H. B. ROBISCHUNG.

ADJUSTABLE BRAKE HEAD.

APPLICATION FILED MAY 11, 1908.

939,094.

Patented Nov. 2, 1909.

3 SHEETS—SHEET 1.

Fig. 1.

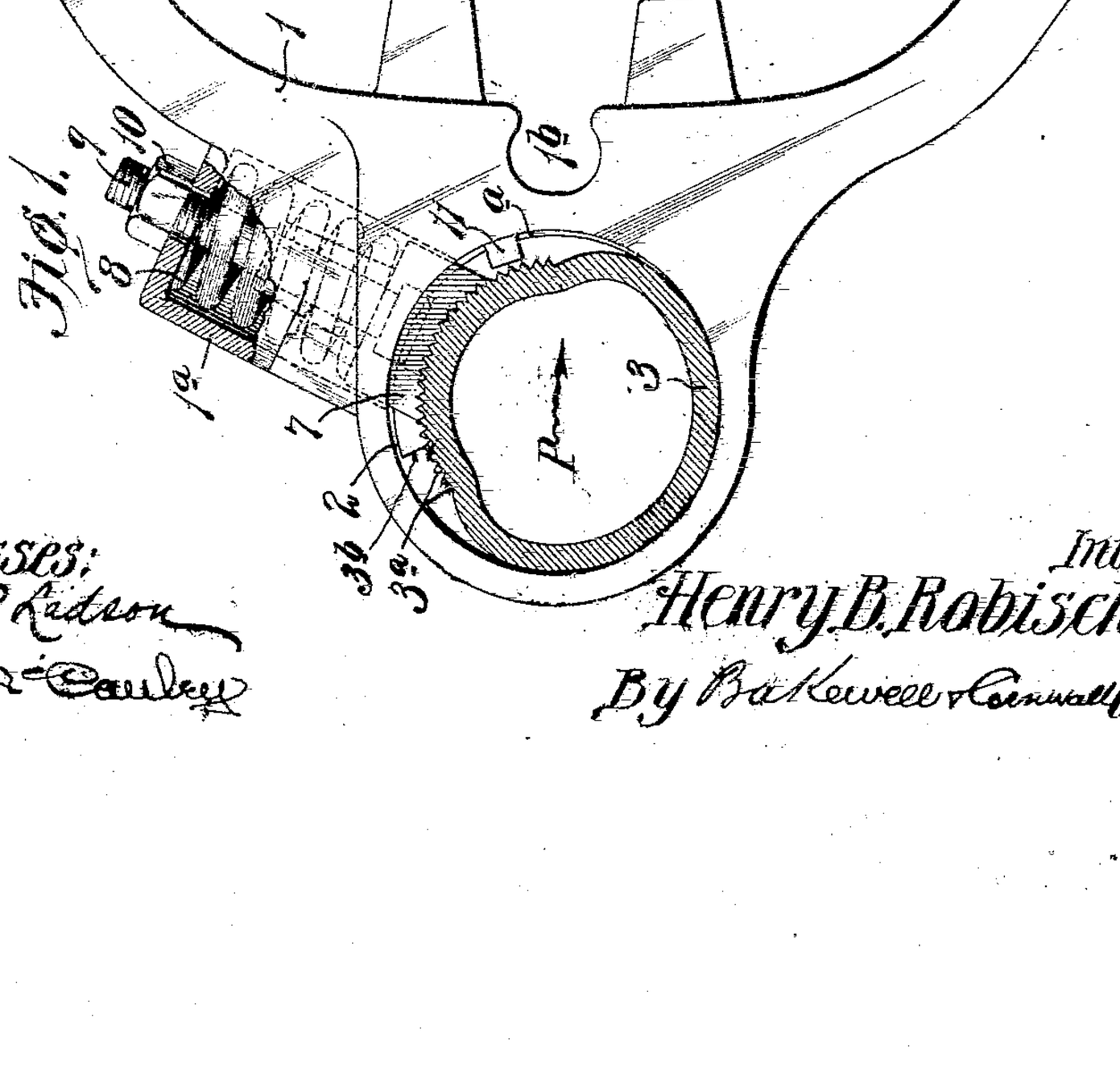


Fig. 2.

