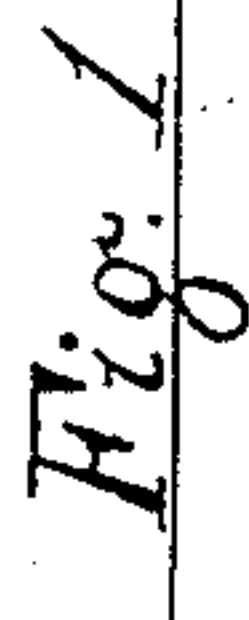
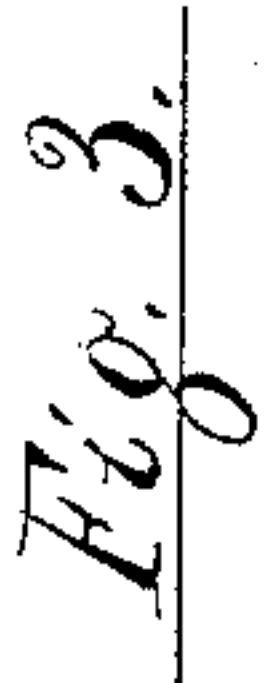


3 Sheets—Sheet 1.

HAT MACHINE SCALE.

Patented Apr. 7, 1885.



Inventor.

George Yule, per
Thos. S. Crane, Atty.

(No Model.)

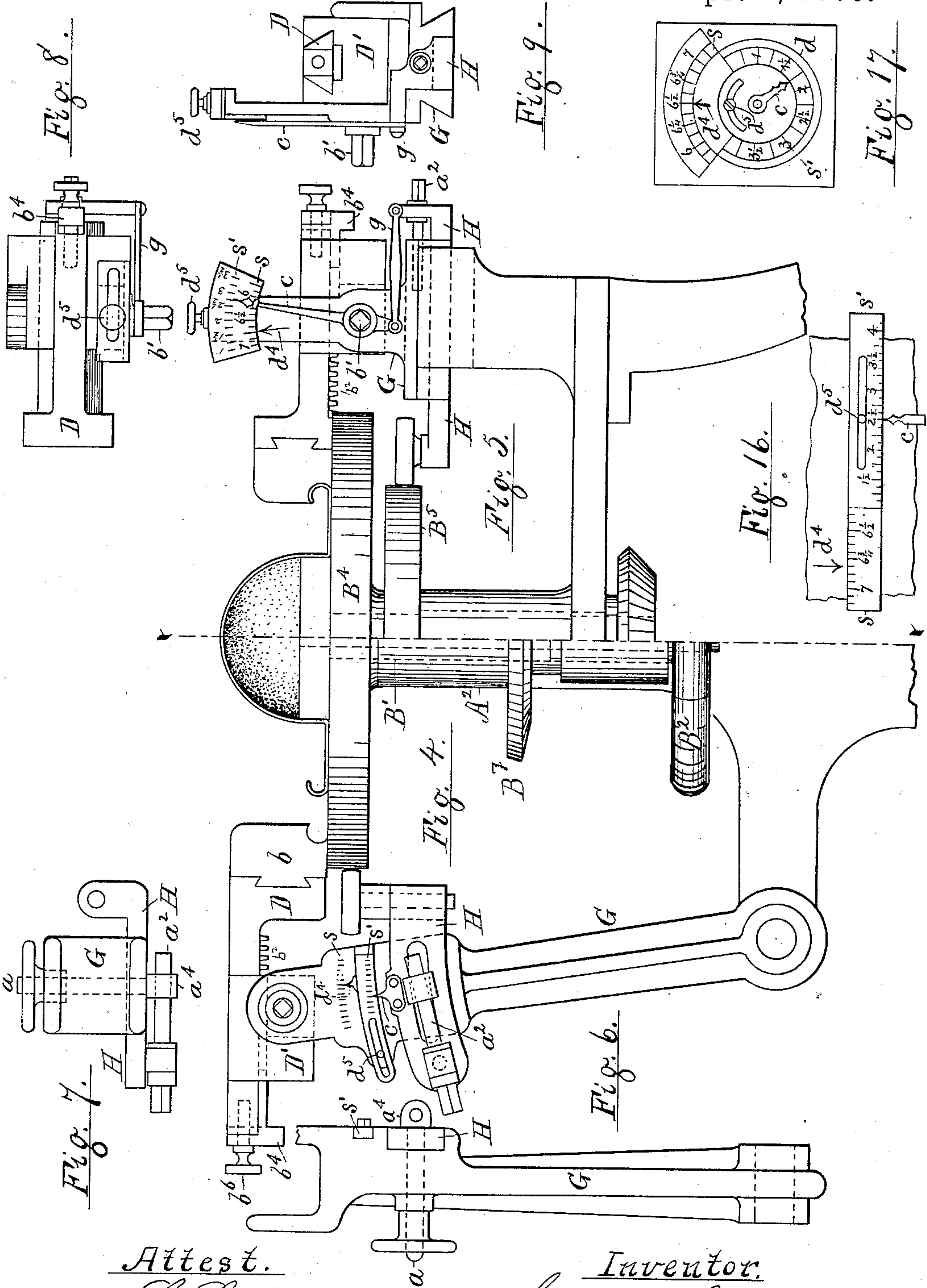
3 Sheets—Sheet 2.

G. YULE.

HAT MACHINE SCALE.

No. 315,208.

Patented Apr. 7, 1885.



Attest.

L. Lee
Henry J. Theberath

Inventor.

George Yule, for
Thos. S. Crane, Atty.

(No Model.)

3 Sheets—Sheet 3.

G. YULE.

HAT MACHINE SCALE.

No. 315,208.

Patented Apr. 7, 1885.

Fig. 10.

