

(No Model.)

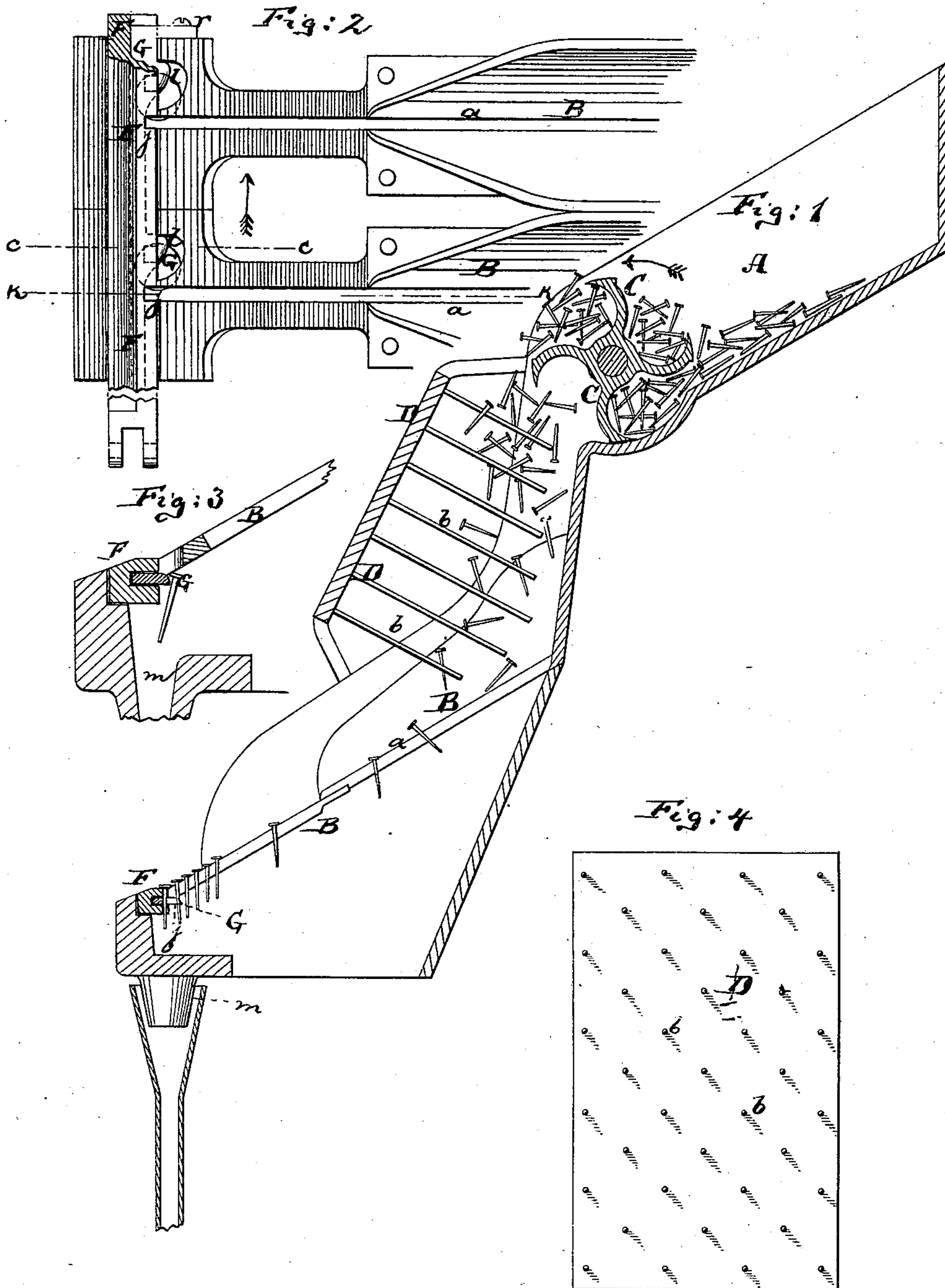
2 Sheets—Sheet 1

F. ROCHOW.

NAIL FEED ATTACHMENT FOR NAILING MACHINES.

