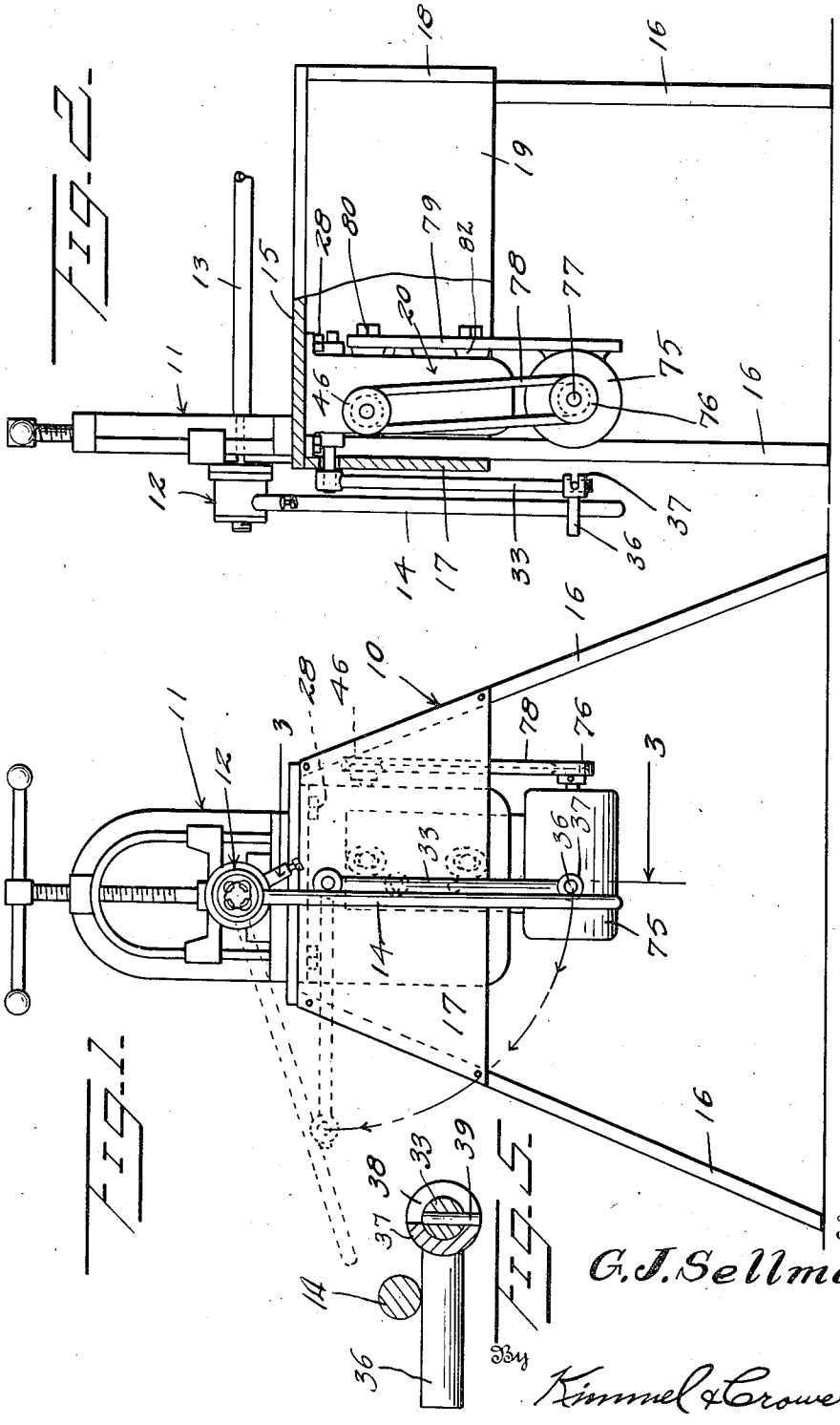
Dec. 1, 1942. G. J. SELLMEYER 2,304,027

PIPE THREADING MACHINE

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PIPE THREADING MACHINE

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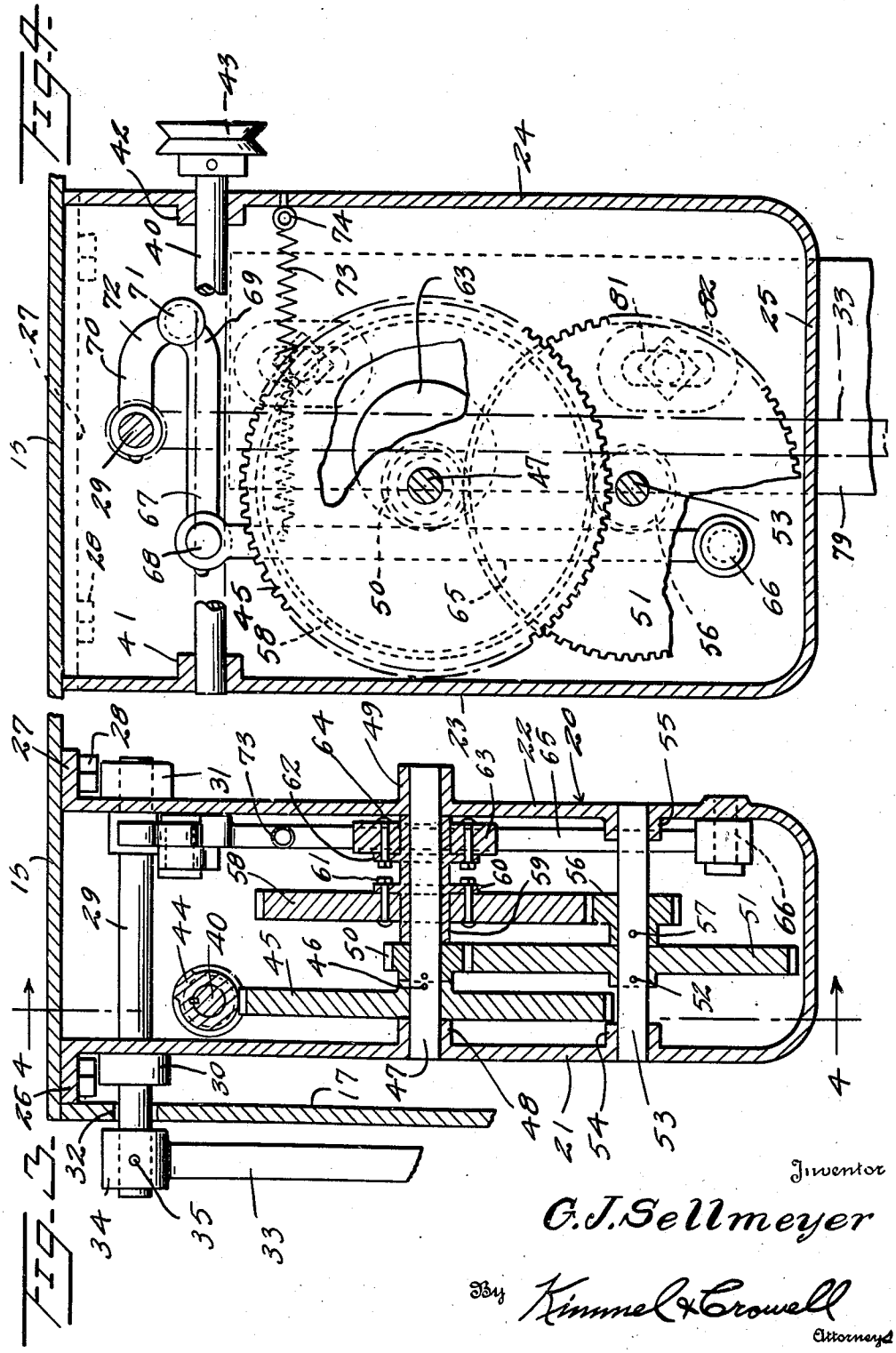


Fig. 4.

Fig. 3.

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PIPE THREADING MACHINE

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7 Claims. (Cl. 10—89)

This invention relates to pipe threading devices.

An object of this invention is to provide in combination with a pipe threading apparatus of the manually operable type including a vise stand, a vise, and a threading head, a power operator which is selectively operable to rotate the head.

Another object of this invention is to provide a power operated attachment for manually operated pipe threading apparatus which can be attached to the present apparatus so that such apparatus can be either manually or power operated.

A further object of this invention is to provide an attachment of this kind which is simple in construction and which includes a minimum amount of steel or other metal which may be required for more urgent purposes.

