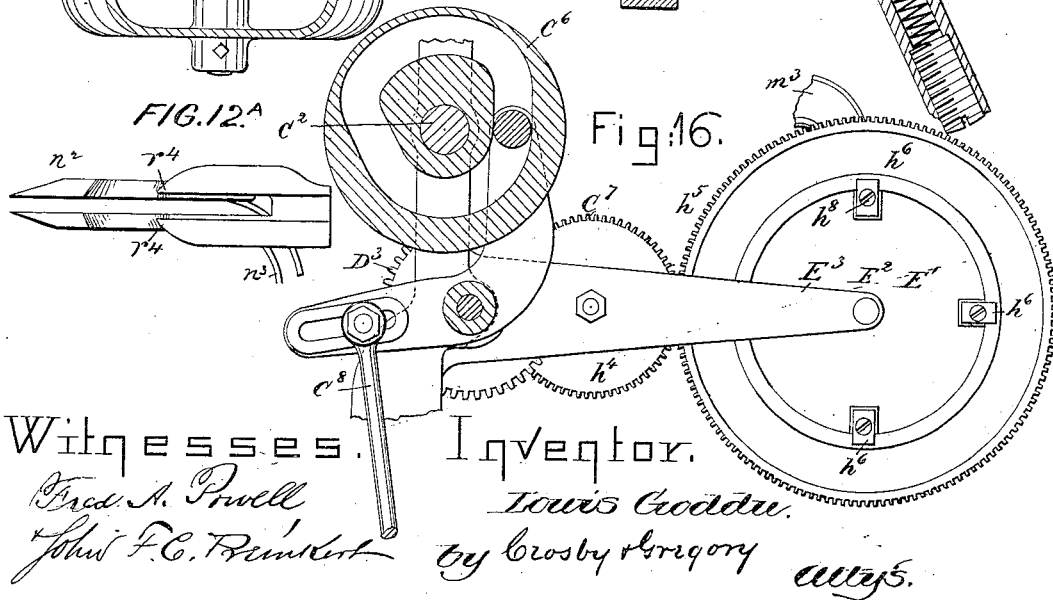
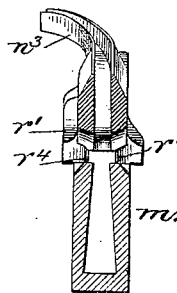
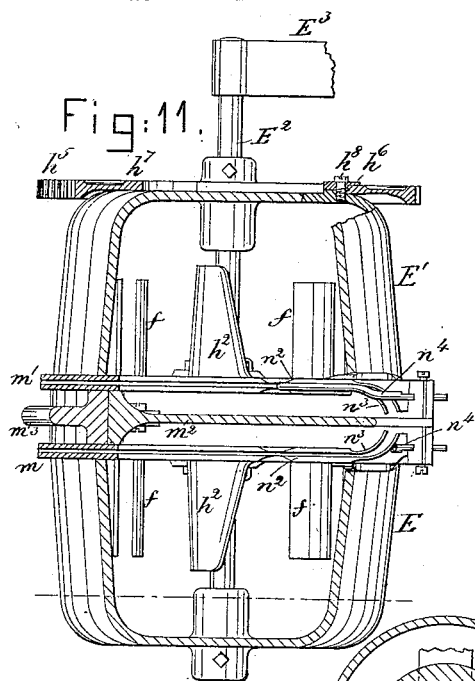
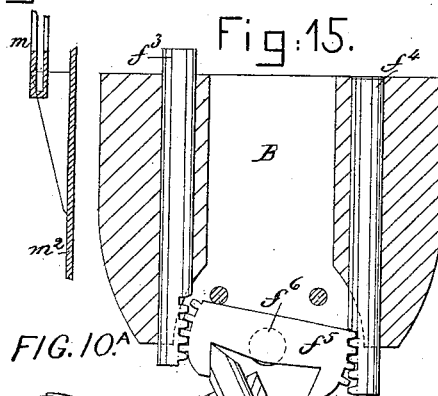
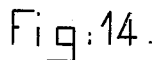
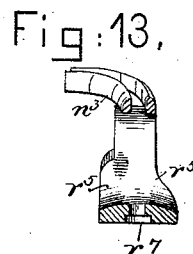
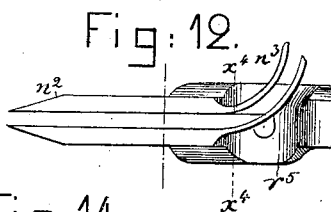
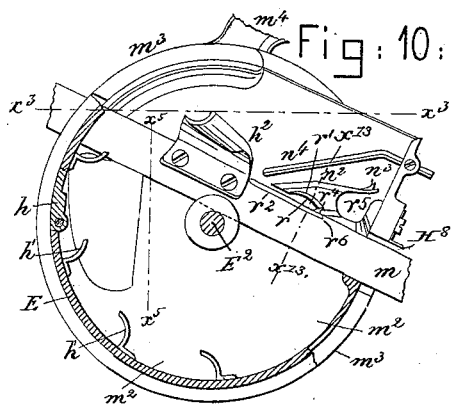
7 Sheets—Sheet 4.

L. GODDU.

MACHINE FOR DRIVING SOLE FASTENINGS.

No. 265,227.

Patented Sept. 26, 1882.



Witnesses.

