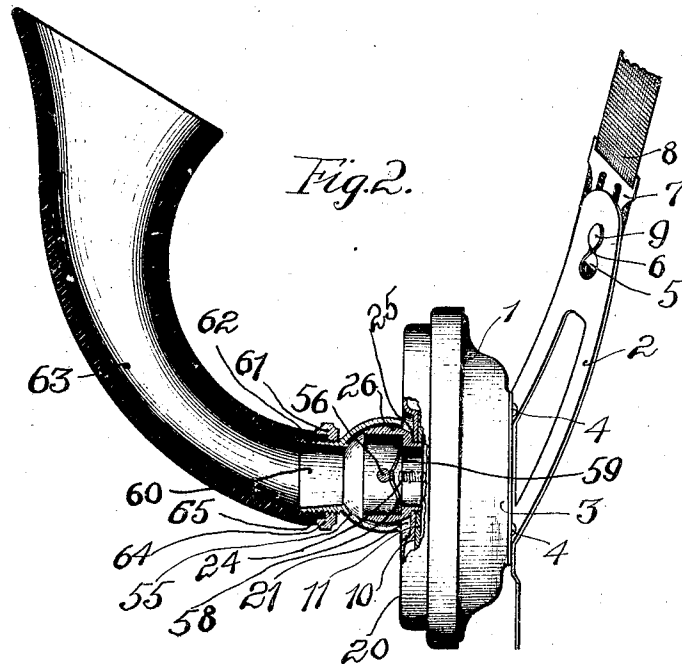
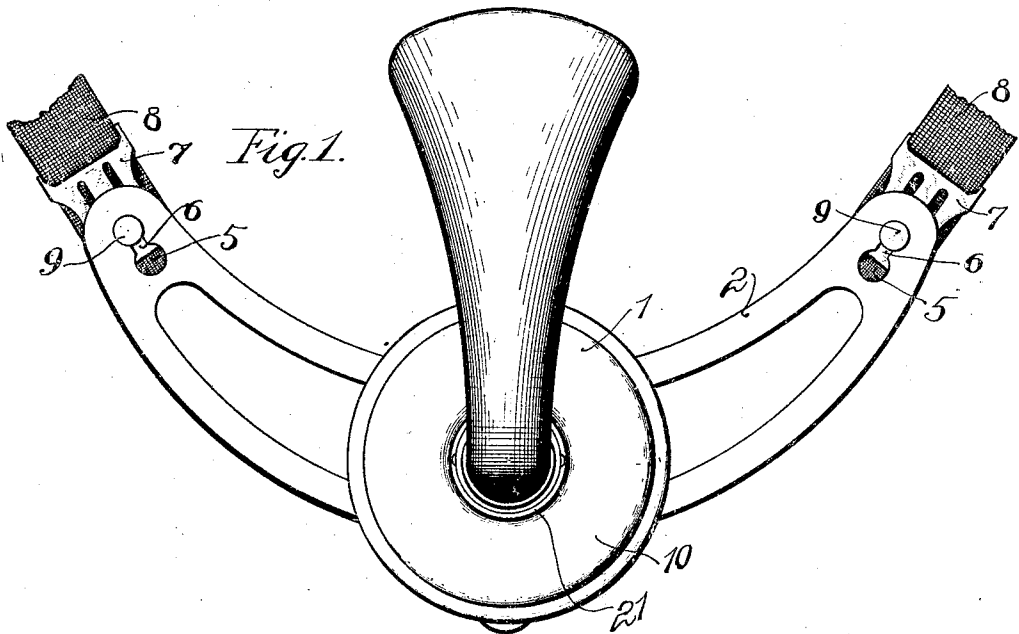


No. 853,337.

PATENTED MAY 14, 1907.

