

No. 881,172.

PATENTED MAR. 10, 1908.

W. P. BARTEL & S. E. TAFT.  
HOOK SEPARATING MECHANISM.

APPLICATION FILED DEC. 18, 1905.

2 SHEETS—SHEET 1.

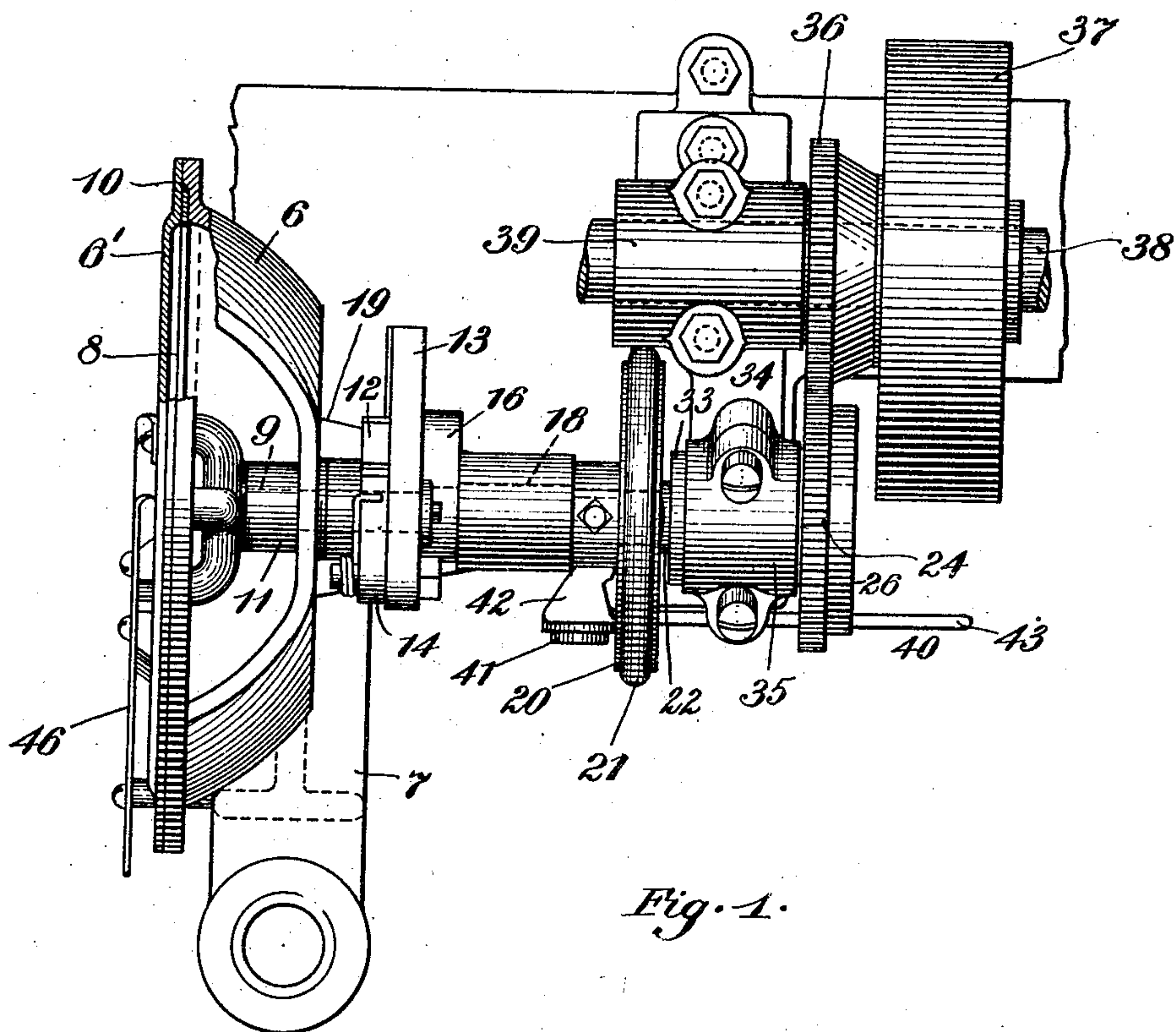


Fig. 1.

