

**A new system of teeth regulation with finely made original devices ready for immediate operative application without soldering / by Miland A. Knapp.**

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RK521 K723 1901 A new system of teet

RECAP

# *A New System* of **Teeth Regulation**

*with finely made original  
devices  
ready for immediate operative  
application*

## **Without Soldering**

By

**Miland A. Knapp, D.D.S.**

**Minneapolis, Minnesota**

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**The S. S. White Dental Manufacturing Co.**

**Publisher and Sole Agent,**

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# TEETH REGULATOR

THE REGULATOR IS A  
SPECIAL ADJUSTABLE  
MOUTH PIECE WHICH  
MAINTAINS THE CORRECT  
RELATIONSHIP OF THE  
TEETH AND JAW  
BONES.

IT IS USED IN THE  
TREATMENT OF  
DENTAL DEFORMITIES  
AND IN THE  
PREVENTION OF  
DENTAL DEFORMITIES.

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# TEETH REGULATION.

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## INTRODUCTION.

In the treatment and correction of the typical cases of irregularity of the teeth described and illustrated in the following pages, the author has attempted simply and plainly to give a description of the peculiar regulating devices, the manner of attaching or applying or removing them, and the method of their positive operation with safety, with restful intervals, and with secure retention. The exemplifying cases were chosen principally to show the uses of the different parts of the devices, each combination shown being immediately applicable to any case wherein similar conditions exist.

For a number of years the author experienced the difficulties attending this branch of corrective dental art, and spent much time in constructing appliances to accomplish the desired results, frequently making and using, or attempting to use, most of the seemingly practical appliances described in dental literature, and all of those offered for sale at dental depots, some of the latest of which are very good, yet require the expenditure of considerable time in soldering them together, and after the soldering require repolishing or replating for the presentation of a respectable appearance in the mouth. The author therefore determined to work out, by a series of practical experiments, some forms of devices that could be immediately applied to the teeth without the very tedious and annoying operation of taking impressions, making appliances, fitting them to plaster models, and making soldered bands to suit the several teeth. Often he would find when the case was about half completed, that some change was necessary which would require a new form of appliance, necessitating the loss of the first one made and nearly all the material used in its construction. The regulating of a case under such circumstances proved to be a very tedious and expensive operation.



If operators were now compelled to make from blanks bought at dental depots burs, excavators, pluggers, clamps, etc., and had to make a new one or lot for every operation they were called upon to perform, the filling of teeth would be a much more tedious and expensive process than it now is, yet this is what has hitherto been done in nearly every case of dental irregularity which dentists have been called upon to correct.

After a long series of experiments in practical work, the author has succeeded in performing with the regulating device described in the following pages, all the operations usually met with in practice, and he claims for these devices the following advantages:

#### ADVANTAGES OF THE SYSTEM.

First: They are ready to take out of the box and apply to the teeth. No heating or soldering is required. They are therefore as neat in appearance in the mouth as when removed from the box.

Second: The several members are as small as is consistent with strength, they are well plated to resist tarnishing, and are accessible in all situations, and are not liable to displacement or loss by the patient.

Third: All the parts are interchangeable, and when an extra member is ordered for a special case, it will work with all the parts on hand as well as those afterward obtained.

Fourth: The directions of force can be changed in a few moments at any time to overcome unlooked-for requirements or an entirely different device may be put on without the usual trouble of removing bands and soldering on new attachments.

Fifth: The threaded bars having nuts screwed on ready for action can be readily placed in, or be taken from the socket clutch bands while these are fixed on the teeth; whereas, in other systems, the nuts must first be unscrewed, the bands be pushed through the band tubes, beyond which the nuts must be again screwed onto the bar ends. This is a very tedious and troublesome operation when those bar ends extend beyond the band tubes on second molars.

Sixth: The several devices can be used over and over again and will last as long as some instruments commonly used



mental practice.

Seventh: They are time-savers for the practitioner, and are attractive to the patient.

Eighth: The members of each organization are readily comparable for sterilization in hot water before replacement in the box.

Ninth: Every member has its indicative number by which it may be identified in description and illustration, and be specified in purchasing orders, to be sure of obtaining the desired part or parts so numbered.

Tenth: The prices of the parts are moderate in view of their convenience, accuracy, uniformity, sightliness, ready usefulness and durability.

Some of the parts are too small for clear delineation, and therefore associated and magnified or sectional views are given, to make obvious the constructive details or assemblages of the several devices.

To those who have hitherto employed thicker and heavier appliances, these thin and small devices may seem inadequate; but the author has in practice proved their sufficiency, and has firm confidence in their general efficiency when employed with due regard to the correct principles involved in their construction and uses.

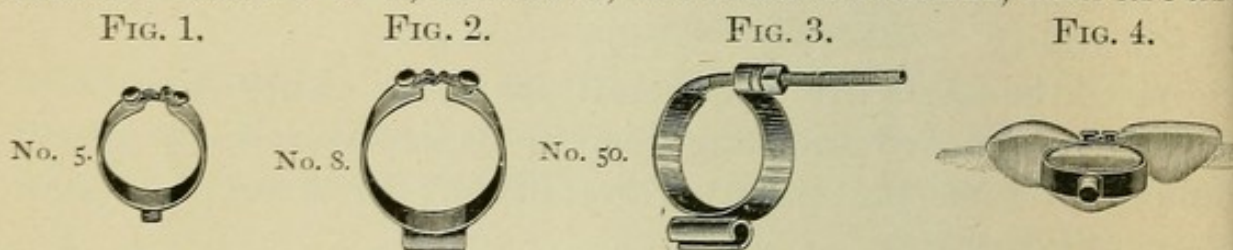
#### FUNDAMENTAL PRINCIPLES.

A fundamental feature of the system and means is the production of a from time to time progressive movement of the tooth or teeth in the desired direction WITHOUT RETROGRESSION. A comparatively weak initial and successive push or pull action will in every suitable case be effective if the GAIN BE UNFLINCHINGLY MAINTAINED; and this is the function of the clutch nut and lock nut members. A moderate moving force, the locking of the moving mechanism, and a timely repetition of that process results in a new tooth-position and a new restoration to sustain it: these are the sources of success in teeth regulation.



## GENERAL DESCRIPTION OF THE BANDS.

The bands used to attach these appliances to the teeth are open or separated at the side opposite to that from which the attachments are to be made. Each end of the band has a button, around which is to be wound a wire thread, holding the two ends of the bands firmly at any required distance from each other. These bands are made in ten sizes, ranging from the size of the smallest incisor to that of the largest molar. Sizes 1 to 6, inclusive, are studded bands, and are used



on all teeth except molars. One of these bands is shown as wired for use in Fig. 1. Sizes 7 to 10, inclusive, are clutch bands, and are to be used on molar teeth for anchorage. One of these is shown as wired for use in Fig. 2.

The bands most used are Nos. 3, 4, 5 and 50. These are the sizes supplied in the sets, and will be found to be sufficient for many cases. Nos. 3, 4 and 5 are studded bands with sets, and are used on the teeth which are to be moved; they are designed to fit bicuspids, cuspids, centrals and laterals, both upper and lower. No. 50, Fig. 3, is one of the double socket-clutch screw bands exactly like No. 8, Fig. 2, except that the band is screw clamped instead of wired and cemented to the tooth. These clutch bands are used for anchorage to the molars, and that size (No. 50) will be found almost universal in its adjustable application. Each band is adaptable to fit a variety of sizes of teeth, as the ends of the band may be separated until the buttons touch the teeth on either side, or may be brought so near that the buttons touch each other. The buttons also serve for rotating wires or other attachments. The full range of the band is sometimes limited by the position of the teeth, and a band that will allow



the buttons to nearly touch becomes necessary, as in Fig. 4, which is an illustration of a studded band No. 4. To meet all these peculiarities, the bands are made in ten sizes.

#### THE STUDDED BANDS.

Figs. 1 and 4 show the studded band with the threaded stud on the side opposite from the buttons. To this stud is attached the ball cap of the jack-screw, the stud bar and nut, or the retaining devices.

#### THE CLUTCH BANDS.

The clutch consists of a slotted tube attached to the band on the side opposite from the buttons or screw. See Fig. 5. This receives and holds firmly the anchorage portions of all the devices used in these appliances, and allows them to be easily and quickly removed and replaced without removing the bands or the clutch nuts from the bars. This last advantage will be fully appreciated by every dentist who has had to place a nut on a bar or wire after passing it through a tube or pipe fixed in a tooth-band in the mouth. He will well remember his efforts to put nuts on traction bars or wire arch bars protruding from the distal ends of tubes on molar teeth.

An enlarged drawing of the clutch tube of the double socket clutch bands, Nos. 7 to 10 and 49 to 52, is shown in Fig. 6. A is the band to which the partial tube B is attached. D is the part which receives the threaded bar. CC are enlarged portions or sockets which receive the cylindrical portions of the clutch nuts. When the nuts are in position the threaded bar is held firmly in the tube, as shown in Fig. 8.

FIG. 5.



FIG. 6.

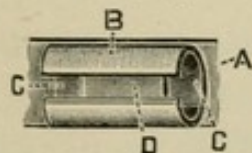


FIG. 7.

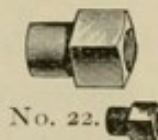
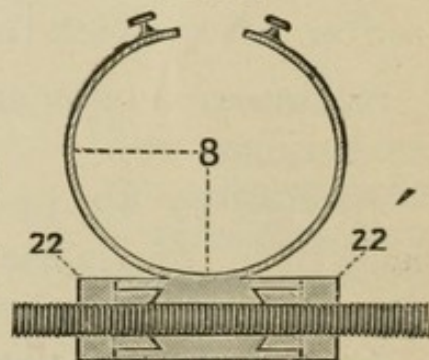


Fig. 7 shows the clutch nut, the round portion of which fits into the socket C of the clutch tube B, Fig. 6.

FIG. 8.



#### TO APPLY THE BANDS.

Select a band of the proper size, and carefully work it on around the tooth to be banded. Do not use a mallet or pound



on the band. If the teeth are very tight together, press a thin spatula or spreader between them on each side, let it remain a few minutes, and when removed the band will go between the teeth easily. Burnish the band to fit the irregularities of the tooth surface, and fasten the wire C to the button A on one end of the band, as shown in Fig. 9. Draw the wire C tightly around the other button B, Fig. 10. Then remove the wire from button B, being careful to leave the kink in the wire at

FIG. 9.

