(No Model.) 2 Sheets—Sheet 1.

J. C. LUCHTERHAND.

TACKER OR NAILER.

No. 422,815. Patented Mar. 4, 1890.

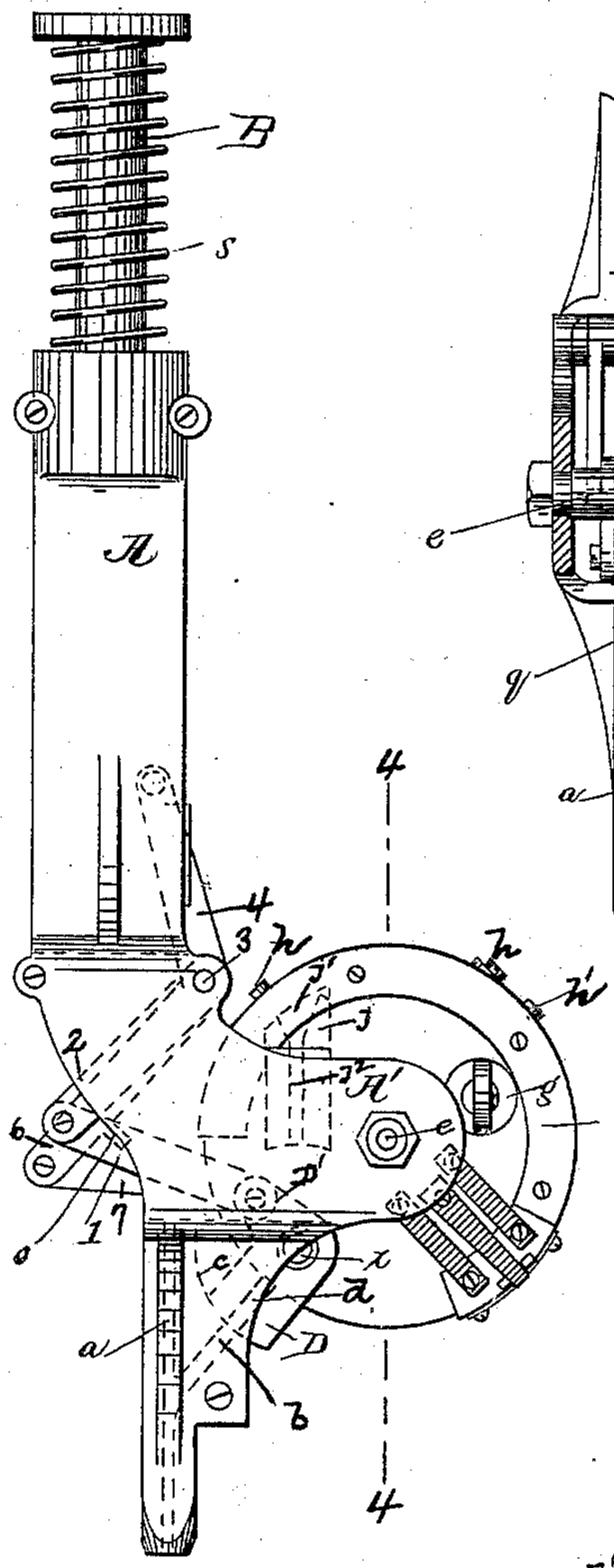


Fig. 1.