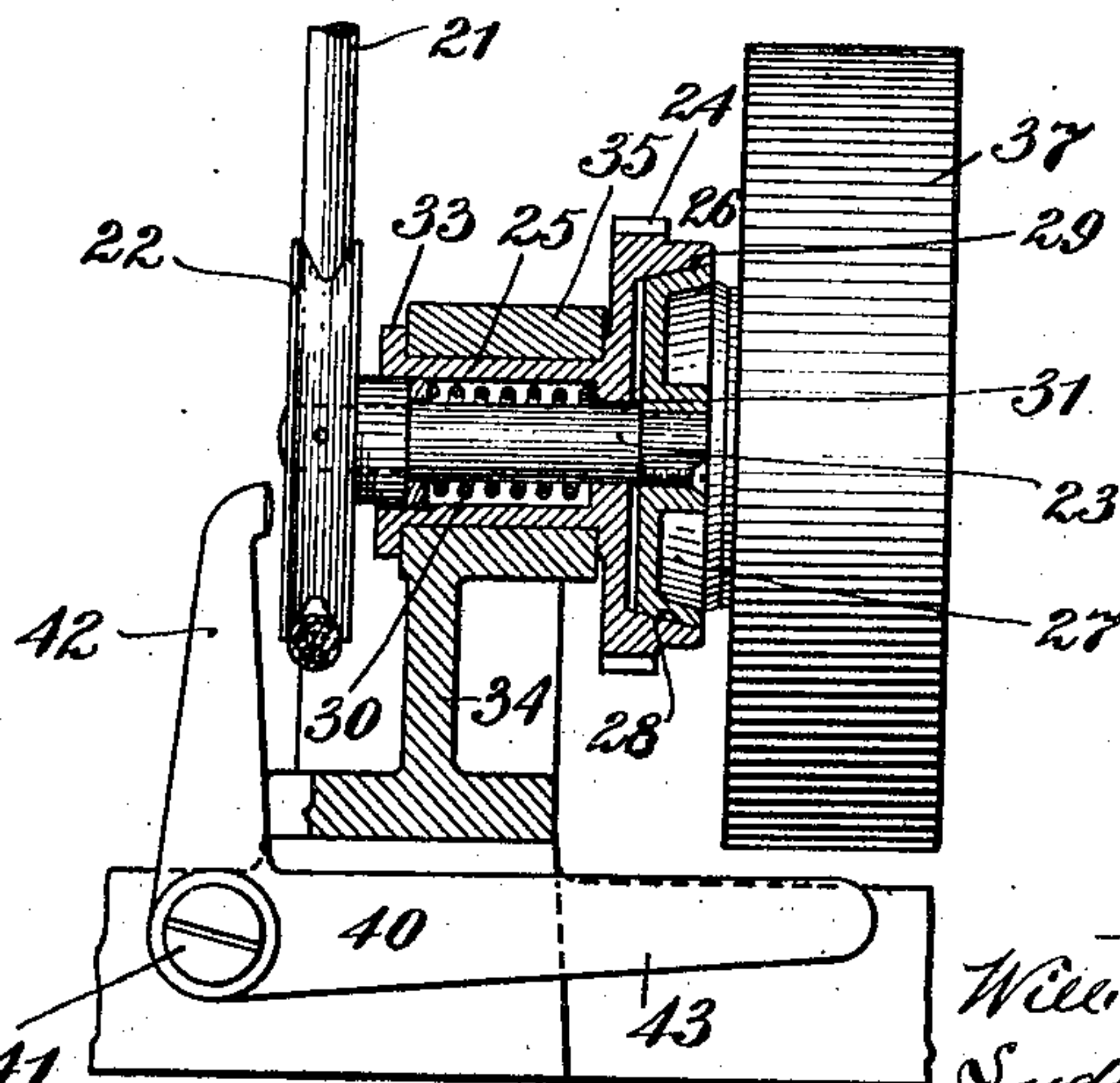


Fig. 2.

Witnesses:  
Franklin C. Low.  
William C. Glass.

