

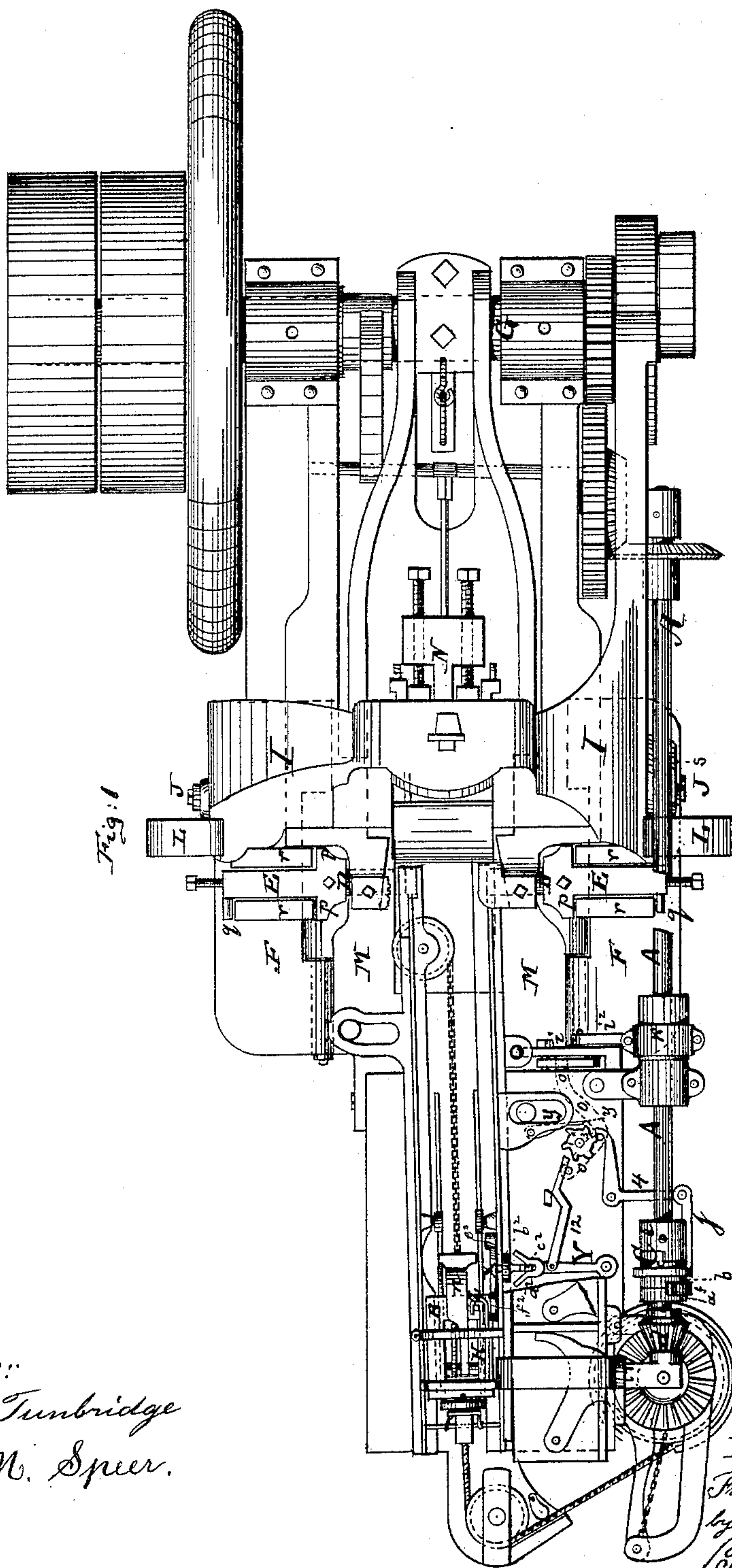
(No Model.)

3 Sheets—Sheet 1.

F. A. GLEASON.
NAIL MACHINE.

No. 327,544.

Patented Oct. 6, 1885.



Witnesses:

John C. Tunbridge
John M. Speer.

