B. M. W. HANSON.

DEVICE FOR MECHANICALLY REGULATING FEED MECHANISM.

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Fig. 1.

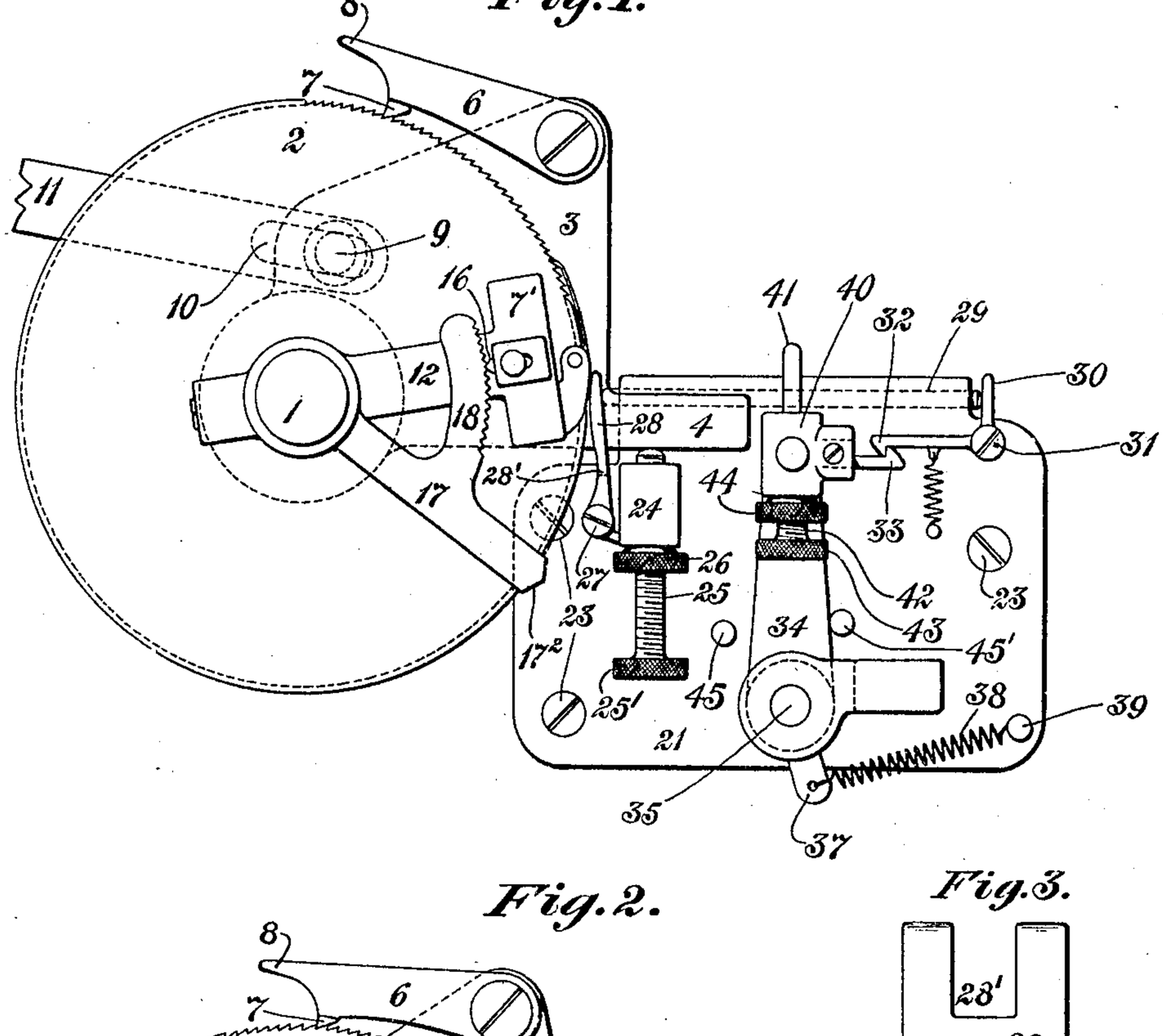

Fig. 2.

