SLIDE TROMBONES

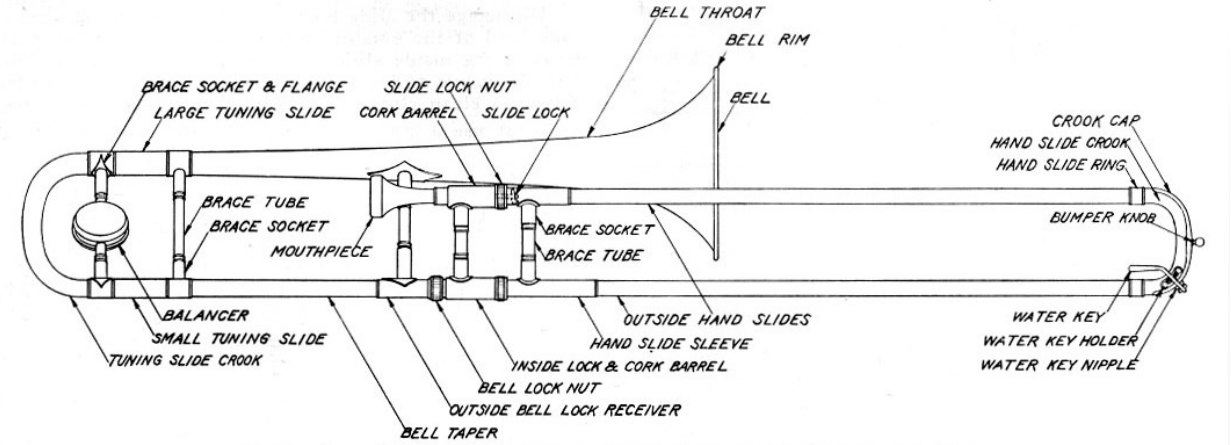

Fig. 11 — Tenor Slide Trombone, with tuning in bell. Equipped with slide lock and bell lock.

Why Hand Slides Require Careful Handling. The hand slides of the slide trombone are delicate and require care- ful handling. The brass outside slides have a wall thickness of from .011" (11 thousandths of an inch) to as little as .006" (6 thousandths of an inch), on the lightweight models.

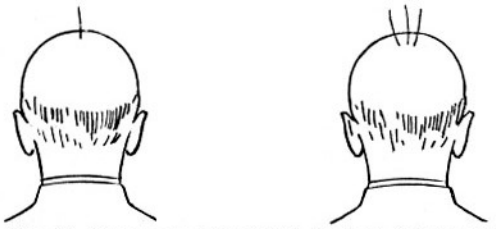

Fig. 13—An average human hair is about 3 thousands of an inch (.003") in diameter. Three hairs laid side by side would be about 9 thousandths of an inch across. This is the thickness of the sidewall of the average outside slide. Lightweight slides are only two hairs in thickness.

Since an ordinary human hair is about .003" (3 thousandths of an inch) in diameter, the thickness of the outside slides wall is equivalent to the combined diameters of about three fine human hairs. Consider a tube which is over four feet long made of brass which is only three hairs in thickness and sometimes is only two hairs in thickness. Further consider that this tube must fit over another tube so that the outside diameter of the inside slide is only .006" less than the inside diameter of the outside slide; that makes the clearance on each side between the stocking of the inside slide and the inside of the outside slide only .003" (three thousandths of an inch) or about *the diameter of* a *human hair* !