Inventors:  
William P. Bartel  
Sydney E. Taft,  
by their attorney,  
Charles S. Gooding





# UNITED STATES PATENT OFFICE

WILLIAM P. BARTEL, OF WALTHAM, AND SYDNEY E. TAFT, OF SOUTH FRAMINGHAM, MASSACHUSETTS, ASSIGNORS TO AMERICAN LACING HOOK CO., A CORPORATION OF NEW JERSEY.

## HOOK-SEPARATING MECHANISM.

No. 881,172.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed December 18, 1905. Serial No. 292,274.

*To all whom it may concern:*

Be it known that we, WILLIAM P. BARTEL and SYDNEY E. TAFT, residing at, respectively, Waltham and South Framingham, both in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Hook-Separating Mechanism, of which the following is a specification.

10 This invention relates to devices for separating lacing hooks and the like from a quantity of the same contained in a hopper and feeding the lacing hooks or like articles thus separated to a raceway, down which they slide, said lacing hooks being subsequently fed one by one by suitable mechanism, to be driven and clenched by other suitable mechanism in sheet material, such as the uppers of boots and shoes.

20 The device for separating the lacing hooks, as hereinbefore set forth, consists of a rotary picker-plate, well known to those skilled in the art, to which an intermittent rotary motion is imparted whereby the lacing hooks are picked up upon the different blades of the picker plate during the rotary motion of said picker plate and while the picker-plate is stationary these lacing hooks slide off the blades of the picker-plate onto the raceway.

30 In devices of this class it is desirable that the picker-plate in its forward motion between its periods of rest should start slowly, then through the middle part of its movements increase its speed, and finally come to a stop slowly. In other words, said picker-plate has an intermittent differential rotary movement imparted thereto and in order that the consecutive movements of the picker plate may be separated one from the other by as slight a period of time as possible, it is desirable that the mechanism which feeds said picker-plate shall not only be capable of imparting the slow differential forward rotary movement, hereinbefore set forth, to said plate, but that in its return movement said mechanism shall be moved very quickly.

40 In devices of the character, hereinbefore set forth, it is also desirable that when the raceway has been filled with hooks, the mechanism for feeding the hooks from the hopper to the raceway, viz., the picker-plate in this instance, should be stopped while the machine to which it is attached containing the driving and setting mechanisms should

continue its operation. Otherwise, when 55 the raceway becomes filled the lacing hooks will be carried around by the picker-plate and emptied into the hopper again as the blades descend during their rotary motion and the continual movement of the picker-plate through the lacing hooks at the bottom 60 of the hopper tends to injure the lacing hooks and remove more or less japan from the surface thereof. It is, therefore, desirable that the picker-plate shall only be rotated sufficiently to keep the raceway well supplied 65 with lacing hooks.

The object of this invention, therefore, is to provide a cheap, simple, durable and easily operated mechanism which will impart a slow intermittent rotary movement to the picker-plate and which will return quickly without moving said picker-plate, and, further, the object of this invention is to provide a mechanism for driving said 75 picker-plate operating mechanism which may be readily disconnected therefrom, thus leaving said picker-plate and its driving mechanism stationary when the raceway is filled with hooks, as hereinbefore described. 80

The invention consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims thereof.

In the drawings I have illustrated my improved lacing hook separating and feeding 85 mechanism as attached to the frame of a lacing hook setting machine and driven by a pulley loosely mounted upon the main driving shaft of said lacing hook setting machine. 90

Referring to the drawings: Figure 1 is a plan view of my improved mechanism for separating and feeding lacing hooks and the like, together with a portion of the frame of a lacing hook setting machine upon which 95 said separating and feeding mechanism is supported, the main driving shaft of said lacing hook setting machine and driving pulley therefor, said driving shaft being broken away to save space in the drawings. 100

