

J. F. HAMMOND.

NAIL PLATE FEEDER.

No. 265,599.

Patented Oct. 10, 1882.

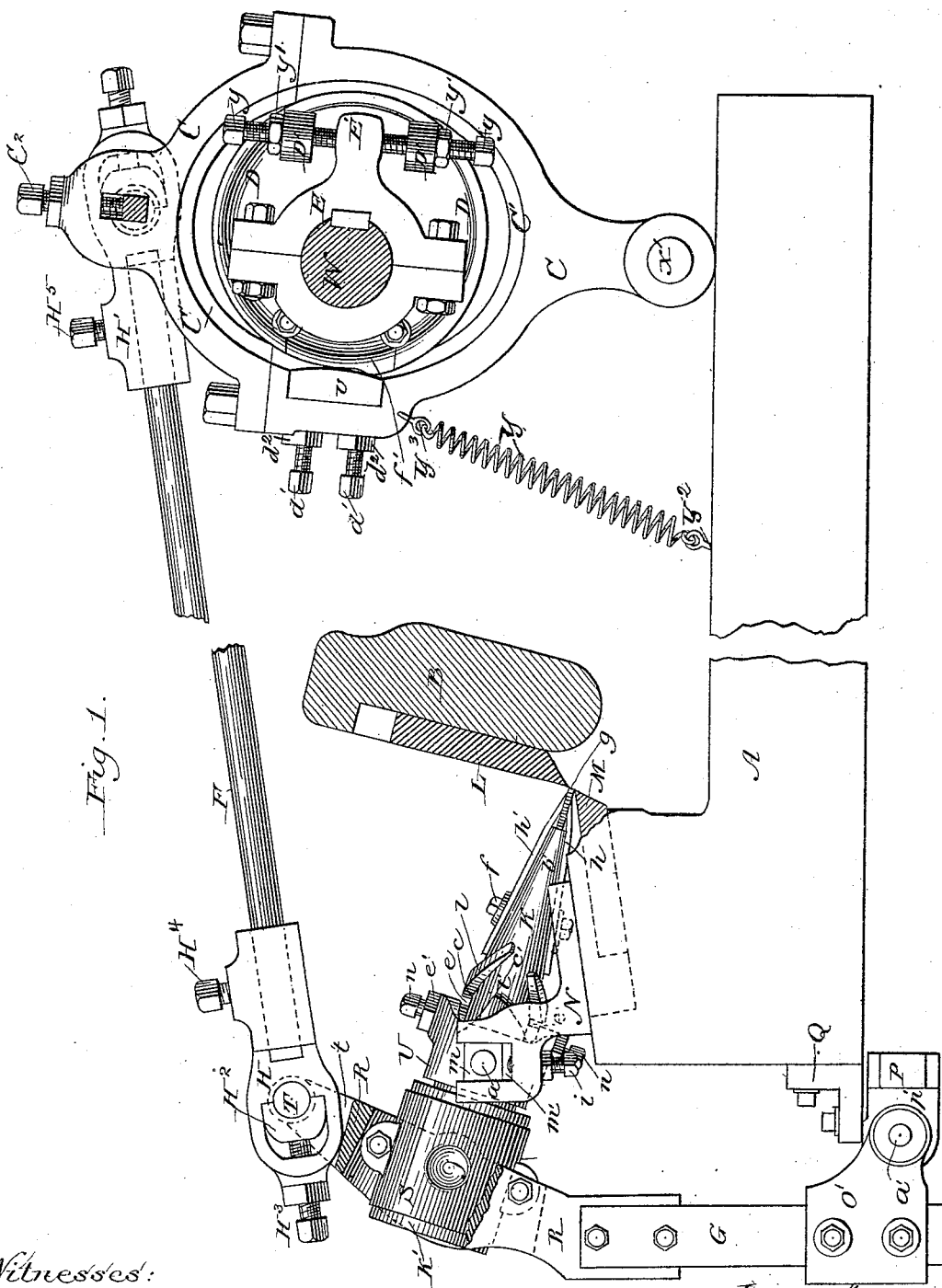


Fig. 1.

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Inventor:

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(No Model.)

