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C. E. MITCHELL.
BOLT FEEDING MACHINE.
APPLICATION FILED MAR. 29, 1910.

Patented Nov. 22, 1910.

2 SHEETS—SHEET 1.

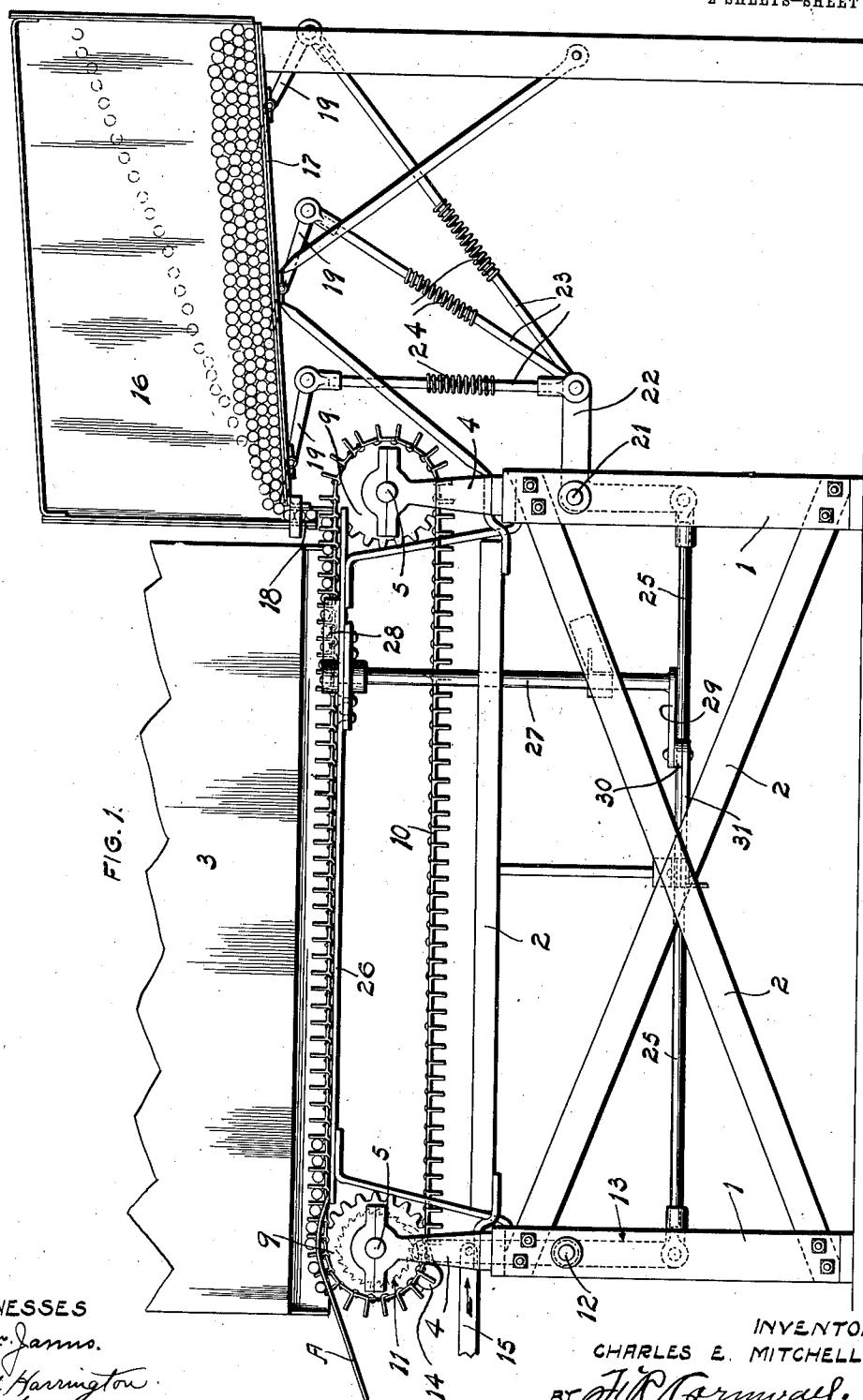


FIG. 1.

