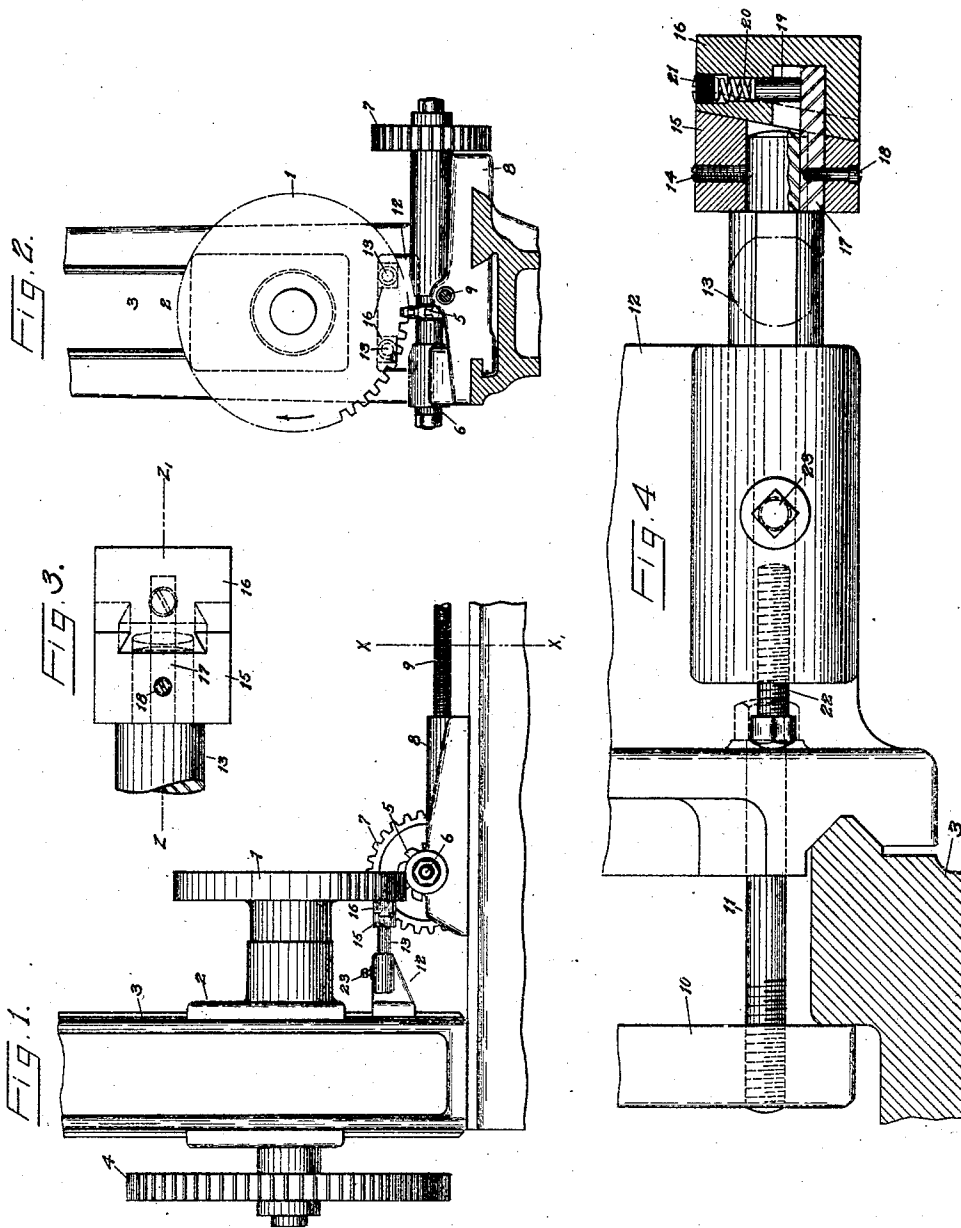


W. F. ZIMMERMANN.
 WORK SUPPORT FOR METAL WORKING MACHINES.
 APPLICATION FILED JAN. 16, 1909.

940,418.

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WITNESSES:

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WORK-SUPPORT FOR METAL-WORKING MACHINES.

940,418.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM F. ZIMMERMANN, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Work-Supports for Metal-Working Machines, of which the following is a specification.

The invention relates primarily to work supports for metal working machines, particularly to gear cutting machines, wherein the rim of the wheel blank, being cut, is supported against the cutting action of the cutter.

It is well known to provide work supports on metal working machines, both solid and adjustable, to prevent the chattering caused by the vibration induced by the cutter when not so supported.

The object of this invention is to provide a simple, compact and durable work support which can be manufactured, as a unit, independent of the machine it is to be used on, and which when properly set, automatically adjusts itself to any spring or inaccuracies in the face of the work being supported, such as the running out of true of the rim on the gear blank being supported.

