

May 1, 1923.

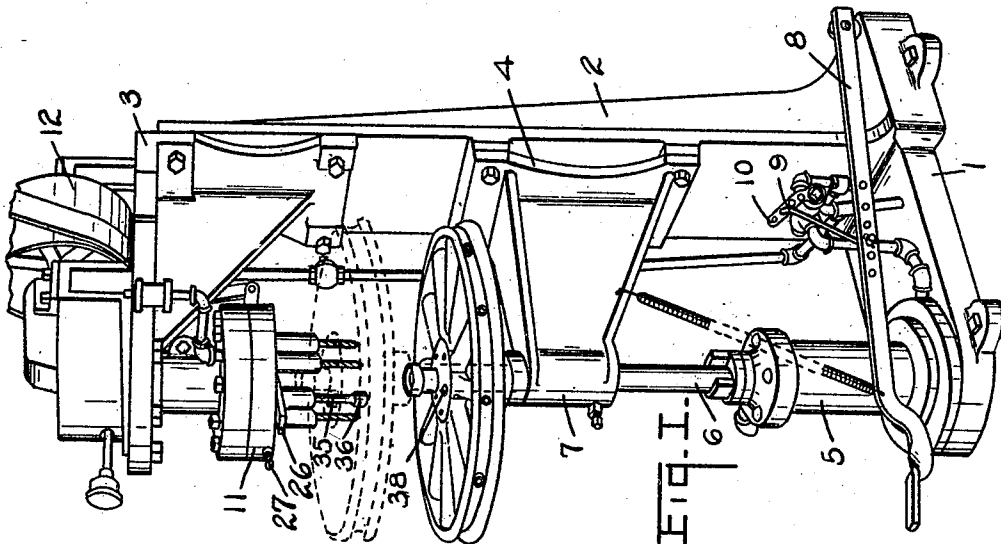
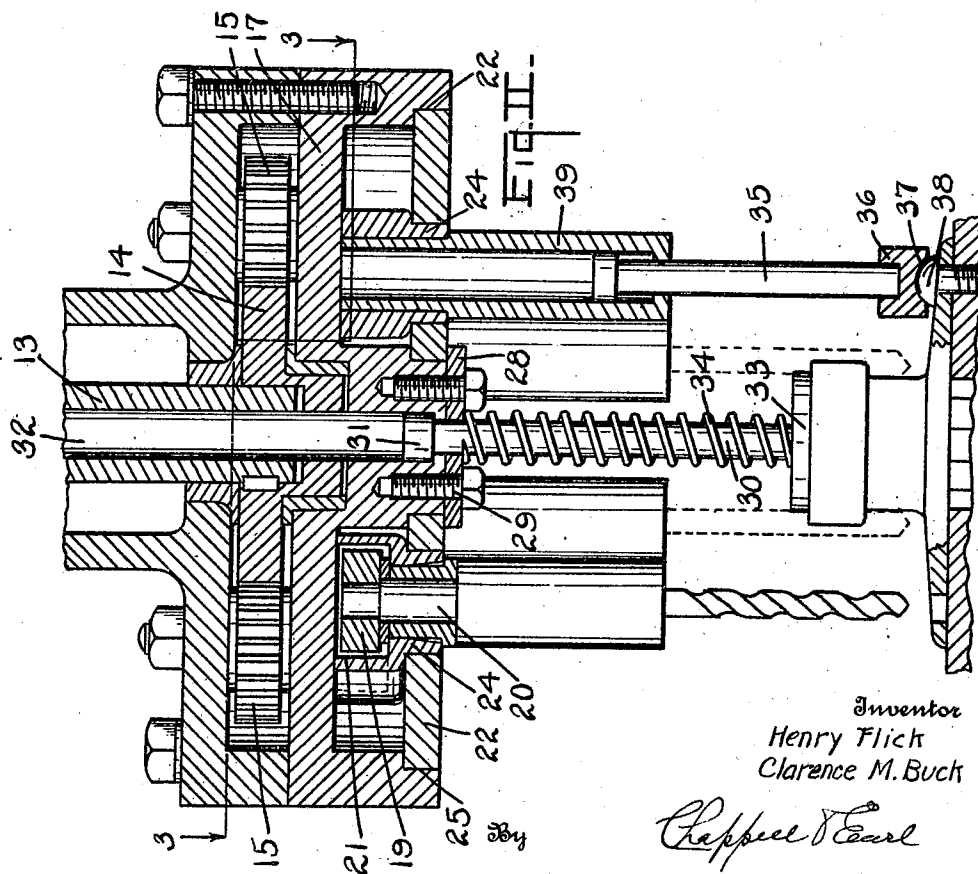
H. FLICK ET AL