WITNESSES

H. J. Janss.
E. M. Harrington.

INVENTOR

CHARLES E. MITCHELL

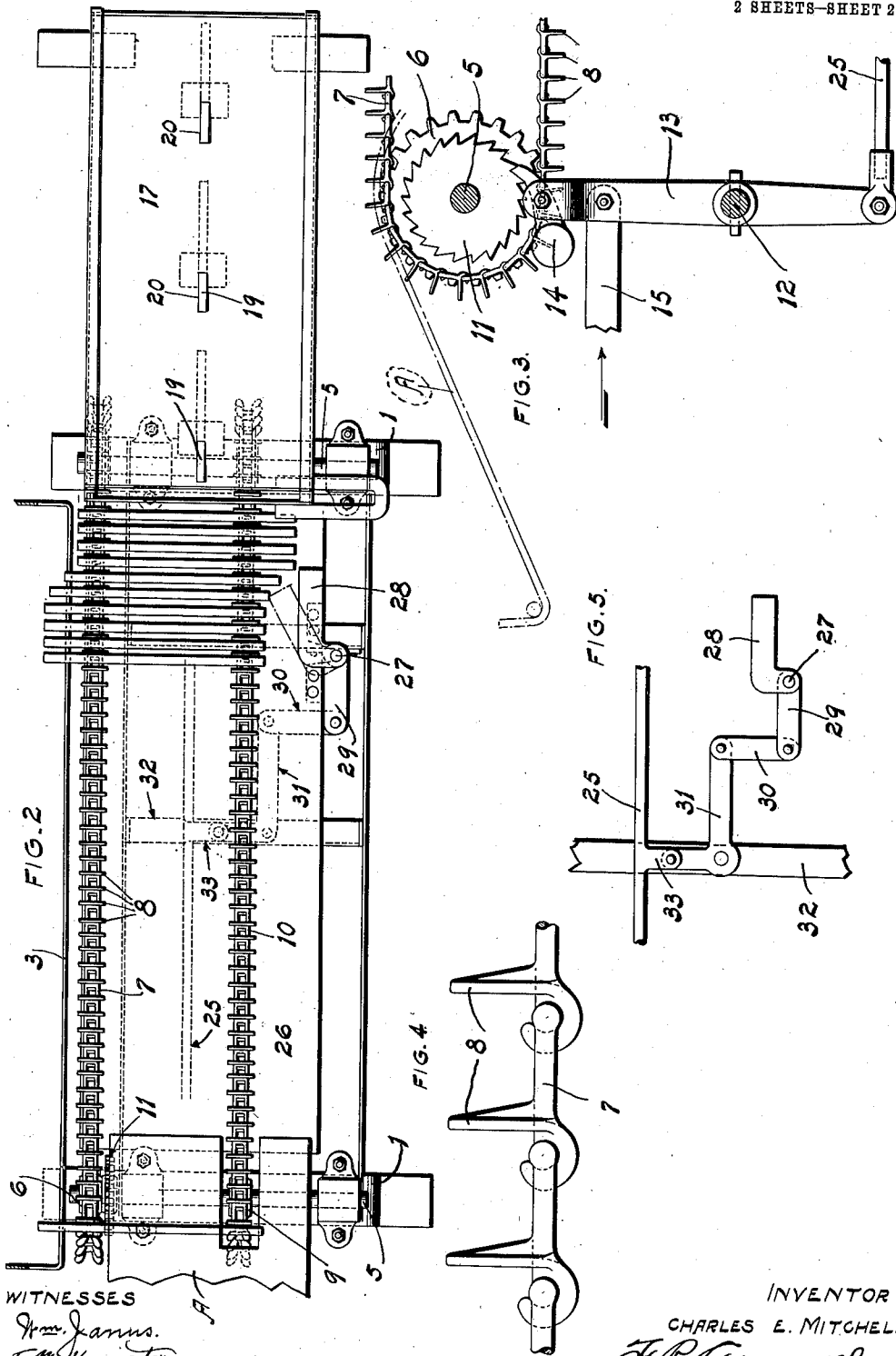
BY *J. R. Gernwal.*
ATT'Y.

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2 SHEETS-SHEET 2.



WITNESSES
J. J. James.
F. M. Harrington.

INVENTOR
CHARLES E. MITCHELL
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UNITED STATES PATENT OFFICE.

