

(No Model.)

4 Sheets—Sheet 1.

D. CASEY, J. MANTION & G. H. MILLEN.
MACHINE FOR BOXING MATCHES.

No. 418,887.

Patented Jan. 7, 1890.

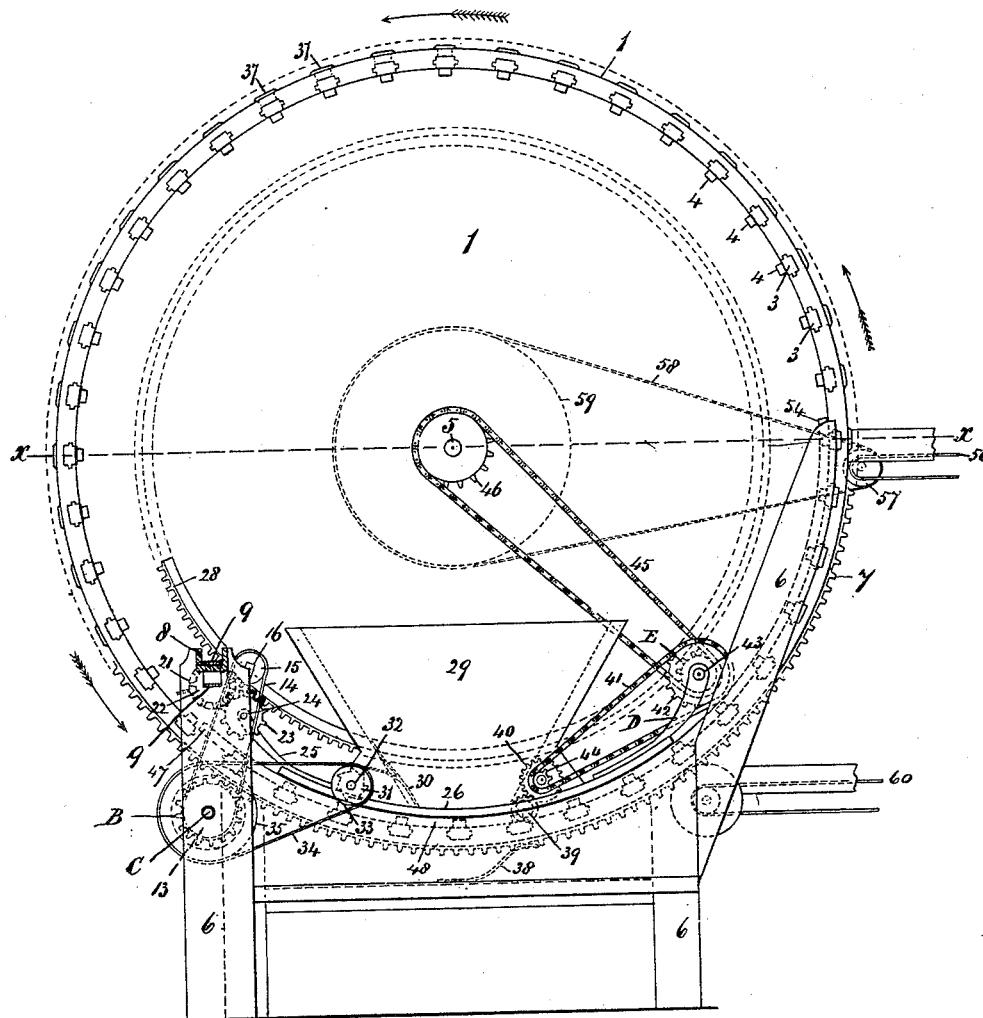


Fig. 1.

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H. H. Storey

Inventors:
Denis Casey,
John Mantion,
George H. Millen
By Henry Grist,
Attorney.

(No Model.)