1,453,931

MULTIPLE DRILL FOR DRILLING WOOD WHEELS FOR HUB FLANGES

Filed Oct. 4, 1921

2 Sheets-Sheet 1



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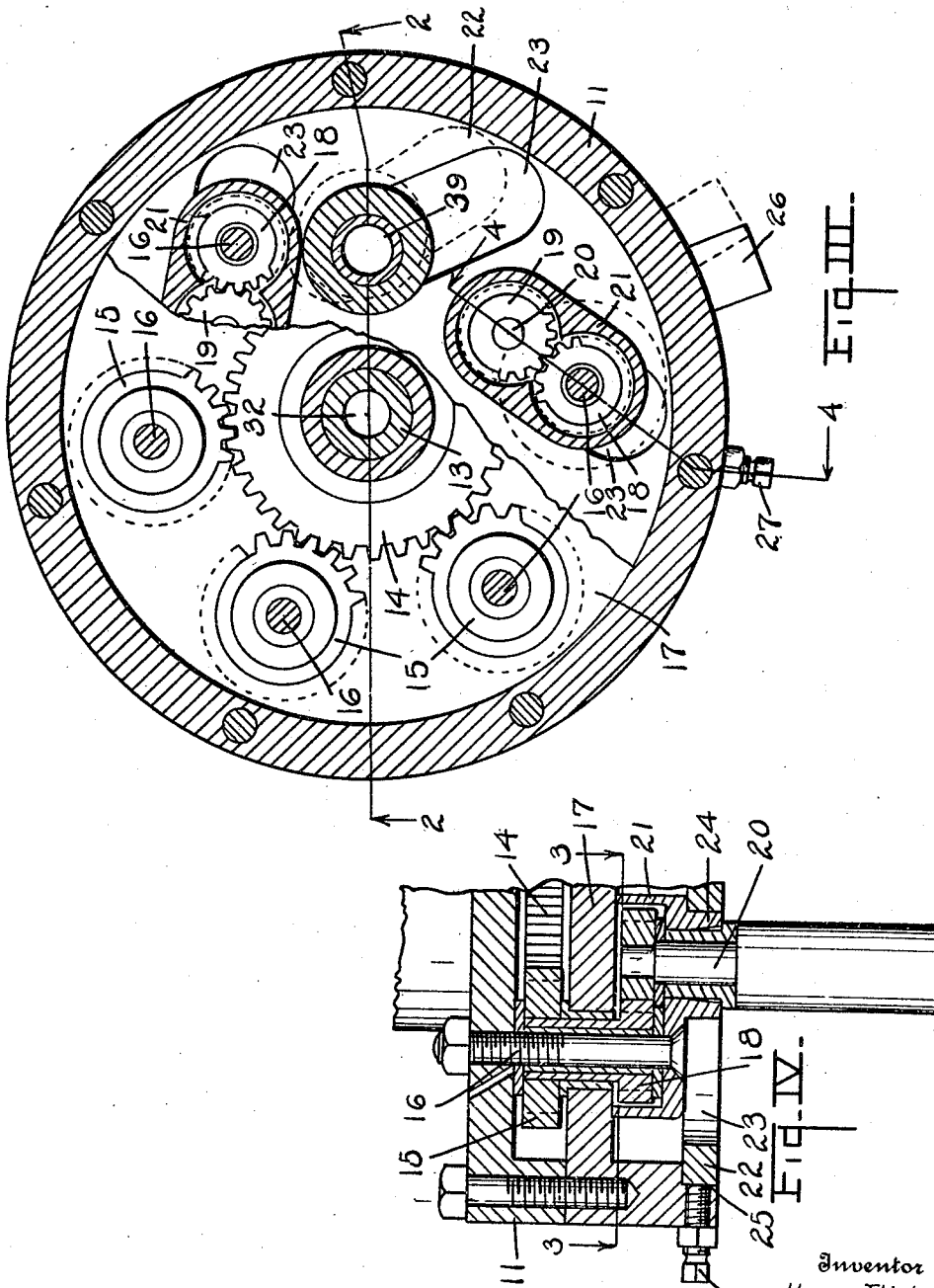
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UNITED STATES PATENT OFFICE.