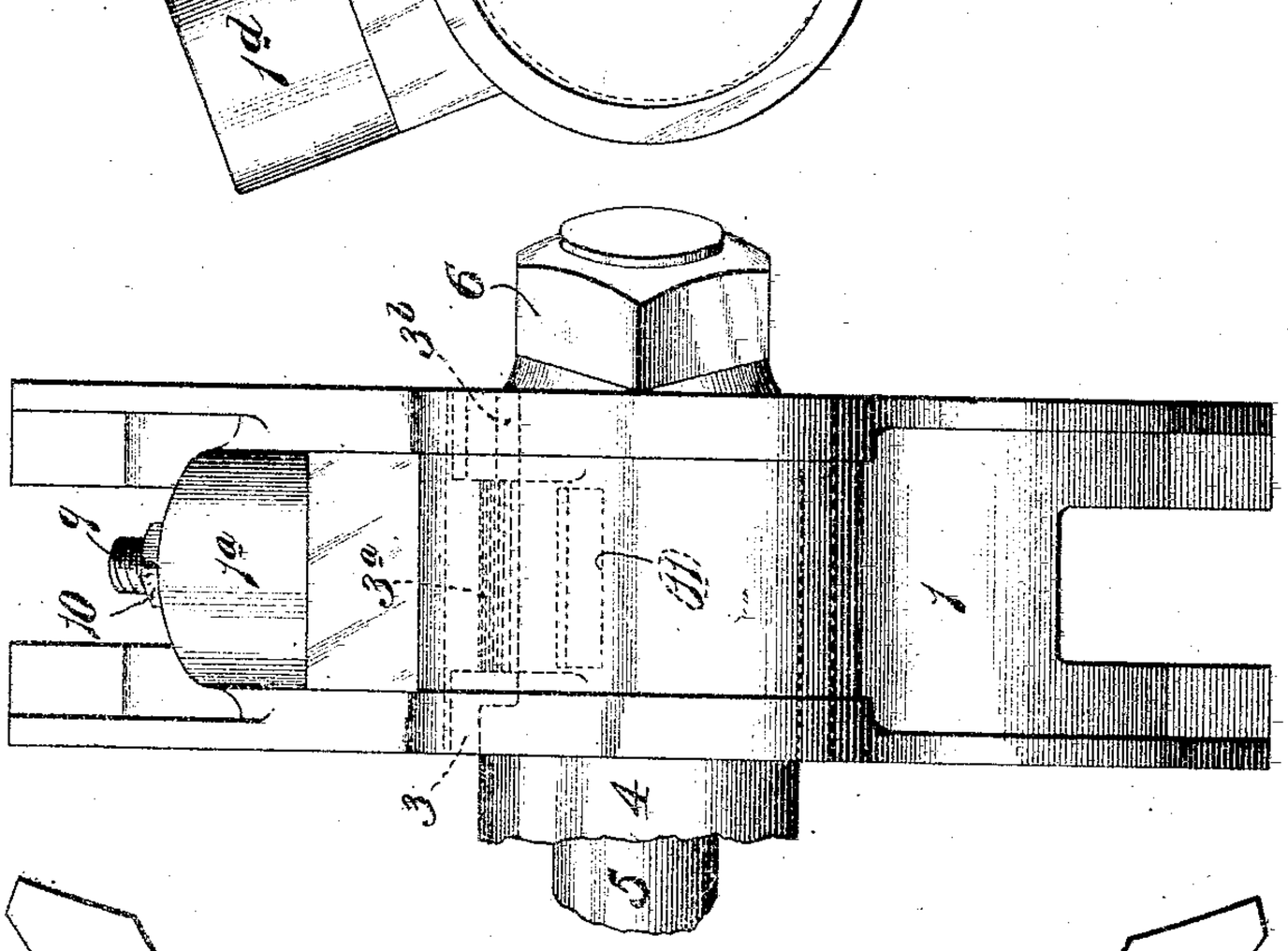
