No. 742,624.

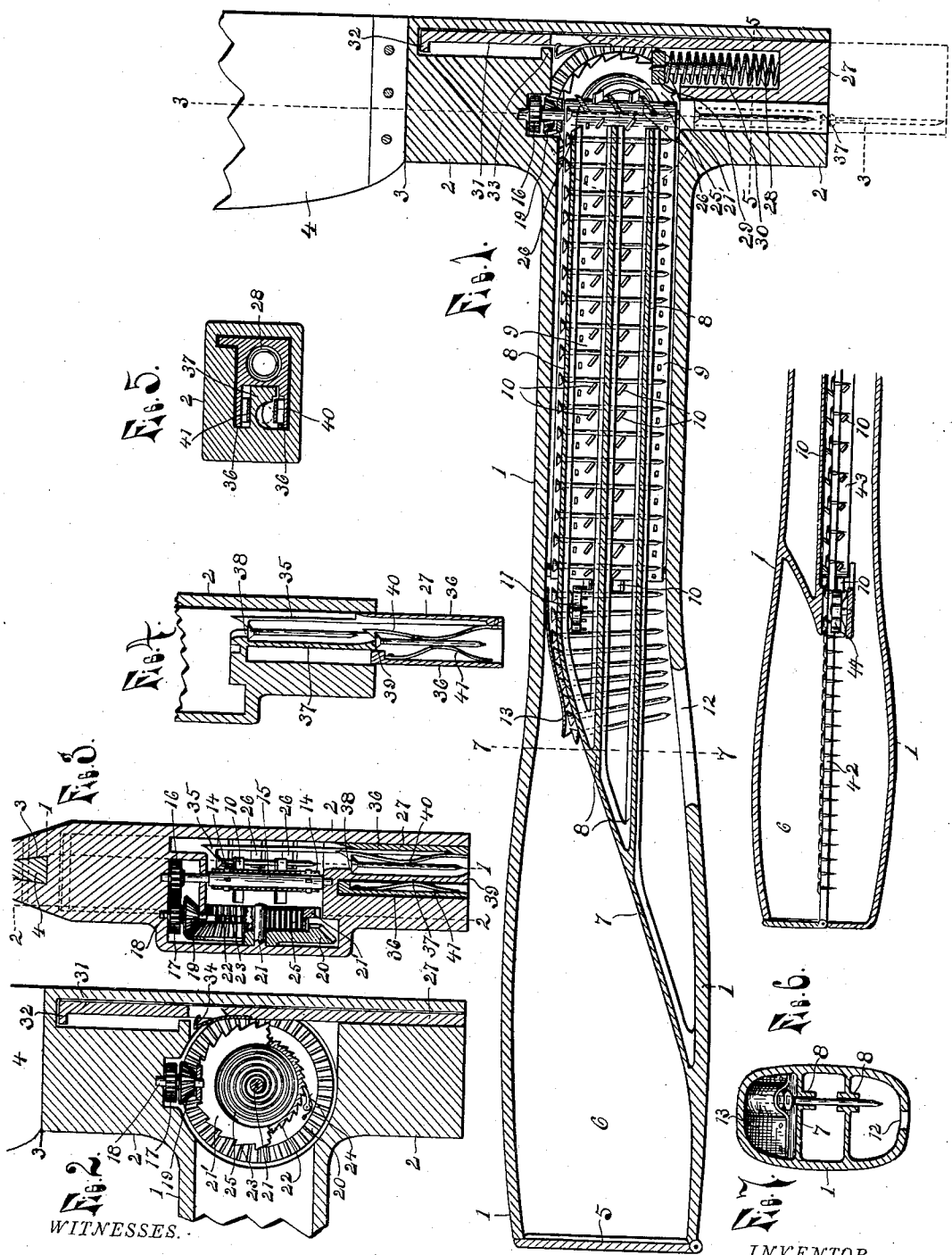
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G. C. FULLER.

MAGAZINE HAMMER OR TOOL.

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NO MODEL.



WITNESSES.

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UNITED STATES PATENT OFFICE.

GAIUS C. FULLER, OF OWOSSO, MICHIGAN.

MAGAZINE HAMMER OR TOOL.

SPECIFICATION forming part of Letters Patent No. 742,624, dated October 27, 1903.

Application filed February 16, 1903. Serial No. 143,523. (No model.)

