

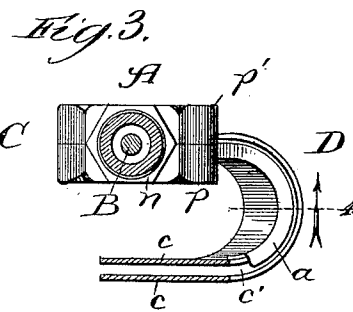
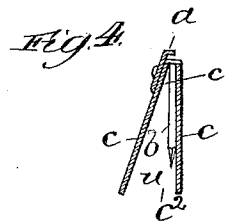
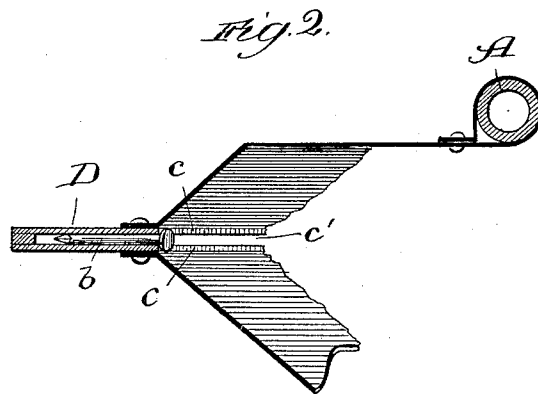
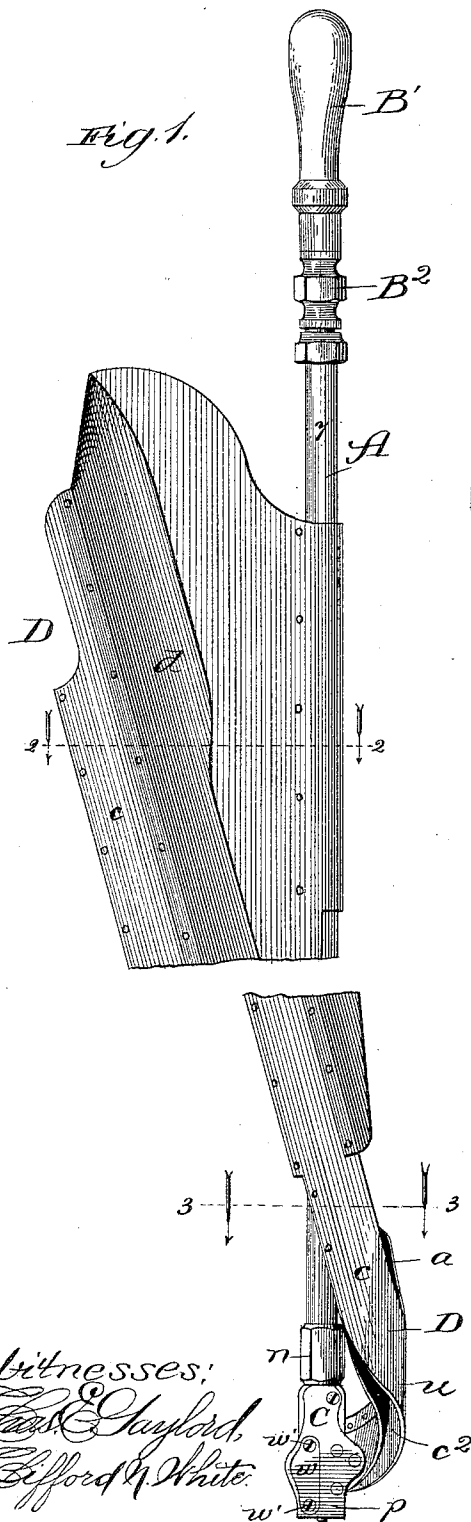
(No Model.)

2 Sheets—Sheet 1.

H. McCORNACK.
NAILING IMPLEMENT.

No. 462,848.

Patented Nov. 10, 1891.



