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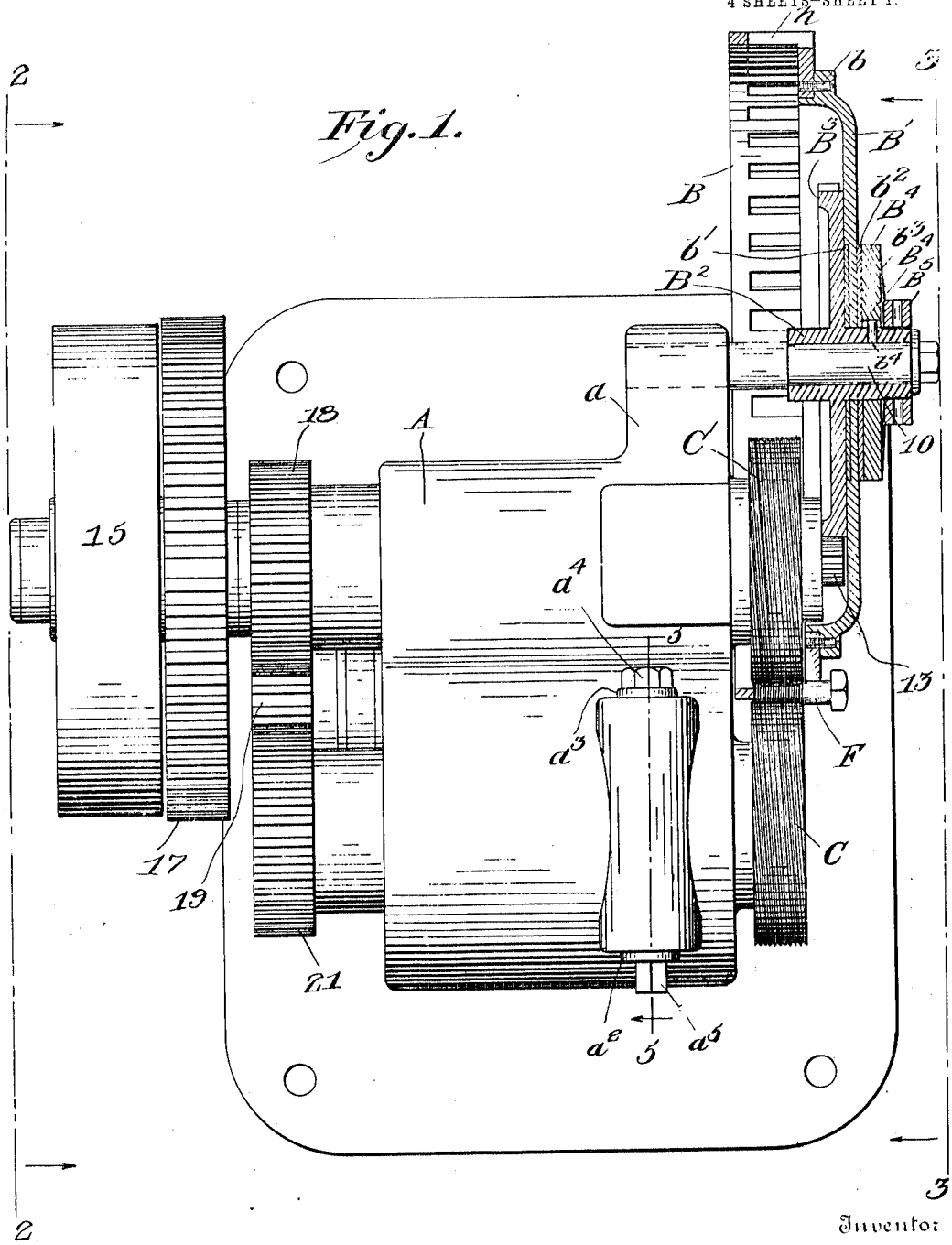
BOLT THREADING MACHINE.

APPLICATION FILED JAN. 17, 1911. RENEWED JAN. 24, 1914.

1,107,621. Patented Aug. 18, 1914.

4 SHEETS—SHEET 1.

Fig. 1.