Fig. 2 is a section, partly in elevation, taken on line 2—2 of Fig. 3, looking toward the right in said figure. Fig. 3 is a side elevation of the parts illustrated in Fig. 1, the frame of the lacing hook setting machine 105 being broken away to save space in the drawings. Fig. 4 is a detail front elevation of the hopper and raceway, the picker-plate



being indicated by dotted lines and the race-way and hopper being broken away to save space in the drawings.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 6 is a hopper of well known construction, which is fastened to the frame 7 of a lacing hook setting machine. A rotary picker-plate 8 is arranged to rotate within an annular recess 10 provided in said hopper adjacent to the cover 6' thereof and is constructed with a plurality of radial arms 8', 8". A shaft 9 is journaled to rotate in a bearing 11 in said hopper and has rigidly attached to one end thereof the picker-plate 8 and at the opposite end thereof from that to which said picker-plate is attached a ratchet 12 is fastened. A lever 13 is journaled to rock loosely upon the picker-shaft 9 adjacent to the ratchet 12. Said lever 13 has a pawl 14 pivoted thereto which engages the ratchet 12 and is provided with a slot 15 extending longitudinally thereof upon the opposite side of the shaft from that upon which said pawl is located. A rocking motion is imparted to the lever 13 by a crank-arm 16 and crank-pin 17, said crank-pin projecting into the slot 15 in said lever 13. The crank-arm 16 is fast to a crank-shaft 18 journaled to rotate in a bracket 19 fast to the frame 7. A rotary motion is imparted to the crank-shaft 18 by a pulley 20 fast thereto and driven by a belt 21, which, in turn, is driven by a pulley 22 fast to an intermediate shaft 23 (Figs. 2 and 3). The intermediate shaft 23 is journaled to rotate in a bearing provided in the interior of the gear 24 and its hub 25.

The gear 24 is locked, when desired, to the intermediate shaft 23 by a friction clutch 26, consisting of two members, one of said members being a disk 27 provided upon its periphery with a conical friction surface 28 which engages a conical friction surface 29 provided upon the interior of the gear 24.

A spiral spring 30 bears at one end thereof against the hub of the pulley 22 and at the other end thereof against a shoulder 31 formed upon the interior of the gear 24. The hub 25 has provided at the left hand end thereof (Fig. 2) an annular flange 33 which bears against a bracket 34 fast to the frame 7. The hub 25 of the gear 24 is journaled to rotate in a bearing 35 provided in said bracket 34. Rotary motion is imparted to the gear 24 by a gear 36 fast to a pulley 37 journaled to rotate loosely upon the main driving shaft 38 of the lacing hook setting machine, said main driving shaft being journaled to rotate in a bearing 39 on said frame.

A clutch lever 40 is pivoted at 41 to the frame 7 and has a vertical arm 42 extending upwardly from said pivot adjacent to the left hand face (Fig. 2) of the pulley 22. Said lever has a horizontal arm 43 by means of

which it may be operated, either by hand, or, if preferred, may be connected with a suitable treadle and operated by foot power.

The friction clutch 26 is normally held by the spring 30 with its friction surfaces 28 and 29 in contact one with the other, but when it is desired to disconnect the parts of said clutch, one from the other, so that the gear 24 may rotate without imparting rotation to the disk 27, intermediate shaft 23 and pulley 20, the horizontal arm 43 is pushed downwardly by the operator until the upper end of the vertical arm 42 bears against the outer face of the pulley 20 and pushes said pulley toward the right a slight distance, sufficient to move the disk 27 out of contact with the gear 24. The clutch lever 40 is held in this position by a dog 44 pivoted at 45 to the frame 7 (Fig. 3), said dog being rotated upon its pivot out of contact with the arm 43 when it is desired to rock the lever 40 to release the pulley 22 and allow the frictional surfaces of the clutch to be brought into contact by the spiral spring 30, or into the position illustrated in Fig. 2.