Inventor
Franklin A. Gleason
by his attorneys
Priesen & Steele

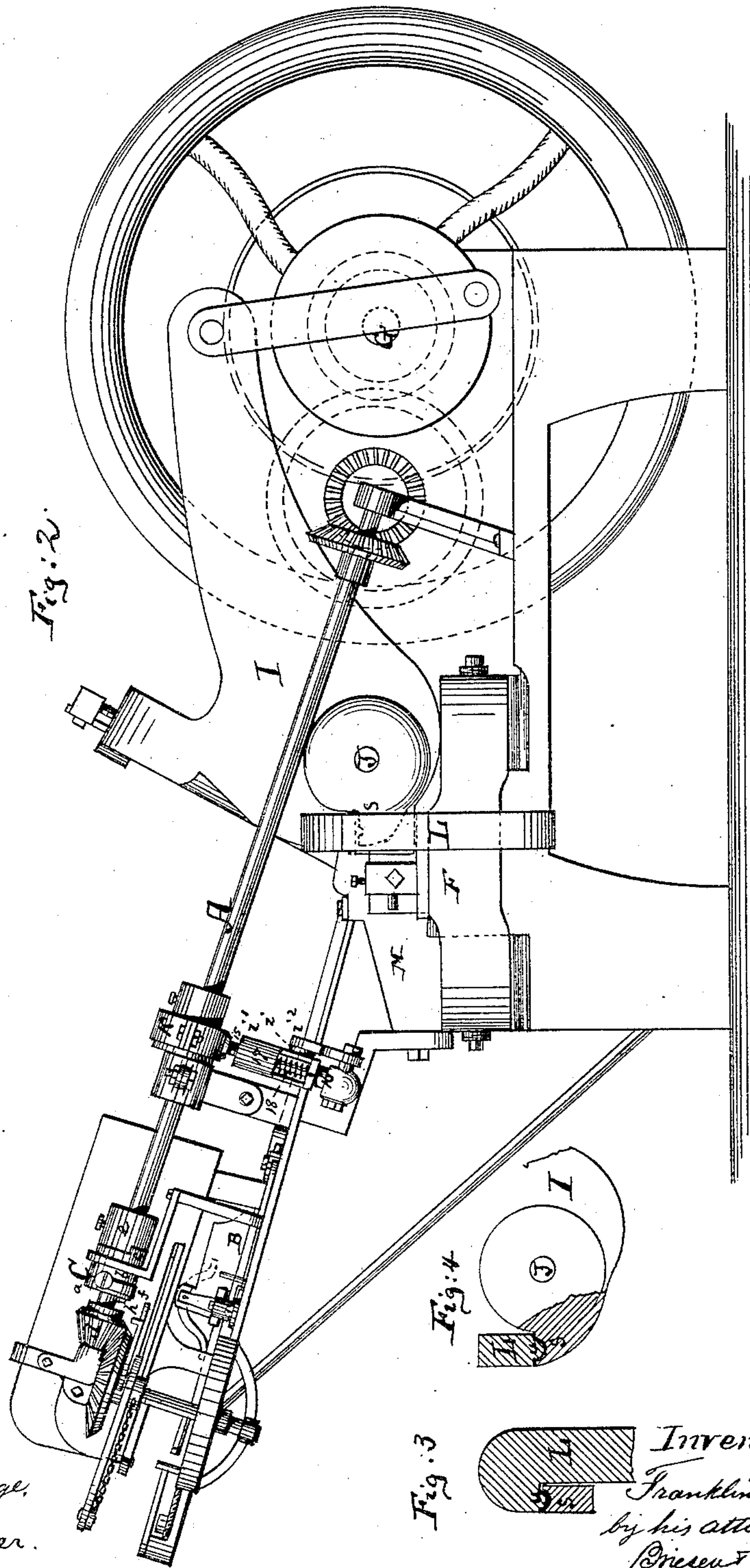
(No Model.)

3 Sheets—Sheet 2.

F. A. GLEASON.
NAIL MACHINE.

No. 327,544.

Patented Oct. 6, 1885.



Witnesses

John C. Tunbridge,
John M. Speer.

