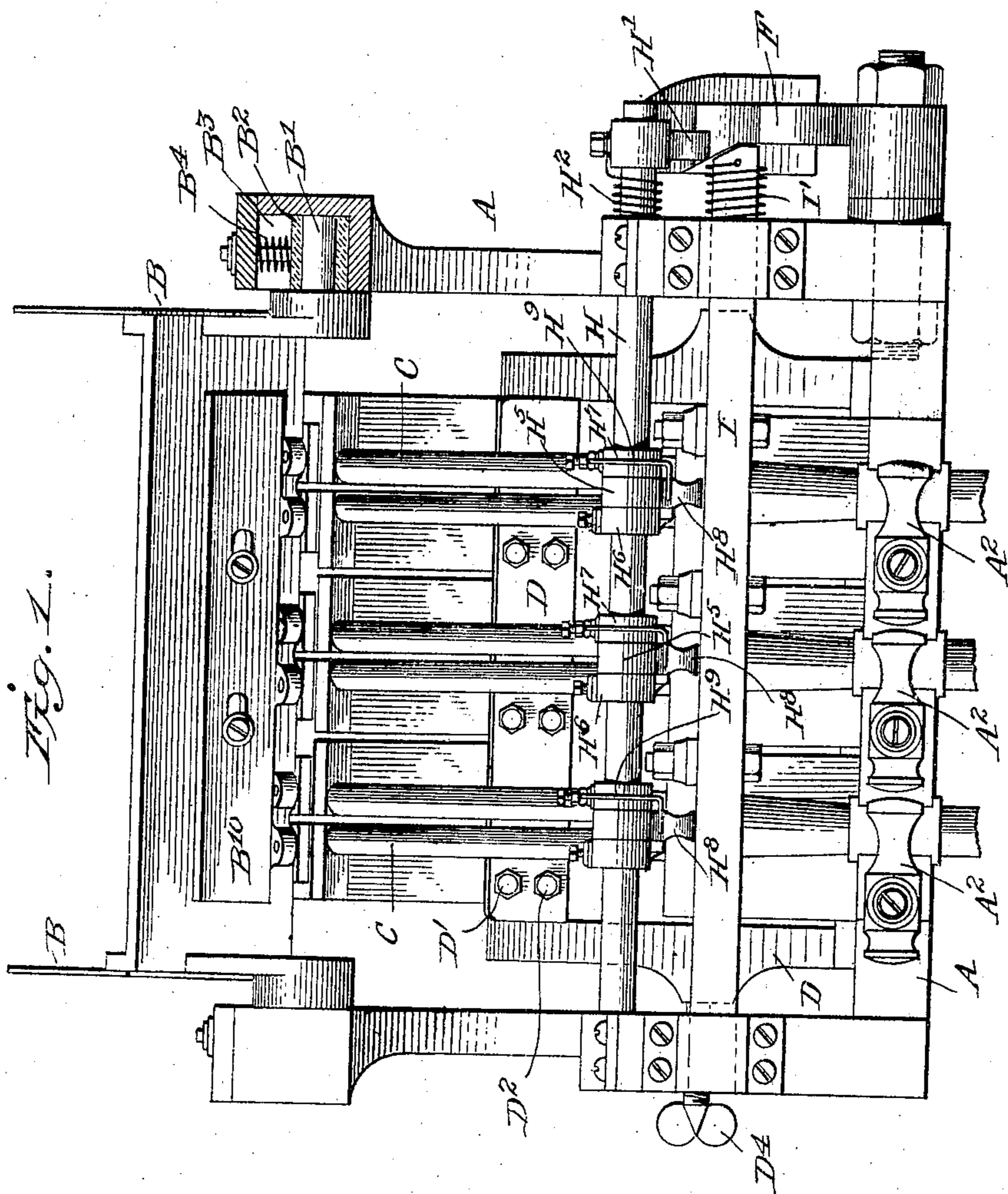


No. 844,463.

PATENTED FEB. 19, 1907.