CHARLES E. MITCHELL, OF DECATUR, ILLINOIS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-FOURTH TO HARRY L. NIXON AND ONE-FOURTH TO C. T. PAYTON, BOTH OF ST. LOUIS, MISSOURI.

BOLT-FEEDING MACHINE.

976,483.

Specification of Letters Patent. Patented Nov. 22, 1910.

Application filed March 29, 1910. Serial No. 552,204.

To all whom it may concern:

Be it known that I, CHARLES E. MITCHELL, a citizen of the United States, residing at Decatur, Illinois, have invented a certain new and useful Improvement in Bolt-Feeding Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of a bolt feeding machine of my improved construction. Fig. 2 is a plan view of the machine. Fig. 3 is a detail elevation of the means employed for imparting intermittent movement to the endless carriers forming a part of my improved machine. Fig. 4 is an elevation of a portion of one of the chains forming a part of the endless carrier of my improved machine. Fig. 5 is a detail plan view of the means employed for moving the bolts rearwardly, so that their rear ends enter the furnace.

My invention relates to a bolt feeding machine, the object of my invention being to construct a simple inexpensive machine or apparatus which feeds the rods from which the bolts are formed to the furnace for the purpose of heating said rods and then carrying said rods and feeding the same one at a time to the bolt heading machine.

A further object of my invention is to construct a bolt feeding machine which is connected to and operated by the heading machine, thus coöperating with said heading machine and delivering the bolts one at a time, which action corresponds to the movement of the heading machine when the head is formed on the end of the bolt.

To the above purposes my invention consists in certain novel features of construction and arrangement of parts hereinafter more fully described and claimed.

The frame of my improved machine is preferably made in skeleton form, and comprises suitable end supports 1 united by

braces 2, and this frame occupies a position immediately to the right of the bolt heading machine (not shown), and immediately in front of the furnace 3, utilized for heating the ends of the rods which are formed into bolts.

The front wall of the furnace is provided with a horizontally disposed slot through which the ends of the lengths of rods extend while the same are being fed to the heading machine. Fixed on each end of the frame are suitable brackets 4, and journaled in the upper ends thereof are the transversely disposed shafts 5.

Fixed on the rear ends of these shafts or the ends immediately adjacent the furnace 3 are sprocket wheels 6, and connecting this pair of sprocket wheels is a sprocket chain 7, each link of which is provided with an upwardly projecting ear or wing 8.

Adjustably positioned on the shafts 5 inside the front pair of brackets 4 is a corresponding pair of sprocket wheels 9, which latter are connected by a sprocket chain 10, which is a counterpart of the sprocket chain 7. The sprocket wheels 9 are adjustable upon the shafts 5 in order that they can be moved backward or forward to accommodate various lengths of bolts.

Fixed on the left hand one of the shafts 5 immediately adjacent the sprocket wheel 6 thereon is a ratchet wheel 11. Journaled in the left hand portion of the frame of the machine immediately below the corresponding shaft 5 is a shaft 12, and fixed thereon is a vertically disposed lever 13, the upper end of this lever is provided with a weighted pawl 14 the point of which engages the teeth of the ratchet wheel 11.

Pivottally connected to the upper portion of the lever 14 is a horizontally disposed rod or link 15 which is connected to a movable part of the bolt heading machine, this rod or link 15 has a reciprocating movement and with each actuation of the bolt heading machine said rod moves in the direction indicated by the arrow in Fig. 3. Such action swings the upper end of the lever 13 toward

the right hand and the point of the pawl 14 engaging with the ratchet wheel 11 correspondingly imparts intermittent rotary motion to the shaft 5 upon which said ratchet wheel is fixed, thus it will be seen that with the mechanism just described an intermittent movement is imparted to the chains 7 and 10, which carry the bolts through the furnace and to the heading machine, which intermittent movement corresponds to the movement of the heading machine during the action of forming a head on the end of one of the rods.

A hopper 16 for holding the lengths of rods to be formed into bolts is arranged on suitable supports immediately above and to the right of the right hand end of the machine, which hopper is provided with an inclined bottom 17, and the top and front of said hopper being open.

A short vertically disposed chute 18 leads downward from the lower end of the hopper 16 to a point immediately above the right hand end of the bolt carrier, comprising the chains 7 and 10.