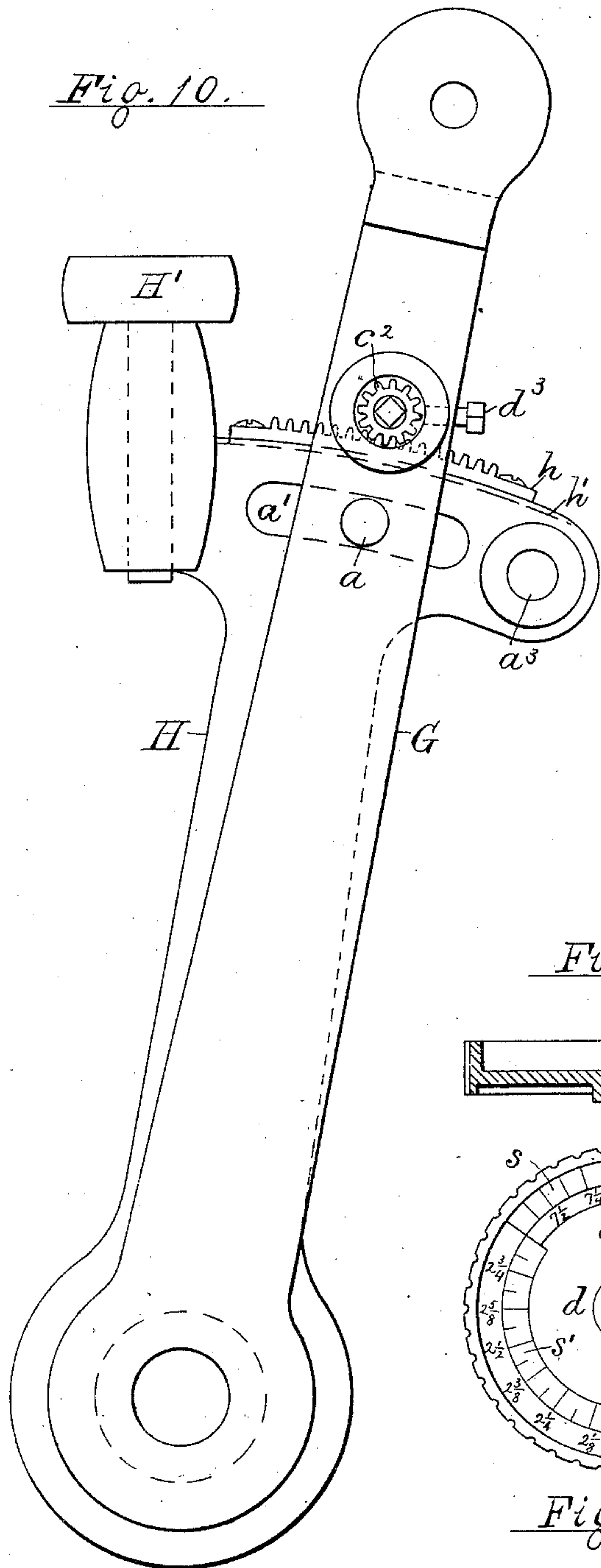


Fig. 11.