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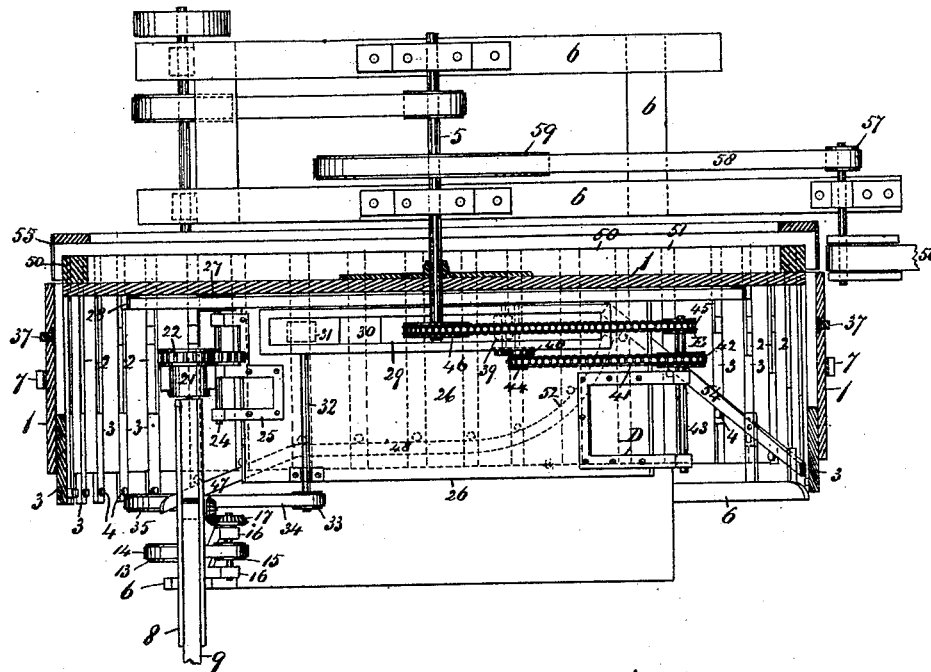


Fig. 2.

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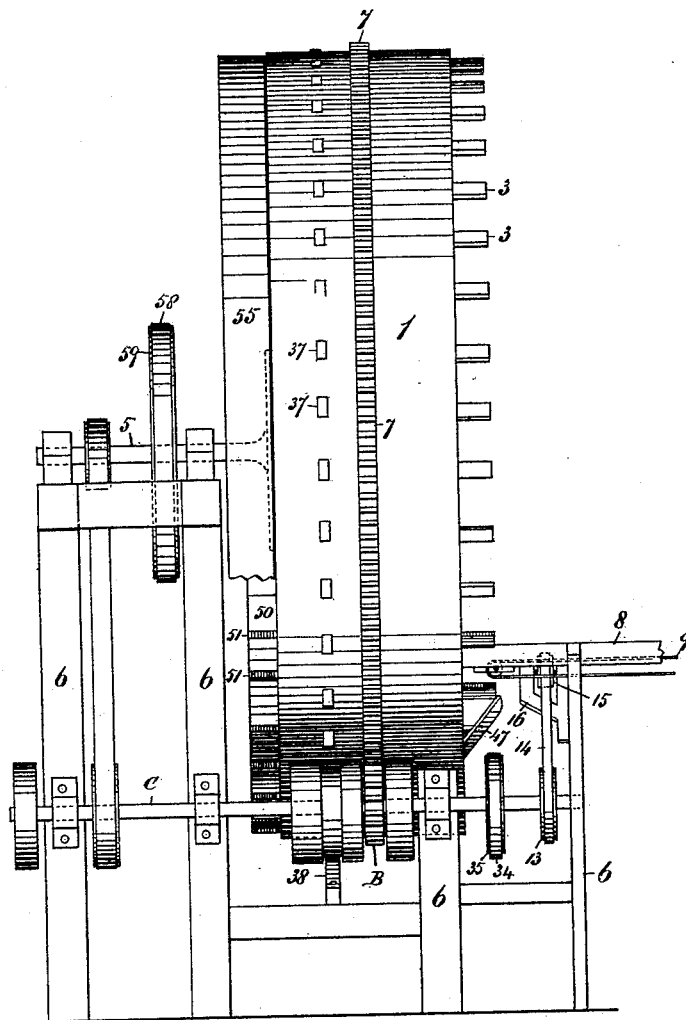


Fig. 3.

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(No Model.)