Agitating fingers 19 are pivotally mounted on the under side of the bottom of the hopper 16, the upper ends of which fingers project through slots 20 formed in the bottom of said hopper. These fingers are for the purpose of agitating or moving the rods in the hopper 16 to cause the same to automatically feed downward over the inclined bottom to the outlet at the lower end thereof.

Journalled on a shaft 21 in the right hand end of the frame is a bell crank 22 and pivotally connected to the outer end of the horizontal arm thereof are the lower ends of a series of rods 23, the upper ends of which are pivotally connected to the lower ends of the fingers 19. Each of these rods is made in two parts and connecting said parts is a stiff coil spring 24. These springs are for the purpose of permitting the agitating fingers 19 to yield readily when they encounter the weight of a considerable number of rods located in the hopper 16.

The lower end of the vertical arm of the bell crank 22 is pivotally connected to one end of a rod 25, the opposite end of which is pivotally connected to the lower end of the lever 13, thus it will be seen that the agitating fingers are actuated with each movement of the lever 13.

26 designates a plate or table which is suitably supported, and which occupies a position between the upper portions of the sprocket wheels 6 and 9, and the chains 7 and 10 travel over this plate or table in passing from the sprocket wheels at the right hand end of the machine to the corresponding sprocket wheels at the left hand end. This plate or table occupies the same horizontal plane with the lower portion of the

horizontal slot formed in the front wall of the furnace.

Journalled in suitable bearings adjacent the right hand end of the machine, and at the front side thereof is a vertically disposed shaft 27, the upper end of which carries a finger 28, the same normally occupying a position on top of and adjacent the front edge of the plate or table 26.

Fixed to the lower end of the shaft 27 is a laterally projecting arm 29, and pivotally connected to the end thereof is one end of a link 30, the opposite end of which is pivotally connected to the end of one of the arms of a horizontally disposed bell crank 31, which is fulcrumed on a bracket 32.

In the center of the frame of the machine and pivotally connected to the end of the opposite arm of this bell crank is an arm or finger 33, which projects forwardly from the connecting rod 25. The mechanism just described provides means whereby the sections of rods are moved rearward so that their rear ends enter the furnace through the slot in the front wall thereof (see Fig. 2).

The operation of my improved bolt feeding machine is as follows: The rod 15 is connected to and operated by a reciprocating part of the bolt heading machine and said rod moves forward and backward with each operation of said heading machine. As said rod 15 moves toward the right hand the pawl 14 carried by the upper end of the lever 13 engages the teeth of the ratchet wheel 11, thus moving said ratchet wheel the distance of one tooth, thereby partially rotating the shaft 5 upon which said ratchet wheel is mounted. The repeated movements of the rod 15 result in an intermittent movement of the endless carrier comprising the chains 7 and 10, and said chains are moved a distance corresponding to the length of one link of said chains. The rods of which the bolts are to be formed are cut to proper length and piled in the hopper 16 and from said hopper the rods pass downward through the chute 18, and drop between the ears or wings 8 formed on the links of the chains. As the lever 13 swings backward and forward the rod 25 connected to the lower end of said lever actuates the bell crank 22, and the rods 23 connected to said bell crank 22 actuate the fingers 19. The upper ends of these fingers project through the bottom of the hopper and as said fingers vibrate the upper ends thereof bear against the rods in the hopper and agitate the same, and as a result said rods will gradually roll down the inclined bottom of the hopper and will finally discharge through the spout 18. As the rod 25 reciprocates an intermittent rocking motion is imparted to the shaft 27 through the connec-

tions 29 30, 31 and 32, and as result the
finger 28 is vibrated backward and forward
on top of the plate 26. This operation
moves the rods on the carrier rearward and
5 the rear ends of said rods are moved through
the horizontal slot in the front wall of the
furnace 3. A high degree of heat is main-
tained within this furnace, and as the rods
are intermittently moved forward over the
10 plate 26 by the endless carrier the rear ends
of said rods will become heated to a very
high degree which is essential and neces-
sary in the formation of the heads on the
bolts. Upon reaching the left hand end
15 of the machine the rods with their rear ends
heated to the proper degree pass onto an
inclined plate A at the lower end of which
is formed a pocket, and from which pocket
the rods are removed by an operator who
20 places the heated ends between the head
forming dies of the heading machine. As
the movement of the endless carrier is in-
termittent the bolts are fed one at a time
onto the plate A and consequently are fed
25 in proper relation to the operation of the
heading machine.

