

(No Model.)

3 Sheets—Sheet 1.

R. A. REGISTER.  
COCK GRINDING MACHINE.

No. 370,160.

Patented Sept. 20, 1887.

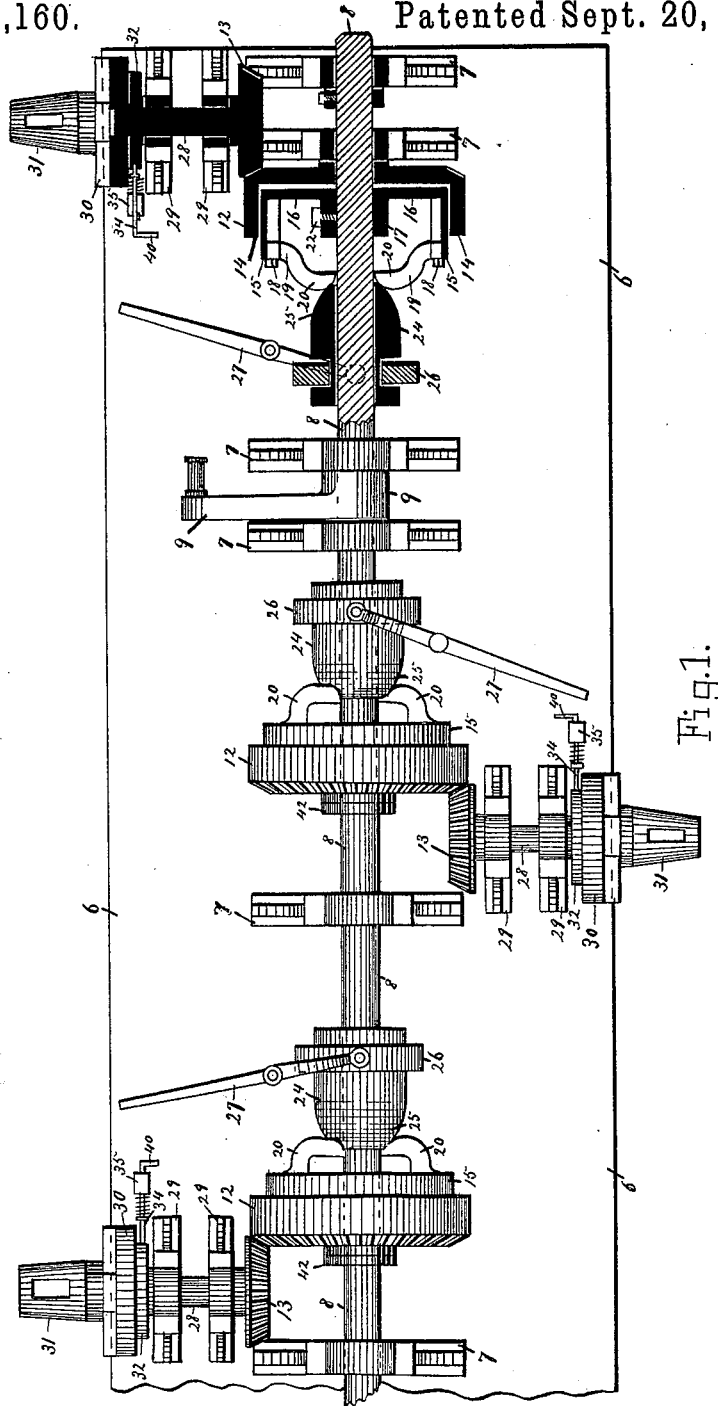


Fig. 1.