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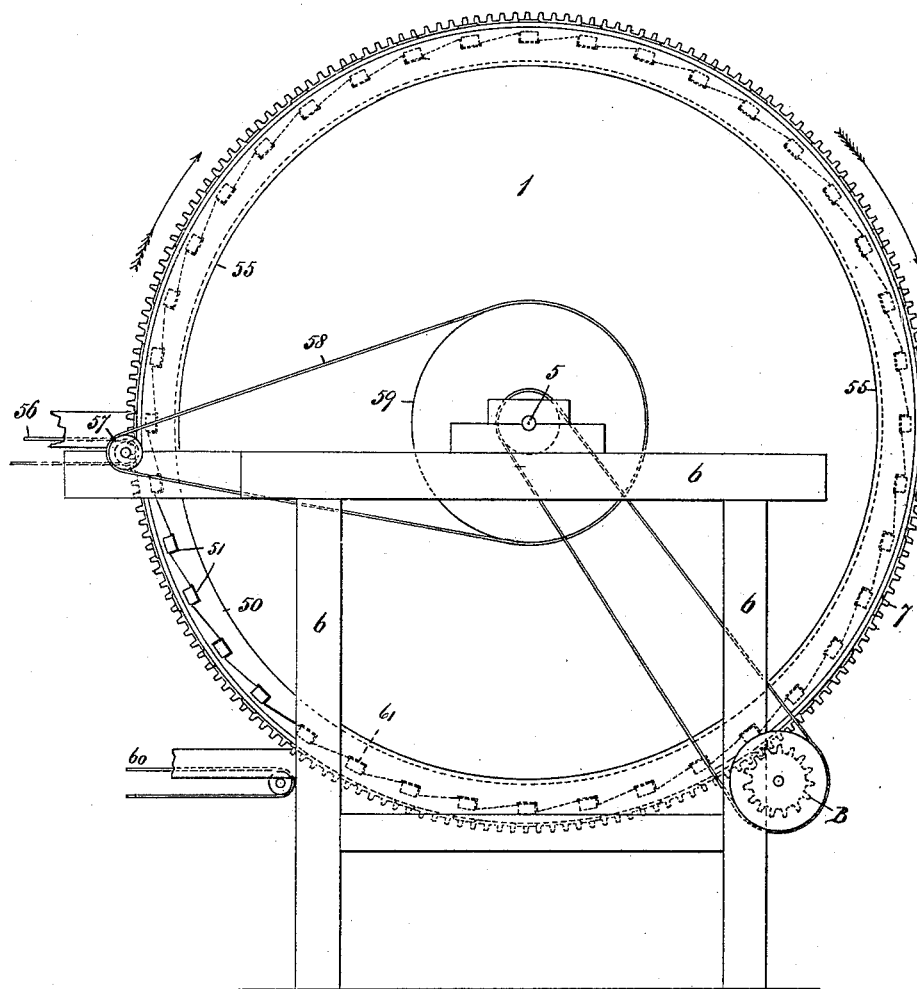


Fig. 4.

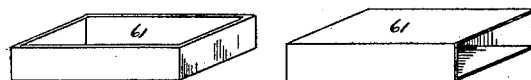


Fig. 5.

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UNITED STATES PATENT OFFICE.

DENIS CASEY, JOHN MANTION, AND GEORGE H. MILLEN, OF HULL, QUEBEC, CANADA.

MACHINE FOR BOXING MATCHES.

SPECIFICATION forming part of Letters Patent No. 418,887, dated January 7, 1890.

Application filed October 3, 1889. Serial No. 325,930. (No model.)

To all whom it may concern:

Be it known that we, DENIS CASEY, JOHN MANTION, and GEORGE H. MILLEN, all of Hull, in the Province of Quebec, in the Dominion of Canada, have invented certain new and useful Improvements in Machines for Boxing Matches; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a front elevation of our machine. Fig. 2 is a plan below the section-line *x x*, Fig. 1. Fig. 3 is a side elevation of Fig. 1. Fig. 4 is a rear elevation, omitting portions of the driving and running gear shown in Fig. 3 for clearness of illustration of the rotary cylinder; and Fig. 5 represents an empty match-box and its tubular cover enlarged. Our invention has for its object to automatically fill boxes with matches and apply the covers to the boxes.

