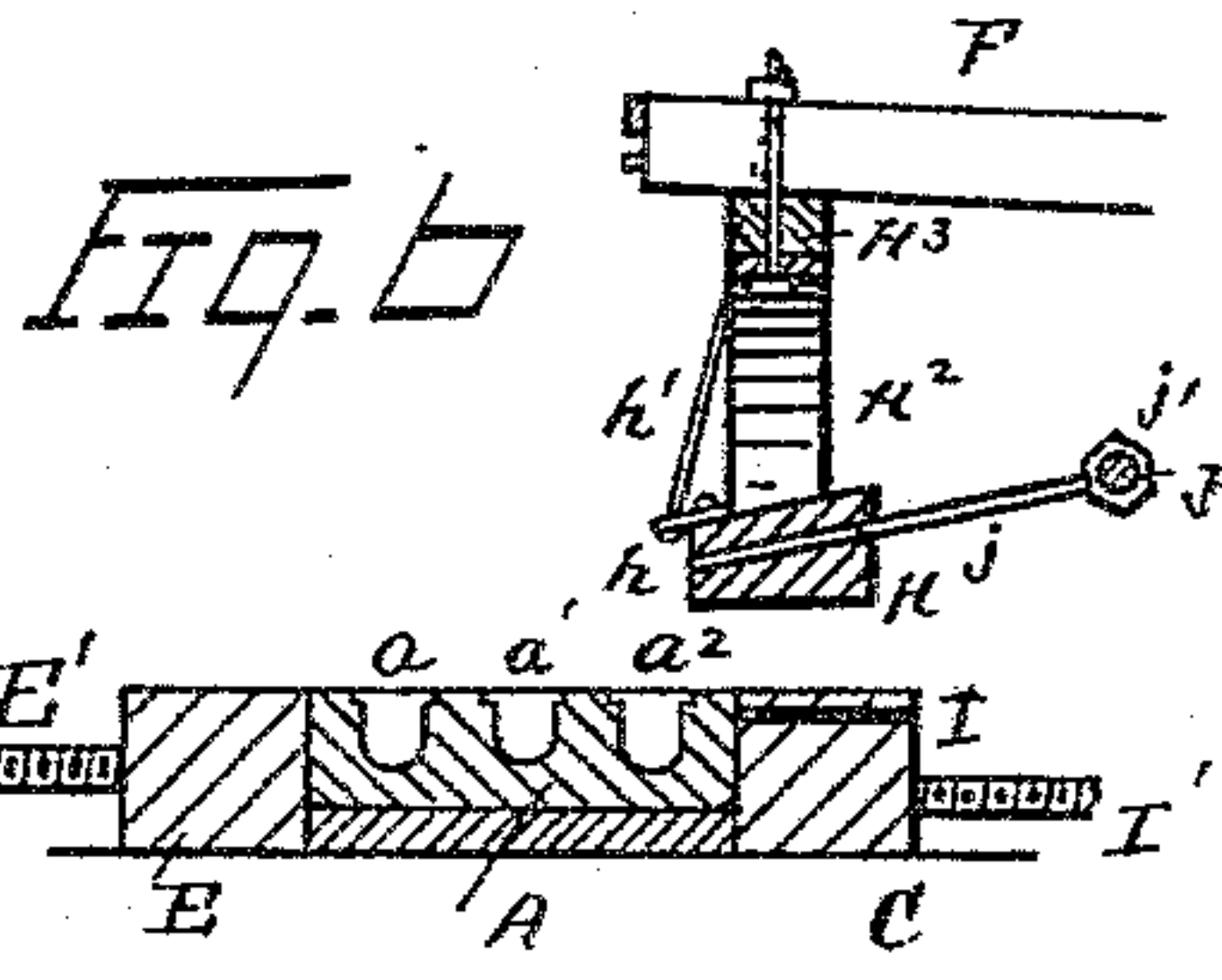


2 Sheets—Sheet 1.

Patented Oct. 8, 1889.



By his Attorney  
Newell S. Wright.