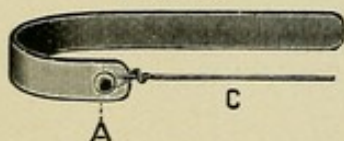


FIG. 10.

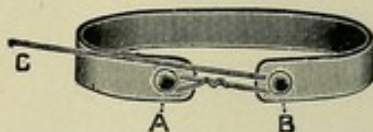
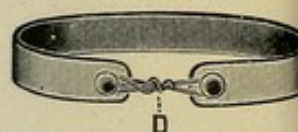


FIG. 11.



button B, which will be a gauge to the size of tooth after the band is removed from the tooth. Next remove the band from the tooth and replace the wire around button B, giving the wire two or three cross turns in the form of an 8 around both buttons, ending in one or two turns of the wire around the center of the coil, as shown at D, Fig. 11. The band is then ready to be cemented to the tooth. The tooth should be thoroughly dried with alcohol, the cement mixed to a sticky consistency and applied to the entire inner surface of the band and to the surface of the tooth, and the band pressed over the tooth well up to the gum.

To remove the bands, unwind or cut the wire, and the band can then be easily taken from the most sensitive or loose tooth without injury to the tooth or band. When bands are taken off they should be immediately cleaned and sterilized in boiling water, after which they may be put away for future use.

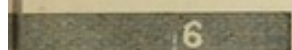
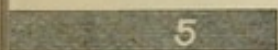
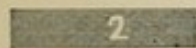
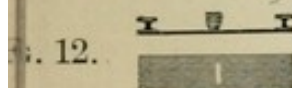
#### INSTRUCTIONS FOR SELECTING AND ORDERING THE DIFFERENT SIZES OF BANDS.

In Figs. 12, 13, 14 and 15 will be seen plane projections of each of the bands used with these regulating devices, the cut showing the exact lengths of the several numbered bands.

Fig. 12 shows the six lengths of studded bands, Fig. 13 the four lengths of single socket clutch bands, Fig. 14 the four lengths of double socket clutch bands, Fig. 15 the four lengths of bite bands and Figs. 16, 17 and 18 the lengths of screw bands.

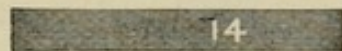
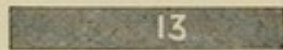
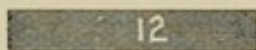


When selecting these bands to fit any special tooth: With a piece of waxed floss silk; or, if the interdental spaces allow, riding wire, take a measure of the tooth to be banded and compare the length of the measure so taken with the lengths of bands in the cuts, and in ordering simply give the NUMBER OF THE BAND that the measure agrees with.



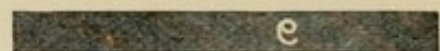
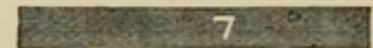
Studded Bands.

FIG. 13.

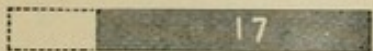
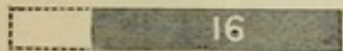
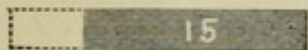
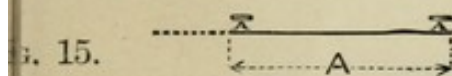


Single Socket Clutch Bands.

FIG. 14.

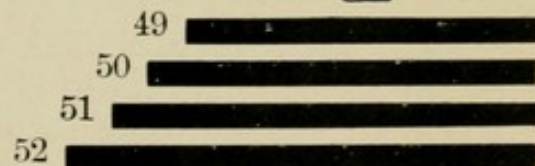
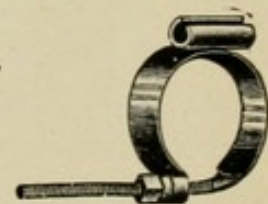


Double Socket Clutch Bands.



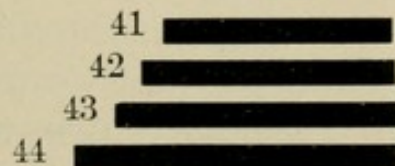
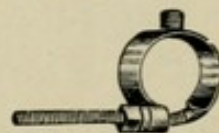
Bite Bands.

FIG. 16.



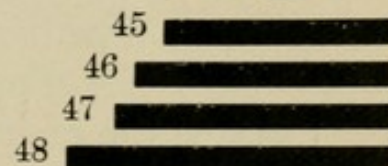
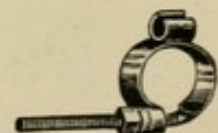
Double Socket Screw Bands.

FIG. 17.



Studded Screw Bands.

FIG. 18.



Single Socket Screw Bands.

If a studded band is wanted, compare the length of the measure with the lengths of bands shown in Figs. 12 to 17 only, according to whether a

clutch or screw band is required. If single socket clutch bands are needed, compare with lengths in Figs. 13 or 14 only, according to style wanted, and so on with each class.



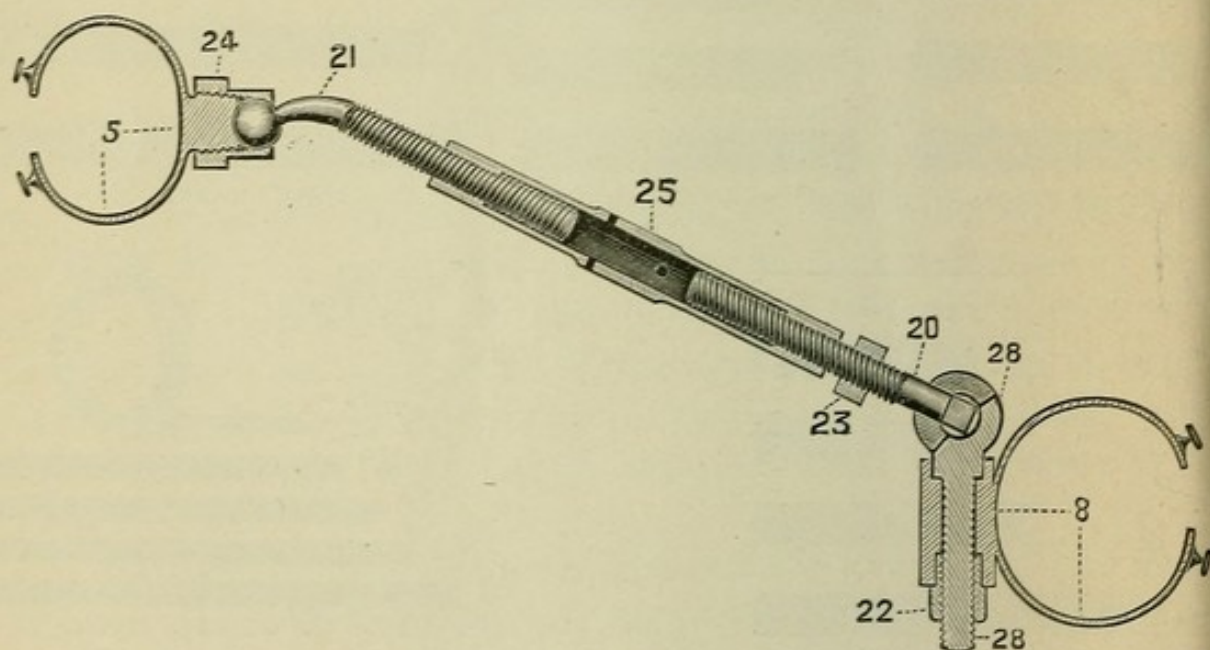
In Fig. 15, showing the bite bands, the dark portions of the drawings represent the circumferences of the teeth which the bands are designed to fit, the dotted portions showing the extra extensions required to make the laps. At A

**The Bite Bands.** Fig. 15, will be seen the proper method of selecting the number of a bite band to order, the line at A representing the measure, or distance, around the tooth to be banded.

#### IN SELECTING BANDS,

if the measure of the circumference of a tooth is between two numbers, as it generally is, always select the lesser number—e. g., if a studded button band is wanted and the length of

FIG. 19.



the measure when compared with the lengths of bands in Fig. 12 should be between Nos. 4 and 5, then select No. 4.

Fig. 17 shows four lengths of screw bands, studded, each of which is capable of adjustment to fit several sizes of tooth, and the same is true of the screw bands having the single socket clutch, Fig. 18, and those having the double socket clutch, Fig. 16. All of the screw band measures denote the smallest size of the bands for the respective teeth to be fitted, but No. 41, for instance, will also fit a tooth having nearly the circumference of the No. 42 measure. So also of No. 43, which may be expanded to almost the length of No. 44 and so on through the series.



## THE JACK-SCREW, COMPLETE.


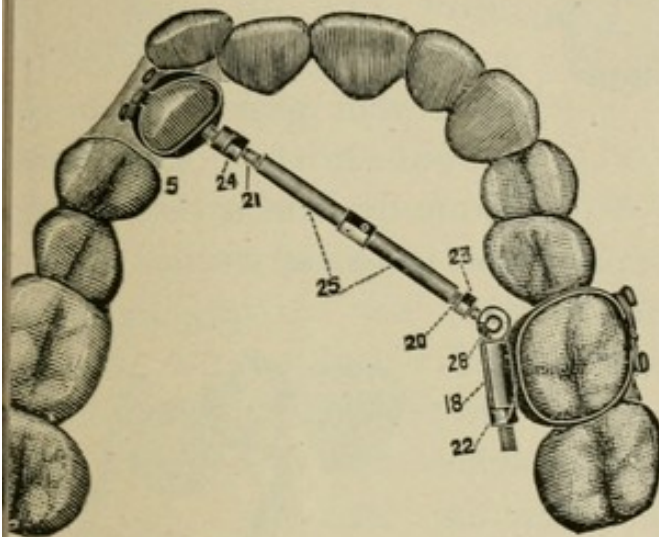
A sectional drawing (magnified) of the jack-screw organization is shown in Fig. 19. It consists of a central elongated nut No. 25, right-hand threaded in one portion and left-hand threaded in the other. No. 26 (  ) is one half the length of No. 25 but otherwise the same. In organizing a jack-screw carefully note the letter "L" which is stamped upon the nuts, Nos. 25 and 26, to indicate the left-hand threaded portion, which fits the left-hand threaded ball bar No. 21 (or Nos. 33 or

FIG. 20.

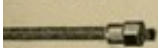


40, see list of parts).