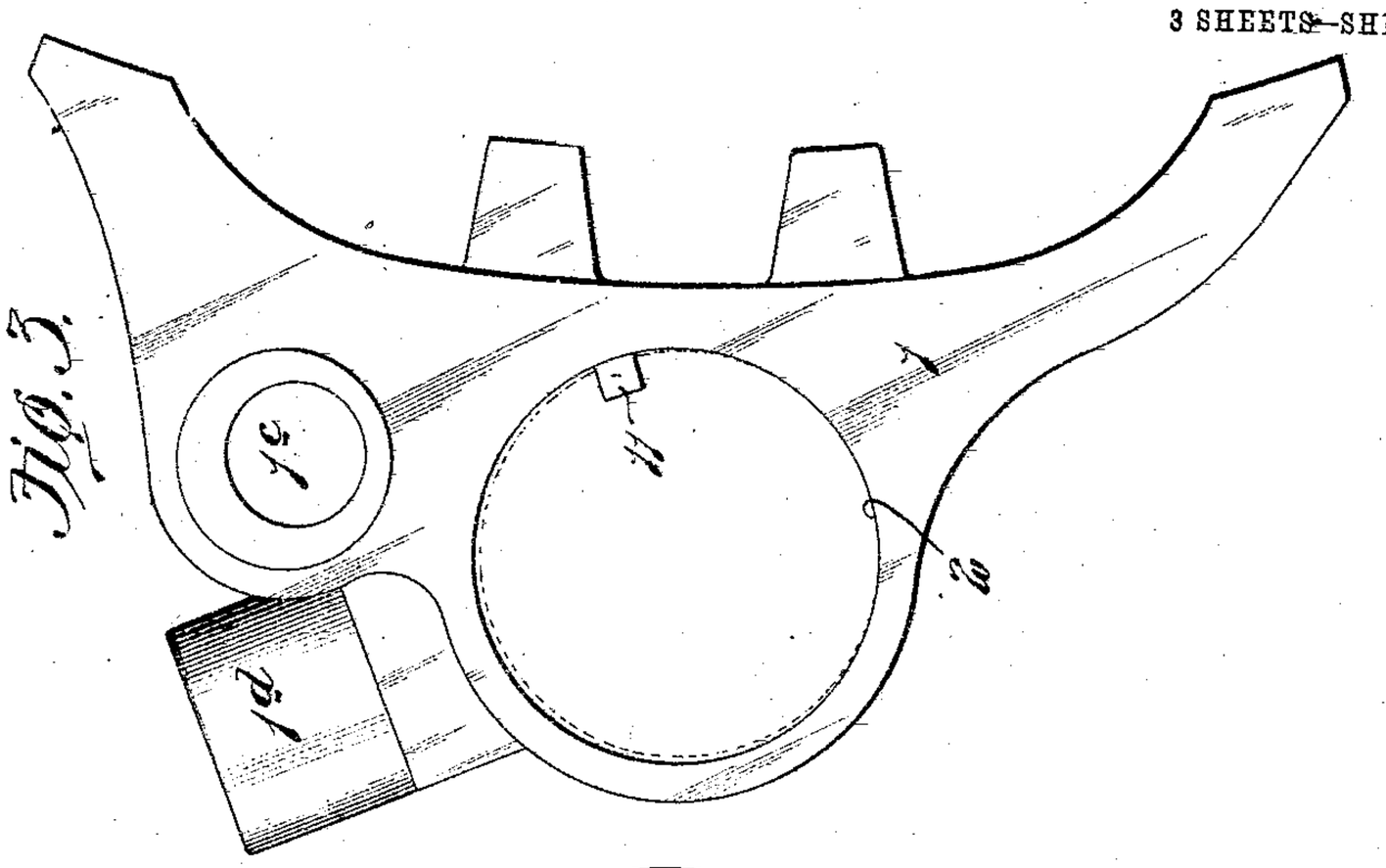