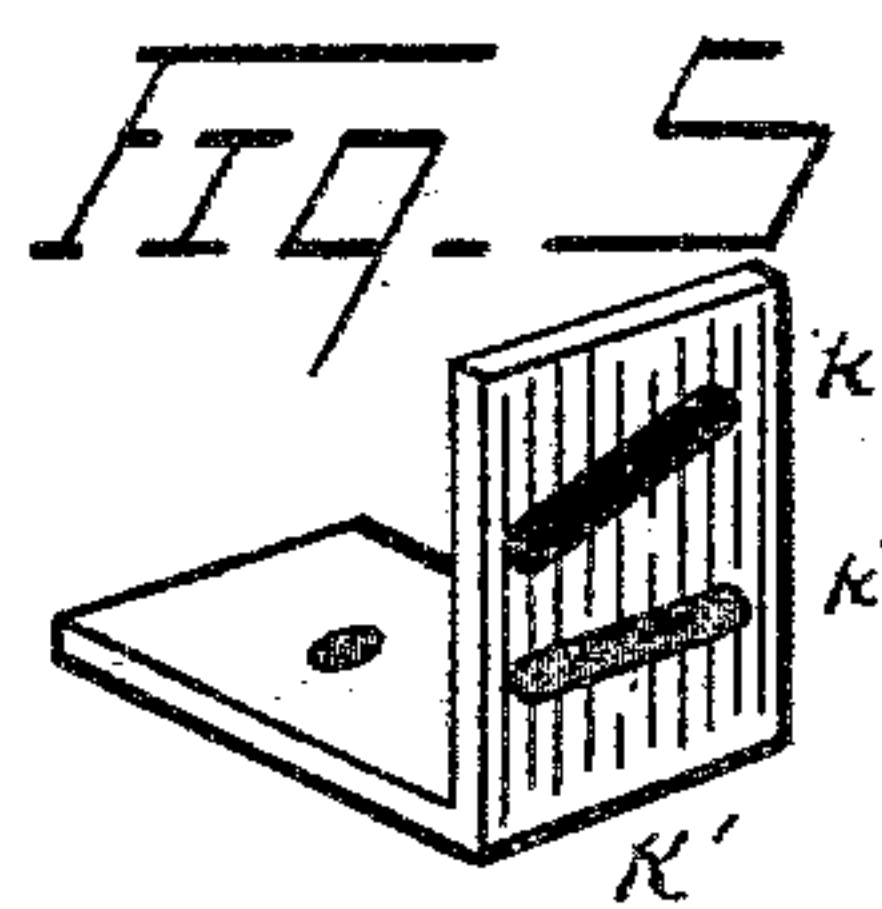
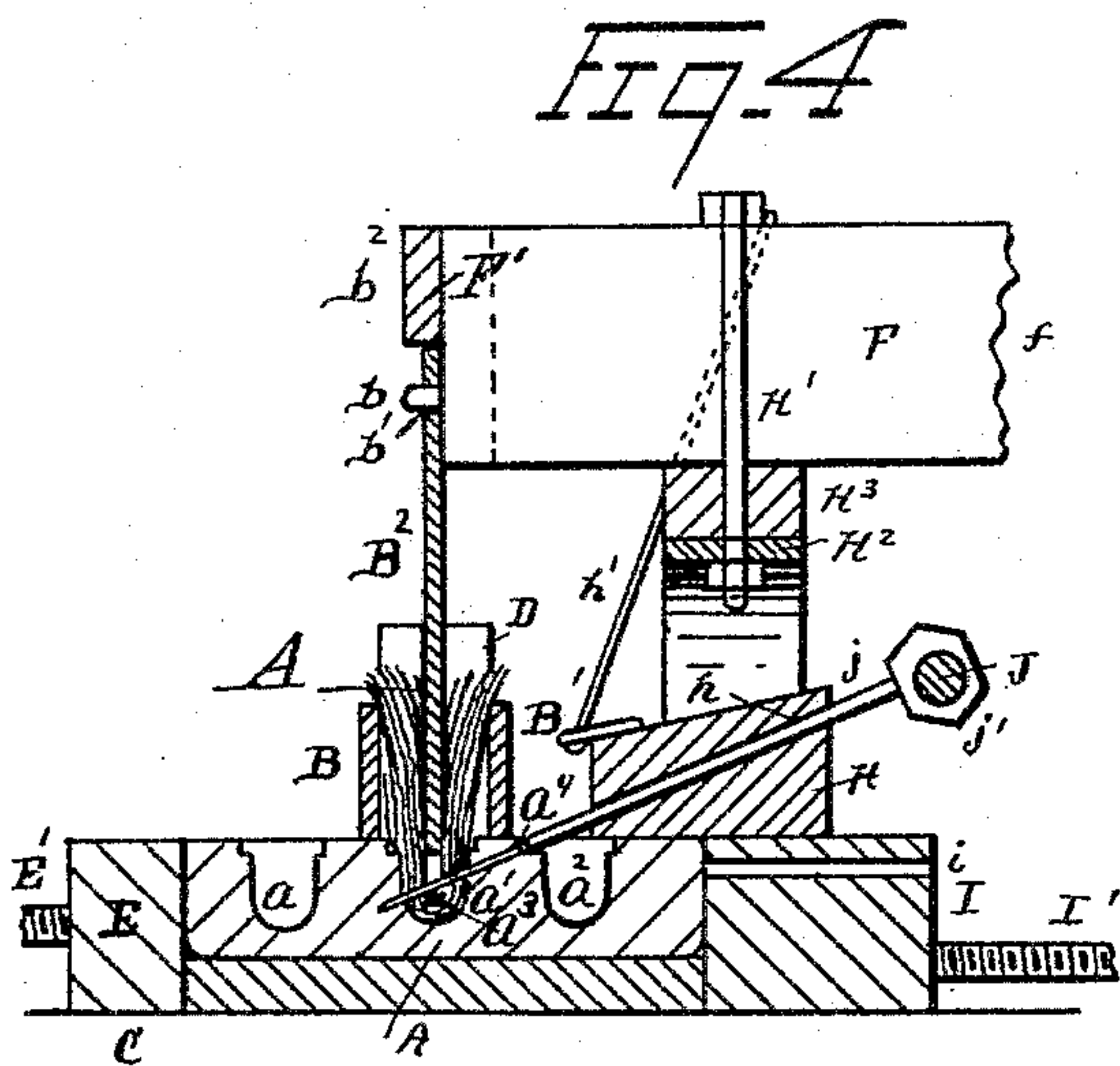
