No. 656,184. Patented Aug. 21, 1900.

J. H. FASSETT & J. E. WARREN.

MACHINE FOR FASTENING STIFFENERS TO SHANKS.

(No Model.) (Application filed Nov. 1, 1899.)

4 Sheets—Sheet 1.

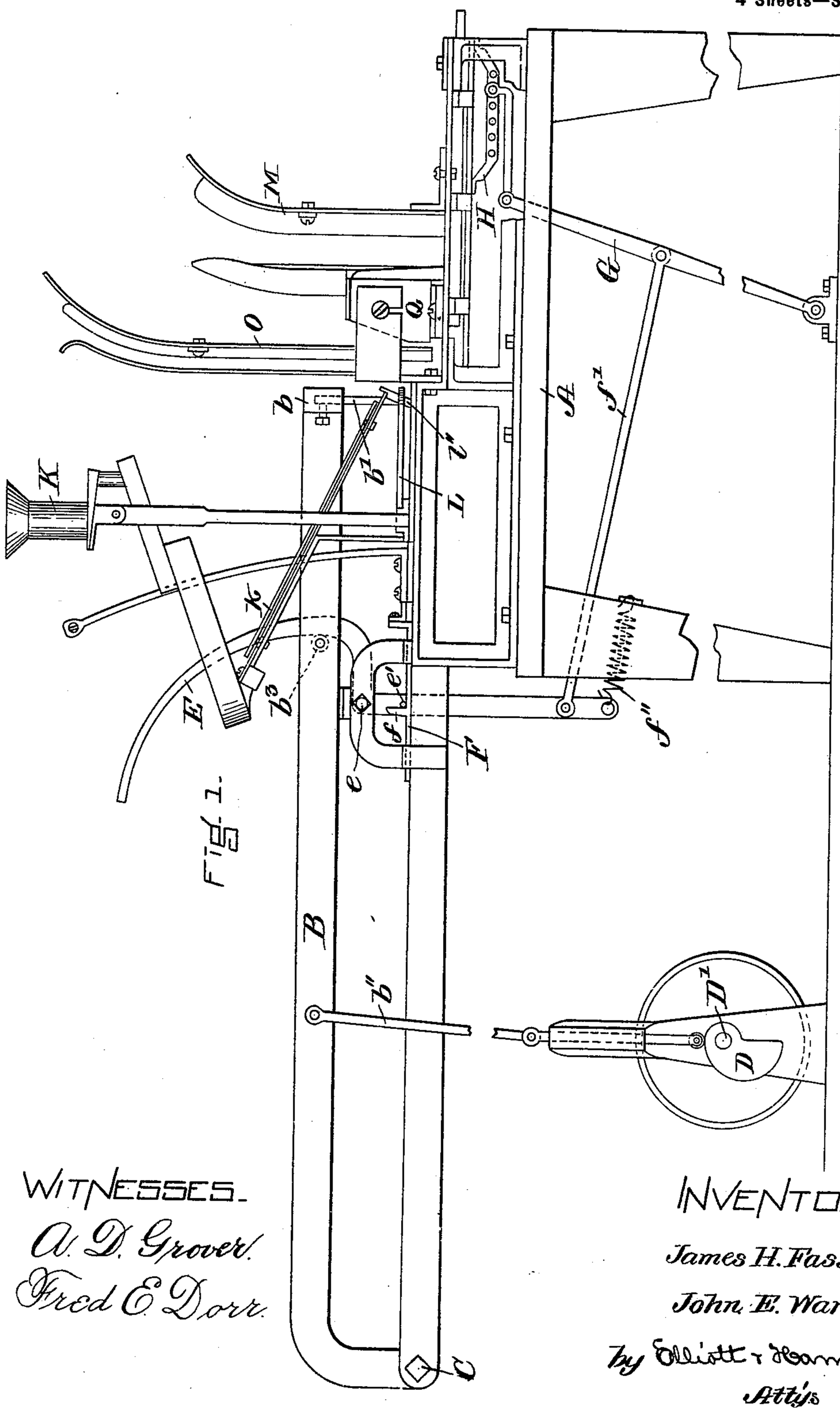

FIG. 1.

