Feb. 27, 1962 H. L. BULLOCK 3,022,573

TOOL FOR INSTALLING AND REMOVING RUBBER ROLLERS

Filed April 15, 1958

Fig. 1

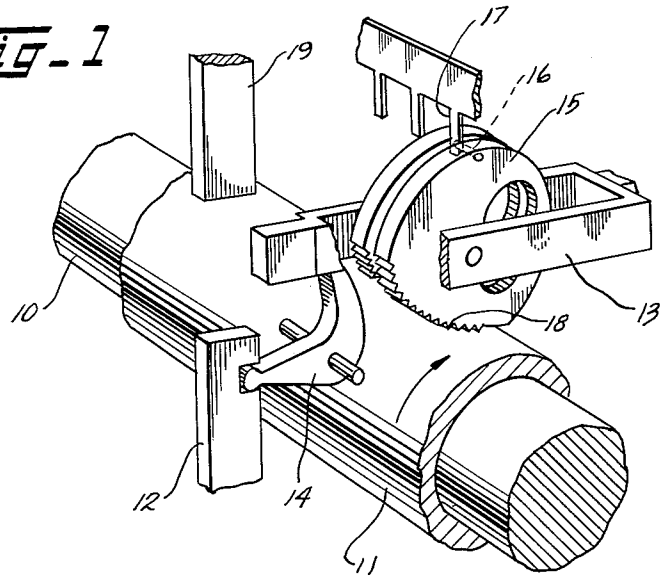


Fig. 2

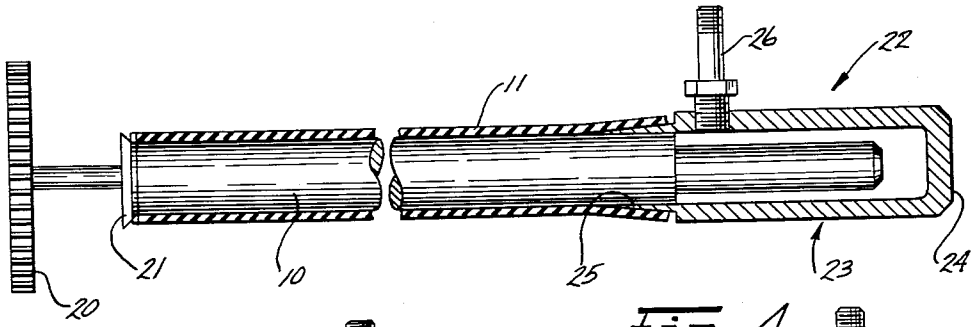


Fig. 3

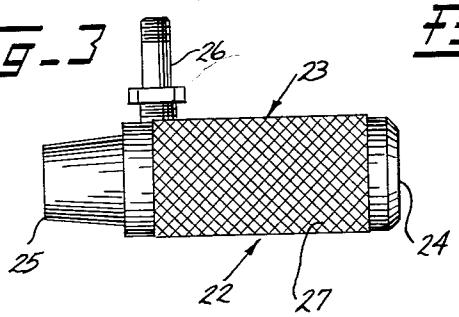
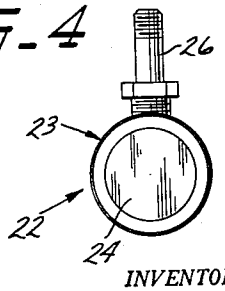


Fig. 4



INVENTOR.
HERBERT L. BULLOCK
BY
H. G. Manning
ATTORNEY

United States Patent Office 3,022,573 Patented Feb. 27, 1962

3,022,573
TOOL FOR INSTALLING AND REMOVING RUBBER ROLLERS

Herbert L. Bullock, % George Bullock & Sons, 530 W. Main St., Cheshire, Conn.

Filed Apr. 15, 1958, Ser. No. 728,638
1 Claim. (Cl. 29—235)

This invention is directed to a tool for facilitating the installation and removal of soft flexible rubber rolls from shafts, such as are used in Linotype machines.

The keyboard mechanisms of Linotype or Intertype machines are provided with a plurality of actuating cams intermittently driven by a rotating rubber roll when the keyboard is manually actuated. These rubber rolls are fitted over a steel drive shaft, and because of the frictional wearing action between the rolls and the cams, frequent replacement of such rolls is necessary. Moreover, since the rubber rolls are tightly fitted upon their shafts, their removal and replacement frequently becomes a difficult and time-consuming operation. It is accordingly the principal object of my invention to provide a pneumatically actuated tool for facilitating the removal and replacement of rubber rolls in Linotype machines.

It is another object of my invention to provide a tool which can be adapted for use for the removal and replacement of rubber or other elastic rolls or rollers from their shafts in all types of machinery employing such rolls or rollers.

It is still another object of my invention to provide a tool of the character and for the purpose described which will be simple in construction, inexpensive to manufacture, easy to install and manipulate, time saving, and very efficient and durable in use.

Other objects, features and advantages of the invention will be apparent from the following description when read with reference to the accompanying drawing wherein:

FIG. 1 is a fragmentary perspective view, of a Linotype keyboard cam roll and its associated cam mechanism,

FIG. 2 is a side view, partly in section, of a Linotype keyboard cam roll and shaft, with the tool embodying the present invention shown in place for removal of the rubber roll from the shaft,

FIG. 3 is a side view of the roll removing or installing tool, shown separately, and

FIG. 4 is a rear end view of the same.

