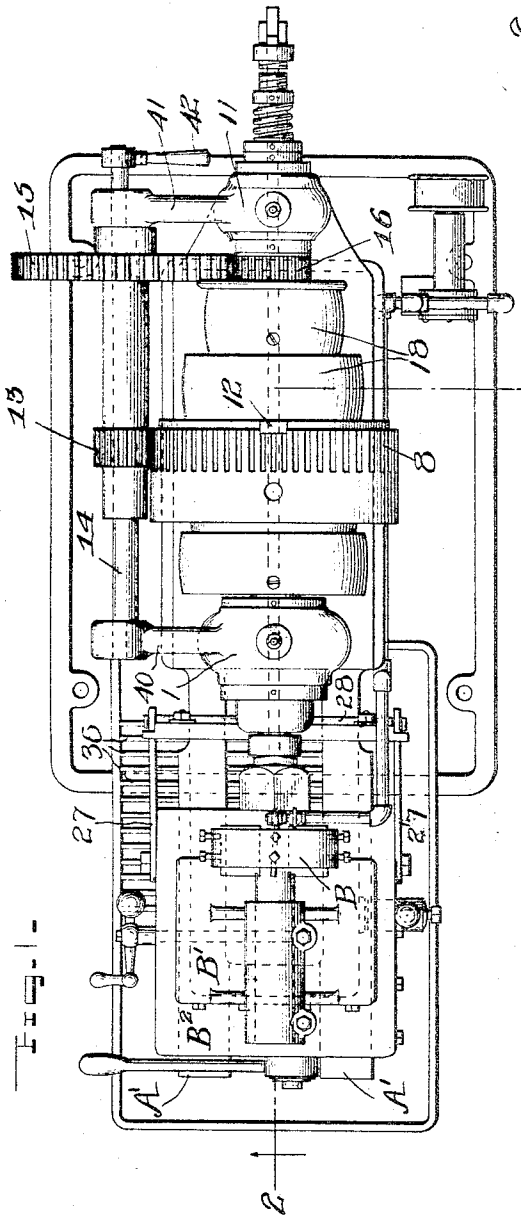
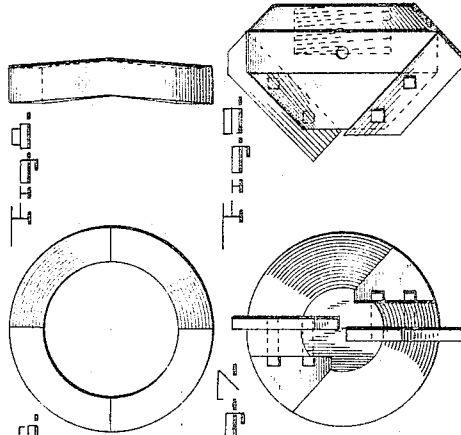
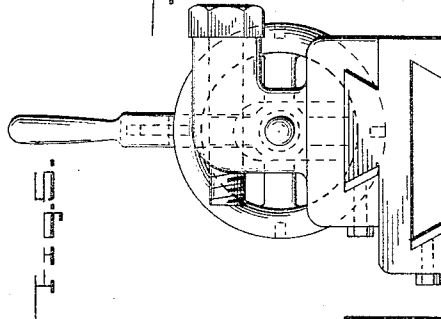
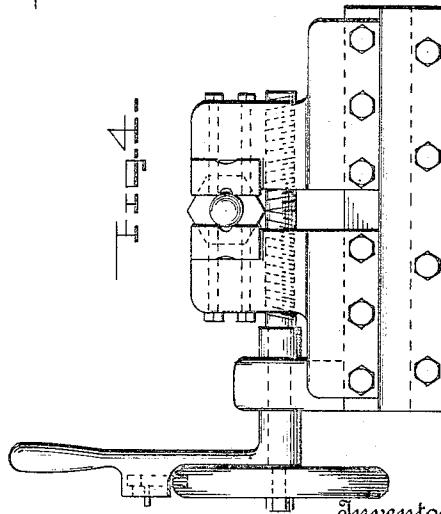


V. R. KOONTZ.
NUT FACING MACHINE.
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1,114,151.

Patented Oct. 20, 1914.
2 SHEETS-SHEET 1.



