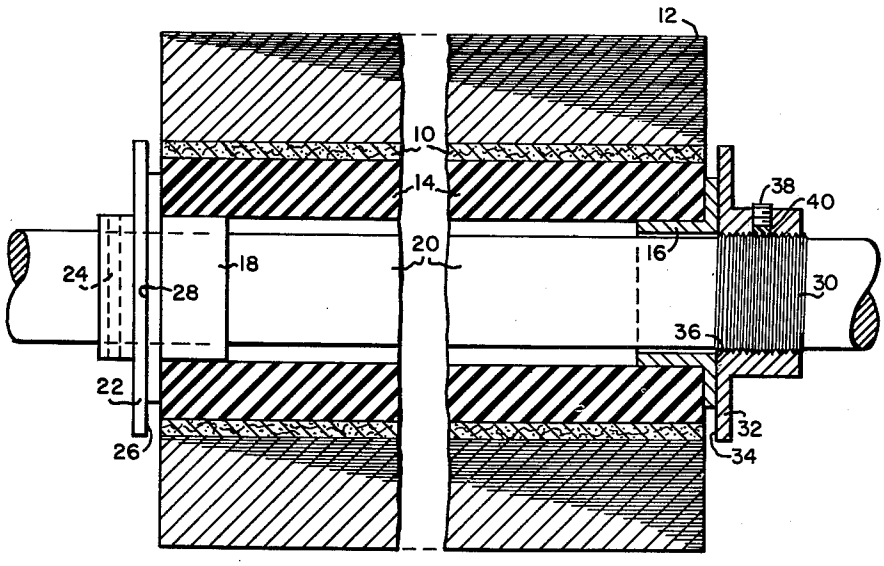
July 27, 1965 A. B. DAVIDSON 3,197,153

MOUNTING DEVICE FOR PAPER ROLLS

Filed Aug. 13, 1963



INVENTOR.
ALFRED B. DAVIDSON
BY William N. Hogg
ATTORNEY

United States Patent Office 3,197,153 Patented July 27, 1965

3,197,153

MOUNTING DEVICE FOR PAPER ROLLS

Alfred B. Davidson, Tarentum, Pa., assignor to Allegheny Ludlum Steel Corporation, Brackenridge, Pa., a corporation of Pennsylvania

Filed Aug. 13, 1963, Ser. No. 301,751
1 Claim. (Cl. 242—72)

This invention relates to mounting devices, and more particularly to a device for facilely mounting rolled paper strip which will allow the paper to be unwound under controlled back tension.

The use of paper for the protection of finished metal surfaces is a common expedient. For example, plates of stainless steel having highly polished surfaces have paper glued onto their polished surfaces to protect these surfaces when the plates are stacked or moved. Conventionally, this gummed paper is stored rolled on a cardboard tube. The tube is mounted on a device which will allow the paper to be unwound from the roll and spread over the surface of a stainless steel plate, the plate being supported on a bed adjacent the roll of paper. When the proper length of paper is unwound, it is severed from the roll and pasted onto the surface of the plate. The plate is removed and a new plate is positioned and similarly covered. Prior art devices for mounting this rolled paper to support it in position for applying to the plate, have proved to be cumbersome, awkward and erratic in the back tension that they apply to the paper as it being unwound. This causes frequent tearing of the paper when the back tension becomes too great or rippling of the paper if the back tension is not sufficient to maintain an even pay-off as the paper is being unwound. It is also very difficult to remove the expanded cardboard tubes from these devices and replace them with new rolls of paper. This causes unnecessary delays in replacing spent rolls with new rolls of paper.

It is, therefore, a principal object of this invention to provide a device for mounting a tubular member which will provided for facile removal and replacement of the tubular metal.

It is another principal object of this invention to provide mounting devices for a tubular member which will easily and accurately control the back tension as strip material is unwound from the member.

A further, more specific object of this invention is the provision of a mounting device for paper rolled on a tube which device has a single adjustment to provide for the facile removal of the tube of the expended roll and replacement with a full roll and which will control the back tension on the paper as it is being unwound.

These and other objects together with a fuller understanding of the invention will become apparent from the following description when taken in conjunction with the accompanying drawing in which:

The single figure is an elevation view of the device of this invention partially in section with parts broken away for clarity.

