Jan. 17, 1950 O. W. JENSEN 2,494,878

ADJUSTABLE SKI-STICK

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Fig.1.

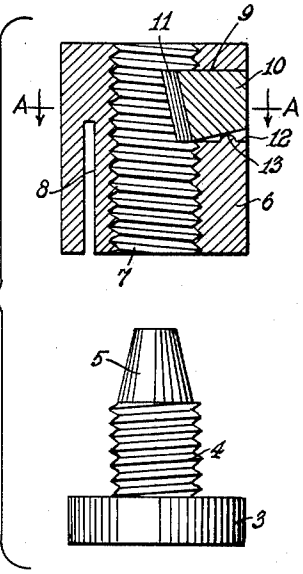


Fig.2.

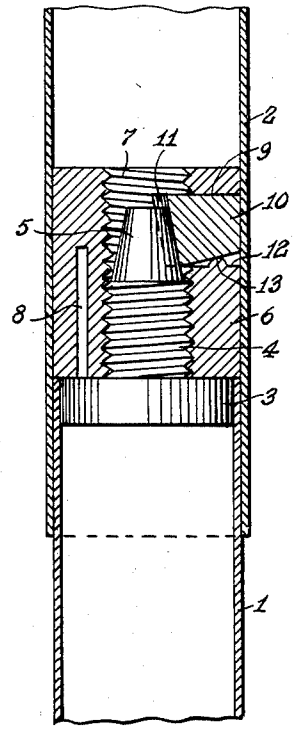


Fig.3.

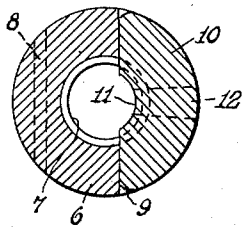


Fig.4.

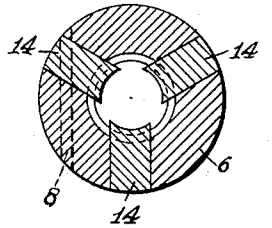
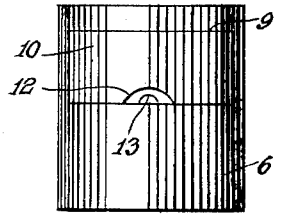


Fig.5.



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ADJUSTABLE SKI STICK

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3 Claims. (Cl. 287—58)

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The present invention relates to an adjustable ski-stick consisting of two telescopically sliding tubes and the invention is characterized chiefly by the two tubes being firmly locked to each other by the pressure of a non-springy frictional clamp, placed loosely in a case or holder in such a way that it is radially movable.

Several types of adjustable ski-sticks have been brought on the market and most of them utilize a split, springy, frictional device, the prongs of which are pressed out by means of a conical spindle to create the frictional pressure required. Other constructions use springy tongues or protruding pins which fit into grooves. The two parts are locked together by the resilient pressure of a device against the inside of one of the parts of the stick. This device, while able to revolve, is firmly connected with the other part of the stick, the locking or release being achieved by turning the two parts relative to each other.

The above mentioned methods of locking the parts are complicated and thus expensive to produce. Further, there is no practicable means of eliminating the tolerance (variation of measurements) in respect of the diameters of the sticks, the control of which the rolling mills always reserve to themselves. There is hence always the risk that a locking device may be difficult to manipulate because of tightness in one tube (stick) or it may be too loose in another, the result being that the locking will not be fully effective or may not work at all, since the necessary frictional contact between the locking device and the tube (stick) is not being obtained. The locking devices are comparatively light in construction and thus the locking may not be fully effective on account of tear and wear or breakage.

The object of this invention is to produce a strong, everlasting clamp device for holding two telescopically sliding tubes in adjusted position. Accordingly the system using a springy device has been discarded and has been replaced by a strong non-springy frictional clamp. At the same time means has been provided to eliminate tolerance, if any, in the diameters of the tubes or sticks.

The accompanying drawing illustrates an example of the invention.