Witnesses:

Edw. J. Gaylord,
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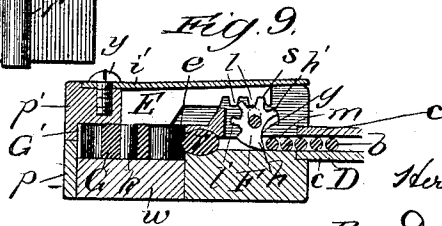
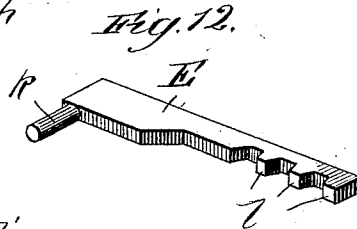
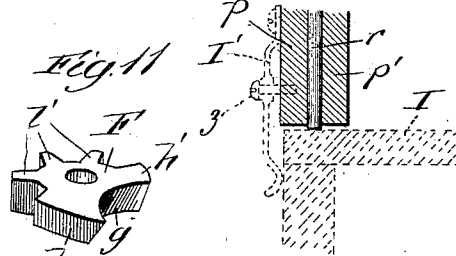
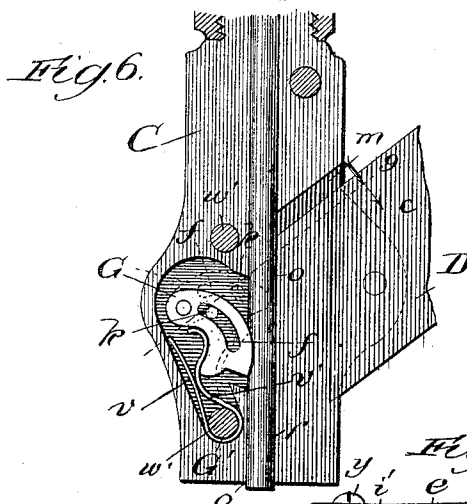
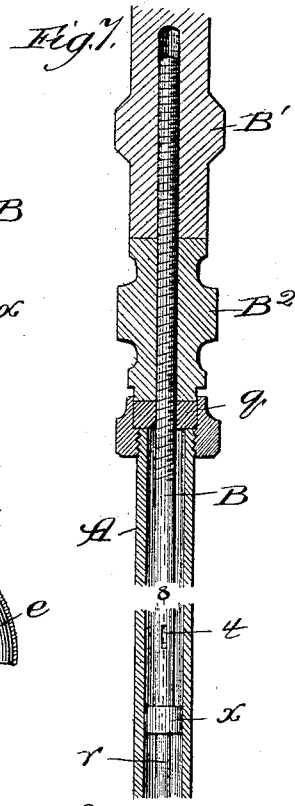
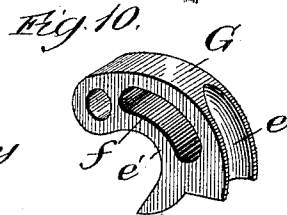
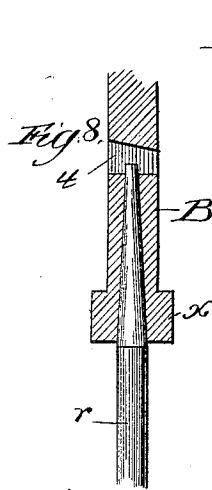
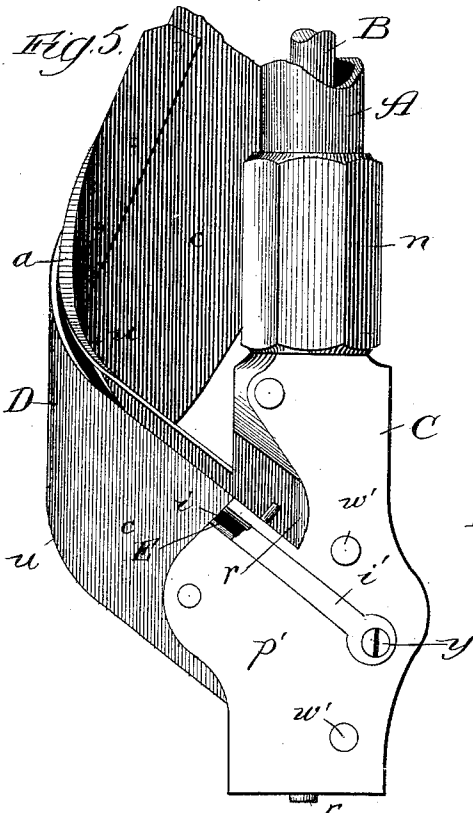
(No Model.)