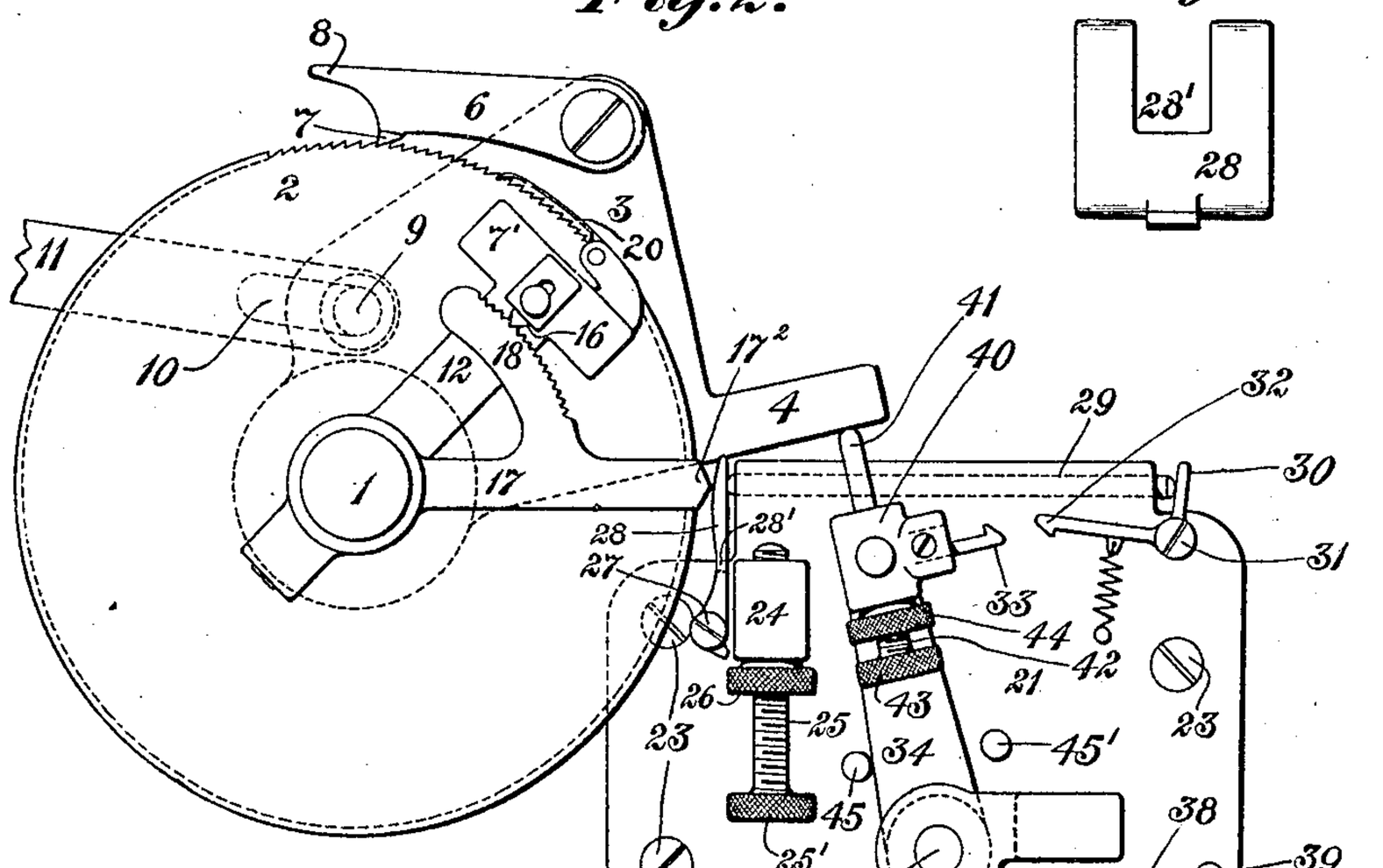

Fig. 3.

Witnesses:

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Inventor:

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By his Attorney,

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UNITED STATES PATENT OFFICE.

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DEVICE FOR MECHANICALLY REGULATING FEED MECHANISM.

No. 909,892. Specification of Letters Patent. Patented Jan. 19, 1909.

Application filed April 12, 1907. Serial No. 367,855.