The invention comprises a work supporting member, with its supporting face substantially parallel to the work supported; the opposite face of said member is slightly inclined to said supporting face and has a dove tail groove therein parallel with said inclined face and is arranged to slide upon a complementary inclined block; said inclined block is provided with a dove tail to engage with said dovetail groove; said block is also provided with a hole substantially at right angles to the supporting face of said member, wherein is secured a key by means of which said inclined block is secured to any suitable stud, or support. Said key projects beyond the inclined face of said block to form the abutment against which a spring, arranged in said member, presses, to draw said member snugly against the work supported, thus substantially forming a solid support with means to automatically compensate for any inaccuracies in the face work supported, thereby preventing any chatter caused by the cutting action of the cutter.

In referring to the drawings, Figure 1 is

a side elevation of a gear cutting machine showing the invention as applied to support the rim of gear wheels. Fig. 2 is a front sectional elevation at X X of Fig. 1 showing two supports applied on each side of the center of gear wheel being supported. Fig. 3 is an end elevation of the support proper and Fig. 4 is a plan view thereof, showing the support in section at Z Z, also a dotted section of the supporting stud 13.

Having particular reference to Fig. 1, the wheel blank 1 is carried by a work head 2, adjustably mounted upon a stanchion or upright 3, said blank is rotated for divisions by the index wheel 4. The cutter 5 is secured to a spindle 6 mounted in bearings, provided in the slide 8, and is rotated by means of a gear wheel 7 connected to any suitable source of power. The slide 8 is fed across the face of the wheel blank 1 by means of a screw 9 operated by suitable feed mechanism common to this class of machines.

To support the rim of the wheel blank 1, against vibration induced by the cutter 5, a bracket 12 is clamped to the stanchion 3 by a strap 10 and bolt 11. Holes are provided in the bracket 12 at right angles to the face supported in which the studs 13 are secured by the set screw 23, after being properly adjusted in the direction of their length by means of an adjusting screw 22 tapped in the stud 13 and operating against the bracket 12 as an abutment. The stud 13 is provided with a reduced end fitting into a hole in the inclined block 15 and is secured thereto by a key 17 and a cone point headless screw 14, said key 17 being secured to the said block 15 by a fillister head screw 18. A dove tail groove is provided in the inclined face of the block 15 parallel therewith, to engage a similarly but oppositely inclined dove tail on the supporting member 16; said member 16 is arranged to slide freely upon said block 15, but is kept from sliding down by the spring 20 and plunger 19, pressing against the abutment formed by the extended portion of the key 17 extending beyond the inclined face of said block 15. The extended portion of said key 17 also forms the abutment to limit the upward movement of said supporting member 16 on said block 15, due to the action of the spring 20. The tension of the spring 20 is adjusted by the screw 21.

The operation of the rim supporting device is very simple and is self-evident from the drawings and is explained as follows: The indexing of the gear blank 1 is in the direction as shown by the arrow in Fig. 2. This tends to slide the supporting member 16 down the incline on the block 15, which is resisted by the spring 20 operating against the abutment formed by the extended portion of the key 17. Any inaccuracies in the workmanship, if within the limits of the slot in the supporting member 16, will be automatically compensated for, since the spring pressed plunger 19 always tends to force the face of the supporting member 16 against the rim of the wheel supported, thereby eliminating practically all vibration induced by the cutter, producing practically a finished surface without chattering.

The arrangements as shown in the drawings illustrate the use of two rim supports, one placed on each side of the center of the wheel.

Work supports, both solid and adjustable, being well known, I do not intend to claim either broadly, but I do claim as new and desire to secure by Letters Patent as follows:

1. In work supports for metal working machines, the combination with an inclined block of a similarly inclined work supporting member in reverse relation thereto and having a slidable dovetail engagement therewith, forming substantially a parallel supporting surface for the work in all positions of said supporting member, an aperture in said supporting member substantially at right angles to the supporting surface, the ends whereof form the sliding limits of said supporting member, an abutment arranged at the small end of said block and extending beyond the inclined surface thereof to engage with said aperture, a spring pressed plunger provided in the narrow end of said supporting member, to engage with said abutment to constantly

draw said supporting member against said abutment, substantially as described.

2. In work supports for metal working machines, the combination with an inclined block, of a similarly inclined work supporting member in reverse relation thereto, and having a slidable dovetail engagement therewith, forming substantially a parallel supporting surface for the work in all positions of said supporting member, an aperture in said supporting member, substantially at right angles to the supporting surface, the ends whereof form the sliding limits of said supporting member, said block provided with a hole therethrough, substantially at right angles to the work supporting surface, a key secured therein whereby said block can be secured to any suitable support or stud, said key projecting beyond the inclined surface of said block to engage said aperture, a spring pressed plunger provided in the narrow end of said supporting member, to engage with the projected portion of said key to constantly draw said supporting member against said key, substantially as described.

3. In work supports for metal working machines, the combination with an inclined work supporting member 16, provided with an aperture therein and a spring pressed plunger 19 in the narrow end thereof, of an inclined block 15 having a hole therethrough and a key 17 secured therein, said key 17 projecting beyond the inclined surface of said block 15, into said aperture to form the abutment for said spring pressed plunger 19, and the inclined surfaces of said supporting member 16 and block 15 arranged in reverse relation and provided with a slidable dovetail engagement substantially as described.

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Witnesses:

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