Fred. A. Powell

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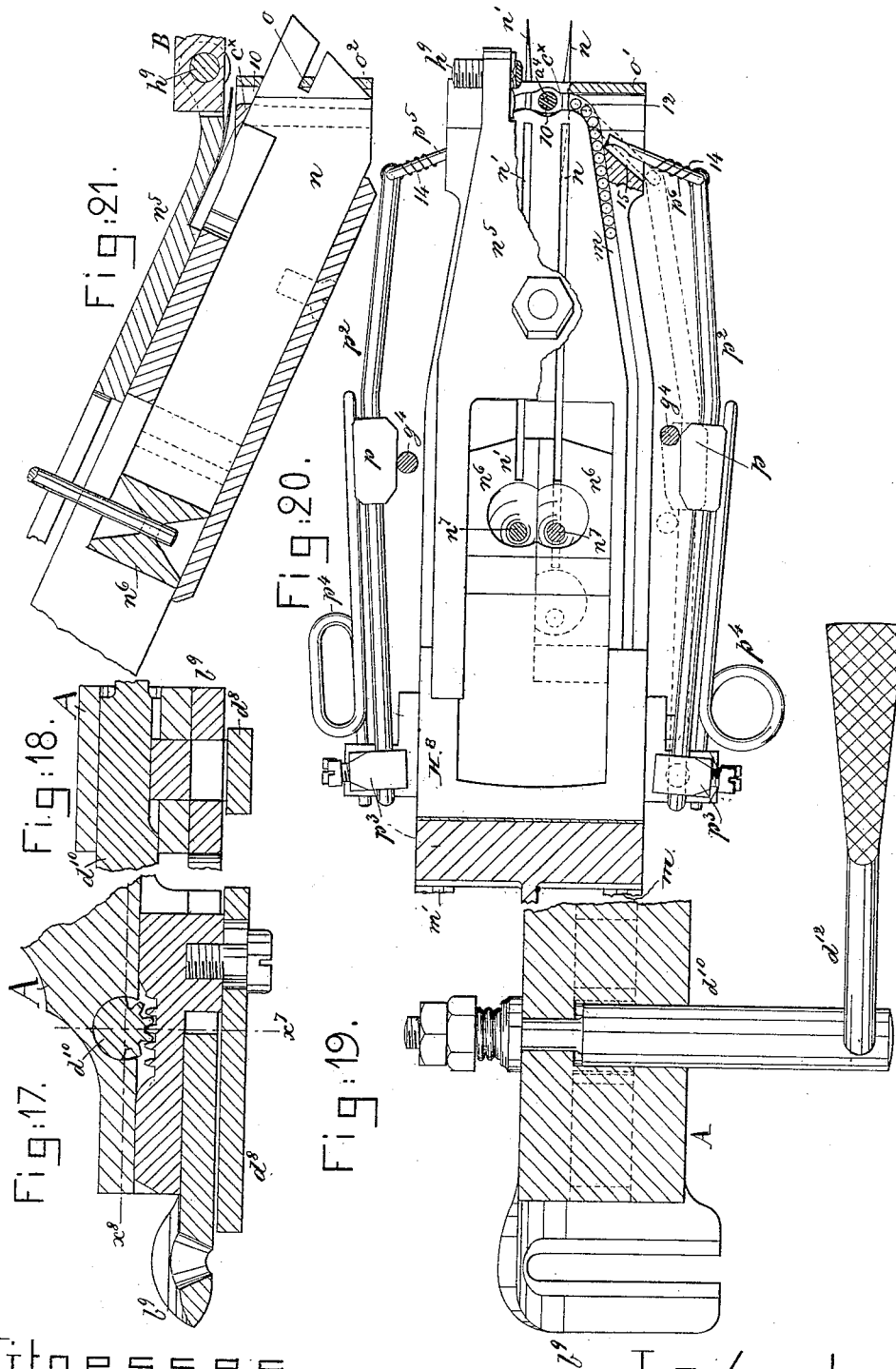
by Crosby & Gregory

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7 Sheets—Sheet 5.

MACHINE FOR DRIVING SOLE FASTENINGS.

Patented Sept. 26, 1882.



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62
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MACHINE FOR DRIVING SOLE FASTENINGS.

No. 265,227.

Patented Sept. 26, 1882.

Fig:22.