The empty boxes are severally placed by a feed-wheel into one of a number of parallel grooves in the inner periphery of a rotary wheel or cylinder, each groove containing a sliding punch. The tubular covers for the boxes are fed to a rim notched at the end of the grooves, and the boxes are carried by the wheel or cylinder under a stationary hopper containing the matches, and when filled pass onward until the punch in the groove in which the box is carried drives the filled box endwise into the open-ended cover. The filled and covered boxes then fall by gravitation from the notched rim of the cylinder and is received by an endless-belt conveyer suitably placed.

Our invention consists of a rotary wheel or cylinder secured to the end of a shaft, and having on the internal periphery parallel grooves lengthwise of the cylinder and a sliding punch in each groove, and a stationary hopper dropping the matches into the boxes carried by the cylinder-grooves under the hopper, cams fixed to said frame to move the punches endwise for placing the boxes under the hopper and subsequently punch the

filled boxes into the covers, said wheel or cylinder having a rim notched to coincide with the grooves therein, and to which notched rim the covers are fed by an endless belt. The filled boxes fall by gravitation from the notches during the rotation of the cylinder past an endless conveyer, as hereinafter more particularly set forth.

1 is a wheel or cylinder having on its internal periphery parallel grooves 2, each containing a sliding bar or punch 3, provided with an anti-friction roller 4, by which the punch is moved endwise in its groove by contact with fixed cams, hereinafter referred to, and said wheel or cylinder is mounted on the end of a shaft 5, journaled in bearings secured to the top of a stand 6, and driven by a cog-band 7 on the outer periphery of cylinder 1, meshing with a cog-wheel B on the main driving-shaft C, which is journaled in bearings at the side of stand 6, or the cylinder may be rotated by driving-power applied to shaft 5 and the cog-band 7 dispensed with.

8 is a feed-trough at right angles to the rotation of cylinder 1, in which trough runs an endless belt 9, on which the empty match-boxes are placed bottom up and end to end, and said endless belt is driven by a belt-pulley 13 on shaft C, belt 14, pulley 15, journaled between jaws of a bracket 16, secured to the stand 6, and by the beveled gear-wheels 17, or in any other convenient manner.

To the under side of the bottom of trough 8, at the end thereof and in line therewith, is secured a projecting axle, on which is a feed-wheel 21, having radial blades which immediately receive the boxes from the trough and dumps them one by one into the grooves 2 of cylinder 1.

The feed-wheel 21 is driven by a cog-wheel 22, secured thereto, which cog-wheel meshes with a cog-wheel 23, keyed on shaft 24, which is journaled in a bracket-frame 25, bolted to floor 26 of stand 6, and said shaft carries a cog-wheel 27, which meshes with a cog-ring 28, secured to the perforated or closed head or end of cylinder 1.

29 is the hopper in which the matches are

placed, and said hopper is fixed securely to floor 26 and stands clear of the cylinder 1. One end of the hopper is provided with a spring-strip 30, which is agitated to keep the matches shaken together by a click-wheel 31 on a shaft 32, journaled in brackets secured to floor 26, and said shaft is driven by a pulley 33 on said shaft and a belt 34, running on a belt-pulley 35 on shaft C. In each groove of cylinder 1 and in alignment with the hopper is a mortise which is occupied by a loose block 37, which passes over a spring 38, the free end below the hopper and the other end secured to stand 6. When receiving the matches, each box bears on the top of the block and the spring lifts the block, whereby the box will rise against a clearing-wheel 39 at one side of the outlet of the hopper to level off the matches in the box and prevent over-filling, and also to prevent the matches choking the boxes at the outlet. After passing the spring the block drops by gravitation a limited distance of about the thickness of a match, and the filled box is then punched into its cover in a coincidentally-notched rim 50 by the punch-roller 4 moving against the curved end 52 of the cam-bar 48. The clearing-wheel 39 is mounted on a shaft journaled transversely through the hopper, and is driven by a cog-wheel on said shaft meshing with a cog-wheel 40 on a shaft carrying a sprocket-wheel 44, and by chain 41 and sprocket-wheel 42 on a shaft 43, journaled in a bracket D, secured to floor 26, sprocket-wheel E, chain 45, and sprocket-wheel 46, keyed on the end of shaft 5.

