

H. THOMAS.
FEEDING MECHANISM FOR BOLT MACHINES.
APPLICATION FILED DEC. 16, 1919.

1,389,916.

Patented Sept. 6, 1921.

2 SHEETS—SHEET 1.

FIG. 1

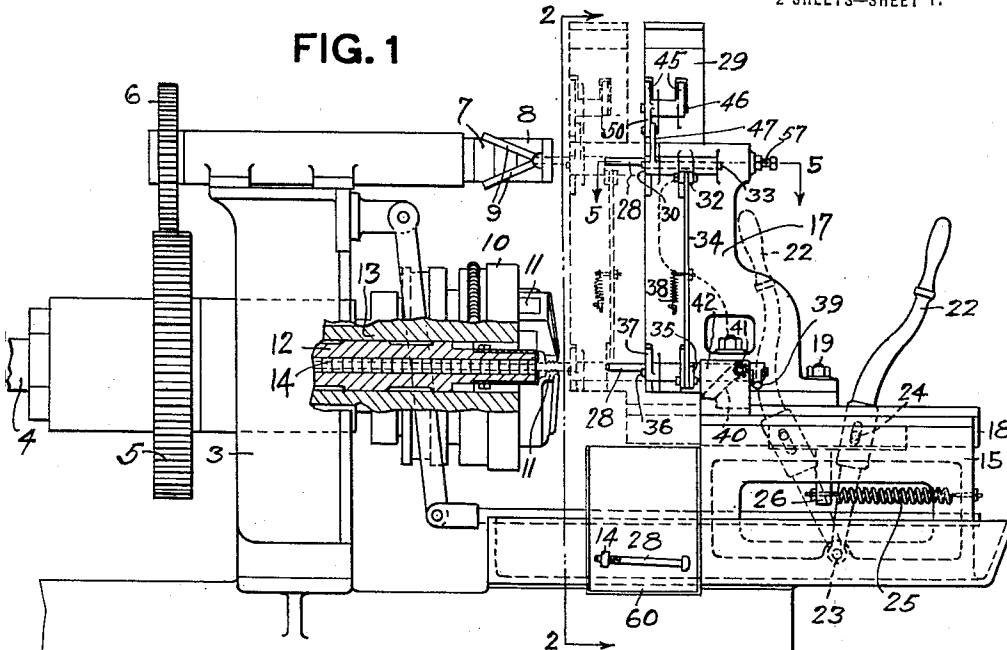


FIG. 3

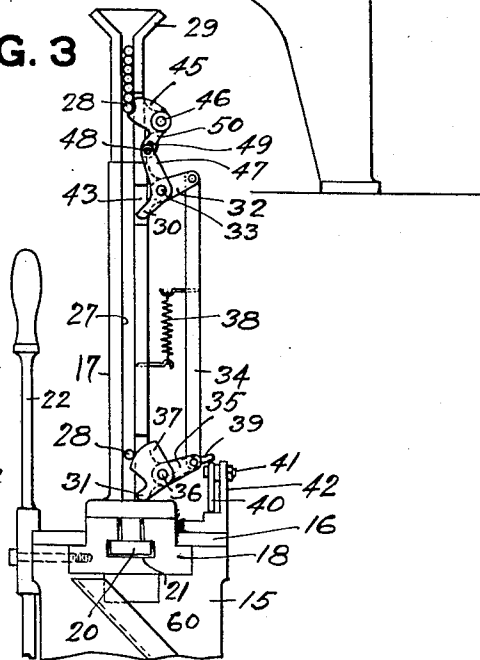
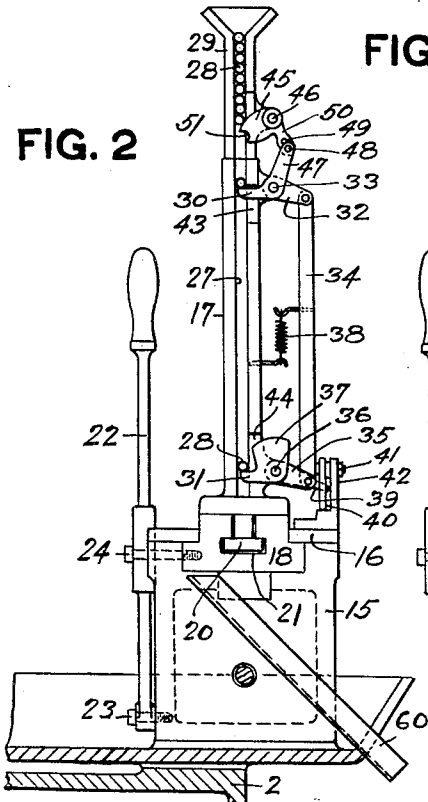