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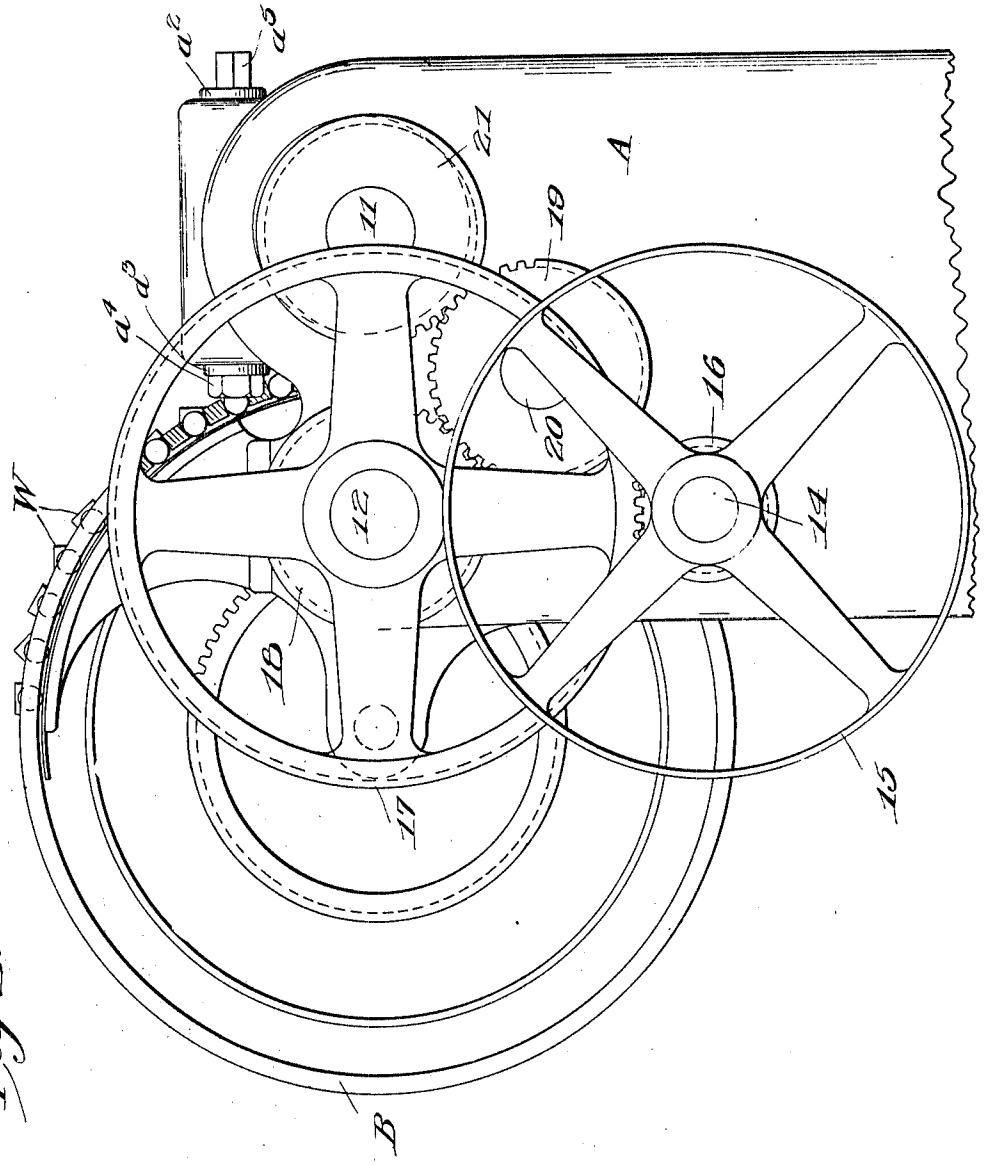


Fig. 2.