Inventor:

Franklin & Gleason
by his attorneys
Pierce & Steele

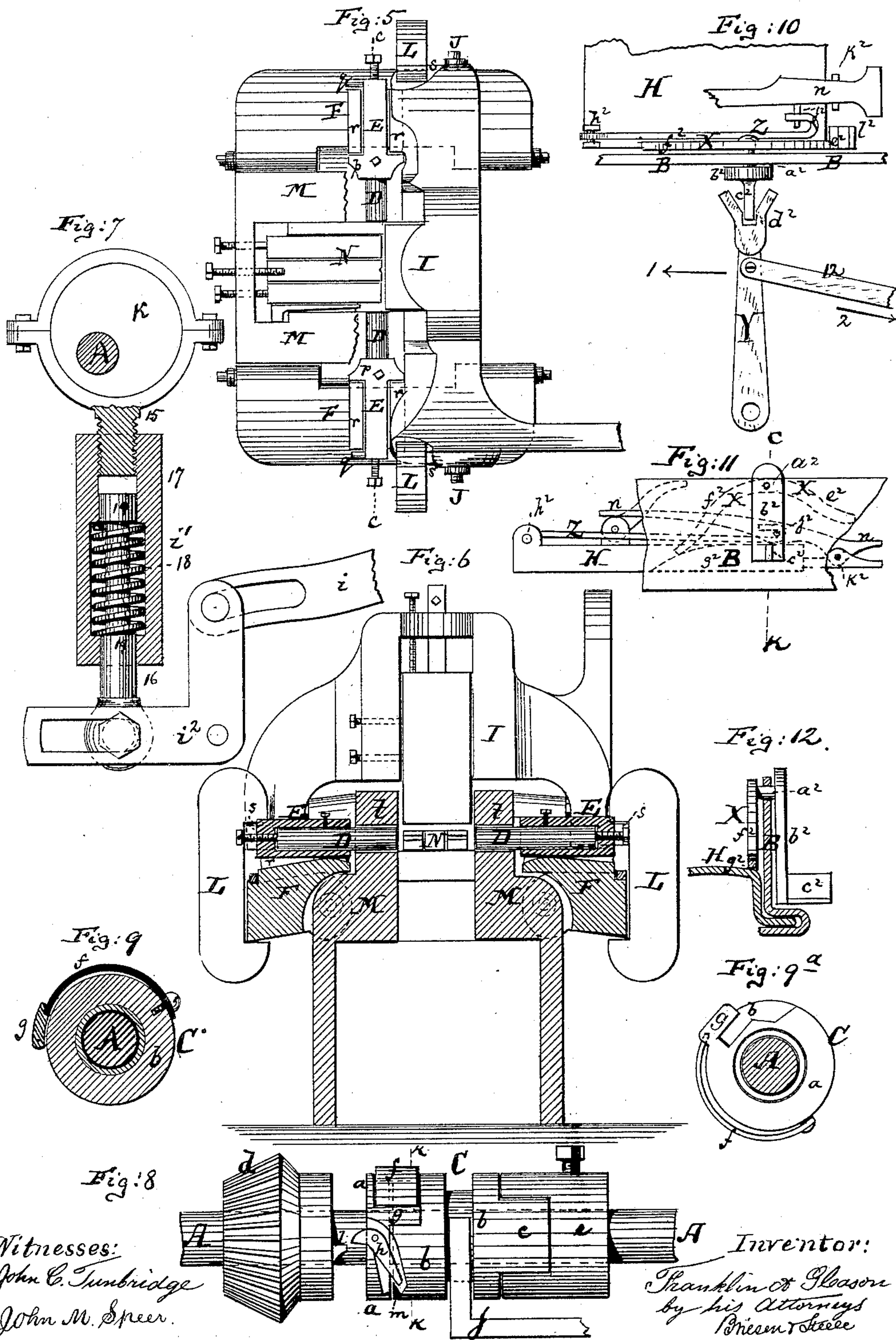
(No Model.)

3 Sheets—Sheet 3.

F. A. GLEASON.
NAIL MACHINE.

No. 327,544.

Patented Oct. 6, 1885.



N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

FRANKLIN A. GLEASON, OF BROOKLYN, NEW YORK.

NAIL-MACHINE.

SPECIFICATION forming part of Letters Patent No. 327,544, dated October 6, 1885.

Application filed October 15, 1884. Serial No. 145,544. (No model.)

To all whom it may concern:

Be it known that I, FRANKLIN A. GLEASON, a resident of Brooklyn, in the county of Kings and State of New York, have invented an Improved Nail-Machine, of which the following is a full, clear, and exact description, reference being made to the accompanying drawings, in which—

Figure 1 is a plan or top view of my improved nail-machine. Fig. 2 is a side elevation of the same. Figs. 3 and 4 are detail views hereinafter more fully referred to. Fig. 5 is a top view of the mechanism for heading the nails. Fig. 6 is a vertical cross-section of the machine on the line *c c*, Fig. 5. Fig. 7 is a detail cross-section of the eccentric and its connections on the longitudinal shaft of the machine. Fig. 8 is a top view, on an enlarged scale, of the clutch on said longitudinal shaft. Fig. 9 is a transverse section on the line *k k*, Fig. 8, and Fig. 9^a a face view of one of the clutch-disks. Fig. 10 is a top view of part of the nipper-slide and its connections. Fig. 11 is a side view of the same, and Fig. 12 a detail cross-section on the line *c k*, Fig. 11.