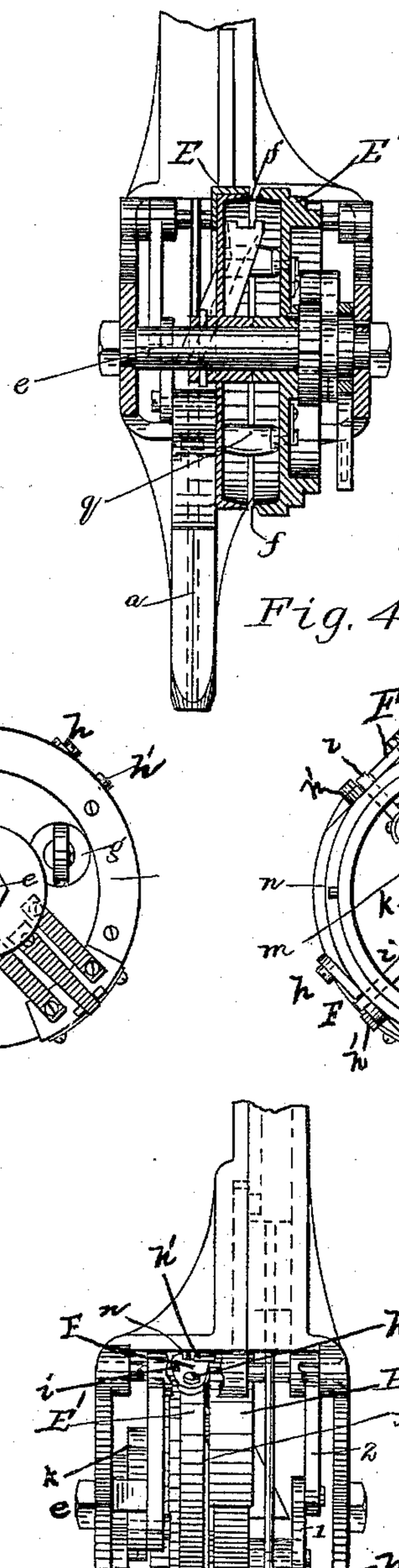
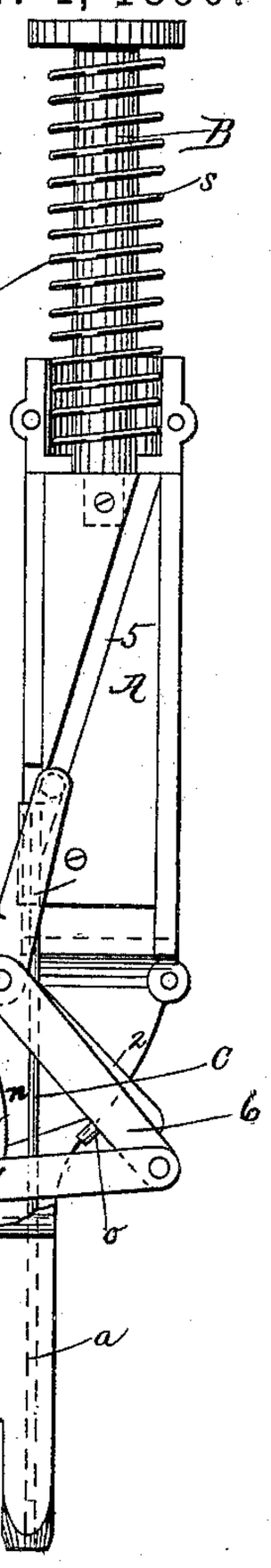


Fig. 4.



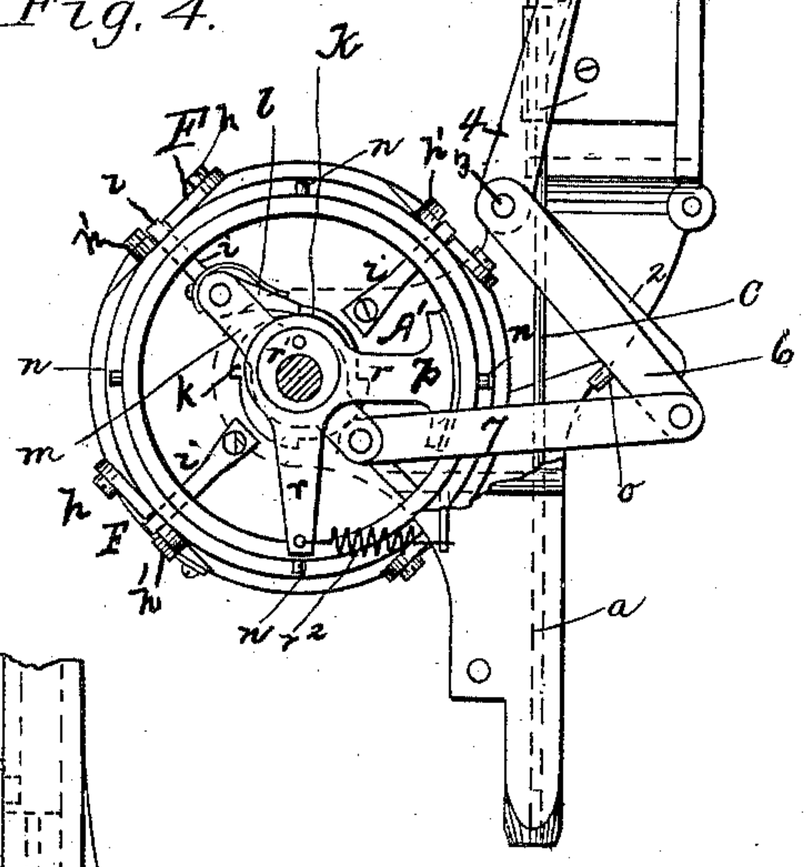


Fig. 2.