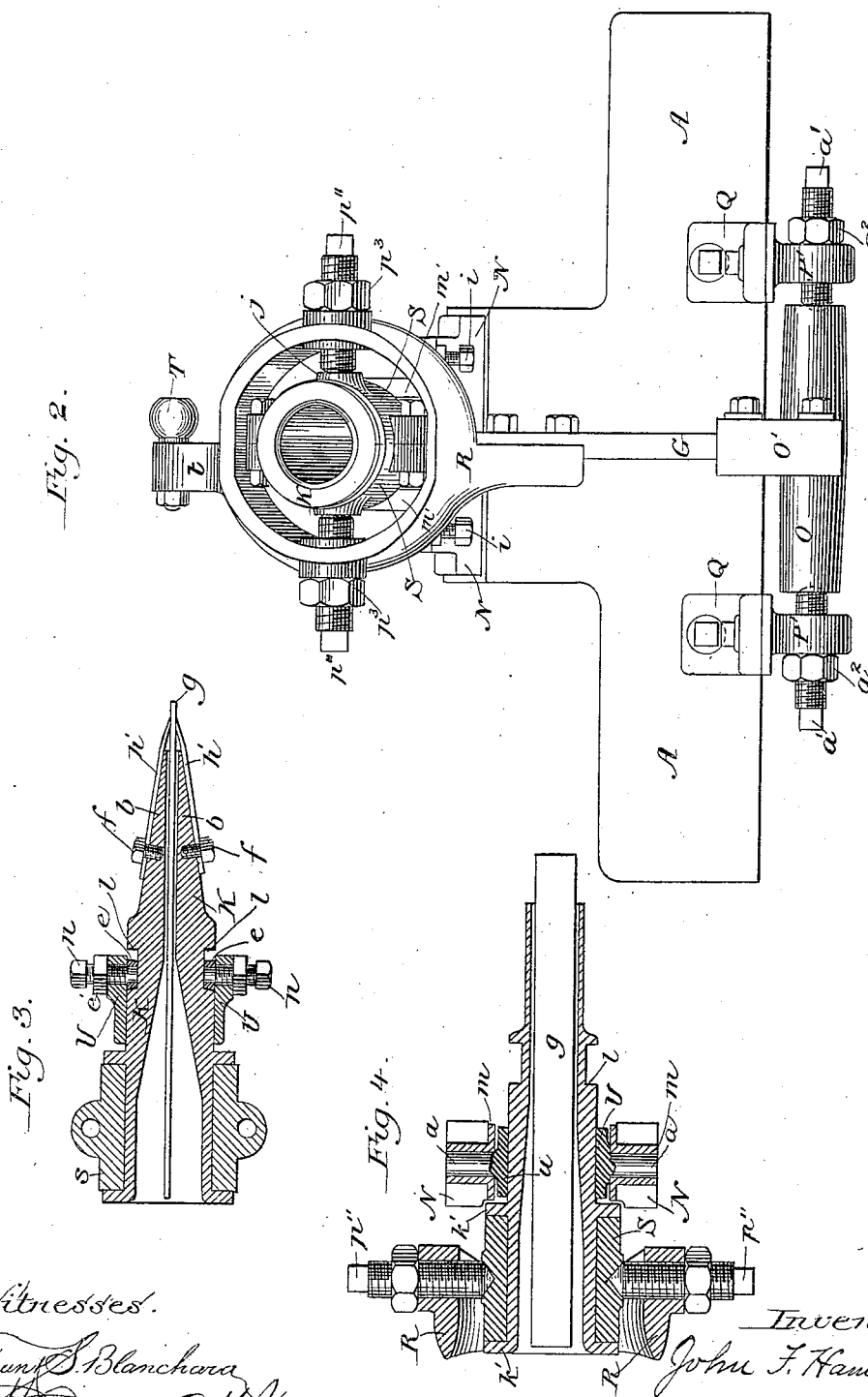
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