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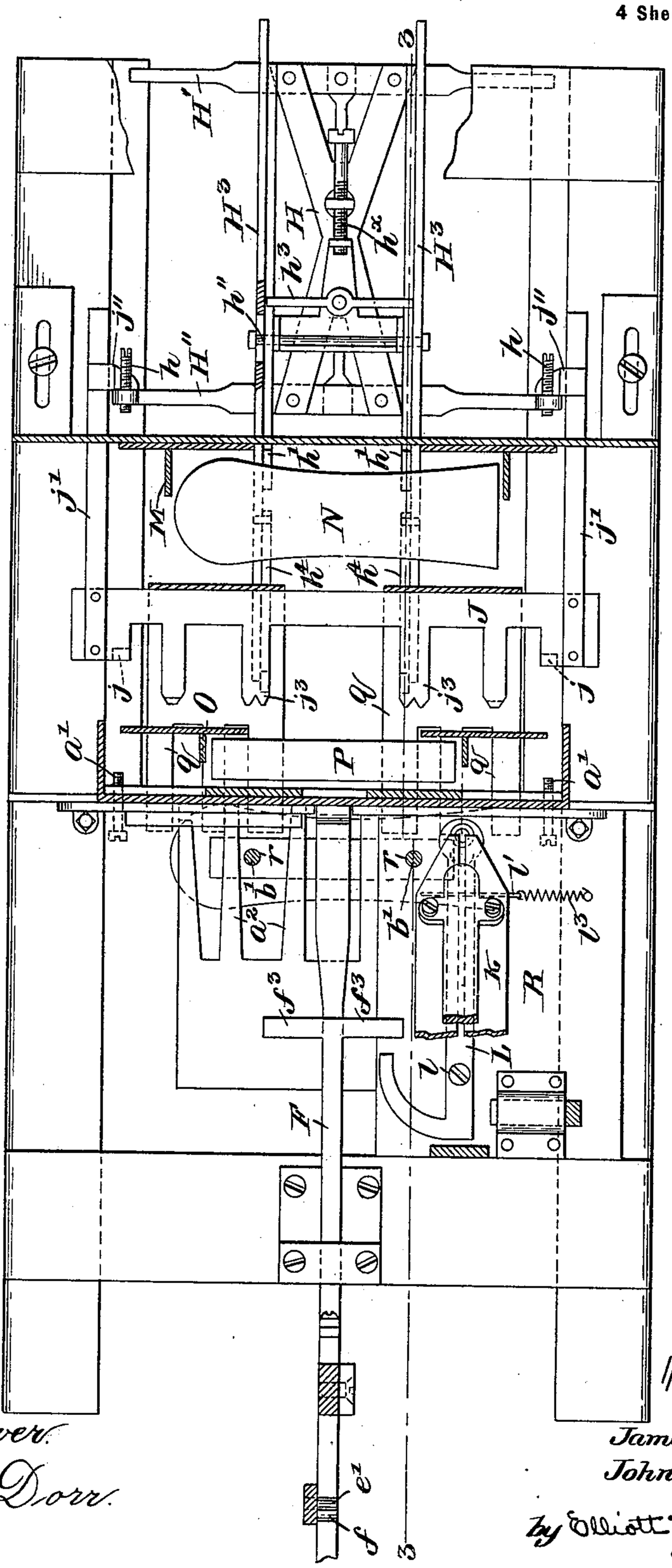
Fig. 2.



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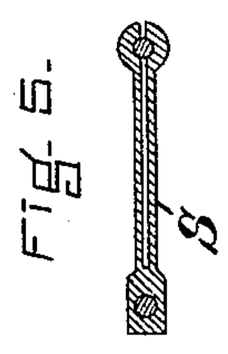

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Fig. 6.