No. 254,570.

Patented Mar. 7, 1882.



Witnesses
John C. Turnbridge
John M. Speer

Inventor:
F. Rochow
by his attorneys
Brisson & Bell

(No Model.)

2 Sheets—Sheet 2.

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Fig: 5

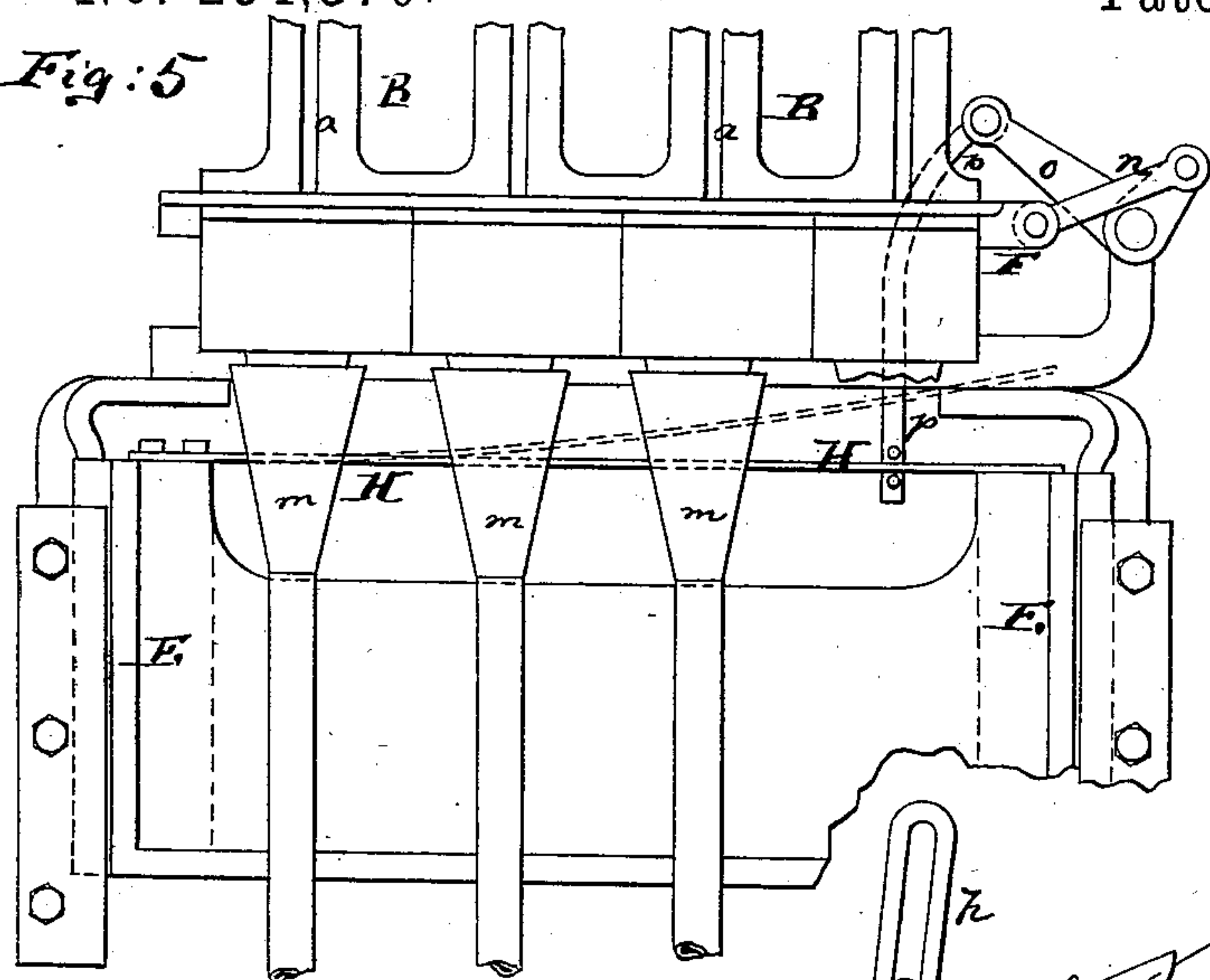


Fig: 6

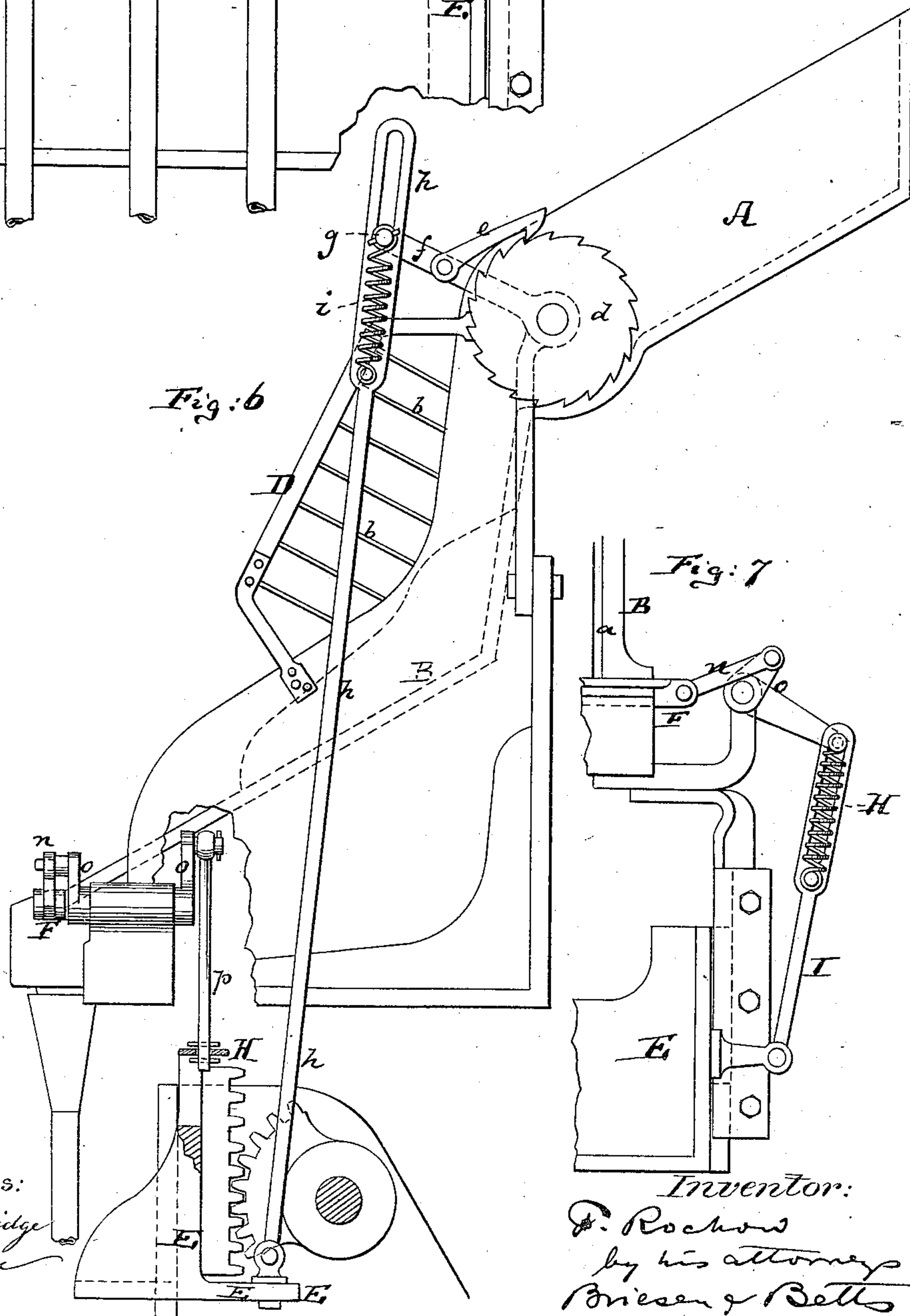