To all whom it may concern:

Be it known that I, GAIUS C. FULLER, a citizen of the United States of America, residing at Owosso, in the county of Shiawassee and State of Michigan, have invented certain new and useful Improvements in Magazine Hammers or Tools, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in magazine nailing-hammers, and its object is to provide a hammer which operates automatically, the parts being actuated by each blow of the hammer to feed the nails one at a time from a suitable magazine to its driving-face, when each nail is held in position to be driven until the blow is struck, which releases and at the same times drives the nail; and a further object is to so construct such a device that it is comparatively cheap, simple in its operation, and not liable to get out of order.

To this end the invention consists in providing a suitable carrier for feeding the nails forward, said carrier being actuated by a coiled spring, which is kept under tension by mechanism operated by each blow struck with the hammer, and in providing mechanism, also operated by the blow, for feeding the nails from the carrier to the face of the hammer, where each is held by suitable springs, which operate to release the nail as it is driven.

The invention also consists in certain other new and useful features and in the peculiar arrangement and combination of parts, all as hereinafter more fully described, and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal section, on the line 1 1 of Fig. 3, of a device embodying my invention; Fig. 2, a section on line 2 2 of Fig. 3; Fig. 3, a section on line 3 3 of Fig. 1. Fig. 4 is a detail of the driving end of the hammer-head in section, showing the feed-slide extended. Fig. 5 is a cross-section on line 5 5 of Fig. 1. Fig. 6 shows a modified construction of handle for use in a tack-hammer, and Fig. 7 is a section on line 7 7 of Fig. 1.

As shown in the drawings, 1 is a hollow handle, and 2 a chambered head formed integral with said handle and having a driving-face at one end and a dovetail groove 3 at the other end to receive the dovetail edge of a blade 4, which is secured therein by rivets to form a hatchet. The handle and its head may be divided longitudinally of the head and cast in halves, which may be bolted together.

5 is a suitable door to close the end of the handle and to permit the chamber or magazine 6 in the end of the handle to be filled with loose nails. An inclined wall 7 forms the inner end of said chamber 6, and in this wall is a slot to receive the shanks of the nails, said nails being suspended therein by their heads, which are too large to enter the slot. Extending longitudinally of the handle and forming a continuation of said slot or way for the nails are the guide-ribs 8, and a carrier 9, consisting of a continuous belt of webbing supported upon rolls, one at each end, is provided and forms one side of said way. On said carrier are two series of projecting lugs 10, adapted to engage the upper and lower sides of one of said ribs to guide and support the carrier-belt and to also engage the nails to feed the same forward.

To space the nails as they move along the slot in the wall of the chamber toward the carrier and to feed the same to the carrier one at a time, a star-wheel 11 is provided, which wheel is journaled on a suitable stud on one of the ribs and adjacent to the end of the carrier, so that the lugs 10 as they pass around the roll at the end of the carrier will engage pins projecting downward from the star-wheel to turn the same, and one of the other arms of the wheel at the same time will engage a nail and move it forward, where it will be engaged by the carrier-lug and fed forward to the hammer-head. The act of striking a blow tends to feed the nails into the slot from the magazine, so that the carrier will always be full.

In the lower side of the handle is a slot 12 to allow any dirt or headless nails which may pass through the feed-slot of the chamber 6 to escape, and a shield 13 extends downward a short distance within the chamber and over said slot to prevent the nails from passing the wall 7 and also to prevent their becoming wedged into this corner of the chamber and hindering the nails in the slot from passing on to the carrier.

The carrier-rolls are provided with teeth 14 near each end which engage a series of openings near each edge of the belt, and as the roll 15 is a driven roll the belt is positively driven thereby. The upper journal of said roll 15 is extended and provided with a gear 16, which gear is in mesh with a similar gear 17, secured to a stub-shaft 18, journaled in suitable bearings, and on said stub-shaft is also secured a small bevel-gear 19, which in turn meshes with and is driven by a larger bevel-gear 20, mounted loosely upon a stud 21, extending inward from the wall of a chamber formed in the hammer-head. The gear 20 is chambered out at its side toward the carrier, and in this chamber is set a ratchet-ring 21′, the periphery of which is provided with two sets of ratchet-teeth 22 and 23, the set 22 being adapted to be engaged by a spring-pressed pawl 24, pivotally secured to the gear 20. Within the ratchet-ring is a coiled spring 25, one end of which is attached to said ring and the other end to the stud 21, (by any suitable means, not shown, to prevent the spring from being wound too tightly,) so that when the teeth 23 are engaged by suitable means, hereinafter described, and the ring turned thereby the spring will be wound, the pawl 24 holding it under tension, and said spring will then act through said pawl to turn the gear 20 and through the medium of the gears 19, 17, and 16 to actuate the carrier when the same is released, said carrier being prevented from being turned forward by the last nail on the carrier or the one which is in position to be fed to the face of the hammer. The spring 25 tends at all times to move the carrier in the direction to feed the nails toward the hammer-head, and each nail abuts against and is fed forward by the lugs 10, so by providing stops 26, which project inward from the wall of the hammer-head toward and into proximity with the carrier, where it turns around the roll 15, the last nail will be caught between said stops and its lugs 10 and prevent the carrier from turning further until said nail is removed, when said spring will turn the carrier until the next nail is brought into contact with said stops, no matter whether the nail lies between the next succeeding lugs on the carrier or a number of spaces farther away, and therefore the hammer will never miss, whether the carrier is full or not.