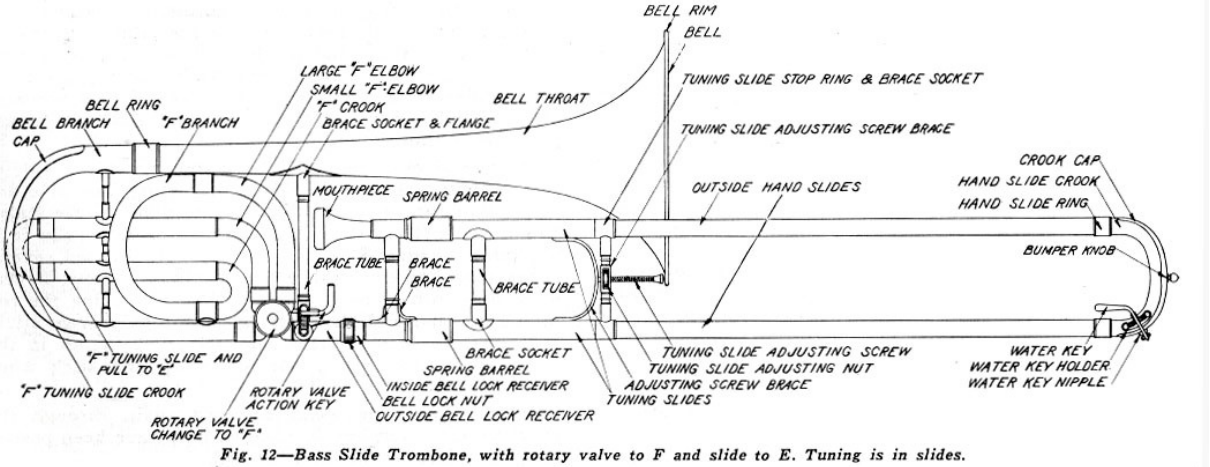

Fig. 12—Bass Slide Trombone, with rotary valve to F and slide to E. Tuning is in slides.

Using other comparisons, an ordinary sheet of bond writing paper is about .003" thick, a cigaret paper is about .001" thick. Consider an outside slide made of brass whose wall thickness is equivalent to three thicknesses of bond paper; some slides are the thickness of only two such sheets of bond paper. Consider also that the clearance on a side between the stocking and the outside slide is equivalent to the combined thickness of three cigaret papers tightly compressed together.

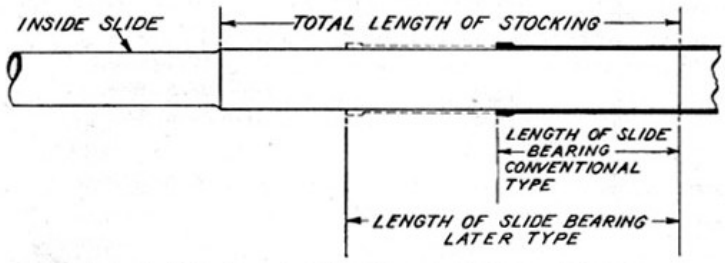

Fig. 14—Trombone inside slide and stocking, with outside slide in solid black. The outside diameter of the stocking is only .006" less than the inside diameter of the outside slide. This makes a clearance on a side between the stocking and outside slide of only .003" or the diameter of a human hair. Dotted lines show outside slide is longer on present models than on old type trombones. See also Fig. 20.

These thicknesses and clearances are emphasized because too few trombone players realize how delicately their hand slides are made. When you think of your hand slides in these terms you'll give more respect and consideration to them.

Cleaning Inside of Hand Slides. When separating the hand slides from the bell on models with a slide-to-bell lock, be sure the bell lock nut is completely unscrewed and disengaged; otherwise, if the slides come loose with a jerk, the force may be sufficient to tear off the lock ring from the outside bell lock receiver. This is a shoulder which keeps the bell lock nut from slipping off the receiver. See Fig. 15. On some trombones this ring is soldered on and quite a number are torn loose in this manner. On better trombones this lock ring is turned from the solid tubing of the bell lock receiver and is an integral part with the receiver; consequently it does not come off so easily.

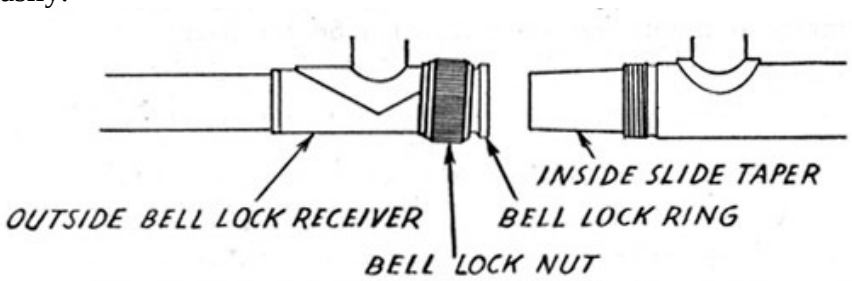

Fig. 15—Slide-to-bell lock. In taking slides from bell, be sure bell lock nut is completely unscrewed, or bell lock ring may be torn off or damaged when friction fit of inside slide taper is broken loose.