Fig. 3.

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(No Model.) 2 Sheets—Sheet 2.

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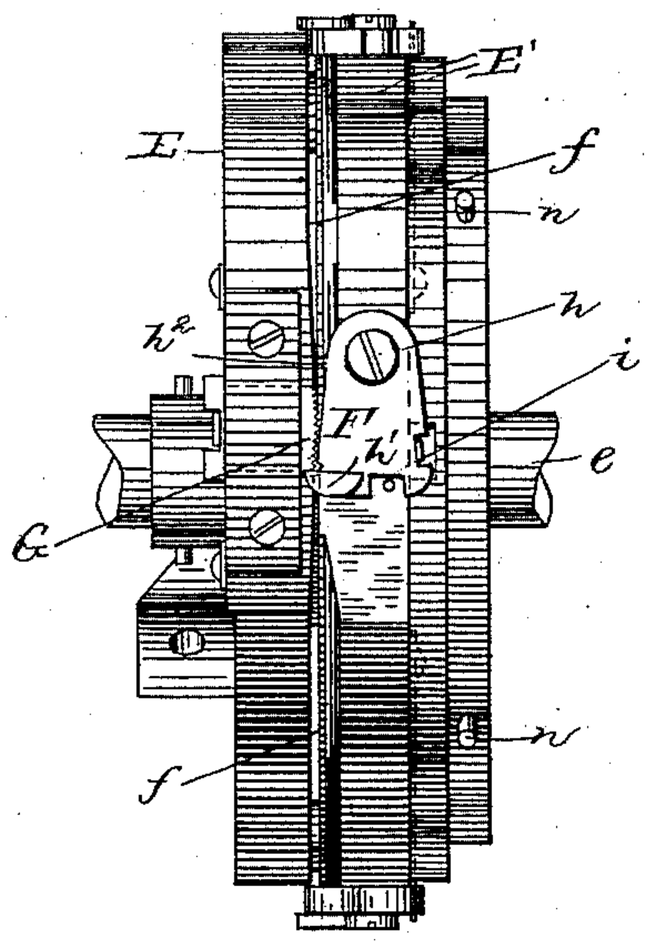

Fig. 5.

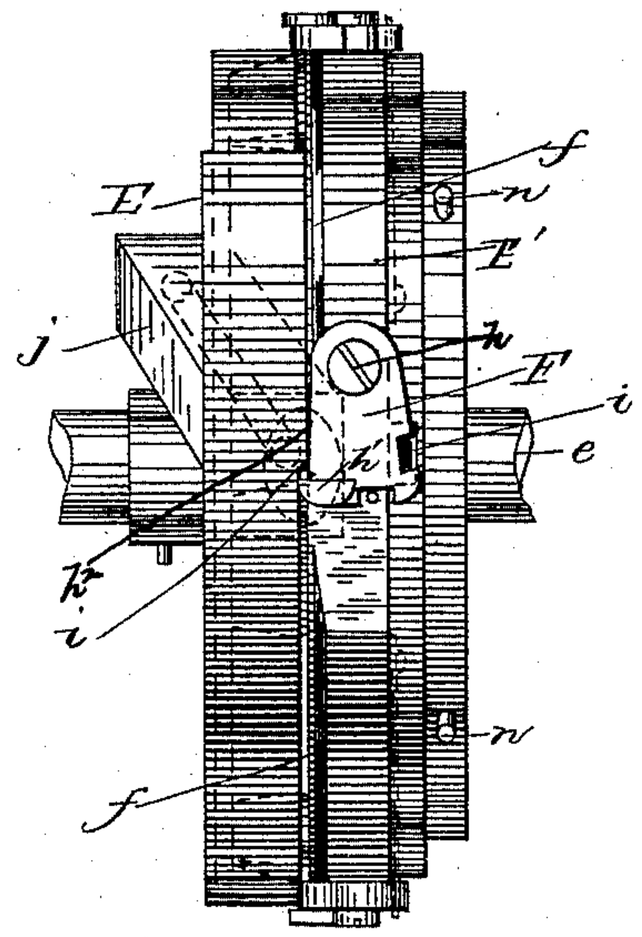

Fig. 6.