The short T bar No. 20 is screwed into the right-hand portion, and the ball bar No. 21 into the left-hand portion. The ball cap No. 24 incloses the ball of ball bar No. 21 or 33, and when this cap is screwed on the stud of the studded band No. 5, this end of the jack-screw is clamped

firmly to the band. The T head of the T bar No. 20 is placed

in the socket of the T socket clutch bar No. 28. The T head with it forms a swivel joint. By unscrewing the ball cap No. 24 from the end of the band No. 5, the jack-screw may be swung backward and disengaged from the round T socket No. 28, Fig. 22, and removed from the mouth

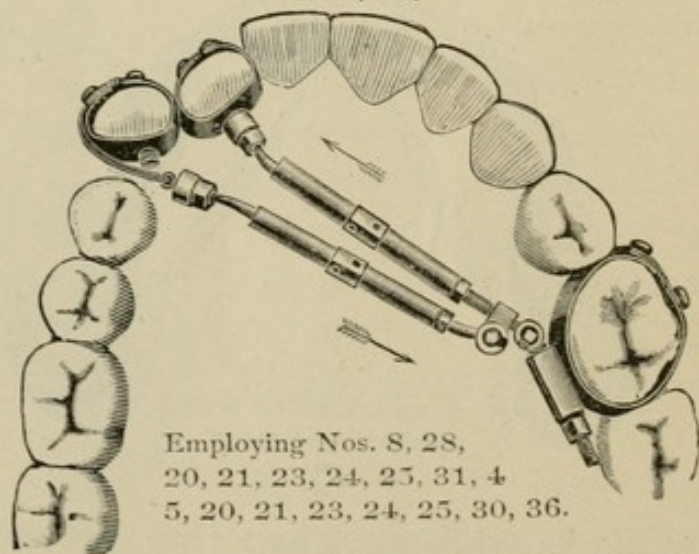


No. 28.

without disturbing the band. No. 23, Fig. 19, is

a lock nut which, when tightened against the long nut No. 25,

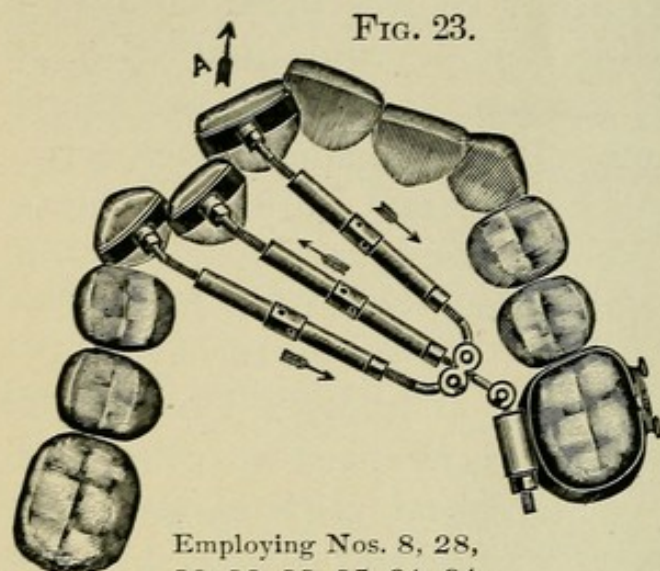
FIG. 21.



Employing Nos. 8, 28,  
20, 21, 23, 24, 25, 31, 4  
5, 20, 21, 23, 24, 25, 30, 36.

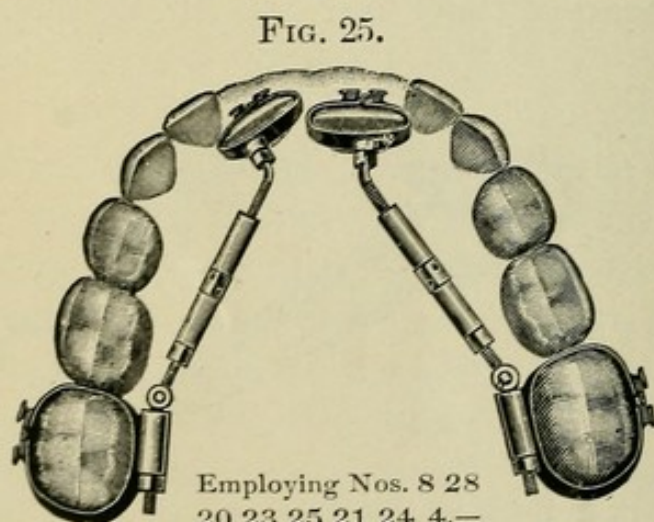


holds it from revolving, thus preventing the loss of any movement once gained, as will occur when the common loose nut are turned by the tongue in the acts of talking and eating, c



Employing Nos. 8, 28,  
20, 32, 23, 25, 21, 24,  
3,—5, 24, 21, 25, 23, 20,—5, 24, 21, 25, 23, 20.

above the point where the separation is to be made and clipping the bar off with a wire cutter; then with a medium fine file cut off the bulging portion caused by the wire cutter. File squarely across the end of the bar and when the bulge is entirely cut away the nut may be

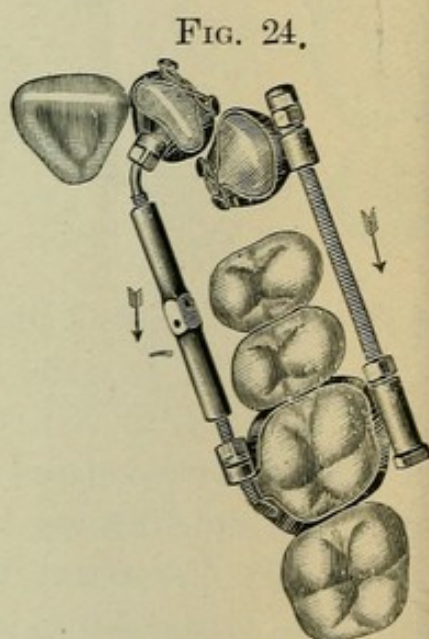


Employing Nos. 8 28  
20 23 25 21 24 4,—  
4 24 21 25 23 20 28 8.

threads catching when the nut is put back. The practical application of the jack-screw, in its most simple form, is shown in Fig. 20. When the ball cap No. 24 is screwed tight

on purpose by the patient who cannot, without wrench, disturb these nut locked appliances.

BOTH THE STUD BAR AND JACK-SCREW WILL EITHER PUSH OR PULL WITHOUT CHANGING THE NUTS. The bars are all made long enough for the greatest reach and will generally need to be cut shorter. This is easily done by first screwing a nut



Employing Nos. 50, 13, 3, 1,  
22, 22, 34, 25, 24, 21.

turned off the end of the bar easily, leaving a bur to prevent the



against the ball, of ball bar 21, the rotation of the tooth to which band 5 is cemented, is prevented. If the ball cap 24 is

FIG. 26.

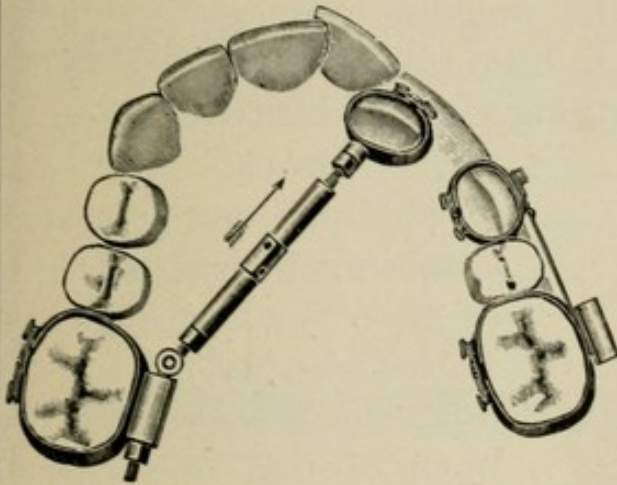
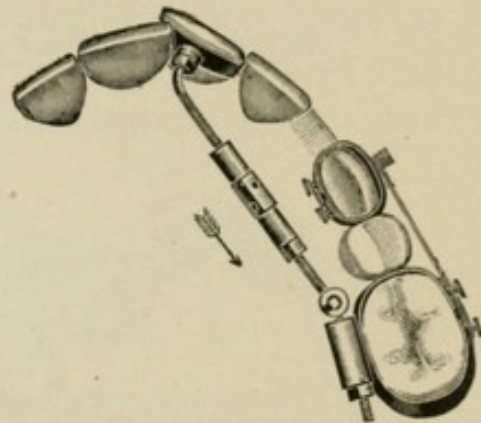


FIG. 27.

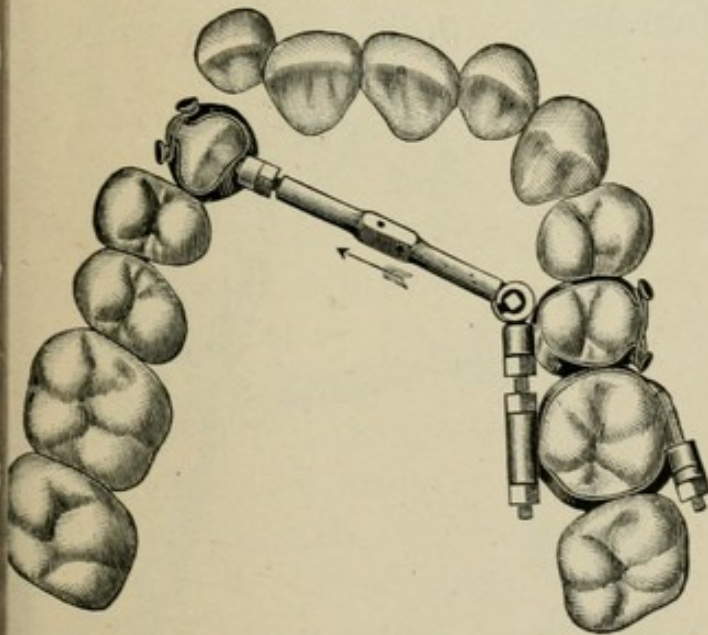


Employing Nos. 4 24 21 26 23  
20 28 8 30 5.

Employing Nos. 3 24 33 25 23 20 28 8,—8 4.

screwed upon the stud loosely the tooth will be free to rotate. When the pressure is applied in the proper direction to cause rotation. In this manner teeth that require to be both placed in the line of the arch and rotated, may be so placed and rotated with this one appliance, by cementing the band to the tooth so that the stud of the band will be at one side of the median line of the tooth, and then screwing the ball cap loosely on the stud.

FIG. 28.



Employing Nos. 5 13 50 28 23 22 22 20 25 21 24.

If the rotation should be accomplished before the tooth is in position, the tightening of the ball cap against the ball will stop the rotation, and there will be no cause for readjusting the band.