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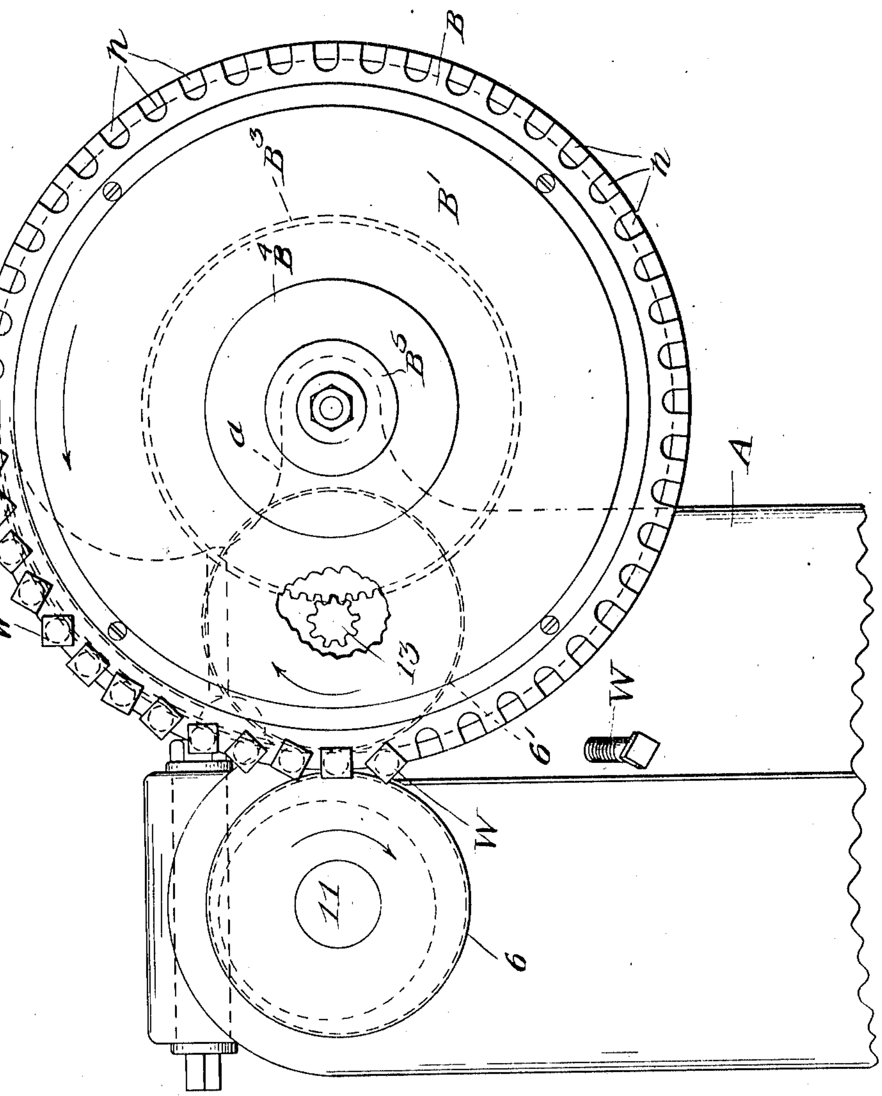


Fig. 3.

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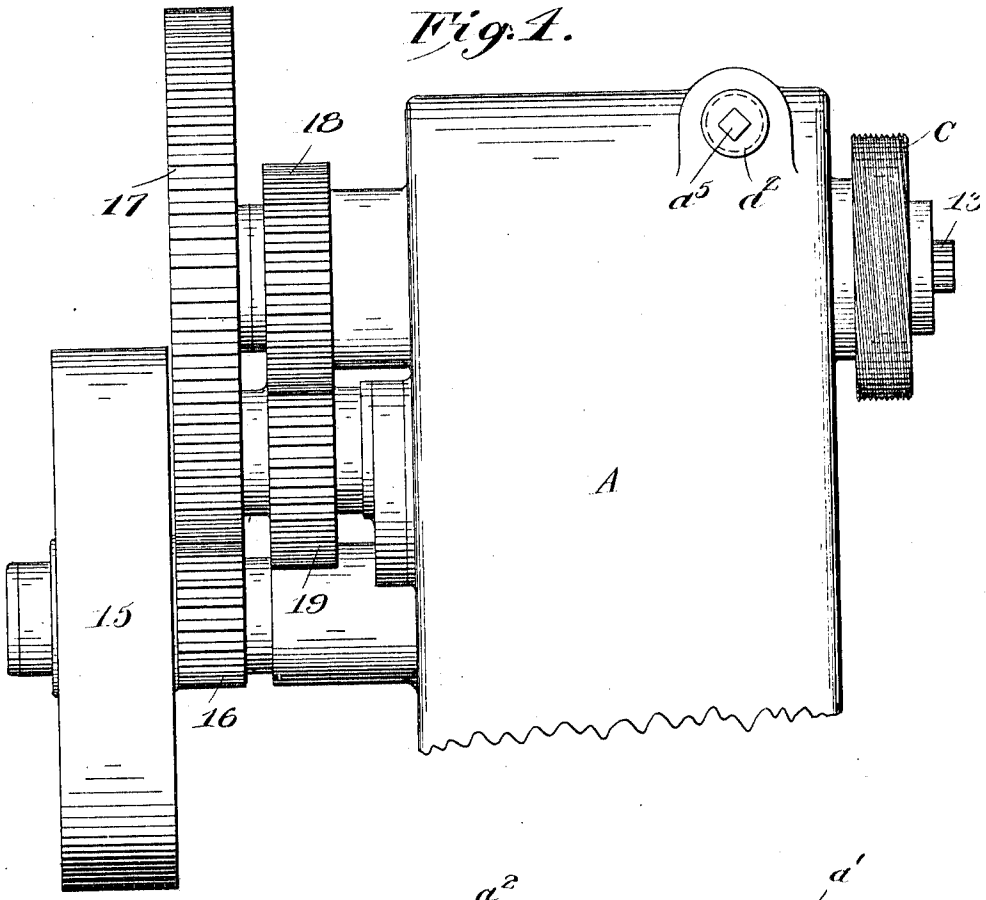
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4 SHEETS-SHEET 4.