FIG. 2



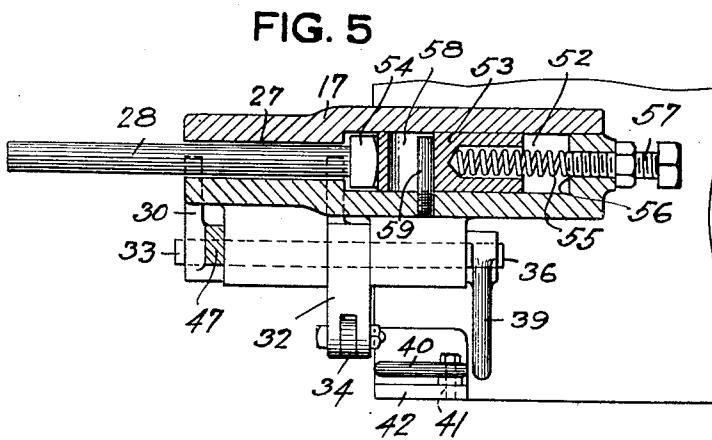
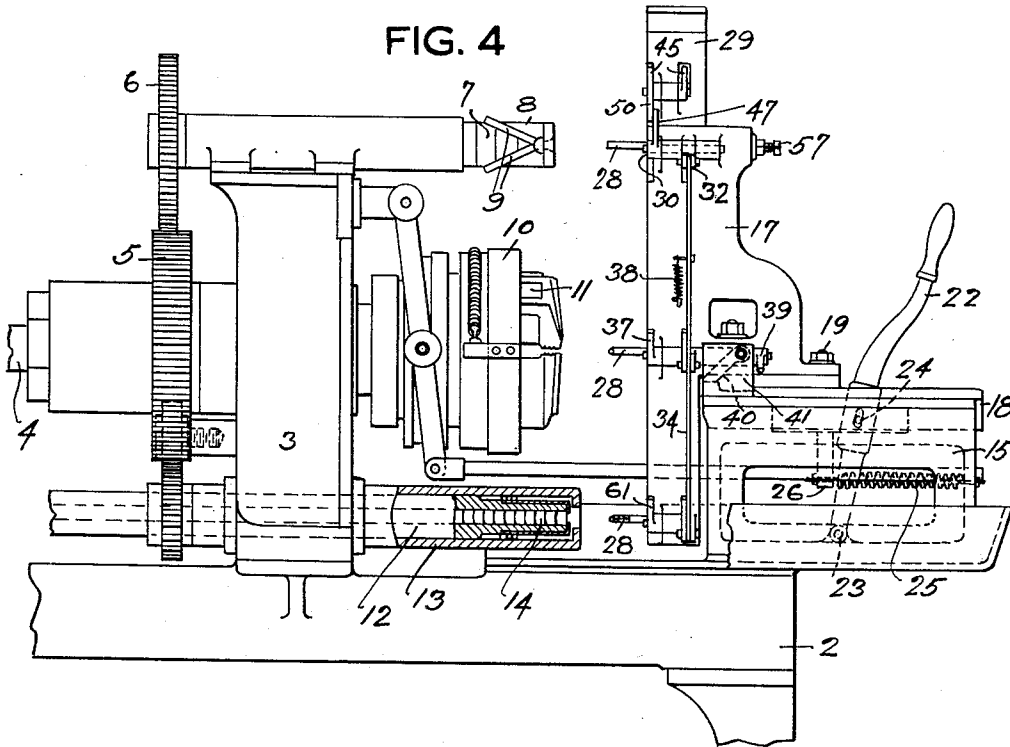
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2 SHEETS—SHEET 2.



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HANSON THOMAS, OF PITTSBURGH, PENNSYLVANIA.

FEEDING MECHANISM FOR BOLT-MACHINES.

1,389,916.

Specification of Letters Patent.

Patented Sept. 6, 1921.

Application filed December 16, 1919. Serial No. 345,283.

To all whom it may concern:

Be it known that I, HANSON THOMAS, a citizen of the United States, and resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Feeding Mechanism for Bolt-Machines; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to feeding mechanism for bolt machines.

The object of my invention is to provide a simple and efficient feeding mechanism for bolt machines by means of which the bolt may be pointed at one position and then automatically moved into a position for threading and nutting, so that the operations heretofore followed of pointing and then removing the bolt from the pointer and placing it manually in position for threading or nutting is avoided, and the operations performed quickly and in succession, thereby greatly reducing the time and labor.