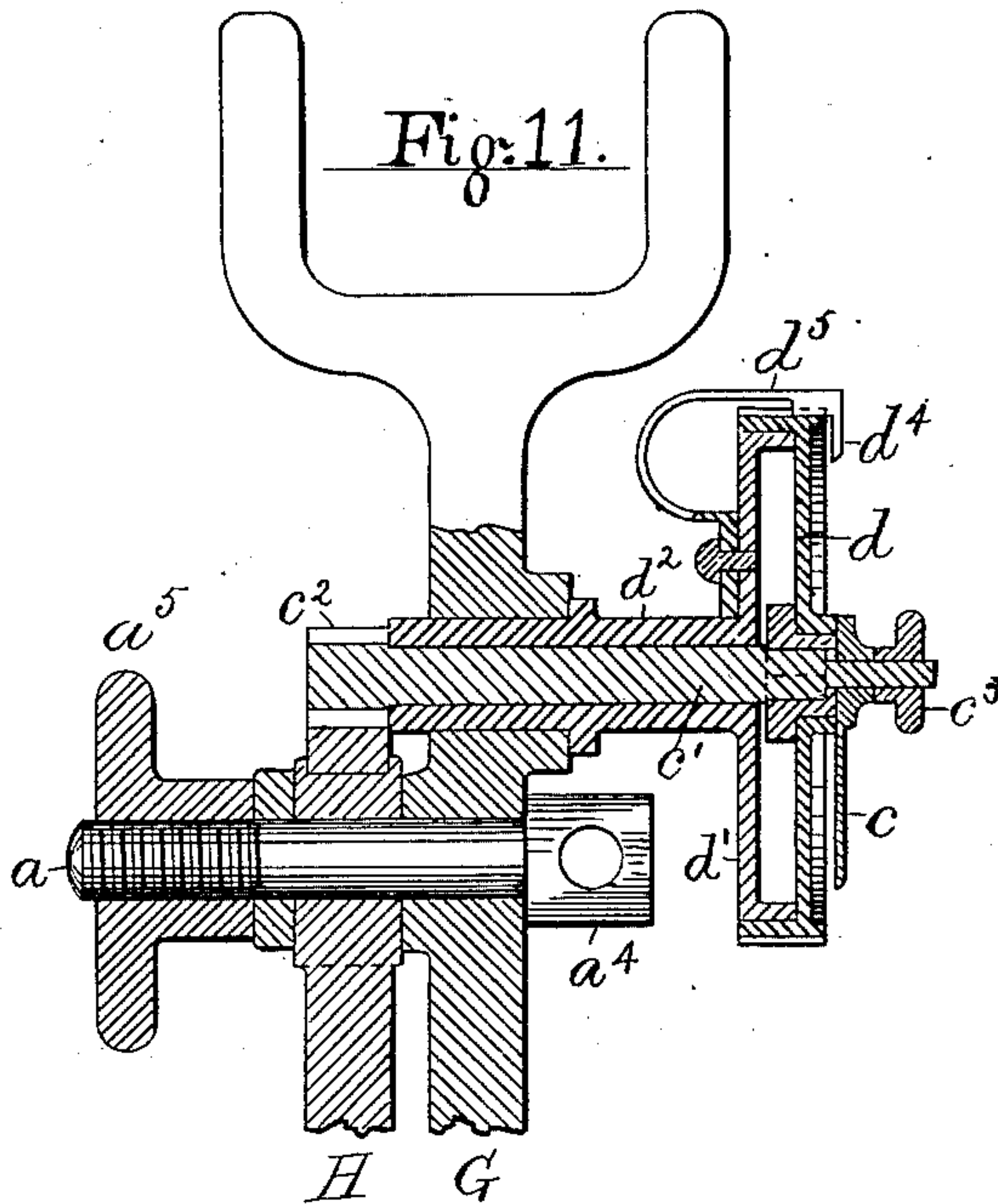


Fig. 15.

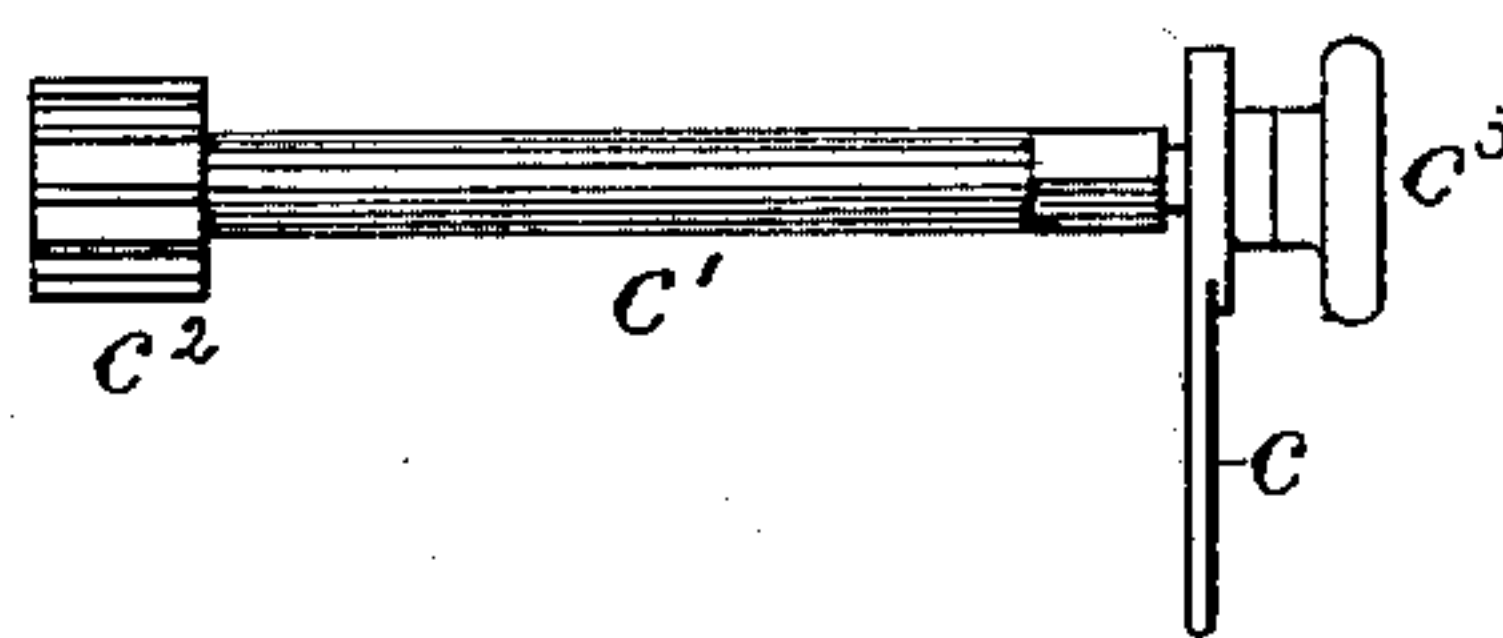


Fig. 13.