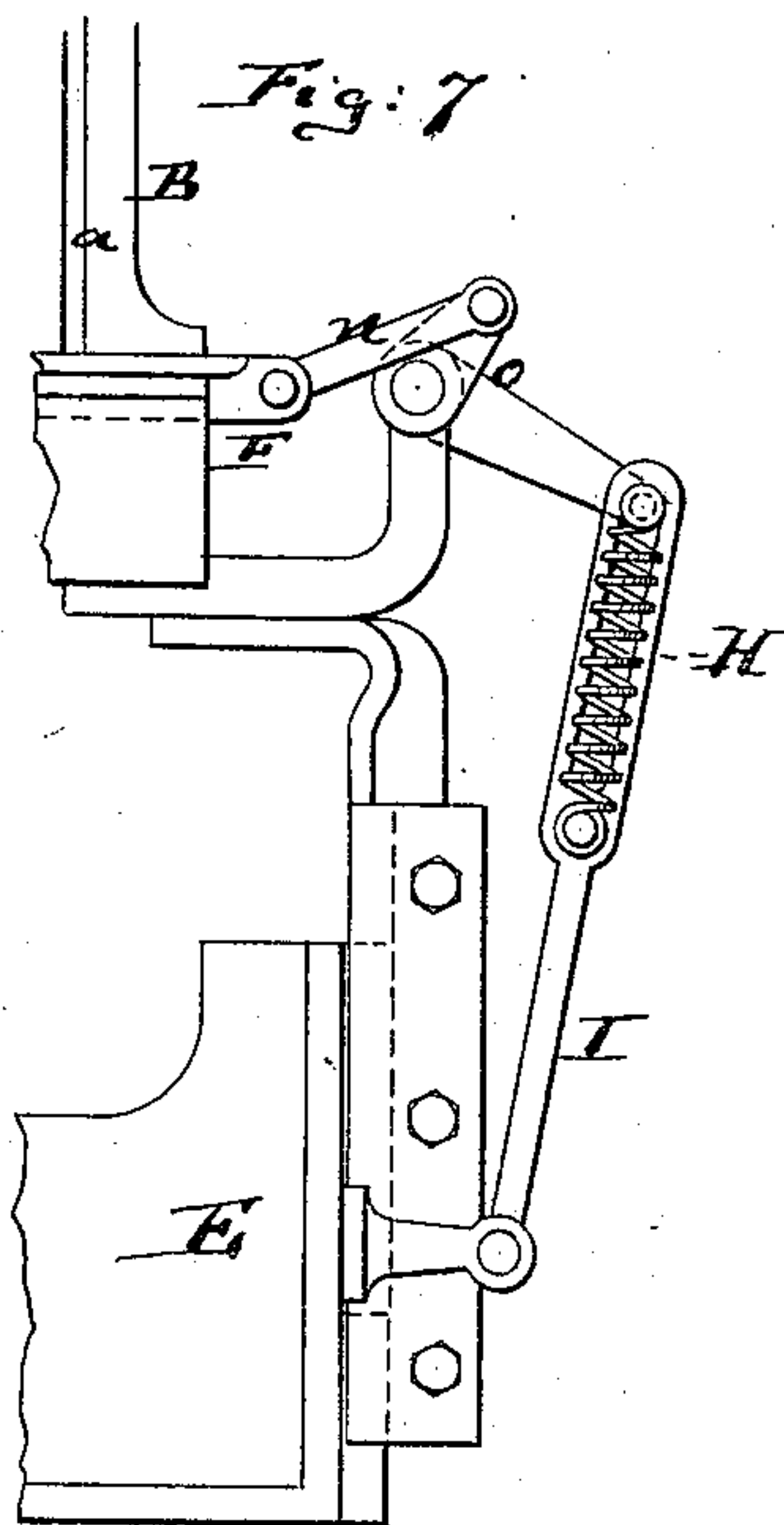


Fig: 7



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UNITED STATES PATENT OFFICE.

