Aug. 21, 1923. 1,465,486

W. SANDIFORD

FEED PINION

Filed June 3, 1921

Fig. 1.

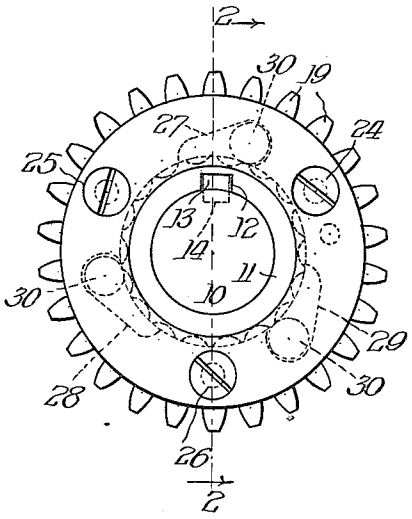


Fig. 2.

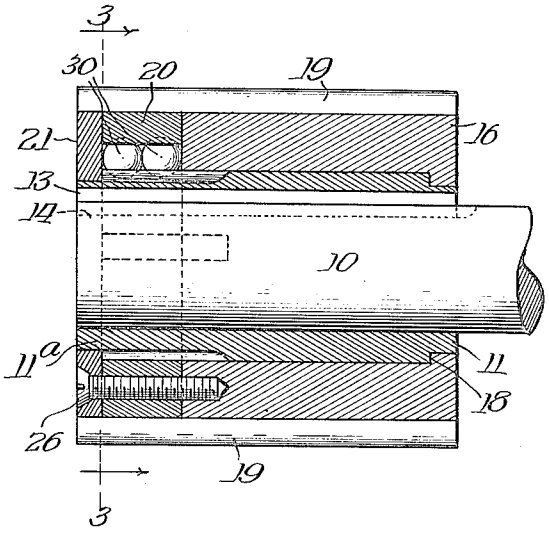


Fig. 3.

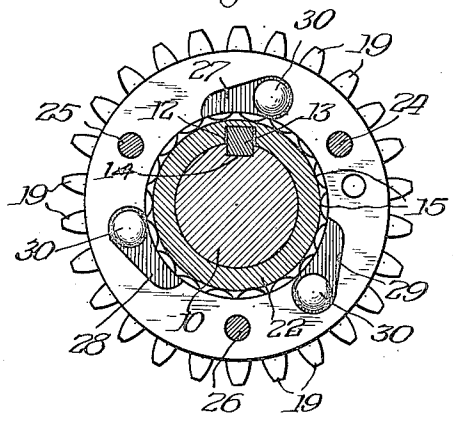
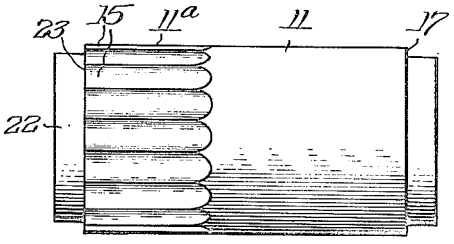


Fig. 4.



Witness

Fred C. Dirson

By

Inventor:

William Sandiford

D. Anthony Mina

Attys.

Patented Aug. 21, 1923. 1,465,486

UNITED STATES PATENT OFFICE.

WILLIAM SANDIFORD, OF JOLIET, ILLINOIS.

FEED PINION.

Application filed June 3, 1921. Serial No. 474,677.

To all whom it may concern:

Be it known that I, WILLIAM SANDIFORD, a citizen of the United States, residing at Joliet, in the county of Will and State of Illinois, have invented certain new and useful Improvements in a Feed Pinion, of which the following is a specification.

My invention relates to a feed pinion and has particular reference to a feed pinion for planing machines and the like and wherein motion is transmitted from a gear wheel to a shaft in one direction. The device is applicable also to lathes and to various other machines where motion is transmitted by means of gears, pinions or the like.

A further object of my invention is the provision of a feed pinion or transmission mechanism which is positive in its operation in one direction and which does away entirely with the setting of thumb latches, dogs or pawls, and furthermore, is simple and efficient in operation.

A further object of my invention is the provision of a feed pinion particularly adapted for use in planers so that the planing tools can be fed in one direction and then reversed by slipping the driving pinion off the driving shaft and reversing it end to end so that the motion is transmitted to a shaft in the opposite direction. This provision has not heretofore been possible in devices of this sort without various adjustments.