Fig. 3.



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3 SHEETS—SHEET 2.

Fig. 3.

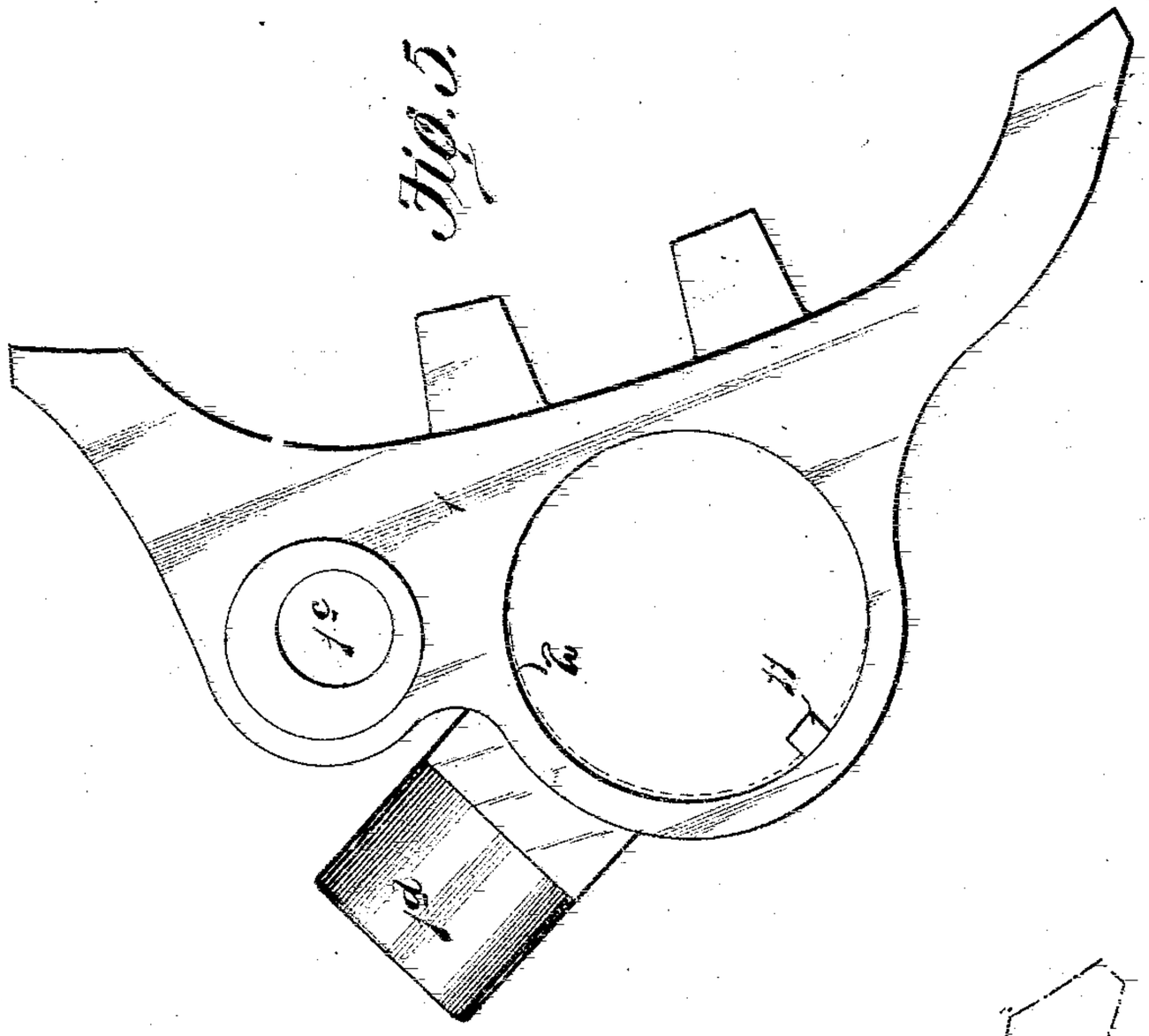