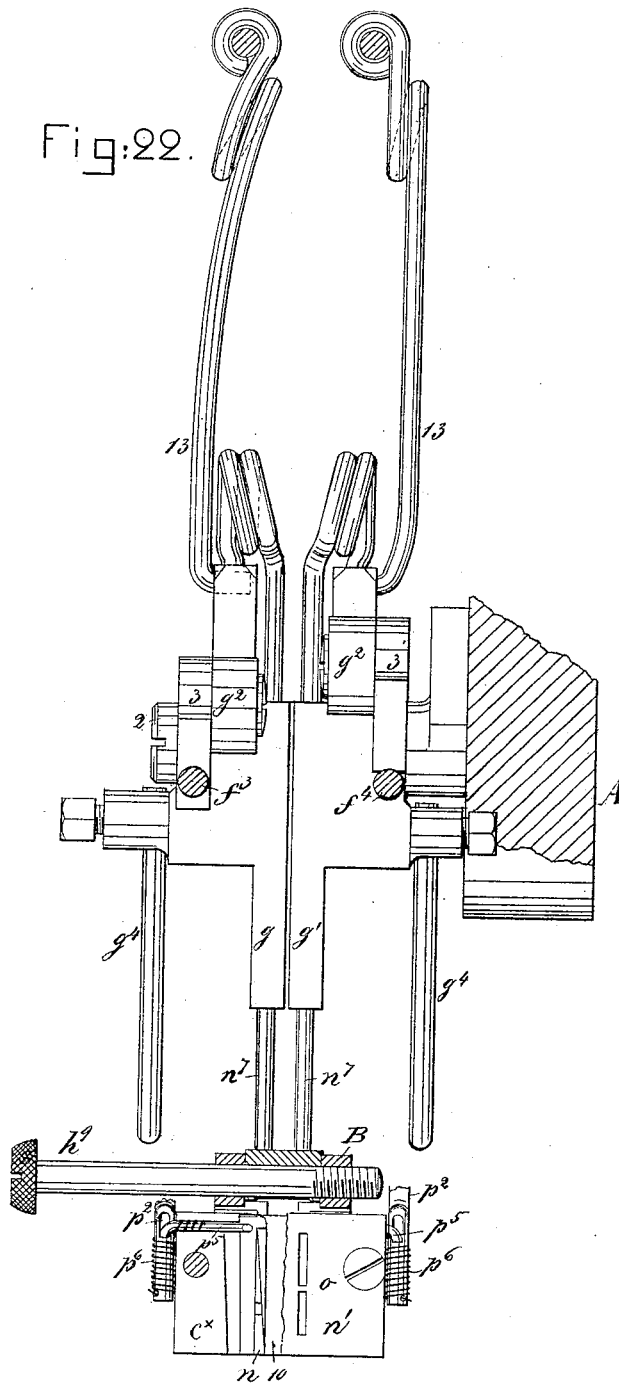


Fig:23.

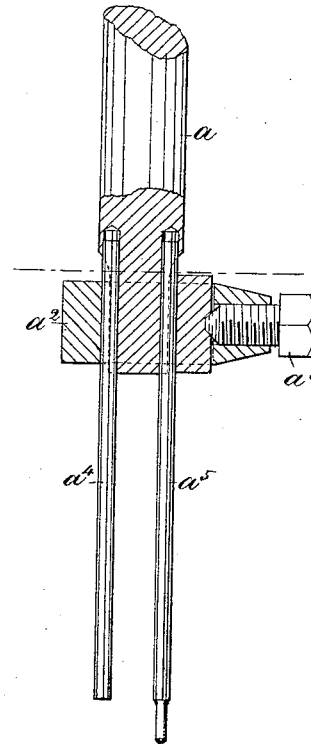
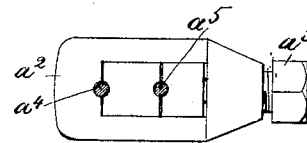


Fig:24.



Witnesses.
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(No Model.)

7 Sheets—Sheet 7.

L. GODDU.

MACHINE FOR DRIVING SOLE FASTENINGS.

No. 265,227.

Patented Sept. 26, 1882.

Fig:27.

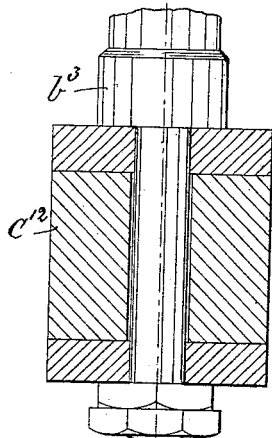


Fig:25

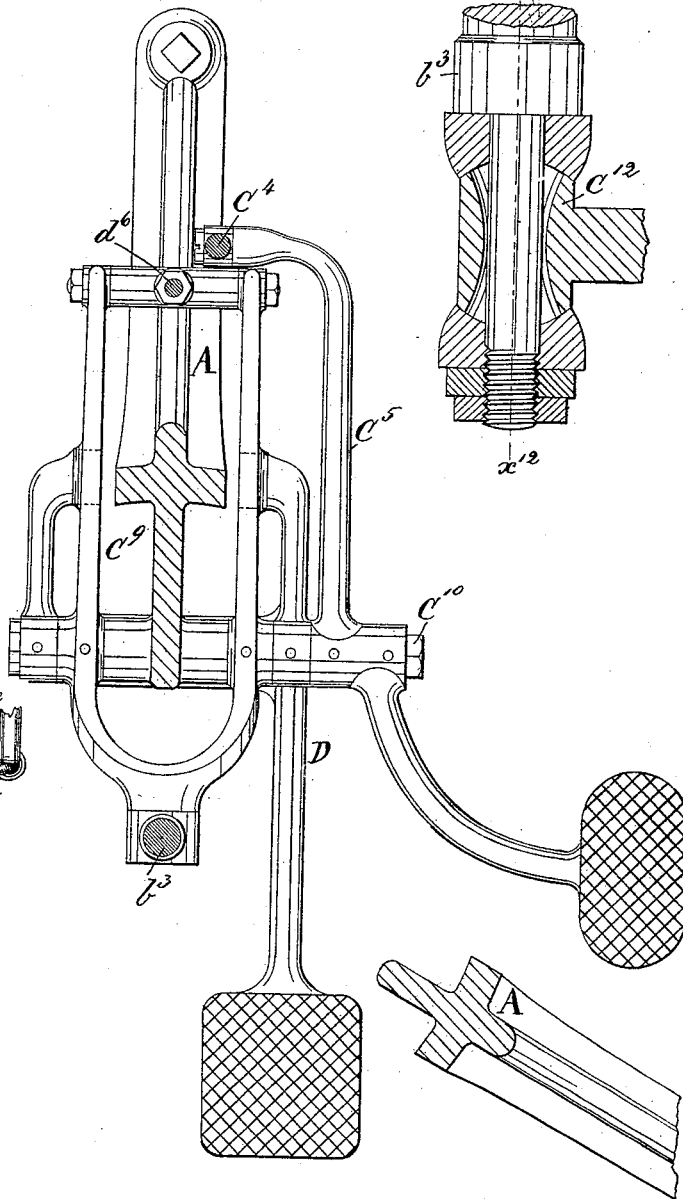


Fig:26.