J. A. BIRSFIELD.
BREAST TRANSMITTER.
APPLICATION FILED FEB. 13, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

Arthur H. Boettcher
Charles J. Schmidt

INVENTOR

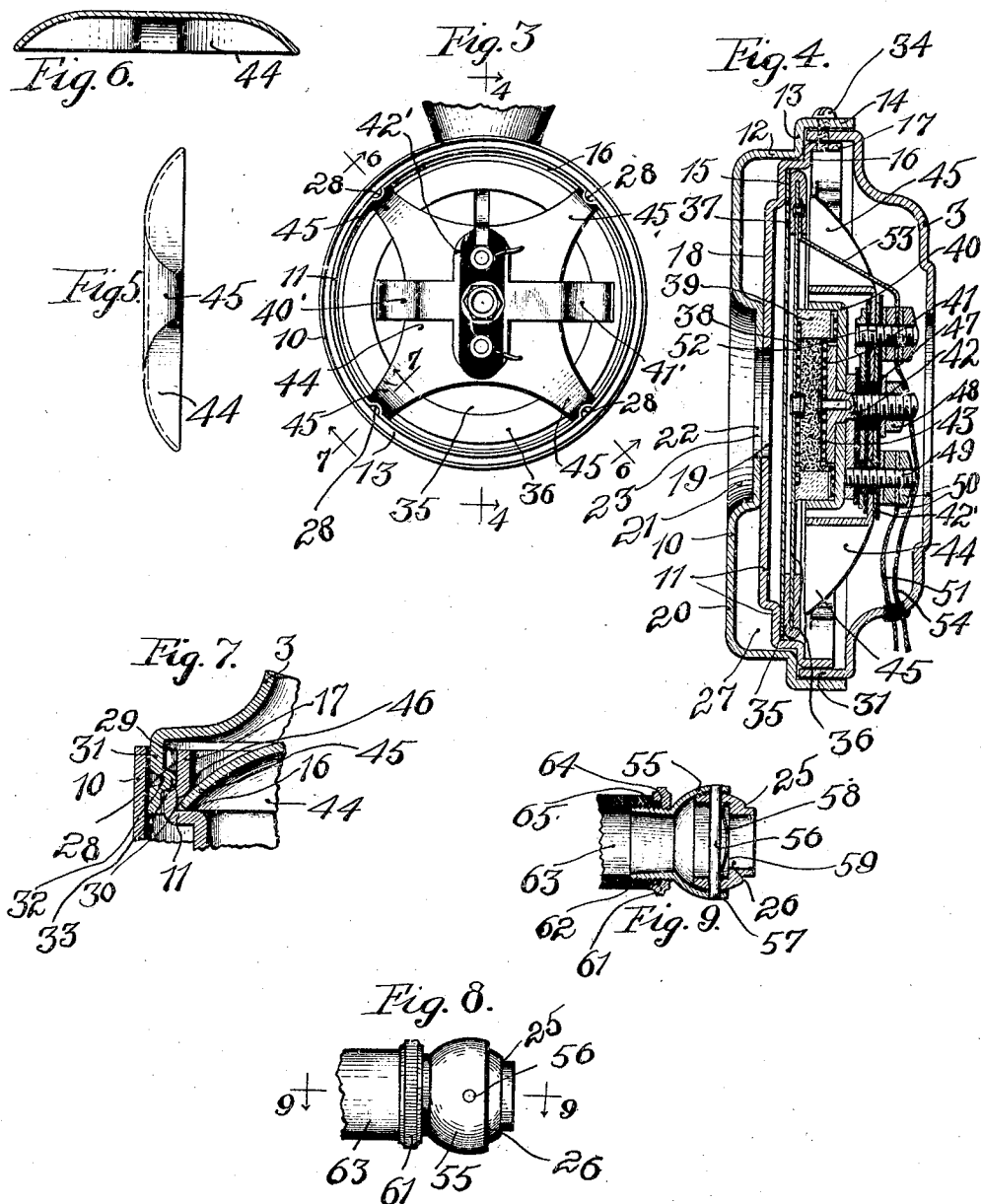
Jules A. Birsfield
By *Charles A. Brown*
ATTORNEY

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2 SHEETS—SHEET 2.