FERDINAND ROCHOW, OF BROOKLYN, NEW YORK.

NAIL-FEED ATTACHMENT FOR NAILING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 254,570, dated March 7, 1882.

Application filed December 22, 1881. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND ROCHOW, of Brooklyn, in the county of Kings and State of New York, have invented an Improved Nail-Feed Attachment for Nailing-Machines, of which the following is a specification.

This invention relates to certain improvements on a nail-feed attachment which is described in Letters Patent No. 164,332, granted to me June 8, 1875, and has for its object, first, to scatter the nails that are distributed by the feed-wheel, so as to bring them separated into position on the guide-troughs, whence they are moved to the lateral conveyer. I found that the machine described in the above-mentioned patent was open to the objection that at times the feed-wheel would throw the nails in clusters into said guide-troughs, and would thereby interfere with the proper and continuous operation of the machine.

A second object of my invention is to supply the mechanism that moves the feed-wheel with means for yielding to an interfering nail, which at times may be caught between the feed-wheel and the lower side of the feed-hopper.

A third object is, in like manner, to provide a yielding resistance to the lateral conveyer, so as to prevent breakage of parts if a nail should clog the conveyer.

A fourth object is to so place the wiper by which the nails are disengaged from the conveyer as to prevent its action being in any manner interfered with by the more or less imperfect heads of the nails. The wiper in the former machine was on top of the conveyer, being intended to move the nail away from the conveyer by taking hold of its head, whereas now I make the wiper take hold of the body of the nail beneath the head.

In order to carry out the objects of my invention, which I have here briefly stated, I have devised the following improvements: first, the application of a scatterer above the feed-troughs and in front of the feed-hopper for the purpose of separating the nails that are thrown by the feed-wheel; second, a spring-connection between the operating shaft or apparatus and the lever that moves the pawl which actuates the feed-wheel, for the purpose of arresting the motion of the feed-wheel if a nail should be caught between it and the lower

part of the hopper, without thereby arresting the motive power or breaking any parts; third, the interposition of a similar spring between the mechanism that moves the lateral conveyer and said conveyer, for the purpose of arresting the motion of the latter in case a nail should be caught obliquely or otherwise in the notch of the conveyer; and, fourth, the placing of the wiper below the top edge of the conveyer instead of on top of the same.

In the accompanying drawings, Figure 1 represents a vertical longitudinal section of my improved nail-feed attachment, taken on the line *k k*, Fig. 2. Fig. 2 is a plan or top view of a portion of the same; Fig. 3, a detail vertical section taken on the plane of the line *c c*, Fig. 2. Fig. 4 is a bottom view of the scatterer. Fig. 5 is a front view of the lower part of the attachment. Fig. 6 is a side view of the attachment; and Fig. 7 is a detail side view of the attachment, showing a modified form of spring-connection between the reciprocating plunger-head and the laterally-movable conveyer.

The letter A in the drawings represents the hopper of the nail-feed attachment placed in inclined position on the frame of a suitable box-nailing machine or on any other suitable support. This hopper is open at its lower end and communicates at its open lower portion with guide-troughs B B, each of said troughs having a straight slot, *a*, in its bottom.

C is the feed-wheel, placed in the lower part of the hopper A, and mounted on a shaft that has its bearings in the frame-work of the attachment. This feed-wheel is to take the nails from the hopper and throw them into the guide-troughs B.

D is the scatterer, which constitutes one of the features of my present invention. It is a plate, board, bar, or lattice-frame, secured on suitable standards above the upper parts of the feed-troughs and in front of the feed-wheel C, and is provided with inwardly-projecting pins or rods *b*, which extend into the upper parts of the feed-troughs, as is clearly shown in Figs. 1 and 6. The pins *b* may be round, as shown in Fig. 4, or prismatic, oval, or of any other suitable form, and they may be of varying lengths, or all of equal length, and may be attached to the frame in straight rows or in

irregular lines. As the feed-wheel receives its intermittent rotary motion in the direction of the arrow indicated in Fig. 1, it takes the nails from the hopper and throws them into the feed-troughs; but in so throwing them they strike the wires or rods of the scatterer, and are thereby separated one from the other and prevented from reaching the feed-troughs in bunches or clusters, which would interfere with the operation of the machine.