In the drawing:

Fig. 1 is an exploded vertical section of the locking device without the two tubes or sticks.

Fig. 2 is a vertical section of the locking device, the two parts of the stick being locked together.

Fig. 3 is a section along the line A—A in Fig. 1.

Fig. 4 is a section similar to Fig. 3 but showing the frictional clamp made in a different way.

Fig. 5 shows the locking device according to Fig. 1, seen from the outside and turned in a position of 90° in relation to Fig. 1.

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In the drawing, 1 indicates the lower part of the tube or stick and 2 the top part. It will be seen that the lower part 1 is telescopically slidable inside the upper tube 2. A relatively thin cylindrical piece 3 is soldered or welded on to the upper end of the lower tube section 1. The cylindrical piece 3 has a short threaded spindle 4 which projects upwardly from the center of the piece 3, the upper end of the spindle 4 being formed to provide a conical portion 5, the sides of which have an inclination of approximately 15° to the axis of the cone.

The threaded spindle 4 is adapted to screw into a cylindrical case or body portion 6 which is provided with a central threaded hole 7 which extends axially through the case 6 and is adapted to receive the spindle 4. The diameter of the case 6 is such that it can easily be pushed up or down in the upper tube section 2, sliding gently along the inside of the tube. In order to eliminate tolerance, if any, as regards the diameter of the tube, the case 6 is provided with a vertical slit 8 which makes the lower end of the case slightly springy. If there is any space between the case and the tube, a wedge is driven into the split 8 to spring the lower portion of the case 6 out to the proper diameter. When properly fitted, the case 6 slides easily in the tube section 2 with frictional contact but without binding. The resilience provided by the slit 8 is not for the purpose of locking the two tube sections together and has nothing to do with the springy pressure effect utilized in previously known constructions, as pointed out above.

In accordance with the invention, the body portion or case 6 is provided with a transverse slot 9 which is located diametrically opposite to the slit 8 and extends in to approximately the middle of the case. The height of the slot 9 (in an axial direction) is about 5 millimeters and the top and bottom sides are substantially parallel to one another and preferably perpendicular to the axis of the case 6. The slot 9 is preferably in the upper portion of the case 6 while the longitudinal slit 8 is in the lower portion. In the slot 9 there is loosely placed a frictional clamp 10 which is of semi-circular shape and, as will be described below, may be pressed out radially to engage the inside of the tube section 2. The size and shape of the frictional clamp 10 are approximately the same as those of the radial slot 9, so that the clamp 10 substantially fills the slot with a loose fit. On the inside vertical surface of the clamp 10 there is provided an arcuate bore or recess 11 which is of conical shape with an inclination corresponding to that of the cone 5, namely, about 15°. The mean radius of the semi-circular conical bore 11 is somewhat smaller than the radius of the hole 7 extending axially through the case 6. Thus, when the frictional clamp 10 is placed in the groove or slot 9 with

its outer surface flush with the outside of the case 6, the inside curved surface of the clamp 10 will project a little way into the hole 7, as shown in Figs. 1 and 3.

It will be seen that when the threaded spindle 4 is screwed into the threaded bore 7 by rotation of the cylindrical piece 3 relative to the case 6, the conical upper end portion 5 of the spindle 4 will engage the inside curved surface of the frictional clamp member 10 and force the clamp radially outwardly so as to project beyond the outer surface of the case 6. Positive non-springy movement of the clamp member is thereby provided.

As stated above, the frictional clamp 10 fits loosely in the slot 9. To keep the clamp 10 from coming out of the groove when the case 6 is removed from the tube section 2, the clamp is preferably provided with a narrow inclined radial groove 12. When the frictional clamp has been put in its place, the case 6 is dented, as indicated at 13, to form a projection which extends into the inclined groove 12 of the clamp 10 and is of such size as to prevent the clamp from coming all the way out on the slot 9 while permitting its radial movement, as described above.