Fig. 1.



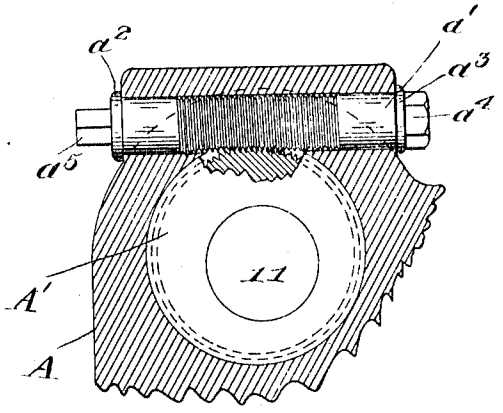


Fig. 5.

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UNITED STATES PATENT OFFICE.

ABRAHAM B. LANDIS, OF ENFIELD, PENNSYLVANIA.

BOLT-THREADING MACHINE.

1,107,621. Specification of Letters Patent. Patented Aug. 18, 1914.

Application filed January 17, 1911, Serial No. 603,125. Renewed January 24, 1914. Serial No. 814,237.

To all whom it may concern:

Be it known that I, ABRAHAM B. LANDIS, a citizen of the United States, residing at Enfield, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Bolt-Threading Machines, of which the following is a specification.

My said invention consists in certain improvements in the construction and arrangement of parts of machines for forming threads on bolts, and like parts, whereby such a machine is provided by which the work may be performed with great rapidity, and the construction of which is comparatively simple and highly efficient, 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 bolt threading machine embodying my said invention, Fig. 2 a side elevation thereof as seen when looking in the direction indicated by the arrows from the dotted line 2—2 in Fig. 1, Fig. 3 a side elevation thereof as seen when looking in the direction indicated by the arrows from the dotted line 3—3 in Fig. 1, Fig. 4 an end elevation of a portion of the machine, chiefly to illustrate the gear connections more fully, and Fig. 5 a detail sectional view on the dotted line 5—5 in Fig. 1.

In said drawings the portions marked A represent the frame or base of the machine, B the work-holding and feeding magazine, and C, C′ the dies.

The frame A is a casting of suitable dimensions and containing bearings and seats appropriately arranged to support the several shafts and other parts of the mechanism.

The work holding and feeding magazine B is a circular rim mounted on a plate or disk B′ to which it is secured by screws or bolts b. Said disk B′ is mounted on a hub B^2 which in turn is journaled on a stud shaft 10. Said stud shaft 10 is mounted in an appropriate seat in a bracket, or arm, a on the side of base A. Hub B^2 carries a gear-wheel B^3 secured to rotate therewith and said disk B′ is interposed between said gear-wheel and a plate B^4. Frictional contact plates b and b' of fiber or other suitable material are mounted on opposite sides of said disk B′ between the surfaces of gear-wheel B^3 and plate B^4, respectively, as shown most clearly in Fig. 1. A collar B^5 is mounted on the outer end of hub B^2 by means of a screw-threaded engagement, and a dished spring washer b^3 is interposed between said collar and plate B^4, whereby said plate is held under spring pressure against said disk B′ and the parts thus held into frictional engagement. Plate B^4 is held from turning on hub B^2 by a pin b^4 in hub B^2 which engages with a radial notch in said plate. The rim B is formed with a series of notches n around its periphery, spaced a suitable distance apart, into which the bolts W, or other articles constituting the work, may be fed, as indicated most plainly in Fig. 3.

