

(No Model.)

A. MILLE.  
TROMBONE.

No. 468,025.

Patented Feb. 2, 1892.

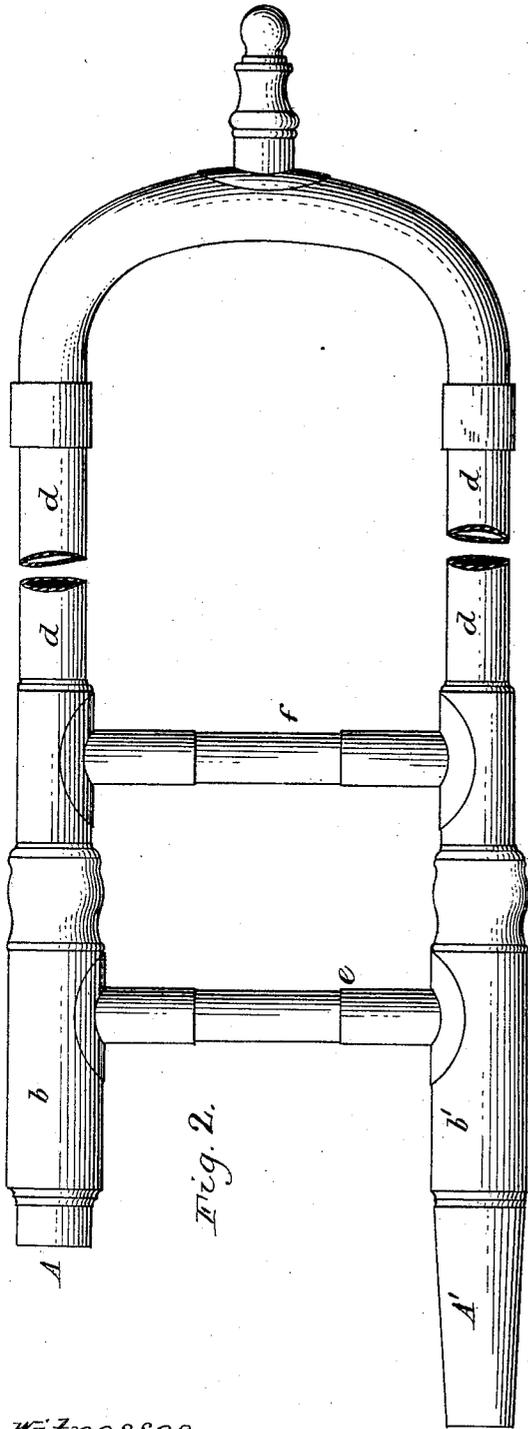


Fig. 2.

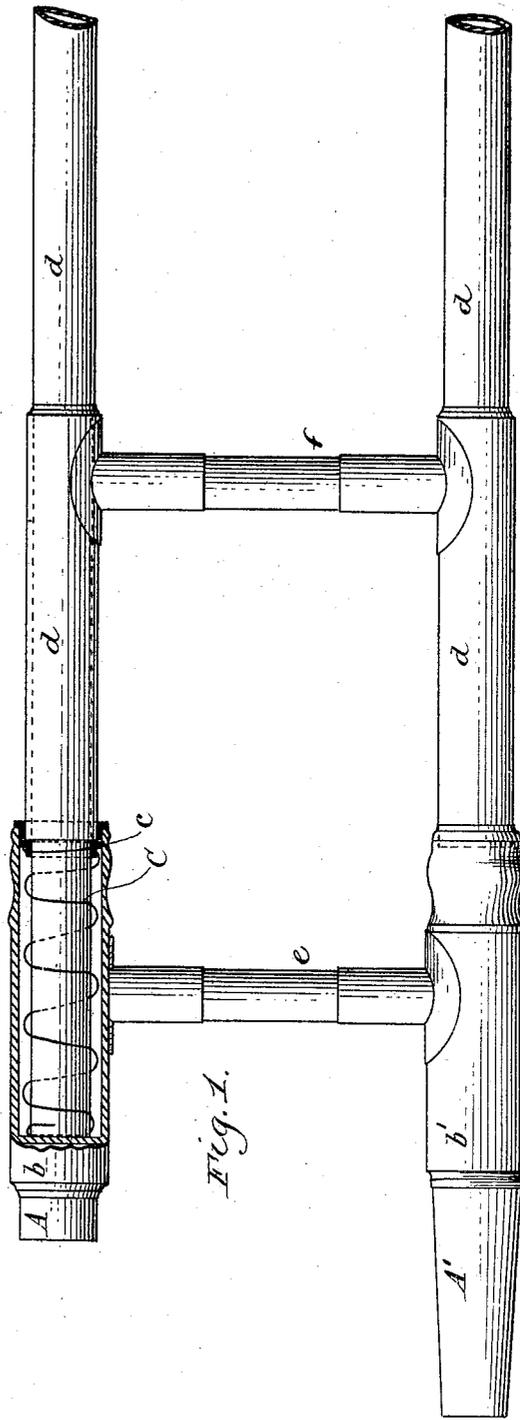


Fig. 1.

Witnesses:

Chas. J. Buchheit  
Emil J. Neuhart }

A. Mille Inventor.  
By Wilhelm Hornum  
Attorneys.

# UNITED STATES PATENT OFFICE.

AUGUSTE MILLE, OF PARIS, FRANCE.

## TROMBONE.

SPECIFICATION forming part of Letters Patent No. 468,025, dated February 2, 1892.