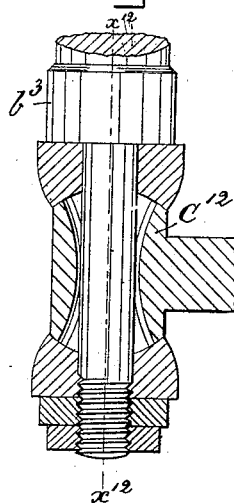
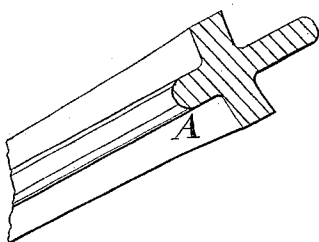
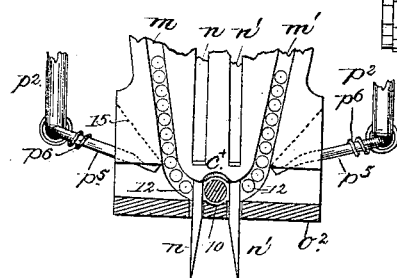


Fig:28.



Witnesses.
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John F. Lee & Co.

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UNITED STATES PATENT OFFICE.

LOUIS GODDU, OF WINCHESTER, MASSACHUSETTS.

MACHINE FOR DRIVING SOLE-FASTENINGS.

SPECIFICATION forming part of Letters Patent No. 265,227, dated September 26, 1882.

Application filed June 10, 1882. (No model.)

To all whom it may concern:

Be it known that I, LOUIS GODDU, of Winchester, county of Middlesex, State of Massachusetts, have invented an Improvement in Machines for Driving Sole-Fastenings, of which the following description, in connection with the accompanying drawings, is a specification.

This invention is an improvement on that class of machines which are adapted to drive sole-fastenings of different lengths, the longer or the shorter fastenings being driven at will.

In this my machine the fastenings are placed in revolving drums having buckets, which throw the fastenings into chutes, each length of fastening into its own chute, down along which the fastenings, properly held, travel to the separators, which permit their escape separately into the nail-passage and the nose of the machine; but those nails the heads of which are not properly held in the chute are picked up by a lifting device and returned to the drum. Each separator, made as a flat blade, is forked at its front end to embrace a bar in a plate at the end of the block into which the two chutes merge, to thus avoid forcing a fastening or nail out of the machine through the opening in which the separator works if the end of the separator, when being moved forward to pass between the said fastening and the end of the chute, should accidentally strike a fastening at its side. The separators are moved by springs actuated by levers under control of a cam and a stop, so that either separator may be thrown out of action at will, thus leaving it at rest in its normal position, at which time it closes the end of the chute and forms one side of the nail-passage in the block through which the driver descends. The chutes are connected together and with the head of the machine. As herein shown, the head of the machine (it having one bar to which is attached both the awl and the driver) is pivoted so that the head turns in the arc of a vertical circle while the awl is in the stock, thus effecting its feed, and the stock having been fed, the awl lifted, and the stock clamped between the horn and presser, the head is swung in the opposite direction until the nail-passages in the connecting-block of the chutes and in the nose and the driver are brought

just above the hole last made in the stock by the awl, after which the driver is thrown down and drives a fastening. The chutes, connected together at their lower ends and with the movable head, must slide the drums, and to enable them to be so moved the chutes are held in slots or bearings of loose disks supported in a bearing between the drums. The machine has also been provided with novel mechanism by which to depress the horn positively while the awl is feeding the stock. The spring-actuated lever, which depresses the bar to which is attached the driver and awl, is connected with the said bar by means of a link having ball-like or equivalent ends, thus permitting the head in which the said bar works to vibrate in the arc of a vertical circle, and yet be operated by a lever which can vibrate only in the arc of a circle at right angles to it.

Figure 1 is a side elevation of the lower part of the machine. Fig. 2 is a side elevation of the upper part of the machine. Fig. 3 is a broken detail, showing the annular hub on the stationary frame-work upon which the head is fitted to vibrate, and also the cam for vibrating the said head and the two cams which actuate the separators. Fig. 4 is a section of Fig. 3 on the line x ; Fig. 5, a section on the line x , Fig. 3, the separator-actuating cams being removed; Fig. 6, a left-hand end view of Fig. 5; Fig. 7, a detail of a part of the disk at the end of the main shaft, showing the shape of the projection which acts to lift the driver-bar and lets it drop off; Fig. 8, a front view of the upper part of the machine, the driver having just driven a fastening and the awl having just entered the stock; Fig. 9, a detail of the driving-spring; Fig. 10, a sectional or broken detail, showing part of one of the nail-drums, the chute, the disk in which it is held, and the lifting device for returning nails from the chute; Fig. 10^A, a section of the picking-up device and chute in the line x^3 , Fig. 10; Fig. 11, a top section of the two drums on the dotted line x^3 , Fig. 10; Fig. 12, a top view of the lifting device on a larger scale. Fig. 12^A is an under side view of Fig. 12. Fig. 13 is a section thereof on the line x^4 ; Fig. 14, a section on the line x^5 , Fig. 10; Fig. 15, an enlarged sectional detail of the stops that determine which of the separators is to remain at rest;

Fig. 16, a detail showing the mechanism for rotating the drum and the novel frictional connection between the last gear of the train and the drum. Fig. 17 is a longitudinal section taken through the presser and gage; Fig. 18, a section of Fig. 17 on line x^7 ; Fig. 19, a section of Fig. 17 on line x^8 . Fig. 20 is a broken detail, in top view, of the separators, their actuating devices, and the connecting-block having the nail groove or passage into which the nail to be driven is first delivered from the chute; Fig. 21, a longitudinal sectional detail, showing one of the separators in side elevation and extended forward through the connecting-block and the plate in front of it; Fig. 22, an enlarged detail, showing the devices which actuate the separators, the same being viewed from the right of Fig. 8, the main part of the head of the machine being broken away, but leaving the block, which is partially broken out to show the nail-passage therein, between the separators and one of the pushing devices, which keeps the endmost fastening in the chute pressed against the separator. Figs. 23 and 24 are details of the driver-bar and its attached driver and awl. Fig. 25 is a section on the line x^9 , Fig. 1; Fig. 26, a section on the line x^{10} , Fig. 1; Fig. 27, a section on the line x^{11} , Fig. 26; and Fig. 28, a sectional detail and top view of the ends of the chutes, separators, pushers, and "block," with groove in passage for the nail and driver.