This invention relates to certain improvements in nail-machines, part of which are improvements on the machine which is described in Letters Patent No. 181,258, which were granted to me August 22, 1876.

The object of the invention is, first, to so arrange the machine that, if parts thereof should become clogged by scraps of iron or other obstructions, the continued operation of the machine will not cause it to become wrenched out of shape or broken.

Another object is to insure a certain connection between the nipper-slide and the wheel, which, when turned by the action of the nipper-slide, will affect the position of the clutch and the movements of the vibrator.

Another object is to impart to the headers a rectilinear instead of a curvilinear motion.

The invention consists, first, in a new construction of clutch, the same having a pivoted pawl, which is hung in a spring-ring forming part of the clutch, as hereinafter described. By this arrangement the clutch can be made inoperative without breaking any parts, if the machine is clogged by obstructions.

The invention consists, secondly, in connecting the eccentric on the longitudinal shaft of

the machine by a yielding connection with the elbow to which it is joined, so that if parts of the machine should be obstructed this yielding connection will prevent breakage.

The invention consists, thirdly, in combining with the nipper-slide a certain lever by which the ratchet-wheel is caused to be turned, which lever is to take the place of the slide 9 9' that is described in Letters Patent No. 181,258, and which insures a definite connection between the nipper-slide and the ratchet-wheel-moving devices in lieu of the uncertain connection described in said patent—that is to say, in the former patent, if the motions of the vibrator were insufficient, the slide 9 9' was liable to fail in making a proper connection with the T-lever 10.

The fourth part of the invention consists in combining one or more horizontally-sliding headers with vibrating heading-levers, and other devices hereinafter described, whereby the headers will receive a rectilinear instead of the curvilinear motion heretofore used in such machines.

I will first describe the clutch mechanism, which constitutes the first part of my invention.

In the drawings, the letter A represents the longitudinal shaft of the machine, which is substantially the same shaft as the shaft A of Patent No. 181,258. This shaft A carries the clutch C, that is moved against the pinion *d* by means of the lever *j*, whenever said lever is moved by the elbow 4, the said elbow being moved at proper intervals by the ratchet-wheel 1 2 3.

The parts thus far enumerated are substantially the same in general arrangement and in object of operation as the parts similarly marked in said Patent No. 181,258; but the clutch C, according to my present invention, is of peculiar construction—that is to say, the body of the clutch is made of two ring-shaped parts, *a* and *b*, (see Fig. 8,) which two rings are united by a spring, *f*, which spring is firmly fastened to the part *b*, and bears against a hook, *g*, on the part *a*. In the part *a* is pivoted the catch or pawl, *h*, which constitutes the engaging projection of the clutch for taking hold of the hook *l* that projects from the loose pinion *d*. Whenever the parts operate normally, the clutch being crowded by means

of the lever or carrier j against the loose pinion d , its pawl h will, engaging with the projection l , cause the pinion d to be revolved, and this pinion will then actuate the plate-carriers in the manner substantially described in my former patent; but if the plate-carriers should be obstructed by some plate being out of position, or by a scrap of iron or otherwise, so that the pinion d cannot possibly be revolved, the parts of the machine will nevertheless not be broken, because in that case the spring f will allow the pawl h to be crowded into the recess of the ring a , within which said pawl is pivoted, causing the tail of the pawl to clear the projection m , against which normally it finds its support, so that now, when the pawl has cleared such projection it will become free to enter into the recess and to be carried out of the way of the projection l , thus preventing the pinion being turned. In other words, the clutch being made in two parts, which are united with sufficient rigidity by the spring f , but yet permitted to turn on one another, the pawl, which is pivoted in one of these parts a , and held stiff by the projection m of the other part normally, will, when the pinion is definitely obstructed, lose its support m and enter the recess in the ring a , so as to prevent the clutch biting the pinion.