After the bell lock is disengaged, hold the bell stationary and rotate the slides slightly to break the friction fit between the inside slide taper and the bell receiver; at the same time pull the bell and slides apart. Do not try to separate by using a straight pull: always pull with a slight rotating motion.

Disengage the slide lock (if your trombone has one), take hold of the outside slide brace with one hand, take hold of the inside slide brace with the other hand, and *lift the inside slides out.* Carefully lay the inside slides flat on a clean cloth while you clean the outside slides.

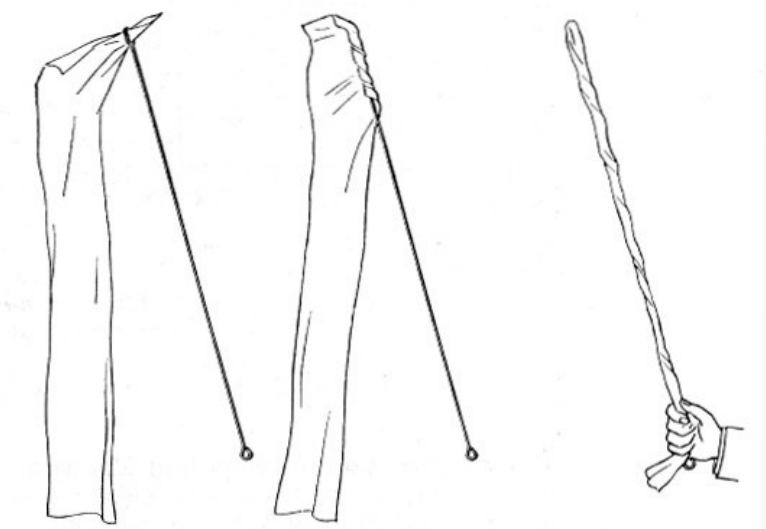

Fig. 16—How to cover trombone cleaning rod. Use piece of cheesecloth 6 to 8 inches wide and 5 to 6 feet long. Don't simply thread the cloth through eye of rod. First insert corner in eye, then twist rod until cloth covers entire length. Hold end of cloth tightly in hand to keep cloth from sliding and bunching when you run the rod through the slide.

First use a strong cord about 5 feet long, weighted at one end and with a strip of clean cheesecloth, about 6 to 8 inches wide and 5 to 6 feet long, at the other end. See illustration, Fig. 18. Run this through the outside slide crook to remove any dirt in the crook. Then use a cleaning rod for the slides. Take a piece of clean cheesecloth about 6 to 8 inches wide and 5 or 6 feet long, thread one corner through the eye of the cleaning rod and wrap the rod spirally until thoroughly covered. This prevents any metal from touching the slides and maybe gouging or marring the inside surface. See illustration, Fig. 16. This is *especially important,* for the inside of this outside slide is the bearing surface for the stocking of the inside slide and any scratch or nick will impair the slide action.

With this cleaning rod so prepared, grasp one side of the slide and clean *that side. Don't* grasp one side and clean the *opposite* side, as this tends to spring the slides. See Fig. 17. Then grasp the other slide and clean it in the same manner. Run the cleaning rod through several times, changing the cloth when it gets too grimy. Repeat until the cloth comes out clean. When pushing the rod in and out, use a slight rotating motion to prevent sticking; also be sure to hold the end of the cloth in the hand so the cloth will not bunch up and stick when pulling it out.

Finally, use the weighted cord again through the crook to clean out any dirt which may have been pushed into the crook by the cleaning rod.

In cleaning the inside slides, use the weighted cord. This is recommended over the cleaning rod, as most good trombones have a delicate mouthpipe inserted inside the mouthplece receiver, and the rod may damage this mouthpipe.