2 Sheets—Sheet 2.

H. McCORNACK.
NAILING IMPLEMENT.

No. 462,848.

Patented Nov. 10, 1891.



Witnesses:
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UNITED STATES PATENT OFFICE.

HERBERT McCORNACK, OF McQUEEN, ILLINOIS.

NAILING IMPLEMENT.

SPECIFICATION forming part of Letters Patent No. 462,848, dated November 10, 1891.

Application filed December 9, 1890. Serial No 374,087. (No model.)

To all whom it may concern:

Be it known that I, HERBERT McCORNACK, a citizen of the United States, residing at McQueen, in the county of Kane and State of Illinois, have invented a new and useful Improvement in Nailing Implements, of which the following is a specification.

My invention relates to an improvement in the class of implements for use in driving nails fed automatically to the reciprocating driver, and it relates particularly to improvement of the implement for which Letters Patent of the United States No. 392,963 were granted to me on the 13th day of November, 1888, which device, like that forming the subject of the present application, is especially designed and adapted for use in nailing shingles on roofs.

My objects are to provide a generally-improved nailing implement of the class referred to and to simplify and otherwise better the construction set forth in my aforesaid Letters Patent.

My invention consists in the general construction of my improvement, and it also consists in details of construction and combinations of parts.

In the accompanying drawings, Figure 1 is a broken view in elevation of my improved nailing implement. Figs. 2 and 3 are sections (the former being broken) taken, respectively, on the lines 2-2 and 3-3 of Fig. 1 and viewed in the direction of the arrows. Fig. 4 is a section taken on the line 4 of Fig. 3 and viewed in the direction of the arrow. Fig. 5 is a broken view showing the lower or head portion of the implement and the lower curved and guarded portion of the chute in elevation. Fig. 6 is a similar view with one of the two plates forming the head removed to display details of the nail feeding and guiding and righting mechanism housed in the other plate, the fastening-screws for the two plates being sectional. Fig. 7 is a section taken on the line 7 of Fig. 1, and is shown to be provided with a guide in the application of the implement to nailing a box. Fig. 8 is a section taken on the line 8 of Fig. 7. Fig. 9 is a section taken on the line 9 of Fig. 6 and viewed in the direction of the arrow. Figs. 10, 11, and 12 are perspective views of different details.

A is a tube containing the driving-rod B,

adapted to be reciprocated in the tube, and the lower or driving end of which should be of smaller diameter than the rest and to that end may be formed of a separate section *r*, Figs. 7 and 8, driven into the lower end of the rod, where it is expanded, as shown at *x*, to fit the bore of and guide the rod B inside the tube. The rod is confined in the tube against withdrawal, and to permit the driving-section to be readily separated from it when desired I provide an opening *t* through the rod, near the inner end of the section, to admit an instrument for forcing the section out.

The rod B is provided with a handle B' and has a threaded portion upon which the handle is screwed and for a jam-nut B², interposed between the handle and upper end of the tube A, for regulating the length of stroke of the driving-rod, according to the depth to which it is desired to drive the nail, and to receive the impact of the driving stroke the tube B is surmounted by a suitable cushion *q*, confined in place and against which the lower end of the nut B² fits.