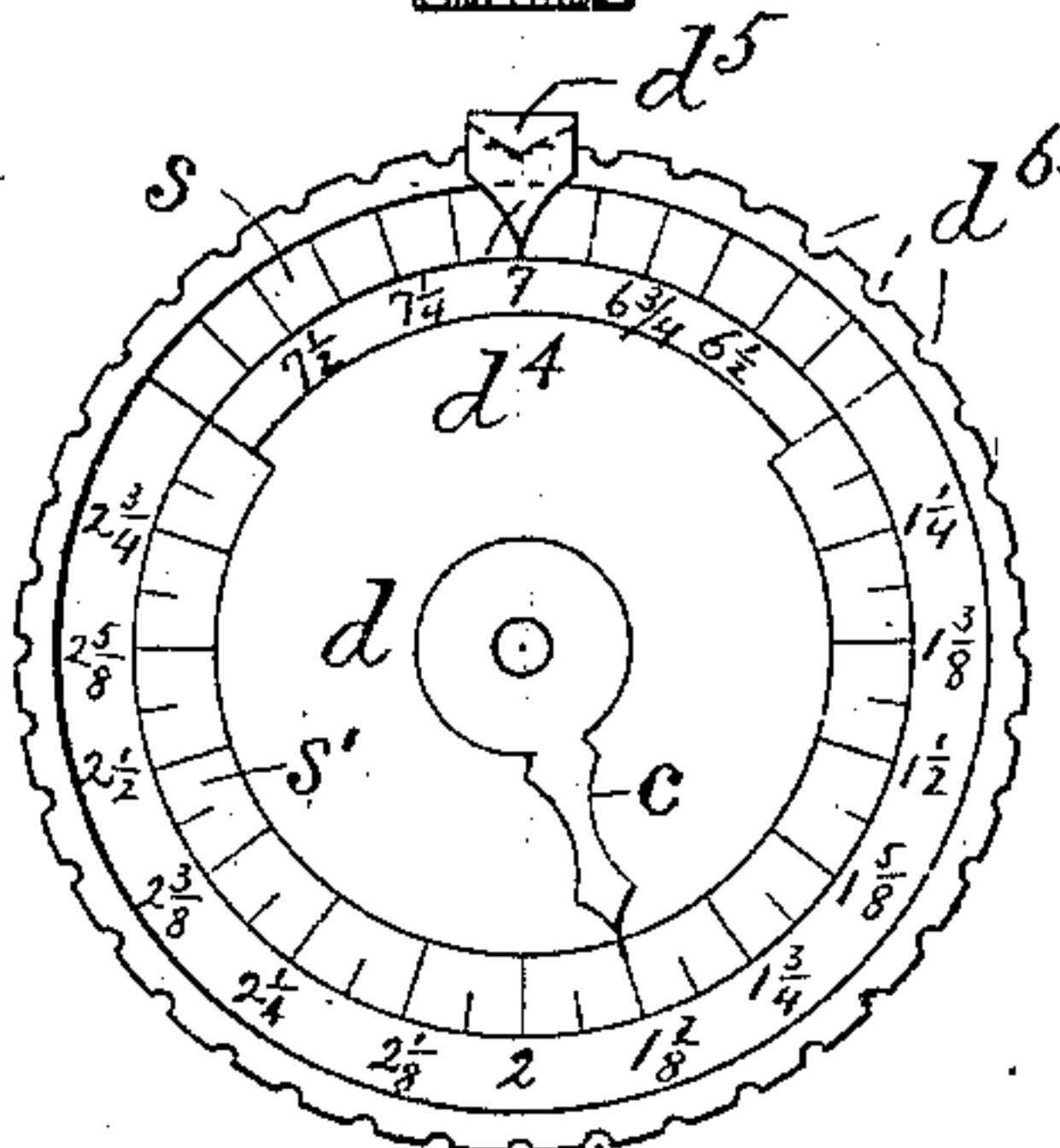


Fig. 12.

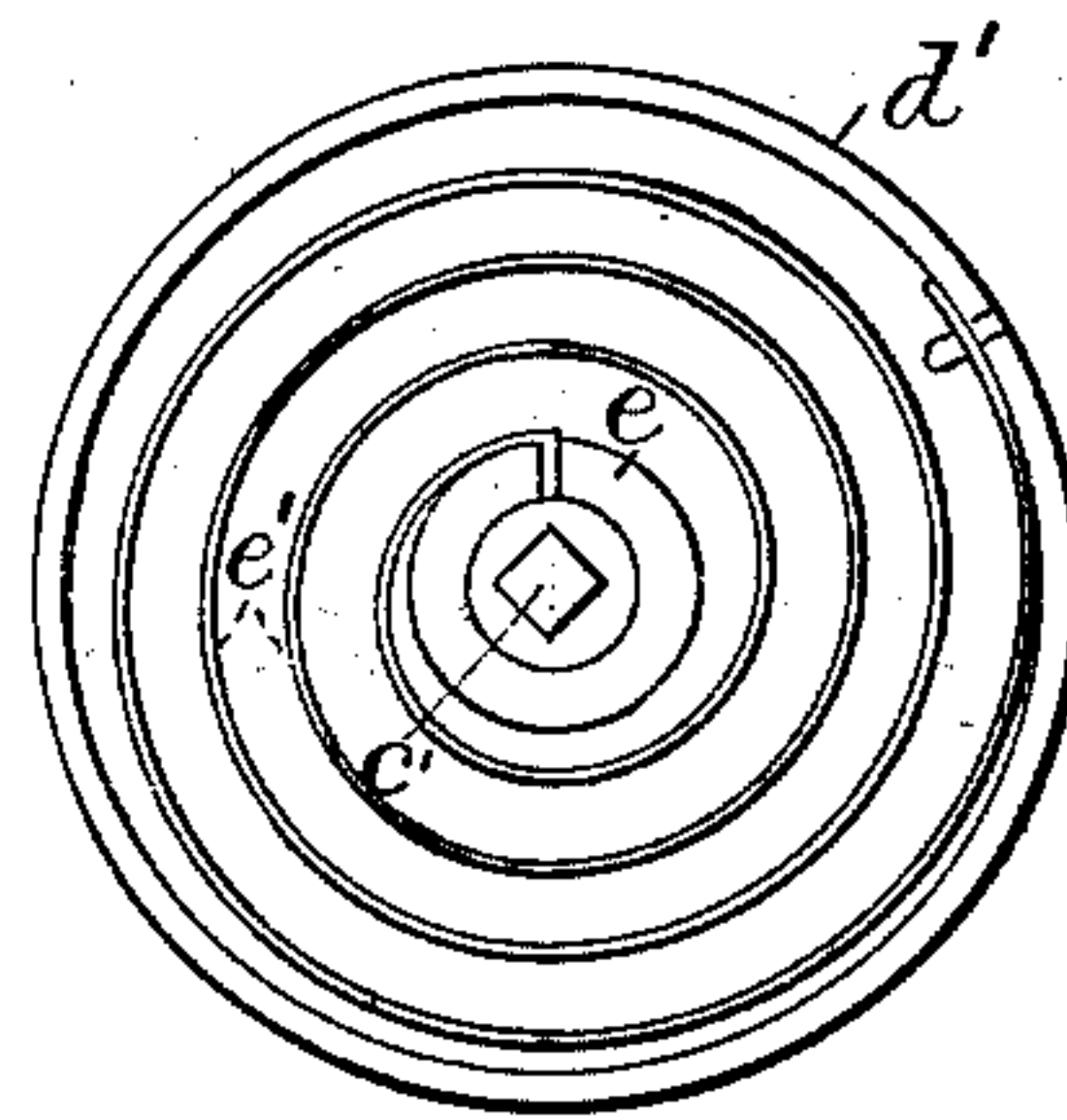


Fig. 14.