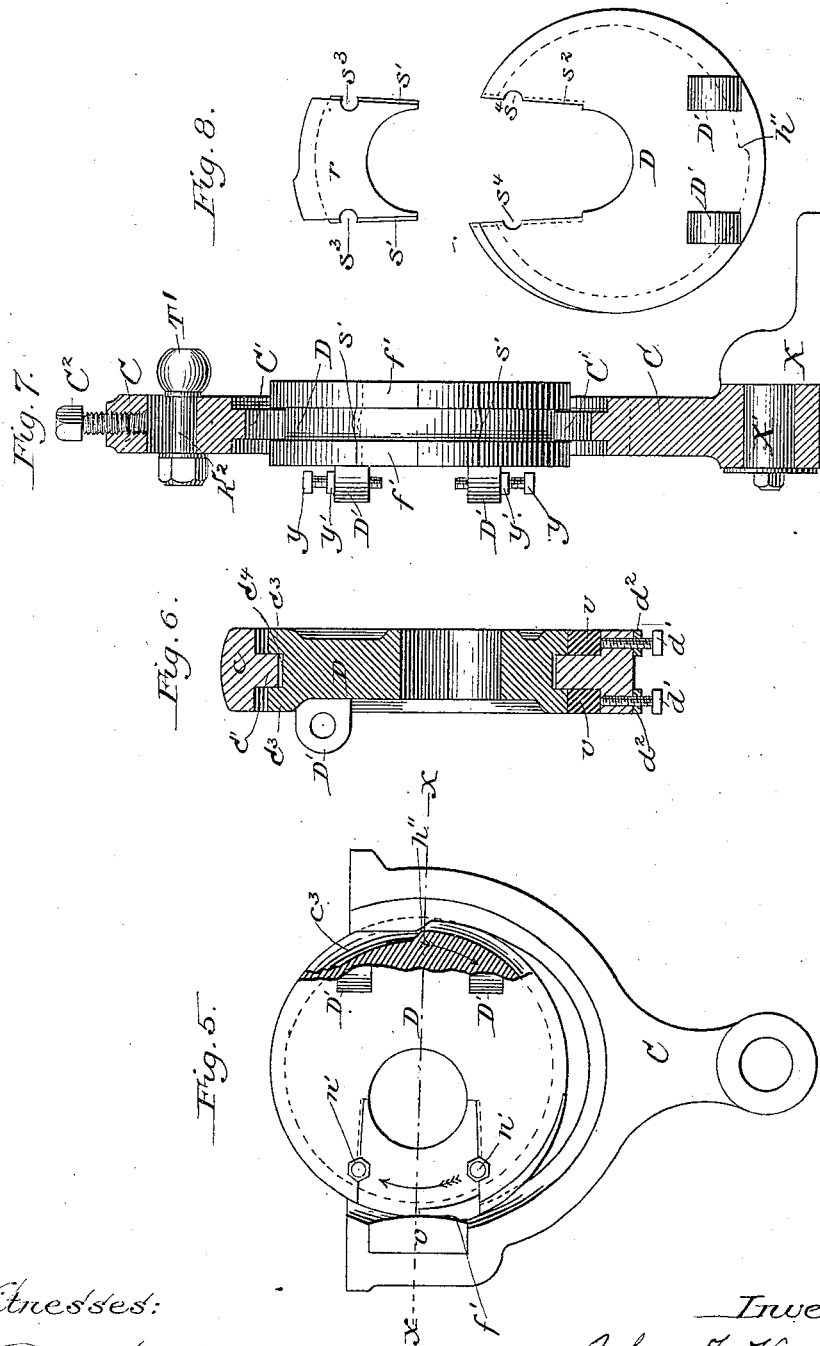
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# UNITED STATES PATENT OFFICE.