The frame-work A of the machine, of suitable shape to support the working parts, has projecting from its front side (see Figs. 2 and 3) a cylindrical hub or bearing, A², upon which is fitted and turns the recessed inner face of the movable head B of the machine, a shouldered part, B², thereof fitting the hub A² snugly, which hub thus forms a fulcrum for the said head during its vibration. The head B has a vertical passage to receive in it the driver-bar a , to which is attached, by a suitable clamp, a^2 , blocks, and set-screw a^3 , (see Fig. 23,) the driver a^4 and awl a^5 . The head B, at its lower end, has connected with it by screw 8 the nose e , in which is made the vertical passage which receives the nail or fastening to be driven, and into which the driver enters in its descent to drive the fastening. The head B, retained on the hub by screws b^6 in slots b^7 , has a fork, B³, (see Figs. 2 and 3,) in which rests a block, b , fitted upon an eccentric, b^2 , near the front end of the shaft C, which has its bearings in the frame-work A, the said eccentric, as the said shaft is rotated, vibrating the head B sufficiently in one direction to enable the awl, when driven down into the stock, to feed it, and in the opposite direction to bring the nose and driver above the hole last made by the awl in the said stock.

The main shaft of the machine has upon it the usual clutch-pulley, forced together at suitable times by a wedge-block, C³, of usual construction.

Shaft C² carries a face-grooved cam, C⁶, that

vibrates a lever, C⁷, joined by link C⁸, with the horn-depressing lever or treadle C⁹, having its fulcrum at C¹⁰, and connected by a globular joint C¹², (see Figs. 1 and 26,) with the lower end of the horn-shaft, b^3 , having at its upper end the usual rotating horn, b^4 , provided with a nail-clinching surface. The horn-shaft has a collar, b^5 , which rests upon a strong spiral spring, b^6 , the normal tendency of which is to lift the horn against the stock as soon as the feed is completed. The horn is pulled down positively and to a uniform distance below the under side of the stock after driving each fastening, and while the awl is feeding the stock, by means of the pawl d , pivoted on the pawl-carrier d^2 , guided in guides d^3 , and connected with the rod C⁹, which is attached by bolt d^4 with the lever C⁷, referred to. This carrier d^2 is lifted once at each revolution of the shaft C², just after the bar a has descended and the awl a^5 is in the stock, and while the head B is being moved to feed the stock, and as the said carrier is raised the pawl d engages a toothed part of the rack d^5 , (also held in the guides d^3 ,) connected by rod d^6 with the horn-depressing lever C⁹, and depresses the horn. The cam-block d^7 disengages the pawl d from the teeth of the said rack as the carrier is depressed, and the spring b^6 then acts to immediately throw the upper end of the horn against the under side of the stock, whatever may be its thickness. By these devices the horn will always be depressed a certain fixed distance from the under side of the stock notwithstanding variations in its thickness. The operator may depress the horn by the foot-treadle D, pivoted at C¹⁰, and having its rear end resting against the lever C⁹ at the rear of its fulcrum.

The shaft C² has a toothed gear, D², which engages a toothed gear, D³, on and rotates the shaft C. The shaft C² has at its front end a disk, e , provided with a peculiar-shaped crank-pin, e' , (see Figs. 3, 4, 7,) which at each rotation of the shaft C² acts upon the block e^2 , secured to the driver-bar a , and lifts the said bar and its driver and awl, withdrawing the driver from the nail-passage in the nose and the awl from the stock before the head B is turned to move the lower end of the nose toward the right, as in Fig. 8, preparatory to driving a fastening, the said block e^2 escaping from the said crank-pin e' at the proper time to permit the lever e^3 , under the influence of the strong adjustable spring e^4 , to throw the said bar down quickly to drive a fastening and force the awl into the stock.

The head e^5 of the bar a and the lever e^3 are provided with concavities to receive the rounded ends of a link, e^6 , which forms a connection between the said bar and lever, and which permits the said bar and lever to vibrate at right angles to each other.

The slotted presser b^9 , which bears upon the upper side of the stock, has below it a sliding or adjustable edge-gage, d^8 , (seen best in Figs. 17 to 19,) one part of which has rack-teeth to

be engaged by the teeth of a toothed gear, d^{10} , having a handle, d^{12} , by which to adjust the said gage horizontally below the presser in proper position to bear against the edge of the stock.

The forward end of shaft C has placed upon it two like cams, f , forming, as shown in Fig. 3, part of a sleeve, which is made to rotate in unison with shaft C by means of a pin, f^2 , (see Figs. 5 and 6,) extended from the eccentric b^2 into a hole in the said sleeve.

The head B has in it two stops, f^3 f^4 , (see Figs. 15 and 22,) provided with rack-teeth and engaged by a toothed sector, f^5 , pivoted at f^6 . One edge of this sector, beveled as shown in Fig. 15, is acted upon by the pointed end of a holder composed of a spring-pressed pin, f^7 , placed in a tube, f^8 , having its fulcrum at f^9 . The operator, by turning this tube to the right or left by hand, causes the pin to act on the sector at one or the other side of its center and force out from the head B one or the other of the said stops to arrest the approach of the arms g^2 of one or the other of the levers g g' , both alike, and pivoted at 2, so that the rollers 3 on the said arms will not be struck and moved by the cams f .