To feed the nail from the carrier to the face of the hammer and hold the same in position for driving and to wind the spring 25, the head 2 is chambered longitudinally thereof to form a suitable way for a slide 27, which slide is normally held projected from the face of the hammer by a coiled spring 28, located within a suitable chamber therein and engaging at its upper end a suitable abutment 29, integral with the wall of the head, a guide-pin 30 being provided to project into said spring and hold the same in place. Extending upward from one side of said slide is an arm 31, provided with a lug 32 at its upper end, which arm moves in a suitable chamber in the head upon which is a stop 33 at the lower end of said chamber to engage the lug 32 and limit the distance which the slide may be projected. Carried by this arm 31 is a spring-dog 34, which is adapted to engage the teeth 23 of the ring 21′ and turn the ring on the inward movement of the slide 27 and which will slip by said teeth without turning the ring when the slide is projected.

To feed the nail from its position on the carrier where it is held between the lugs 10 and stops 26, a spring-hook 35 is secured to said slide and extends upward therefrom in line with said nail, and said slide is provided with carrying-flanges 36, adapted to embrace an integral portion 37 on the hammer-head, which projects inward into the chamber and is provided with a shoulder 38 a short distance below the carrier and has a flat lower face 39 lying in the plane of the face of the hammer and forming the driving-face, with which the head of the nail is in contact when driven. Secured to one of the carrying-flanges 36 and in line with the spring-hook 35 is a spring-hook 40, and said hooks are so proportioned and located that when the slide is retracted by striking a blow with the hammer the hook 35 will engage the head of the nail held between the lug 10 and stops 26 and will carry said nail downward until the head has engaged the under side of the shoulder 38, and the next inward movement of the slide will engage the hook 40 with the head of this same nail, which will then be carried downward by said hook until its head engages the driving-face 39. The said nail is moved laterally to engage its head with the driving-face by the spring-hook 40, which is bent so as to engage the shank of the nail also, and on the opposite carrying-flange 36 is a flat spring 41, which springs away from said flange as the slide is projected and engages the opposite side of the shank of the nail. The nail is thus held between the springs 40 and 41 with its head in contact with the driving-face 39 of the hammer until the blow is struck, which will force the slide up into the head and at the same time drive the nail which is released by the holding-springs being carried up into the head of the slide.

In Fig. 6 a modified form of handle is shown which is adapted to feed tacks, the feed-slot 42 extending substantially in the longitudinal center line of the handle and the carrier 43 being made narrow to correspond with the length of the tacks. In this construction the pins may be omitted from the star-wheel 44, and the teeth thereof may be engaged by the lugs on the carrier to turn the same. The head of the hammer and feeding mechanism (not shown) would be substantially the same as for feeding nails except as to size and proportioned parts. This device is especially adapted for tacking up signs, laying carpe. &c., and the device shown in the other figures is especially

adapted for lathers' and box-makers' use or where many nails are driven in quick succession.

From the foregoing description the manifold advantages of a device of this construction are obvious, the device being not only automatic and efficient in its operation, but simple in construction and easy to manufacture.

Having thus fully described my invention, what I claim is—

1. In a magazine-hammer, the combination of a rib forming one side of a way for the nails, a carrier extending adjacent to and parallel with said rib to form the other side of the way, two series of lugs on said carrier adapted to engage each side of the rib to guide and support the carrier and to engage the nails to move the same along said way.

2. In a magazine-hammer, the combination with the magazine thereof, of a way to receive the nails from said magazine, a carrier forming an extension of said way, and means operated by said carrier for spacing the nails and feeding the same from the way to the carrier.