Application filed October 14, 1889. Serial No. 326,943. (No model.)

*To all whom it may concern:*

Be it known that I, AUGUSTE MILLE, a citizen of the Republic of France, residing at the city of Paris, France, have invented new and useful Improvements in Sliding Trombones, of which the following is a specification.

This invention relates to slide-trombones, and has for its object to improve the construction of the instrument so that certain passages or combinations of tones which have heretofore been awkward and difficult of execution may be played with greater ease and certainty.

In the accompanying drawings, Figure 1 is a fragmentary side elevation, partly in section, of a slide-trombone containing my improvement, showing the slide in the first position. Fig. 2 is a fragmentary side elevation thereof, showing the slide drawn back beyond the first position.

Like letters of reference refer to like parts in both figures.

A is the stationary tube of the trombone, to which the mouth-piece is attached, and A' the stationary tube arranged parallel with the tube A and forming a continuation of the return-bend of the bell-tube, which latter is not shown in the drawings.

d d represent the tubes of the slide, which fit over the stationary tubes A A'.

e is the brace connecting the stationary tubes A A', and f is the brace, forming, also, the handle for operating the slide.

The stationary tubes A A', instead of being provided at some distance below the mouth-piece with the usual stops for limiting the inward movement of the slide, have an unobstructed outer surface extending to or nearly to the mouth-piece, so as to permit the slide to be moved inwardly beyond what is known as the "first position." This innermost position of the slide, which is represented in Fig. 2, may be termed the "rear" or "augmented first" position. By this increased inward movement of the slide the inclosed air-column is shortened and the tone is raised accordingly.

b b' represent shost tubes or sleeves, which surround the inner portions of the stationary tubes A A'. Each of these tubes or sleeves is made of larger diameter than the tube

which it incloses, so as to leave an annular space or socket between the tubes which receives the upper portion of the adjacent slide-tube when the slide is shifted into the augmented first position. The inward movement of the slide is limited by internal shoulders formed at the contracted inner portions of the sleeves or in any other suitable manner. These sleeves are made so long as to arrest the movement of the slide when the same is shifted to the extent of a semi-tone beyond the first position.

C is a yielding stop or cushion applied to one of the stationary tubes A A', and which offers a slight resistance to the inward movement of the slide when it reaches the first position. This yielding stop may consist of a spiral spring coiled within one of the sockets b b' around the inclosed tube and bearing with one end against the inner end of the socket and with its opposite end against a follower c, which surrounds the inclosed tube and in turn bears against the end of the adjacent slide-tube. The spring acts as a guide, which enables the player to determine with greater certainty when the slide occupies the first position. It also tends to automatically shift the slide from the augmented first to the first position when unrestrained.

Upon shifting the slide into any position except the augmented first position the instrument is played like an ordinary trombone, while upon shifting the slide into the augmented first position, against the pressure of the spring, all the tones of the first position are raised a semitone. Thus, for instance, if it is desired to pass from B-flat to B-natural with a tenor or B-flat trombone containing my improvement it is only necessary to shift the slide from the first to the augmented first position, which involves a short and easy arm movement.

The difficulty and inconvenience of smoothly executing with an ordinary trombone rapid passages in which B-flat and B-natural occur in ascending or descending succession is well known to trombonists, B-flat being taken in the first position, in which the slide is moved back nearly to the mouth-piece, while B-natural must be taken in the seventh position, in which the slide is shifted to its

extreme outer position, and which requires the arm to be stretched to its full length. Hence in passing with an ordinary trombone from B-flat to B-natural, or vice versa, (an interval of but a semitone,) it is necessary to shift the slide to opposite extremes of its stroke, which renders the production of these tones in good tune exceedingly difficult and uncertain, especially when they occur in rapid passages. With my improved instrument such a succession of tones is not only played with less exertion, owing to the shorter arm movement, but the tones are played in better tune and with greater certainty, because of a shorter stroke of the slide.

In playing F and F-sharp, (the fifth above B-flat,) either in ascending or descending succession, similar advantages are obtained. With an ordinary trombone it is necessary to take F-sharp in the fifth position, which is a comparatively long arm-reach, while with my improved trombone the transit from F to F-sharp or F-sharp to F involves a short shift of the slide from the first to the augmented first position. Like advantages are obtained in passing from the other tones of the first position to the semi-tones above the same, or vice versa.

Another advantage of my improved instrument which is not found in ordinary trombones is its capacity to produce a pedal-tone on B-natural.

It is obvious that a stop-spring may be ar-

ranged in each of the sockets or sleeves *b b'*, if desired.

35

I claim as my invention—

1. In a trombone, the combination, with the slide, of the stationary parallel tubes having an unobstructed outer surface extending inwardly to about the mouth-piece of the instrument, whereby the slide may be shifted inwardly beyond the first position, substantially as set forth.

2. In a trombone, the combination, with the stationary parallel tubes and the slide, of a yielding stop which resists the movement of the slide inwardly beyond the first position, while permitting the same to be moved beyond such position by overcoming the resistance of the yielding stop, substantially as set forth.

3. The combination, with the stationary parallel tubes of the trombone and the slide, of a socket or sleeve surrounding one or both of said stationary tubes, and a spring arranged in said socket or sockets and resisting the inward movement of the slide, substantially as set forth.

The foregoing specification of my improvements in sliding trombones signed by me this 25th day of September, 1889.

AUGUSTE MILLE.

Witnesses:

ERNEST PARMENTI,  
PICOU ROBING.