The scatterer is shown to be stationary, but may, if desired, have a slight motion imparted to it.

Instead of placing the wires *b* of the scatterer so that they extend from the outside into the feed-troughs, as shown in Fig. 1, said wires may be ranged parallel with the bottom of the feed-troughs, or nearly so—that is to say, horizontally instead of obliquely; or they may be vertically placed, and they may be curved or angular, instead of being straight.

It is not necessary that to utilize all the advantages of the scatterer which I have shown a feed-wheel be employed, because, if proper shaking motion is imparted to the hopper and the scatterer properly placed below the discharge-opening of the hopper, the scatterer alone, as well as with the feed-wheel, will insure the proper distribution of nails in the feed-troughs.

The feed-wheel carries outside of the hopper a ratchet-wheel, *d*, to which intermittent rotary motion is imparted by a pawl, *e*, and thereby also to the feed-wheel. This pawl is pivoted to a vibrating link, *f*, which carries a pin, *g*, that extends through a slot in the upper part of a rod, *h*, which rod at its lower portion is attached to the vertically-reciprocating plunger-head or cross head *E* of the nailing-machine. The pin *g* is directly connected to a spring, *i*, of which the lower end is attached to the rod *h*. This spring holds the pin *g* always—that is to say, normally—in the lower end of the slot of the rod *h*, and as the cross-head *E* moves up and down the link *f* will be vibrated in harmony with such motion. When the rod *h* is moved up the pin *g* will be lifted by positive contact with the lower end of the slot, and when the rod *h* moves down the pin *g* will be grasped by the spring and pulled down, and thus be held in the lower part of the slot, unless a nail should clog the feed-wheel and interfere with its freedom of movement, in which case on the downward movement of the rod *h* the resistance of said clogging nail would tend to hold the link *f* up, to which tendency the spring *i* will yield in such case, thereby preventing the breaking of the operating mechanism and giving the attendant warning that such clogging has taken place.

The improvements herein specified are more particularly intended for application to nailing-machines that are driven by steam-power or other powerful mechanism, and have been made with a view of maintaining the machine

in operation when under the impulse of such powerful motor.

It is clear that instead of attaching the spring *i* to the rod *h* in manner shown any equivalent means of providing for the necessary yielding of the connecting mechanism that is to move the feed-wheel may be provided.

The feed-troughs *B* lead the nails that hang suspended by the heads in the slotted parts of said troughs into contact with the lateral conveyer *F*, which conveyer is held on the lower front portion of the machine, and in its normal position presents a notch, *j*, at the end of each slot *a* in the feed-troughs, as shown in Fig. 2. The nail drops into this notch *j* and hangs by its head on the upper face of the conveyer, as indicated in Fig. 1. Now the conveyer receives a lateral movement, which carries the nail, in the direction of the arrow shown in Fig. 2, to a projecting lip, *l*, of the wiper *G*. This lip *l* projects beyond the face of the conveyer and disengages the nail from the notch *j*, throwing it into the lower feed-tube *m*, whence it passes into the jaws of the nailing-machine in suitable manner.

To regulate the movement of the conveyer *F*, I have in Fig. 5 shown it connected by a link, *n*, with a bell-crank, *o*, which is joined to a rod, *p*, that grasps a spring, *H*, one end of said spring being attached to the vertically-reciprocating cross-head *E* above referred to. When the cross-head *E* descends to drive the nails of the nailing-machine it draws the rod *p*, by means of the spring *H*, down, thereby moving the bell-crank and the links *o n* so as to push the conveyer in the direction of the arrow which is shown in Fig. 2; but if a nail should clog the conveyer—that is to say; be in a position to interfere with the free movement thereof—the spring *H* will yield when the cross-head moves down and assume the position shown by dotted lines in Fig. 5, thus allowing the conveyer to remain stationary without interfering with the movement of the machine that drives the nailing apparatus. Hence the interposition of said spring between the moving cross-head and the conveyer saves the machine from breakage in case the conveyer should be clogged.