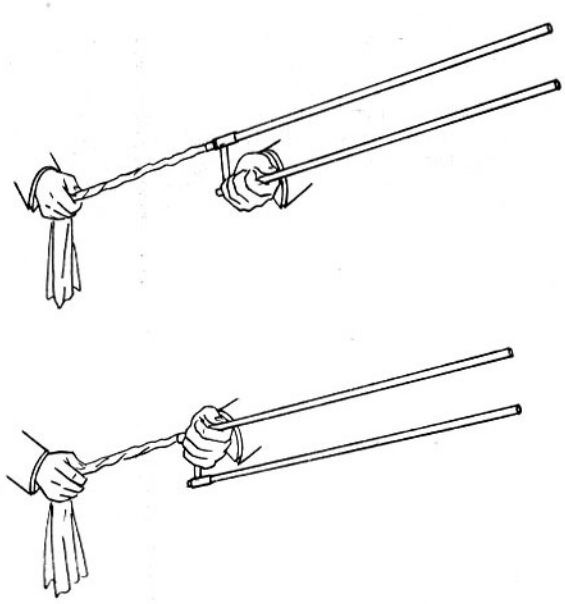

Fig. 17—What's wrong about this picture? There are two mistakes shown. NEVER hold one slide while cleaning the other; always hold the slide you are cleaning, as in lower view. The lower view is correct except a cleaning rod is NOT recommended for the INSIDE slide. This rod may damage delicate mouthpiece. Use weighted string and cloth for inside slide. Rod is recommended for outside slide.

If the dirt inside the slides has become dry and hard or if there is considerable corrosion, wash with soap and water or use some gasoline on the cloth; otherwise use a dry cloth. Be sure to use cheesecloth, as it has very little lint. A cloth with lint will leave small pieces of fuzz in the slides and these will later come out and cause trouble with the slide action. It is a good idea to run cold water through both slides to remove lint after cleaning.

Cleaning Outside of Inside Hand Slides. Use piece of clean cheesecloth dampened with a little gasoline. Wipe the slides until dry. Don't worry about a little stain or discoloration on the outside of the inside slides as long as the slides work well. Avoid buffing or use of abrasives to remove discoloration, as this removes the precious protective shell of nickel or chromium and once this has worn through, it may be impossible for the duration of the war to replate. Wearing through the chromium or nickel in 9 cases out of 10 has been caused by buffing or use of abrasives to remove discoloration. Actual use in playing seldom is the cause. If you happen to get a dent or crimp in the inside slide, have repairman take it out with a dent ball or bar; don't let him dress the slide down by buffing or using abrasive.

Cleaning the Cork Barrel. Dirt accumulates inside the cork barrel. Clean out this dirt with a small brush feather, or pipe cleaner. Use gasoline or some trombone oil to loosen. If you don't keep this dirt out of the cork barrel, the outside slide will gradually draw it out and it will foul the action. Often this is the cause of a certain mysterious slide trouble. After the trombone is thoroughly cleaned and oiled, the slide action is fine for awhile. Then it begins to drag and bind.

The reason is this: the dirt is being loosened and dragged out of the cork barrel. If your trombone has a spring stop instead of the cork stop, the same precautions apply. See Fig. 20 and Fig. 21.

Lubrication. *Don't work the slides when they are dry.* This causes small scratches and will harm the surface of both inside and outside slides, especially outside slides. Brand new trombones right out of the dealer's stock should not be tried until the slides are oiled. Dealers sometimes hand a customer a trombone with dry slides because they don't want to go to the trouble of cleaning off the oil after trial, but this is a bad practice. Not only does oil protect from scratches but a protective film of oil on new slides is essential to fill up the pores of the metal and guard against corrosion by body acids.