To the under side of floor 26 is secured a cam-bar 48 parallel to the hopper, and said cam-bar has an upwardly and outwardly projecting end portion 47 offset from the inner periphery of cylinder 1. During the rotation of the cylinder the anti-friction roller of each punch is brought into contact with the portion 47 of the cam-bar and slides the punch inwardly to move the empty box in the groove to the alignment of the outlet of the hopper until the parallel portion 48 of the cam is reached, when the movement of the punch endwise will cease and the empty box fills with matches dropping or feeding from the hopper during the rotation of the cylinder.

50 is a rim secured to the cylinder at the rear or integral therewith, and said rim has notches 51 at the inner end of the grooves in the cylinder, and into each notch a cover of the boxes is fed. The filled boxes in the grooves in the cylinder 1 are then driven endwise into the tubular covers by the punches being forced inward by the anti-friction rollers 4 moving against the sharply-curved portion 52 of the cam-bar 48. The notched rim 50 is partly inclosed by a stationary cover 55, secured to stand 6 for protection to the box-covers during the rotation of the cylinder. After a punch has performed its office of

driving the box into the cover it is receded to its original position by the anti-friction roller 4 moving against a cam-bar 54, secured diagonally to the main frame or stand 6. The covers of the boxes are fed to the notches 51 of rim 50 by placing them sidewise on an endless belt 56, which is driven by pulley 57, belt 58, and pulley 59 at the rear of the cylinder. The filled and covered boxes 61 discharge from the notches 51 by gravitation and fall on an endless-belt conveyer 60 and by it are removed away from the cylinder.

The machine may be made for larger or smaller boxes and the grooves and punches reduced to suit smaller boxes, or by inserting a lining in the grooves and using smaller punches.

We claim as our invention—

1. The combination, with the main frame or stand 6, having a stationary hopper 29 and fixed cam-bars 48 54, of the rotating wheel or cylinder 1, provided on the interior periphery with grooves 2, parallel to the axis of rotation, punches 3, sliding in said grooves by moving against the cams during the rotation of the cylinder, and having a rim 50, provided with notches 51, coincident to the grooves, as set forth.

2. The combination, with the main frame or stand 6, having a stationary hopper 29 and fixed cam-bars 48 54, of the wheel or cylinder 1, mounted on said frame or stand eccentrically to said hopper, and having a notched rim 50 and provided with grooves 2, punches 3 in said grooves actuated by the cam-bars, a feed-wheel 21 within the cylinder, a trough 8, and endless belt 9, leading to the feed-wheel, and belts 56 60, leading to and from the notched rim, as set forth.

3. The combination, with the wheel or cylinder 1, provided with grooves 2, and punches 3, sliding in said grooves, of the endless conveyer-belt 9, trough 8, and feed-wheel 21 for delivering empty boxes to the grooves, as set forth.

4. The combination, with the wheel or cylinder 1, provided with grooves 2, punches 3, and having a rim 50, provided with notches 51, coincident to said grooves, of the endless-belt conveyer 56, delivering the box-covers to said notches, and an endless-belt conveyer 60, receiving the filled and covered boxes from the notches, as set forth.

5. The combination, with the main frame or stand 6, having a hopper 29, of a wheel or cylinder 1, mounted on said frame or stand eccentrically to the hopper, punches 3, sliding in grooves therein parallel to the axis of rotation, and having a rim 50, provided with notches 51, coincident to said grooves, cam-bars 48 54, fixed to the stand or frame to reciprocate the punches, feed-wheel 21, to deliver the empty boxes to the grooves, and feed-belt 56, to deliver the box-covers to the notched rim, as set forth.

6. The combination, with the frame or stand
6, having a hopper 29 and a spring 38 at the
end of the hopper, of the cylinder or wheel 1,
provided with grooves containing a sliding
5 punch 3, and having loose blocks 37, lifted
by said spring while the box is being filled
with matches prior to the punch driving the
filled box into its cover, and a wheel 39 at

the end of the hopper to prevent overfilling
of the boxes, as set forth.

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