HENRY FLICK AND CLARENCE M. BUCK, OF JACKSON, MICHIGAN, ASSIGNORS TO
HAYES WHEEL COMPANY, OF JACKSON, MICHIGAN.

MULTIPLE DRILL FOR DRILLING WOOD WHEELS FOR HUB FLANGES.

Application filed October 4, 1921. Serial No. 505,283.

To all whom it may concern:

Be it known that we, HENRY FLICK and CLARENCE M. BUCK, citizens of the United States, residing at the city and county of Jackson, State of Michigan, have invented certain new and useful Improvements in Multiple Drills for Drilling Wood Wheels for Hub Flanges, of which the following is a specification.

This invention relates to improvements in multiple drills for drilling wood wheels for hub flanges.

The objects of the invention are:

First, to provide such a machine in which the drill spindles may be simultaneously radially adjusted for flanges of different sizes.

Second, to provide improved means for effectively locating the drill head for drilling through the holes of the metallic flange into the wood of the wheel at the center.

Third, to provide an improved means of feeding the work to such a multiple drill.

Further objects, and objects relating to details of construction and operation will definitely appear from the detailed description to follow.

We accomplish the objects of our invention by the devices and means described in the following specification. The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of the invention is fully illustrated in the accompanying drawing forming a part of this specification, in which:

Fig. I is a detail perspective view of the improved multiple drill, the driving pulley being shown fragmentary and the elevated position of the wheel being indicated by dotted lines.

Fig. II is an enlarged detail vertical central section through the multiple spindle head and spindle adjusting and driving means, taken on the irregular line 2-2 of Fig. III.

Fig. III is a detail horizontal sectional view on the irregular line 3-3 of Figs. II and IV.

Fig. IV is an enlarged detail sectional view on the line 4-4 of Fig. III, showing details of the gears and adjusting means.

In the drawing the sectional views are taken looking in the direction of the little arrows at the ends of the section lines and similar numerals of reference refer to similar parts throughout the several views.

Considering the numbered parts of the drawing by their numbers, 1 is the base. 2 is the standard for supporting the drill head bracket 3 and the work table 4. 5 is an engine cylinder for actuating the plunger or piston rod 6 through guide 7 in the bracket 4 for raising the work table or support. The same is controlled by foot lever 8 connected by link 9 to the throttle lever 10, as seen in Fig. I.

The drill head 11 is supported on the bracket 3 and is driven by the tight and loose pulley structure 12, which is connected by suitable means, not necessary to illustrate in detail, to drive the central hollow spindle 13. To this spindle is keyed the central driving gear 14 meshing with the series of driven gears 15 disposed thereabout in symmetrical relation and carried on suitable spindles 16 which are journaled in plate 17.

Pinions 18 are on the lower ends of the spindles 16 and mesh with pinions 19 on the upper ends of the drill spindles 20. The drill spindles 20 are carried by adjustable arms 21 which constitute link connections between the spindles 16 and the drill spindles 20. The bottom plate 22 of the head is slotted at 23, 23 with slots oblique to the radius thereof for engaging downwardly projecting bosses at the inner ends 24 of the said link arms 21.

