G. McKAY.

NAILING AND PEGGING MACHINE.

No. 188,810. Patented March 27, 1877.

Fig. 1.

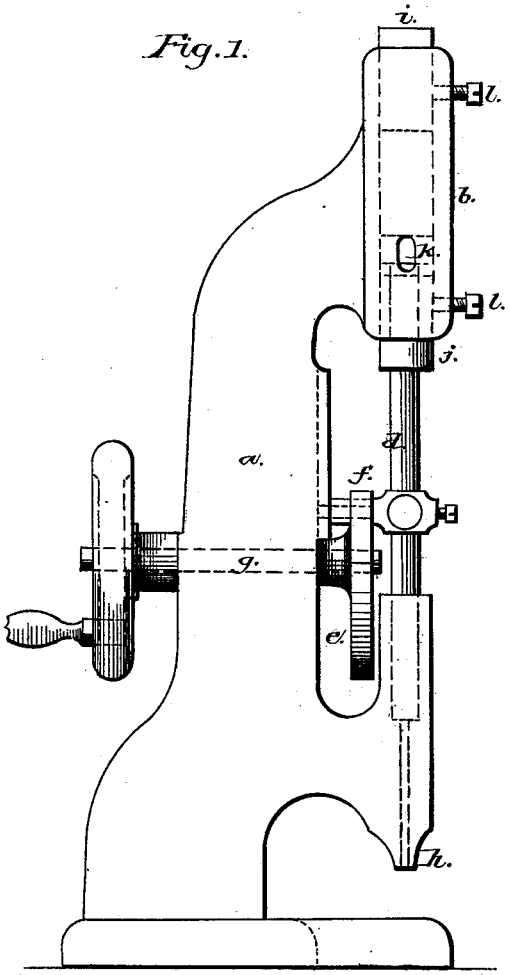
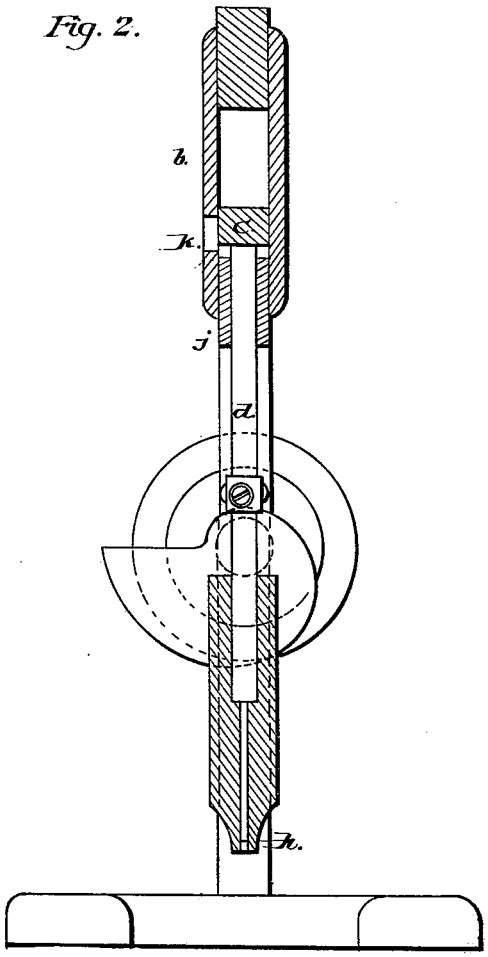


Fig. 2.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN NAILING AND PEGGING MACHINES.

Specification forming part of Letters Patent No. **188,810**, dated March 27, 1877; application filed November 4, 1875.

To all whom it may concern:

Be it known that I, GORDON McKAY, of Cambridge, Middlesex county, in the State of Massachusetts, have invented certain Improvements in Nailing and Pegging Machines; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

My invention relates particularly to a way of actuating the driver in machines for nailing and pegging, and is applicable chiefly to machines for fastening the soles to the uppers of boots and shoes. It is common at this time to drive the driver-bar in these machines by a spring, which is compressed by the action of a cam, lifting the driver-bar, and then suddenly allowing the bar to descend, driven by the reaction of the spring. The repeated compression and release of these springs cause them to break, which is expensive and troublesome.

