

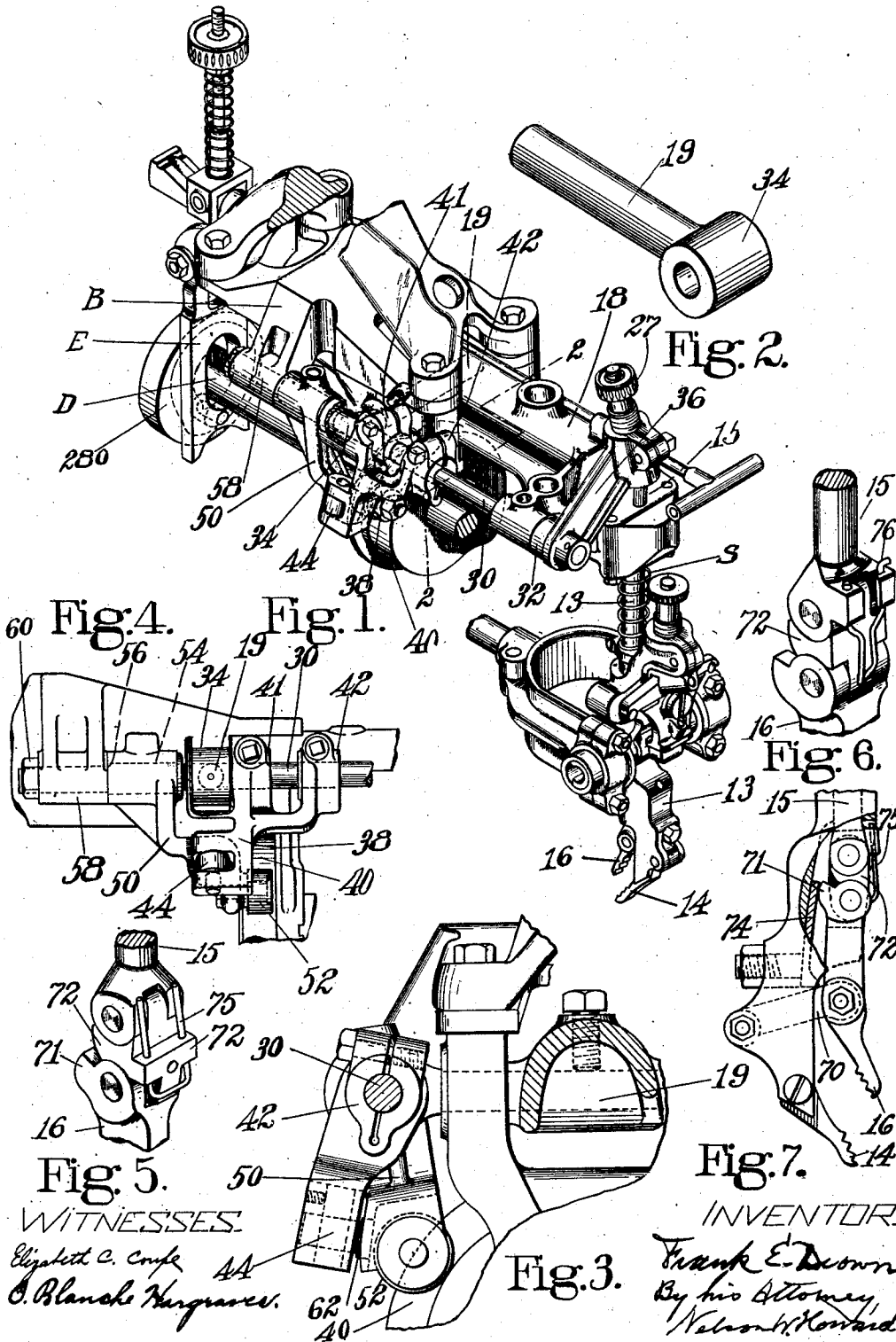
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PINGER ACTUATING MECHANISM FOR LASTING MACHINES.

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WITNESSES.

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UNITED STATES PATENT OFFICE.

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PINCER-ACTUATING MECHANISM FOR LASTING-MACHINES.

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Specification of Letters Patent.

Patented Nov. 21, 1911.