Fig. 7.

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UNITED STATES PATENT OFFICE.

JACOB C. LUCHTERHAND, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-THIRD TO JOHN A. WIECK, OF SAME PLACE.

TACKER OR NAILER.

SPECIFICATION forming part of Letters Patent No. 422,815, dated March 4, 1890.

Application filed May 7, 1889. Serial No. 309,903. (No model.)

To all whom it may concern:

Be it known that I, JACOB C. LUCHTERHAND, of Boston, in the State of Massachusetts, have invented a certain new and useful Improvement in Nailing or Tacking Machines, of which the following is a specification.

My invention has relation to that kind of a tacker or tacking-machine known as a "loose tacker"—that is to say, a tacker in which the tacks are loose in a receptacle, from which they are, by the action of suitable mechanism, successively taken and presented in proper position to the driver or plunger by which the tack is driven.

My invention has particular reference to the mechanism for selecting the tacks and presenting them to the driver.

The mechanism which I have devised comprises, among other things, an oscillating receiver and reverser, which receives the tacks head foremost and which then, by an oscillatory movement, delivers the tack point foremost into the channel or gutter-way in the tacker in which the driver moves. It is this combination of the driver and the oscillatory tack receiver and reverser which chiefly characterizes my invention.

Other features of the invention consist in the means by which the loose tacks are successively selected and delivered into the oscillating receiver and reverser. The means employed by me comprise a receptacle of cylindrical form having a peripheral way or slot of a width to permit the points or shanks of the tacks to pass through, but not their heads, and a clamp having an intermittent movement of rotation which acts to take hold of one of the tacks projecting through the slot in the receptacle and to carry that tack to a point where, when released, it will drop into the oscillatory receiver and reverser hereinbefore mentioned. The moving parts are all of them connected by suitable means with the driver or the stock which actuates it and derive their movements in this way, as is usual in this class of machines. In practice I use a series of these clamps—generally four—which are equidistant from one another and successively act to take each its own tack and to deliver the latter into the receiver and reverser.

The nature of my improvements and the manner in which the same are or may be carried into effect can best be explained and understood by reference to the accompanying drawings, in which—

Figure 1 is a front elevation of the tacker. Fig. 2 is a rear elevation of the same. Fig. 3 is a side elevation of a portion of the instrument, looking at it from the left-hand side of Fig. 1, a portion of the frame being broken away. Fig. 4 is a sectional view on line 4 4, Fig. 1. Figs. 5 and 6 are enlarged edge views of the tack-receptacle. Fig. 7 is an enlarged side elevation of said receptacle with the oscillating receiver and reverser, as well as the guide leading thereto, in section.

A is the shell or case of the tacker, and B is the vertically-reciprocatory stock, to which the driver C is secured. The retracting-spring for the plunger or stock B is shown at *s*. The driver C itself moves in a channel or guideway *a*. (Shown by dotted lines in Figs. 1 to 4 and in section in Fig. 7.) Into this channel is delivered the tacks to be driven by the driver. Thus far there is nothing essentially new in the instrument.

Laterally branching from channel *a* is the inclined channel *b*, which opens at its upper end into a concave face *c*, which is curved in the arc of a circle struck from the center of motion *x* of the oscillatory receiver and reverser D.

The part D, which is supported on the pivot *x*, is formed with a tack-receiving recess *d*, Fig. 7. Its outer face is convex, with a curve corresponding to that of the face *c*. Normally it occupies the position indicated in Fig. 1—that is to say, it is turned downward with its convex face against the face *c* and its recess *d* in alignment with the inclined channel *b*. It will therefore be seen that if the reverser and receiver D be turned up into the position shown in Fig. 7 and a tack be dropped into it head foremost, and if the said receiver and reverser D be then oscillated to bring its recess *d*, containing the tack, into alignment with the channel *b*, the result will be that the tack which was placed head fore-

most in the recess *d* will be delivered point foremost into channel *b*, and will pass down through the latter into the main channel *a* into a position where it can be driven by the driver C into the work.