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George Yule, per
Thos. S. Crane, atty.

UNITED STATES PATENT OFFICE.

GEORGE YULE, OF NEWARK, N. J., ASSIGNOR, BY MESNE ASSIGNMENTS, TO
THE HAT CURLING MACHINE COMPANY, OF DANBURY, CONN.

HAT-MACHINE SCALE.

SPECIFICATION forming part of Letters Patent No. 315,203, dated April 7, 1885.

Application filed September 4, 1884. (No model.)

To all whom it may concern

Be it known that I, GEORGE YULE, a citizen of the United States, residing in the city of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Hat-Machine Scales, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 This invention is designed as an attachment to machines in which a tool is sustained and operated in contact with the brim of a hat, and is designed to indicate the position of the tool for operating upon a hat-brim of specific
15 width attached to a crown of specific size; and it therefore embodies two series of graduations, one of which is marked to indicate a series of crown-measures and the other to indicate a series of brim-measures, the brim-
20 scale being adjusted in reference to the crown-scale, and the tool set with reference to the brim-scale after the latter has been thus adjusted.

To comprehend the character and operation
25 of this invention, it should be understood that the measure of the brim expresses the width of the same at only one side of the hat, and that the entire diameter of the brim is altered twice the amount that may be added to
30 or subtracted from the brim at any point, while the measure of the crown expresses the entire diameter, and any change in that diameter requires an adjustment of the tool but one-half the amount of such change, to
35 maintain the tool at the same distance from the side of the crown. If a tool be required to operate upon a lot of hats of various crown sizes, and to trim, or curl, or otherwise operate upon a brim of uniform width upon all
40 of such hats, it is obvious that if the tool be correctly set to suit such a brim—say two-inch upon a seven-inch crown—the tool would only require to be moved or drawn away from the crown one-eighth of an inch for each quarter that the hats might differ in size, and would
45 thus stand one-eighth of an inch farther from the center of the hat, if the size were changed from seven inches to seven and one-quarter inches of crown measure. Such a movement
50 of the tool would, however, only be sufficient

to operate upon a two and one-eighth inch brim had the size of the crown been retained at seven inches, so that it is plain how an increase of a quarter-inch in the crown size corresponds to an increase of only one-eighth
55 inch in the brim size, and in a similar ratio for other sizes and for any increase or diminution thereof.

Machines have already been devised for automatically shifting the tool outward or inward
60 when the hat-clamp was expanded or contracted by the application of a larger or a smaller hat thereto, the device consisting in a positive connection or tie formed between the tool-carrier and the moving parts of the hat-
65 clamp; but my invention requires no connection of any kind with the hat-clamp, as it is not intended to operate automatically, but to be set by the operator to suit the size of each hat applied to the tools, and the automatic
70 device referred to could not employ my invention to any advantage, as my scale would only serve to indicate changes effected by the machine itself, instead of serving, as intended
75 by me, to guide the workman in effecting personally the necessary changes in the setting of the tool.

The invention is represented herein as applied to tools mounted upon different kinds of
80 supports, all of which, however, are provided with means for imparting a definite vibration to such support and tool and with means for adjusting the tool upon the support, so as to
85 vibrate at a suitable distance from the hat-crown for operating upon a brim of specific width. I have termed such support herein a "vibrator," the agent for transmitting the motion from a cam to a vibrator a "shoe," and the device by which the tool is fixed up-
90 on the support a "tool-carrier."

Whatever device may be used for holding and rotating the hat is termed herein a "rotating hat-clamp," and the pointer used in connection with the scale an "index" or
95 "hand," and I have used the terms "graduations" and "divisions" for the successive marks formed upon the crown and brim scales.

The improvements consist, primarily, in the combination, with a movable brim-scale, of a crown-scale to which it may be adjusted; and
100

it also includes means for exaggerating the movement of the index, and the use of an enlarged scale therewith, and in the combination, with the scales described herein, of various means for adjusting and securing the tool and the vibrating mechanism in their required positions. A modification of the invention also includes means for rotating the index in combination with a circular dial. The invention will be understood by reference to the annexed drawings, in which—

Figure 1 is a front elevation of a machine having two tool-carriers mounted upon vibrating arms at opposite sides of the hat-clamp. Fig. 2 is a rear elevation of the frame of such machine, showing a means for coupling the vibrating arms together. Fig. 3 is a plan of the frame of such machine, with all the parts removed except the vibrating arms and their coupler. Figs. 4 and 5 represent, at opposite sides of a central line, $x\ x$, machines constructed in one case with the tool-carrier support as a vibrating arm, and in the other case with the carrier-support as a rectilineal vibrating slide, the same exhibiting different applications and combinations of the scales. Fig. 6 is an edge view of the vibrating arm without the tool carrier and guide shown in Fig. 4. Fig. 7 is a plan of the same. Fig. 8 is a plan of the vibrator and carrier shown in Fig. 5. Fig. 9 is an end view of the same. Fig. 10 is an enlarged view of a vibrator-arm and means for rotating a dial-hand thereon. Fig. 11 is a section of such arm with the dial, the hand, and its rotating mechanism. Fig. 12 is a front view of the dial and hand. Fig. 13 is a transverse section of such dial. Fig. 14 is a view of the dial-box with the inclosed spring and disk attached to the spindle; and Fig. 15 is a detached view of the hand and its rotating spindle and pinion. Fig. 16 shows the brim and scale divisions arranged consecutively upon a straight bar; and Fig. 17 shows a dial provided with brim-measures only, and adjustable to a stationary crown-scale.