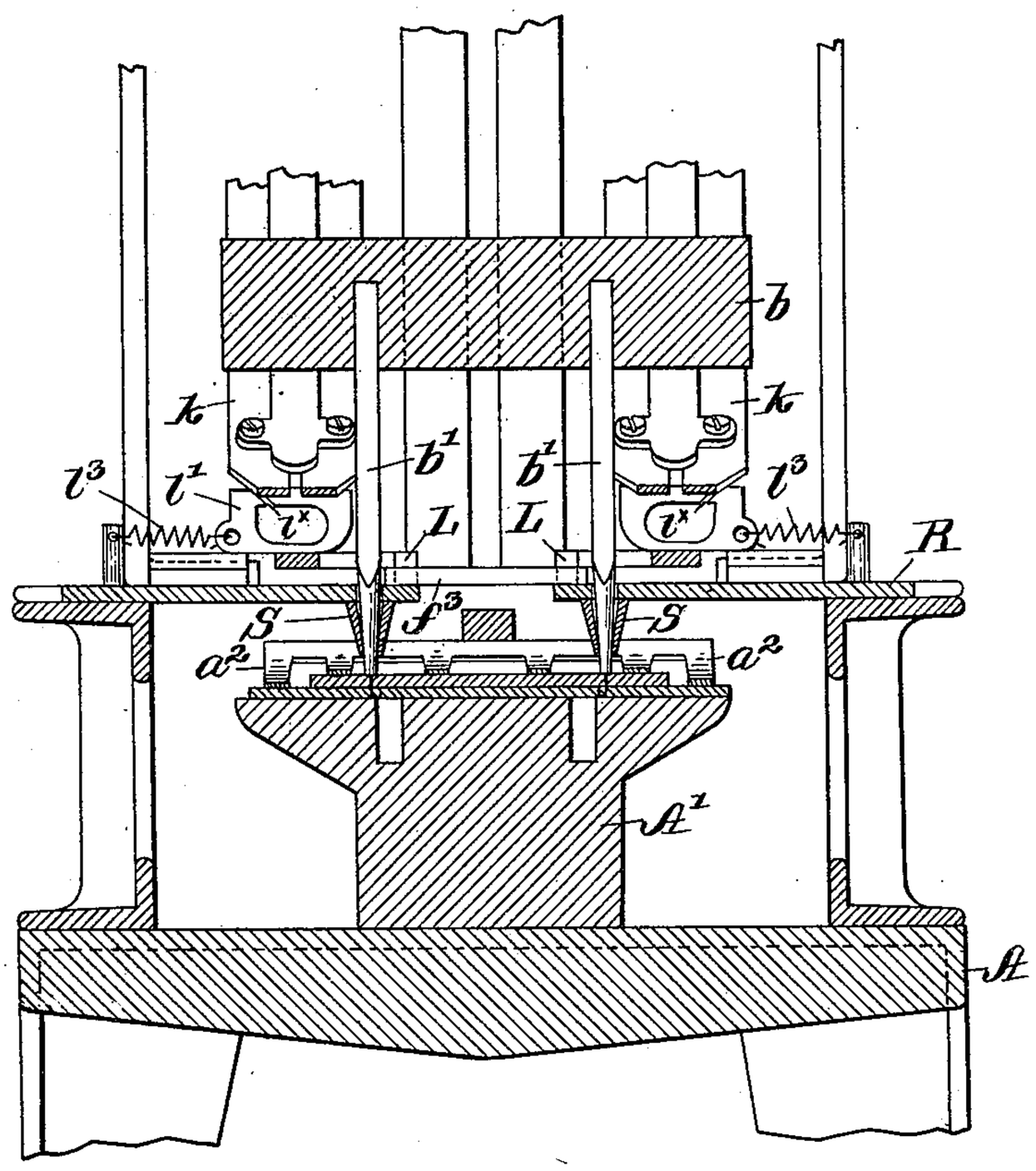


Fig. 7.

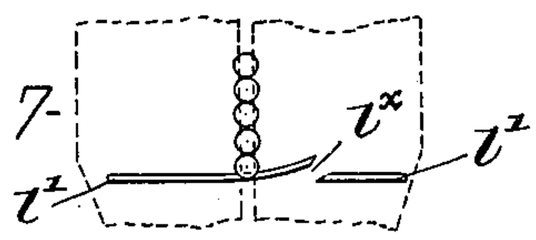


Fig. 8.