Witnesses:

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BY

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UNITED STATES PATENT OFFICE.

JULES A. BIRSFIELD, OF ROCHESTER, NEW YORK, ASSIGNOR TO STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

BREAST-TRANSMITTER.

No. 853,337.

Specification of Letters Patent.

Patented May 14, 1907.

Application filed February 13, 1905. Serial No. 245,527.

To all whom it may concern:

Be it known that I, JULES A. BIRSFIELD, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Breast-Transmitters, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to telephone transmitters and its object is improved features of construction and improved means for assembling the various parts and for adjusting them.

I will describe my invention with reference to an operator's breast plate transmitter, although my invention is adaptable to switchboard or instrument transmitters, and my invention will be best understood with reference to the accompanying drawings, in which,

Figure 1 is a front view of a transmitter secured to the breast plate, Fig. 2 is a side elevation of Fig. 1, the mouth piece and transmitter arm being shown in section, parts being also broken away from the transmitter casing, Fig. 3 is a rear view of the transmitter alone, Fig. 4 is an enlarged longitudinal sectional view taken on line 4—4 of Fig. 3, Fig. 5 is a side elevation of an improved supporting bridge, Fig. 6 is a sectional view of the supporting bridge alone, taken on line 6—6 of Fig. 3, Fig. 7 is a detached detail view taken on line 7—7 of Fig. 3, showing the adjustment of inclosing case stampings, Fig. 8 is a detached view of the transmitter arm, only part of the transmitter mouth piece being shown, and Fig. 9 is a sectional view taken on line 9—9 of Fig. 8.

Like reference characters refer to like parts throughout the various figures.

As shown in Figs. 1 and 2, the transmitter 1 is secured to the breast plate 2, which is secured to the rear wall 3 of the transmitter by rivets 4, 4'. The ends of the breast plate are provided with openings 5 and slots 6 leading thereto, and the end pieces 7 of the supporting strip 8 are each provided with a button 9 passing through the corresponding opening 5 and into the slot 6. The rear wall 3 of the transmitter is preferably of aluminium, to secure lightness, and the front wall of the trans-

mitter consists of an outer stamping 10 and an inner stamping 11. The flange 12 of the stamping 10 is shaped to offer an annular ridge 13 and a flange part 14, while the stamping 11 is bent to form an annular ledge 15, an annular shoulder 16 and a flange part 17. The front wall 18 of the stamping 11 is straight and provided with a central opening 19. The front wall 20 of the stamping 10 is bent inwardly to form a depression 21, the rear wall 22 of which has a central opening 23, registering with the opening 19, the rear wall 22 being secured to the front wall 18 of the stamping 11 by means of screws 24 which pass through both these walls into engagement with the shoulder 23 of a spherical head 26, to be further described hereafter. The shoulder 16 and ledge 13 are so adjusted that upon assembly of the stampings 10 and 11 this shoulder and ledge will engage before the walls 18 and 22 come into engagement and as the screws 24 are secured, the two stampings are sprung securely together and form between them an annular air chamber 27.

The flange part 17 of the stamping 11 is provided with a plurality of indentations 28 of such shape as to form longitudinal grooves 29 and circumferential grooves 30. The flange 31 of the rear wall or casing 3 has indentations 32 to form lugs 33 corresponding in position to the indentations in the stamping 11. Upon assembly, the lugs 33 are brought to the entrance of the longitudinal grooves 29 and upon a slight forward and rotary motion of the rear wall 3, the lugs 33 are moved into the circumferential slots 30 and the rear wall is securely held in position. To lock the several walls or stampings in position, a screw 34 passes through the flanges 14, 31 and 17.

