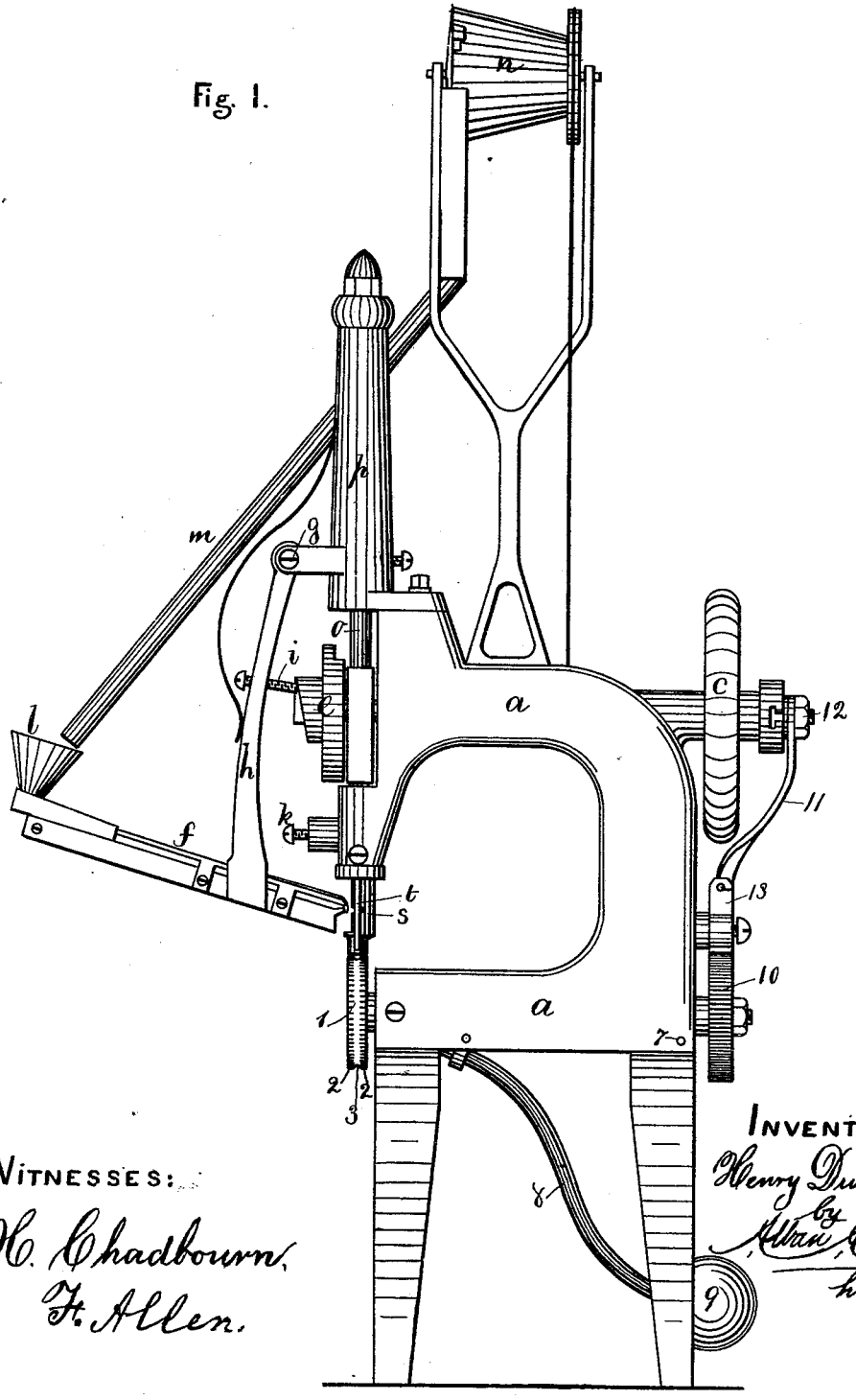
3 Sheets—Sheet 1.

H. DUNHAM.

NAIL-DRIVING MACHINE FOR BOOTS AND SHOES, &c.

No. 188,874. Patented March 27, 1877.

Fig. 1.



WITNESSES:

H. Chadbourn,

F. Allen.

INVENTOR:

Henry Dunham

by Albert Andrew

his atty.

H. DUNHAM.

NAIL-DRIVING MACHINE FOR BOOTS AND SHOES, &c.

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Fig. 2.