Referring now to the drawing the device of this invention is shown mounting a cardboard tube **10** around which a strip of paper is coiled, this coil of paper being designated by reference character **12**. This device includes a hard rubber or other elastomer drum **14** over which the cardboard tube **10** is telescoped. In its relaxed condition, the drum **14** has a circumference slightly less than the inner circumference of the cardboard tube **10**. A pair of brass sleeves **16** and **18** are provided which can be inserted in the opposite ends of the drum **14** and which journal the drum **14** for rotation on a stationary shaft **20**. Thus, when the paper is unwound from the cardboard tube **10**, the sleeves **16** and **18** will allow the drum to rotate on the shaft **20**. The shaft **20** is provided with an

annular collar **22** secured thereto by means of a pin **24**. The collar **22** has a flat bearing face **26** which abuts against a mating bearing face **28** on the sleeve **18**. The shaft **20** is threaded at **30** and a threaded collar **32** is threaded thereon. The collar **32** has a bearing face **34** which acts against a mating bearing face **36** on the sleeve **16**. A set screw **38** with a nylon tip **40** is provided in the collar **32** and is adapted to releasably secure the collar **32** against rotation at any selected position on the threads **30**.

When a coil of paper is to be mounted on the device as shown in the figure, the collar **32** is removed from the shaft **20**. The drum **14** is inserted into the cardboard tube **10** and the sleeves **16** and **18** are inserted in the opposite ends of the drum **14**. The sleeves mounting the drum **14** and cardboard tube **10** with the coiled paper thereon, are slipped onto the shaft **20** with the bearing face **28** of the sleeve **18** abutting the bearing face **26** on the collar **22**. The collar **32** is then screwed onto the threads **30** tightly against the sleeve **16**. This tightening of the collar **32** will cause an axial compressive force on the hard rubber drum **14** which will cause the drum **14** to expand radially and thus tightly engage the inner surface of the cardboard tube **10**. This will frictionally secure the cardboard tube **10** on the elastomer drum **14**. This axial compression force caused by the tightening of the collar **32** will also cause a friction force between the bearing faces **26** and **28** and between the bearing faces **34** and **36** which, in turn, will cause a drag or back tension resisting the rotation of the drum **14** on the shaft **20**. The amount of drag or resistance will depend upon how tightly the collar **32** is screwed against the sleeve **16** and by varying this pressure the amount of back tension can be controlled. When the proper back tension has been achieved, the set screw **38** is tightened against the threads **30** which will prevent movement of the collar **32** as the paper is being unwound.

When the paper has been completely unwound from the cardboard tube the set screw **38** is loosened and then the collar **32** is unscrewed from the shaft. This will relieve the compression on the rubber drum **14** allowing it to return to the relaxed condition. In the relaxed condition the circumference of the drum is less than the inside circumference of the spent cardboard tube **10**, which can then be easily slipped off the drum **10** and a new tube of rolled paper is then placed on the drum. The collar **32** is then screwed back onto the shaft and the back tension is adjusted as described above easily and facilely without delay.

While one embodiment of this invention has been shown and described, other adaptations and modifications may be made without departing from the spirit and scope of the appended claim.

I claim:

Apparatus for rotatably mounting a tubular member on a stationary shaft comprising, an annular elastomer drum adapted to be inserted into said tubular member and to expand radially to engage the inner surface of said tubular member, a pair of sleeves adapted to be inserted in the opposite ends of the elastomer drum and journal the drum for rotation on said shaft, each of said sleeves having a thrust bearing face, a first collar non-rotatably carried by said shaft having a bearing surface coactable with the bearing face of one of said sleeves, and a second collar threadably engageable on said shaft, said second collar having a face coactable with the bearing face of the other of said sleeves, whereby, when the second collar is loosened away from its associated sleeve the tubular member can be facilely removed from the drum and when the second collar is tightened against the associated sleeve the axial compressive forces caused by the coaction of the collars and sleeves will cause the drum to expand

radially to engage the inner surfaces of the drum and will control the back tension on the drum, by providing a frictional force to resist rotation of the sleeves on the shaft.

References Cited by the Examiner

UNITED STATES PATENTS

163,217	5/75	Lawson	242—72
1,518,026	12/24	Van Sluys	242—72
1,878,264	9/32	Claybourn	242—72
2,066,659	1/37	Templeton et al.	242—72
2,481,000	9/49	Brunner	242—72
2,563,994	8/51	Dougherty	242—46.6 X
2,638,282	5/53	Prevost	242—72
2,647,701	8/53	Cannard	242—68.2
2,681,401	6/54	Anderson.	

RUSSELL C. MADER, *Primary Examiner.*

MERVIN STEIN, *Examiner.*