JOHN F. HAMMOND, OF OMAHA, NEBRASKA.

## NAIL-PLATE FEEDER.

SPECIFICATION forming part of Letters Patent No. 265,599, dated October 10, 1882.

Application filed February 25, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN F. HAMMOND, a citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Nail-Plate Feeders, of which the following is a specification.

My improvements relate in particular to that class of apparatus for feeding nail plates or blanks to the nail-cutting knives wherein both a reciprocating and a rotary motion is imparted to the plate or blank, that the opposite sides of the same may be successively exposed to the action of the cutters.

In machines of this character as heretofore constructed it has been customary to provide what is commonly designated the "plate-holding barrel," by which the plate at the proper time is turned over, with supplemental feeding mechanism for gripping the plate and regularly advancing the same toward the cutters a space sufficient to form the next nail as the preceding nail was cut therefrom.

The principal objects of my present invention are to improve the means for rotating the plate-holding barrel, to dispense with the supplemental mechanism for gripping and feeding forward the plate, and to substitute for the same mechanism by which, while the plate is held firmly in the bite of the cutters, the barrel will be caused to recede suddenly a short distance in order to automatically expose sufficient of the plate to form the succeeding nail. These objects of my invention I best accomplish by the apparatus hereinafter fully described and particularly claimed, and illustrated in the accompanying drawings, forming part of this specification.

Figure 1 is a side view of my improved nail-plate feeder, portions of the same being shown broken away and portions being shown in section for better illustration. Fig. 2 is a front end view of the machine. Fig. 3 is a vertical sectional view of the plate-holding barrel and its fittings, and Fig. 4 is a horizontal sectional view of the same. Fig. 5 is a side view of the eccentric cam and its yoke, a portion of the former being broken away and the top of the latter being omitted for better illustration. Fig. 6 is a cross-sectional view of the cam and its yoke on lines *x x* of Fig. 5. Fig. 7 is a

vertical sectional view of the yoke, the cam being shown in elevation. Fig. 8 is a side view of the eccentric cam, the detachable portion being shown lifted out of its seat.

Like letters of reference indicate like parts in the several figures of the drawings.

A designates the bed of an ordinary nail-plate machine, upon which is held the cutting-knife M; and B represents the usual form of cutter-bar, carrying the knife L. To the front end of this bed A are attached brackets Q, having suitable lugs, P', bolted thereto, through which pass the center screws *a'*, provided with the jam-nuts *a*<sup>2</sup>. On these center screws, as clearly shown in Fig. 2, is pivoted the cross-head O, carrying the frame O', in which is securely held the bar G, to which is bolted the yoke R, by which the plate-holding barrel is carried.

To a suitable standard, *t*, upon the top of the yoke R, is bolted the chilled ball T, upon which is held the clamp H, having a movable section, H<sup>2</sup>, controlled by the set-screws H<sup>3</sup>. This clamp is also provided with a socket, within which, by means of the set-screw H<sup>4</sup>, is held the end of the rod F, by which a back-and-forth motion is imparted to the barrel from the driving mechanism in a manner to be hereinafter described. Through suitable apertures in the sides of the yoke R pass the center screws *p''*, provided with the jam-nuts *p*<sup>3</sup>. Upon these center screws is pivotally hung the box-bearing S, provided with suitable pivot-seats, and encircling and supporting between the flanges K' the long irregular casting designated the "barrel." Around this barrel K is fitted in a manner free to slide thereon the sleeve or collar U, provided at its top and bottom with apertures, through which pass set-screws *n*, having the jam-nuts *e'*, and carrying upon their ends, within the collar U, the friction-rollers *e*, the purpose of which will hereinafter appear. The collar U is provided on its sides with the trunnions *a*, held in suitable bearings, *m*, which move in the slots or ways *m'*, formed in the tops of the standards N, rising from the bed of the machine. From this construction it will be seen that the collar U is incapable of moving longitudinally, but is susceptible of a vibratory movement upon its trunnions, and also of a vertical movement in the slots or ways *m'*, which is regulated

by the set-screws *i*, passing through the standards *N* to the bottoms of such slots.

Upon the surface of the barrel *K* are a series of inclined planes or cam-ribs, *l* and *l'*, each extending obliquely a portion of the distance around the barrel. The function of these ribs is to impart to the barrel the rotary motion necessary to present successively the opposite faces of the nail-plate to the action of the cutting-knives, and this they accomplish as the barrel is drawn back through the collar *U*, guarded against longitudinal movement, as described, by working against the friction-rollers *e*, which are mounted loosely upon the set screws *n n*, affixed to said collar.

To the upper surface of the barrel *K* are attached, by means of the set-screws *f*, two spring-plates, *h' h'*, which project beyond the end *b'* of the barrel and clamp and hold this end of the nail-plate *g*.