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Witnesses

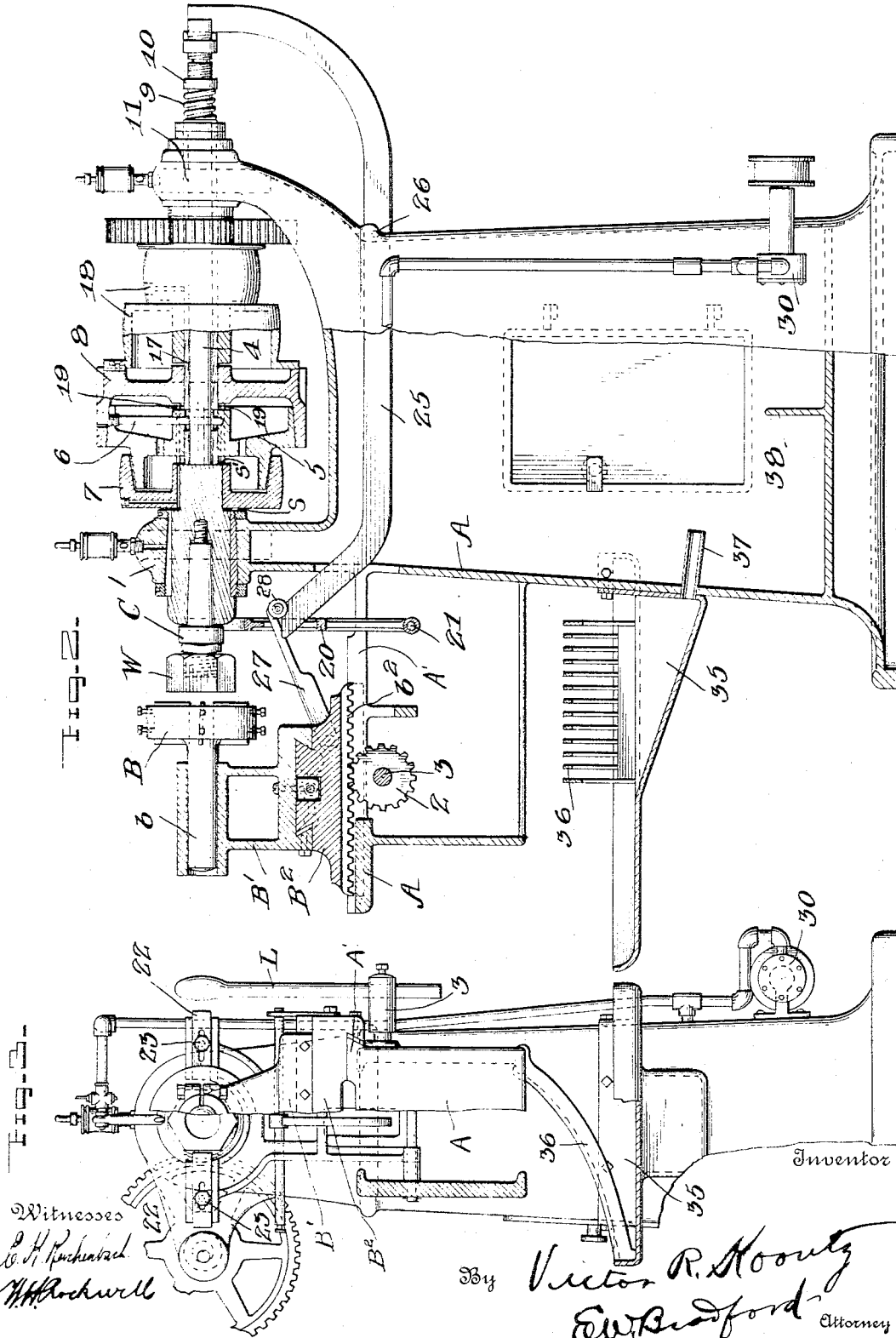
C. H. Reichenbach
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UNITED STATES PATENT OFFICE.

