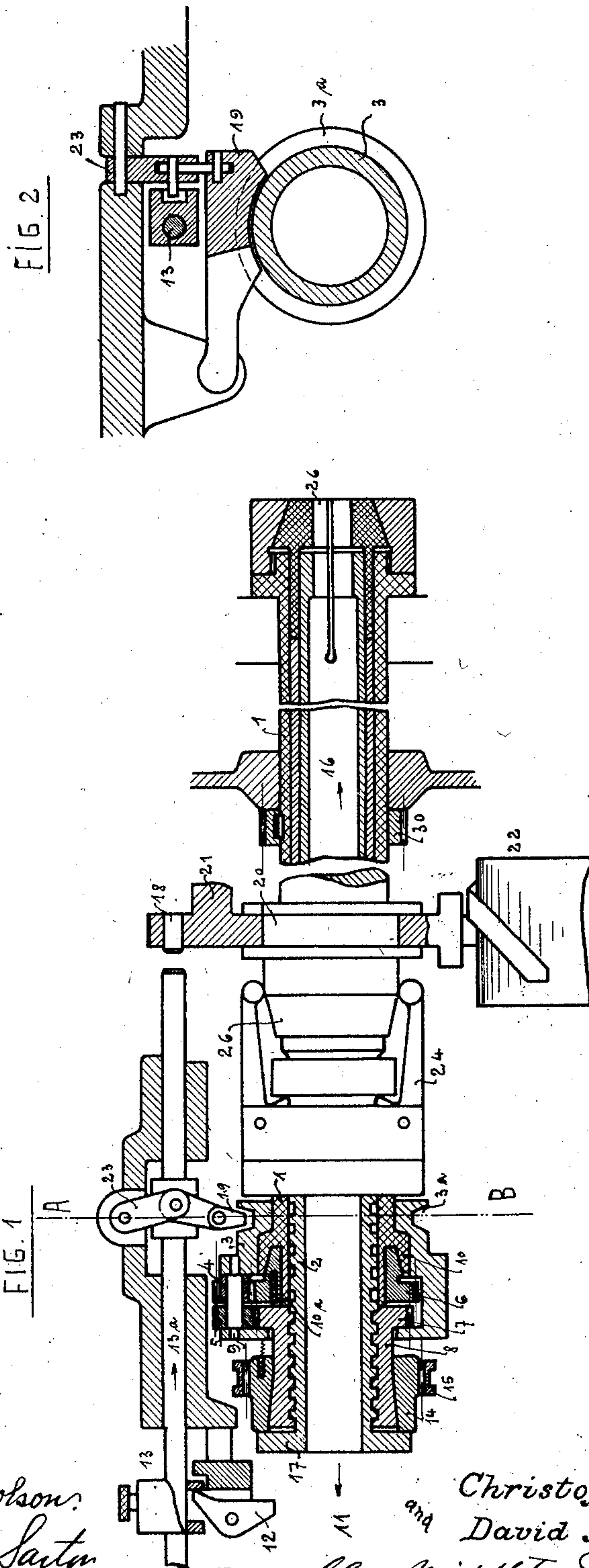


C. MUNTHE & D. MILLINGTON.
 DEVICE FOR FEEDING MATERIAL IN TURRET LATHES AND THE LIKE.
 APPLICATION FILED SEPT. 27, 1910.

998,377.

Patented July 18, 1911.

2 SHEETS—SHEET 1.



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FIG. 3.

