J. J. SCHURGER.

ATTACHMENT FOR LATHES.

APPLICATION FILED AUG. 10, 1918.

1,307,520. Patented June 24, 1919.

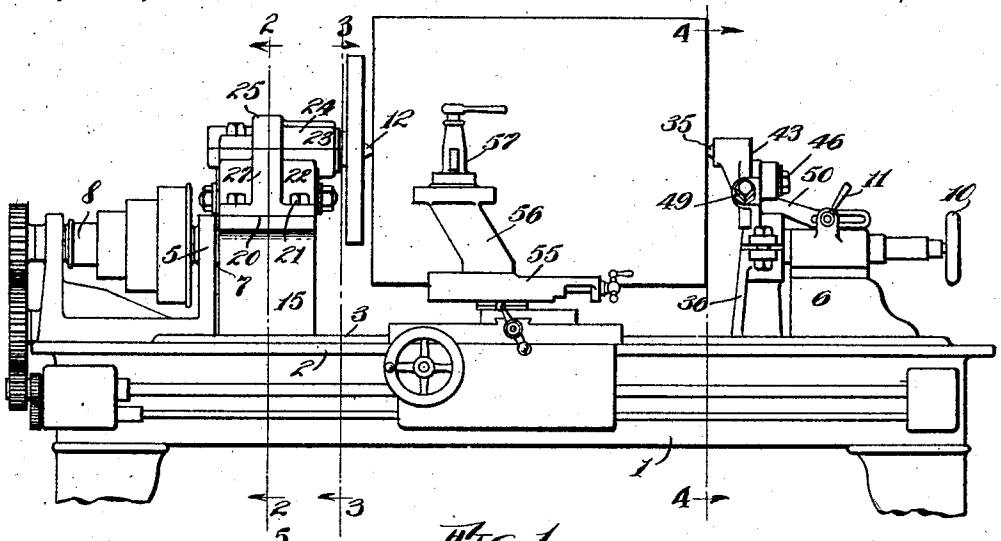


FIG. 1.

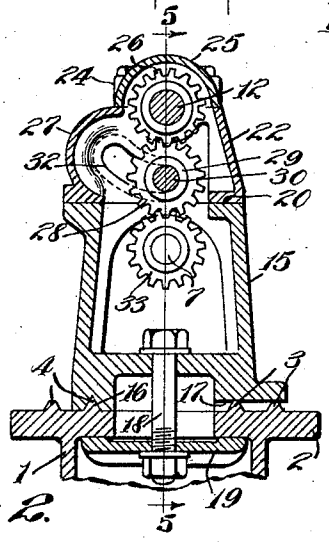


FIG. 2.

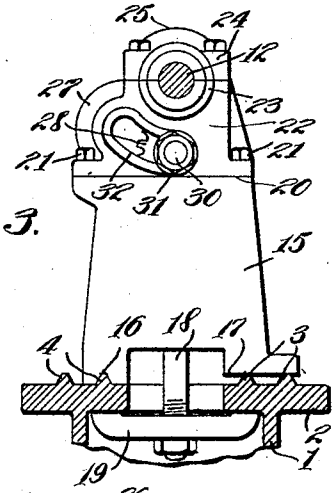


FIG. 3.

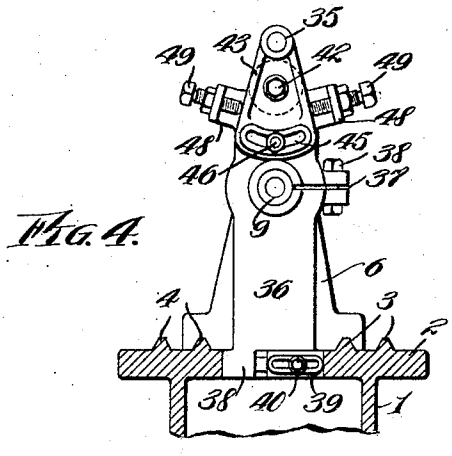


FIG. 4.

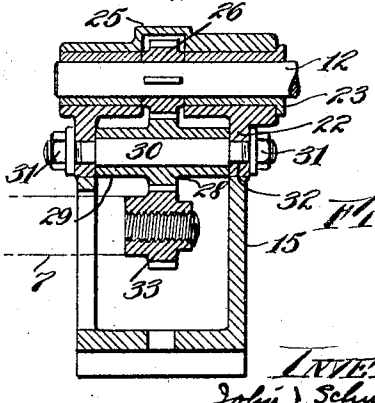


FIG. 5.