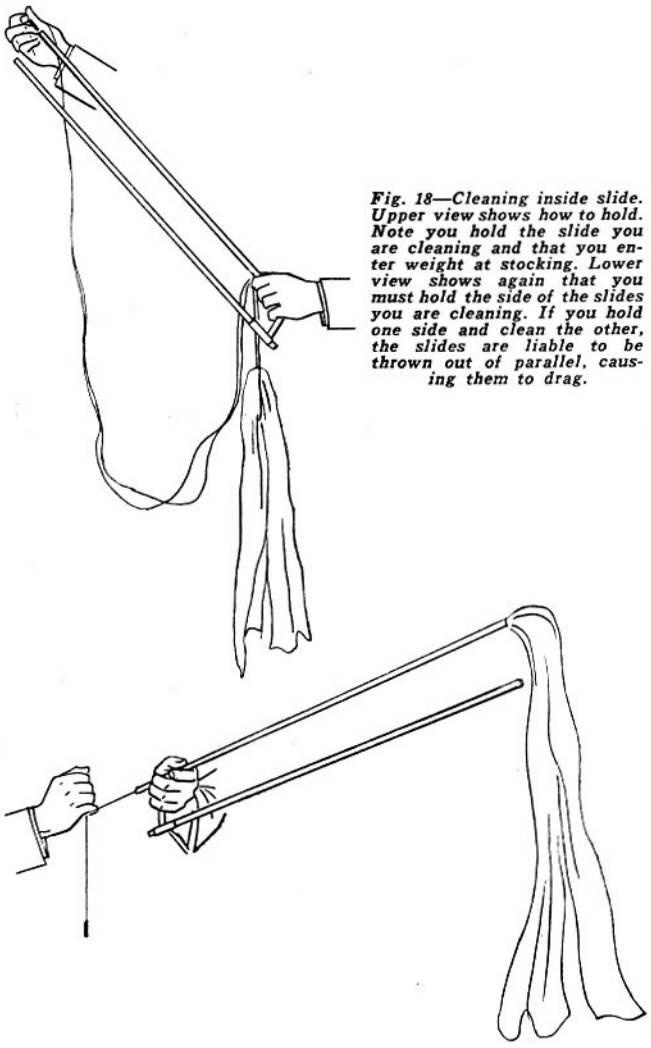

Fig. 18—Cleaning inside slide. Upper view shows how to hold. Note you hold the slide you are cleaning and that you enter weight at stocking. Lower view shows again that you must hold the side of the slides you are cleaning. If you hold one side and clean the other, the slides are liable to be thrown out of parallel, causing them to drag.

There are many fads about lubricating trombones. Some players swear by Cuticura ointment, a salve for skin disease. They say it is especially good for breaking in a new trombone. Others prefer ordinary cold cream. They apply the cold cream to the dry slide, then add water.

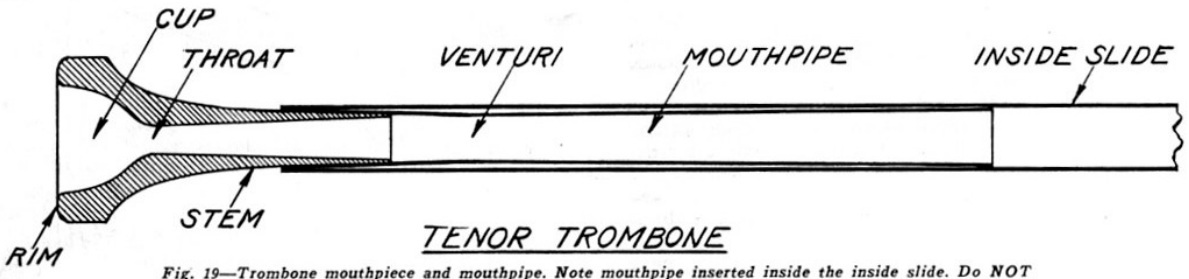

Fig. 19—Trombone mouthpiece and mouthpipe. Note mouthpipe inserted inside the inside slide. Do NOT use cleaning rod for inside slides, for you are liable to damage this thin mouthpipe. The venturi of the mouthpipe is one of the most critical spots in the trombone and if it becomes enlarged through the use of a rod, the response of the trombone will be impaired.

Nothing, however, takes the place of a good trombone oil and it is recommended generally. If your slides are plated with nickel, any good trombone oil put out by a reputable manufacturer will do the job. If your trombone is plated with chromium, an emulsion oil is recommended. All late model Conn trombones are chromium plated and Conn oil has been especially prepared for use on chromium plated slides. The specially developed emulsion oil will stick to chromium plated slides, whereas ordinary oil runs off quickly. Although this oil was developed especially for chromium, it will work equally well on nickel.

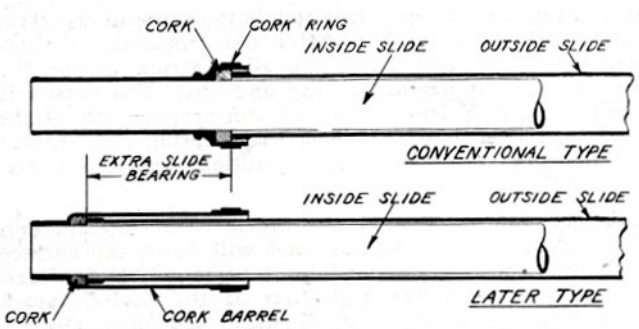

Fig. 20—Cork ring and cork barrel construction. On later models providing for longer outside slides which run up into cork barrel, dirt collects in cork barrel. This dirt is loosened when slides are oiled and the dirt is dragged out onto the slides where it fouls the action. For outside slide length, see also Fig. 14.