G. D. PARKER.
NAIL FEEDING APPARATUS.
APPLICATION FILED MAR. 8, 1906.

3 SHEETS—SHEET 1.



Witnesses
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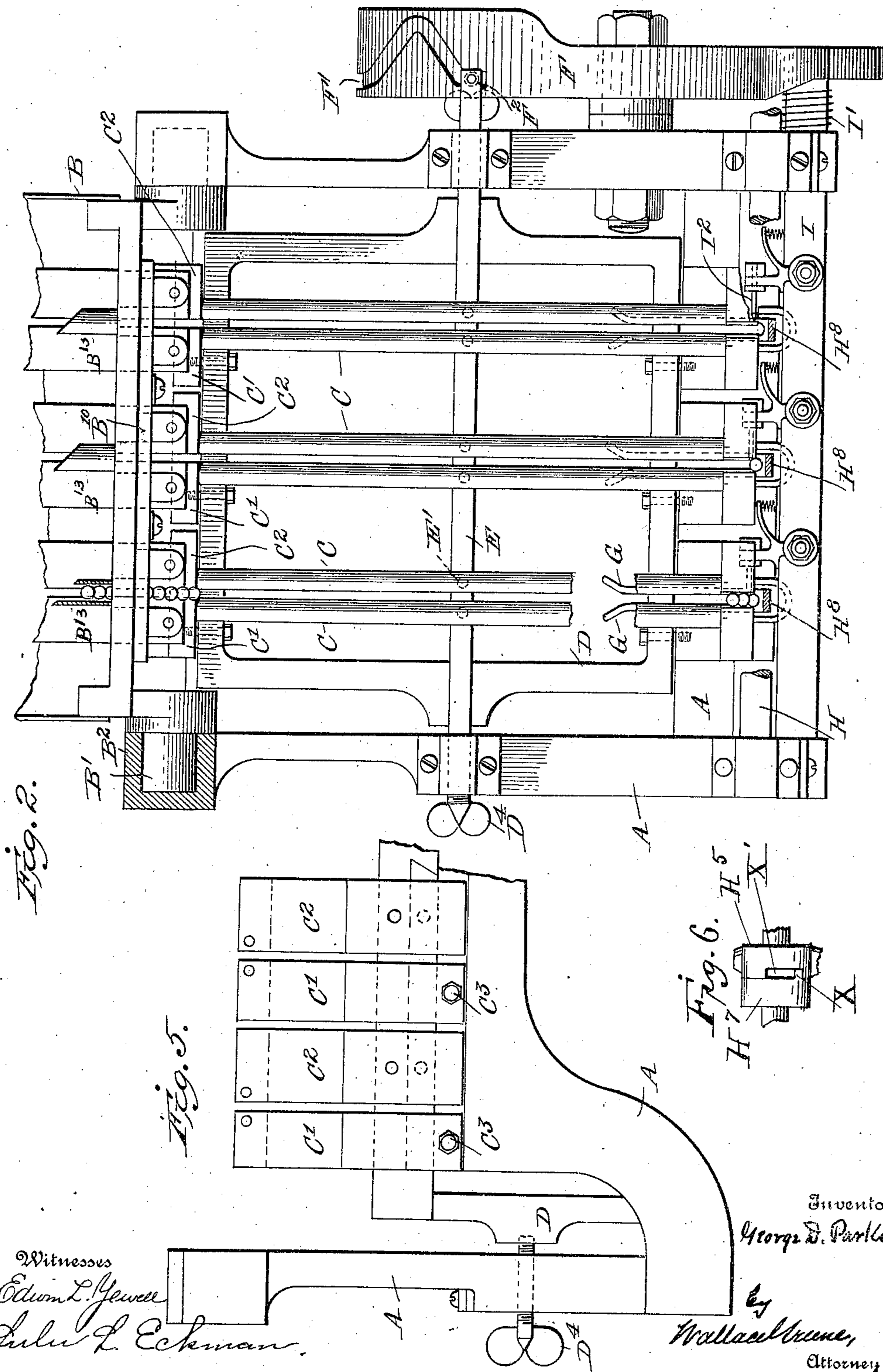
By
Wallace Greene,
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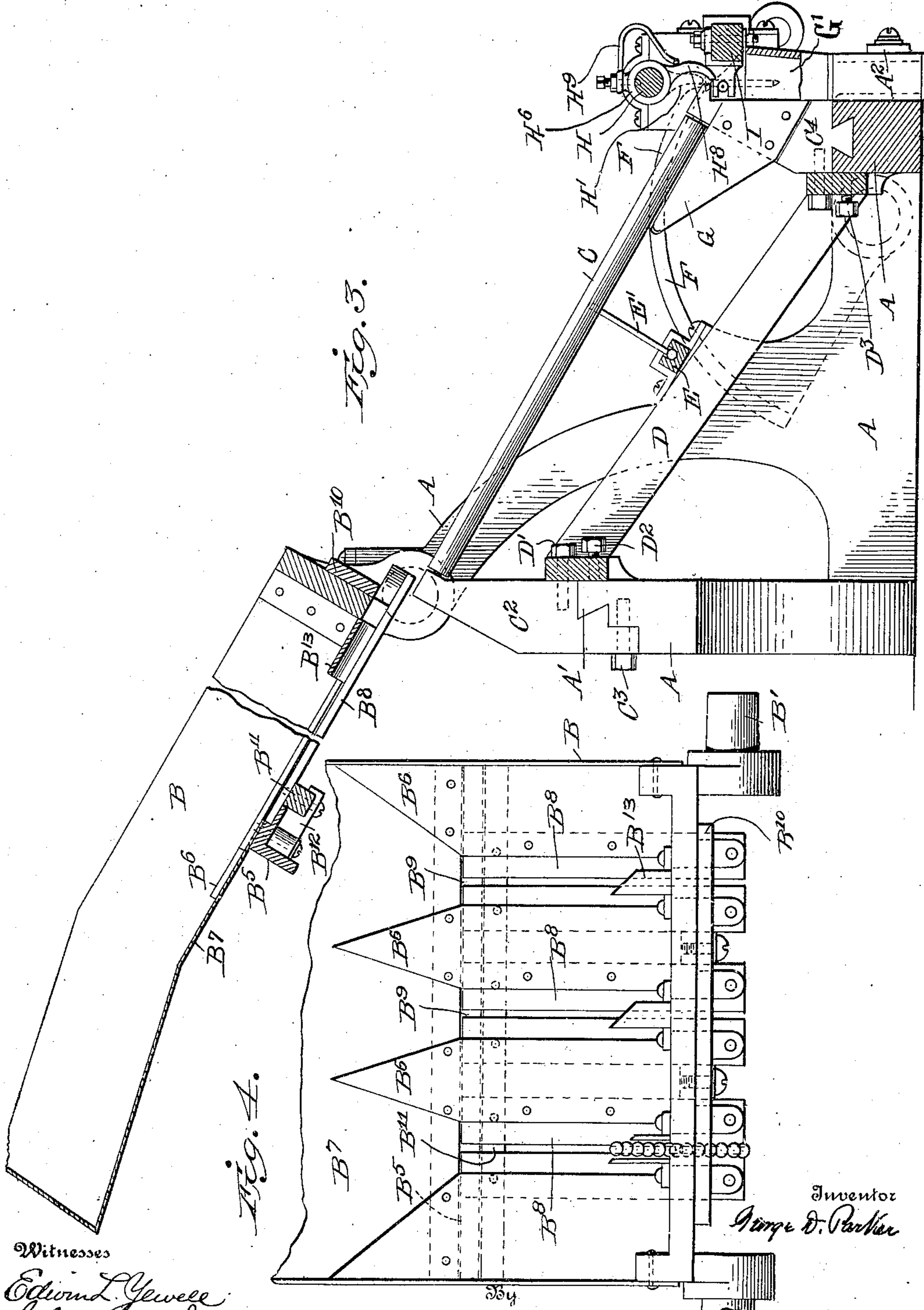