VICTOR R. KOONTZ, OF WAYNESBORO, PENNSYLVANIA.

NUT-FACING MACHINE.

1,114,151.

Specification of Letters Patent.

Patented Oct. 20, 1914.

Application filed October 3, 1910. Serial No. 585,130.

To all whom it may concern:

Be it known that I, VICTOR R. KOONTZ, a citizen of the United States, residing at Waynesboro, in the county of Franklin and State of Pennsylvania, have invented certain new and useful Improvements in Nut-Facing Machines, of which the following is a specification.

My said invention consists in certain improvements in the details of construction and arrangement of parts of machines for facing nuts, etc., whereby such a machine is provided which is very efficient in operation and result, all as will be hereinafter more fully described and claimed.

Referring to the accompanying drawings which are made a part hereof and on which similar reference characters indicate similar parts, Figure 1 is a top or plan view of a nut facing machine of my improved construction, Fig. 2 a view partly in side elevation and partly in section as seen when looking in the direction indicated by the arrow from the dotted line 2—2 in Fig. 1, Fig. 3 a view partly in end elevation and partly in cross section, and Figs. 4, 5, 6, 7, 8 and 9 detail views illustrating certain details of construction and modifications more clearly.

In said drawings the portions marked A represent the bed or frame of the machine, B the cutter-head and C the work-holding mandrel.

The frame of the machine is preferably a casting of suitable size and dimensions and provided with bearings for the various parts of the mechanism. The particular form is not material, although that shown has been found suitable and is approved. No special features of novelty are embodied in said form, however, and a detailed description is therefore not necessary.

The cutter-head B is a suitable cutter-head for the purpose mounted on a spindle *b* which is held in a suitable socket in the top of head-block B', which is mounted to be transversely adjusted on a carriage, or head-block slide, B². Said carriage B² is mounted to slide longitudinally on ways A' supported on one end of the bed A and may be adjusted toward and from the work by means of a rack *b*² on its underside with which a pinion 2 on a transverse shaft 3 engages. Said shaft 3 is journaled in suitable bearings on frame A and provided with a crank or lever L, by which it may be turned.

The mandrel C is screw-threaded at its

outer end to receive the work W and its inner end is tapered and mounted in a socket in the front end of driving shaft 4. Said mandrel is interchangeable with other mandrels of varying sizes so that one of appropriate size for the nuts to be dressed may be placed in position for the work as nuts of varying sizes are to be dressed.

Main driving shaft 4 is mounted to have a longitudinal movement in its bearings 1 and 11 and is formed with an enlarged front end to contain the socket for mandrels C, as shown, and has a shoulder *s* at the rear of its front bearing and another shoulder *s'* a short distance therefrom. Between said shoulders the reverse pulley 7 is mounted to normally run loosely. A sleeve 17 is mounted on shaft 4 and extends from shoulder *s'* to just through the rear bearing 11. A double-faced friction clutch-part 5 is mounted on sleeve 17 adjacent to pulley 7, which has a tapered internal friction face adapted to engage by frictional contact with one face of clutch-part 5. Said clutch-part 5 is secured to rotate with shaft 4 by a key 6 extending through a perforation in its hub, a short longitudinal slot in sleeve 17 and a perforation in said shaft 4. The outer end of said key 6 is preferably screw-threaded and seats in a screw-threaded perforation in rim of part 5. A gear 8 is mounted on the other side of clutch-part 5 and has an internal friction face adapted to surround and engage with the other tapered face of said part 5. Said shaft 4 is mounted to have a limited longitudinal movement in its bearings and a stiff coiled spring 9 is interposed between a collar 10 thereon and the rear end of sleeve 17 and tends to hold shaft 4 back from the work and the clutch-part 5 normally engaging with the gear 8. Said gear 8 is formed with a toothed section on one side of its periphery adapted to mesh with a pinion 13 on a cam countershaft 14, which countershaft has another pinion 15 adapted to mesh with another pinion 16 on sleeve 17 near the rear end of the machine. Said cam shaft is mounted in bearings in the outer ends of arms 40 and 41 extending transversely from the rear side of bearings 1 and 11 and on its rear end has a handle 42 by which it may be rocked to throw gears 13 and 15 into and out of engagement with gears 8 and 16. The gear 8 is mounted to revolve loosely on sleeve 17 and a double-faced driving pulley 18 is mounted on said