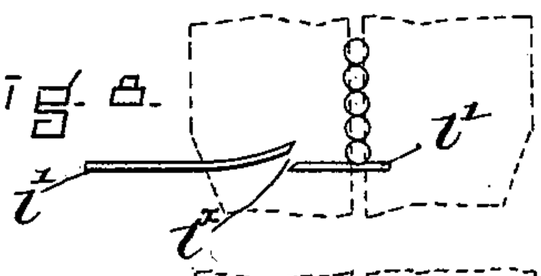
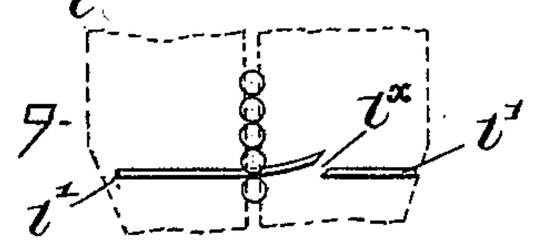


Fig. 9.



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UNITED STATES PATENT OFFICE.

JAMES H. FASSETT, OF NASHUA, AND JOHN E. WARREN, OF GREENFIELD, NEW HAMPSHIRE.

MACHINE FOR FASTENING STIFFENERS TO SHANKS.

SPECIFICATION forming part of Letters Patent No. 656,184, dated August 21, 1900.

Application filed November 1, 1899. Serial No. 735,546. (No model.)

To all whom it may concern:

Be it known that we, JAMES H. FASSETT, of Nashua, and JOHN E. WARREN, of Greenfield, in the county of Hillsborough and State of New Hampshire, have invented a new and useful Improvement in Machines for Fastening Stiffeners to Shanks, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of our new machine. Fig. 2 is a horizontal sectional view on line 2 2 of Fig. 3 and shows a plan of the main front portion of our new machine. Fig. 3 is a vertical sectional view on line 3 3 of Fig. 2 and shows the main front portion of the machine in sectional side elevation. Fig. 4 is a detail showing the relative position of the feeding and ejecting mechanism when the stiffener is in position on the shank. Fig. 5 is a detail showing the construction of the tack-holder. Fig. 6 is a vertical section on line 6 6, Fig. 3. Figs. 7, 8, and 9 are detail views illustrating the operation of the tack cut-off.

Our invention relates to improvements in machines for attaching a stiffener of wood, steel, or other suitable material to the ordinary shoe-shank.

The object of our invention is to provide a machine of the class described which shall be simple and cheap in construction, efficient in operation, and capable of a greater production than any machine of the class described yet produced.

In the drawings illustrating the principle of our invention and the best mode now known to us of applying that principle, A is the supporting-base, mounted upon suitable standards, as shown. (See Fig. 1.) The lever B is fulcrumed at C and carries at its front end the hammer-head b, to which are secured the plungers b'. To the lever B is secured the pitman b'', through which the lever B is given a vertically-reciprocating motion by means of the cam D, fast upon the driving-shaft D', as shown in Fig. 1, but this driving mechanism is no part of our invention and may be replaced by other forms well known to those skilled in the art. The lever B carries a roller b^3, which bears against the curved upper arm of the lever E, fulcrumed at e. The lower arm of the lever E carries a stud e', which bears against the lug f on the slidable bar F. This lower straight arm of lever E is connected to the lever G by a link f' and is controlled by the spring f''. The lever G is adjustably connected to the slidable carrier H. The ribs H' and H'' of the carrier H (see Fig. 2) slide on suitable ways in the upper portion of the base A, and the rear transverse rib H'' carries adjustable stop-screws h. The shank-feeding fingers h' are fulcrumed on the shaft h'' and are located just within the longitudinal ribs H^3 of the carrier H. The position of the shaft h'' may be adjusted by means of the adjusting-screw $h^\times$. Above the carrier H is a slide, from each side of the rear portion of which depend lugs J. This slide J has forwardly-extending arms j', from the front ends of which depend lugs j''. The slide J moves in suitable ways in the upper portion of the base A above the carrier H and carries the stiffener-feeding fingers j'^3. The front ends of the fingers h' are controlled by a flat transverse spring h^3, and their rear ends are notched to engage the shanks. Pivotally mounted upon the longitudinal ribs H^3 and just in front of the shank-feeding fingers h' are the ejector-fingers h^4, which are controlled by the springs h^5. The stop-screws a' limit the rearward motion of the slide J. Just above the anvil A' are curved spring-fingers a^2. On each side of our machine, mounted upon a separate adjustable base, is a tack-feeding mechanism, and these two tack-feeding mechanisms are alike in all their parts. The tack-feeding mechanism comprises a hopper K and a chute k and the lever L, which is fulcrumed at l and carries at its forward ends the tack cut-off l' and the tack-carrier l''. The tack-chute k is made up of a plate slotted centrally and a narrow upper plate which covers the central slot of this lower plate, as is plainly shown in Figs. 1, 2, and 6. The width of the slot is less than the width of a tack-head. The tacks travel by gravity from the hopper K and engage, point downward, in the slot of the lower plate of the chute. The lower end of the tack-carrier is close to the base R, and thereby the tack is securely held in the tack-carrier until it is brought over the hole r above the tack-holder S. The rear arm of