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Inventor:  
Robert A. Register  
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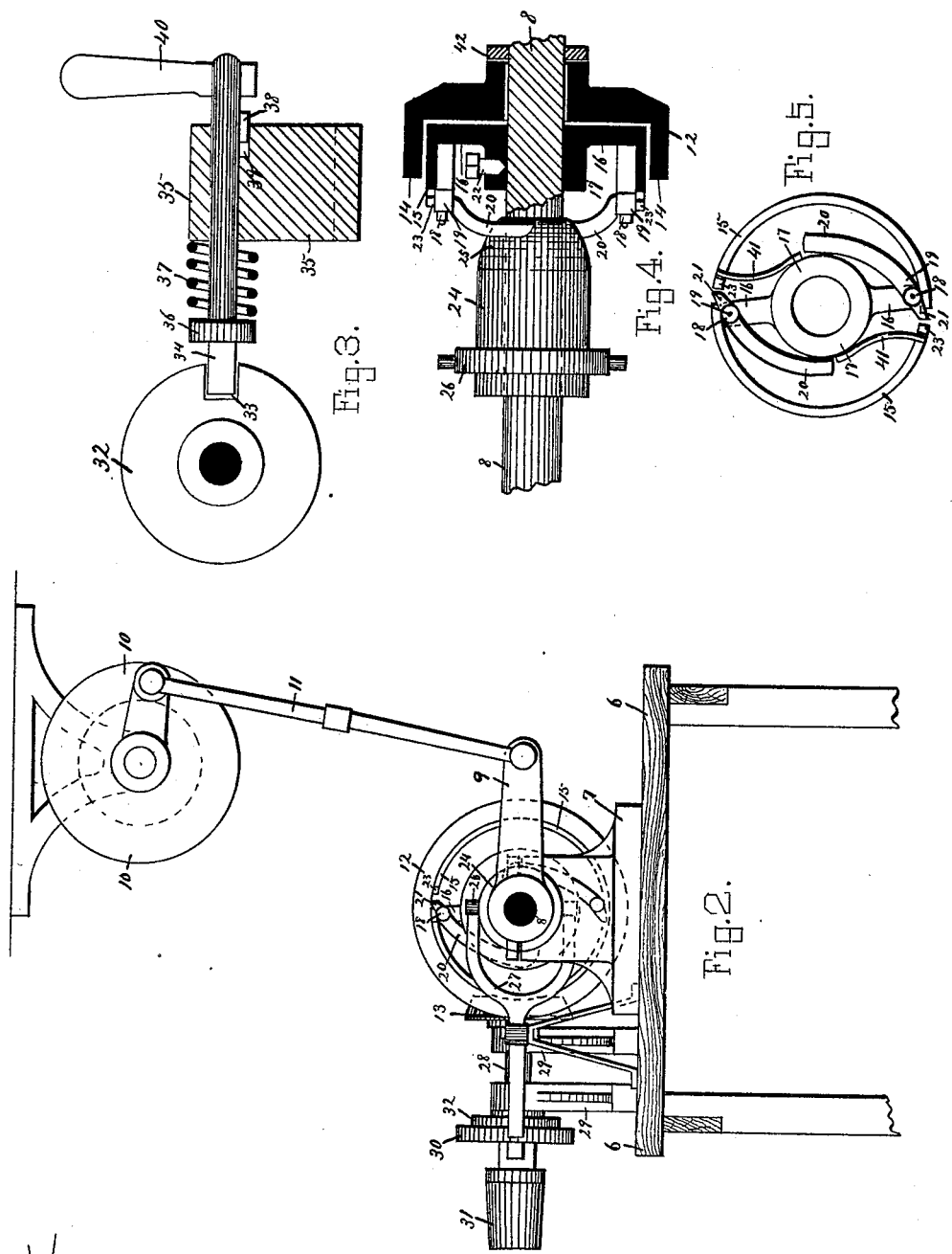
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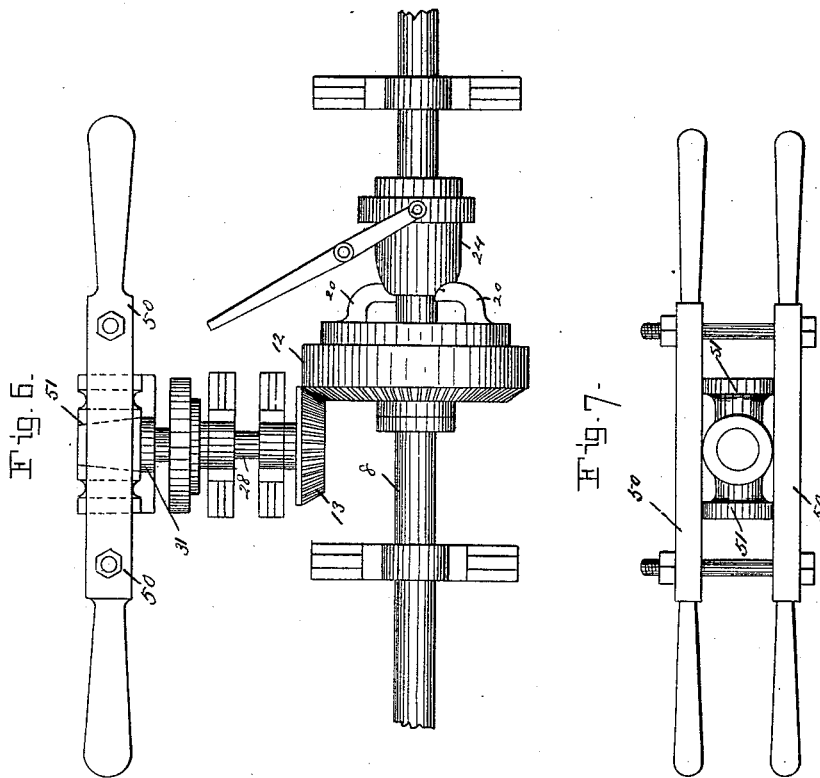
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# UNITED STATES PATENT OFFICE.