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To all whom it may concern:

Be it known that I, FRANK E. DROWN, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain Improvements in Pincer-Actuating Mechanism for Lasting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to pincer actuating mechanisms for use in lasting machines and is hereinafter described as applied to a lasting machine of the type described in United States Letters Patent No. 584,744; dated June 15, 1897. In machines of the type referred to, the mechanism for closing the pincers is actuated by a cam on the main shaft of the machine through suitable connections which comprise a roll pivoted in an arm of a rock shaft. This rock shaft is secured in bearings in an updraw lever which is mounted above the cam shaft and which has a tilting or tipping movement in a direction transverse to the axis of the main or cam shaft. The cam aforesaid does not share in this tipping movement. At every tipping of the updraw lever and consequently of the rock shaft and its dependent arm, there is necessarily a tipping of the bearing surface of the cam roll relatively to the edge of the cam which it engages. These tipping movements imparted to the cam roll through its connection with the tipping updraw lever occur during every actuation of the updraw lever to move the pincer mechanism upward or downward. Thus during a considerable part of the operation of the pincer actuating mechanism the cam roll is prevented from riding evenly on the edge of the cam. As a result the roll wears out rapidly, and, what is more important, the edges of the roll dig into and rut out the bearing edge of the cam thus necessitating frequent and expensive replacing of cams and entailing often inconvenient delays for substitution of new parts.

Accordingly an object of the present invention is to overcome these disadvantages of the construction now in use by providing an arrangement whereby the bearing surface of the cam roll will remain in substantially

square engagement with the edge of the cam during the described angular movement of the updraw lever. To this end I have provided mechanism so constructed and arranged that the aforesaid cam roll is not affected by the tipping movement of the rock shaft with the updraw lever, and so that moreover, the wear caused as aforesaid will be taken by a bearing provided for that purpose instead of on the cam edge. To attain these objects, I preferably dispose an intermediate member between the cam edge and the adjacent arm of the rock shaft, this member being arranged to swing about a fixed axis which is parallel with the cam shaft. This swinging arm carries the cam roll and has another face adapted to engage a roll pivoted in the arm of the rock shaft. As a result, every tipping of the rock shaft imparts relative movement to the roll on the rock shaft arm and its bearing on the swinging member but leaves undisturbed the angular position of the axis of the cam roll with relation to the cam edge. Moreover the above mentioned bearing on the swinging member for engaging the roll on the arm of the rock shaft takes the wear above described instead of the cam edge. These and other features of my invention will clearly appear from the following detailed description read in connection with the accompanying drawings which show a preferred embodiment thereof, applied to a machine of the type described in the aforesaid Letters Patent.

Referring to the drawings:—Figure 1 is a perspective view of a portion of the pincer mechanism of the aforesaid patent, showing my invention applied thereto. Fig. 2 is a detail. Fig. 3 is a section on the line 2—2 of Fig. 1. Fig. 4 is another detail. Fig. 5 is a perspective showing the pivoted jaw controlling spring. Fig. 6 shows a variation. Fig. 7 is a side elevation of the pincers with part of the casing broken away to show the mounting for the pivoted jaw.

The machine to which by way of illustration this invention is described as being applied comprises a column that supports a framework or head B in which is journaled the main shaft D of the machine upon which are the cams and gears, including the updraw cam 280 and the pincer closing cam 40,

which give the proper motions to the several mechanisms for operating the various last- ing devices.

Journalled in the head B is a pivot rod 19 (Fig. 1) on which is mounted the updraw lever 18 from the front end of which the pincers are suspended. A rock shaft 30 is journalled at one end in a bearing 32 in lever 18 and at its other end the said rock shaft 30 is journalled in a sleeve 34 which embraces an end of the rod 19 on which lever 18 is pivoted.

Fixed at one end of the rock shaft 30 is an arm 36 which is provided at its other end with suitable yielding connections with a plunger 27. The said plunger 27 rests upon the top end of a pincer bar 15 to which is pivotally connected at its lower end a movable pincer jaw 16. The bar 15 is disposed for longitudinal movement in the center of a tubular bar 13 which is connected at its upper end to the lever 18 and which carries at its lower end the fixed-pincer-jaw 14. It will be observed that a movement of the bar 15 in one direction operates to open, and a movement thereof in the opposite direction operates to close the pincers-jaws 14 and 16. In the bar 15 are pins which, projecting outwardly through slots in the bar 13, engage one end of a coil spring S seated against a fixed collar on bar member 15. Downward movement of plunger 27 and bar 15 for closing together the pincers jaws produces contraction of spring S which by its expansive force lifts bar 15 against plunger 27 for reopening the pincers jaws when permitted to do so by the movement of the rock shaft 30. The rock shaft 30 is thus actuated to rock about its axis by means of the cam 40 on shaft D through connections between rock shaft 30 and cam 40. These connections comprise an arm 38 secured to the rock shaft 30 by split clamps 41, 42. This arm 38 has a bifurcated lower end in which is pivotally mounted a roll 44.