3. In a magazine-hammer, the combination with the magazine thereof one wall of which is provided with a slot to receive the shanks of the nails and form a way for the same, ribs forming one side of a continuation of said way, a carrier forming the other side of the same, lugs on the carrier, and a star-wheel operated by said lugs to space the nails and move the same into engagement with the lugs.

4. In a nailing-hammer of the character described, the combination of a carrier, a spring to actuate said carrier, and means operated by the blow of the hammer for putting said spring under tension.

5. In a nailing-hammer of the character described, the combination with a carrier for feeding the nails, of a spring to actuate said carrier in one direction, lugs on said carrier to engage the nails at one side and feed the same forward, and stops adjacent to the end of the carrier to engage the nails at their opposite side and prevent the carrier from moving forward until the nail engaged has been removed.

6. In a nailing-hammer of the character described, the combination of a chambered head, a slide movable in said chamber, a carrier, a spring to actuate said carrier, means for putting said spring under tension operated by the inward movement of the slide, means on the slide for moving the nails from the carrier to the driving-face of the hammer, and a spring to project the slide from the chamber and move the nails from the carrier.

7. In an automatic nailing-hammer, the combination, with a hollow handle and a chambered head, of a magazine in the handle, a carrier to feed the nails from the magazine to the head, means within the head for actuating the carrier, a slide adapted to be moved in one direction by the blow of the hammer to actuate said means, means on said slide for engaging the nails, and a spring to actuate the slide in the opposite direction to feed the nails to the face of the hammer.

8. In a nailing-hammer, the combination, with a carrier and a slide operated by the blow of the hammer, of a train of gearing to transmit motion to said carrier, a ring provided with ratchet-teeth, a power-spring within said ring, means on the slide for engaging the teeth on the ring to wind up the spring, and means connecting the ring and one member of the train of gearing whereby motion is transmitted to said gearing when the ring is turned by the action of said spring.

9. In a nailing-hammer of the character described, the combination of a carrier consisting of a continuous belt mounted upon rolls, a gear secured to the journal of one of said rolls, a fixed stud, a bevel-gear loosely mounted on said stud, intermediate gears between the bevel-gear and the gear on the carrier-roll, a toothed ring, a power-spring attached at one end to the stud and at its opposite end to the ring, a pawl on the bevel-gear to engage the teeth on the ring, and means for turning the ring to wind the spring.

10. In a nailing-hammer of the character described, in combination with the chambered head thereof, and a carrier to feed the nails to said head, a slide within the chamber of the head, a fixed stud in said chamber, a chambered bevel-gear on said stud, a toothed ring within said chamber of the gear, a coiled spring within the ring and attached at one end to the stud and at the opposite end to the ring, a pawl pivoted to the gear and adapted to engage the teeth of the ring, a spring-dog on the slide to engage the teeth of the ring, a gear on the carrier, and intermediate gears between the last-named gear and the bevel-gear.

11. In an automatic nailing-hammer, in combination with the hollow handle and integral chambered head thereof, a door to close the end of said handle, an inclined wall forming a magazine at one side thereof and provided with a slot to receive the shanks of the nails, a shield extending downward over said slot, ribs on the wall of the handle forming one side of a way extending longitudinally of the handle from the end of said slot, a carrier consisting of a continuous belt mounted on rolls and forming the other side of said way, lugs on said carrier, stops on the wall of the head adjacent to the discharge end of the carrier, a gear on the journal of one of the carrier-rolls, a fixed stud, a bevel-gear on said stud, a stub-shaft journaled in bearings within the chamber of the heads, gears on the stub-shaft in mesh with the bevel-gear and the gear on the carrier, a toothed ring mounted on the bevel-gear, a spring-pressed pawl on said gear to engage the teeth on the ring, a spring within the ring attached at one end to the stud and at the other end to the ring, a slide in the chamber of the head, an arm extending

upward from said slide, a lug on the arms and a stop on the head to limit the movement of the slide, a spring-dog on the arm to engage the toothed ring, a portion extending into the chamber and integral with the head, a shoulder on said portion, a spring-hook on the slide to move the nails into engagement with said shoulder, flanges on the slide embracing said inwardly-extending portion, springs on said flanges one of which is provided with a hook, and a spring within a recess in the slide to project the slide from the chamber.

In testimony whereof I affix my signature in presence of two witnesses.

GAIUS C. FULLER.

Witnesses:
OTTO F. BARTHEL,
THOMAS G. LONGSTAFF.