In Fig. 8 the stop f^3 is shown projected to stop the arm of the outermost lever, g , thus retaining out of action the separator n , which cooperates with the said lever. The headed nails or fastenings of different lengths are placed in the two bowl-shaped drums E E', secured to the shaft E², held in a suitable bearing, E³. Each drum has a suitable door or removable piece, h , (see Fig. 10,) through which to introduce fastenings of the desired length, and has buckets h' to lift the said fastenings and drop them upon the inclined shelf h^2 . The drums are driven by a train of gearing, h^3 h^4 , and a toothed ring or gear, h^5 , which is held against an annular flange, h^7 , at one end of the drum E' by friction-plates h^6 , made adjustable by screws h^8 , so that in case of obstruction the gearing may continue to run and the drums stop. The friction between the friction-plates and annular flange h^7 is also made to determine the amount of slippage of the gear h^5 and consequent speed of the drums. Fastenings dropped upon the inclined shelf h^2 fall therefrom upon and into one or the other chute, m or m' , both alike, and leading downward to a block, e^x , which unites the chutes, the said block having a groove or passage, 10, to receive a fastening, 12, from either chute, the passages at the lower ends of the chutes opening directly into the passage 10 in the block e^x , but at opposite sides thereof.

For sake of brevity, I have used the term "block" to designate that portion of the metal of the chutes which lies between the separators, and in which is made the vertical groove or passage 10 for the reception of a nail or fastening, and down through which the driver descends, the said groove serving at times as a portion of the driver-passage; and I wish it to

be understood that this so-called "block" may be either a separate piece of metal or to be integral with the chutes.

The connected chutes have an attached cover, n^5 , which is joined to the head B by a screw-bolt, h^9 , so that the chutes move with the said head. The chutes, near their upper ends, are fitted into mortises or notches made at the sides of a flanged disk, m^2 , (see Fig. 2,) held loosely in an annular or hoop-like bearing, m^3 , supported by or forming part of a bracket, m^4 , attached to a rigid part of the frame-work, the said disk rotating or rocking slightly in its bearing as the chutes are moved backward and forward in the said mortises or notches, the said chutes deriving their movement from the head B, with which they are connected. The nails or fastenings the bodies of which drop directly into the chutes and the heads of which do not override pass down the said chutes until arrested by the separators n or n' , both alike; but those fastenings the heads of which stand up for an objectionable distance above the others are acted upon by the forked and inclined forward end of the lifting device n^2 , (see Fig. 10,) and are lifted up out of the chute, and as the other fastenings continue to travel the fastenings so lifted are forced along the auxiliary chute n^3 at the rear of the lifting device, and are again discharged into the drum from which they were taken. The majority of the loose fastenings piled upon each other in the chute will be knocked off by the knocking-off finger n^4 , composed of a piece of bent wire, the lower bent end of which terminates just above the top of the chute, as shown in Fig. 10. The covering-pieces n^5 of the chutes m m' rest just above the heads of the nails and prevent them overriding as they approach the block e^x .

The separators (made as flat blades, one of which is shown clearly in Fig. 21, and arranged at opposite sides of the block e^x , between the said block and the ends of the chutes, to stop, when desired, the passages between the said chutes and the said block e^x) are slotted or forked at their front ends, as shown in Fig. 21, and when projected forward to cover the ends of the chutes straddle a bar, o , left between two short vertical slots made in a plate, o^2 , attached to the face of the block e^x . The separators may have several slots to cooperate with bars o . Forking the separators, as described, and making them pass over the bar o obviate the liability of a nail or fastening being struck at its side by the end of the separator and being driven by the separator into the slot in the plate o^2 , through which the separator works, for the said slot above the bar o is shorter than the shortest fastening.

The endmost nails of the rows of loosely-held nails in the inclined chutes, down which the said nails travel by gravity, are kept pressed closely against the separators, when forward, by their own weight and the jar of the machine, produced chiefly by the blows of the driver,

the pushers p^6 being at that time held back, as in full lines, Figs. 20 and 28. A nail will be transferred from one of the said chutes into the groove or space 10 between them only when the driver is down and partially fills the said space.

The separator at the end of that chute containing the nail next to the driver will be pulled back to uncover the end of the said chute while the driver is in its lowest position, and as the separator uncovers the end of its chute the arm g^1 will pass from the block p (see Fig. 20) and permit the pusher p^2 to act upon the loose nails near the end of the chute and crowd the endmost nail of the series of nails, which endmost nail rests closely against the said separator, as before described, and push the said nail against the side of the driver, there being sufficient space at the side of the driver and between it and the reduced end of the separator then drawn back for the reception of but one of the said nails. The nail having been pressed against the driver, the separator commences its forward movement, placing its thin beveled upper point between the nail resting against the driver and the next one back of it and close to the head of the said nail, after which the pusher is retracted. The separator, as it continues its forward movement, actuated by a spring, as will be described, and as the driver rises, gradually brings its thicker portions behind the endmost nail, and the beveled surface, being at the side of the separator next to the driver, gradually straightens the said nail, bringing it into upright position by the time the driver is lifted from the opening 10, the separator, by its thicker part, gradually reducing the area of the opening 10, and when both separators are fully forward they form the side walls of the said space 10, into and through which the driver next descends to drive the said nail. The pusher will act on a nail more or less remote from the endmost nail. The block c^x is held with its groove or passage 10 just above the nail-passage in the nose c , so that a nail or fastening removed from one of the chutes after the withdrawal of the separator next to its end will drop into the nail-passage in the nose c under it.