A short right and left threaded nut No. 26 may be used in place of the long nut 25 shown in the cuts, when the reach is short. The jack-screw may be removed by unscrewing the ball cap 24 from stud of band 5 and swinging it backward until it is about opposite the right second molar. In



this position it may be lifted vertically out of the socket 28 and removed from the mouth. Fig. 21 shows two jack-screws connected by a No. 31, Fig. 29. The arrows indicate the pushing power against the lateral as nearly equalized by the pulling force on the cuspid, thus putting very little stress upon the anchor tooth. In Fig. 23 a similar compensating combination is seen wherein three jack-screws connected by a No. 32, Fig. 31, push the lateral and pull both central and cuspid, exerting but slight pressure upon the anchorage.

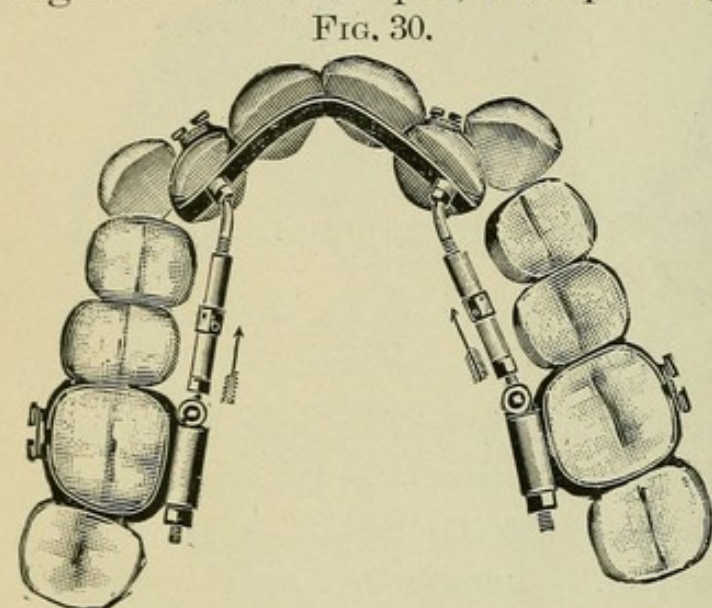


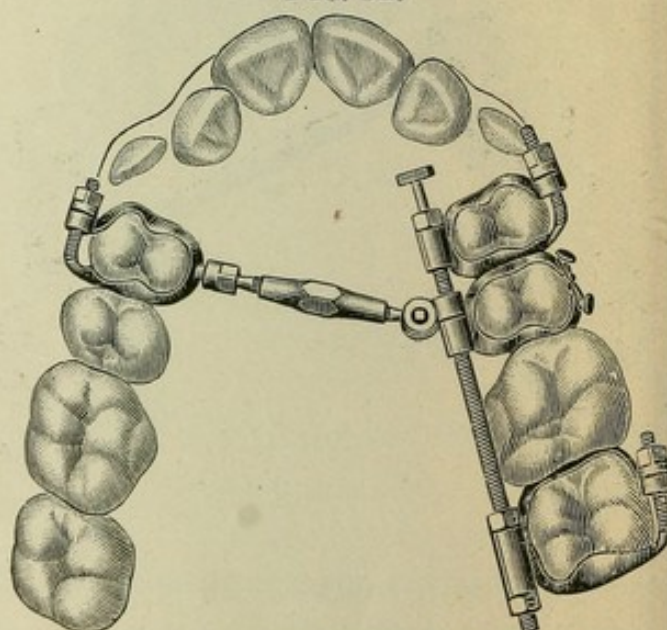
FIG. 30.

Employing Nos. 3 3 39--8 28 20 23 26 21  
24--24 21 26 23 20 28 8.

the operation on the other central, lateral and cuspid. In Fig. 24 the screw band is anchor for double traction by jack-screw and T bar. Jack-screw application for inlocked centrals is shown in Fig. 25.

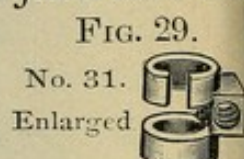
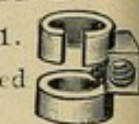
Retracting and at the same time rotating a central tooth is effected by jack-screw action in Fig. 27.

In Fig. 28 a bicuspid and molar are connected by Nos. 13, 50 and 28 to serve as a reinforced anchorage for jack-screw action on a cuspid. Fig. 32 shows how three or four teeth may be made a base for extra powerful jack-screw action. Innumerable other combinations are possible.



Employing Nos. 42 24 33 26 20 19

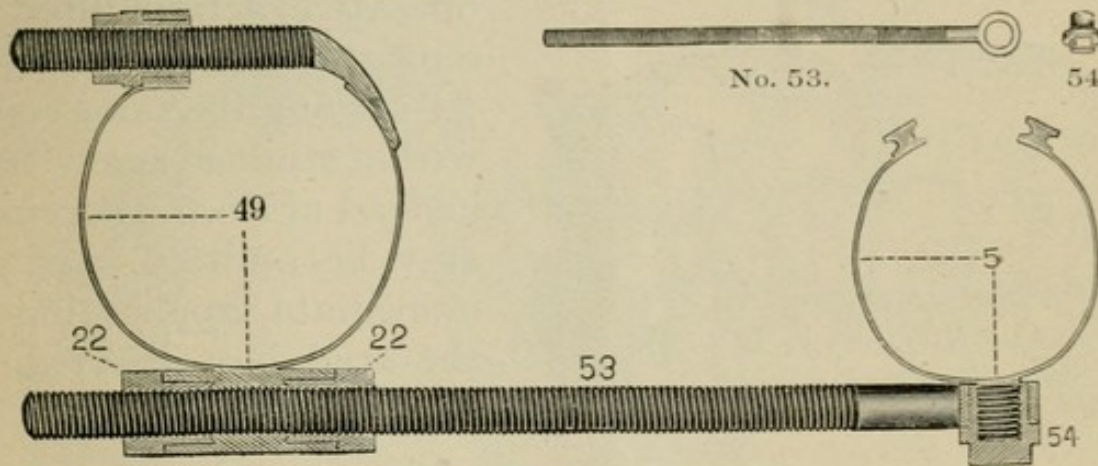
22 31 22 22 49 13 46

No. 31.  
EnlargedFIG. 31.  
No. 32.  
Enlarged.



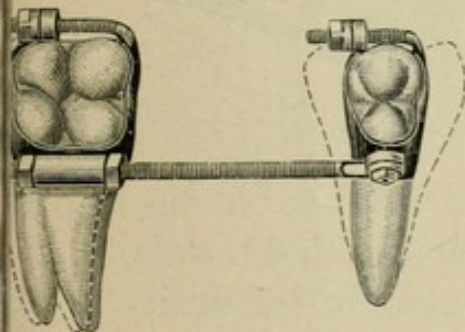
## THE STUD BAR AND NUT.

FIG. 33.



A careful examination of the illustrative Figs. 33 and 34 will make evident the fact that in the new stud bar No. 53 and stud bar nut No. 54 we have means for effecting tipping movement without rotation in any actual instance.

FIG. 34.



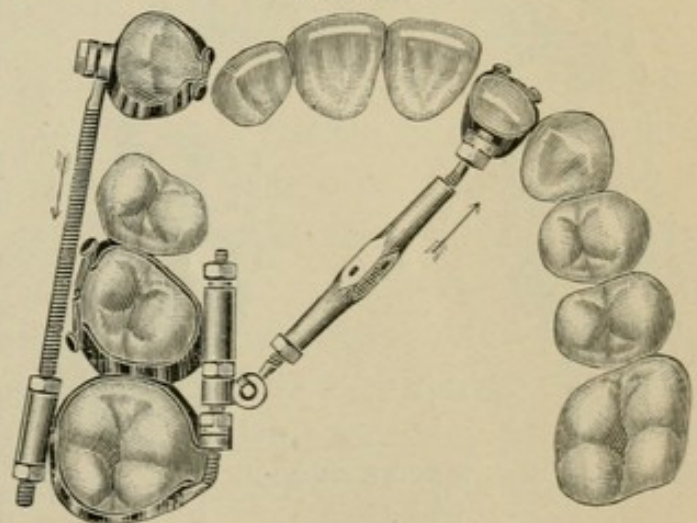
Nos. 43 50 53 54 22 22.

push action on the tooth to be moved, without any rotative stress, while surely effecting the desired tipping movement of the tooth crown in a progressive and retentive manner.

In the illustrative example in Fig. 35, a studded band No. 5 was fitted on the cuspid and a No.

movement without rotation in any actual instance. In Fig. 33 the magnified members exhibit the operative functions of the new appliances Nos. 53 and 54, which couple the stud of No. 5 to the clutch of No. 49 in such a way as to permit optional pull or

FIG. 35.



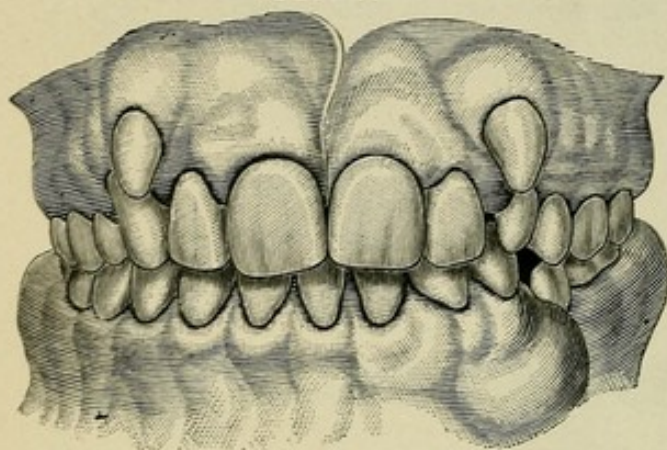
S 35 50 31 23 22 20 23 25 21 24 53 54 22 22

50 on the molar. The stud bar No. 53 and nut 54 were adjusted on the stud of band 5, the cuspid being dried and



kept dry while with a little cement around its inner surface the band was pressed tightly upon the cuspid, and at the same time the bar rested in the clutch of the molar band, ready for

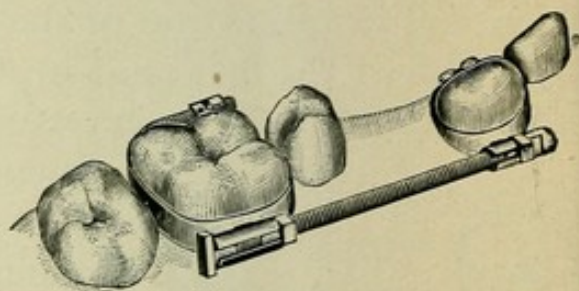
FIG. 36.



operative action after the cement had set.