To these ends my invention comprises the novel features hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 is a vertical elevation of my improved feeding mechanism showing the threading and nutting device partly in section; Fig. 2 is a view taken on the line 2—2, Fig. 1, showing the bolts in position for the pointing and threading operations; Fig. 3 is a like view showing the bolts in process of being moved from one position to another; Fig. 4 shows a modified form of my invention; and Fig. 5 is an enlarged section on the line 5—5, Fig. 1.

In the drawings, the numeral 2 designates a suitable support upon which is mounted the housing or frame 3, in which is journaled the shaft 4. Mounted on the shaft 4 is the gear-wheel 5 which meshes with the pinion 6 mounted on the pointing spindle 7. The pointing device 8 is of any ordinary construction provided with the pointing knives 9, and as this pointing device forms no part of my invention, it has not been deemed necessary to illustrate and describe the same in detail.

Below the pointing device 8 and mounted in the housing 3 is the rotary die-head 10

which carries the thread-chasers 11. This rotary die-head has not been illustrated in detail as it is complicated in form and is what is known as the Landis rotary die-head, well known to those skilled in the art.

Combined with this Landis rotary die-head is a nut-feeding mechanism which comprises a nut-magazine or barrel 12 contained within a sleeve 13. Suitable mechanism is provided for feeding the nuts 14 one by one, and this whole device has already been patented in a patent issued to Henry Oliver, No. 1,282,116, dated Oct. 22, 1918. It will, therefore, not be necessary to illustrate this feature in detail, as it forms no part of my invention.

Mounted on the support 2 is the base-block 15 provided with the guide 16 in which the frame 17 is adapted to move back and forth, said frame being mounted on the sliding block 18 fitting in said guide. The frame 17 is bolted to said guide by the bolts 19 and said frame has the T-head 20 fitting in a like shaped groove 21 in said slide-block 18.

A lever 22 is pivoted at 23 to the base 15 and said lever engages a pin 24 on the slide-block 18 whereby said slide-block may be moved forward by said lever for the purpose hereinafter more fully set forth.

A spring 25 is connected to the lug 26 on the slide-block 18, and at its opposite end to the stationary base 15, said spring acting to normally hold the frame 17 in the position indicated in full lines Fig. 1.

Frame 17 has the vertical runway 27 to receive the bolts 28. At the upper end of the runway 27 is the magazine 29 from which the bolts are fed one by one to the runway 27. In order to support the bolts at the proper position for the pointing and threading operations, I provide the fingers 30 and 31. The fingers 30 are mounted on the rocker-shaft 33 mounted in the frame 17. The arm 32 is connected to the rocker-shaft 33. A rod 34 is connected to the arm 32, the lower end of said rod being connected to the arm 35 on the rocker-shaft 36 mounted in bearings in the frame 17. The fingers 31 form part of the detents 37 which act to detain the bolt at the position indicated in Fig. 3 before said bolt finally drops on to the fingers 31.

A spring 38 is connected to the rod 34 and to the frame 17, said spring acting to hold the fingers 30 and 31 normally in the position indicated in Fig. 2.

5 A trip-finger 39 is connected to the rocker-shaft 36, said trip-finger being adapted to engage the pawl 40 pivoted at 41 to a lug 42 on the stationary base 15 so that as said frame 17 advances the trip-finger 39 will
10 pass beneath the pawl 40 which will be raised thereby, and upon the return of said frame said trip-finger will ride up on said pawl and so act to rock the rocker-shaft 36 for the purpose more fully hereinafter set
15 forth.

Slots 43 and 44 are formed in the runways 27 to allow the fingers 30 and 31 to project into said runway, and for their movement therefrom to permit the bolts to
20 drop through said runway.

In order to retain the bolts in the magazine 29 and to feed the same one at a time to the runway 27, I provide the dogs 45 mounted on the rocker shaft 46. An arm
25 47 on the rocker-shaft 33 has the pin 48 which engages a slot 49 in an arm 50 secured to the rocker-shaft 46. The dogs 45 have the recesses 51 formed therein.

At the pointing position of the bolt in the frame 17, I provide means for permitting the bolt to yield longitudinally during the pointing operation to prevent undue strain, as well as provide for variations in the length of the bolt. Accordingly in the
30 frame 17 I provide the seat 52 to receive the gage-block 53 which bears at its forward end against the head 54 of the bolt. A spring 55 is interposed between said gage-block and the inner wall 56 of the seat 52.
35 An adjusting screw 57 may be employed for adjusting the tension of the spring 52.