The transmitter diaphragm 35 is provided with a peripheral rubber washer 36 and rests against the annular ledge 15 of the stamping 11, a moisture disk 37 being clamped between the diaphragm and the ledge. A front electrode 38 in the form of gauze is secured to the diaphragm and surrounded by a felt ring 39. A cup 40 surrounds the felt ring and carries the rear electrode 41 mounted on a stem 42 extending through the cup 40. The comminuted material 43 is disposed in the chamber formed by the front and rear electrodes and the felt ring.

Heretofore, it has been customary to em-

ploy a heavy bridge piece extending from one side of the transmitter frame to the other. One of the features of my invention is to dispense with a heavy bridge of this kind and in place thereof I substitute a sheet metal arch 44, best shown in Figs. 5 and 6. This sheet metal arch has four feet 45. As best shown in Fig. 7, the indentations 28 in the stamping 11 form detention ledges 46 and upon assembly the arch 44 is placed with its feet 45 at one side of the corresponding ledges 46, and upon a slight rotary motion the feet will pass under the ledges and the arch is thus firmly secured in position. The rear electrode stem 42 passes through an insulation washer 47 and is engaged by a nut 48, and securely clamped to the supporting arch. A binding screw 49 secured to the rear electrode cup 40 passes through the arch wall and is engaged by nuts 50 between which may be clamped the conductor 51. A binding screw 52 is secured to the arch wall and is engaged by a conductor 53 connected with the diaphragm and by the lead 54. A damping spring 40' rests against the diaphragm, while a damping spring 41' rests against the rubber washer 36. These damping springs are integral with the supporting body plate 42', which is clamped to the supporting arch as the screws 30 of the binding nuts are fastened and also as the nut 48 is secured. Thus in place of the heavy supporting bridge heretofore employed, I am enabled to support the transmitter parts with equal efficiency by the use of a very light and strong supporting arch.

A spherical shell 55 receives the spherical head 26, which is hollow, the spherical shell being pivoted to the head by means of a pivot pin 56 passing through the axis of the head and the shell. This pivot pin has a knurled end 57 which as the pin is driven into position engages the spherical shell wall and secures the pin therein. The necessary friction between the spherical shell and spherical head is obtained by means of a spring stamping 58, which engages the pivot pin 56 and the annular ledge 59 within the spherical head. A cylindrical shell 60 extends from the spherical shell and at its outside is threaded for receiving the locking ring 61 and the threaded end 62 of the mouth piece 63. The locking ring 61 is provided with a recess 64 at its forward end into which the reduced end 65 of the mouth piece securely fits, the mouth piece being prevented thereby from cracking as the locking ring is brought into engagement therewith. The mouth piece 63 is curved upwardly, as shown, and may be adjusted by swinging about the pivot 56. The depression 21 in the stamping 10 allows sufficient rotation of the spherical shell about the head to offer a wide range of adjustment of the mouth piece.

I thus provide a transmitter which is of very durable construction, being at the same

time light and inexpensive, the supporting parts being all shaped so they may be stamped from sheet material, the locking and securing means for the supporting parts being inherent in the various parts and formed during the operation of stamping of the parts.

As many modifications may be made without departing from the spirit of my invention, I do not wish to be limited to the exact construction as herein shown.

I claim as new and desire to secure by Letters Patent:

1. In a telephone transmitter, the combination with a rear inclosing wall, of a front inclosing wall consisting of two stampings, flanges extending from said stampings and separated to form an annular groove, and a flange extending from the rear wall for engagement in said annular groove.

2. In a telephone transmitter, the combination with a rear supporting wall, of a front supporting wall formed of two stampings, an air chamber between said stampings, a flange extending from each stamping, said flange being disposed to form an annular groove, and a flange extending from the rear wall for engagement in said groove.

3. In a telephone transmitter, the combination with a rear inclosing wall, of a front inclosing wall consisting of two stampings, an air chamber between said stampings, flanges extending from said stampings and disposed to form an annular groove, a flange extending from said rear inclosing wall for engaging in said groove, lugs extending from said rear wall flange, and indentations in one of said other flanges for receiving said lugs, whereby said front and rear inclosing walls are secured together.