Cleaning Inside of Bell. Clean the inside of the bell regularly. The handiest method is to use a weighted cord with cheesecloth on the end. Run this through the bell after each playing engagement, entering the cord through the bell. For more thorough cleaning, wash out with warm water and castile soap.

Taking Tuning Slide Out. Care should be used in removing and putting back the tuning slide. To push the tuning slide out, put your hand in between the two braces and in the center of the braces, and push the slide out with the thumb. See Fig. 2. Be sure the thumb is placed in the center of the tuning slide brace. This gives a steady, well-controlled force and distributes the pull evenly. By advancing one side of the slide more than the other side, the slide becomes cocked and stuck. Efforts to get the slide "uncocked" result in bent and kinked slides. This trouble is especially liable to happen if your model trombone has a tapered tuning slide. In the tapered slide, the inside slide goes into the bell and the outside slide goes over the inside slide attached to the bell taper.

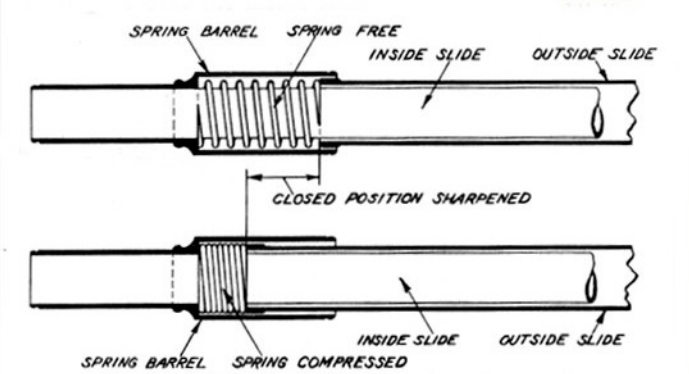

Fig. 21—Spring barrel. Some trombones have spring barrels instead of cork barrels. This spring enables the player to favor the closed position tones. Dirt collects in the spring barrel as it does in cork barrel and fouls the action.

Keep the tuning slide clean and lubricated. Use vaseline or tallow on the slides and they will work more freely and cause less trouble. After applying the vaseline or tallow, push the slides all the way in and wipe off the excess which squeezes out at the joint.

All of the above applies to models with tuning in the bell. If tuning is in the slides, the same precautions and methods of lubrication apply. A special warning should be added, not to try to force stuck tuning slides by using the tuning device. To keep the weight of the hand slides down, this device is made as light as possible and is meant to regulate tuning of only well lubricated, free-working slides. If the tuning slides on this type of trombone become stuck, you'll save yourself some costly repairs if you'll take it to a repairman. Fortunately, this type of tuning has been replaced by tuning in the bell on most models except the bass trombone.

Cleaning Outside of Trombone. This subject is thoroughly covered under "Piston Valve Instruments - Cleaning Outside," page 7 .

Cleaning Mouthpiece. See "Piston Valve Instruments -Cleaning Mouthpiece," page 6.

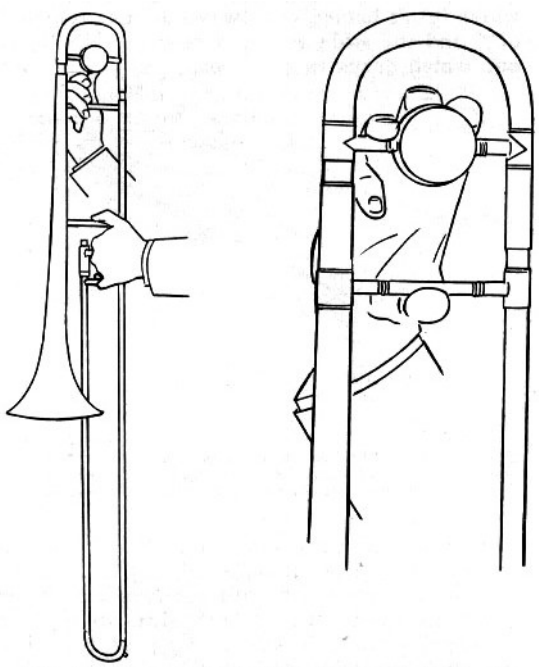

Fig. 22—Changing tuning slide. Force applied in center of braces will avoid advancing one side of slide beyond the other and causing the slides to cock and stick. Left, opening; right, closing.