A slot 58 is formed in the gage-block 53, and a pin 59 on the frame 17 enters said slot to control the movement of the gage-
40 block 53.

A chute 60 is provided to receive the bolts as they are delivered from the lower end of the runway 27 to discharge them into a suitable receptacle below.

50 In the operation of my improved feed mechanism as illustrated in Fig. 1, the bolts supported on the fingers 30 and 31 are advanced to the pointing and threading position by the operator grasping the lever 22
55 and advancing said lever to the position indicated in dotted lines Fig. 1, whereby the frame 17 is advanced, the guide-block 18 moving in the guides 16. In this manner the upper bolt is advanced into position for
60 pointing and the lower bolt is advanced in position to be engaged by the threading dies. Just as soon as the threading dies take hold of the lower bolt the rotating die-head 10 will draw the bolt into the threading dies,
65 and consequently the frame 17 will be ad-

vanced and the upper bolt forced against the pointing knives. Where the combined threading and nutting device is employed, as set forth in said above recited Letters Patent, the threading and applying of the
70 nuts to the bolt will be done at the same time.

When the threading operation has been completed and the nut has been applied to the bolt, the threading dies are automatically withdrawn and the bolt released. This automatic release of the bolt is a feature of these threading dies, and as stated above, the mechanism for performing this function has not been illustrated or described in detail.
80 Just as soon as the threading dies withdraw and release the bolt, the spring 25 comes into play and returns the frame 17 to its normal position. On the return of the frame 17 the trip-finger 39 passes up
85 over the pawl 40 and in this way the rocker-shaft 36 is rocked and the rod 34 is elevated. This elevation of the rod 34 acts through the connections described to move the fingers 30 and 31 out of the runway 27, so that the
90 bolt just pointed and the bolt threaded are free to drop, the latter dropping down on to the chute 60, while the former drops down into the position to be detained by the detents 37, as clearly indicated in Fig. 3. The
95 upward movement of the rod 34 also moves the dogs 45 into the position indicated in Fig. 3, whereby the lowermost of the bolts in the magazine 29 enter the grooves 51 in said dogs, and are retained in this position.
100 When, however, the trip-finger 39 passes beyond the pawl 40 the spring 38 will lower the rod 34 and the lowering of the rod will act through the connections described to bring the fingers 30 and 31 again into position
105 to support the bolt just pointed and the one just released from the magazine by the movement of the dogs 45 which discharge the next bolt to be pointed on to the fingers 30 for the pointing operation. In
110 this manner the bolts are automatically delivered to the pointing and threading position in succession while the blank bolts are fed one by one to the runway to be operated on in succession.
115

In this manner, I avoid the manual labor heretofore required in removing the bolt from the pointer and feeding it to the threading and nutting apparatus and thereby greatly increase the capacity and output.
120

In Fig. 4 I have illustrated a modified form of my invention in which the applying of the nuts to the bolts is made a separate operation where the combined threading and nutting device is not employed. This
125 modification only necessitates a third set of fingers to support the bolt at the lowermost position for applying the nuts. Otherwise the construction and operation is the same and it has not been deemed neces-
130

sary to refer specifically to the different parts of the modified structure except to designate the lower set of fingers to support the bolts in position for applying the nuts by the numeral 61.

By the term "bolt finishing mechanisms" as used in the claims, I mean any work done on the bolt including the application of the nut.

10 What I claim is:

1. In bolt feeding mechanism, the combination with a plurality of bolt finishing mechanisms, of a frame movable toward and from said mechanisms, means for supporting the bolts in position on said frame, and means for delivering a bolt by gravity from one mechanism to the other.

2. In bolt feeding mechanism, the combination with a plurality of bolt finishing mechanisms, of a frame movable toward and from said mechanisms, means for supporting the bolts in position on said frame, and means for automatically delivering a bolt from one mechanism to the other.

3. In bolt feeding mechanism, the combination with a plurality of bolt finishing mechanisms the one above the other, of a frame movable toward and from said mechanisms, means for supporting the bolts in position on said frame, and means for delivering a bolt by gravity from one mechanism to the other.

4. In bolt feeding mechanism, the combination with a plurality of bolt-finishing mechanisms, of a frame movable toward and from said mechanisms, a runway in said frame, means for supporting the bolts in said runway, and means for releasing a bolt whereby it moves by its own gravity in said runway from one mechanism to the other.

5. In bolt feeding mechanism, the combination with a plurality of bolt finishing mechanisms, the one above the other, of a frame movable toward and from said mechanisms, a runway in said frame, means for supporting the bolts in said runway, means for releasing said bolts whereby the bolt moves in said runway from the upper to the lower mechanism, and means for delivering a bolt to the upper of said mechanisms.

