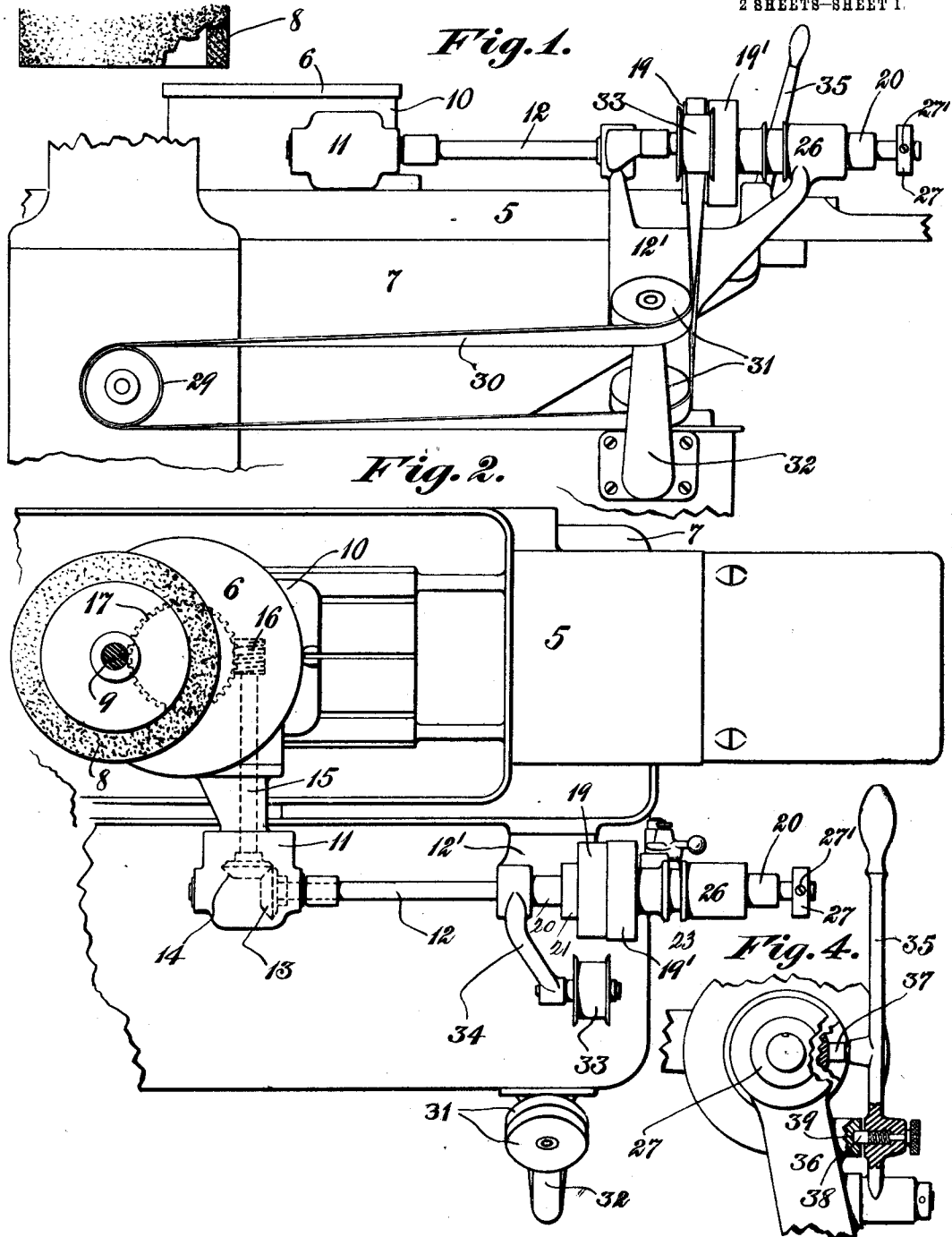


B. M. W. HANSON.
METAL REDUCING MACHINE.
APPLICATION FILED JUNE 13, 1912.

1,065,869.

Patented June 24, 1913.