4. In a telephone transmitter, the combination with a rear inclosing wall, of a front inclosing wall formed of two stampings, said stampings being in contact at their centers and at their edges to leave an air chamber between them, flanges extending from said stampings and disposed to form an annular groove, a flange extending from the rear inclosing wall for engaging in said groove, lugs extending from said rear wall flange, and a plurality of grooves in one of said other flanges for receiving said lugs, said grooves extending longitudinally and then circumferentially.

5. In a telephone transmitter, the combination with a rear supporting wall, of a front wall composed of an outer and inner stamping, the front walls of said stampings being separated to leave an air chamber, a flange extending rearwardly from each stamping, said flanges being disposed to form an annular groove, a flange extending from the rear wall for engaging in said groove, lugs pressed from the rear wall flange, and indentations pressed in the flange of the inner stamping

for receiving said lugs, said indentations being longitudinal and then circumferential.

6. In a telephone transmitter, the combination with a cup shaped rear inclosing wall, of a front inclosing wall consisting of cup shaped outer and inner walls, the flange of each stamping being shaped to form a ledge and an end flange, only the center portion of the stampings and the ledges thereof being in engagement to leave an annular air chamber between the stampings, the end flanges of the stampings being disposed to form an annular groove, a flange extending from the rear inclosing wall for engaging in said groove, lugs pressed inwardly from the rear wall flange, and indentations pressed in the end flange of the inner stamping to form grooves for the reception of said lugs, said grooves extending longitudinally and then circumferentially for short distances.

7. In a telephone transmitter, the combination with a rear inclosing wall stamped integrally from sheet material, of a front inclosing wall formed of outer and inner cup shaped stampings, the cylindrical sides of said stampings being pressed to form annular ledges and end flanges, said stampings being adapted for engagement only at their central portions and at said annular ledges, whereby an annular air chamber is formed between the stampings, means for securing the stampings together at the central part thereof, said stampings when brought into engagement at their ledges being separated a distance at their central parts, whereby upon securing said central parts together said stampings will be sprung together, an annular groove formed between the end flanges of said stamping, a flange extending from the rear inclosing wall for engaging in said groove, lugs pressed from said rear wall flange, and indentations pressed in the inner stamping end flange to form grooves for receiving said lugs, said grooves extending longitudinally a distance and then circumferentially a distance, said lugs when disposed in said circumferential part of the grooves serving to lock the inclosing walls of the transmitter securely together.

8. In a telephone transmitter, the combination with a rear inclosing wall, of a front inclosing wall, a flange extending rearwardly from the front inclosing wall, provided with indentations to form grooves in the outer surface of the flange, a flange extending from the rear inclosing wall provided with lugs for engaging in said grooves, an annular ledge formed in said front inclosing wall, a sheet metal supporting arch engaging said annular ledge, notches formed between said ledges and the indentations in the flange of the front wall, and feet extending from said supporting arch for engaging in said notches, whereby said arch is secured to said front inclosing wall.

9. In a telephone transmitter, the combination with a rear inclosing wall, of a front inclosing wall, said walls being stamped integrally from sheet material, a flange extending from the front supporting wall, indentations pressed in said flange to leave grooves in the outer surface thereof, said grooves running longitudinally and then circumferentially short distances, a flange extending from the rear inclosing wall provided with lugs for engaging in said grooves to secure the front and rear inclosing walls securely together, an annular ledge extending inwardly from the foot of the front inclosing wall flange, said ledge forming notches with the indentations in the front wall flange, and a supporting frame for transmitter parts, said supporting frame having feet for engaging in said slots, whereby said supporting frame is secured to the front inclosing wall.