It will readily be seen from the construction of the parts as thus far indicated that if a backward movement is imparted to the rod *F*, and consequently to the yoke *R* and its connections, the barrel *K* will be allowed for a short distance an initial straight backward movement until the bearings *m* in their downward course strike the adjusting-screws *i*. As the movement of the rod *F* continues the barrel is tipped or rocked on its trunnions *a*, so as to cause the end *b'* to be lifted such distance as to permit the nail-plate to be turned without interference with the bed-knife *M*, and as the barrel *K* continues to be drawn through the collar *U* the cam-ribs *l* strike the friction-wheels *e*, and the barrel is thus rotated. The cam-ribs *l* and *l'* are so placed upon the barrel with reference to each other that as the barrel is drawn backward two of the ribs, *l*, work against the friction-rollers and produce a quarter of a revolution of the plate, and when the motion is reversed and the barrel is moved forward the remaining ribs, *l'*, work against the friction-rollers and complete the half-revolution of the barrel necessary to present the opposite side of the plate to the action of the cutting-knives.

My object in giving an initial straight backward movement to the barrel is to permit the same to be slipped back upon the nail plate while the latter is still held firmly in the bite of the cutters a sufficient distance to expose enough of the plate to form the succeeding nail. As the nail-plate is held in the bite of the cutters but a very short time, it is obviously necessary that this initial backward movement of the barrel should be a very rapid one.

I shall now proceed to describe at length the mechanism by which I impart the peculiar back-and-forth movement to the plate holding barrel.

The rod *F* is secured by the screw *H*<sup>5</sup> in the seat of the clamp *H'*, similar in construction to the clamp *H*, which is fastened to the chilled ball *T'*, held in a slot at the top of the cam-yoke *C* by the spindle *K*<sup>2</sup>, the movement of which is controlled by the set-screw *C*<sup>2</sup>.

The cam-yoke *C* is journaled in a manner free to vibrate upon the bearing *X'*, held upon the standard *X*, bolted to the bed of the machine, and is made of sections suitably bolted together. Around its inner surface this yoke is provided with a raised guide, *C'*, which works in a corresponding slot, *C*<sup>4</sup>, in the periphery of the eccentric *D*, and upon one of its sides are placed in suitable seats in the yoke two steel plates or shoes, *v*, one on each side of the raised guide *C'*. These plates *v* are rendered adjustable by means of the set-screws *d'*, two for each plate, which pass through the yoke and are furnished with jam-nuts *d*<sup>2</sup>.

Within the cam-yoke *C* works the eccentric cam *D*, loosely journaled upon the main shaft *W*. This cam *D* is provided upon its periphery with the flanges *C*<sup>3</sup>, forming the groove *C*<sup>4</sup>, and each of these peripheral flanges *C*<sup>3</sup> has an enlargement or cam, *f'*, preferably steel shod, rising abruptly from its rim. Upon the side of the cam *D* opposite the enlargements or cams *f'* a depression, *h''*, is formed in the groove *C*<sup>4</sup>, so that when the steel plates or shoes *v* are struck by the cams *f'* as the eccentric cam *D* revolves, and the yoke *C* is thus forced suddenly to the left, the projecting portion *e* of the guide *C'* can move freely into the depression *h''*. From this peculiar construction of the eccentric cam it will be readily seen that a portion of the movement of the yoke, while acted on by the cams *f'*, is very rapid, while the remainder is much slower, being such as would be imparted by an ordinary eccentric.

In order that the cam *D* may be readily placed in position on or removed from the main shaft, it is provided with a detachable section, *r*, having upon its sides tongues *s'*, adapted to fit in corresponding grooves in the body of the eccentric cam. To hold this section *r* securely in position, it is furnished with the axial grooves *s*<sup>3</sup>, which, with the companion grooves *s*<sup>4</sup> in the eccentric cam, receive the retaining-key bolts *w'*. Upon one of its sides the eccentric cam is provided with two lugs, *D'*, having screw-seats to retain the adjusting-screws *y y*, carrying the jam-nuts *y'*.

As already stated, the eccentric cam *D* is itself journaled loosely upon the main shaft, but it receives motion therefrom through the medium of the collar *E*, formed in sections, securely bolted together, and keyed firmly to the shaft. This collar *E* is provided with a projecting lug or arm, *E'*, which lies between the lugs *D'*, and is connected rigidly thereto by means of the adjusting-screws *y y*. This main shaft *W* also drives the cutting mechanism, and it is apparent that by means of the set-screws *y y* and the collar *E* the movement of the eccentric cam with relation to the action of the cutters can be accurately adjusted. The necessity for such adjustment is obvious when it is remembered that the quick initial backward motion given to the plate-carrying barrel must occur at the very instant the plate is in the bite of the cutting-knives.