Light retaining-springs *y* may be used in the channel *a* to hold the tack in position until it is expelled by the driver.

In order to actuate the receiver and reverser D, I can conveniently make use of the following means: Part D is formed with an angle-arm D′, which by a connecting-rod 1 is jointed to a radial arm 2, fixed to a rock shaft or rod 3, journaled in the frame or case A. To this rock shaft is fixed another arm 4, provided with a friction-roller or the like, which projects into a cam or inclined groove 5 in the vertically-reciprocating stock B. The arrangement is such that when the driver is up the receiver and reverser D is down, and vice versa. Consequently when the driver descends the part D moves from the position shown in Fig. 1 to that shown in Fig. 7, in which latter position a tack can be dropped into it head foremost. Then when the driver rises the part D turns down again into the position shown in Fig. 1, thus dropping the tack, as before explained, point foremost *via* channel *b* into channel *a*, from whence it will be expelled at the next descent of the driver.

Manifestly various means can be employed for delivering tacks head foremost into the receiver and reverser D. The means which I prefer to employ are illustrated in the drawings and will now be described. The part D is pivoted on one side of a cylindrical receptacle for loose tacks, which receptacle is supported in a suitable bracket-extension A′ of the main frame. The receptacle is composed of two parts E E′, the one fixed and the other free to rotate upon an axis or stationary shaft *e*. The two parts E E′ are separated by a continuous peripheral slot *f* of a size which will permit the points and shanks, but not the heads of the tacks, to pass through. Consequently when loose tacks are put into the receptacle through the door *g*, Figs. 1 and 4, provided for the purpose some of them will by gravity drop through this slot at the bottom of the receptacle, hanging by their heads with their shanks projecting through the outside.

On the rotating portion E′ of the tack-receptacle I mount one or more retaining-pawls F. In practice I make use of four, as shown in the drawings; but as each in construction and function is the same as the other a description of one will answer for all. The pawl is pivoted to the periphery of the rotating portion E′ at *h*. It is pressed by a spring *i*, so as to bear with yielding pressure toward and against that face of the stationary part E which bounds the opposite edge of the slot *f*. The pawl is provided with a raised shoulder or abutment *h′* to prevent tacks from passing it, and its inner face h^2 is inclined so that there will be between it and the adjoining face of the stationary part E a wedge-shaped space, the object of this being that the clamp shall take hold only of the shank of the tack, which is caught at the apex or narrowest part of the wedge-shaped space. Such of the loose tacks as by gravity project through the peripheral slot *f* in the receptacle will do so between the points z' z^2, Fig. 7. At the point z^2 is arranged on the stationary part E a spring-pressed yielding dog G, having its inner acting edge serrated and shaped as shown in Fig. 5, which is a view of that part of the periphery of the receptacle on which the dog is located. In the drawings I have shown the dog secured in place by strips z^* z^* z^5, being a spring-strip for pressing the dog against the pawl.

The pawl F at each movement travels one-fourth of a circle. In moving from z' to z^2 (the movement is a quick one) it sweeps before it such tacks as may be hanging down through the peripheral slot *f*. This movement continues until it reaches z^2, (at which time it will be opposite the dog G,) where it suddenly stops. In thus moving it jerks forward and throws back into the receptacle such of the tacks as are not caught between it and the dog G. Usually only one tack is thus caught, but sometimes there may be two.

The next move of the pawl is from z^2 to z^3. The peripheral slot *f* throughout this range of movement (and, indeed, up to the point z^4) is a plain smooth slot with an unbroken edge on the stationary side E. The pawl in traversing this portion of the slot takes hold only of the shank of the tack, which is at the apex or narrowest part of the space between it and the part E. If there be any other tack, the latter, after passing beyond the dog G, will be free and will drop back into the receptacle.