The bottom plate 22 is adjustable in a seat 25 in the under side of the casing 11 and is provided with a projecting arm 26 whereby it may be adjusted to swing the drill spindles out and in toward the center. A set screw 27 is provided to lock the same in place and a central washer 28 held up by screws 29 keeps the same in position. A central plunger 30 with head 31 slides up and down in the hollow center 32 of the main driving spindle. The lower end is provided with a plunger head 33 for engaging the center of a hub and the plunger is forced yieldingly downward by the springs 34 (see Fig. II). One of the drill spindles is replaced by a plunger 35 with a head 36 having a depressed center 37 to fit the head of a flange bolt 38. The plunger reciprocates in a socket 39 which is held by one of the arms 21 (see Fig. II), so that this socket and plunger are adjusted in symmetrical relation with the other five drill spindles.

In the use of this device the hub flange is put in place and held by a single bolt and

is then placed within this multiple drill, the center plunger 13 engaging the center of the hub thereof and the bolt head of the single inserted bolt is placed in the depression 36 in the end of the plunger 35. The work table is then forced upward by the engine cylinder. The drills enter the holes in the flanges and the wood center is thus bored out at a single operation.

10 While we have shown a cylinder for raising the work and feeding it to the drills, we desire to state that air or other means might be used in this behalf, and, for that matter, the drills themselves might be fed 15 to the work, both in manners well known in this art.

It is desired to claim the structure specifically as illustrated and also to claim the same broadly as pointed out in the appended 20 claims.

Having thus described our invention what we claim as new and desire to secure by Letters Patent is:

1. In a multiple drill, the combination of 25 a suitable base with standard, a work support with an engine cylinder for actuating the same, a multiple spindle head with a central gear and bracket for supporting the same, means for driving the said central 30 gear, multiple gears symmetrically disposed on suitable spindles around the said driving gear, drill spindles carried on suitable arms pivoted to the spindles of said multiple 35 spindles to drive the drill spindles, a plate with slots embracing the said arms and disposed to actuate the same simultaneously out and in towards the center, means for adjusting the said disk, a central plunger 40 part for embracing the hub of a wheel, a plunger disposed symmetrically with the said drill spindles with a head containing a depression to engage a single bolt inserted in the hub flange, all coacting substantially 45 as described for the purpose specified.

2. In a multiple drill, the combination of a suitable base with standard, a work support with means for actuating the same, a 50 multiple spindle head with a central gear and bracket for supporting the same, means for driving the said central gear, multiple gears symmetrically disposed on suitable

spindles around the said driving gear, drill spindles carried on suitable arms pivoted to the spindles of said multiple gears, inter- 55 meshing pinions on the said spindles to drive the drill spindles, a plate with slots embracing the said arms and disposed to actuate the same simultaneously out and in towards the center, means for adjusting the said disk, a 60 central plunger part for embracing the hub of a wheel, a plunger disposed symmetrically with the said drill spindles with a head containing a depression to engage a single bolt inserted in the hub flange, all coacting sub- 65 stantially as described for the purpose specified.

3. In a multiple drill, the combination with a drill head comprising a central driving spindle and gear, spindles disposed 70 around said driving spindle with pinions thereon meshing with said driving gear, arms pivoted on said spindle and projecting inwardly from said spindle, drill spindles carried by the said arms with suitable pin- 75 ions thereon, a slotted adjustable disk embracing the said drill spindles whereby they are adjusted simultaneously to different sizes, as specified.

4. A multiple spindle drill for drilling 80 through hub flanges comprising a circular group of drills adjustable radially and disposed for drilling the wood part through metal flanges, and a plunger entering the group arrangement and controlled by the 85 radial adjustment of the drills and having a depressed head for engaging a single bolt head inserted therein whereby the drills are effectively located.

5. In a multiple drill, the combination of 90 a group of spindles disposed and arranged for driving drills through the flanges of a hub, a central guiding plunger disposed to engage the projecting end of the hub, a locating plunger adapted to engage the said 95 flange and locate it in effective relation to the said drill spindles, and a steam cylinder connected to feed the said hub and flange to the said drills, as specified.

In witness whereof, we have hereunto set 100 our hands and seals.

HENRY FLICK. [L. s.]
CLARENCE M. BUCK. [L. s.]