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3 SHEETS—SHEET 3.



Witnesses

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GEORGE D. PARKER, OF RIVERSIDE, CALIFORNIA.

NAIL-FEEDING APPARATUS.

No. 844,463.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed March 8, 1905. Serial No. 248,990.

To all whom it may concern:

Be it known that I, GEORGE D. PARKER, a citizen of the United States, residing at Riverside, in the county of Riverside and State of California, have invented new and useful Improvements in Nail-Feeding Apparatus, of which the following is a specification.

This invention relates to apparatus for feeding nails to box-nailing or box-making machines; and its general object is to provide for supplying to such machines such nails as may be needed, whatever the size, and at one or more points, as may be desired.

The nails are placed in bulk in a hopper, and arranging themselves in a file in suitable slots in the hopper-bottom, where they are suspended by their heads, they pass out of the hopper and down inclined races formed by rounded rocking bars to chutes which guide them to points where they are to be used.

In the accompanying drawings, Figure 1 is a front elevation of the apparatus. Fig. 2 is a plan view of the same parts. Fig. 3 is a front-to-rear vertical section. Fig. 4 is a plan view of a part of the hopper. Fig. 5 is a partial rear elevation, many parts of the apparatus being omitted. Fig. 6 is a detail view of certain collars hereinafter mentioned.

In the views, A represents a frame supporting other parts of the apparatus, and B is a hopper pivoted to the rear and higher portion of the frame by short studs B', working in bearings B², which are yieldingly held down in recesses B³ in the frame A by springs B⁴. It may be rocked in a vertical plane by any suitable means, such movement and means being common and forming no part of my invention. Below the middle of the hopper is a transverse angle-iron B⁵, and to this are fixed the pointed rear ends of widely-separated strips B⁶, of considerable thickness, which overlap and rest upon the bottom B⁷ of the rear portion of the hopper and which serve to turn the nails into parallel relation with the strips. Immediately beneath the strips are other strips B⁸, which are parallel to those first mentioned and are separated only so far as to form a slot or race B⁹ for the bodies of the nails, which are thus suspended by their heads in the races in the usual way. The forward ends of alternate strips are connected to a longitudinally-adjustable member or bar B¹⁰ on the outer face of the front member of the hopper, and the rear ends of the same strips are attached to a trans-

versely-sliding bar B¹¹, which is adjustably held by clamps B¹², connected to the angle-bar B⁵. The remaining or alternating strips B⁸ are fixed to the corresponding strips B⁶, beneath which they lie, and obviously by adjusting the bars B¹⁰ B¹¹ the width of the races may be varied at will.

The rear end of the hopper is bent downward at a small angle with the remainder, as shown, to the end that the mass of nails which moves to the rear of the hopper as the latter rocks downward may move forward less early when the hopper rises, and thus afford more time for nails which have fallen into the slots to adjust themselves and move forward before the mass falls upon them. Near the front side of the hopper each slot is covered by a hood B¹³, which protects a certain number of nails in the slot and prevents their being carried back by the superposed mass of nails when this mass moves rearward and also allows them to advance freely at other times.

The lower side of the front member of the hopper is cut away to form a continuation of the channel under the hood, so that the nails may pass out of the hopper in advancing in the races. Each hood is cut off obliquely at its rear end, so that the nails striking it may tend to assume such position that they readily enter the slots. As the nails move forward and before they have left the races formed by the strips their downwardly-projecting bodies have entered the upper ends of downwardly-inclined races formed by parallel bars C and their supports. The upper ends of these bars are revolvably supported in blocks C' C², the blocks C' being permanently fixed to the frame A by screws C³ and the alternate blocks C² being attached to a laterally-adjustable inclined frame D by means of screws D' or other suitable devices. The frame A is provided with an overhanging part A', beneath which engages a corresponding portion of each block C², which may thus be adjusted along the frame and may at will be rigidly fixed by a set-screw D². The lower ends of the bars C are similarly supported by blocks C⁴, engaging in dovetail slots in the front member of the frame A, the blocks corresponding to the blocks C² above being locked in any desired adjustment by set-screws D³. The set-screws D² D³ being loosened, the frame D and the alternate blocks secured thereto may be moved bodily by means of the wing-bolts D⁴, working in the

frame A, and thus the races formed by the bars are varied in width according to the size of the nails to be used in any given case.

Beneath the central portion of the bars C is a transverse bar E, sliding in ways on the frame D. Rigid arms E', projecting from the bars C, respectively, have rounded ends engaging in sockets in the bar E, and thus reciprocation of the latter bar rocks all the bars C back and forth, thereby making the advance of the nails practically certain and uniform. The reciprocation of the bar E is caused by a cam F, itself rocked back and forth by means not shown and provided with a sinuous groove F', in which travels a roller F², carried upon the end of the bar E. The bars C are shown as cylindrical; but clearly this is not indispensable. The blocks which support the ends of the bars C contrary to the usual practice are supported wholly from below, the supporting-blocks forming continuations of the races, and there being nothing above the plane of the races to prevent loose nails falling upon the bars automatically pass off and fall out of the way without in any way calling for attention. As the nails approach the lower ends of these races they pass between guide-plates G, which insure their lying in the same vertical plane. At the lower ends of the races, respectively, are upwardly-open chutes G', having their rear walls cut away so that the pendent nails may enter them freely. These chutes are removably held in the frame A by turn-buttons A², so that they may be readily removed for freeing them from obstructions or for other purposes. Above the chutes is a transverse rock-shaft H, which is rocked rearward by the forward movement of the cam F, already mentioned, the cam striking an arm H', projecting from the shaft, and a spring H² restoring the shaft to normal position as soon as the opposite movement of the cam permits. This shaft bears over each chute a loose collar H⁵, lying between two fast collars H⁶ H⁷, one of which bears a projection X, adapted to engage in a recess X' in the loose collar, and thus rotate the latter when the shaft rocks in one direction, but not when it rocks in the contrary direction. The loose collar bears an arm H⁸ normally in position to prevent the escape of nails from the corresponding race; but this arm is swung forward when the shaft rocks in the proper direction and far enough to permit a nail to escape from the race and fall in the chute. A spring H⁹ resists this movement and restores the arm to position as soon as the projection on the fixed collar permits and also allows the arm to swing forward at any other time should such movement be desired for removing a faulty nail or for other reasons. To insure releasing one nail from the race without allowing the whole file of nails in the race to advance into position to