Referring now in detail to the drawings, wherein like reference numerals denote corresponding parts throughout the several views, the numeral **10** designates a cylindrical steel shaft carrying a soft rubber yieldable keyboard cam roll **11** frictionally held thereon, for use in a Linotype machine, portions of the latter being shown in FIG. 1. The numeral **12** (FIG. 1) designates a vertical heavy keyboard bar, which, when its associated key-button (not illustrated) is manually actuated, moves upwardly to release a horizontal keyboard cam yoke **13**, through the action of a bell crank trigger lever **14**.

Downward motion of the yoke **13** will carry a keyboard cam **15**, together with its stop pin **16**, away from a keyboard cam stop lug **17**, and allow said cam **15** to fall downwardly and outwardly so that its notched arcuate edge **18** will come into contact with the keyboard cam roll **11**.

The shaft **10** is driven continuously to rotate the cam roll **11** in a clockwise direction, as indicated by the arrow in FIG. 1, causing the cam **15** to raise the cam yoke **13** to its highest position, thereby also lifting a keyboard rod **19** to its highest position. The trigger member **14** will in the meantime have returned to its normal position, by gravity, due to the weight of the heavy keyboard bar **12**, and the cam will then come

to rest with its stop pin **16** again in abutment with the keyboard cam stop lug **17**.

FIG. 2 illustrates, separately, the shaft **10** which in this instance has a driving gear **20** and a beveled stop collar **21**, against which the inner end of the rubber cam roll **11** abuts when installed. This figure also shows the rubber roll installing and removing tool embodying the invention, generally indicated by the reference numeral **22**, located in operating position for removal of the rubber cam roll **11**.

As illustrated in FIGS, 2, 3 and 4, the roll installing and removing tool **22** comprises a cylindrical body member **23**, preferably formed of metal, and closed at its rear end **24**. The outer forward surface of the tool **22** is tapered to a sharp conical edge **25**. A standard tire valve stem **26** is fitted to one side of the body member **22**, for applying air pressure from any suitable source of supply to the interior of the tool **22**.

Operation

In use, when it is desired to remove a rubber roll **11** from a shaft **10**, the sharp tapered front edge **25** of the tool **22** will be pushed between the outer end of the roll **11** and the shaft **10**, as illustrated in FIG. 2, this action being permitted since the internal diameter of the tool is made slightly greater than the diameter of the shaft. Air pressure will then be applied to the valve stem **26**.

To facilitate the manual holding of the tool **22** firmly in place, in the position shown in FIG. 2, the outer surface of the body member **23** is preferably knurled, as indicated at **27**. It will be understood that air will then be forced between the roll **11** and the shaft **10** to expand the roll about the shaft **10** throughout the entire length of said roll, whereupon it becomes a simple matter to pull or push the roll off of said shaft.

In applying a new roll **11** to a shaft **10**, the outer end of the roll **11** will be fitted over the tapered end **25** of the tool **22**, and the inner end of the roll will be forceably pushed for a short distance along said shaft **10**, after which, upon applying air pressure to the valve stem **26**, the roll will be expanded sufficiently throughout its length to allow easy placement of the roll on the shaft. The handle has an interior chamber substantially larger than said shaft to enclose an air space therebetween of considerable volume when mounted upon said shaft, whereby the air pressure in said chamber will be allowed to build up and be retained by said check valve after removal of said source of air supply.

While I have herein described my roll installing and removal tool in connection with the installation and removal of a keyboard cam roll in a Linotype machine, it is to be understood that this illustration of use is given by way of example only, and that the invention is not limited to the specific disclosure, but may be modified and embodied in various other equivalent forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claim.

Having thus fully described the invention, what is claimed as new and for which it is desired to secure Letters Patent is:

In a tool for installing or removing a soft elastic expansible tubular roll with respect to a cylindrical carrying shaft on which said roll is adapted to be tightly fitted, the combination of a short hollow cylindrical handle member closed at its outer end and terminating at its inner end in a reduced short frusto-conical tapered section, the end diameter of which is slightly greater than the diameter of said shaft, said handle member being knurled and provided on one side with a pneumatic check valve for introducing air under pressure from a source of sup-

ply into the interior of said handle member, whereby when said sharp conical tapered section is inserted between the end of said roll and said shaft, air may be introduced into said handle member to expand said roll throughout its entire length and permit said roll to be easily installed upon or removed from said shaft, said handle having an interior chamber substantially larger than said shaft to enclose an air space therebetween of considerable volume when mounted on said shaft, to allow the air pressure in the chamber to be built up and to be retained by said check valve after the removal of said source of air supply.

References Cited in the file of this patent

UNITED STATES PATENTS

1,608,206	Freedlander	Nov. 23, 1926
2,361,026	Greene	Oct. 24, 1944
2,583,117	Piperoux et al.	Jan. 22, 1952
2,621,867	Grettve	Dec. 16, 1952
2,663,902	Anderson	Dec. 29, 1953
2,671,262	Kuniholm	Mar. 9, 1954
2,734,260	Wyckoff	Feb. 14, 1956
2,813,331	Hohl	Nov. 19, 1957