It is of course clear that instead of applying the spring *H* to the cross-head *E*, that drives the nails of the nailing-machine, it may as well be applied to any other reciprocating or moving portion of the nailing-machine, and the same remark applies to the lower connection of the rod *h*, that actuates the pawl of the feed-wheel.

In Fig. 7 I have shown a modification of the spring which resembles that shown for moving the pawl. In this modification the spring *H* is attached to a pin at the end of the bell-crank *o*, which pin passes through a slot in a rod, *l*, that connects with the reciprocating cross-head *E*. In this case the spring *H* acts on the opposite plan from the spring *i*—namely, it holds the pin of the bell-crank in the upper

end of the slot at all times, whereas the spring *i* holds the pin *g* always in the lower end of the slot, for in the position shown in Fig. 7 the motion of the conveyer in the direction of the arrow which is shown in Fig. 2 is produced by the lifting of the cross-head E, whereas the mechanism shown in Fig. 5 produces the same motion of the conveyer by the descending of the cross-head, either plan being substantially the equivalent of the other.

The wiper G has one end, or, if desired, both ends, rigidly attached to the frame-work of the machine, as indicated at *r* in Fig. 2, and is in this instance shown to be placed in a groove formed in the inner face of the conveyer, so as to be below the upper edge of the conveyer. It need not necessarily be placed in a groove of the conveyer, as it might as well be placed in a rabbet; or it may be placed directly beneath the conveyer, which need not have any thickness below the wiper, the main feature of this part of the improvement being that the wiper is placed below the top of the conveyer. By this feature I am enabled to push the nail off the conveyer by taking hold of it at a point below its head, so that thus no interference with the proper operation of the machine will take place if a nail should happen to have too great a head or too little a head, which interference a machine operated by steam is subjected to if the wiper is on top of the conveyer, as indicated in my above-mentioned patent.

I claim—

1. The combination of the hopper A with the scatterer D and one or more feed-troughs or channels, B, between which and the hopper the scatterer is operative, substantially as described.

2. The scatterer D, having inwardly-projecting wires *b*, attached to a fixed board or frame, in combination with the feed-hopper A and feed-trough B, substantially as described.

3. The combination of the feed-wheel C and its ratchet-wheel *d* with the actuating-pawl *e*, with mechanism for vibrating said pawl, and

with a spring, *i*, which will yield to the resistance of a nail clogging the feed-wheel, substantially as described.

4. The combination of the feed-wheel C and its ratchet-wheel *d* with the pawl *e*, link *f*, having pin *g*, slotted rod *h*, and spring *i*, and with mechanism, substantially as described, for imparting up-and-down motion to said rod, substantially as specified.

5. In a nail-feed machine, the laterally-reciprocating conveyer F, combined by a link and lever, *n* and *o*, with the spring H, and reciprocating bar or mechanism E, substantially as described, and for the purpose specified.

6. In a nailing-machine having an intermittently-rotating feed-wheel, the combination thereof with mechanism for turning it and with a spring, *i*, which is connected to said mechanism and placed between the parts thereof, for permitting the moving mechanism to continue in its operation without moving the wheel when the latter is clogged by a nail, substantially as specified.

7. In a nail-feed machine having a notched nail-conveyer, the combination thereof with mechanism for moving it and with an interposed spring, H, which is placed between the parts of said mechanism, and will allow said mechanism to continue in its motion if the conveyer is clogged, substantially as specified.

8. In a nail-feed machine, the combination of the movable conveyer F with the stationary wiper G, said wiper being placed below the upper face of the conveyer, substantially as described.

9. The movable conveyer F, grooved on its inner face, combined with the wiper G, which is placed in said groove, substantially as described.

This specification of my invention signed by me this 28th day of November, 1881.

FERDINAND ROCHOW.

Witnesses:

WILLY G. E. SCHULTZ,
WILLIAM H. C. SMITH.