A machine of the form shown in Fig. 1 has been made the subject of a separate patent application, No. 142,205, in which its constructive features are fully described, and certain of its parts are therefore merely referred to herein, the same reference-letters being used as in said application, as follows:

A is the pedestal or frame, provided at the top with a bearing, A^2 , for the spindle B^1 , carrying the hat-clamp B and hat-plate B^4 . B^2 represents a hand-wheel for actuating the clamp to clamp the hat. A bevel-gear, B^7 , upon the spindle B^1 , (shown only in Figs. 1 and 4,) indicates the means for rotating the hat-clamp B; but as such means forms no part of my present invention I have not shown the driving-shaft for transmitting the motion to such bevel-gear, and have only shown, in Fig. 3, two bearings, A^3 and A^4 , in which such driving-shaft would be supported, as fully set forth in a co-pending application, No. 142,206. Curling-tools b are represented as resting upon

the brim-plate B^4 , being held in carriers D, which latter are movable to and from the hat-clamp in guides D' , which are pivoted to holders G, actuated by the vibrator H. The pivot for the guide is formed as a shaft, b^1 , provided with a pinion fitted to a rack, b^2 , upon the lower side of the movable carrier D; and an adjustable stop, b^4 , is shown secured to the rear end of the carrier by a screw, b^6 . By means of the screw the stop may be set in contact with the guide when the tool is in its operative position, so that the tool may be retracted from the hat-brim for removing the hat, and again restored to the same position. A breaker, f , is shown hinged to the top of each guide D' in Fig. 1, the breaker at the right being shown in its operative position, and the one at the left turned up, as when removing the hat. In Fig. 4 the tool is shown retracted from a finished hat-curl, and the stop b^4 appears distant from the rear end of the guide the same amount as the iron is retracted. A crank, b^3 , is shown in Fig. 1 applied to the pivotal shafts b^1 , for turning the pinion thereon to retract the carrier, and the shafts are shown provided with squares in Figs. 4, 5, 8, and 9 for the removal of the crank, if desired.

The simplest form of my invention is shown in Fig. 16, the figure consisting, merely, in a diagram showing a brim-scale and crown scale combined in one straight bar, the graduations for the brim-scale being shown at the left-hand end of the bar at s' , and those of the crown-scale adjacent thereto at s . The crown-scale divisions are set opposite to a stationary pointer, d^1 ; and c represents a movable index attached to or actuated by the vibrator, so that the latter may be adjusted with reference to the brim-scale after the latter has been adjusted by shifting the crown-scale until the division opposite the pointer d^1 corresponds to the crown size of the hat operated upon. When the parts were once adjusted to correspond with the tool itself, then with the construction shown in this figure the scales would have to be moved to the left to set the tools to operate on a hat of larger crown, and to set the vibrator to actuate the tools upon a brim of the same width the index would also have to be moved to the left by the setting of the vibrator, and such movement of the index and vibrator would then represent the moving of the tools outward just the amount that the crown had been increased on one side. An adjustment of the tools one-eighth of an inch farther from the hat-clamp would obviously be required to correspond to an increase of the same amount in the width of the brim only; but such movement would equally correspond to an increase of one-eighth inch on each side of the crown, and would therefore represent an increase of one-fourth inch in the entire diameter of the latter. The divisions in the brim-scale for the same variation in the setting of the tool are therefore made twice as great as those in the crown-scale, and a movement of the shoe

which shifts the index one division on the brim-scale would indicate that the tool was correctly set for a brim one-eighth inch larger all around, or for operating on a brim of the same width on a crown one-fourth inch larger.

In Fig. 4 the brim-scale s' , as also in Fig. 17, is provided with a pointer fitted to a crown-scale, s , affixed to a holder-arm, G , and the vibrator or shoe, formed as a slide movable across the arm, is provided with the index c , to use with the brim-scale when the latter is first adjusted by reference to scale s .

In Fig. 5 the movements of the index affixed to a rectilinear holder, G , are exaggerated by pivoting the index-arm at a point nearer one end than the other, and linking the short end of the arm to the vibrator H , as by rod g . The scale is provided with both sets of divisions, and is adjusted to a crown-scale pointer, d^4 , (fixed on the holder,) by an adjusting clamp-screw, d^5 , and the point of the index, when moved by the link g , is moved much farther than the vibrator by the proportionate distance of its two ends from the pivot b' . It is obvious, therefore, that by operating with both scales jointly the index of the brim-scale may operate with reference to the crowns of the hats as well as to the brims. To effect this result I make one of the scales movable in relation to the other, or to a fixed pointer for the crown-scale, and then set the brim-scale, by reference to such pointer, before using the index, which is actuated by the vibrator or shoe. The vibrator-index c is also preferably made movable or adjustable in reference to the vibrator, as by a slot, or by turning on a spindle, so as to be set in correspondence with the different tools used in the same machine.

By using intermediate mechanism the vibrator may impart a rotary motion to the index c , and in such case the scales would be formed on a dial or concentric therewith.

In Fig. 17 only the brim-scale is formed on the dial d , and a pointer thereon is fitted to a stationary concentric crown-scale fixed adjacent, so as to indicate the turning of the dial required for a crown of different size. A slot in the dial permits the adjustment of the same and of its being clamped by a screw, d^5 , equivalent to the catch shown in Fig. 12, and hereinafter described. A similar slot and screw are shown in Fig. 16.

Another arrangement of the scales, both being on an adjustable or movable dial, is shown in Fig. 1, and upon a larger scale in Figs. 10 to 15, inclusive, and as the same is constructed to be used with a special form of vibrator, I will describe the construction of such vibrator and other attachments before referring to the scale more fully.