Analyzing Slide Trouble. There are so many causes of slide trouble that it is valuable to know how to analyze the cause quickly and eliminate the trouble. Correct diagnosis of the trouble is half the battle, just as in correct diagnosis of auto or radio trouble. Usually the trouble is minor but if you tinker and experiment blindly you'll have a major repair job before you're through.

If the slides work okey when dry but begin to drag after oiling, look into the following:

1. Maybe grinding powder used by manufacturer when he ground the slides in, has become loosened by the oil and is acting as an abrasive. This fine grinding powder sometimes becomes imbedded in the inside surface of the outside slides. As long as it stays in the tiny pockets in which it has become imbedded, you have no trouble with it. But when oil is applied, the particles are flushed out onto the slides and trouble starts. The only remedy is to oil and clean, oil and clean, until all the particles are removed. This may take weeks but usually it will clear up in time.

2. The other cause has been touched on under "Cleaning Cork Barrel,," above. Sometimes the original grinding powder has not been well cleaned out by the manufacturer, or sometimes dirt accumulates in the cork barrel. When the instrument is dry, the dirt is not dislodged and causes no trouble. But when oil is applied to the slides, the outside slides push oil up into the cork barrel and then pull the loosened dirt out, coating the inside of the slides. This dirt spreads over the slides gradually. At first you have trouble only with sixth position, then you feel it in fifth, and so on up, until the inside of the outside slide is entirely fouled, as well as the stocking on the inside slide. The remedy is to clean out the cork barrel and keep it clean.

If your trombone works all right at first after clean- ing and oiling but begins to drag and bind after awhile, investigate these possibilities :

1. First hold your hand slides up to the light and sight down their length. You'll probably be amazed at the dents and dinges revealed. When the slides are inspected in the ordinary way, you cannot see these dents, but when you sight down the slides they loom up. The chances are that one or more of these dents are the source of your trouble.

   Remember there is only about .003" (three thousandths of an inch) clearance on a side between the stocking of the inside slide and the inside of the outside slide. The dent may extend only .001 " to .002" (one to two thousandths of an inch) on the inside of the outside slide. This may not give you any trouble when you start playing. But as the trombone *becomes* warm *it expands.* The dent which gave no trouble when the trombone was cool begins to drag when the trombone becomes warm and expands. If you'll lay the trombone away until it becomes cool, it may play all right again for awhile. Then, when it becomes warm through playing, you experience the same trouble. The only remedy is to have the dents and dinges removed. A repairman can run a ball down the slide and locate the dent. This ball will be the diameter of the slide and will rub or bind when it reaches a dent.

2. More difficult to locate is another source of trouble of the same nature. Slides become slightly sprung out of parallel. Often this has been caused by dropping the hand slides on the slide crook. The drop may have been slight, and when you picked the slides up and worked them you may have concluded that no damage was done. But when you get the slides warmed through playing, the slightest springing out of parallel becomes more pronounced and the slides begin to drag and bind. The only remedy here is to send the slides to a good repairman who has the necessary precision tools to check the slides. If your repairman does not have these necessary precision tools, the trombone should be sent to the factory.

Tips on Avoiding Trouble. Some trombonists almost never have any trouble with their instrument; others have trouble constantly. The reason is that one knows how to take care of his trombone and avoid trouble while the other player doesn't. Here are a few ways to avoid trouble, in addition to the ways mentioned in the foregoing.

1. Be sure your case gives adequate protection to *your* instrument, especially to *your* hand slides. The case in which the instrument came to you from the manufacturer usually has proper blocking, but often second hand cases *or* "special" cases made by firms who "specialize" in cases do not give the trombone proper protection. Be particularly careful to see that the slides do not rest on nor can bump against the hand slide crook. To let this crook hit the case is fatal to good slide action, as a drop *or* bump of the case is liable to spring the slides.