Lever 18 heretofore referred to through its connections with pincers-bar 13 is arranged to effect a lifting and lowering of the pincers mechanism as a whole by a suitable tipping or tilting of the lever 18 about the rock shaft 19 as an axis. To effect this tipping movement of lever 18 an actuating cam 280 is mounted on shaft D. This cam 280 engages a pin or roll on a plate E. The plate E is suitably connected to one end of lever 18 whereby on the actuation of cam 280, lever 18 is given the aforesaid tipping movement at predetermined times depending upon the formation of the cam groove in cam 280.

The construction and arrangement of the above mentioned parts being substantially as shown and fully described in detail in the patent above referred to, further description thereof is unnecessary and reference may be

had to the aforesaid patent for any matters of construction not herein fully explained.

It will be remembered that the rock shaft 30 is mounted in bearings so as to have a fixed relation to the tipping updraw lever 18 although permitted to rock about its own axis. By reason of this fact, the said rock shaft 30 upon every tipping or tilting of lever 18 about the rock shaft 19, will receive itself a corresponding tipping movement. This tipping movement of rock shaft 30 is in a direction transverse to the axis of the said rock shaft, and also transverse to the axis of cam shaft D. The cam shaft D and cam 40, however do not share in these tipping movements of lever 18 and rock shaft 30. Accordingly at every tipping of rock shaft 30 and of its dependent arm 38 the roll 44 carried therein will be tilted relatively to the plane of the bearing edge of cam 40 about an axis transverse to the axis of the cam shaft D and cam 40. Therefore if, as in the construction of the before mentioned patent the said roll 44 is the cam roll and is in engagement with cam 40, at every such tipping or tilting of the said roll, it will be prevented from riding evenly on cam 40 with the result that not only will the roll 44 wear rapidly and unevenly, but the cam 40 will be rutted and pitted by the above described variations in the angular position of roll 44 relatively to the said cam 40. To obviate these difficulties, and to eliminate such wear upon cam 40, I provide an intermediate arm 50 (Figs. 1 and 3) carrying a cam roll 52 adapted to engage the bearing surface of the edge cam 40. This arm 50 is disposed between cam 40 and arm 38 of rock shaft 30, and is arranged to swing freely about a fixed pivot or stud 54. The stud 54 (Fig. 4) has a shoulder 56 formed thereon, the portion of the said stud adjacent to the fixed arm 38 being enlarged over the other and relatively thinner portion of the said stud. This thinner portion of stud 54 is secured rigidly in a bearing 58 in the machine frame or head B by means of a nut 60, the nut 60 being adapted to draw the shoulder 56 of the stud 54 hard against one end of the bearing 58. One face of the swinging member 50 (Fig. 3) has set into it a block of hardened steel 62 adapted and arranged for engagement with the roll 44 mounted in the fixed arm 38 of the rock shaft 30. The construction is such therefore, that whenever the rock shaft 30 and arm 38 are tilted or tipped by the tipping of lever 18 as above described, the axis of roll 44 in the fixed arm 38 will be tipped relatively to the bearing 62 on the swinging member 50, but the said intermediate or swinging member 50 will be undisturbed thereby, and the axis of the cam roll 52 carried in the member 50 will remain constantly parallel to the cam shaft D

whereby the said cam roll 52 is permitted to maintain constantly a true and uniform contact with cam 40. Thus the wear formerly coming on cam 40 as aforesaid is now
 5 taken by the bearing block 62 in the swinging member 50, and the life of the cam 40 is thereby greatly prolonged.

In operation, as indicated above, whenever during the engagement of cam roll 52
 10 with cam 40, lever 18 is tipped to operate the pincer mechanism upwardly or downwardly, the angular variations of the axis of the roll 44 on the fixed rock shaft arm 38 are taken care of by the bearing block 62 on
 15 which the said roll rides while the cam roll 52 in its contact with cam 40 is unaffected thereby.