2 SHEETS—SHEET 1.



Witnesses:

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Inventor:

B. M. W. Hanson
By his Attorneys,

Sutherland Anderson

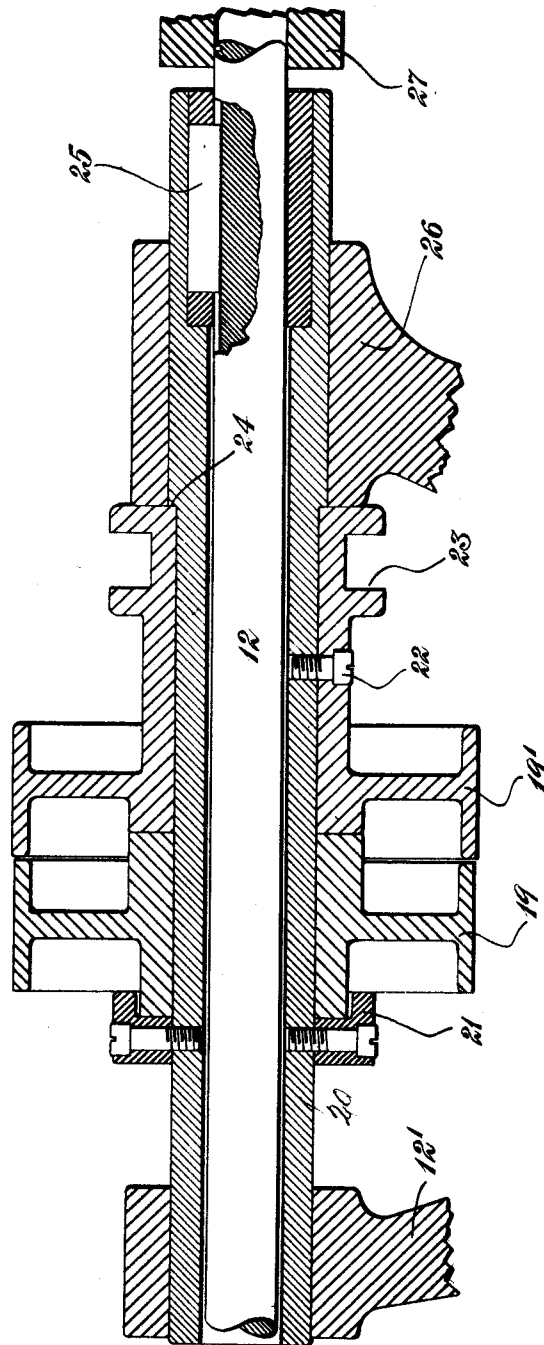
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2 SHEETS—SHEET 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

BENGT M. W. HANSON, OF HARTFORD, CONNECTICUT, ASSIGNOR TO PRATT & WHITNEY COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF NEW JERSEY.

METAL-REDUCING MACHINE.

1,065,869.

Specification of Letters Patent.

Patented June 24, 1913.

Application filed June 13, 1912. Serial No. 703,562.

To all whom it may concern:

Be it known that I, BENGT M. W. HANSON, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Metal-Reducing Machines, of which the following is a specification.

This invention relates to what may be termed for convenience "metal-reducing machines," and in the drawings accompanying and forming part of the present specification, the improvements are represented as incorporated in a grinding machine, although this is not essential as they may be employed with advantage in other connections.

A grinding machine such as that shown, comprises a traveling or reciprocatory main work support and an auxiliary work support on the main support, and it is one of the objects of the present invention to provide means for controlling the operation of the auxiliary work support by and through the movement of the main work support.

Another object of the invention is the provision of effective driving mechanism which is certain and precise in action.

The invention includes other features of novelty and advantage which with the foregoing will be set forth at length in the following description wherein will be outlined in detail that one of the several forms of embodiment of the invention, selected for illustration in said drawings, this disclosure being provided to enable those skilled in the art to practice the invention. The invention, however, is not limited to such showing as certain variations may be made therefrom within the scope of the invention defined by the claims following said description.

Referring to said drawings: Figure 1 is a side elevation of a portion of a metal-reducing machine involving the invention. Fig. 2 is a top plan view of the same. Fig. 3 is a longitudinal section of a shaft, a tubular shaft on the same, and certain cooperating parts hereinafter more particularly described. Fig. 4 is a detail view in end elevation of part of the driving mechanism and a holding and shifting latch hereinafter more particularly described.

Like characters refer to like parts throughout the several views.

As already intimated the invention can be employed with utility in different ways, although it is shown associated with a grinding machine comprising a reciprocatory platen as 5 and a rotary table as 6 on the platen, the latter in the present instance constituting a main work support and the rotary table constituting an auxiliary work support. The platen 5 is mounted upon the bed 7 of the machine, the latter being provided with suitable ways for guiding said platen for sliding movement longitudinally thereof. While the main work support or platen 5 is moved in a straight path and while the auxiliary support or table 6 rotates, such motions may not be always necessary. The reciprocatory platen provided with the turn table are well-known, in the grinding machine art, and for this reason they need not be further described.