Pursuing the same course with a studded screw band instead of No. 5, the cement may be omitted, and an immediate application of the stud bar effected, as shown in Fig. 34.

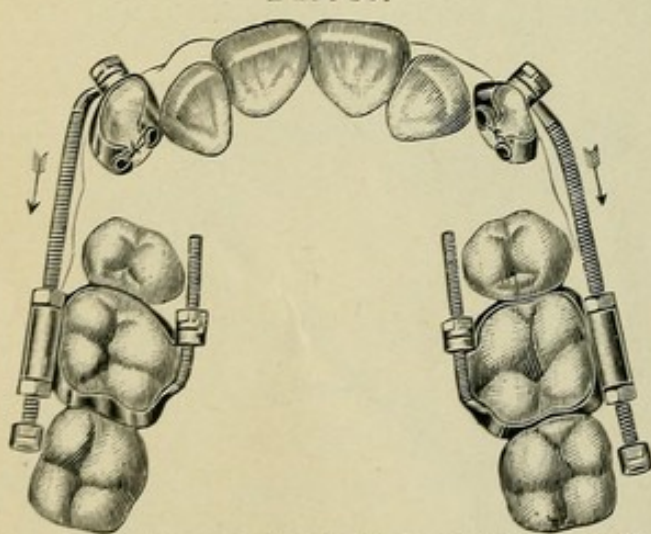
FIG. 37.



Employing Nos. 50 19 22 13 22 34,

By turning 54 tightly on 53 and suitably turning the 22s the tooth may be tipped forward or backward (see dotted lines Fig. 34) without any rotative movement whatever. The device is both simple and strong; affording another example

FIG. 38.

Employing Nos. 3 50 53 54 22 22 34—3 50 53  
54 22 22 34

of the adaptable usefulness of the studded bands.

Should it be desirable in any case to draw the tooth backward WITHOUT TIPPING that result will be accomplished by using a single-socket clutch band instead of a studded band on the cuspid as shown in Fig. 37.

It is evident that by turning the nuts, 22 and 22, in the proper directions the bar may be used to either

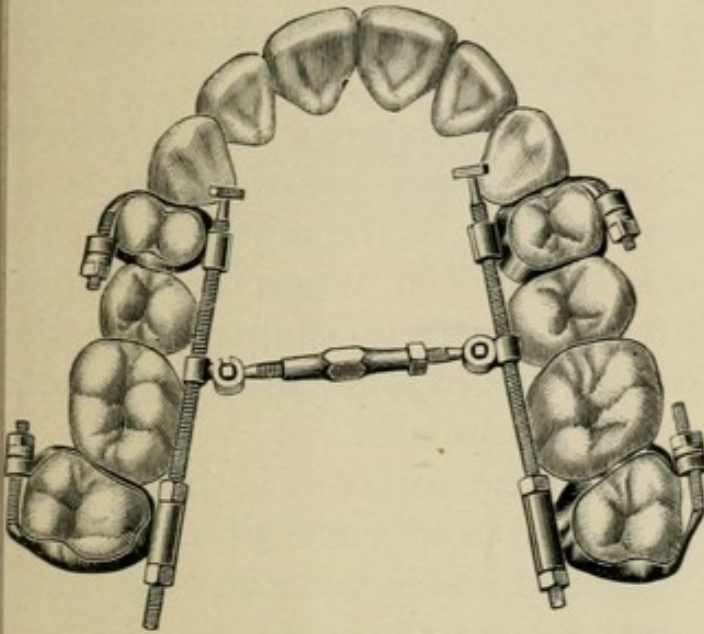
push or pull, and by tightening both nuts the bar is securely locked and cannot become loosened by the action of the tongue.

In the case shown by Figs. 36 and 38 (the cut, Fig. 36, erro-



ously shows the partially erupted cuspids behind the laterals, instead of above and lapping them, as in the model), the first bicuspids were extracted and studded bands No. 4 cemented

FIG. 39.



Employing Nos. 20 23 26 40—19 31 22 22—19 31  
22 22—47 47 50 50.

on the cuspids. Screw-band No. 50 was fixed on the molars, and stud bars No. 53, with stud bar nuts 54, were applied as shown in Fig. 38. By suitably turning the nuts, No. 22, and from time to time bending the slightly flattened stud bars, to exert inward spring stress on the retrograding cuspids, they were simultaneously moved backward and

inward into line; the long screws of the screw bands being bent into contact with the second bicuspids to prevent rotative stress on the molars due to the spring action of the stud bars. In Fig. 39 is illustrated a combination of appliances for lateral arch expansion or contraction, an organization which is immediately applicable to any case of its class.

### THE BITE BANDS.

FIG. 40.



When a tooth is inlocked it is always advisable to open the bite while the tooth is being carried over the locking teeth, and the bite should also be opened if the lower teeth strike the appliances when placed upon the upper teeth. This may be easily accomplished by using the band illustrated in Fig. 40.

These bands are wider than those used in regulating the teeth, and have four buttons, two of which are attached at one end and the other two at some distance from the other end of the band. This allows the extra length of band to pass inside and close the otherwise open space where the ends of the band are wired together with band wire No. 30, making a tight



collar around the tooth. The buttons are attached nearer to one edge than the other, and as this edge is to go next to the

FIG. 41.

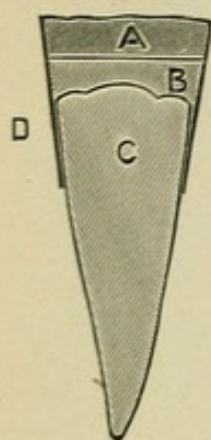
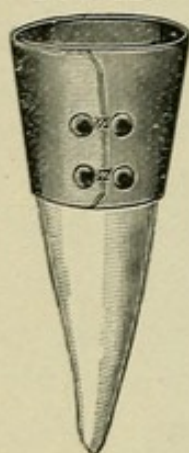


FIG. 42.

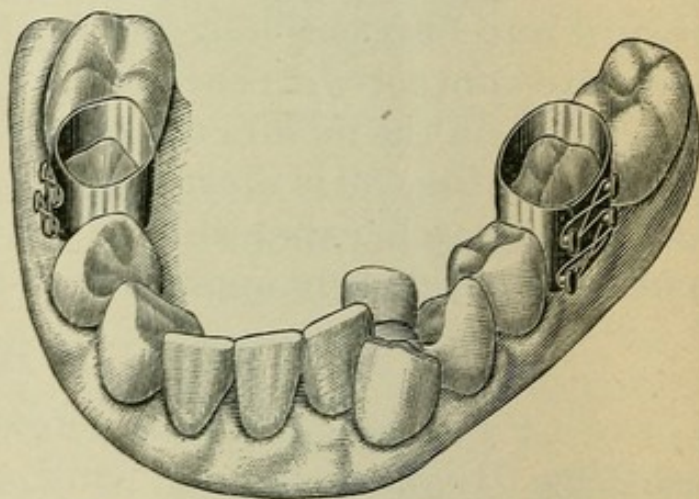


gum the upper part may be trimmed off with shears if the band is too wide and holds the teeth too far apart.

These bands are generally placed upon the lower bicuspid, a band on each side of the mouth. In the case of children, when the bicuspid are not entirely erupted, or for other reasons, they may be placed upon the molars.

To place these bands on the teeth: tie an end of band wire No. 30 to the button nearest the end and edge of the band; next curl the band, with the long end inside, until it is a little too small for the tooth and press it over the tooth to make a tight fit. If the extra lap of band should be too long, and pass between the teeth, causing two thicknesses of band on one side, and if the teeth are tight together, cut the end of the lap off enough to just miss going between the teeth.

FIG. 43.

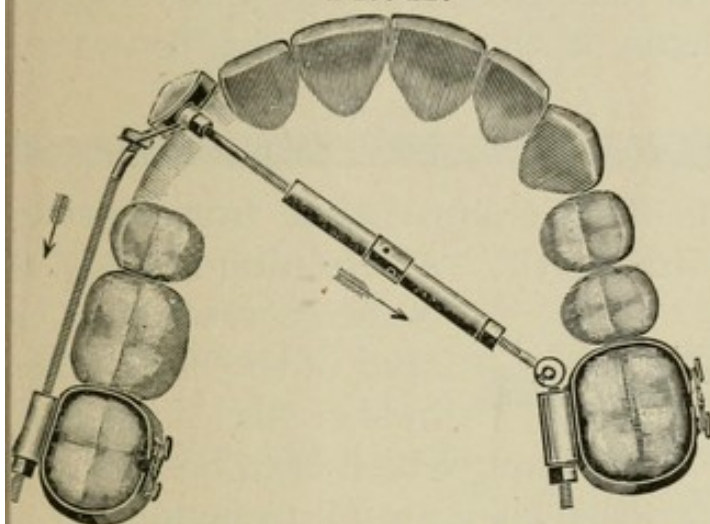


The buttons at the bottom of the band, near the gum, should be drawn a little nearer together than the upper ones, to make a close fit around the neck of the tooth, and form a larger grinding surface at the top of the band. When the band is in position both sets of buttons should be wired, the lower set first, and a napkin or cotton roll placed around the tooth, and the crown of the tooth and the inside of the band thoroughly dried with alcohol. Cement and amalgam should then be mixed (the cement rather thin), the band filled two-thirds full of cement and the amalgam immediately placed upon it, and firm



pressure brought to bear on the top of all. This will force the cement all around the crown of the tooth and out at the lower edge of the band, making a very solid temporary crown, proof against decay, and one that may be left on any length of time without fear of injury to the tooth, which cannot well be done

FIG. 44.



Employing Nos. 8 19 22 5 30 24 21 25 23 20 28 8.

with a soldered band, as it is difficult to make a proper fit at the neck of the tooth, and if left on too long is liable to cause decay. The amalgam should be so trimmed that the teeth will strike evenly on each side.

In the sectional view Fig. 41, A represents the amalgam, B the cement, C the tooth, and D the

band. Fig. 40 shows the band curled ready to be placed over the tooth and Figs. 42 and 43 show the bands in position.

To remove the bands: Unwind the wire, strip off the band, and remove the amalgam and cement with a scaler.