The holders shown in Fig. 1 consist in arms G , pivoted at opposite sides of the hat-clamp in bearings $E' E'$, projected from opposite sides of the pedestal A , the arms being attached to rocking shafts $E E$, which are provided with toothed segments F , meshing together at a

point midway between the shafts, as shown in Fig. 2, so that any movement imparted to one of the arms or shafts is transmitted equally to the other. A hook, W' , (shown in Figs. 2 and 3,) is attached to one of the segments and projected to the pitch-line of the teeth, at which point a rod, v , sustaining a weight, W , is suspended.

The vibrator shown in Fig. 1 is an arm, H , pivoted upon the same center as one of the rocking arms G , and is provided with a roller, H' , arranged to bear upon the edge of the hat-plate B^4 , which plate has its edge suitably shaped to act as a cam, B^5 , and to impart the desired oscillating motion.

The arms G and H , as shown in Figs. 10 and 11, may be clamped together by a bolt, a , one of the arms being furnished with a slot, a' , and the holder G being adjusted in relation to the vibrator by a setting-screw, a^2 , journaled upon the vibrator at a^3 , and fitted to a nut, a^4 , formed in the head of the bolt a . A wheel, a^5 , serves to clamp the two parts rigidly together when the holder is properly adjusted. The vibrator H has a uniform stroke produced by the cam B^5 , or by any suitable means, and the screw-connection a^2 serves to oscillate the holder G nearer to or farther from the hat-clamp for operating upon brims of different widths, while the scale, which is the subject of the present application, serves to indicate the proper adjustment of the holder to the vibrator for any prescribed brim, which scale is shown in Fig. 1 as a dial, d , fixed upon the arm or holder G , and provided with an index, c , actuated by the setting of the holder upon or in relation to the vibrator. The means for thus actuating the index is shown in Fig. 10 as a rack meshing into a pinion upon the index-spindle. The dial d is movably mounted upon a shell, d' , which is formed with a sleeve, d^2 , clamped in a socket in the arm G by a setting-screw, d^3 . The spindle c' of the index c extends through the sleeve, and is provided at its rear end with a pinion, c^2 , and the vibrator is provided with a rack, h , fitted to the teeth of the pinion, so as to rotate the same when the holder is moved by the setting-screw a^2 .

The dial shown in Fig. 12 is provided with a brim-scale, s' , having graduations marked from one and a quarter inch up to two and three-quarters, and with a crown-scale, s , marked with crown sizes. The dial is movable on the shell, and is secured in any position by a catch, d^5 , fitted to notches d^6 in its rim.

To adjust the scales in conformity to any specific tools already set to operate upon a hat and brim of given size, as seven-inch crown and two-inch brim, the dial is turned with the crown-division marked "seven inch" opposite to the fixed pointer d^4 , and the index c , which is movably fitted to the spindle, is then set to the brim-division "two inch" corresponding to the setting of the tools, and clamped to the spindle c' by the nut c^3 . If required subsequently to operate upon a brim of different width on a crown of equal size,

the operator would only have to alter the setting of the tool-carrier in relation to the vibrator by turning the adjusting-screw a^2 until the movement of the carrier had actuated the index c to the proper division on the brim-scale; but if the crown of the next hat were to be different, and the brim were to be either the same or different, the operator would first turn the crown-scale with the division expressing the altered size of the crown to the pointer d^4 , and then adjust the tool-carrier by the screw a^2 , as before, until the index c pointed to the graduation expressing the desired width of the brim, the index c being always left secured in the same position upon the arbor c' during the continued use of the tool with which it was set into agreement.

In the dial shown in Figs. 11 and 12 the index c is much longer than the radius of the pinion c^2 , and the indications on the scale are proportionately magnified.

To obviate any lost motion arising in the teeth of the rack h , the spindle c' is shown (in Figs. 11 and 14) provided with a notched disk, e , in which a spiral spring, e' , is fastened, and its opposite end secured to the shell d' . The spring is adjusted so as to always press the index-hand opposite to the movement of the pinion c^2 , and the spindle is thus prevented from rattling.

Without the adjustable stops b^4 the indexes, rigidly connected to the vibrator, (as in Figs. 4 and 5,) could only be used with the same tool, or with others which fit an identical position, as the pointer d^4 , being fixed, would not indicate the correct position to set the scales for a differently shaped or proportioned tool; but with the use of a rotary arbor and an index-hand movably clamped thereon, as by the nut c^3 , the operator can readily set the scales and index to agree with any specific tools, and can thereafter readily change the vibrator to operate upon hats of various sizes by reference to the scales thus adjusted. This function of the movable index arises from the fact that the index-hand may be thus disconnected from the vibrator during the correct setting of any given tool, and the arbor allowed to assume its normal relation to such tool before the index is clamped to it in the proper relation to that division on the brim-scale which expresses the setting of the tool, the brim-scale being first adjusted with reference to the crown-scale to correspond with the crown size of the hat upon which such tool is set to operate. The adjustable stops b^4 also furnish the means of changing the position of one tool or the other, when two are used, to secure a more perfect operation of the same, or to adjust a new tool into the position of a former one. When such stops are applied to the tool-carriers, the movable index may be dispensed with, as such stop substitutes a means of adjusting the tool upon the vibrator into exact agreement with the scales and their fixed pointer d^4 . It is also plain that, in lieu of the

movable (or adjustable) index or the adjustable tool-carrier stop, the pointer d^4 may be made movable, and the index could then be rigidly connected to the vibrator. The index would then be moved by the vibrator when a given tool was correctly set, and the brim-scale would be next set with its appropriate division opposite the index, and lastly, the pointer would be set against the correct division on the crown-scale. The index would then show the width of brim operated upon whenever the crown-scale was set in agreement with the size of hat upon the clamp.

The coupling of the tools together in the manner described, and which I have generically claimed in another patent application, No. 142,206, renders a single scale or index applicable to both tools, and obviates a great deal of labor and annoyance required in setting two tools separately without such scale when hats of various sizes require to be treated with the same tools.