A further object of this invention is to provide an attachment of this kind wherein the operative connection thereof with the die head may be shifted to an inoperative position without the use of tools so as to thereby permit manual operation of the die head.

A further object of this invention is to provide an attachment of this kind in which the die head, which is of the conventional ratchet type, is rotated in only one direction thereby, the die head gravitatingly following the operating arm on the return stroke of the latter.

A further object of this invention is to provide in a device of this kind an improved reduction gearing and cam operator for the crank so that this device will provide sufficient power to rotate the die head from a relatively small operating motor.

To the foregoing objects and others which may hereinafter appear, the invention consists of the novel construction, combination and arrangement of parts as will be more specifically referred to and illustrated in the accompanying drawings, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention, as claimed.

Figure 1 is a detail front elevation of a pipe threading apparatus having a power attachment for the die head secured thereto.

Figure 2 is a detail side elevation, partly broken away, and in section, of the apparatus.

Figure 3 is a vertical section taken on the line 3—3 of Figure 1.

Figure 4 is a vertical section taken on the line 4—4 of Figure 3.

Figure 5 is a sectional view of the lower end of the die head crank and the die.

Referring to the drawings the numeral 10 designates generally a vise stand which has mounted on the forward portion thereof a pipe-holding vise 11 within which a pipe 13 is adapted to be clamped. A ratchet type die head, generally designated as 12, is adapted to engage the projecting end of the pipe 13, and in the present instance, the die head 12 is a manually operable die head which is provided with a radially disposed arm or lever 14.

The stand 10, the vise 11 and the die head 12, including the arm 14, are of conventional construction and it will be understood that the operating attachment for the die head 12 to be hereinafter described may be secured to other types of vise stands and other types of vises 11 may be mounted on the forward portion of the stand 10. The stand 10 includes a top wall or platform 15, a plurality of supporting legs 16, front and rear aprons 17 and 18 and side aprons 19.

In order to provide a means whereby the ratchet die head 12 may be operated by power instead of manually, I have provided a power operated attachment which is adapted to be secured in depending relation to the vise stand 10. The attachment includes a housing, generally designated as 20. The housing 20 is formed of front and rear walls 21 and 22, opposite side walls 23 and 24, a lower wall 25 and flanges 26 and 27 which are carried by the front and rear walls 21 and 22 respectively. The housing 20 is adapted to be secured to the lower side of the platform 15 by means of fastening devices 28 which engage through the flanges or ears 26 and 27. The housing 20 has journalled in the upper portion thereof, a rock shaft 29 which is journalled in bearings 30 and 31 carried by the walls 21 and 22 respectively. The shaft 29 has one end thereof extended from the front wall 21 and the extended portion of the shaft 29 engages through an opening 32 which is formed in the front apron 17 of the vise stand. A swinging crank or arm 33, which is provided at its upper end with a boss 34, is secured by means of a fastening member 35 in the form of a pin, set screw or the like, to the extended end of the rock shaft 29. The lower or opposite end of the crank arm 33 has mounted thereon a laterally or forwardly extending finger 36. The finger 36 is provided with an annular boss 37 within which the lower end portion of the crank arm 33 loosely engages. The boss 37 is formed with an arcuate slot 38 and a pin 39 is secured within the crank arm 33 and loosely engages in the slot 38. The pin 39 is adapted, in one position of the finger 36, to abut against one end of the slot 38 so as to hold the finger 36

in forwardly projecting position in the path of the handle 14. In the opposite position the finger 36 is adapted to be positioned out of the path of the handle 14 so that this handle may, if desired, be manually operated. A drive shaft 40 is journalled in bearings 41 and 42 carried by the side walls 23 and 24 respectively and has secured to a projecting end thereof, a grooved pulley 43. The drive shaft 40 within the housing 20, has fixed thereto, a worm 44 which is adapted to mesh with a worm gear 45. The worm gear 45 is fixed, by means of a fastening member 46, to a rotatable shaft 47, which is journalled in bearings 48 and 49 carried by the front and rear walls 21 and 22 respectively.