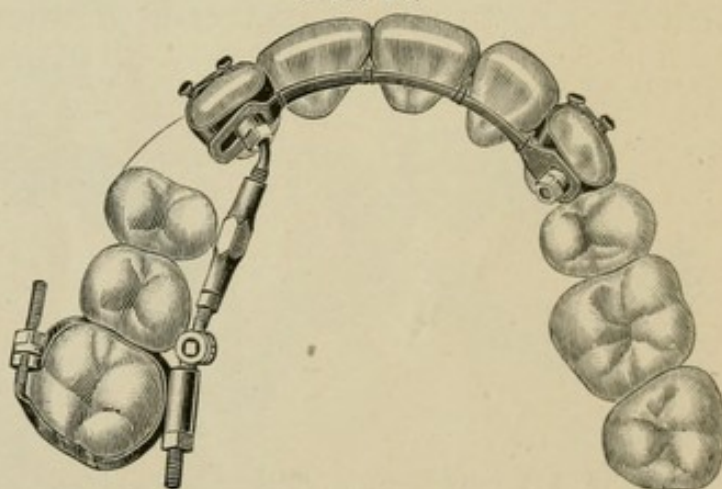
The bands should be immediately sterilized in boiling water, brushed with a soft brush wheel, and put away for future use.

Fig. 45 shows a case in which the four incisor teeth were inlocked. The bite was opened sufficiently to permit these teeth to pass

over the lower incisors, and an appliance placed upon the upper teeth as shown. The bite bands were removed as soon as the upper incisor teeth had been moved over the lower incisors.

Fig. 44 requires no explanation.

FIG. 45.



Employing Nos. 50 28 20 23 26 21 24 38 39 3 4



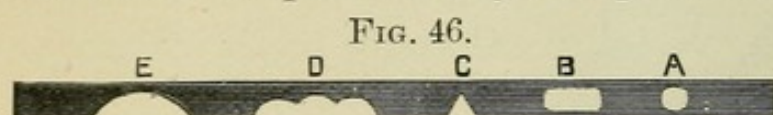
## THE RETAINING DEVICES.

The parts numbered 37, 38, and 39 are used for holding the teeth in line after they have been moved to their proper positions.

The retaining clamp No. 37 is attached to the bands by passing the stud of the band through the hole in the broadened

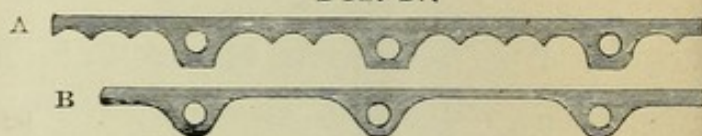


center of the clamp, the ends of the clamp being first suitably bent to rest upon the adjoining teeth. A retaining nut No. 38



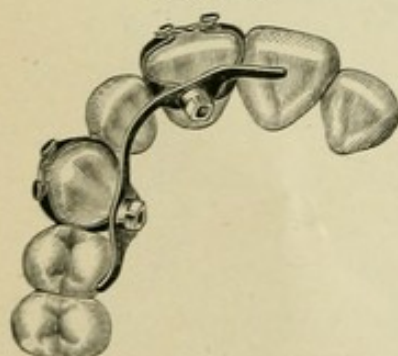
is then screwed on the stud of the band which holds the clamp in position. Part No. 39 is a blank band which is to be prepared to connect a number of teeth when they are all to be moved in one direction, and also is to be made as a retainer when a number of teeth are to be held in line, making it necessary to put bands on two or more teeth.

FIG. 47.



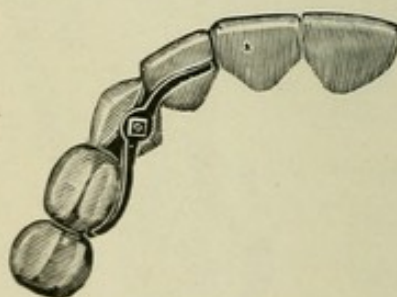
To attach a retaining and connecting band No. 39 to the teeth: First make a pattern of sheet tin, or lead, punching

FIG. 48.



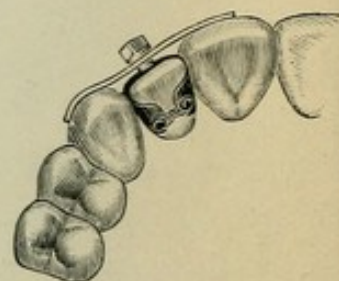
Nos. 5 5 39 38 38.

FIG. 49.



Nos. 5 37 38.

FIG. 50.



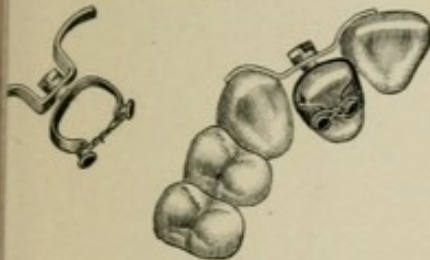
Nos. 3 37 38.

holes in the pattern for the studs of the bands to pass through. This will mark the proper distances apart that the holes should be punched in the retaining band. After bending the band to the proper curve the holes should be punched, the band placed in position, and a retaining nut No. 38 screwed on each of the studs which pass through the band



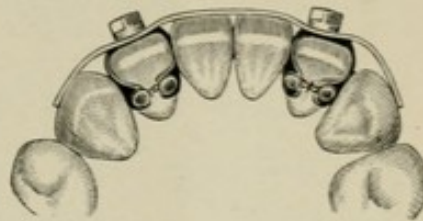
to hold it in position. Fig. 46 represents at A a hole punched to receive the stud of the band on the tooth. B indicates a

Fig. 51.



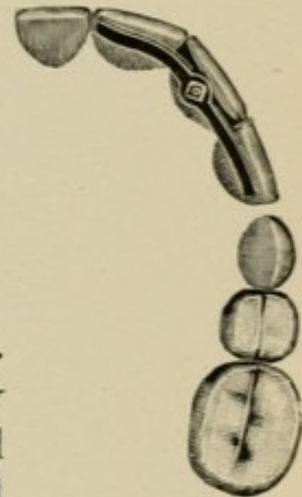
Nos. 3 37 38.

FIG. 52.



Nos. 3 3 39 38 38.

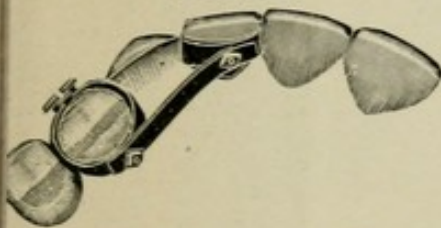
FIG. 53.



Nos. 5 37 38.

not formed by punching a succession of holes. This may be necessary in some cases, especially when the holes have not been properly punched at first. When it becomes necessary to bend the band in the plane of its width, cut a V-shaped notch two-thirds the width of the band as shown at C.

FIG. 54.



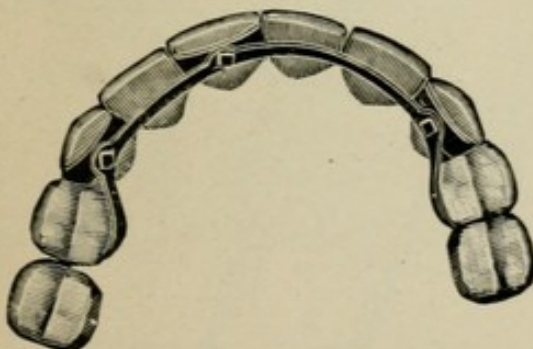
Nos. 6 3 39 38 38.

This will allow the band to be bent in a lateral direction. If it should be advisable to have the band as narrow as possible it may be cut away for two-thirds of its width with plate nippers as shown at D, and the points

filed off with a half-round file as shown at E. Carefully leave enough metal to surround the stud where the holes are punched.

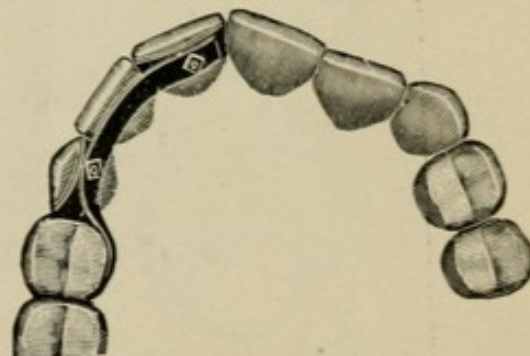
When the preliminary pattern for a retainer or connector has been formed, the holes in the blank band No. 39 may be

FIG. 55.



Nos. 5 5 5 39 38 38 38.

FIG. 56.



Nos. 5 5 39 38 38.

punched with a plate punch and enlarged with an engine bur. The round bur No. 6 or the bud bur No. 52 will cut suitably



sized holes to allow the studs on the bands to pass through the retainer to receive the No. 38 retaining nuts. Fig. 47 shows the band roughly cut at A, and finished at B. Figs. 48 to 56 show the practical application of the three parts.

### MAJOR PROTRUSION.

In cases of major protrusion when the oral teeth, sometimes even including the bicuspid, are to be retracted simultaneously-

FIG. 57.