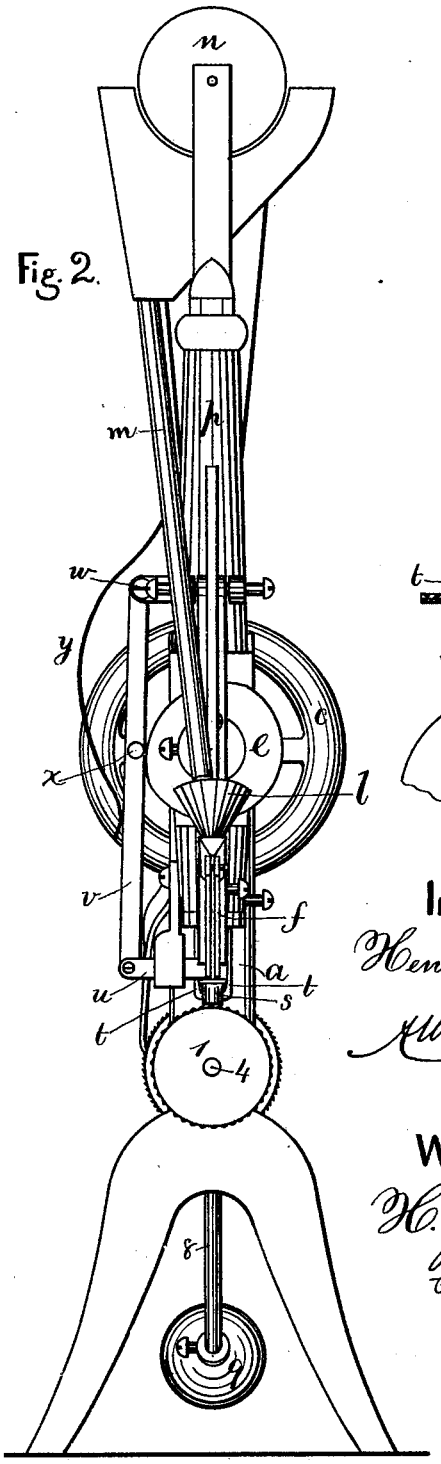


Fig. 5.

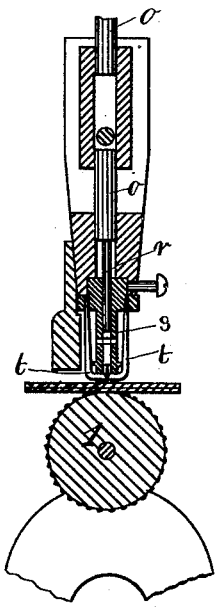
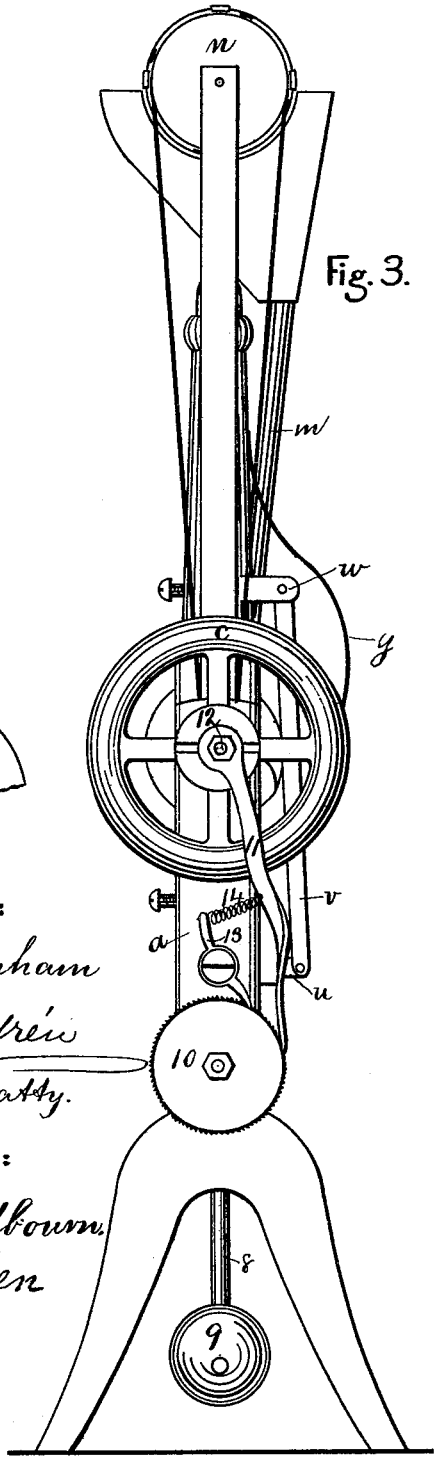


Fig. 3.



INVENTOR:

Henry Dunham
by Alban Andrein
his atty.

WITNESSES:

H. Chadbourn
H. Allen

3 Sheets—Sheet 3.

H. DUNHAM.

NAIL-DRIVING MACHINE FOR BOOTS AND SHOES, &c.