Power operated means are provided as will hereinafter appear, for rotating the turn table 6 on the platen 5, and means are provided for governing the power operated mechanism simply by the movement of the platen 5 or its equivalent, the parts being so organized in the present case that when the platen is moved in one direction (toward the left in the showing made) the turn table will be thrown into action or into driving relation with a power operable member, while when said platen is moved in the opposite direction the table will be thrown out of action, so that the control of the said table or auxiliary work support can be secured simply by the movement of the platen, it being unnecessary to provide independent means for this purpose.

The work on the turn table 6 is subjected in the example illustrated to the effect of a grinding or reducing member as 8 which may consist of a disk rotary about a fixed axis but capable of adjustment toward and from the work in the direction of said axis, said wheel 8 being fastened to the shaft 9. This grinding wheel and its mounting are not uncommon so that it is not necessary to describe the same further.

The construction to which reference has been briefly made, is advantageous in that when the platen is moved to carry the turn table 6 from under the tool 8 the rotation of the table 6 will be automatically stopped merely by the movement of the platen after the same has been moved a predetermined

distance, while when the table is returned to its original position under or approximately directly under the tool 8, the turn table will be automatically started, it being understood that the work is generally applied to the table 6 when the latter is at rest.

Different forms of drives can be utilized for securing the functions mentioned, but that now to be described is highly advantageous. The bearing 10 which supports the turn table is shown equipped with an arm or bracket 11, and this bracket 11 and a bearing 12' on the bed 5, support for end-wise reciprocation the rotary shaft 12 which is so related, with the platen 5 as will hereinafter appear as to partake of the movements thereof. The shaft 12 is also operatively connected with the table 6 for rotating the latter, being shown equipped at its inner end with a bevel gear 13 in mesh with a corresponding bevel gear 14, rigid with the transverse shaft 15 supported by the bracket 11 and also by the bearing 10. The shaft 15 is provided at its inner end with a worm 16 in mesh with the worm gear 17 rigid with the turn table 6 which is suitably pivoted for rotation on the platen as usual in the type of grinding machine represented. It will be, therefore, understood that on the rotation of the shaft 12, the turn table 6 through the intermediate part will be rotated.

Associated with the shaft 12 and supported indirectly thereby, are the loose and tight pulleys 19 and 19' both carried by the elongated sleeve 20 surrounding the shaft 12 and rotatively supported by the bearing 12'. The pulley 19 as will be understood is loose on said sleeve, being held against inward displacement by the collar 21 pinned or otherwise suitably connected to said sleeve, while the pulley 19' is connected to said sleeve for rotation therewith as by the pin or screw 22. The screw or pin 22 extends through the elongated hub of the right pulley 19' and is provided with a peripherally grooved collar 23, the purpose of which will be hereinafter explained. An annular shoulder 24 formed by circumferential reducing sleeve 20 bears against the outer face of this collar 23, the shoulder 24 and collar 21 preventing accidental lateral motion of the two pulleys and also serving as a means for positively moving said pulleys laterally when occasion requires by the longitudinal shifting of said sleeve 20. The shaft 12 and the sleeve or tubular shaft 20 are keyed together for rotation, and the elongated key 25 may be provided for this purpose, the parts 12 and 20 having mating keyways to receive said key. The sleeve or tubular shaft 20 is also supported by a bracket or bearing 26. It will therefore be clear that when the pulley 19' is rotated it will rotate the hollow shaft or sleeve 20 and the latter in turn through the key 25 will rotate the shaft 12

so as to turn through the connections already described, the auxiliary work support or table 6. The shaft 12 is provided at its outer end with an adjustable collar 27 the purpose of which will be hereinafter explained, adapted to be held in its adjusted positions by the set screw 27'.

Supported on the side of the bed 7 is the rotary pulley 29 and passed around the same is the belt 30 bent between its ends to travel over the guide sheaves 31 sustained by a bracket 32 on the bed 7. The belt also passes under the guide sheave 33 carried by the arm 34 on the bearing 12, this sheave 33 having side flanges to prevent accidental lateral motion of the belt 30, the effect of said belt being alternately transferred to the loose and tight pulleys 19 and 19' not by shifting said belt, but by shifting the pulleys. In Fig. 1 the belt is on the loose pulley 19, and it will be understood that at this time the turn table 6 is at rest. By moving the two pulleys 19 and 19' laterally so as to relatively speaking, transfer the belt from the loose pulley 19 to the tight pulley 19', the latter will be rotated to effect the movement of the turn table 6 through the agency of the parts already described. This particular operation is accomplished in the construction shown by the movement of the main work support or platen 5 toward the left. As said platen moves in such direction the shaft 12 is moved therewith, and when the adjustable collar 27 strikes the outer end of the tubular shaft 20, said shaft 20 will be shifted with the shaft 12, this resulting in moving the pulleys 19 and 19' simultaneously laterally whereby the belt 30 can be shifted relatively from the loose pulley 19 onto the tight pulley 19', and when this occurs the pulley 19' and hollow shaft 20 will be rotated thereby through the key connection 25 turning the shaft 12 and consequently rotating the table 6 through the described connections with said shaft 12. While the means which throw the turn table 6 into action is positive in action, the means which throw the same out of action operates in the present instance frictionally, and the key 25 plays a part in this particular procedure. It will be assumed that the platen 5 is operated to carry the table 6 from under the grinding wheel 8, and when this occurs the shaft 12 is moved to the right, said shaft at this time being rotated and hence pressing the key 25 against one of the walls of the keyway in the hollow shaft 20 with sufficient pressure or friction to move said shaft 20 longitudinally outward on the corresponding movement of the shaft 12 which results in the transfer of the belt 30 from the tight pulley 19' to the loose pulley 19 thereby stopping the rotation of the turn table.