The next move of the pawl is from z^3 to z^4. In thus moving it carries along with it the tack until it reaches an inwardly-projecting cam-surface *i* on the stationary part E, (seen plainly in Fig. 6,) which is a plan of that portion of the periphery of the receptacle where the cam is located. By the cam the pawl is opened so as to release the tack, which up to this time it has held, and under the point where the tack is released is an inclined tubular guide *j*, having a tapering mouth *j′* to receive the tack, and a guide-channel j^2, leading down from this mouth to a point where it will register with the recess *d* of the receiver and reverser D when the latter is turned up, as in Fig. 7. This is the position of the part D at the time the tack is dropped by the pawl. The dropped tack falls head foremost through the guideway j' j^2, and thence is delivered head foremost into the receptacle. There are four pawls F, each the same in function and operation as the others. Consequently at each intermittent quarter revolu-

tion of the series of pawls one tack will be dropped into the guide *j* and will be delivered thence into the receiver and reverser D.

Intermittent movement may be imparted to the pawl-carrier E′ from the plunger or stock B by a variety of means. I prefer for this purpose a pawl-and-ratchet mechanism such as shown in Figs. 2, 3, and 4. On the hub of part E′ is fixed a four-toothed ratchet *k*, and on the same hub or on the shaft *e*, which is encircled by that hub, is loosely mounted an oscillatory arm *m*, carrying at one end a spring-pawl *l* to engage the ratchet. The opposite end of arm *m* is connected to a radial arm 6, fast on rock-shaft 3, by a connecting rod or link 7.

As before said, the movement of the driver and of the reverser and receiver D are so timed that when the latter rises the former descends, and vice versa. The movement of the pawl-carrier is so timed that it advances one-quarter turn at each descent of the driver, having no movement when the driver rises, owing to the slip of the then backwardly-moving pawl *l* over the ratchet *k*. Thus when the driver descends the pawl-carrier brings a pawl (holding a tack) into a position where the tack will be released and will drop through the guide *j* head foremost into the receiver and reverser D, which has risen to receive it. Then when the driver rises the pawl-carrier remains stationary, while the receiver and reverser D turns down and delivers point foremost into the driver-channel *a* the tack which it had received head foremost, said tack being in position to be expelled and driven into the work at the next descent of the driver.

I find it advisable to provide a positive stop for the pawl-carrier E′ at each quarter-revolution; and to this end I place upon it four pins *n*, and upon the radial arms 6, I form a shoulder or abutment *o*, which, at the conclusion of each quarter-revolution, comes in the path of one of the pins *n* and thus halts the pawl-carrier.

In order to prevent any recoil or backward movement of the pawl-carrier, I provide a friction-pad *p*, acting peripherally upon the pawl-carrier, being for this purpose attached to the end of one arm of an angle-lever *r*, loosely mounted at its elbow upon an eccentric *r′*, fixed on shaft *e*, the other arm of said angle-lever being pulled by a spring r^2, as seen in Fig. 2, the arrangement being such that the friction-pad will allow the forward rotation of the pawl-carrier, but will prevent rotary movement in opposite direction.

Attached to the moving part or pawl-carrier E′ are four cross-pieces or supports *q*, which extend across the slot *f* inside of the tack-receptacle, close to the inside of the rim of the stationary part E. These supports *q* steady the movement of E′, and as they are placed one just back of each pawl F they serve to clear the slot *f* of tacks.

Having described my improvements and the best way known to me of carrying the same into practical effect, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with the reciprocatory driver, of the oscillatory receiver and reverser and means for raising the receiver and reverser to receive the tack head foremost while the driver is down, and vice versa, whereby the tack is delivered point foremost to the driver, substantially as and for the purposes set forth.

2. The combination, with the reciprocatory driver, of the oscillatory receiver and reverser, and means for raising the receiver and reverser to receive the tack head foremost while the driver is down, and vice versa, and means for supplying the tacks head foremost to the reverser, substantially as and for the purposes set forth.

3. The combination, with a peripherally-slotted receptacle for loose tacks, of the intermittently-rotating tack-selecting pawl F, the dog G, and the releasing-cam *i*, substantially as and for the purposes hereinbefore set forth.

4. The combination of the peripherally-slotted tack-receptacle, the series of intermittently-rotating tack-selecting pawls, the dog G, and releasing-cam *i*, the guideway *j*, the oscillating receiver and reverser, and the reciprocatory driver, substantially as and for the purposes hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 2d day of May, 1889.

JACOB C. LUCHTERHAND.

Witnesses:
EWELL A. DICK,
WILL E. AUGHINBAUGH.