ROBERT A. REGESTER, OF BALTIMORE, MARYLAND.

## COCK-GRINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 370,160, dated September 20, 1887.

Application filed November 19, 1886. Serial No. 219,423. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT A. REGESTER, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Cock-Grinding Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in cock-grinding machines wherein is imparted an oscillating motion to the plug of the cock which is to be ground by specially-adapted mechanism, hereinafter described, special clutching devices being provided for throwing in and out of gear that portion of the mechanism which operates the plug of the cock to be ground, the said clutching device being so constructed that in the vibrating movement of the said plug a smooth and steady motion is maintained free from jarring or lost motion.

In the further description of my invention reference is had to the accompanying drawings, in which—

Figure 1 is a plan of the device complete, with an attachment in section. Fig. 2 is an end elevation of Fig. 1. Fig. 3 is a detail view of the chocking device. Fig. 4 is a detail view, partly in section, of the coupling device. Fig. 5 is a front elevation of the expanding segmental ring used in the coupling. Fig. 6 is a plan of a single cock-holding attachment, showing the clamping device for holding the barrel of the cock during the operation of grinding. Fig. 7 is a side elevation of the clamp.

Similar figures refer to similar parts throughout the several views.

The figure 6 denotes the table upon which the device is mounted. To the said table 6 are secured the bearings 7, in which oscillates the shaft 8. Motion is given to the shaft 8 by the rocker-arm 9, Fig. 2, which receives its vibrating motion from the crank-wheel 10 through the connecting-rod 11.

On the shaft 8 is loosely fitted the bevel gear-wheel 12, which is kept in position by the collar 42, and which, in addition to driving the small bevel-wheel 13, forms a portion of the coupling device. The said coupling de-

vice consists of the extended edge 14 of the bevel gear-wheel 12, within which freely oscillates, when contracted, the segmental expanding-ring 15, Figs. 4 and 5, the said segmental expanding-ring 15 being constructed in the manner shown in Fig. 5, and consisting of the segmental ring 15, the spokes 16, and the hub 17, all of which are integral, each segment being connected at one end by its respective spoke to the hub 17, thus permitting the free end of the segment to be expanded or contracted, as may be desired.

The hub 17 is screwed to the shaft 8 by means of the set-screw 22, thus causing the segmental ring to oscillate in unison with the shaft 8. To the spokes 16 are fulcrumed, at 18, the lever 19, which, when the long arm 20 of the lever 19 is thrown outward, serves to expand the segmental ring 15 through the pressure exerted by the short arm 21 of the said lever 19 upon the projection 23, with which each segment of the ring 15 is provided, thus expanding the said segmental ring 15 against the inner surface, which is formed by the extended edge 14 of the bevel gear-wheel 12, and causing the said bevel gear-wheel 12 and the shaft 8 to oscillate in unison. To operate the said levers 19, the sleeve 24 is provided, which fits loosely upon the shaft 8 and is furnished with the tapered end 25, which, when the said sleeve 24 is moved inward, will throw the long arms 20 of the levers 19 outward and, in the manner described, expand the segmental ring 15. When the coupling is in gear, the sleeve 24 will oscillate in unison with the shaft, and the strap 26 is provided, which permits the said sleeve 24 to be operated when in motion by the lever 27.

The segmental ring 15 is provided with the springs 41, Fig. 5, one end of the said springs being secured to the projection 23 on the segment 15 and the other end of the said springs 41 being secured to the hub 17, and serves to contract the two segments of the ring 15 when released by the tapered sleeve 24, thus permitting the said segmental ring 15 to oscillate freely within the extended edges 14 of the bevel-wheel 13.