These and other objects of my invention will be more fully and better understood by reference to the accompanying sheets of drawings, and in which—

Figure 1 is an end elevational view of a pinion embodying my improved invention having a shaft inserted therethrough;

Figure 2 is a vertical sectional view on line 2—2 of Figure 1;

Figure 3 is an end sectional view on line 3—3 of Figure 2; and

Figure 4 is a side view in elevation of a bushing upon which the pinion is mounted and which is secured to a shaft in any approved manner.

Referring now specifically to the drawings, a shaft 10 of a machine leading to the feeding mechanism is shown having a bushing 11 adapted to be inserted over the shaft 10 and having a longitudinally extending keyway 12 therein into which a key 13 is fitted, the said key 13 extending into a keyway 14 extending longitudinally of the shaft 10, or a stud may be secured to the shaft 10 which extends into the keyway 12 in the bushing 11. The bushing 11 is mounted upon the shaft 10 and at one of its ends 11^a has a series of recesses 15 extending circumferentially around the bushing 11, the said recesses 15 having the appearance of corrugations upon the wall of the bushing 11. A pinion 16 is provided into which the bushing 11 is fitted, the bushing 11 also having a shoulder 17 extending circumferentially therearound, and which abuts against a shoulder 18 in the pinion 16. The pinion 16 has a series of teeth 19 thereon and at one of its ends is cut away and a collar 20 inserted under the teeth 19 and which surrounds the end 11^a of the bushing 11. A second collar 21 is provided which fits over the end 22 of the bushing 11 and against a shoulder 23 extending circumferentially around the end of the bushing adjacent the recesses 15 and against which the collar 21 abuts. The collar 21 is held in position by screws 24, 25 and 26 which pass through the collar 21, also the collar 20 and into the gear wheel 16 so that the gear wheel 16 and the two collars 20 and 21 respectively, and the bushing 11 are securely held together as a unit so that the pinion 16 can be slipped off the shaft 10 and turned around end to end and the motion of the pinion reversed so that the shaft 10 can be turned in either direction, as hereinafter described. In the collar 20 is a series of recesses 27, 28 and 29 extending entirely through the collar 20, into which balls 30 are inserted and which grip the bushing 11 by dropping into the recesses 15 in the bushing 11 and coming into contact with the bottom and sides of the recesses 15. The balls 30 are retained in the recesses 27, 28 and 29 by the end of the pinion 16 and the collar 21. The recesses 27, 28 and 29 in the collar 20 are deeper at one side than at the other, and therefore extend diagonally in the collar 20 so that the balls 30 by being in the deepest part of the recesses are entirely out of engagement with the bushing 11 as the pinion 16 is turned upon the bushing 11. As illustrated in Figure 3, as the pinion 16 is turned to the left the balls 30 will be forced into the rear or deepest portion of the recesses, as shown in the drawing, but immediately the direction of the pinion 16 is reversed the balls 30 will be forced into the recesses 15 in the

sleeve 11 by the wall of the collar 20 and by gravity, so that the bushing 11 is gripped by the collar 20 and motion transmitted to the shaft through the key 13.

It will also be understood that rollers may be substituted in the place of the balls 30 and the same result accomplished.

While I have described more or less precisely the details of construction, I do not wish to be understood as limiting myself thereto, as I contemplate changes in form and the proportion of parts and the substitution of equivalents as circumstances may suggest or render expedient without departing from the spirit or scope of my invention.

I claim:

1. A reversible feed pinion comprising in combination a bushing having a series of longitudinally extending corrugations at one of its ends, means adapted to detachably secure the said bushing upon a shaft, a pinion rotatably mounted upon said bushing, a collar secured to said pinion having diagonally extending recesses therein and a plurality of movably mounted balls in said recesses adapted to engage the said bushing when the pinion is rotated in one direction only.

2. A reversible feed pinion comprising in combination a bushing having a series of longitudinally extending corrugations at one of its ends, means adapted to detachably secure the said bushing upon a shaft, a pinion rotatably mounted upon said bushing, a collar secured to said pinion having diagonally extending recesses therein, and a plurality of movably mounted balls in said recesses adapted to engage the said bushing when the pinion is rotated in one direction only, the bottom of the said corrugations corresponding in contour to the curvature of the said balls.

Signed at Joliet, Illinois, this 23rd day of May, 1921.

WILLIAM SANDIFORD.