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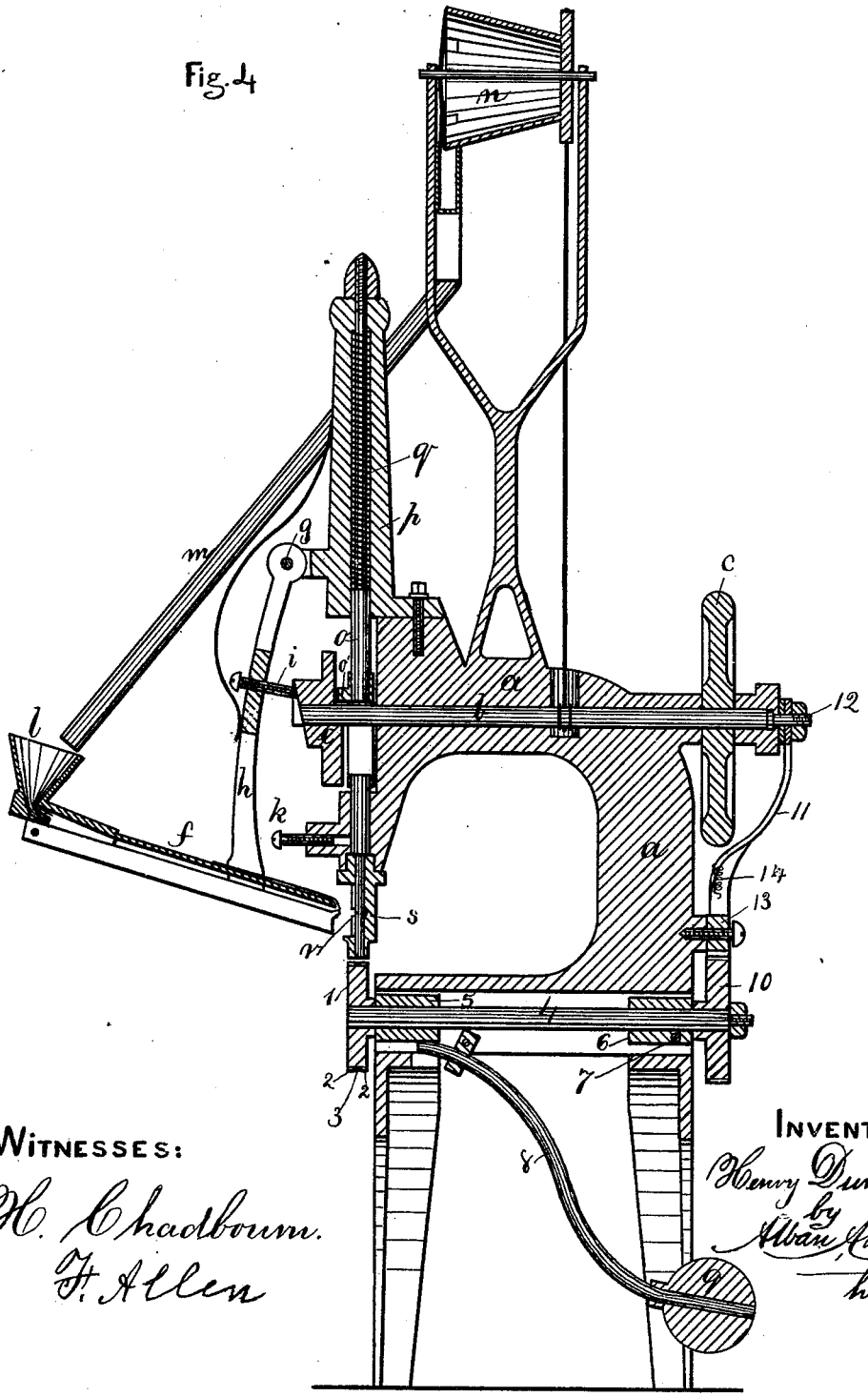
Fig. 4



WITNESSES:

H. Chadbourn.

F. Allen

INVENTOR:

Henry Dunham

by Alban Andrén

his atty.

UNITED STATES PATENT OFFICE.

HENRY DUNHAM, OF ABINGTON, MASSACHUSETTS, ASSIGNOR TO TIMOTHY M. BRISTOL, OF NEW YORK, N. Y.

IMPROVEMENT IN NAIL-DRIVING MACHINES FOR BOOTS AND SHOES, &c.

Specification forming part of Letters Patent No. **188,874**, dated March 27, 1877; application filed March 10, 1876.

To all whom it may concern:

Be it known that I, HENRY DUNHAM, of Abington, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Nail-Driving Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing, and the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in nail-driving machines, for the purpose of driving headed nails in the soles of boots and shoes, or articles of a similar nature, and to clinch the ends of said nails on the under side of the material; and my invention consists of the combination and arrangement of the devices, as will hereinafter be more fully set forth and described.