6. In bolt feeding mechanism, the combination with a plurality of bolt finishing mechanisms, one above the other, of a frame movable toward and from said mechanisms, a runway in said frame, fingers supporting the bolts in said runway, means for moving said fingers simultaneously, whereby said bolts are released, and means for retaining the bolt released by the upper fingers in position temporarily above the lower fingers.

7. In bolt feeding mechanism the combination with a plurality of bolt finishing mechanisms one above the other, of a frame movable toward and from said mechanisms, a runway on said frame, fingers for support-

ing the bolts in position in said runway for pointing and threading, means for feeding bolts one by one to said runway, and means for simultaneously releasing said fingers whereby said bolts are free to drop in said runway, and means for detaining the bolt dropped from said upper mechanism to said lower mechanism temporarily, above the lower of said fingers.

8. In bolt feeding mechanism, the combination with a plurality of bolt finishing mechanisms, one above the other, of a frame movable toward and from said mechanisms, a runway in said frame, a magazine communicating with said runway, means for supporting the bolts in said runway, means for withdrawing said last-named means, means for supporting the bolts in said magazine when said supporting means are withdrawn, and means for feeding a bolt to said runway when said supporting means are brought into supporting position.

9. In bolt-feeding mechanism, the combination with a plurality of bolt finishing mechanisms one above the other, of a frame movable toward and from said mechanisms, a runway in said frame, rocker-shafts, fingers mounted on said rocker shafts adapted to support the bolts in position in said runway, a spring-actuated rod connecting said rocker-shafts, and means for elevating said rod by the return movement of said frame.

10. In bolt feeding mechanism, the combination with a plurality of bolt finishing mechanisms, one above the other, of a frame movable toward and from said mechanisms, a runway in said frame, means for supporting the bolts in position in said runway, and means for withdrawing said last-named means operated by the movement of said frame.

11. In bolt feeding mechanism, the combination with a plurality of bolt-finishing mechanisms, of a frame movable toward and from said mechanisms, a runway in said frame, rocker-shafts, fingers on said rocker-shafts for supporting the bolts, connections between said rocker-shafts, a projection on one of said rocker-shafts, a movable pawl in the path of said projection on the forward movement of said frame, and means for holding said pawl against movement on the return of said projection, whereby said projection rides up over said pawl and rocks said rocker-shafts.

12. In bolt feeding mechanism, the combination with a plurality of bolt finishing mechanisms one above the other, of a spring-actuated frame movable toward and from said mechanism, a runway in said frame, means for supporting the bolt, and means for releasing said last-named means operated by the return movement of said table.

13. In bolt feeding mechanism, the combination with a plurality of bolt finishing

mechanisms, of a frame movable toward and from said mechanisms, a runway in said frame, fingers for supporting the bolts in said runway, means for withdrawing said 5 fingers, and detents for temporarily supporting the bolts released by the upper fingers at a point above the lower fingers.

14. In bolt feeding mechanism, the combination with a plurality of bolt finishing 10 mechanisms the one above the other, of a frame movable toward and from said mechanisms, means for supporting the bolts at different heights in position on said frame in line with said mechanisms, means for 15 withdrawing said supporting means, and means for temporarily supporting the bolt released by the upper supporting means at a point above said lower supporting means.

15. In bolt feeding mechanism the combination with bolt finishing mechanism, of a frame movable toward and from said mechanism, a runway in said frame, means for supporting a bolt in said runway at the finishing position, means for supporting bolt-blanks in said runway at a point above, 25 means for withdrawing said first supporting means, and means for simultaneously withdrawing said second supporting means, whereby the bolt is dropped from its finishing

position and a bolt-blank is dropped to 30 the finishing position.

16. In bolt feeding mechanism the combination with bolt finishing mechanism, of a frame movable toward and from said mechanism, a runway in said frame, means for 35 supporting a bolt in said runway at the finishing position, means for supporting the bolt-blanks in said runway at a point above, means for withdrawing said first supporting means and for simultaneously withdrawing 40 said second supporting means operated by the movement of said frame.

17. In bolt feeding mechanism the combination with bolt finishing mechanism, of a frame movable toward and from said mechanism, a temporary support for a bolt on 45 said frame in line with said finishing mechanism, and means operated by the movement of said frame for withdrawing said temporary support whereby the finished bolt is 50 permitted to drop by gravity to a point below.

In testimony whereof, I, the said HANSON THOMAS, have hereunto set my hand.

HANSON THOMAS.

Witnesses:

ROBT. D. TOTTEN,
JOHN F. WILL.