A bolt feeding machine of my improved
construction is comparatively simple, oper-
ates with little power, occupies but little
30 space to one side of the heading machine,
and provides simple means whereby the bolts
are heated and delivered to the heading ma-
chine in proper time relation with the oper-
ation of said heading machine.

35 It will be readily understood that minor
changes in the form, size and construction
of the various parts of my improved ma-
chine can be made and substituted for those
herein shown and described without depart-
40 ing from the spirit of my invention.

I claim:

1. In a machine of the class described a
table an intermittently moving endless car-
rier, adapted to receive sections of metal
45 rods to be formed into bolts, and convey the
same over the table to a bolt heading ma-
chine, a vibrating finger on the table for
successively engaging the ends of the sections
of rods for moving the same rearwardly
50 while on the conveyer and means for im-
parting movement to said finger.

2. In a machine of the class described, an
endless conveyer, means whereby the same is
intermittently actuated, a hopper at one end
55 of the machine, which hopper receives the
sections of metal rods to be formed into
bolts, there being an outlet in the bottom
of the hopper over one of the conveyers and
means projecting through the bottom of the
60 hopper whereby the rods are agitated while
in the hopper to cause said rods to gravitate
to the discharge end of the hopper.

3. In a machine of the class described, an
endless carrier for conveying sections of

metal rods to be formed into bolts from a 65
hopper, a vibrating finger adapted to suc-
cessively engage the outer ends of the sec-
tions of rods whereby the same are moved
lengthwise while on the endless carrier, and
means for imparting movement to said 70
finger.

4. In a machine of the class described, the
combination with an intermittently moving
endless carrier adapted to receive sections of
metal rods to be formed into bolts, a vibrat- 75
ing finger adapted to successively engage
the ends of the sections of rods for moving
the same lengthwise while on the conveyer,
and means for imparting movement to said
finger. 80

5. In a machine of the class described, a
table, an endless conveyer operating over
said table and adapted to receive and carry
sections of metal rods to be formed into
bolts, a vibrating finger on said table for 85
moving the sections of rods longitudinally
while on the conveyer, and means for im-
parting movement to said finger.

6. In a machine of the class described, the
combination with a furnace in the front wall 90
of which is formed an opening, of an end-
less carrier arranged for operation in front
of the opening, means whereby sections of
metal rods are delivered to the carrier at
one end thereof, a vibrating finger where- 95
by said metal rods are moved lengthwise
while on the carrier so that the rear ends of
said rods enter the opening in the furnace,
and means for imparting movement to said
finger. 100

7. In a machine of the class described, an
endless conveyer, a hopper arranged at one
end thereof, there being an outlet at the
lower end of said hopper, fingers projecting
through the bottom of the hopper for agi- 105
tating the sections of metal rods located in
said hopper, and means for imparting move-
ment to said fingers.

8. The combination with a furnace hav-
ing an opening in one wall, of an endless 110
carrier arranged for operation adjacent said
opening, which endless carrier comprises a
pair of chains one of which is adjustable
relative to the other, means for imparting
intermittent movement to the endless car- 115
rier, a hopper adapted to feed sections of
metal rods onto the carrier, a vibrating finger
for moving the sections of rods rearward
while on the carrier so that the rear ends
of said rods extend through the opening in 120
the furnace, and means for imparting move-
ment to said finger.

9. In a machine of the class described, the
combination with a furnace having an open-
ing in one wall, of an endless carrier, means 125
whereby the endless carrier is intermittently
driven, means whereby sections of metal
rods are fed onto one end of the carrier, a

vibrating finger adapted to successively engage the sections of rods whereby said sections of rods are moved longitudinally while on the carrier so that their rear ends enter
5 the opening in the furnace, and means for imparting movement to said finger.

In testimony whereof I hereunto affix my

signature in the presence of two witnesses, this twenty-first day of March, 1910.

CHARLES E. MITCHELL.

Witnesses:

GEORGE LOWERY,

CLEMENT C. WALTERS.