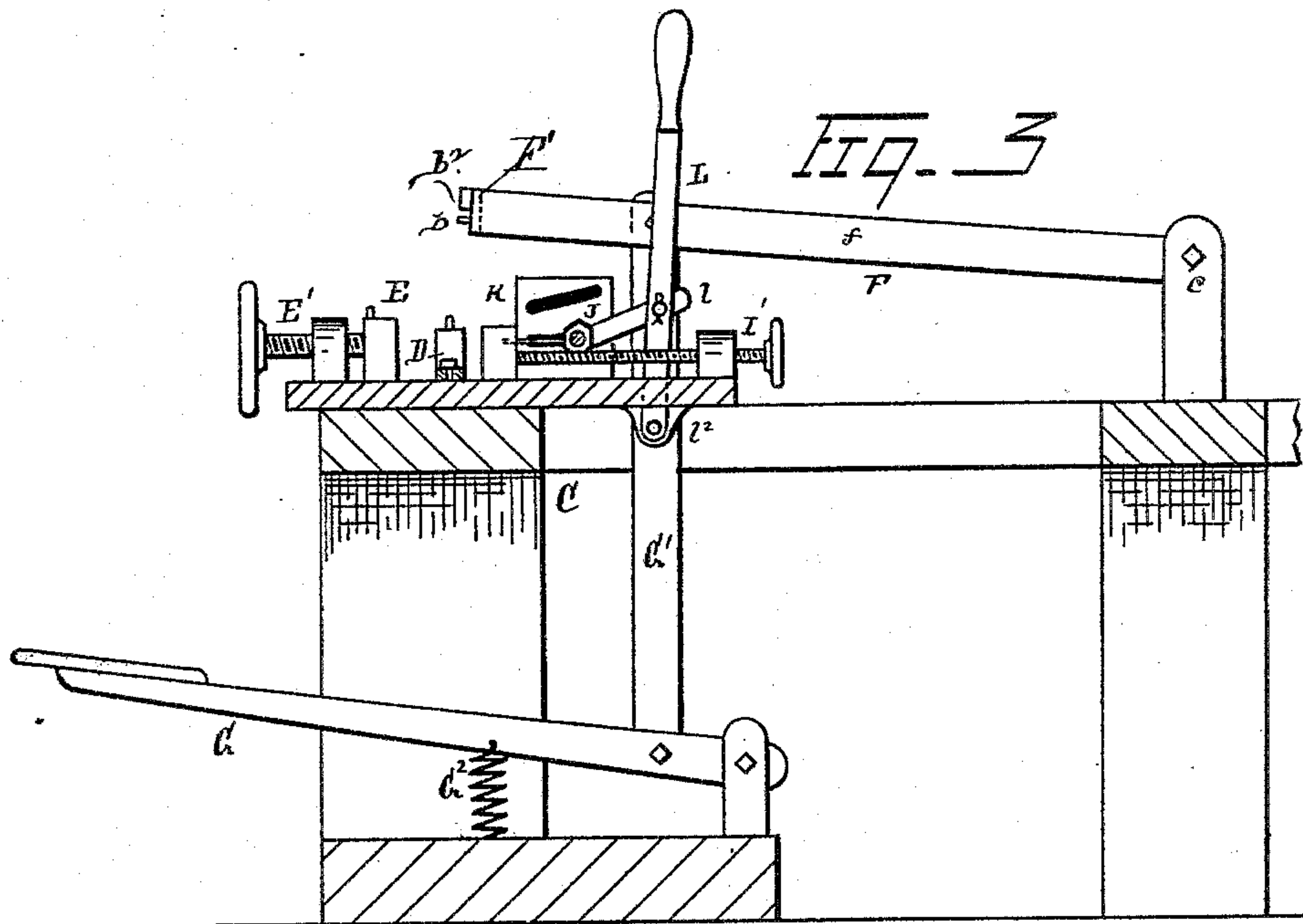
(No Model.)