sleeve 17 adjacent to said clutch-part 8 to which it may be secured by a radial key 12 removably mounted in a key way formed partly in each of said parts, for a purpose to be presently described. Spacing pins 19 extend slidably through the hub of clutch-part 5 and bear against the adjacent faces of reverse pulley 7 and gear 8 to keep them a proper distance apart so as to allow only one to engage with part 5 at the same time, and hold them from sliding with the longitudinal movement of shaft 4. Pinion 16 is secured fast to pulley 18 to turn therewith.

A nut releasing yoke 20 is mounted on a transverse pivot 21 extending across the front end of the frame. Adjustable jaws 22 are secured on its upper end by means of clamping nuts 23 on bolts which extend through slots in said jaws, whereby said yoke may be adapted for use with nuts of different sizes.

A lever 25 is mounted on a pivot 26 and extends longitudinally through the frame A, its rear end being curved upwardly and engaging in a vertical slot in the rear end of shaft 4, while its forward end is curved upwardly and is formed with a cam-shaped top which is engaged by a roller 28 on the front end of a link 27 carried by the carriage B². Said link 27 also engages with pivoted yoke 20 for swinging it toward and from the work.

An oil pump 30 is provided for pumping the oil to the work in the usual way. It is geared to the driving mechanism in any approved manner, not shown.

A drip pan 35 is provided on the front end of the machine beneath the work to receive the oil drippings and also the cuttings from the work and a grate 36 is mounted above said drip pan on which the finished work may fall, said grate being inclined, as shown most clearly in Fig. 3, to guide said work to one side of the machine, while the cuttings and oil fall into the drip pan and run through pipe 37 into a chamber in the base of the machine. Said chamber is divided by a partition 38 which holds the chips and sediment on the front side thereof, the oil flowing over to the other side of said partition from whence it may be pumped back to the work.

In normal operation, pulleys 7 and 18 are driven from the power shaft (not shown) in reverse directions and cam shaft 14 is turned to throw gears 13 and 15 out of mesh with gears 8 and 16, a nut holding mandrel C being placed in position, the shaft 4 is started in operation through driving pulley 18 (connected by a belt to the power shaft, not shown) and gear 8 and clutch-part 5. The nut W is then run thereon. When it is in position on the mandrel, the operator moves carriage B² toward the nut through the medium of the lever L on shaft 3 and the pin-

ion 2 thereon, which engages with the rack b² on said carriage, as before described. As the carriage moves toward the work the cutters of the cutter-head B thereon come in contact with the face of the nut and dress it off as desired. When the dressing operation has been completed the operator backs carriage B², which draws the roller on the outer end of link 27 back over the cam-shaped top end of lever 25, which depresses this end of said lever and also throws the nut holding yoke 20 forward so that the jaws will engage with the sides of the work, at the same time carrying clutch-part 5 out of engagement with gear 8 and into engagement with reverse pulley 7 (driven by a crossed belt from the power shaft) thus reversing the motion of shaft 4 which serves to throw the work W, held from turning by the yoke 20, off the work holding mandrel, when another nut may be put in place, as before, and the operation repeated. When greater power and less speed is desired key 12 is removed so that gear 8 will be free from pulley 18, cam shaft 14 rocked in its bearings to bring gears 13 and 15 into mesh with gears 8 and 16, when the drive of shaft 4 will be through gears 16, 15, 13 and 8 to clutch-part 5, keyed to said shaft, as will be readily understood.