The pincer jaw 16, which is pivoted about midway of its whole length upon the swinging bar 70, is connected at its upper end by
 20 a link 72 to its operating rod 15 in order that the tip of the jaw may have an appropriate outreaching movement to gather in the stock which is to be gripped. The
 25 heel 71 of jaw 16 slides over a cam 74 which is formed to cooperate with these connections for giving the desired path of movement and in accordance with a construction of this machine a spring is arranged to co-
 30 operate with the link 72 and the foot of the rod 15 for controlling the flexure of the joint between said link and rod for the purpose of maintaining the heel 71 against the cam 74. This spring which is indicated at
 35 75 in Fig. 5 has an inverted staple shape and its cross bar is seated in a transverse groove in the face of the link 72 while its legs extend upwardly through a shelf of said link and engage the foot of the rod 15.
 40 This constitutes a very effective arrangement for controlling the flexure of the joint between the link and the rod and holding the lower end of link 72, and thereby the heel of jaw 16 yieldingly toward the cam 74
 45 (Figs. 5 and 7). In Fig. 6 a variation in the form of the spring is shown in which while the cross bar rests against the face of the link 72 the legs extend through bosses on the foot of rod 15 and the end of one
 50 leg is outturned as at 76 to retain the spring in place. For convenience in assembling a close fitting eye is made for the straight leg upwardly through its boss and for receiving the other leg the boss is slotted inwardly and then laterally to form a seat in
 55 which the resilience of the spring holds the leg having the outturned end.

Having now described my invention thus fully, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. In a lasting machine, a pincer actuating mechanism comprising a rock shaft having
 65 a tipping movement transversely of its axis, an operating cam for said rock shaft which

does not partake of said tipping movement, and an intermediate member arranged between the cam and the adjacent arm of the rock shaft and having a face for engagement with the said arm. 70

2. In a lasting machine, a pincer actuating mechanism comprising a cam shaft, an updraw lever mounted above the cam shaft and tipping about an axis transverse to the shaft,
 75 a pincer closing rock shaft mounted in bearings in the tipping updraw lever, a cam on the cam shaft to actuate an arm of the rock shaft, and an intermediate arm swinging about a fixed axis that is parallel with the cam shaft, said intermediate arm having a
 80 face for engagement with the cam.

3. In a lasting machine, a pincer actuating mechanism comprising a cam shaft, a pincer closing rock shaft having an arm fixed thereon, a cam on the cam shaft for actuating the
 85 arm of the rock shaft, and an intermediate member arranged between the cam and the said arm of the rock shaft, the said member swinging about a fixed axis parallel with the cam shaft and having a face over which
 90 the cam rolls and another face over which the arm can move in a path substantially perpendicular to the direction of movement of the cam.

4. In a lasting machine, a pincer actuating
 95 mechanism comprising a cam shaft, an updraw lever mounted above the cam shaft and tipping about an axis transverse to the shaft, a pincer closing rock shaft mounted in bearings in the tipping updraw lever and hav-
 100 ing an arm dependent therefrom, a cam on the cam shaft to actuate said arm of the rock shaft, and an intermediate member between the cam and said arm of the rock shaft arranged to swing about a fixed axis
 105 parallel with the cam shaft and having opposite faces adapted for engagement with said cam and said arm of the rock shaft.

5. In a lasting machine, a pincer actuating mechanism including an updraw lever,
 110 pincer closing devices which partake of the movements of the lever, a cam which does not partake of such movements, and means maintaining a square engagement with the face of the cam and through which the
 115 pincer closing devices are actuated in the different positions assumed by said devices during the lever movements.

6. In a lasting machine, a pincer actuating mechanism including an updraw lever,
 120 pincer closing devices which partake of the movements of the lever, a cam which does not partake of such movements, and connections arranged to maintain a square engagement with the cam and permit a rock-
 125 ing engagement with said devices during said lever movements.

7. In a lasting machine, a pincer actuating mechanism including an updraw lever,
 130 bearings formed in said lever, a pincer clos-

ing rockshaft mounted in said bearings, a pincer closing cam, a fulcrum pin on which said lever turns, a bearing formed in the end of the fulcrum pin, and a cam engaged
5 member turning in said latter bearing and on which an arm of the pincer closing rockshaft rests and has sliding movement as the updraw lever is actuated.

8. In a lasting machine a tipping lever, a
10 rockshaft extending longitudinally thereof and partaking of the tipping movement of said lever, a cam for imparting separate rocking movements to said rockshaft, a shaft

by which the cam is turned, and a plate interposed between the cam and an arm of the
rockshaft and which can move under action
of the cam about an axis parallel with the
cam shaft, for the purpose described. 15

In testimony whereof I have signed my name to this specification in the presence of
two subscribing witnesses. 20

FRANK E. DROWN.

Witnesses:

CHESTER E. ROGERS,
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."