In order to assist the cam-yoke in its forward

movement, and to relieve the same to some extent from the shock occasioned by the striking of the cams or enlargements  $f'$  against the plates or shoes  $v$ , a strong spring,  $Y$ , is provided, one end of the same being attached to an eye,  $Y^3$ , in the bed of the machine, and the other end being held by the eye  $Y^2$ , fastened to the yoke.

A nail-plate feeder of the above-described improved construction, while simple, I found in practice to be accurate, durable, and effective.

I am aware that it is not new, broadly, to feed the nail-plate by receding the holding-barrel while the plate is yet retained in the bite of the knives; also, that it is not new to impart to the plate-holding barrel its entire backward movement by a single operating-rod connected with the main shaft; but,

Having thus described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. In a nail-plate feeder, the combination, with the main driving-shaft, and with the cutting-knives, of the pivoted yoke and the plate-holding barrel sustained thereby, a connecting-rod to impart to said yoke and barrel their entire backward movement, and adjustable eccentric mechanism, substantially as described, whereby the relative action of the cutting-knives and of the barrel in feeding the nail-plate and in cutting the same may be maintained, substantially as set forth.

2. The combination, with the cutting-knives, and with the main driving-shaft, of an eccentric mounted thereon, a pivoted yoke to encompass said eccentric, a connecting-rod, a pivoted yoke, a plate-holding barrel sustained by said yoke, and an encircling collar provided with means to engage and rotate the barrel as the same is reciprocated, substantially as set forth.

3. The combination, with the plate-holding barrel having inclined ribs, and a journaled collar provided with means to engage therewith and rotate the barrel, of a pivoted yoke to sustain said barrel, and mechanism, substantially as described, to rock the yoke, substantially as set forth.

4. The combination, with the plate-holding barrel  $K$ , provided with the cam-ribs, and the collar  $U$ , carrying set-screws and provided with trunnions, of the standards  $N$ , the rocking

yoke  $R$ , connecting-rod  $F$ , and eccentric mechanism for imparting motion to said rod, substantially as described.

5. The combination, with the barrel-supporting collar  $U$ , having trunnions thereon, of the slotted standards  $N$ , having mechanism for adjusting the vertical movement of said collar, substantially as described.

6. The combination, with the barrel  $K$ , having inclined or cam-ribs  $l$ , of the collar  $U$ , having friction-rollers  $e$  and trunnion-bearings, the slotted standards  $N$ , the sleeve, and the rocking yoke  $R$ , substantially as described.

7. The combination, with standards  $N$  and with the collar  $U$ , mounted on trunnions therein, of the plate-holding barrel  $K$ , having cam-ribs, the sleeve, the yoke  $R$ , carrying center screws  $p''$ , the bar  $G$ , and the rocking frame  $O$ , substantially as described.

8. In a nail-plate feeder, the combination, with the main driving-shaft, of a fixed collar,  $E$ , an eccentric cam journaled loosely on said shaft, and a pivoted yoke to encompass the cam, said yoke having adjustable shoes or plates set therein, substantially as set forth.

9. The combination, with the main shaft, of the fixed collar, the eccentric loosely journaled on said shaft and provided with adjusting mechanism, the eccentric yoke, the plate-holding barrel, and mechanism for communicating motion from the yoke to the barrel, substantially as described.

10. The combination, with the main shaft, of the fixed clamp  $E$ , the eccentric  $D$ , having adjusting mechanism, and having an enlarged portion,  $f'$ , the yoke  $C$ , carrying shoes  $v$ , the barrel  $K$ , and connecting mechanism, substantially as described.

11. In a nail-plate feeder, the eccentric  $D$ , formed with a separable section,  $r$ , said eccentric and section being provided respectively with the tongues and grooves, and with key-slots to receive the bolts  $n'$ , substantially as described.

12. In a nail-plate feeder, the combination, with the eccentric  $D$ , having the enlargements  $f'$ , and the yoke  $C$ , provided with the shoes  $v$ , of the spring  $Y$ , substantially as described.

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Witnesses:

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