the lever L is curved, as shown, and the front end of the lever is controlled by a spring l^3. The front end of the slidable bar F is T-shaped, and the transverse rib f^3 bears against the curved outer ends of the lever L. The hopper M holds the shanks N. The hopper O holds the stiffeners P. The block Q is secured to the base A between the two hoppers, and to this block Q is secured fingers q, which project rearwardly under the hopper O and serve to support the pile of stiffeners P. To the under side of the base R of the tack-feeding mechanism is secured a tack-holder S, (see Figs. 3 and 5,) which is split longitudinally, as shown.

The operation of our machine is as follows: The driving mechanism being set in motion, the lever B is raised and the roller b^3 bears against the curved arm of the lever E. The lower straight arm of the lever E is thereby moved rearwardly against the tension of the spring f'', and through the link f' and the lever G it moves the carrier H rearwardly. The shank-feeding fingers engage one of the shanks N and carry it rearwardly under the slide J. The stop-screws h abut against the lugs j, and the slide J is thereby moved rearwardly. The stiffener-feeding fingers j^3 engage one of the stiffeners P and move it rearwardly. The rearward motion of the slide J and carrier H is limited by the stop-screws a', and at this time the shank and its stiffener are in position over the anvil A', as shown in Fig. 4. When the carrier H is moved to the rear, the ejector-fingers eject the shank and stiffener which have been fastened together by the previous operation. The curved spring-fingers a^2 retain the shank and stiffener in position on the anvil after they have been fed thereto, as just described. When the lever B moves upwardly, the stud e' bears against the lug f and draws the slidable bar F to the rear, and the transverse rib or cross-piece f^3 bears against the curved ends of the levers L and draws these levers L inwardly toward each other. The cut-off has allowed one tack to fall from the chute k into the tack-carrier l'', and by the inward movement of the levers L the tack-carriers are brought over holes r in the base R, which communicate with the tack-holders S. When the lever B moves downward the plungers b' pass through the holes r and the tack-holders S and drive the tack through the stiffener. The divided tack-holders are of spring metal and open outwardly as the plungers b' enter them. As will be understood without further explanation by the downward movement of the lever B the levers L are moved outwardly and the cut-off l' allows another tack to drop into the tack-holder. As the carrier H moves to the rear the rear rib H'' strikes against the front lugs j'' and draws the slide J to its original position.

The operation of the cut-off is clearly shown by Figs. 6, 7, 8, and 9. As shown in Fig. 6, a thin sheet-metal tack cut-off is formed with a slot $l^\times$ in its upper portion, and the inner edge of the slot is curved rearwardly, as shown in Figs. 7, 8, and 9. When the plungers b' move upward, the cut-off takes the position shown in Fig. 9 and allows a tack to drop into the tack-carriers on the end of lever L. When the plungers move downward, the cut-off takes the position shown in Fig. 8 and prevents the line of tacks from dropping out of the chute. In this way the tacks are fed one at a time into the tack-carriers, and thence by the inward movement of the levers L the tacks are fed through the holes r one at a time into the tack-holders S.