2. The slides are generally held in the lid of the case. If so, the blocking should be loose enough so that when the lid is sprung in opening, the slides will not be sprung also. See Fig. 23 *for* more complete explanation of proper blocking. How often have you tried to open your case and one end has stuck. You get a good grip on the free end and yank the case open. This

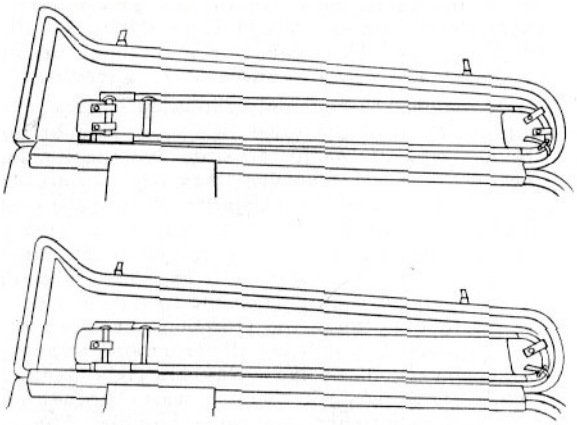

Fig. 23—Wrong and right blocking for slides in lid of case. In top view the slides are held rigidly against the lid of the case. If the lid is sprung, the slides are wrenched and twisted. In lower view, the slides are held loosely against the lid so that though the lid is sprung or twisted, the single button across the brace and crook gives the slides enough freedom so they are not twisted with the lid.

tortional force is what does damage to slide action. Take a stick of gum, hold one end between your left thumb and finger, the other end between your right thumb and finger. Then, holding the left end stationary, twist the right end. That's tortion and gives you a rough idea of what happens to your trombone slides when you open the case in the manner described. See Fig. 24.

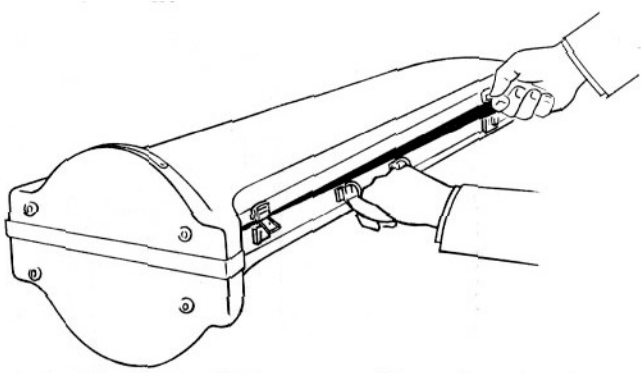

Fig. 24—How NOT to open a slide trombone case. If you force the lid open when one end has a tendency to stick, you are liable to twist your slides.

3. Don't hit your mouthpiece with your hand to seat it when you put it in the mouthpiece receiver. This constant hitting with the hand tends to spring the slides. Simply put the mouthpiece in the receiver and give it a slight, firm twist to seat it.

4. Between numbers many players rest their trombone on the hand slide bumper knob. In this position it is liable to skid and run under the music stand or under a chair. This results in dented slides. Keep hold of your instrument so it will not skid.

5. To avoid dropping your slides, always take hold of your trombone by the *outside hand slide brace,* even though your instrument has a slide lock. If you form this habit, you will not need to worry whether the slide lock is locked or not. The gun which "isn't loaded" is always the one which "goes off," and the slide which is "locked" is always the one which drops to the floor .

6. When putting your trombone down, don't lay it across a chair; lay it on a fiat surface, full length, or take apart and lay both sections fiat. When the trombone overhangs on both sides of a chair and is supported only by the center part, the slides are put on an unnecessary strain.

7. Another careless trick of some players is to lay the trombone across the opened trombone case. Often when the player picks up his instrument he'll hit the slides against the latch and put a dent in them. They have only 2 to 3 hairs wall thickness, remember.

8. Don't go through a revolving door, holding your case by the center handle. Carry the case approximately parallel with your body and avoid getting one end of it caught in the door. If you have a formed case, carry it by hugging the bell end in the crook of your arm, close to your side.

9. Don't sit or lean on your case. This is liable to spring the lid of the case and damage your slides.

10. Examine the water key cork often and replace it as needed. Much oil from the slides soaks this cork and softens it, making it necessary to replace it often. Keep the cork in good shape so you won't get caught with a leaking water key on an important playing engagement.

For other tips, read those on Piston Valve Instruments, page 7. Many of these tips apply also to slide trombone, especially those about chewing gum while playing, eating candy just before an engagement, use of heavy mutes, keeping mouthpieces and other accessories from banging around in your case loose, etc.