On the accompanying drawings, Figure 1 represents a side elevation of my improved nail-driving machine. Fig. 2 represents a front elevation. Fig. 3 represents a rear view. Fig. 4 represents a central longitudinal section, and Fig. 5 represents a partial vertical section in a line with the driver and feed-wheel.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

On the drawings, *a* represents the frame of the machine. *b* is the driving-shaft, provided with the wheel or pulley, or its equivalent, *c*. To the forward end of the shaft *b* is secured the side and face cam *e*, the objects of which are twofold, viz., by the face-cam the inclined nail-way *f* is oscillated forward and back on the fulcrum *g*—that is, the upper end of the arm *h* being attached in its lower end to the inclined way *f*, the face-cam aforesaid engages with an adjustable screw, *i*, projecting through the arm *h*. *k* is an adjustable screw or pin, against which the arm *h* strikes after it has been acted upon by the face-cam for the purpose of moving the nails downward on the inclined way *f* toward the shoe, directly underneath the driver. The inclined way *f* is provided, in its upper end, with a funnel or receptacle, *l*, into which the nails are conducted through the spout, in from the rotary nail-deliverer *n*, that is set in rotary motion around its axis in the usual manner.

By means of the side cam *e* the driver-bar *o* is raised upward in the guide or bearing *p*, in which the spring *q* is located for the purpose of forcing the driver-bar *o* downward as soon as the side cam *e* ceases to act upon the projection *o'*, that is attached to the said driver-bar. The lower end *r* of the driver-bar *o* forms the driver, by means of which the tacks are driven into the material. The driver *r* is moved up and down in the nail-tube *s*, that is inserted in the forward part of the frame *a*. The nail-tube *s* is provided with an opening in front, opposite the lower end of the inclined way *f*, as shown in Fig. 4, by which the nails are delivered from the inclined way *f* into the nail-tube *s*, directly beneath the driver *r*, when the latter is in its highest position. On two opposite sides of the nail-tube *s* are located movable dies *t t*, the lower ends of which project through holes in the lower end of the said nail-tube, when they meet each other, by which each nail is centered and held automatically in its proper position preparatory to being driven. The said movable dies *t t* are flattened in their upper ends, so as to act like springs, and in this manner automatically confine the nail or tack between their lower ends till the driver descends, and, as the nail or tack is driven, the movable jaws *t t* expand and allow the head of the nail to pass between them. The nails are picked from the inclined way *f* by means of the horizontal picker-bar *u*, that is hinged to the lower end of the lever *v*, hung at *w* to a pin or bolt, and operated by means of the cam *e*, acting on the pin *x*, Fig. 2. The spring *y* produces the forward motion of the lever *v* and picker-bar *u*. Below the nail-tube *s* is located the feed-wheel and clinching-surface 1, which I prefer to make in one solid piece, as shown, provided with feed corrugations 2 2 on each side of the smooth clinching-surface 3, as shown in Fig. 1, although I may, to equal advantage, make the feed-wheel in three pieces—that is, an independent clinching surface, having detached and independent feed-wheels on each side

The clinching-surface and feed-wheel 1 is made to revolve with the shaft 4, to which it is secured. The shaft 4 revolves in movable bearings 5 and 6, the latter being made to swing around the pin 7, whereas the former has an up-and-down free motion in the frame *a*, and, by means of the arm or lever 8 and the weight 9, the bearing 5 is automatically pressed upward, so as to clamp the material firmly between the nail-tube *s* and the feed-wheel and clinching-surface 1. To the rear end of the feed-shaft 4 is secured the ratchet-wheel 10, that is acted upon by the pawl-lever 11, the upper end of which is secured to the adjustable eccentric 12 on the driving-shaft *b*. 13 is an additional pawl, acted upon by the spring 14, for the purpose of holding the feed-wheel and clinching-surface 1 in its proper stationary position during the driving and clinching of the nail or tack.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent, and claim—

1. In combination, the feed-wheel 1, adapted to support and feed the stock and present a continuous nail-clinching surface, the nail-tube *s*, the inclined way *f*, and driver *r*, all substantially as and for the purpose described.

2. In combination, an automatic feeder and nail-clinching surface, 1, on the under side of the material, with the movable dies *t t'* and driver *r*, as and for the purpose set forth.

3. In combination, a feed-wheel, 1, inclined way *f*, movable dies *t t*, and driver *r*, substantially as and for the purpose set forth and described.

In testimony that I claim the foregoing as my own invention I have affixed my signature in presence of two witnesses.

HENRY DUNHAM.

Witnesses:
ALBAN ANDRÉN,
HENRY CHADBOURN.