resist the return of the arm to normal position, I provide a bar I, sliding in ways upon the frame A and thrown in one direction by a spring I' and in the contrary direction by the cam F, which is provided with a suitable working face upon its side. The bar bears pointed fingers I², each in position to pass between the first nail and the second in the corresponding race at the proper time, and thus positively move the first nail forward while holding all the rest back until the first has dropped down the chute and the arm H⁸ has returned under the action of the spring H⁹.

It may be observed that because nails are sometimes burred or otherwise imperfect and for certain work are often coated with material intended to cause them to adhere more tenaciously to the wood in which they are driven they often fail to feed with uniformity and certainty in simple gravity-races, thereby causing annoyance in the operation of the machine and imperfections in the work.

What I claim is—

1. The combination with a rocking hopper having nail-races in the forward portion of its bottom, of hoods cut obliquely at their rear ends and covering the forward portions of said races, respectively.

2. The combination with a main frame provided with suitable ways and having sets of race-bar bearing-blocks independently and detachably fixed thereto, of corresponding sets of similar blocks alternating with those of the first sets and slidable in said ways, a rigid frame fixed to the main frame and independently holding the blocks of said corresponding sets, means for adjusting said rigid frame to simultaneously vary the distance of all its blocks from their companions borne by the main frame, race-bars mounted in the blocks borne by the main frame, and coacting race-bars mounted in the blocks borne by the adjustable frame, substantially as set forth.

3. The combination with parallel pairs of suitably-spaced, inclined rocking bars forming nail-races, of rigid arms projecting downward from the bars, respectively, a transverse bar mounted below the plane of nails carried in said races, and engaging the lower ends of said arms, and means for oscillating said bar longitudinally.

4. The combination with a suitable supporting-frame, of parallel pairs of parallel race-bars mounted to rock about their longitudinal axes, rigid arms projecting downward from the bars, respectively, a transverse sliding bar mounted in the frame at some distance below the race-bars, and connected to the lower ends of all said arms, and a rocking cam mounted upon the frame and adapted to oscillate the transverse bar longitudinally.

5. The combination with inclined bars forming nail-races, of a rock-shaft extending transversely across the lower portions of the

5 races, yielding arms extending into position for obstructing the races, respectively, a cam automatically rocking the shaft, means whereby the shaft in rocking in one direction swings all the arms from obstructing position, and springs independently restoring the several arms to normal position as the shaft rocks in the contrary direction.

10 6. The combination with a series of inclined bars forming nail-races, of a shaft extending transversely over the lower ends of the races, swinging arms normally obstructing the lower ends of the races, respectively, means whereby the rocking of the shaft in
15 one direction swings the arms out of normal position, springs resisting such swinging, a reciprocating transverse bar bearing fingers imposition to separate the foremost nail in

each race from its companions, and a cam arranged for simultaneously rocking said shaft and sliding said reciprocating bar. 20

7. The combination with a set of inclined rocking bars forming nail-races, of swinging arms normally obstructing the lower ends of said races, respectively, fingers arranged to slide between the foremost nail in each race and its companions, thereby holding back said companions, and a cam automatically actuating said bars, arms, and fingers at proper intervals. 25

In testimony whereof I affix my signature in presence of two subscribing witnesses. 30

GEORGE D. PARKER.

Witnesses:

E. B. HEWITT,

H. B. HENDERSON.