The construction of our machine permits the accurate adjustment of the stiffener upon its fastener. The adjusting-screw $h^\times$ gives the shank-feeding fingers h' a fine longitudinal adjustment. Again, the stop-screws h control the distance which the carrier H moves before striking and moving the slide J and thereby control the position of the stiffener upon the shank. The stop-screws a' determine the position of the shank and stiffener upon the anvil and thereby determine the points at which the shank and stiffener are joined.

The preferred form of construction shown in the drawings and herein described may be modified in minor details by those skilled in the art without departing from the spirit of the invention. For instance, the ejector-fingers may be placed upon the slide which carries the stiffener-feeding fingers, the slide carrying the stiffener-feeding fingers may be retracted by a spring instead of by the positive action of the slidable carrier, and the means shown for adjusting the shank-feeding fingers may with but little modification be applied to the other fingers.

We desire it to be understood that we claim our invention in the broadest permissible manner.

What we claim is—

1. In a machine of the class described, a feeding mechanism made up of coöperating slides one of which carries the ejector-fingers and the shank-feeding fingers, and the other of which carries the stiffener-feeding fingers; mechanism for reciprocating one of said slides; and means by which the reciprocating motion of the driven slide is communicated to its coöperating slide.

2. In a machine of the class described, a feeding mechanism made up of coöperating slides, one of which carries the ejector-fingers and the shank-feeding fingers; and the other of which carries the stiffener-feeding fingers; mechanism for reciprocating one of said slides; and adjustable means, such as stop-screws, by which a reciprocating motion of the driven slide is communicated to its coöperating slide, and the position of the stiffener on the shank is determined.

3. In a machine of the class described, an automatic feeding mechanism made up of a hopper for the shanks; a hopper for the stiff-

eners; and coöperating slides, one of which carries the ejector-fingers and the shank-feeding fingers, and the other of which carries the stiffener-feeding fingers; mechanism for reciprocating one of said slides; and means by which the reciprocating motion of the driven slide is communicated to its coöperating slide.

4. In a machine of the class described, an automatic feeding mechanism made up of a hopper for the shanks; a hopper for the stiffeners; and coöperating slides, one of which carries the ejector-fingers and the shank-feeding fingers, and the other of which carries the stiffener-feeding fingers; mechanism for reciprocating one of said slides; and adjustable means, such as stop-screws, by which a reciprocating motion of the driven slide is communicated to its coöperating slide, and the position of the stiffener on the shank is determined.

5. In a machine of the class described, a feeding mechanism made up of coöperating slides, one of which carries spring-controlled ejector-fingers and shank-feeding fingers, and the other of which carries the stiffener-feeding fingers; mechanism for reciprocating one of said slides; and means by which the reciprocating motion of the driven slide is communicated to its coöperating slide.

6. In a machine of the class described, a feeding mechanism made up of coöperating slides, one of which carries the ejector-fingers and the shank-feeding fingers, and the other of which carries the stiffener-feeding fingers; mechanism for reciprocating one of said slides; means by which the reciprocating motion of the driven slide is communicated to its coöperating slide; and adjustable means, such as stop-screws, by which the travel of said slides is limited and the points of fastening of the shank to its stiffener determined.

7. In a machine of the class described, a feeding mechanism made up of coöperating slides, one of which carries the ejector-fingers and the shank-feeding fingers, and the other of which carries the stiffener-feeding fingers; mechanism for reciprocating one of said slides; means by which the reciprocating motion of the driven slide is communicated to its coöperating slide; and means for adjusting the position of the fingers on their carrier.

8. In a machine of the class described, the combination of a tack-feeding mechanism; a tack-driving mechanism; an anvil; a slidable shank-carrier; shank-feeding fingers mounted on said slidable carrier; ejector-fingers; stiffener-feeding fingers; and mechanism for reciprocating said slidable carrier.