The dies C and C′ are similar in formation, being hardened steel, having cutting grooves in their peripheries of the pitch desired to be imparted to the work and mounted on shafts 11 and 12, respectively. Shaft 11 is journaled in an eccentric sleeve A′ mounted in a perforation extending through the base A, said sleeve being formed with a threaded groove in its periphery with which a threaded adjusting screw a' engages. Said adjusting screw a' is mounted in suitable bearings and extends transversely across said sleeve A′ being formed with a flange a^2 at one end and a washer a^3 held in place by a nut a^4 at its other end to prevent any longitudinal movement thereof. It is also formed with an angular end a^5 by which a wrench or other tool may be applied for the purpose of turning it. By this means, as will be readily seen, the axis of shaft 11 may be adjusted toward or from the axis of shaft 12 and the dies C and C′ thus fixed at the distance apart necessary for the size of work to be operated upon. Said shaft 12 is mounted in fixed bearings in base A and its end carrying the die C′ extends beyond said die and has a pinion 13 mounted thereon which is adapted to mesh with the teeth of gear-wheel B^3. Dies C and C′ are removably mounted on their arbors in any desired or approved manner so that other dies having threads of different pitch may be substituted from time to time as desired.

The machine is driven from a single driving shaft 14 by means of a pulley 15, connected with any convenient power. On said shaft 14 is mounted a small gear 16 which meshes with a large gear 17 on shaft 12. A

smaller gear 18 is mounted on said shaft 12 alongside gear 17 which meshes with an intermediate gear 19 on a countershaft 20 which is journaled in appropriate bearings on base A. The intermediate gear 19 meshes with gear 21 on the shaft 11. Gears 18, 19 and 21 are of the same diameter which insures that dies C and C′ shall rotate in the same direction, as indicated by the arrows in Fig. 3, and also make the same number of revolutions per minute. The engagement between pinion 13 and gear-wheel B^3 also rotates said gear-wheel and through the frictional engagement tends to carry the work-holding magazine in the direction indicated by the arrows in said figures. Die C is made of a diameter slightly larger than the diameter of die C′ so that while the revolutions of the dies are equal the peripheral speed of die C is slightly in excess of that of die C′ to insure the feed and rotation of the work after it has been gripped between the rotary dies.

In operation the parts are arranged as shown in the drawings, the rim of the magazine being arranged to pass between the dies C and C′, its thickness being less than the normal distance apart of said dies, or less than the thickness of the work of the smallest size which it is intended to operate upon. The bolts or other parts constituting the work W being placed in the magazine, as shown in Figs. 2 and 3, and the machine started in operation the magazine moves forward under the frictional engagement between disk B′ and gear-wheel B^3 until the first bolt is received between the dies. Die C having a slightly greater peripheral speed than that of die C′, the bolt is rolled between the dies and also fed downward through the space between them operating to roll into the surface of the bolt threads of the pitch formed on the rotary dies. During the operation of rolling the threads into the work, gear-wheel B^3 is constantly rotating, but the frictional connection with disk B′ yields under the flexibility of spring washer b^3 permitting the parts to slide over each other and the magazine B to move only as fast as the work until said work has passed through between the dies and been discharged, as indicated in Fig. 3. Immediately upon the discharge of one bolt, the resistance being removed, magazine B, under the frictional engagement with gear-wheel B^3, is immediately fed forward with a quiet movement until another bolt comes into the die and is operated upon in a like manner. Thus the bolts are fed to the die constantly and the magazine moved quickly between operations to supply new work to the die as rapidly as each piece is finished and all parts of the machine are driven directly from a single driving shaft. The threads in dies C and C′ are of corresponding pitch and they are mounted on their shafts to coöperate in the formation of the threads on the work. The slight excess of peripheral speed of die C over that of die C′ is not sufficient to disturb the coöperation of said dies as to the pitch of their grooves to any appreciable extent, but the difference in speed of die C is essential to roll the work and carry it through from the receiving side to the discharge side of said die.

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

1. A bolt threading machine comprising a base, rotary thread forming dies mounted on shafts in said base and arranged to cooperate, a rotary work-carrying magazine arranged to carry the work between said dies, gearing for driving said dies also geared to drive said magazine, said magazine being connected to said gear by a frictional connection, substantially as set forth.

2. A bolt threading machine comprising a base, rotary thread forming dies arranged to coöperate, a rotary work-carrying magazine arranged to carry the work between said dies, gearing for driving said dies from a single shaft, said gearing also connected to drive said work-carrying magazine, the connection between said gearing and said magazine being formed to permit a slipping between the parts, substantially as set forth.

3. A bolt threading machine comprising rotary thread forming dies arranged to cooperate, a rotary work-carrying magazine mounted to feed the work between said dies, means for driving said dies constantly and at a uniform speed, means for driving said work-carrying magazine variably, and means for adjusting the dies toward or from each other, substantially as set forth.

In witness whereof, I, have hereunto set my hand and seal at Washington, District of Columbia this 13th day of January, A. D. nineteen hundred and eleven.

ABRAHAM B. LANDIS. [L. S.]

Witnesses:
J. D. Yoakley,
E. W. Bradford.