2 Sheets—Sheet 2.

L. STRICKEL.  
BRUSH NAILING MACHINE.

No. 412,305.

Patented Oct. 8, 1889.



Witnesses  
John Schyman.  
Charles F. Salow

Inventor  
Louis Strickel

By his Attorney  
Newell S. Wright.



# UNITED STATES PATENT OFFICE.

LOUIS STRICKEL, OF DETROIT, MICHIGAN, ASSIGNOR OF ONE-HALF TO  
GEORGE C. WETHERBEE, OF SAME PLACE.

## BRUSH-NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 412,305, dated October 8, 1889.

Application filed March 2, 1889. Serial No. 301,772. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS STRICKEL, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Brush-Nailing Machines; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object a new and useful improvement in brush-nailing machines, whereby such a machine shall be adapted for driving the nails into the middle of the brush-head to hold in place the stock engaged in the middle of the head, as more fully hereinafter described and claimed and more fully illustrated in the accompanying drawings, in which—

Figure 1 is a plan view embodying my invention. Fig. 2 is a front elevation of the nail-bars and the supporting-head. Fig. 3 is a vertical section on the line  $x x$ , Fig. 1. Fig. 4 is a vertical section of features of my invention on the line  $y y$ , Fig. 1, showing the relation of parts when the nails have been driven home. Fig. 5 is a view in perspective of one of the bracket-arms; and Fig. 6 is a view similar to Fig. 4, but showing the relation of parts when ready for the reception of the brush to be nailed.

The more specific purpose of my present invention is to provide a nailing-machine adapted for the manufacture of my improved brush, for which an application for Letters Patent was filed by me August 24, 1888, Serial No. 283,607.