10. In a telephone transmitter, the combination with a rear inclosing wall, of a front inclosing wall, said walls being stamped integrally from sheet material, a flange extending rearwardly from the front wall, provided with indentations for forming grooves in the outer surface of the front wall flange, a flange extending from the rear wall provided with lugs for engaging in said grooves, whereby the inclosing walls are secured together, an annular ledge extending inwardly from the foot of the front wall flange, said ledge with the indentations in the front wall flange forming slots, an arch stamped integrally from sheet material for supporting transmitter parts, and four feet extending from said arch frame for engaging in said slots upon a slight turning motion of the arch frame, whereby said arch frame is securely locked to the front inclosing wall.

11. In a telephone transmitter, the combination with a rear inclosing wall, of a front inclosing wall, said walls being stamped integrally from sheet material, a flange extending rearwardly from the front inclosing wall, indentations pressed in said flange for forming grooves in the outer side of the flange, said grooves being longitudinal and then circumferential, a flange extending forwardly from the rear inclosing wall, lugs pressed in said flange for engaging said grooves to lock the inclosing walls together, an annular ledge extending inwardly from the base of the front wall flange, said ledge with the indentations in said front wall flange forming dependent slots, an arch frame for supporting transmitter parts, and arms for said arch, the ends of said arms being adapted for insertion in said slots to lock the arch to the front inclosing wall.

12. In a telephone transmitter, the combination with a front inclosing wall, of a flange extending rearwardly from said wall, indentations pressed in said flange to form lugs at the interior thereof, an annular ledge ex-

tending inwardly from the base of said flange, said ledge with said indentations forming slots, a frame for supporting transmitter parts, and feet extending from said frame for engagement in said slots.

13. In a telephone transmitter, the combination with a front supporting wall stamped integrally from sheet material, of a flange extending rearwardly from said wall, indentations pressed in said flange to form detent lugs at the interior thereof, an annular ledge extending inwardly from the base of said flange and forming slots in conjunction with said detent lugs, a supporting arch stamped integrally from sheet material for supporting transmitter parts, said arch consisting of a body portion, and arms extending from said body portion for engagement at their ends in said slots, whereby said arch may be securely locked to the front inclosing wall.

14. In a telephone transmitter, the combination with a front inclosing wall stamped integrally from sheet material, a flange extending rearwardly from said wall, indentations pressed in said flange for forming detent lugs at the interior thereof, an annular ledge extending inwardly from the base of said flange and forming slots with said detent lugs, a supporting frame in the shape of an arch stamped integrally from sheet material, arms extending from said supporting frame and adapted for engagement at their ends in said slots, whereby said frame is securely locked to the supporting wall, a diaphragm secured to said front wall in front of the supporting frame, an electrode chamber supported from said supporting frame and associated with the diaphragm, and damping springs associated with the diaphragm, said damping springs terminating in a body portion and being stamped integrally therewith, said body portion being clamped to said supporting frame.

15. In a telephone transmitter, the combination with a front supporting wall, of a hollow spherical head secured thereto, a spherical shell for receiving said head, a pivot pin extending through the axes of said shell and said head, and a transmitter mouth piece secured to said shell.

16. In a telephone transmitter, the combination with a front supporting wall, of a hollow spherical head secured thereto, a spherical shell for receiving said head, a pivot pin passing through the axes of said shell and said head and secured in said shell, friction spring means engaging said pin and said head, a hollow extension from said cylindrical head, a transmitter mouth piece secured to said extension, and a locking ring for locking said mouth piece to said extension.

17. In a telephone transmitter, the combination with a rear inclosing wall, of a front inclosing wall consisting of an outer and an inner stamping, central openings in said

stampings, a spherical head extending into said openings, a mouth piece supported by said spherical head, said stampings being secured together and to said head, and means for locking said rear inclosing wall to said front inclosing wall.