Each separator is connected with a slide, n^6 , guided between the metal pieces constituting the chutes, (see Figs. 20 and 21,) and is reciprocated by means of a spring-rod, n^7 , extended down through it. These spring-rods are moved backward one at a time to withdraw the separators, so as to uncover one end of one or the other nail-chute by means of one of the levers g or g' as it is moved by its connected spring 13, the said lever, when so to operate, not having its arm g^2 arrested by the stop f^3 or f^4 , but rather having its roller 3 on one of the cams f . As the lower end of the lever g or g' is moved toward the left (see Fig. 8) it acts against one of the rods n^7 and causes it to draw that one of the separators back which is to uncover the end of that chute from which the nail is next

to be taken, when the endmost nail, 12, of the row of nails therein will be moved by the pusher beyond the separator into the groove or passage 10 of the block c^x , and against the driver, as described. A nail having been passed into the said passage, the cam f acts on the lever g or g' , controlling the said separator, and turns the said lever in the direction to permit rod n^7 to move the separator to close the end of the chute from which the said nail was just permitted to escape; but during this forward movement, if the end of the separator should strike a nail, the spring-arm n^7 will prevent breakage.

Either lever g or g' may be operated at will to move either separator at each rotation of the main shaft and permit the escape of a nail of the desired length from one or the other chute by withdrawing the stop f^3 or f^4 , which is done by the change of position of the tube f^5 of the holding device. The levers g or g' have connected with them arms g^1 , the lower ends of which, as the levers are vibrated, strike inclined blocks p , secured to arms p^2 , held in movable blocks p^3 and acted upon by springs p^4 . The forward ends of the arms p^2 have pivoted to them the pushers p^5 , acted upon by coiled springs p^6 , (see Figs. 20 and 21,) which serve to normally keep the said pushers with their ends pressed against the inclines 15 near the slots in the chutes. (See Figs. 20 and 28.)

When a lever g or g' is not in operation the arm g^1 will act on a block p and keep the pusher back, as in full lines, Fig. 20; but as a separator is moved back to uncover a chute the arm g^1 is moved to the rear of the said block and permits the arm p^2 and pusher to be moved forward into the dotted-line position, Fig. 20, and push toward the groove or passage 10 in the block c^x the nails in advance of it; but only one nail can pass beyond the separator and between it and the driver, and the driver, as it is again immediately moved forward, enters between the nail in the passage 10 and the next one to it at the end of the chute.

The delivery ends of the chutes are curved so as to allow the headed nails or fastenings of different lengths to come directly into the said groove or passage 10 at its opposite sides, the chutes supporting the said nails by their heads until a separator beveled at its end passes behind the nail next to the driver. The end of each blade-like separator (see separator n , Fig. 22) is beveled at one side, commencing at its upper edge, and the said bevel decreases toward the lower edge of the separator.

Each separator is placed at an incline, as in Fig. 21, so that its thin beveled upper point will readily enter just behind the endmost nail of the chute, close to its head, and as the said separator is moved forward its wedging end and face next the driver will act to place the nail next to be driven in upright position in the passage 10.

The force of the spring e^1 is controlled by turning the disk r^x , with which one of its ends

is connected. This disk has worm-teeth at its periphery, (see Figs. 2 and 8,) to be engaged by the worm r^{20} on a shaft provided with a hand-wheel, r^{30} , and held in an ear, r^{40} , fast to the frame-work.

Whenever the horn is depressed by the operation through the foot-lever the rack-bar d^5 is lifted; but the teeth of the said bar are not worn by such movement, because the pawl d is supported by the stop or cam d^7 .

In case a nail should happen to lodge on the chute crosswise under the heads of nails held in the chute, the said nail, as it reaches the open space below the picking-up device n^2 , (which at this point is beveled and made thin, as at r' , Fig. 10^A, as is also the top of the chute at r^2), will, as it meets the corners or shoulders r^4 at the lower side of the picking-up device, be tipped in one or the other direction and be thrown off the chute.

It sometimes happens that a nail will stand with its head upon the chute and with its shank upright. The shank of such a nail will enter between the forked ends of the picking-up device if not removed by the knocking-off device n^4 ; but as the said nail reaches the open place r^5 at one side of the picking-up device it will tip over and fall back into the drum.

The small shoulders r^6 , formed by beveling the top of the chute under the picking-up device and near the shoulders r^4 , as the chute is moved longitudinally with the movable head, as described, will strike against the beveled under side of the head of a nail lodged crosswise and will move it endwise from the top of the chute.

The outwardly-beveled edges r' r^2 of the picking-up device and chute deflect outward the points of any nails striking against them, and only nails having their heads properly supported on the chute can enter the groove r^7 at the under side and rear part of the picking-up device, which part serves as a part of the cover for the chute.

Nails having small imperfect heads, as well as slivers, sometimes get lodged into the chute and travel along the chute between the perfect nails. To dispose of these imperfect nails and slivers, the space between the walls of the chute is made wider towards its bottom, (see Fig. 10,) so that the said nails and slivers gradually drop as they descend the chute, and one side wall of the chute is cut away, as shown at m^6 , Fig. 8, to at that point permit the said imperfect nails and slivers to readily fall out and outside of the drum.

I do not broadly claim the swinging head andawl to feed the shoe as the head is being vibrated or swung.

I do not claim a pivoted laterally-movable raceway provided with two channels for nails, the raceway being movable to place one or the other channel opposite the stationary nail-guide.

I claim—

1. The drum to contain the fastenings and

toothed gearing to rotate it, combined with friction devices to connect the drum and toothed gear, substantially as described.