The shaft 47 also has fixed thereon, a small spur gear 50 which is in constant mesh with a large spur gear 51 which is fixed by a fastening member 52 to a second shaft 53. The shaft 53 is journalled in bearings 54 and 55 which are carried by the front and rear walls 21 and 22 respectively and the shaft 53 also has fixed thereto at one side of the gear 51 a small spur gear 56. The gear 56 is fixed to the shaft 53 by means of a fastening member 57. The gear 56 meshes with a large reduction gear 58 which is mounted about a cylindrical bushing or sleeve 59. The sleeve or bushing 59 is rotatable on the shaft 47, one end thereof abutting against the small gear 50. The bushing or sleeve 59 is formed with an annular flange 60 and the gear 58 is secured to the flange 60 by fastening members 61. The sleeve or bushing 59 is also provided with a second annular flange 62 and an annular eccentric 63 is mounted on the sleeve or bushing 59 and secured against the flange 62 by fastening members 64.

The gear train, hereinbefore described, provides a reduction gear so that the annular cam 63 will rotate at the desired speed. The cam 63 is adapted to engage against an elongated pitman or lever 65 which is pivotally mounted on a pivot member 66 secured to the rear wall 22. The pitman or lever 65, has pivotally secured to the opposite end thereof, one end of a link 67 which is secured to the lever 65 by means of a pivot member 68. The link 67, adjacent the opposite end portion thereof, is provided with a bend 69 and the free end of a rock arm 70 is pivotally secured as by a pivot member 71 to the bend 69. The arm 70 is also formed with a bend 72 extending in the direction of the bend 69 and the opposite end of the arm 70 is secured to and mounted on the rock shaft 29. The lever or rock shaft operating member 65 is maintained in constant contact with the eccentric 63 by means of a spring 73 which is secured at one end to the pitman or lever 65 and is secured at the opposite end to an eye 74 which may be secured to the side wall 24.

The drive shaft 40 is adapted to be rotated by means of a motor 75 which has a grooved pulley 76 mounted on the armature shaft 77 thereof and a V-belt 78 is trained about the two pulleys 43 and 76. The motor 75 is supported below the housing 20 by means of a vertically disposed supporting plate 79 which is secured at one end to the base of the motor 75 and is secured in vertically adjusted position to the rear wall 22 of the housing 20 by means of bolts 80. The bolts 80 engage through elongated openings 81 which are formed in the plate 79 and preferably the rear wall 22 is provided with outstanding bosses 82 within which the bolts 80 are adapted to be threaded.

In use and operation of this attachment the housing 20 is adapted to be secured by the fastening devices 28 to the platform 15 in a position where the finger 36, carried by the crank arm 33, will be disposed in the path of the movement of the handle 14 of the die head 12. The die head 12, being of the ratchet type, it is only necessary for the crank arm 33 to raise the handle 14 from vertical depending position to substantially the dotted line position shown in Figure 1, and upon return of the crank arm 33 the handle 14 will gravitatingly swing downwardly to the vertical full line position shown in Figure 1. Rotation of the drive shaft 40 will effect rocking of the pitman or rock shaft operating lever 65 which will pull the rock arm 70 to the left as viewed in Figure 4. This will raise the crank arm 33 and the handle 14 therewith. The swinging movement of the operating lever or pitman 65 to the right is effected by means of the spring 73 which will also cause the crank member 33 to return to the vertical position shown in full lines in Figure 1.

This attachment may be mounted on any conventional type of vise stand and will provide a power means for a manually operated die head of the ratchet type. When it is desired to begin pipe threading the finger 36 is swung to the left out of the path of the handle 14 and the die 12 is rotated in the conventional manner so as to bring it to a thread cutting position at which time the finger 36 is swung to its operating position and the power means is energized oscillating the die 12. When it is desired to remove the die 12 after the threading is completed, the finger 36 is swung to the left out of the path of the handle 14 and the die is reversely rotated by hand until it has been removed from the pipe. When it is desired to operate the die head 12 manually the handle engaging finger 36 may be swung to the left and out of the path of the handle 14.

What I claim is:

1. A vise stand attached power operator for a manually operated pipe threading die of the type including a head and projecting operating means comprising a housing for attachment to the vise stand, a rock shaft carried by said housing and having an end extended therefrom, a right angularly disposed arm fixed to the extended end of said shaft, a right angularly disposed finger carried by said arm engageable with said operating means to rotate said head in one direction, said finger being axially pivoted to said arm whereby said finger is adapted to be swung to a disengaged position with respect to said operating means and means in said housing for rocking said shaft.