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ATTACHMENT FOR LATHES.

1,307,520. Specification of Letters Patent. Patented June 24, 1919.

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To all whom it may concern:

Be it known that I, JOHN J. SCHURGER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Attachments for Lathes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to lathes and has for its object the provision of a cheap and simple attachment whereby a much larger device can be turned upon the lathe than the machine was originally built for. It frequently happens that a machine shop will have occasion to perform some operation upon a device far larger than its ordinary lathes will accommodate, and yet such unusual work does not come with sufficient frequency to warrant the purchase of a lathe of that size. Such work as that has ordinarily to be sent out to a larger shop at considerable loss of time and expense, since the only alternative heretofore has been to tie up a large sum of money in a machine which is used only infrequently. The object of my invention is the provision of an attachment which shall be in itself simple and inexpensive and by means of which the unusual device can be handled upon the usual lathes. Further objects of the invention are the provision of a device of this character which shall be cheaply and easily constructed, and which shall have a considerable range of adjustment permitting it to be applied to lathes of many makes; while further objects and advantages of this said invention will become apparent as the description proceeds.

In the drawings accompanying and forming part of this application I have shown one embodiment of my said invention although it will be understood that these drawings are illustrative merely and are not intended to limit me to the particular constructions therein shown, inasmuch as many modifications can be made within the scope of my inventive idea. In these drawings Figure 1 is a front elevation of a lathe equipped with my improvement and showing the mode of using the same; Figs. 2, 3, and 4 are sectional views taken respectively on the lines 2—2, 3—3, and 4—4 of Fig. 1; and Fig. 5 is a sectional view on the line 5—5 of Fig. 2.

Describing the parts by reference characters, 1 represents the body of a lathe, 2 the lathe bed, 3 the front rails, 4 the rear rails, 5 the head-stock, 6 the tail-stock, 7 represents the live spindle, 8 the driving pulley, and 9 the dead spindle, the latter controlled as usual by the hand wheel 10, and adapted to be locked in place by a suitable hand-lever or clamping-screw 11.

According to my invention I secure to the lathe bed in front of the head-stock a rigid support having journaled therein an auxiliary live spindle 12 having sufficient height above the lathe bed to swing the article desired; this auxiliary spindle is driven by means of gearing from the main spindle, the gearing being so arranged as to rotate the auxiliary spindle in the appropriate direction and speed, and certain of the gears also preferably being adjustable to facilitate the application of the device to different lathes. In the present embodiment, which is the best form I have so far conceived of performing my said invention, the lower part of this support consists of a hollow cast-iron box 15 having the one side of its bottom grooved as at 16 for the reception of one of the rails, as 4, and the other side being flat as at 17 so as to rest upon the rails 3 at the opposite side of the lathe bed. This member is affixed to the lathe bed by means of a suitable bolt 18 engaging the clamping member 19 which grips the lower face of the bed.

The box 15 is shown as terminating in a flat horizontal face 20, a short distance above the live spindle 7, this construction being adopted for the purpose of easy manufacture; and secured upon the face 20 by suitable bolts 21 is the head 22 also consisting of a hollow casting, and having its uppermost part formed with an elongated bearing 23 the upper part of which is carried by the cap 24. The middle part of this cap is formed with an enlargement 25 for the reception of the pinion 26 carried by the spindle 12; while the portion of the head 22 adjacent thereto is similarly enlarged as at 27 for the reception of the idler 28 which meshes therewith. This idler is formed with an elongated hub 29 loosely sleeved upon the gudgeon 30, and the latter is adjustably secured by nuts 31 in the arcuate slot 32 formed in the end faces of the head 22. This arrangement provides a long bearing for the spindle 12 and a long bearing for the idler 28. The slot 32 is curved about the center

of the spindle 12 so that the gears may remain in proper engagement at all times; while the idler 28 is also engaged upon its lower side with the gear 33 which is rigidly attached to the live spindle, preferably by screwing it thereon in place of the ordinary chuck.