It will be understood that the brush-head A (shown in Fig. 4) is constructed with longitudinal grooves, as at  $a a' a^2$ , for the reception of the stock  $A'$ , which is bent over a binding-wire  $a^3$ , extending longitudinally of said grooves, and which in turn is held firmly in place by a series of nails driven into the brush-head adjacent to said wire and in such a manner as to retain the binding-wire in place. A nail so driven is shown in Fig. 4 at  $a^4$ . It will be obvious that the nails holding the binding-wires in the middle grooves

of the brush-heads must be driven into the head on a slant, there being no opportunity to drive the nails in any other direction, while the nails to hold the binding-wires in the marginal grooves may be driven straight into the head from the side.

$B B'$  represent the guides into which the stock is forced and over it the binding-wire, and  $B^2$  is a suitable plate employed to force the stock and wire into the brush-head. The stock is forced into the guides by an attendant on a separate machine, the plate  $B^2$  being driven to the base of the guides, in which condition the guides, with stock and plate thus engaged therein, are passed to the nailing-machine.

I will now proceed to describe the nailing-machine and its operation.

$C$  represents any suitable supporting frame or bed.

$D D'$  represent adjustable brackets to embrace the ends of the brush head and guides. For longer or shorter brushes these brackets may be moved to and fro, as required.

$E$  is a movable head-block adjusted by means of an operating-screw  $E'$ , adapted to be brought against the side of the brush-head to brace the head when the nails are driven thereinto.

$F$  represents a vertically-oscillating arm having a jointed engagement at its rear extremity upon the frame, as shown at  $c$ . Said arm is provided at its forward extremity with a supporting-head  $F'$ , constructed to engage the plate  $B^2$ . To this end the head is shown in this instance as provided with supporting studs or posts  $b$  to engage similar apertures in the plate, as shown in Fig. 4 at  $b'$ . A bar  $b^2$  above said studs is calculated to bear upon the plate to press the stock into the groove of the brush-head.

To oscillate the arm  $F$  a foot-lever  $G$  is shown in this instance as suitably connected therewith, as by the connecting-bar  $G'$ . The arm is made self-retracting in any desired manner, as by a spring  $G^2$ .

$H$  is a nail-bar constructed to receive a desired number of nails. To this end it is constructed with a suitable number of orifices, as at  $h h$ , into which individual nails may be located ready for driving. This nail-bar is



engaged upon the oscillating arm F in any suitable manner, and is preferably removable therefrom. As shown in the drawings, the said nail-bar is supported by wires  $h' h^2$ , engaged with a bolt  $H'$ , engaged with said arm, the base of the bolt supporting a spring  $H^2$ .

$H^3$  is a block intervening between the said spring and the under side of the arm, which is preferably constructed of two adjacent arms  $f f'$ , forming an open recess between them, at the forward end of which the bolt  $H'$  may be adjusted to and fro, as required, to bring the nail-bar into proper position. The wires  $h' h^2$  are simply looped over the upper end of the bolt  $H'$ , as shown. By removing said bolt the nail-bar and the spring  $H^2$  may very readily be removed altogether from the machine when desired. Being connected with the oscillating arm, it is evident that the nail-bar will move vertically therewith as the foot-lever G is operated. When in place for driving the nails, as shown in Fig. 4, it is manifestly impracticable to insert the nails into the nail-bar or to engage the clamps and plate  $B^2$  in place over the brush-head; but by allowing the supporting-head and nail-bar to be lifted into the position shown in Fig. 6 this work may be conveniently accomplished.

It is a stationary nail-bar provided with orifices  $i$  to receive the nails. The orifices  $i$  may be horizontal, as this stationary nail-bar is used for nailing through the margins of the brush-head. It may be adjusted for various sizes of brush-heads by means of screws  $I' I^2$ , as heretofore common.