2. The rotating drum provided with buckets and the chute and connected movable head, combined with the loosely-held flanged disk m^2 , to support and guide the nail-chute during its movements, as described.

3. The rotating drum provided with buckets and the chute into which the nails or fastenings are dropped, combined with the knocking-off device a^4 , with its free end located just above the chute, to throw from the heads of the nails in the chute nails which are lodged therein and not in the chute, substantially as described.

4. The drum to contain and the chute to suspend the nails or fastenings by their heads, combined with the lifting device to act upon the heads of those nails which are too much elevated and lift them from between the walls of the chute, substantially as described.

5. The main chute and drum into which it is extended, combined with the auxiliary chute, to lift from the main chute those nails the heads of which are held too far above the top of the main chute, the auxiliary chute being curved or turned aside, as shown and described, to transfer the nails lifted by it back into the drum, substantially as and for the purpose described.

6. In a machine to drive headed and separate and loose fastenings contained in series in chutes, a block, c^* , provided with a nail-passage, 10, in which the driver works, combined with two chutes, stationary with relation to the said passage and having their ends opening directly into opposite sides of the said passage, and with two independent separators, whereby the nail next to be driven may be taken directly from the end of either chute by moving its corresponding separator to permit the passage of a nail into the said passage under the driver, the other separator closing the end of the other chute, substantially as described.

7. The block provided with the nail-passage 10 and the two chutes stationary with relation thereto and in communication with different portions of the said passage, and two independent separators and means to move them, combined with the nose e , located directly below the said block, substantially as described.

8. The two chutes and a block stationary with relation to the said chutes, and located between their ends, and provided with a passage, 10, for the reception of a nail or fastening from either chute at will, and two separators and means to move them, combined with the nose and the movable head of the machine, with which the said chutes are connected, substantially as and for the purpose described.

9. The two chutes, the block c^* between their ends, provided with the nail-groove passage 10, and the separators, combined with arms to engage the separators and with levers to move the said arms to retract the separa-

tor and uncover the ends of the chutes, substantially as described.

10. The chute and block e^x , provided with nail-passage 10, combined with the forked separator, and a bar to enter between its forked end as the separator is moved forward, whereby the separator is prevented forcing a nail accidentally through the passage in which the end of the separator works.

11. The chute, block e^x , provided with nail-passage 10, and a separator, combined with a pusher to act upon and press forward some of the loose nails at the rear side of the separator and near the delivery end of the chute, substantially as described.

12. The chute, slotted to receive the pusher, combined with the pivoted pusher, its carrying-arm, and means to move the said arm at the proper times to carry the pusher backward over the detached nails, and then to push the nails forward, as required, substantially as described.

13. The lever g , its arm g^2 , a cam to move it, and the rod actuated thereby, and the separator with which the said rod is connected, combined with the chute, substantially as and for the purpose described.

14. The two chutes, two separators, $n n'$, and connecting devices to move the said separators to open or close the ends of either of the said chutes, combined with movable stops $f^3 f^4$ to arrest the movement of the devices for actuating the separators, substantially as and for the purpose described.

15. The two stops provided with teeth, the sector, and the yielding holding device to co-operate with the said sector to retain either of the said stops projected forward, combined with the two separators and chutes and means to actuate the said separators, whereby by change of position of the said holding device a nail or fastening may be taken from either of the said chutes, substantially as described.

16. The presser and horn to clamp the work between them, and the head, and a driver and awl carrying bar, and awl and driver combined with the nose, and the two drums and separators and chutes connected to and made movable with the said head, as and for the purpose described.

17. The horn, its depressing lever, and connected rack-bar, combined with the pawl-carrier, its pawl, and means to lift the pawl-carrier preparatory to moving the stock over the horn, substantially as described.

18. The horn, its depressing-lever, its connected rack-bar, and the pawl-carrier and pawl and means to operate the pawl-carrier, combined with the stop to disengage the said pawl

from the teeth of the toothed bar as the carrier descends, substantially as described.

19. The driver-bar, the movable head in which it is reciprocated, and the lever to throw the driver-bar down, combined with the link e^6 , having its ends loosely connected with the said lever and bar, to permit the head to be vibrated in one arc and the said lever in another arc at right angles to it, substantially as described.

20. The driver-bar link, with rounded ends, and lever-spring e^4 , and the toothed disk, with which one end of the said spring is connected, combined with the gear to engage the said disk and move it to vary the force of the said spring, substantially as described.

21. The block having the passage 10, the driver, the chutes, the separators, and the pushers, combined with means to operate the said parts in the order specified, whereby the driver is retained in the passage 10 while the pusher (the separator being thrown back) acts to press a nail against the driver, the separator being subsequently moved forward, so that its point passes behind the endmost nail while the driver is yet down or not fully raised, and after the driver rises the separator, by its further forward movement, places the said nail in upright position in the passage 10 to be struck by the driver, substantially as described.

22. The chute, combined with the lifting device, having an opening in its side to permit the nails standing shank upward to tip and fall out into the drum, as described.

23. The chute, beveled at its upper edge, combined with the picking-up device, beveled at its lower edge, and provided with a shoulder, r^4 , to knock off nails lodged across the chute, substantially as described.

24. The chute having the space between its walls enlarged toward the under side of the chute, and cut away, as at m^6 , to permit the escape of slivers and imperfect nails having small heads, as set forth.

25. The vibrating head, the reciprocating bar and awl carried by it to feed the stock, the driver, the block provided with the nail-passage 10, a chute or guideway for the nails, a drum to supply the chute with nails, and the rotating work-supporting horn, combined with the presser against which the face of the sole is held while the nail or fastening is driven, substantially as described.

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

LOUIS GODDU.

Witnesses:

G. W. GREGORY,
W. H. SIGSTON.