2. A vise stand attached power operator for a manually operated pipe threading die of the type including a head and projecting operating means comprising a housing for attachment to a vise stand, a rock shaft carried by said housing and having an end extended therefrom, a head operating arm fixed at one end to said shaft, a laterally projecting finger carried by the opposite end of said arm and engageable with said operating means to rotate said head in one direction upon rocking of said shaft in one direction, said finger being axially pivoted to said arm whereby said finger is adapted to be swung to a disengaged position with respect to said operating means a rotatable drive shaft in said housing and correlated means connected with said rock shaft and said drive shaft for rocking said rock shaft.

3. In combination, a vice stand, a pipe vise car-

ried by said stand, a pipe threading head engageable with a pipe secured within said vise and including a head operating lever, a housing dependingly carried by said stand, a rock shaft carried by said housing and extending therefrom, a lever operating arm fixed to said shaft, a laterally extending finger fixed to said arm and engageable with said lever upon swinging of the latter to rotate said head in one direction, said finger being axially pivoted to said arm whereby said finger is adapted to be swung to a disengaged position with respect to said lever, and means carried by said housing for rocking said shaft.

4. A vise stand attached power operator for a manually operated pipe-threading die of the type including a head and an operating lever, comprising a housing for attachment to the vise stand, a rock shaft carried by said housing and having an end extended therefrom, a head operating arm fixed at one end to said shaft, a laterally projecting finger carried by the opposite end of said arm and engageable with said lever to rotate said head in one direction upon rocking of said shaft in one direction, said finger being axially pivoted to said arm whereby said finger is adapted to be swung to a disengaged position with respect to said lever, a rotatable drive shaft in said housing, means for rotating said drive shaft, a cam fixed to said drive shaft, a cam engageable lever pivotally secured at one end in said housing and means connecting the opposite end of said cam lever to said rock shaft.

5. A power operator for a manually operated pipe threading die head for attachment to a vise stand, comprising a housing for attachment to the vise stand, a rock shaft carried by said housing and having an end extended therefrom, a head operating arm fixed at one end to said shaft, a laterally projecting finger carried by the opposite end of said arm and engageable with a portion of said head to rotate said head in one direction upon rocking of said shaft in one direction, a rotatable drive shaft in said housing, means for rotating said drive shaft, a cam fixed to said drive shaft, a cam engageable lever pivotally secured at one end in said housing, means connecting the opposite end of said cam lever to said rock shaft, and yieldable means constantly maintaining said cam lever in contact with said cam, said yieldable means also acting to rock said rock shaft in a reverse direction.

6. A power operator for a manually operated pipe threading die head for attachment to a vise stand, comprising a housing for attachment to the vice stand, a rock shaft carried by said housing and having an end extended therefrom, a head operating arm fixed at one end to said shaft, a laterally projecting finger carried by the opposite end of said arm and engageable with a portion of said head to rotate said head in one direction upon rocking of said shaft in one direction, a rotatable drive shaft in said housing, means for rotating said drive shaft, a cam fixed to said drive shaft, a cam engageable lever pivotally secured at one end in said housing, a second arm fixed to said rock shaft within said housing, a link pivotally connecting the opposite end of said cam lever to said second arm, and yieldable means constantly maintaining said cam lever in contact with said cam while rocking said rock shaft in a reverse direction during a portion of the rotation of said cam.

7. A power operator for a manually operated pipe threading die head for attachment to a vise stand, comprising a housing for attachment to the vise stand, a rock shaft carried by said housing and having an end extended therefrom, a head operating arm fixed at one end to said shaft, a laterally projecting finger carried by the opposite end of said arm and engageable with a portion of said head to rotate said head in one direction upon rocking of said shaft in one direction, a rotatable drive shaft in said housing, means for rotating said drive shaft, a reduction gearing correlated with said drive shaft and said rotating means, a cam fixed to said drive shaft, a cam engaging lever pivotally secured at one end in said housing, a second arm fixed to said rock shaft within said housing, a link pivotally connecting the opposite end of said cam lever to said second arm, and yieldable means constantly maintaining said cam lever in contact with said cam while rocking said rock shaft in a reverse direction during a portion of the rotation of said cam.

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