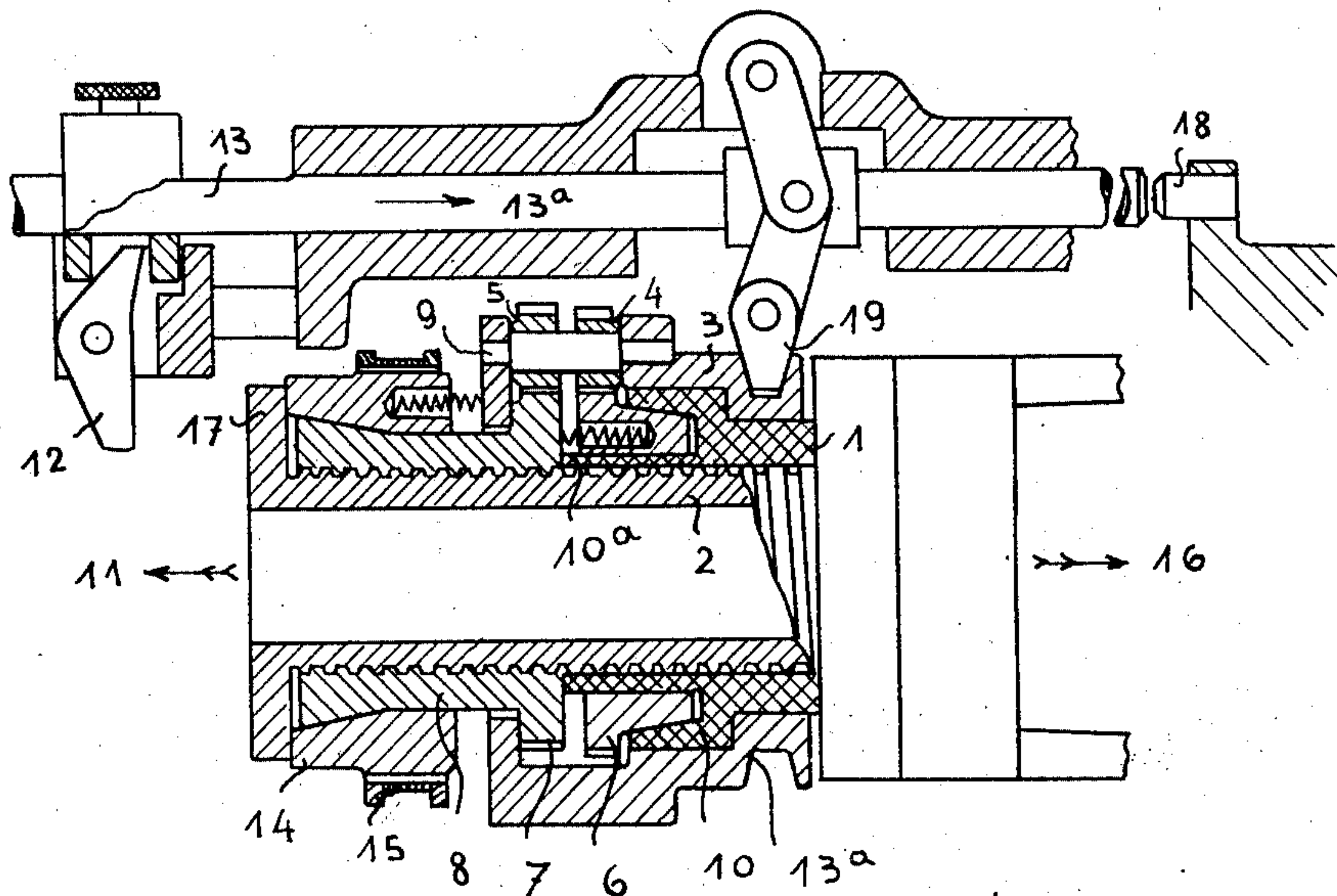