C is the head of the implement, secured to the lower end of the tube A and containing the feed-regulating mechanism. I form the head C of two flat and mainly-rectangular metal plates *p* and *p'*, suitably chambered out on their inner sides to contain and admit the details hereinafter described. The two parts *p* and *p'* are fastened together with their chambered sides facing each other and are firmly secured to the lower end of the tube, as by means of the nut *n* illustrated. The head has a bore *o*, extending longitudinally through it for the driver-section *r*, and which of course is in alignment with the bore of the tube A. Between the two parts or plates of the head C, at one edge thereof, is an opening *m*, (shown as of rectangular form in Fig. 9,) which extends between the upper and lower ends of the head, being of a length adapting it to admit into the head from the chute D the nails to be driven, as hereinafter described.

The parts of the feed-regulating mechanism hereinbefore mentioned involve means for taking the nails to be driven, one at a time, into alignment with the reciprocating driver, and by that act shutting off to that position the feed of other nails following the one so

admitted, all of which is actuated by the reciprocation of the driving-rod. Following is a description of the details of the aforesaid feed-regulating mechanism:

5 E is a rack-bar having teeth *l* in its edge at one end and widened toward the opposite end, from the edge of which extends a pin or stud *k*. The bar E fits edgewise into a lateral slot *z*, Fig. 5, formed diagonally through the side *p'* of the head and which is covered by a flat spring *z'*, let into the side *p'* and held at one end, as indicated at *y*, being free to be sprung toward its opposite end. The rack-bar E engages by its teeth a pinion F of peculiar shape, being provided regularly about a portion of its periphery with teeth *l'*. At opposite extremities of the series of teeth *l'* are the blanks *h* and *h'*, between which the periphery is hollowed out to form a concave recess *g*, extending somewhat obliquely to the planes of the flat sides of the pinion. The pinion F is journaled in the chambered side *p'* of the head C by a form of so-called "slip" or yielding journal, as indicated by the dotted representation at *s* in Fig. 9, for a purpose hereinafter described, and its position is such that the opening *m* is in the path of and crossed alternately by the opposite ends *h* and *h'* of the oblique peripheral recess *g* in the reciprocal movements of the pinion on its axis, as and for a purpose hereinafter described.

The pin or stud *k* of the rack-bar E passes through a slot *f* or guide curved in the arc of a circle in a seat G, having somewhat the form of a dog or lever, being pivotally supported at one end in the chambered side *p'* of the head C and caused to project normally at its free end into the bore *o*, thus into the path of the driver, and having a concavity *e*, formed longitudinally in its convex side to afford a species of stop for a nail, for a purpose hereinafter described. The arrester is normally held in the position described by a spring G', confined against it, the preferred form thereof being that shown of a strip of spring metal bent upon itself to form one slightly-bent end *v* to bear against the wall confining it, and an end *v'*, bent to fit and bear against the concave side *e'* of the arrester. The spring is held against slipping lengthwise by one of the screws *w'*, serving to fasten together the plates of the head C and to secure in place a plate *w*, covering an opening to which it conforms in the side or plate *p* of the head C and which is provided to permit the ready insertion into their seats or housing in the plate *p'* and withdrawal therefrom of the details of the feed-regulating mechanism.

The chute D is of the general form of that shown and described in my aforesaid former patent, being of trough shape near its upper end, the trough *d*, communicating at its open base with the slot *c'* between the bars *c*, Figs. 2 and 3, forming the chute proper, which is spirally arranged with reference to the driver-