In Figs. 4 and 5 I have shown a head-stock carrying bolt-clamping jaws 50 and 51 supported and operated by mechanism of ordinary form, which head-stock may be substituted for the head-stock B when it is desired to dress the heads of bolts. In Figs. 6, 7, 8 and 9 I have illustrated a form of an equalizing collar 53 and cutter-head 54 adapted to be run onto the nut holding mandrels C'. When it is desired to use the machine for dressing the outer face of bolt heads this head-stock may be substituted for head-stock B, the cutter-head shown in Figs. 8 and 9 put on the mandrel, and with the bolts secured in said head-stock they may be readily dressed as desired, the operation being practically the same as above described for dressing nuts. By having these substitute parts the machine is readily convertible from one use to the other, as will be readily understood.

Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent, is:

1. A facing machine comprising a carriage, a cutter-head mounted on said carriage, means for adjusting said carriage to and from the work, a work carrying shaft mounted to slide longitudinally, a clutch on said work carrying shaft comprising a main part with two engaging faces, a driving element on a sleeve surrounding said main shaft adapted to engage with one of its faces, a reversing element on the shaft adapted to engage with its other face, means

for holding said driving element and said reversing element a predetermined distance apart, and means for sliding said shaft to throw said main clutch into engagement with either of said driving and reversing elements, substantially as set forth.

2. A facing machine comprising a cutter-head, an adjustable carriage carrying said cutter-head, a work carrying shaft, means for driving said shaft in either direction, a pivoted work holding yoke, and a connection from the cutter-head carriage to said work holding yoke for throwing it toward and from the work as said carriage is moved, substantially as set forth.

3. A facing machine comprising a cutter-head, means for adjusting said cutter-head toward and from the work, a work carrying shaft mounted to slide in its bearings, a main clutch-part carried thereby with double engaging faces, two rotary members mounted to rotate in opposite directions one mounted on either side of said main clutch-part and adapted to engage with one of its clutch-faces, a pivoted lever engaging with said main shaft for sliding it longitudinally, and a connection between the cutter-head carriage and said pivoted lever for operating it, substantially as set forth.

4. A facing machine comprising a frame, a sliding carriage a main shaft, a cutter-head mounted on one of said parts, a work support mounted on the other, a reversing pulley mounted loosely on the shaft, a sleeve surrounding said shaft to one side of said pulley, a clutch-part with clutch faces mounted on said sleeve and keyed to said

shaft, said shaft being mounted to have a limited longitudinal movement, a driving pulley on said sleeve alongside said clutch-part and formed with a face to engage with one of the clutch-faces thereof, and means for sliding said shaft longitudinally to couple one or the other of said pulleys to said clutch-part, substantially as set forth.

5. A facing machine comprising a frame, a carriage, a main shaft having longitudinal movement, a cutter-head mounted on one of said two elements first mentioned, a work support mounted on the other of said two elements, a pulley mounted loosely on the shaft and formed with a clutch-face, a sleeve mounted on said shaft to one side of said pulley, a double-faced clutch-part keyed through said sleeve and shaft and formed with a clutch-face adapted to engage with the center face of the pulley, a spring interposed between a collar on said shaft and the end of said sleeve for normally holding said shaft and sleeve at the extreme of one limit of movement, a lever for sliding said shaft against the action of said spring, and a connection between said carriage and said lever, whereby the movement of said carriage will operate said shaft, substantially as set forth.

In witness whereof, I have hereunto set my hand and seal at Waynesboro, Pennsylvania this 15th day of September, A. D. nineteen hundred and ten.

VICTOR R. KOONTZ. [L. S.]

Witnesses:

BENJ. DEARDORFF,
JOHN A. POTTER.