J denotes a rocking driving-bar provided with driving-fingers  $j$ , engaged upon said bar, as by means of a collar  $j'$ , said fingers projecting into the adjacent orifices of the nail-bar H. This driving-bar is engaged at its extremities in supporting-brackets  $K K'$ , engaged upon the frame or bed C, said brackets being constructed with a downwardly-inclined elongated slot  $k$  to receive the driving-bar when the nails are to be driven into the middle of the brush, and preferably also with horizontal elongated slots  $k'$  to receive the driving-bar when the nails are to be driven straight into the margin of the brush-head.

L is an operating-lever engaged with the driving-bar, as by connecting-bars  $l l'$ , said lever having a jointed engagement on said bed, as shown at  $l^2$ .

By this construction it is apparent that the operator by seizing said lever and pulling it forward will force the driving-fingers upon the nails in the nail-bar and simultaneously drive them into the brush-head.

The operation of the device will now be understood. The operator locates a brush-head upon the bed between the brackets  $D D'$ . The machinery being in readiness for nailing the stock into the middle groove, the operator brings the guides  $B B'$ , with the stock and plate  $B^2$  engaged therein, into position, engaging the plate upon the studs  $b'$ . The

nail-bar having been filled with nails, the operator applies his foot to the foot-lever, thereby forcing the plate  $B^2$  firmly, with the stock and binding-wire  $a^3$ , into the middle groove. At the same time the nail-bar H is brought into proper position for nailing. The operator then seizes the lever L and thrusts it forward, driving the nails into the brush-head. The foot being released from the lever G, the lever F, with its connected parts, is restored to normal position. It is customary to nail the stock into the middle grooves of the head in a large number of heads, one after another. Then by removing the nail-bar H the driving-fingers are engaged in the nail-bar I and the driving-bar in the slots  $k'$  of the brackets  $K K'$ , when the machine is ready for driving the nails into the margins of the heads. The nails in the middle having to be driven on a slant, the orifices in the nail-bar H are also run in a slanting direction.

The spring  $H^2$  serves to hold the adjacent nail-bar firmly in place while the nails are driven into the brush-head.

It will be observed that the nail-driving bar J is supported in the brackets  $K K'$  independently of the operating-lever L, the latter simply serving to actuate the driving-bar.

What I claim as my invention is—

1. In a brush-nailing machine, the combination, with a supporting-frame, of the movable arm F, having a nail-bar engaged therewith, and a driving-bar, substantially as set forth.

2. In a brush-nailing machine, the combination, with a supporting bed or frame, of a movable arm F, having a nail-bar H engaged therewith, a driving-bar, and operating-lever, said bar mounted in brackets  $K K'$ , said nail-bar and brackets constructed with inclined recesses and slots, respectively, substantially as set forth.

3. In a brush-nailing machine, the combination, with a supporting bed or frame, of a movable arm F, having a nail-bar engaged therewith, a driving-bar, and means for reciprocating said bar, said nail-bar provided with a spring  $H^2$ , substantially as set forth.

4. In a brush-nailing machine, the combination of the supporting bed or frame, the movable arm F, provided with a nail-bar H, removably engaged therewith, an adjustable nail-bar I, and a reciprocatory driving-bar, substantially as described.

5. In a brush-nailing machine, the combination of the supporting bed or frame, the movable arm F, provided with a nail-bar H, constructed with inclined orifices  $h$ , a nail-bar I, constructed with horizontal orifices  $i$ , and a reciprocatory driving-bar arranged to operate with either of said nail-bars, substantially as set forth.

6. In a brush-nailing machine, a driving-bar adjustable relatively to a horizontal plane, substantially as set forth.

7. In a brush-nailing machine, an adjust-



able nail-bar, in combination with a driving-bar adjustable relatively to a horizontal plane, substantially as set forth.

5 8. In a brush-nailing machine, the combination, with a supporting-bed, of a driving-bar provided with driving-fingers projecting therefrom and an operating-lever, said bar supported independently of said lever, substantially as set forth.

In testimony whereof I sign this specification in the presence of two witnesses.

LOUIS STRICKEL.

Witnesses:

N. S. WRIGHT,  
CHAS. F. SALOW.