tube A, to which it is secured, extending obliquely thereof from one side nearly to the lower end of the implement beyond its opposite side, whence the bars *c* are curved around, (thereby forming the bend *u*,) to meet the inlet-opening *m* to the head, which leads into the bore *o*, and, as will be seen on inspection of Fig. 6, is somewhat higher than the chute to admit the heads of the nails *b*. As in my formerly patented device, it is much preferred to have the chute D flare, as shown at *c'* in Fig. 1, at the underside of the bend *u* therein to facilitate the passage of the nails around the bend. In passing the bend *u* the nails, by crowding each other, will tend to cause numbers in the line to rise and jump out of the chute-slot *c'* under the jar of the driving action, or at least interfere with the flow of the supply. To obviate this I provide on the upper side of the bend, to extend from the edge of one of the bars *c* short of that of the other bar, a guard *a*, Fig. 3, which being thus open along one side, while covering and thus preventing rising of the nails in passing around the bend, permits ready access to them in case of clogging, as by reason of a deformed nail becoming there wedged in the chute, and the open side along the guard furthermore allows nails, when in any way held up in the raised position, to pass around it.

The operation is as follows: The chute D is supplied or filled with the nails *b* by merely pouring them into the trough *d*, whence, the implement being held in an upright and somewhat inclined position, they will automatically enter with their pointed ends the slot or passage *c'* between the bars *c*, the heads preventing them from slipping through the slot. Thus a regular line or series of the nails is provided in the chute extending from the part *h* of the pinion F, which obstructs their admission into the bore *o*, up into the chute as far as the supply will reach. The driver B is normally at the position it assumes at the end of its inward stroke, wherein the section *r* has forced the arrester G against its controlling-spring G' out of the path of the driver, thereby also by the engagement with the arrester-slot *f* of the pin *k* having caused movement of the rack-bar E lengthwise in the direction to cause the stop *h* on the pinion F to extend across and obstruct the path of the nails through the passage *m*, in which position of the pinion its concave seat *g* receives the innermost of the series of nails, which by extending obliquely downward, owing to the relative direction of the chute at that point, is in the plane of and thus aligns or substantially aligns with the oblique seat *g*. The first outward stroke of the driver permits the spring G' to turn the arrester into its normal position of extending across or into the bore *o*, as represented by dotted lines in Fig. 6, and the movement of the arrester in attaining that position will actuate the rack-bar E to turn the pinion F part-way around in the direction to remove its abutment *h* from

the path of the innermost nail *b* and at the same time project its abutment *h'* across the path of the next preceding nail, holding the series aloof while the innermost nail descends into the recess *e* for it in the arrester *G*, whereby it is righted in case of entering the bore *r* out of accurate alignment therewith. In the last-named position of the said nail its head is directly in line with the driver, which in its inward stroke on reaching the nail forces the arrester aside and drives the nail with the resultant effect on the rack-bar and pinion of bringing them to the relative positions in which they are illustrated in Fig. 9.

In case a nail, bent or otherwise irregular, becomes in any way wedged against the pinion its slip-journal *s* and the yielding nature of the bearing against it of the rack-bar *E*, due to the spring *v'*, will enable the parts to yield sufficiently to avoid their being broken thereby.

For nailing a box *I* (see Fig. 7) or any other article the nailing-line on which may be gaged by its edge, *I* provide a guide *I'* on one side (as the outer side *p*) of the head *C*, preferably of the springy construction indicated by the dotted representation, whereby its degree of lateral extension from the surface of the head may be regulated by a set-screw *z*, the guide projecting beyond the lower end of the head *C* to overlap the edge of the article adjacent to the side being nailed. Thus the edge guides the implement, the guide having been previously set to bring the line of the bore *o* to the desired distance from the edge.

My improved device may readily be adapted to be operated by the foot or by steam or other power. Hence I do not limit it to a hand nailing implement.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a nailing implement, the combination, with the driving mechanism and a supply-chute, of a head at one end of the driving mechanism, having a bore for the driver into which the chute leads, a spring-controlled arrester normally tending to extend into the path of the driver and operating to hold the nail to be driven in alignment therewith and removed thence by the driving stroke thereof, and feed-regulating mechanism connected with and actuated by the movements of the arrester produced by those of the driver to control the nails and feed them successively to the bore in the head against the arrester, substantially as described.