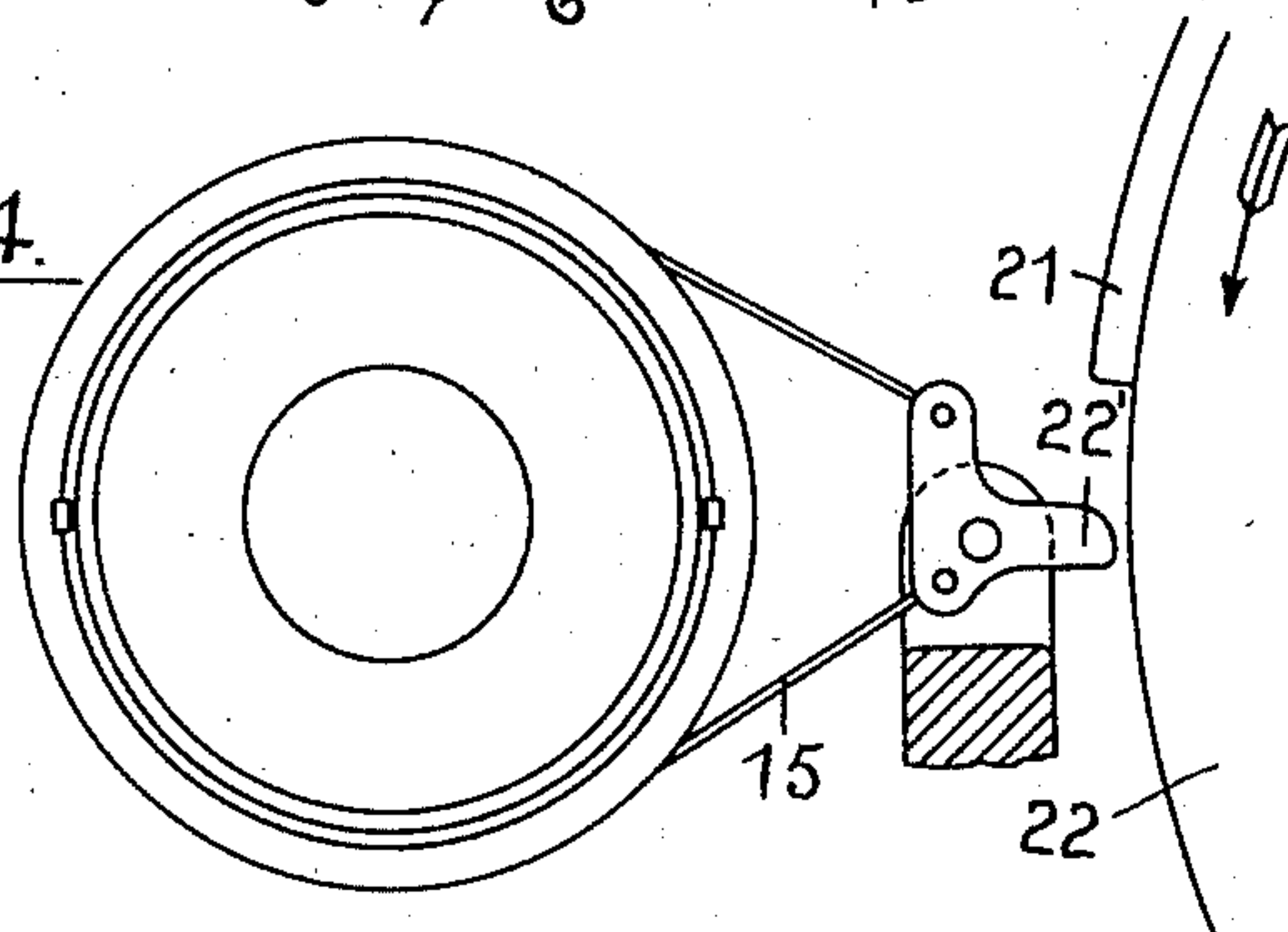