The operation of the mechanism hereinbefore specifically described is as follows: Assuming the necessary amount of lacing hooks to be placed within the hopper 6 and the clutch 26 to be in operative position, as illustrated in Fig. 2, the main driving pulley 37 imparts a rotary motion to the gear 36 which, in turn, rotates the gear 24, thus rotating the disk 27, intermediate shaft 23 and pulley 22. The pulley 22 drives the belt 21, thus rotating the pulley 20 in the direction of the arrow (Fig. 3). The pulley 20 rotates the crank-shaft 18, crank-arm 16 and crank-pin 17 in the direction of the arrow (Fig. 3). As the crank-arm 16 and crank-pin 17 are thus rotated in the direction of the arrow (Fig. 3) it will be seen that said crank-pin will travel longitudinally of the slot 15 toward and away from the picker-shaft 9, which constitutes the pivot of the pawl-lever 13, so that during one portion of the rotation of said crank-arm and crank-pin, said crank-pin will be nearer the pivotal center of the pawl-lever than at another time, and by reference to Fig. 3 it will be seen that when the crank-pin is farthest removed from the pivotal center of the pawl-lever 13, said lever is being moved in a direction to rotate the picker-plate through the pawl 14, ratchet 12 and shaft 9, and when said crank-pin is passing through that portion of its rotation which brings it nearest to the pivotal center of the pawl-lever said pawl-lever is being moved backwardly or in the direction to carry the pawl backwardly from one tooth of the ratchet to engage a new tooth thereon, so that it will be evident that a slow forward and quick return movement is imparted to the pawl, and further at each end of the movement of the pawl during the beginning



of its forward movement and during the end of said forward movement, and also at the beginning of its return movement and the end of its return movement, said pawl will travel slower than in the middle of either of said movements, for the reason that at such times the crank-arm is in a position similar to that illustrated in Fig. 3, so that it is traveling longitudinally of the slot 15 without moving the pawl-lever to any more than the slightest extent. In other words, the median longitudinal line of said slot is tangent at such times to a circle described by the center of the crank-pin 17.

As the picker-plate is rotated, as hereinbefore described, lacing hooks are carried by the arms 8', 8' of said picker-plate in the bottom of the hopper upwardly and slide along the upper surface of said arms, said lacing hooks passing outwardly through a suitable orifice in the side of the hopper onto the raceway 46 and slide downwardly upon said raceway to the driving and setting mechanism in a manner well known to those skilled in this art. When the raceway becomes filled the operator rocks the clutch lever 40 upon its pivot to disconnect the members of the clutch 26, as hereinbefore described, thus disconnecting the mechanism which drives the pulley-operating mechanism therefrom and stopping the rotation of the picker-plate.

Having thus described my invention, what I claim and desire by Letters Patent to secure is:

1. In a device of the character described, a hopper, a picker plate journaled to rotate within said hopper, mechanism adapted to impart an intermittent rotary motion to said picker plate, said mechanism adapted to impart a slow forward motion to said picker plate and to return preparatory to imparting another forward movement to said picker plate at a relatively rapid rate of speed, while said picker plate is stationary.

2. In a device of the character described, a hopper, a picker plate journaled to rotate

within said hopper, a ratchet fast to said picker plate, a lever provided with a slot extending longitudinally thereof, a crank pin fast to said crank and projecting into said slot, and a pawl pivoted to said lever and engaging said ratchet, whereby a slow forward movement is imparted to said picker plate and a relatively rapid return movement is imparted to said pawl while said picker plate is stationary.

3. In a device of the character described, a hopper, a shaft journaled therein, a picker plate fast to said shaft within said hopper, a ratchet fast to said shaft, a lever journaled on said shaft and provided with a slot extending longitudinally thereof, a crank, a crank pin fast to said crank and projecting into said slot, and a pawl pivoted to said lever and engaging said ratchet, whereby a slow forward movement is imparted to said picker plate and a relatively rapid return movement is imparted to said pawl while said picker plate is stationary.

4. In a device of the character described, a hopper, a shaft journaled therein, a picker plate fast to said shaft within said hopper, a ratchet fast to said shaft, a lever journaled on said shaft and provided with a slot extending longitudinally thereof, a crank, a crank pin fast to said crank and projecting into said slot, and a pawl pivoted to said lever and engaging said ratchet, whereby a slow forward movement is imparted to said picker plate and a relatively rapid return movement is imparted to said pawl while said picker plate is stationary, and frictional means for imparting a rotary motion to said crank.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

WILLIAM P. BARTEL.  
SYDNEY E. TAFT.

Witnesses:

CHARLES S. GOODING,  
ANNIE J. DAILEY.