There is also commonly employed, to arrest the motion of the driver when the nail is driven, a collar with leather washers on the driver-rod, striking against some solid part of the machine. This is not a durable mechanism, for the washers soon wear out, and by constant hammering become too thin, so as to make the end of the driver go too far through the nail-tube.

In my improvement I supply a cylinder, bored true on the inside, having an adjustable head fitted into each end, and these can be set in or out of the cylinder, to make the chamber of it longer or shorter. In this cylinder there is a piston, and attached to this piston is a rod, which is the driver-rod. Near the bottom of the cylinder is an aperture, allowing free passage to the air. This aperture is so placed that in the downstroke of the piston a little air is cut off from escaping by the aperture, and this, being compressed between the piston and the lower cylinder-head, forms a cushion, taking the place of the ordinary washers, and the amount of cushioning and the point where the driver is arrested are regulated at will by adjusting the position of the lower cylinder-head. When the piston is down its upper edge passes below the upper side of the aperture in the cylinder, and allows the air in the upper part of the cylinder to assume the same pressure as that of the external air.

By lifting the driver-rod by the cam the piston soon closes the aperture and compresses the air thus confined in the cylinder, which, being further compressed as the piston ascends, acts as a spring when the cam releases the driver-rod, and forces it down, driving the nail or peg. The adjustable head in the upper end of the cylinder gives means of regulating the force of the action of the driver.

Having thus generally described the nature and action of my invention, I will describe the drawings.

Figure 1 is a side elevation. Fig. 2 is a front elevation, and is sectional through the driver-rod and air-cylinder.

a is the frame of the machine; *b*, the air-cylinder; *c*, the piston; *d*, the driver-rod; *e*, the cam; *f*, the cam-roller; *g*, the shaft rotating the cam; *h*, the driver-tube; *i*, the upper adjustable head for the cylinder; *j*, the lower adjustable head for the cylinder; *k*, the aperture for egress and ingress of the air; *l l*, set-screws to fasten the adjustable cylinder-heads.

In adapting this invention to pegging or nailing shoes I use the jack or a horn for supporting the shoe, both of which are described in several United States Patents, and are in common use in this country; and the means of feeding in the peg-strip, or the material for the nails, and for feeding the shoe, are too well known to need description here. This invention is also applicable to machines commonly called "tacking-machines," used for tacking the outsole onto the lasted shoe, and for other purposes.

In this instance I use a cam to lift the driver; but it can be as readily done by a lever so arranged as to "trip" or break the connection between the lever and the driver, allowing the free descent of the driver.

I claim—

1. In a machine for driving nails or pegs, an atmospheric-spring cylinder, constructed with an aperture for the ingress and egress of air, and adapted to force down the piston and driver by compressed air, all substantially as and for the purpose described.

2. In a nailing-machine, a positively-lifted driver and attached piston, adapted to be

driven by the expansion of air compressed by the piston at its ascent, in combination with a stationary yet adjustable head, to regulate the operative force of the air-spring upon the driver, substantially as described.

3. A nail-driver and piston adapted to be operated by the force of air compressed by the piston at its ascent, in combination with a stationary yet adjustable head, to regulate the extent of downward motion of the driver through the action of air compressed between the lower side of the piston and the upper portion of the head, substantially as described.

4. The piston and attached driver, in combination with a cam adapted to lift the driver and piston within a cylinder to compress air, which, when the cam releases the driver, permits the compressed air to operate as a spring to cause the descent of the driver, substantially as described.

5. The combination, with an atmospheric-spring cylinder, constructed with an aperture and provided with adjustable heads, of a reciprocating piston, all substantially as and for the purpose described.

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