FIG. 4.



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UNITED STATES PATENT OFFICE.

CHRISTOFFER MUNTHE AND DAVID MILLINGTON, OF FRIEDENAU, NEAR BERLIN, GERMANY.

DEVICE FOR FEEDING MATERIAL IN TURRET-LATHES AND THE LIKE.

998,377.

Specification of Letters Patent.

Patented July 18, 1911.

Application filed September 27, 1910. Serial No. 584,109.

To all whom it may concern:

Be it known that we, CHRISTOFFER MUNTHE, a subject of the King of Norway, and DAVID MILLINGTON, a subject of the King of Great Britain, and residents of Friedenau, near Berlin, Germany, have invented certain new and useful Improvements in Devices for Feeding Material in Turret-Lathes and the Like, of which the following is a specification.

This invention relates to devices for feeding material in turret lathes and the like. In such devices as hitherto constructed for this purpose the forward feed of the material is effected either by curved members, in which case a special cam drum for the driving of the material is necessary, or by rollers which are pressed against the material by a spring and actuated by toothed wheel gearing from the spindle. Special cam drums are necessary in the latter device, also in order to effect the starting and stopping of the advancement.

The essential feature of the present invention consists in that a nut working on the feed tube is rotated by toothed wheel gearing from the work spindle more rapidly than the feed tube, which latter is coupled to the material, whereby differential motion occurs between the feed tube and the nut, which causes the feed tube to move backward; while by fixing the nut, which works on an external screw thread on the feed tube, forward motion of the said tube is produced. This arrangement has the advantage that the construction is very simple and the material can be used to the very last piece.

One method of carrying out the invention is illustrated by way of example in the accompanying drawings, in which—

Figure 1 is a longitudinal section; Fig. 2 is a section on the line A B of Fig. 1, while Fig. 3 illustrates the device on a larger scale. Fig. 4 is a detail view showing the brake band.

The work spindle 1 surrounds the externally threaded feed tube 2 which is coupled by a key 2* to the same but can slide axially therein. On the work spindle 1 which is

actuated by a toothed wheel 30 connected to the main drive of the machine, a sleeve 3 is loosely mounted, and carries the spur wheel gearing 4, 5. A toothed wheel 6 is also mounted on the spindle 1 and engages with the gear wheel 4 while the gear wheel 5 of the spur gearing engages with a toothed flange or ring 7 formed integral with or secured to nut 8 working on the feed tube 2. The spur wheels 4, 5, are rigidly fixed on the pin 9 journaled in the sleeve 3. The toothed wheel 6 is provided with a friction cone 10 on its front end, which can be pressed into a coned recess in the spindle 1 by means of springs 10^a, so that on rotation of the spindle 1 the toothed wheel 6 will be carried around also. Since the gear wheel 6 meshes with the gear wheel 4, the nut 8 will also be set in rotation by means of the gear wheel 5. The gear wheel 6 is of larger diameter and therefore has more teeth than the wheel 7 of the nut 8, so that the nut will revolve more rapidly than the gear wheel 6 which rotates with the spindle 1, with the result that the nut 8 working on the external threads of the feed tube 2 effects the backward motion of the latter in the direction of the arrow 11, until the flange 17 of the feed tube 2 comes up against the striker lever 12 by means of which the bar 13 is moved in the direction of the arrow 13^a, which effects a release of the spur wheel gearing 4, 5. To accomplish the latter purpose a bent lever 23 or pair of links is arranged on the bar 13, and on the forward motion of the bar 13 this lever is caused to swing out so that a member 19, which engages in a recess 3^a in the sleeve 3 and normally holds the latter fixed (Fig. 3) now frees the same. Thus the sleeve 3 is unlocked, and the latter now rotates along with the work spindle 1. The gear wheels 4, 5, work only as gearing as long as the sleeve 3 is held by the member 19. As soon as sleeve 13 is freed the gear wheels 4, 5, have no more independent rotation, but revolve together with the sleeve 3 carried around by the wheels 6, 7, with the work spindle 1. Relative motion between the wheels 6, 7 no longer takes place, so that the feed tube 2 ceases to execute either for-

ward or backward motions. At the instant in which the advancement of the material is to take place, a conical member 14 is gripped by means of a band brake 15 and consequently the nut 8 is simultaneously prevented from revolving. This causes the feed tube, which is coupled in known manner with the spindle 1 by means of a conical clutch rotating with the said spindle, to be moved forward in the direction of the arrow 16 by means of the screw threads of the nut 8, until the flange 17 of the feed tube comes into contact with the conical member 14 and presses the latter backward until this conical member frees the nut 8, whereupon the latter also rotates along with the material spindle 1. The operation of the band brake 15 is performed by a drum 20 on the main shaft, which drum is provided with a curved piece 21 which engages the angle lever 22, by which the brake band 15 is tightened in the usual way. When the nut 8 is held fast two cases have to be considered. When the friction of the pin 9 is greater than that of the cone 10, the wheel 5 and consequently the wheels 4 and 6 are held fast, the cone 10 sliding in the spindle 1. But should the friction of the cone 10 be greater than that of the pin 9, the wheel 5 will roll around the wheel 7. As the wheel 4 will also be set in rotation thereby, the wheel 6 with the cone 10 will also be driven, the latter revolving more slowly than the spindle 1, the relative motion between the wheel 6 and the spindle 1 being compensated by a sliding on the cone 10.