To all whom it may concern:

Be it known that I, BENGT M. W. HANSON, a citizen of Sweden, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Devices for Mechanically Regulating Feed Mechanism, of which the following is a specification.

This invention relates to mechanical regulating and throw-off devices for feed-mechanism, and while designed for use with metal-grinding or reducing machines, is limited to no specific art.

Frequently it is necessary either to increase or to decrease the amplitude of oscillation of a pawl coöperating with a ratchet-wheel fixed to a shaft controlling the feed-mechanism, and the object of my invention is the provision of devices for accomplishing this result in an accurate manner and also for stopping the motion of the feed at a predetermined point.

Other objects of the invention will be set forth in the following description.

In the accompanying drawings, Figure 1 is a front view of the improvement showing one stage of the operation; Fig. 2 is a similar view illustrating the parts in different positions; and Fig. 3 is a detail view hereinafter described.

Like numerals designate similar parts throughout the several views.

Referring to the drawings, the numeral 1 designates a shaft controlling feed-mechanism of any desired kind, and 2 a ratchet-wheel rigid with said shaft.

Sleeved on shaft 1, or on the hub of ratchet-wheel 2, is an arm 3 having a lateral extension 4, and pivoted at 5 to the upper part of the arm is a pawl 6 having a tooth 7 normally in engagement with the teeth of the ratchet-wheel, and provided with a handle 8 by which it may be lifted to free said engagement at any required time. On the inner surface of the arm is a stud or wrist-pin 9, working in a slot 10 of a pitman 11, which may be actuated in any desired manner.

Designated by 21 is a plate which may be secured to the frame of the machine with which the feed-mechanism is employed by screws 23. In a lug 24 of said plate is threaded a screw 25 having a knurled head 25′, and a jam-nut 26 the point of said screw being located beneath the extension of arm 3. Pivoted at 27 to the plate 21 is a lever 28, the free end of which is bifurcated at 28′ to provide clearance for plate 3, and mounted in a chamber of the plate 21 is a rod 29 in engagement at its inner end with said arm 28, and at its outer end with an arm 30 of an angle-lever pivoted at 31 to the plate, and having a latch 32 projecting inwardly, and adapted to engage a catch 33, as will be hereinafter described.

Designated by 34 is a lever pivoted on a stud 35, and having an arm 37 connected by a spring 38 with a stud 39 of the plate 21. In a head 40 of the lever 34 is adjustably fitted a pin 41 projecting from a screw 42 having a knurled manipulating-head 43, and locked in place by a jam-nut 44,—the amplitude of oscillation of said lever being limited by stops 45, 45′ on said plate 21.

To the hub of the ratchet-wheel 2 is frictionally fitted an arm 12 having a T-head 7 to which the shoe 20 is pivoted. Normally therefore the arm 12 will turn with said ratchet-wheel although by virtue of its connection therewith it is capable of adjustment so as to regulate the time at which the shoe 20 will lift the pawl 6 to throw the latter out of action. The arm 17 is loosely carried by the hub of the arm 12 and is therefore adjustable being held in an adjusted position by a detent as 16 carried by the T-head 7 and adapted to engage the teeth of the rack 18 extending laterally from the arm 17. This arm 17 therefore is capable of rotating with the ratchet-wheel 2 and serves as a means for effecting, through intermediate means, a shortening in stroke of the oscillatory member 3.

In the operation of the invention, the pitman 11 is reciprocated by any desired mechanism, and is limited at the end of its stroke by the walls of the slot 10 engaging the pin 9 of the arm 3. As said pitman moves forward it will oscillate the arm 3 and cause the tooth 7 of pawl 6 pivoted to the arm to engage the teeth of ratchet-wheel 2, and to advance said ratchet-wheel and the shaft 1 to which it is connected. As said ratchet-wheel advances, arms 12 and 17 will move with said ratchet-wheel and after a certain number of teeth of the ratchet-wheel have been operated upon by the pawl 6, the beveled end 17^2 of arm 17, acting as a cam, will come into contact with the upper end of pivoted lever 28, will force said end

inward and drive the rod 29 backward, thereby tripping the latch 32, and permitting the spring 38 to throw the lever 34 inward, and cause the adjustable point 41 to pass beneath the extension 4 of the swinging arm 3, thereby limiting the amplitude of oscillation of said arm 3, and shortening the feed-stroke of the mechanism. As the ratchet-wheel moves forward after this condition has arisen, a slow feed will take place for a certain number of teeth dependent upon the adjusted position of the shoe 20, and when said shoe comes beneath the tooth 7 of pawl 6 it will raise said pawl, and disconnect the same from the teeth of the ratchet-wheel 2. In this way any desired feed adjustment may be obtained, and either a coarse or fine feed may be readily accomplished, the control of said feed being readily effected by the means described.