2. In a nailing implement, the combination, with the driving mechanism and a supply-chute, of a head at one end of the driving mechanism, having a bore for the driver into which the chute leads, a spring-controlled arrester normally tending to extend into the path of the driver and removed thence by the driving stroke thereof, and feed-regulating mechanism yieldingly supported in its bearings and connected with and actuated by the movements of the arrester produced by those

of the driver to control the nails and feed them successively to the bore in the head against the arrester, substantially as described.

3. In a nailing implement, the combination, with a reciprocable driver in a tube having a head *C* at one end, of a spirally-arranged chute *D*, leading to the bore in the head and provided on the upper side of its bend *u* with a guard *a*, open along one side, a spring-controlled arrester in the head normally tending to extend into the path of the driver and removed thence by the driving stroke thereof, and feed-regulating mechanism connected with and actuated by the movements of the arrester produced by those of the driver to control the nails and feed them successively to the bore in the head against the arrester, substantially as described.

4. In a nailing implement, the combination, with the driving mechanism and a supply-chute, of a head at one end of the driving mechanism having a bore for the driver into which the chute leads, a spring-controlled arrester *G* in the head having a nail-seat *e* in its convex side and normally tending to extend into the path of the driver and removed thence by the driving stroke thereof, and feed-regulating mechanism connected with and actuated by the movements of the arrester produced by those of the driver to control the nails and feed them successively to the bore in the head against the seat, substantially as described.

5. In a nailing implement, the combination, with the driving mechanism and a supply-chute, of a head at one end of the driving mechanism, having a bore for the driver into which the chute leads, a spring-controlled arrester normally tending to extend into the path of the driver and removed thence by the driving stroke thereof, and feed-regulating mechanism comprising a rack-bar engaging toward one end a guide in the arrester, and a pinion journaled near and engaged by the teeth on the opposite end of the rack-bar and normally extending into the path of the nails to the said bore, substantially as described.

6. In a nailing implement, the combination, with the driving mechanism and a supply-chute, of a head at the end of the driving mechanism, having a bore for the driver into which the chute leads, a spring-controlled arrester normally tending to extend into the path of the driver and removed thence by the driving stroke thereof, and feed-regulating mechanism comprising a rack-bar yieldingly held in engagement near one end with a guide on the arrester, and a pinion yieldingly journaled near and engaged by the teeth on the opposite end of the rack-bar and normally extending into the path of the nails to the said bore, substantially as described.

7. In a nailing implement, the combination, with the driving mechanism and a supply-chute, of a head at one end of the driving mechanism, having a bore for the driver into

which the chute leads, a spring-controlled ar-
rester normally tending to extend into the
path of the driver and removed thence by the
driving stroke thereof, feed-regulating me-
chanism comprising a rack-bar having near
one end a stud engaging a curved guide in
the arrester and provided with teeth near
its opposite end, and a pinion journaled in
position to engage the teeth of the rack-bar
and extend into the path of the nails and pro-
vided with a peripheral recess, substantially
as described.

8. A nailing implement comprising, in com-
bination, a tube A, containing a reciprocable
driver B and having a head C, containing a
bore *o* for the driver, a spiral chute D, se-
cured to the tube and leading into the said

bore and flaring at the under side of its bend
u, a guard *a* at the upper side of the said
bend, a spring-controlled pivotal arrester G
in the head normally tending to project into
the said bore and provided with a seat *s* in
its convex side and with a guide *f*, and feed-
regulating mechanism comprising a rack-bar
E, having a stud *k*, engaging the guide in the
arrester, and a pinion F, journaled to engage
the teeth of the rack-bar and extend into the
path of the nails and provided with a periph-
eral recess *g*, substantially as described.

HERBERT MCCORNACK.

In presence of—

J. W. DYRENFORTH,
M. J. FROST.