There may be cases when it is desired to

lock the sleeve or shaft 20 in its inner shifted position, and the lever 35 fulcrumed at its lower end to the arm 36 on the bed 7 may be conveniently provided for this purpose. Said lever has a handle at its upper end to facilitate its operation, and between its ends may be provided with a stud 37 in the form of an anti-friction roller to enter the peripheral groove or channel of the collar 23. The lever, therefore, can be utilized for shifting the sleeve 20 and hence the two pulleys 19 and 19' to start and stop the turn table 6. Said lever is equipped between its ends, with a spring plunger 38 adapted to enter a hole or socket 39 on the bracket or arm 36 when the belt 30 is on the tight pulley 19' so as to positively maintain such relation. It is not necessary that the lever 35 and the spring plunger 38 or their equivalents be employed as in some cases they can be entirely omitted.

What is claimed is:

1. The combination of a movably mounted main work support, an auxiliary work support movably mounted on the main work support, driving means for the auxiliary work support, and means for putting the auxiliary work support into and out of driving relation with the driving means therefor to start and stop the same, by the movement of the main work support.

2. The combination of a work support, means for driving said work support, said work support being also mounted for shifting movement, and means whereby the connection between the work support and the driving means can be controlled to stop and start said work support by and on the shifting movement of the work support.

3. The combination of a reciprocatory platen, a turn table on said platen, a power transferring member, a source of power, and mechanism for putting said power transferring member into and out of driving relation with said source of power by and on the movement of the platen and for also transferring the effect of said power transferring member to said turn table to rotate the same when the power transferring member is in driving relation with said source of power.

4. The combination of a rotary and shiftable work supporting member, a power transferring member, a source of power, and mechanism for putting said power transferring member into and out of driving connection with said source of power by and on the shifting movement of said work supporting member, and for rotating said shiftable member when said power transferring

member is in driving relation with said source of power.

5. The combination of a reciprocatory platen, a turn table on said platen, a shaft provided with fast and tight pulleys, and mechanism for moving said pulleys by and on the movement of the platen and for also transferring the effect of the tight pulley to the turn table at a predetermined time.

6. The combination of a platen, a turn table on said platen, a shaft to move with the platen and operatively connected with the turn table for rotating the same, a hollow shaft surrounding the other shaft, loose and tight pulleys on said hollow shaft, a key connection between the two shafts, and means for moving the first mentioned shaft by the second mentioned shaft on one of the movements of the latter, the second mentioned shaft being provided with means for moving the pulleys in the direction of the axis of motion thereof.

7. The combination of a reciprocatory member, a shaft to reciprocate on the reciprocatory member, a device on the reciprocatory member, a power transferring member, means for rotating said shaft from said power transferring member, a source of power, and means whereby said source of power and power transferring member are put into and out of operative relation on the longitudinal movements of said shaft.

8. The combination of an endwise movable shaft, a hollow shaft surrounding the other shaft, fast and loose pulleys on the hollow shaft, the latter being provided with means for laterally shifting the pulleys on the endwise movement of said shaft, and means whereby the hollow shaft is moved with the companion shaft during a predetermined movement of the latter.

9. The combination of a rotary shaft mounted also for endwise movement, a hollow shaft on the first mentioned shaft, fast and loose pulleys on the hollow shaft, the latter being provided with means for shifting said pulleys in the direction of its axis of rotation, means on the first mentioned shaft for moving the hollow shaft therewith when the same is moved in one direction, and a key connection between the two shafts for rotatively connecting them and for moving them in the opposite direction.

In testimony whereof I affix my signature in presence of two witnesses.

BENGT M. W. HANSON.

Witnesses:

W. M. STORRS,

N. S. BATES.