9. In a machine of the class described, the combination of a tack-feeding mechanism; a tack-driving mechanism; an anvil; a slidable shank-carrier; shank-feeding fingers mounted on said slidable carrier; ejector-fingers; stiffener-feeding fingers; mechanism for reciprocating said slidable carrier; and fingers for retaining the shank and stiffener in place upon each other on the anvil.

10. In a machine of the class described, the combination of a tack-feeding mechanism; a tack-driving mechanism; an anvil; an automatic feeding mechanism made up of a hopper for the shanks, a hopper for the stiffeners, coöperating slides, one of which carries the ejector-fingers and the shank-feeding fingers, and the other of which carries the stiffener-feeding fingers; mechanism for reciprocating one of said slides; and means by which the reciprocating motion of the driven slide is communicated to its coöperating slide.

11. A machine of the class described, made up of a supporting-base; a driving mechanism; a lever carrying plungers for driving tacks and reciprocated by said driving mechanism; an anvil; a tack-feeding mechanism comprising a hopper and chutes for leading the tacks to the tack-carriers, a cut-off permitting the tacks to drop from the tack-chutes into the tack-carrier, a tack-holder for receiving the tacks from the tack-carrier, and mechanism for reciprocating the tack-carriers between the tack-chutes and the tack-holder; and a feeding mechanism made up of coöperating slides, one of which carries the ejector-fingers and shank-feeding fingers, and the other of which carries the stiffener-feeding fingers, mechanism for reciprocating one of said slides, and means by which the reciprocating motion of the driven slide is communicated to its coöperating slide.

12. A machine of the class described made up of a supporting-base; a driving mechanism; a lever carrying plungers for driving tacks and reciprocated by said driving mechanism; an anvil; a tack-feeding mechanism comprising a hopper and chutes for leading the tacks to the tack-carriers, a cut-off permitting the tacks to drop from the tack-chutes into the tack-carrier, a tack-holder for receiving the tacks from the tack-carrier, and mechanism for reciprocating the tack-carriers between the tack-chutes and the tack-holder; and an automatic feeding mechanism comprising a hopper for the shanks, a hopper for the stiffeners, coöperating slides, one of which carries the ejector-fingers and the shank-feeding fingers, and the other of which carries the stiffener-feeding fingers, mechanism for reciprocating one of said slides, and means by which the reciprocating motion of the driven slide is communicated to its coöperating slide.

13. A machine of the class described made up of a supporting-base; a driving mechanism; a lever carrying plungers for driving tacks and reciprocated by said driving mechanism; an anvil; fingers which retain the stiffener in place upon its shank on the anvil; a tack-feeding mechanism comprising a hopper and chutes for leading the tacks to the tack-carriers, a cut-off permitting the tacks to drop from the tack-chutes into the tack-

carrier, a tack-holder for receiving the tacks from the tack-carrier, and mechanism for reciprocating the tack-carriers between the tack-chutes and the tack-holder; and an automatic feeding mechanism comprising a hopper for the shanks, a hopper for the stiffeners, coöperating slides, one of which carries the ejector-fingers and the shank-feeding fingers, and the other of which carries the stiffener-feeding fingers, mechanism for reciprocating one of said slides, and means by which the reciprocating motion of the driven slide is communicated to its coöperating slide.

14. The herein-described cut-off for a tack-feeding mechanism comprising a thin plate slotted on one side; one of the walls of said slot being bent from its opposing wall sufficiently to allow a tack to pass through the slot between them.

15. The herein-described tack-holder for a tack-driving mechanism made of spring metal and having a shank portion by which the tack-holder is secured and a head portion for receiving and holding the tack; the sides of the tack-holder yielding when the plungers enter and closing to their original position when the plungers are withdrawn.

In testimony whereof we have hereunto set our hands this 21st day of September, 1899.

JAMES H. FASSETT.
JOHN E. WARREN.

Witnesses:
M. L. MORRISON,
N. F. CUMMINGS.