Fig. 4 shows a modified example of the invention in which the single frictional clamp 10 has been replaced by three radial frictional clamp members 14 which are of any suitable cross-sectional shape, for example round or square pins. Alternatively, they may be of approximately the shape shown in Fig. 3, in which case two clamp members would be used and would be placed in diametrically opposed position.

The operation of the device is as follows. The case 6 provided with the frictional clamp member 10 is, as shown by Fig. 2, screwed on to the spindle 4 of the cylindrical part 3 which is fixed to the lower stick portion 1. Thereupon, the case 6 and the engagement portion of the stick 1 are pushed longitudinally into the upper tube portion 2. The case slides easily into the tube with slight frictional engagement. In order to lock the parts 1 and 2 together, the tube sections are turned slightly relative to one another to cause the spindle 4 to screw itself into the case 6. The conical part 5 of the spindle engages the inside conical bore 11 of the frictional clamp 10 and thereby forces the frictional clamp outwardly and presses it into engagement with the tube 2 which will thereby instantly be locked firmly to the lower part of the tube 1. Thus the locking is achieved by the pressure of the frictional clamp 10 against the tube 2 which is engaged on the opposite side by the solid portion of the case 6. The opposed gripping forces are thus transmitted through the clamp 10, the spindle 4 and the case 6 in such manner that a positive locking pressure is provided without any springy pressure effect.

In order to regulate the length of the stick, the tubular sections are turned slightly in the opposite direction. The spindle 4 is thereby screwed down, thus releasing the pressure of the frictional clamp and permitting relative longitudinal movement of the two tubular sections. If the two tubular sections are pulled completely apart, the clamping device remains completely assembled on the upper end of the lower section and can readily be slid back into the upper section when it is desired to put the two sections back together.

While the case 6 is shown in the drawing (Fig. 2) as being detachably screwed on to the spindle 4, the cone 5 can, of course, readily be lengthened so as to reach beyond the case 6 and provide it with a stop device in such a way that the spindle 4 cannot come out of the case 6. Still other modifications of the device will be apparent to those skilled in the art within the scope of the invention as defined by the appended claims.

What I claim and desire to secure by Letters Patent is:

1. An adjustable ski-stick comprising two telescopically sliding tubes one inside the other and means for locking the tubes in adjusted relation comprising a cylindrical case frictionally slidable inside the outer section and having a threaded axial bore and an opening extending radially from said bore to the outer periphery of said case intermediate its ends, a clamp member loosely received in said opening and movable radially therein, a threaded spindle secured to the end of the inner tube and adapted to screw freely into the threaded bore of the said case, said spindle having a conical portion adapted to engage the clamp member and move it positively outwardly into locking engagement with the inner surface of the outer tube upon relative rotation of the case and spindle to screw the spindle further into the bore of the case, said case having resilient means for maintaining slight frictional engagement between the case and the outer tube section when the said clamp member is released, said resilient means and clamp member acting independently of one another.

2. An adjustable ski-stick consisting of two telescopically sliding tubes one inside the other and means for locking the tubes in adjusted relation comprising a cylindrical case frictionally slidable inside the outer section and having a threaded axial bore and a transverse opening extending approximately half way through the case from one side thereof and having upper and lower sides which are substantially parallel to one another and perpendicular to the axis of the case, a semi-circular clamp member loosely received in said opening and having on its inner side a semi-circular notch corresponding in shape to a segment of a cone, a threaded spindle secured to the end of the inner tube and adapted to screw into the threaded bore of the case, said spindle having at its upper end a conical portion adapted to engage the conical notch of the clamp member and move said member positively outwardly into locking engagement with the outer tube upon relative rotation of the case and spindle to screw the spindle further into the bore of the case.

3. An adjustable ski-stick according to claim 2, in which the clamp member is provided with a narrow, inclined radial groove and the case is provided with a protuberance projecting into the groove to retain the clamp member and case in assembled relation while permitting their relative movement.

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