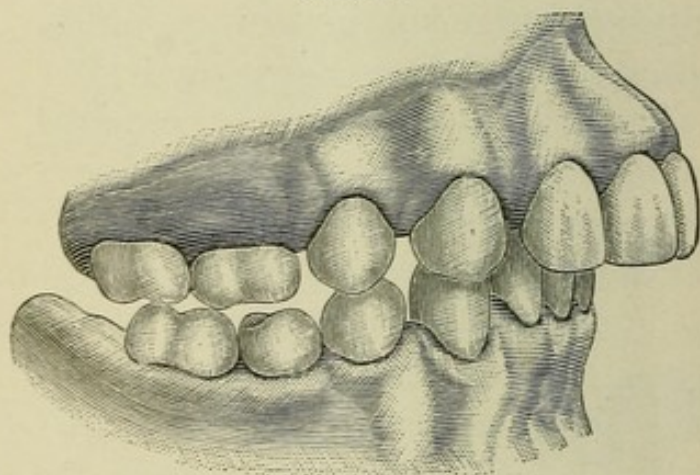
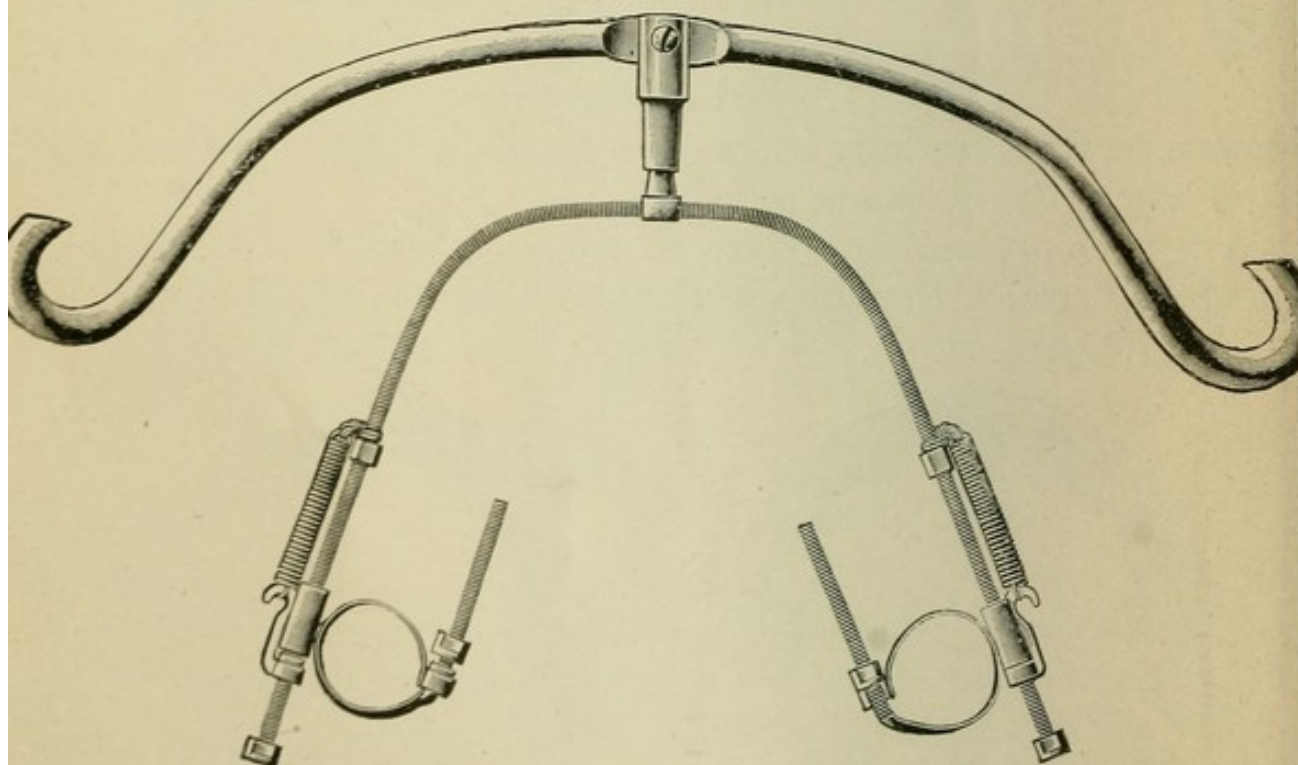


FIG 58.



ly, or partially so, merely dental anchorage is insufficient and a resort to the occipital base becomes necessary. A case in



point is shown in Fig. 57 wherein the lower central incisors indent the gums on a line from cuspid to cuspid.



The superior first bicuspidis were removed, and studded bands No. 5 were cemented on the central incisors as shown in Fig. 50. Screw bands No. 50 were then fixed upon the first molars.



Two lock nuts No. 23 were placed (one on each side) upon an arch bar, No. 35 and two springs No. 56 were tied to the arch bar just above the nuts with band wire No. 30. Two band hooks were then slid, hooks first, on the bar and kept from falling off by bar end caps No. 34. The hooks were passed through the looped ends of the springs and the appliance placed in position as shown.

### PROTRUSION BOW AND HEAD CAP.

The protrusion bow No. 58, has a pivoted central standard A in the socket of which the split chuck B is conically seated. This

FIG. 59.

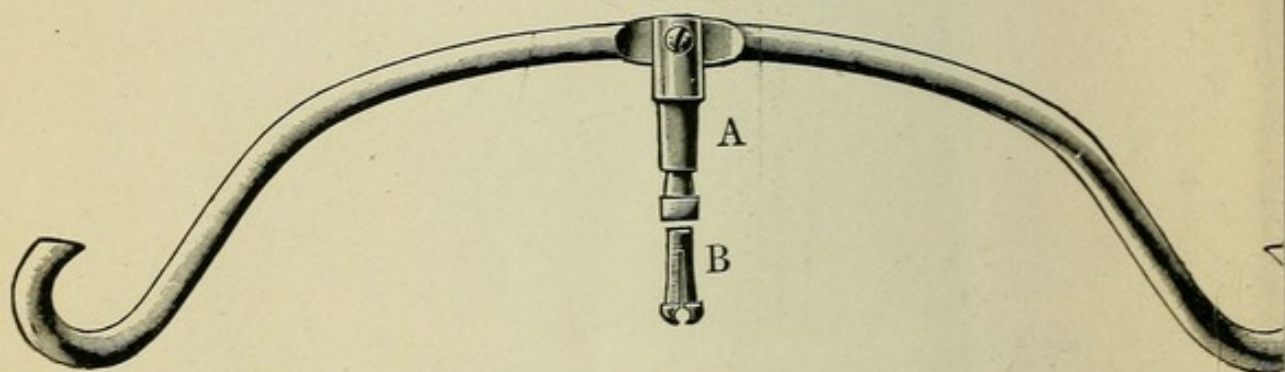
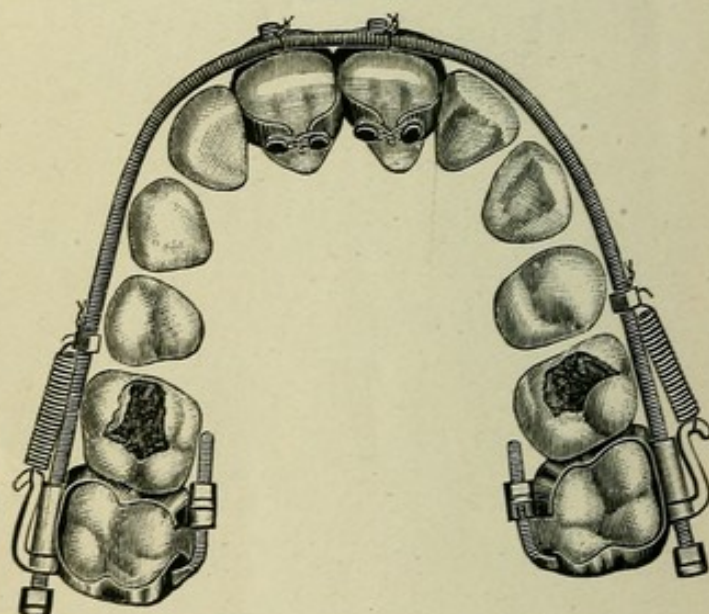


FIG. 60.



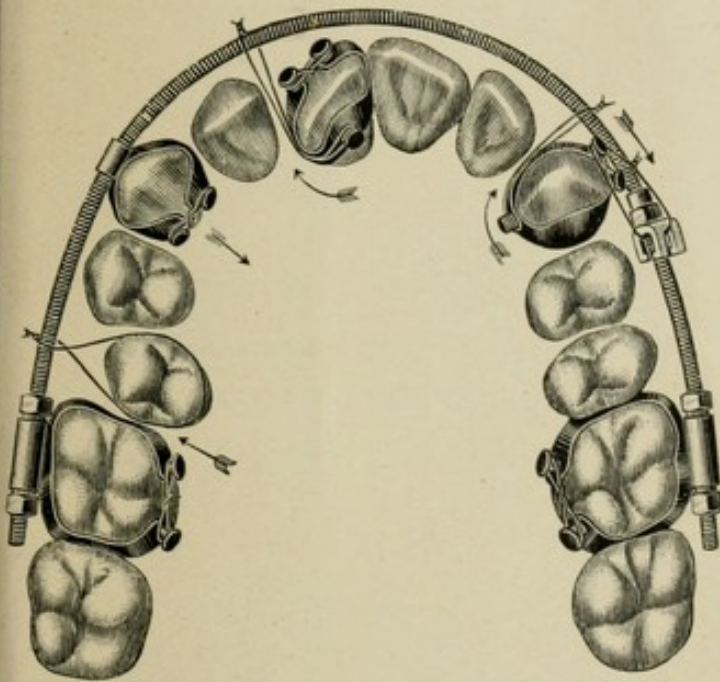
chuck is transversely bored and threaded to receive the arch bar No. 35. In operation the arch bar is secured upon the teeth in a manner similar to that shown in Fig. 60. The chuck B is then sprung on the bar and the standard telescoped upon the chuck, which by cone action grips the arch bar at an



anterior location. The protrusion bow rocks on its pivot to prevent shocks when the bow ends are pressed upon by the pillow or otherwise, and also provides for unswerving pressure on the standard. The split chuck grips the bar firmly under retractive pressure, which when relaxed somewhat, does not detach the bow.

To remove the bow or change its relations, it is only

FIG. 62.



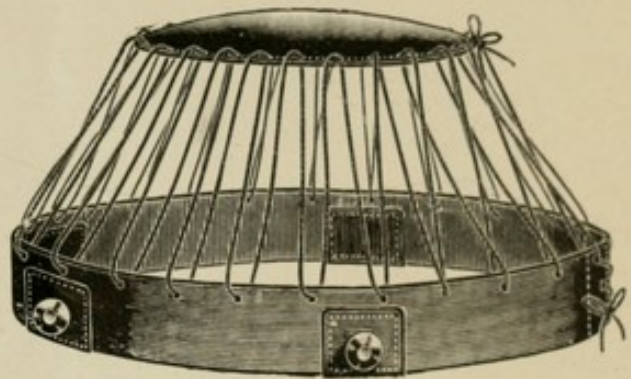
Nos. 8 12 5 4 35 22 27 8 22 22 22 22.

which connect it with the protrusion bow. See illustration on page 21.

Arch bar exemplifications are shown in Figs. 62 and 64.

Fig. 63 is a sectional drawing (enlarged) of the detachable stud No. 59. The stud is provided with a screw-threaded hole through the center and can be attached to the band at any point by screwing it on the inner stud which projects through a hole punched in the

FIG. 61.



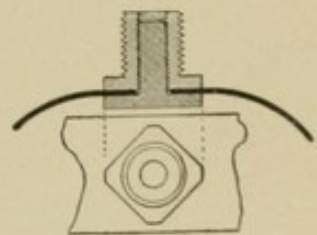
HEAD CAP, No. 60.

necessary to detach the bow ends from the head cap and slip the standard from the chuck. This too is readily sprung off the bar by a slight lateral movement.

The head cap, Fig. 61, is made of kangaroo skin and silk cord, and is light, cool, and adjustable in all directions.

It has metal buttons placed in the proper positions for the attachment of the rubber bands

FIG. 63.