The device works in the following manner:—As soon as the ring 21 mounted on the chuck operating cone 20, to which ring the striker 18 is fixed, is moved to the left by means of the cam drum 22 the striker 18 strikes against the bar 13, whereby the latter is moved in the direction of the arrow 11. This results in the lever or links 23 being moved in such a manner that the member 19 is pressed into the recess in the sleeve 3 whereby the latter is held fast. The ring 21 is thereupon moved back by the cam drum 22 into the normal position represented in Fig. 1. During the forward motion of the chuck operating cone 20 the arms 24 run against the cone 25 of the tightening chuck operating cone 20 whereby the chuck 26 is closed for the purpose of gripping the bar of material in known manner. Since, as already described, the sleeve 3 is held fast by the member 19, the nut 8 is set in rotation by the spindle 1 owing to the coming into action of the spur wheel gearing 4, 5, and rotates more rapidly than the feed tube 2. By this means the feed tube 2 and the chuck 26 are moved backward in the direction of the arrow 11 so as to seize new material, until the flange 17 of the tube 2 comes up against the striker lever 12, by means of which the mem-

ber 19 is moved through the agency of the bar 13, and the sleeve 3 is released. If the advancement of the material is to take place the conical member 14 is held fast by a hand brake 15 in known manner, for example by means of a lever which can be caused to swing out by a cam drum in the main drive, and thereby the nut 8 likewise is held fixed. The result is that the feed tube which rotates with the spindle 1 is moved in the direction of the arrow 16 by means of the screw thread of the nut 8 until the flange 17 of the feed tube comes up against the conical member 14 and presses this backward until the nut 8 is released and can revolve with the spindle. While the nut 8 is held fixed the toothed wheel 6 will also be held fixed by means of the spur wheel gearing 4, 5, which toothed wheel afterward slides in the spindle 1 along with its friction cone 10.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:

1. A device for feeding material in turret lathes and the like comprising a feed tube, a work spindle slidably supporting the same, a nut on the tube, and means for rotating the nut from the work spindle to move the feed tube rearwardly.

2. A device for feeding material in turret lathes and the like comprising a feed tube, a work spindle slidably supporting the same, a nut on the tube, means for rotating the nut from the work spindle to move the tube rearwardly and means for holding the nut stationary to feed the tube forward.

3. A device for feeding material in turret lathes and the like comprising a feed tube, a work spindle slidably supporting the same, a nut on the tube, gearing for rotating the nut from the work spindle, a rotatable sleeve carrying some of said gearing and means for holding the sleeve stationary when desired.

4. A device for feeding material in turret lathes and the like, comprising a feed tube, a work spindle slidably supporting the same, a nut on the tube, gearing for rotating the nut from the work spindle, a rotatable sleeve carrying some of said gearing, means for holding the sleeve stationary when desired, said means comprising a link lever adapted to engage with the sleeve, and a cam drum for operating the link lever.

5. A device for feeding material in turret lathes and the like, comprising a feed tube, a work spindle slidably supporting the same, a nut on the tube, a sleeve rotatably mounted on the work spindle, pinions carried by said sleeve, said nut and work spindle carrying gear teeth engaging with the pinions, and means for holding the sleeve stationary when desired.

6. A device for feeding material in turret

lathes and the like comprising a feed tube,
a work spindle slidably supporting the same,
a nut on the tube, a sleeve rotatably mount-
ed on the work spindle, pinions carried by
5 said sleeve, said nut and work spindle car-
rying gear teeth engaging with the pinions,
means for holding the sleeve stationary when
desired, and brake means for the nut.

In testimony whereof, we affix our signa-
tures in presence of two witnesses.

CHRISTOFFER MUNTHE.
DAVID MILLINGTON.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.

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