The part b of the clutch C has on the side which is farthest away from the part a a projecting tongue, c , which enters a recess in a collar, e , which collar, by a suitable set-screw, is fastened to the shaft A . The tongue c is sufficiently long to leave the clutch C at all times in engagement with the collar e , so that by means of said collar said clutch will always be revolved with the shaft. This arrangement is used in lieu of the feather on the shaft, which is impracticable where the clutch is made of the two rings b and a .

It is evident that instead of having the tongue c on the ring b , it may as well be made to project from the collar e into a recess of the ring b .

I will now describe the second part of my invention, which refers to the connection of the eccentric k on the shaft A with the elbow-lever i^2 .

In the above-mentioned patent, No. 181,258, the elbow-lever i^2 and its connection by the rod i' and eccentric k , is clearly described, and is fully shown in Fig. 2 of the said patent. I will therefore in this specification not reiterate the object of said elbow-lever and of its connection by the rod i with the vibrator B , but will simply state that in the present invention I make the rod or strap i' self-adjusting. It is more fully shown in Fig. 7 of the accompanying drawings. From this figure it will appear that the strap or rod i' is made in two sections—an upper section, 15, which is rigidly attached to the strap which embraces the eccentric k , and a lower section, 16, which is pivotally connected with the elbow i^2 . To the section 15 is attached a box, 17, into which

the section 16 enters, and which box contains a spring, 18, that bears at each end against shoulders within the box, and also at each end against collars 19, that are formed on the section 16, so that whether the strain or obstruction on the vibrator B may tend to shorten the connection between the elbow i^2 and the eccentric k or to lengthen it, in either case the spring 18 will be compressed, and will allow the parts to yield to the obstruction; hence if, by a scrap of iron or other obstruction, the vibrator should become clogged so that it cannot get its full stroke, the connections between the vibrator and the eccentric k would not be wrenched out of shape, nor would the vibrator itself be injured by such an obstruction.

I will now describe the third feature of the present invention, which relates to improvement in mechanism for turning the ratchet-wheel 1 2 3.

As already stated, the difficulty in the former patent, No. 181,258, with the mechanism for so turning the ratchet-wheel that it should set the vibrator in motion, was that the T-shaped piece 10 was not certain at all times to be reached by the plate 9 9' if the side motion of the vibrator should at any time be less than the normal toward the piece 10. In the present construction, in lieu of the pieces 9 and 10 of the old patent, I use a lever, X , which I pivot by a pin, a^2 , to one side of the vibrator B , and which lever on the outer side of the vibrator carries rigidly attached to its pivot an arm, b^2 , having an outwardly-projecting tooth, c^2 . (See Figs. 10, 11, and 12.) This tooth enters a fork, d^2 , which is attached to a lever, Y , that is pivoted to the framing of the machine, said lever being connected to the pusher-bar 12, which is to move the ratchet-wheel 1 2 3. This pusher-bar 12 in the present specification is intended to perform the same function as the pusher-bar 12 that is described in Patent No. 181,258.

The lever X , which is pivoted, as described, to the side of the vibrator, and the form of which is indicated by dotted lines in Fig. 11, has a shorter arm, e^2 , in front and a longer arm, f^2 , at the back. Whenever the nipper-slide H moves backward to get a new plate, or for any other purpose, it brings a cam, g^2 , which it carries under the longer arm f^2 of the lever X , and, lifting the same, tilts the projection b^2 and tooth c^2 so as to move the lever Y in the direction of the arrow 1 in Fig. 10, thereby taking the pusher-bar 12 back off the ratchet-wheel and putting it in position for imparting motion to said ratchet-wheel, which is the position shown in Fig. 1. When, afterward, the nipper-slide moves forward, it is intended that it should lift the short arm e^2 of the lever X . To enable this to be done a lever, Z , is pivoted at h^2 to the nipper-slide, and overhangs a pin, j^2 , that projects from the side of the upper nipper-jaw, n . Whenever the nippers engage a plate, so that the biting end of the jaw n is lowered, the pin h^2 , which is located back of the pivot k^2 of the nippers, will be

raised, and being beneath the lever Z will lift the same, so that during the forward motion of the nipper-slide and its attachments this lifter-lever Z will get under an enlargement, 5 12, of the arm e^2 of the lever X, thereby raising said arm e^2 and tilting the parts b^2 and c^2 , so as to move the lever Y in the direction of the arrow 2, Fig. 10, thereby causing the pusher-bar 12 to turn the ratchet-wheel 1 2 3 sufficiently far to cause it to affect the lever o, which lever o performs its functions as described with reference to the lever o in Letters Patent No. 181,258, and thus set the vibrator in motion. The vibrator, when the nipper-slide has 15 reached its lowermost position, which is its extreme front position—that is to say, when the nail-plate has been cut up into nail-blanks—causes its pawl y (which is the same as the pawl y described in Patent No. 181,258) to turn the ratchet-wheel 1 2 3 still further, so as to cause the said ratchet-wheel to set the clutch in engagement with the pinion d, and at the same time, by acting on the lever o, stop the motion of the vibrator.