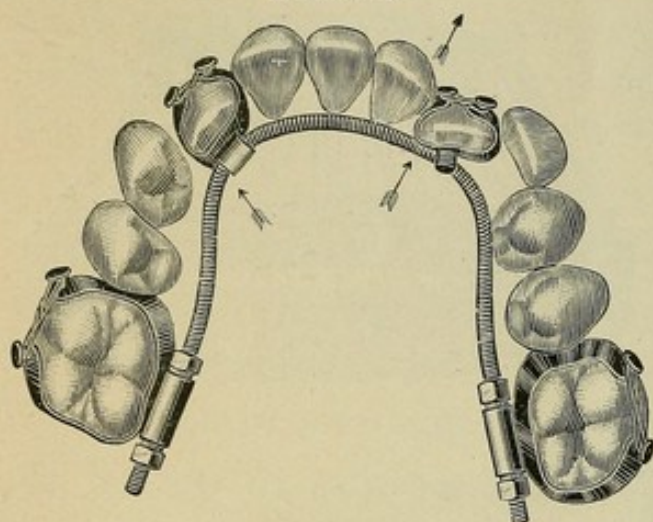
No. 59.



band at the desired place. The base is squared to take a wrench.

The form of jack-screw shown in Figs. 66 and 67 will be

FIG. 64.



Nos. 8 12 3 8 35 22 22 22 22

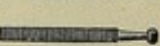
found convenient in many cases where a tooth on each side of the arch is outside or inside the arch. A right-hand threaded ball-bar No. 57 (  ) is used, thus employing a ball-bar at each end of the long right and left nut 25 or 26 as the reach may require. This device will either expand to force the teeth outward or contract to pull them inward, and will apply to all teeth anterior to the first molars (upper and lower).

FIG. 65.

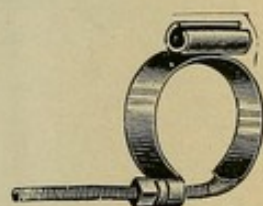
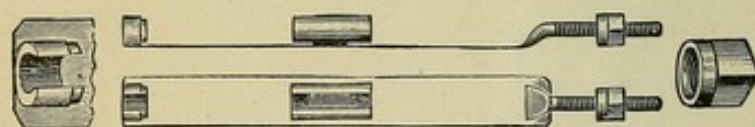
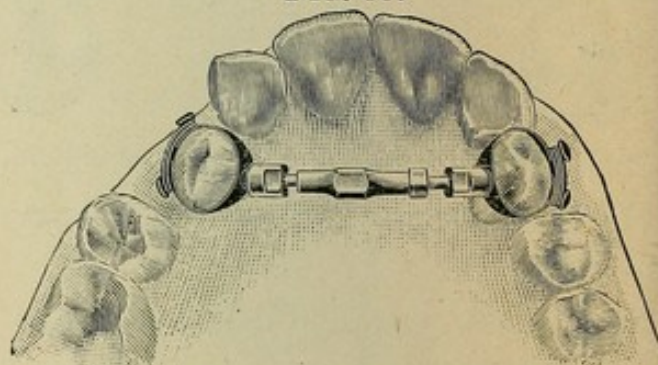


Fig. 65 makes clear the constructive details of the screw bands. The double socket clutch forms, Nos. 49 to 52, being shown.

The immediate and extensive adoption of these appliances has greatly encouraged the author to expect a further favorable reception of some later devices described and illustrated in this pamphlet, which is gratefully submitted for the consideration of the profession that is ever ready to appreciate any real advancement in the means and methods for facilitating the almost always perplexing problems of teeth regulation.

FIG. 66.



Employing Nos. 4 24 33 26 23 57 24 4.


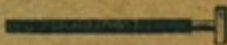



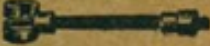


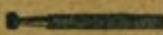




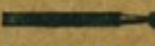










FIG. 67.





# COMPLETE LIST OF NUMBERED APPLIANCES WITH PRICES.

Patented Jan. 18, 1898, Jan. 24, 1898, Sept. 12, 1899, Dec. 25, 1900.

Button Bands, Studded, Nos. 1 to 6, inclusive, each		50 cents.
“ “ Double Socket Clutch, Nos. 7 to 10, each		75 cents.
“ “ Single “ “ “ 11 to 14, each		60 cents.
Bite Bands, Nos. 15 to 18, see page 7, each		50 cents.
Screw Bands, Studded, Nos. 41 to 44, (page 7) each		\$1.00.
“ “ Single Socket Clutch, Nos. 45 to 48, each		\$1.00.
“ “ Double “ “ Nos. 49 to 52, each		\$1.00.
Long T Bar, No. 19,		50 cents.
Short T Bar, No. 20,		45 cents.
Ball Bar, No. 21,		50 cents.
Long Right and Left Nut, No. 25,		75 cents.
Short “ “ “ “ “ 26,		60 cents.
Round T Socket Clutch Bar and nut, No. 28,		\$1.00.
Single Auxiliary T Socket, No. 31,		75 cents.
Double “ “ “ “ “ 32,		\$1.00.
Straight Neck Ball Bar, No. 33,		50 cents.
Retaining Clamp, No. 37,		50 cents.
Retaining and Connecting Band, No. 39,		25 cents.
Left-hand Threaded T Bar, No. 40,		50 cents.
Arch-bar, Threaded, No. 35, (see Fig. 58.)		\$1.00.
Stud Bar, No. 53,		50 cents.
Right-hand Threaded Ball-bar, No. 57,		50 cents.
Protrusion Bow with Chuck, No. 58, (see Fig. 59)		\$2.50.
Extra Chucks, each		75 cents.
Detachable Stud No. 59, (see Fig. 63)		75 cents.
Head Cap No. 60, (see Fig. 61)		\$2.00.
Clutch Nut No. 22,		25 cents.
Lock Nut No. 23,		20 cents.
Ball Cap No. 24,		75 cents.
Bar-End Cap No. 34,		25 cents.
Band Wire Coil No. 30,		25 cents.
Wrench No. 29,		15 cents.
Perforated Stud No. 36,		25 cents.
Retaining clamp nut No. 38		25 cts.
Stud Bar Nut No. 54,		75 cents.
Bar Hook No. 55,		25 cents.
Springs No. 56, pair,		25 cts,

THE S. S. WHITE DENTAL MFG. CO., SOLE AGENT.

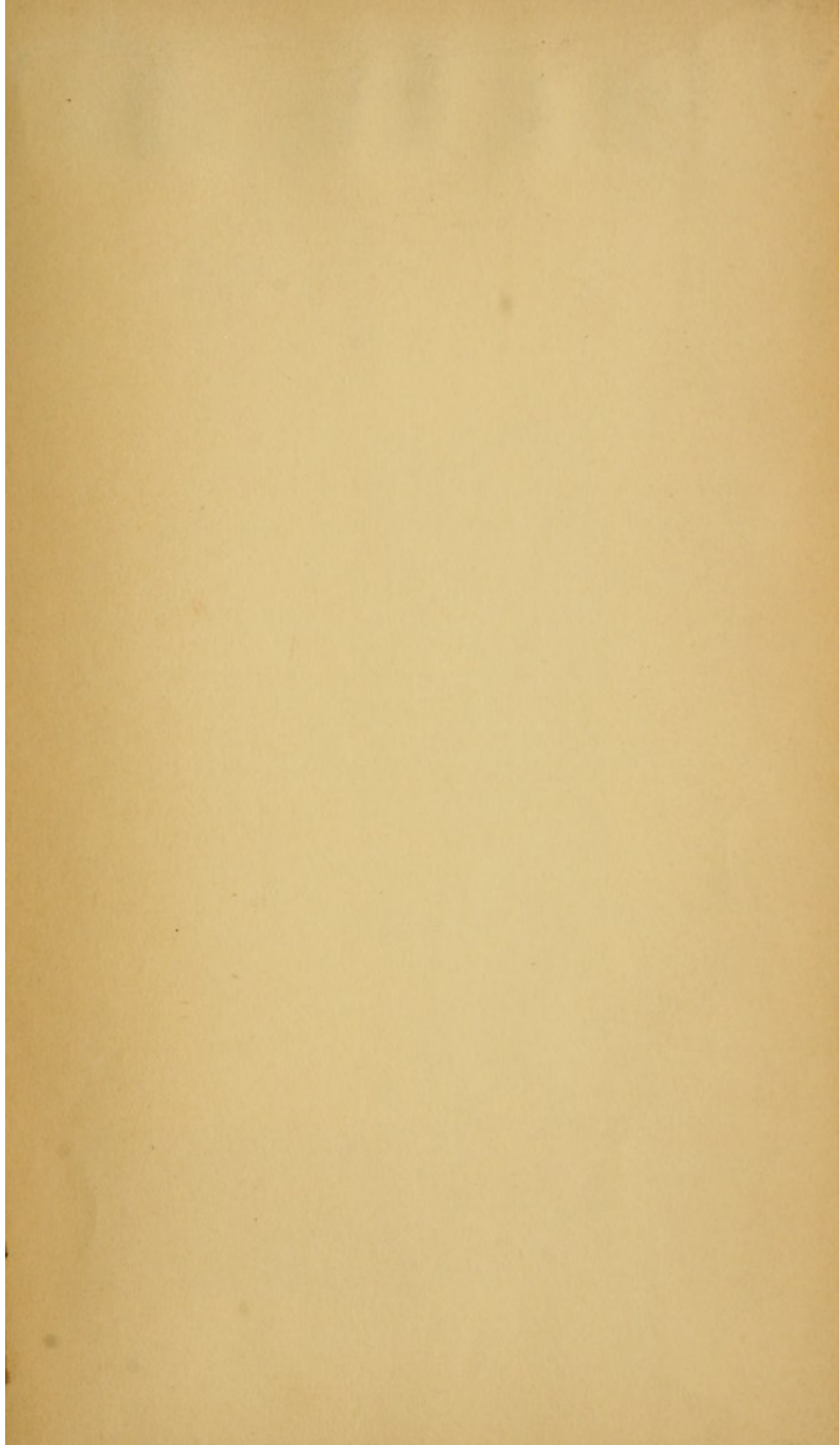




These appliances are manufactured under the immediate supervision of Dr. Miland A. Knapp, Minneapolis, Minnesota. Made of a specially prepared German Silver, accurately interchangeable, and heavily Gold Plated.









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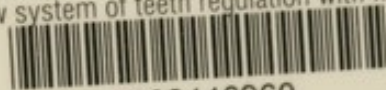
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