Placed at right angles to the shaft 8 is the spindle 28, Fig. 1, which is supported by the bearings 29, and is operated by the smaller

bevel-wheel 13, which is in gear with bevel-wheel 12, the said bevel gear-wheels 12 and 13 being made in such proportion to suit any desired arc through which it may be required to oscillate the said spindle 28—about three-fourths of a turn being the necessary extent of arc in which the spindle should travel. To the end of the spindle is attached an ordinary lathe-chuck, 30, in which is secured in the usual manner the plug, 31, which is to be ground. The end of the spindle 28 is further provided with the face-plate 32, which is furnished with slot 33, Fig. 3, in which fits the bolt 34, when it is desired to chock the spindle 28 for the purpose of manipulating the work by hand, when it may be required. The said bolt 34, Fig. 3, works in the bearing 35, and is provided with the collar 36, upon which acts the spring 37, thus holding the bolt 34 in position in the slot 33. The said bolt 34 is further provided with the feather 38, which in the position shown in Fig. 3 moves in the slot 39, with which the bearing 35 is provided. The said feather 38, when the bolt 34 is drawn outward and the handle 40 placed at right angles to the former position, (whereby the feather 38 is out of line with the slot 33,) serves to hold the bolt 34 in this position and the handle out of the way of the operator.

The manner of operating is as follows: The shaft 8 being put in operation by the mechanism described, the plug of the cock to be ground is secured in the chuck 30. The bolt 34 is withdrawn from its slot 33 in the face-plate 32 and the bevel gear-wheel 12 put in gear by means of the lever 27 and the frictional clutch device heretofore described. The barrel of the cock in which the said plug is to be ground is held in the clamp 50, which is manipulated by an operator, who holds the said clamp in his hands and inserts the plug 31 within the barrel 51, Fig. 6, with the desired pressure, and permits the said plug to oscillate therein, which is accomplished by the mechanism heretofore described. It is necessary at times to withdraw and turn the barrel 51, in order to bring in contact new grinding-surfaces, and occasionally to withdraw the plug for the purpose of supplying the grinding material. The pressure with which the plug is held in the barrel of the cock varies at different stages of the grinding and requires the experienced judgment of the operator. At times it is necessary to throw the attachment out of gear and manipulate the barrel by hand, in which case the bolt 34

is thrown in its slot 33 in the face-plate 32, which holds the spindle 28 and its attached parts firm while such operation is being performed.

The coupling mechanism herein described as a part of this device is very necessary to secure a smooth and steady motion to the spindle 28, as in any of the ordinary devices where a feather or key is used a troublesome lost motion in the oscillating movement of the shaft is experienced, which is magnified in its transmission to the spindle 28, and causes a jerking movement to the parts being ground. It will be seen that this arrangement permits any number of grinding attachments to be operated from the one driving-shaft, whereby any number of operators may be employed at the same time.

Having described my invention and the manner of operating, what I claim, and desire to secure by Letters Patent, is—

1. In a cock-grinding machine, the combination of the oscillating shaft 8, the bevel gear-wheel 12, the bevel-wheel 13, the spindle 28, set at right angles to the shaft 8, a clutch to throw the said spindle 28 in or out of gear, the face-plate 32, with its chocking-bolt 34, and the chuck 30, for the purpose set forth.

2. In a cock-grinding machine, the combination of an oscillating shaft, 8, the bevel gear-wheel 12, the bevel gear-wheel 13, with its spindle 28 set at right angles with the shaft 8, a clutch-coupling consisting of the bevel gear-wheel 12, the segmental expanding-ring 15, the lever 19, and the tapered sleeve 24, the face-plate 32, provided with a chocking-bolt, 34, and a chuck, 30, substantially as shown, and for the purpose set forth.

3. In a cock-grinding machine, the combination of the oscillating shaft 8, the bevel gear-wheel 12, the bevel gear-wheel 13, with its spindle 28 set at right angles to the shaft 8, a clutch to throw the said spindle 28 in and out of gear, the chuck 30, and a clutching device for holding firm the said spindle 28, consisting of the face-plate 32, the bolt 34, provided with the feather 38, and the bearing 35, provided with the slot 39, substantially as shown, and for the purpose set forth.

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

ROBERT A. REGISTER.

Witnesses:

CHAS. W. SMILEY,  
JNO. T. MADDOX.