25 I will now proceed to the fourth part of the invention, which has reference to the motion that is imparted to the headers, which cause the nail-blanks to be headed.

Heretofore headers in nail-machines have 30 been attached to pivoted arms that carry them in such a way as to cause them to join in the curvilinear motion. Such curvilinear motion, however, is objectionable in the headers, because it throws the head of the nail to one side. The object of this part of the present invention is to impart to the header a horizontal rectilinear motion. For this purpose the headers D D, (see Figs. 5 and 6,) which are steel rods of suitable size, are placed in socket-pieces E E or tubes, which are provided with 40 shoulders p and q (see Fig. 5) or analogous projections. Each socket-piece E is set between two projecting ribs, r r, of the heading-lever F. The upper face of this heading-lever is rounded, as appears in Fig. 6, where it bears against the under side of the socket E.

The driving-shaft G (see Fig. 2) moves the cutter-lever I and the pivot J thereof—that is, the pivot J turns, together with the cutter-lever 50 I, in its appropriate bearings. This pivot J carries a cam or projection, s, (see Fig. 4,) which engages under the upper beak of a double hook, L, the lower beak of which hook bears against the under side of the heading-lever F. (See Fig. 6.) Thus whenever the pivot J is turned so as to lift the projection s, the heading-lever F will be swung up and inward on its own pivot, and will thereby move the header which it carries. If this 55 header were rigidly attached to the heading-lever F, as has heretofore been the case, its motion would be the objectionable curvilinear motion; but by attaching the header to the socket E, which rests loosely on the heading-

lever, and by at the same time guiding the inner end of the header in a perforated portion, 65 t, of the stationary frame M of the machine, the result is that the motion of the header will be transversely horizontal and not curvilinear. Each machine may have only one header or 70 two headers, two being shown in Fig. 6. The nail-blanks that are being headed are held in suitable dies, N.

Figs. 3 and 4 show that the upper beak of the double hook L, where it rests on the cam 75 s, has a ball projection, u, which enters a corresponding ball-socket of the projection s. This allows of the conjoint use of the parts s and L, so that the rotary motion of the cam s will not interfere unduly with the upward 80 motion of the hook L.

I claim—

1. In a nail-machine, the combination of the shaft A with the clutch C and loose pinion d, the clutch C being constructed of the 85 rings a and b, spring f, pivoted pawl h, and supporting projection m, and the pinion d, having tooth l, substantially as described.

2. The clutch C, composed of the rings a b, spring f, and pivoted pawl h, and which has 90 the tongue c on the ring b, in combination with the collar e, having recess to receive said tongue, substantially as described.

3. The combination of the eccentric k with the rod 15, box 17, having internal shoulders, 95 rod 16, having collars 19, spring 18, and elbow i², substantially as and for the purpose herein shown and described.

4. The combination of the vibrator B with the lever X, pivoted thereto, said lever having arm b^2 and tooth c^2 , and with the lever Y, having forked piece d^2 , nipper-slide H, having cam g^2 , nipper-jaw n, having pin j^2 , and lever Z, substantially as and for the purpose 100 herein shown and described.

5. The combination of the pivoted heading-lever F with mechanism, substantially as described, for swinging it on its pivot, said lever having ribs r, and with the socket E, header D, and frame M, having perforated guide portion t, substantially as and for the purpose 105 herein shown and described.

6. The combination of the driving-shaft G, cutter-lever I, and rotary pivot J, having projection s, with the double hook L, header-lever F, socket E, header D, and perforated 110 frame portion t, substantially as herein shown and described.

7. The combination of the pivot J and its cam s, having ball-socket, with the double 115 hook L, having ball projection u, and with the heading-lever F, substantially as herein shown and described.

FRANKLIN A. GLEASON.

Witnesses:

GUSTAV SCHUEPPÉ,
JOHN M. SPEER.