According to my invention I also provide an auxiliary dead spindle 35; and in order to support the same and also to provide for its convenient operation, I clamp securely to the main dead spindle a rigid upright body 36. In the present invention I have shown this body as secured in place by being slit at 37 and clamped upon the dead spindle by bolts. The lower part of this body is formed with feet 38 and 39, respectively, one of the same, as 39, being adjustable laterally, and held in place by the clamp screw 40. These depend into the slot in the lathe bed 2 and are adjusted so as exactly to fill the same. Pivoted to the upper end of the body 36 upon the horizontal bolt 42 is a head 43 here shown as triangular in shape and having at one apex the auxiliary dead spindle heretofore mentioned. This head is also formed with an arcuate slot 45 concentric with the bolt 42 and receiving the clamping bolt 46 carried by the body 36. Also carried by the body 36 are a pair of arms 48, one at each side of the head, and having therein the set-screws 49—49 by means of which the same can be adjusted about its pivot 42. I have also shown this body as provided with a tail 50 projecting rearwardly therefrom and arranged to be grasped by the same handle or clamping screw 11 as that which locks the tail-stock in position.

Carried by the slide rest 55 I have shown an extension member 56 adapted to raise the tool post 57 by the same amount as the auxiliary spindle is raised; and I have shown the same as formed at an angle so that by turning it to one side the greater swing of the larger article can be accommodated.

The mode of operation of the auxiliary spindle will be obvious without further description, so far as the same pertains to any one lathe. The adjustment feature provided by the idler gear is intended not so much to permit the same device to be employed with lathes of different radial capacities as to make up for the variations of lathes manufactured by different concerns under the same rated swing; for two lathes of nominal twelve inch swing will frequently vary by as much as 10 per cent. in the actual distance from the live spindle to the lathe bed, added to which is the fact that the distance between rails is never the same in the lathes of any two manufacturers, which causes the auxiliary spindle to fall to one side or the other of the vertical plane which intersects the main spindle. It is this last which necessitates the adjustment provided by the set screws 49—49 and slot 45 since it is necessary to bring the dead spindle 35 forwardly or rearwardly to compensate for this. It will be noticed that by attaching this spindle to the body 36 as described, the same can be moved backward and forward by the handle 10 the same as though the lathe was intended for this mode of operation. It may also be pointed out that the only operating parts of this device are contained within the head 22 which may be used with all sizes and descriptions of lathes; and the only devices necessary to be changed in order to adapt the attachment for lathes of different sizes are the comparatively cheap and simple members 15 and 36.

This device in practice possesses sufficient stiffness and strength to enable all ordinary work to be done therewith. While I have specifically pointed out the constructions which I now esteem as most satisfactory, it will be understood that I do not confine myself to the constructions herein illustrated and described except as the same are specifically recited in the claims hereto annexed.

Having thus described my invention, what I claim is:—

1. The combination with a lathe having a bed and head-stock, of a hollow support carried by the lathe bed and inclosing the end of the live spindle, an auxiliary live spindle journaled in said support at a point above the first spindle, a pinion secured to said auxiliary spindle inside said support, a gear secured to the first spindle inside said support and located beneath said pinion, and an idle gear journaled inside said support and meshing with said gear and pinion.

2. The combination, with a lathe having a bed and provided with a head-stock and tail-stock, said bed being formed with longitudinal rails, of a support located upon said bed between said head-stock and tail-stock, one side of said support having a groove receiving one rail and the other side having a flat base resting on another rail, an auxiliary spindle journaled in said support and having a pinion, a gear carried by the live spindle of the head-stock, an idle gear carried by said support and meshing with both said gear and pinion, means for adjusting the position of said idle gear as to both said gear and pinion, an auxiliary dead spindle carried by the tail-stock in the same horizontal plane with said auxiliary live spindle, and means for adjusting said dead spindle laterally of the lathe bed.

3. As an article of manufacture and sale an attachment for lathes comprising a hollow support adapted to be attached to the lathe bed in front of the head-stock, an auxiliary live spindle journaled in said support, a pinion carried thereby, a gudgeon

carried by said support and adjustable laterally in an arc having said pinion at its center, and an idle gear journaled on said gudgeon and meshing with said pinion in all positions of its adjustment, the side of said support having an opening for the main live spindle and said idle gear being also adapted to mesh with a gear carried by the main live spindle.

In testimony whereof, I hereunto affix my signature.

JOHN J. SCHURGER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."