Changes may be made in various parts of the mechanism, without departure from the invention.

Having thus described the invention, what I claim is:

1. The combination, with a ratchet-wheel, of a movable arm; a pawl carried by said arm, and adapted to engage the ratchet-wheel; means for actuating the arm; a device adapted to be thrown under an extension of the arm to limit the movement of said arm; a latch for said device; and means controlled by the ratchet-wheel for tripping said latch.

2. The combination, with a shaft, and with a ratchet-wheel rigid therewith, of an arm ocillatory about said shaft, said arm having an extension; a pawl carried by the arm; a shoe for releasing the pawl at a predetermined point; and means to engage said extension, for varying the amplitude of oscillation of the arm.

3. The combination, with a shaft, and with a ratchet-wheel carried thereby, of an arm movable around the shaft; means for oscillating said arm; a pawl carried by the arm; a shoe for releasing the pawl; an extension rigid with the arm; and means adapted to be thrown beneath the extension, and serving to limit the oscillation of said arm.

4. The combination, with a shaft, and with an arm sleeved thereon, said arm having an extension, of a ratchet-wheel connected with the shaft; a shoe for releasing the pawl; means for oscillating the arm; and an adjustable device beneath the extension for limiting the stroke of said arm.

5. The combination, with a shaft, and with a ratchet-wheel rigid therewith, of an arm sleeved upon the shaft, and having an extension; a pawl carried by the arm, and in engagement with the teeth of the ratchet-wheel; a device adjustable upon the shaft, and having a rack; a device carried by the ratchet-wheel, and having a shoe; a detent carried by said device, and in engagement with the rack; a frame; a movable rod on said frame; a latch adapted to be tripped by the rod; a cam for tripping the latch; a lever pivoted to the frame; and means carried by the lever for engaging the arm.

6. The combination of a ratchet-wheel, a pawl for operating said ratchet-wheel, an oscillatory member carrying said pawl, a shiftable device normally held against movement, and mechanism operable by said ratchet-wheel for releasing said shiftable device at a predetermined point and for afterward throwing the pawl out of action, said shiftable device when released being automatically movable into position to limit the stroke of said oscillatory member.

7. The combination of a ratchet-wheel, a movably-mounted pawl for operating the ratchet-wheel, a shoe movable into position between the teeth of the ratchet-wheel and the pawl, and automatically-operative mechanism controlled by the ratchet-wheel for limiting the movement of the pawl and for also moving the said shoe between said teeth the said pawl to stop the ratchet-wheel.

8. The combination of a ratchet-wheel, an oscillatory member, a pawl carried by said oscillatory member, for operating said ratchet-wheel, automatically-operative mechanism for limiting the amount of stroke of said member, and an automatically-operable shoe movable into position between the teeth of the ratchet-wheel and pawl to throw the latter out of action.

9. The combination of a ratchet-wheel, an oscillatory member, a pawl carried by said oscillatory member, for operating said ratchet-wheel, an automatically-operative device, a latch for holding said automatically-operative device normally against movement, and means for tripping said latch to release said automatically-operative device the latter when released serving to vary the stroke of said oscillatory member.

10. The combination of a ratchet-wheel, a pawl for operating said ratchet-wheel, a movable device for carrying said pawl, an automatically-shiftable device, a latch for normally holding said automatically-shiftable device against movement, means movable with the ratchet-wheel for tripping said latch to thereby release said automatically-shiftable device, the latter when released being movable into position to vary the movement of said movable device, and means also movable with said ratchet-wheel for throwing the pawl out of action.

In testimony whereof I affix my signature in presence of two witnesses.

BENGT M. W. HANSON.

Witnesses:

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