The different constructions for the support G (exhibited in Figs. 1, 4, and 5) show that the scale may be applied to carriers mounted in various ways and to vibrators connected therewith in any convenient manner. Thus the support in Figs. 1 and 4 is in either case a pivoted or swinging arm; but the vibrator and scale are constructed and applied differently in each case. The support G in Fig. 5 is, on the contrary, a straight slide, with the vibrator H also fitted to move straight, and is therefore suited for the application of a straight scale, like that shown in Fig. 16. The scale and pointer d^4 would then be affixed to the holder G and the index c to the vibrator H , in place of the means shown for exaggerating the movement of the index in Fig. 5.

With the dial shown in Figs. 1, 11, and 13, it will be understood that the operator is required to move the brim-scale by operating the catch or fastening d^5 whenever a hat of different crown size is to be operated upon, but that the movements of the index c are strictly automatic; and when it is properly adjusted upon its spindle are produced only by a setting of the vibrator or holder for a brim of specific width.

Either the holder or vibrator may be set in relation to the other to effect the movement of the index, and the brim-scale may be adjusted in reference to the crown-scale by means of a pointer, d^4 , attached to the brim-scale, as in Figs. 4 and 9, or by moving an attached crown-scale before a stationary pointer, as in Figs. 5, 12, and 16.

From the above description my invention will be readily distinguished from any mechanism which is intended to automatically set the tool, as it consists, solely, in a scale which is intended to be adjusted in agreement with a given hat and tool, and to guide the operator thereafter in setting the tool to operate upon hats of different size in the crown or in the brim, or in both. It also differs from any scale heretofore applied to such a machine in

having the brim and crown sizes marked directly upon the scale opposite suitable graduations.

Having thus fully set forth the nature and operation of my invention, I claim herein as follows:

1. The combination, with a vibrator and a tool-carrier adjustable thereto, of a scale marked with graduations indicating the position of a specific tool for operating upon hats of specific sizes, and an adjustable stop to set other and different tools into agreement with the same scale.

2. The combination, with a vibrator and a tool-carrier adjustable thereto, of an adjustable scale provided with graduations marked partly with the series of crown-measures and partly with the series of brim-measures, as described, a stationary index, and means for adjusting the crown-graduations thereto, and an index pointing to the brim-measures upon the scale, and actuated by the setting of the vibrator for operating upon hats having crowns of specific sizes and brims of specific widths.

3. The combination, with a vibrator and a tool-carrier adjustable thereto, of a scale marked with figures indicating the crown sizes of hats, an adjustable scale marked with figures indicating the brim sizes of hats, and means for setting or adjusting the brim-scale by reference to the crown-scale, so that the brim may be operated upon with reference to the crown of the hat, substantially as herein set forth.

4. The combination, with a vibrator and a tool-carrier adjustable thereto, of a fixed crown-scale and a movable brim-scale, the one having marks indicating crowns of specific sizes, and the other having marks indicating brims of specific widths, the brim-scale being adjustable to the other, as described, and having an index actuated by the setting of the holder for operating upon brims of specific widths.

5. The combination, with a vibrator, of a tool-carrier adjustable thereto, an enlarged scale and index to show the position of the carrier on the vibrator, and means, substantially as described, for producing the increased movement of the index upon the enlarged scale by the adjustment of the carrier.

6. The combination, with an adjustable tool to operate upon the edge of a hat-brim, of a scale constructed with a continuous series of graduations, the divisions at one end of the scale having figures for indicating crown sizes, and those at the other end of the scale being twice as great, and marked with figures indicating the brim sizes of the hats to which the tool is adjusted.

7. The combination, with a vibrator, a tool-carrier adjustable therewith, and an adjustable scale having divisions marked for both crown and brim sizes, as described, of a stationary index for the crown-divisions, and a movable

index applied to the brim-divisions, and actuated by the adjustment of the vibrator.

8. The combination, with a rotating hat-clamp, the cam rotated therewith, and a tool-carrier vibrated by an adjustable shoe fitted to such cam, of a dial indicating the measure of the hat-brim operated upon, and an index actuated by the setting of the shoe for operating upon such brim.

9. The combination, with a rotating hat-clamp, the cam rotated therewith, the rocking arm or support, and the vibrator or shoe adjustably attached thereto, of the dial, the index-hand attached to a pinion-shaft, and the rack operating to rotate the pinion when the shoe is adjusted.

10. The combination, with the movable dial, of the continuous scale having graduations for both crown and brim measures, as described, a stationary index, and means for securing the dial with any of the crown-graduations opposite such index.

11. The combination, with a tool-carrier and an adjustable shoe for vibrating the carrier, of a movable dial provided with brim and crown scales, as described, a stationary pointer, and means for securing the dial in any relation to such fixed pointer, a central arbor actuated by the setting or adjustment of the shoe, and an adjustable hand, and means for securing the same to the arbor, for a brim-scale index.

12. The combination, with two tool-carriers coupled together, as described, of a scale applied to one of such carriers, and adjusted to indicate the position of both carriers for tools adapted to operate simultaneously upon the same hat.

13. The combination, with two tool-carriers coupled together, as described, of a scale applied to one of such carriers and means for adjusting the carriers in relation to one another, so that both may operate simultaneously upon a hat whose size is marked and indicated upon said scale.

14. The combination, with two tool-carriers coupled together, as described, of a scale applied to one of such carriers and stops for setting the carriers with both tools in their operative positions.

15. The combination, with two tool-carriers coupled together, as described, of a scale applied to one of such carriers, stops for setting the carriers with both tools in their operative positions, and means for adjusting one or both of said stops in relation to the carrier, so as to bring both tools into suitable positions for operating simultaneously upon a hat whose size is indicated upon said scale.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE YULE.

Witnesses:

THOMAS E. TWEEDY,
THOS. S. CRANE.