18. In a telephone transmitter, the combination with a rear inclosing wall, of a front inclosing wall consisting of an outer and an inner sheet metal stamping, a central opening through both stampings, a depression in the outer stamping for causing an air chamber to exist between said stampings upon assembly thereof, a transmitter supporting arm extending through said openings, screws for securing said stampings together and to said arm, flanges extending rearwardly from said stampings disposed to form an annular groove for receiving the edge of the rear inclosing wall, and means for locking said rear wall within said groove.

19. In a telephone transmitter, the combination with a rear inclosing wall, of a front inclosing wall consisting of an outer and an inner stamping of sheet metal, an annular flange and an annular shoulder for each stamping, a central depression in said outer stamping, the walls of said depression extending rearwardly for engagement with the rear stamping, a central opening through said stampings, a transmitter supporting arm extending into said openings, means upon assembly of said stampings for causing the annular shoulders thereof to engage before engagement of the walls of the depression with the rear stamping, and screws passing through said stampings and engaging said transmitter arm tightening of said screws causing said stampings to be sprung together and to be secured to said transmitter arm.

20. In a telephone transmitter, the combination with a front inclosing wall composed of two plates separated about their edges to form an annular groove, of a rear inclosing wall having its edge engaging in said groove.

21. In a telephone transmitter, the combination with a front inclosing wall composed of two plates separated about their edges to form an annular groove, of a rear inclosing wall having its edge engaging in said groove, and locking means formed of the material of the walls for locking the rear inclosing wall in said groove.

22. In a telephone transmitter, the combination with a cup-shaped supporting frame, an annular interior ledge about the edge of said frame, inwardly extending lugs punched from the material of the frame above said ledge to form grooves, and a sheet metal supporting frame locked at its edge in said grooves.

23. In a telephone transmitter, the combination with a cup-shaped supporting frame, an annular interior ledge about the edge of said frame, inwardly extending lugs punched

from the material of the frame above said ledge to form grooves, and a cross-shaped sheet metal supporting frame, the ends of the arms of said frame engaging in said grooves to be locked to the supporting frame.

24. In a transmitter, the combination with a front cup-shaped inclosing casing, an annular ledge at the interior of said casing a distance from the edge thereof, said casing being punched about the edge at various places to leave indentations at the outside thereof, lugs at the interior thereof above the ledge, an arched sheet metal frame engaging at its edge between said ledge and said lugs to be locked to the inclosing casing, and a cup-shaped rear inclosing casing engaging at its edge about the edge of the front inclosing casing, said rear inclosing casing being punched along its edge to form lugs at the interior thereof to register with the indentations about the edge of the front inclosing casing.

25. In a transmitter, the combination with a front cup-shaped inclosing casing, an annular ledge at the interior of said casing a distance from the edge thereof, said casing being punched about the edge at various places to leave indentations at the outside thereof, lugs at the interior thereof above the ledge, an arched sheet metal frame engaging at its edge between said ledge and said lugs to be locked to the inclosing casing, and a cup-shaped rear inclosing casing engaging at its

edge about the edge of the front inclosing casing, said rear inclosing casing being punched along its edge to form lugs at the interior thereof to register with the indentations about the edge of the front inclosing casing; said indentations about the edge of the front inclosing casing extending longitudinally and circumferentially, the lugs of the rear inclosing casing passing through the longitudinal part and finally engaging in the circumferential part of the indentations to lock the casings together.

26. In a telephone transmitter, the combination with an inclosing casing containing the transmitter and operative parts, of a mouth piece for conveying voice waves to the interior of the casing, a ball and socket joint having the ball member secured to the casing and the socket member secured to the mouth piece and a pivot member passing through the ball and socket joint whereby said mouth piece may be moved to assume various angles with respect to the casing, and means for locking the joint to hold the mouth piece in any adjusted position.

In witness whereof, I hereunto subscribe my name this 9th day of February A. D., 1905.

JULES A. BIRSFIELD.

Witnesses:

CHARLES J. SCHMIDT,
LEONARD W. NOVANDER.