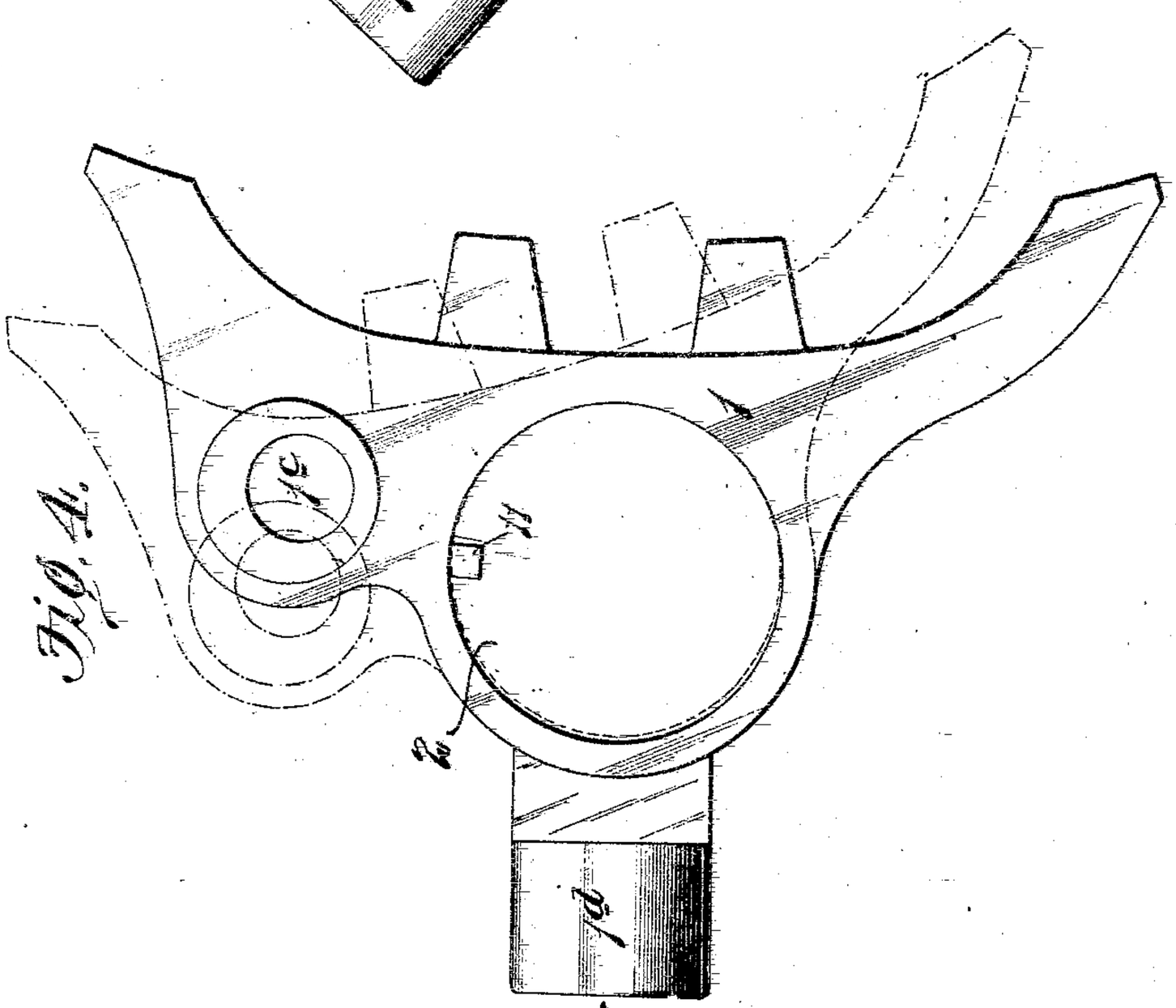


Fig. 4.



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3 SHEETS—SHEET 3.

Fig. 6.

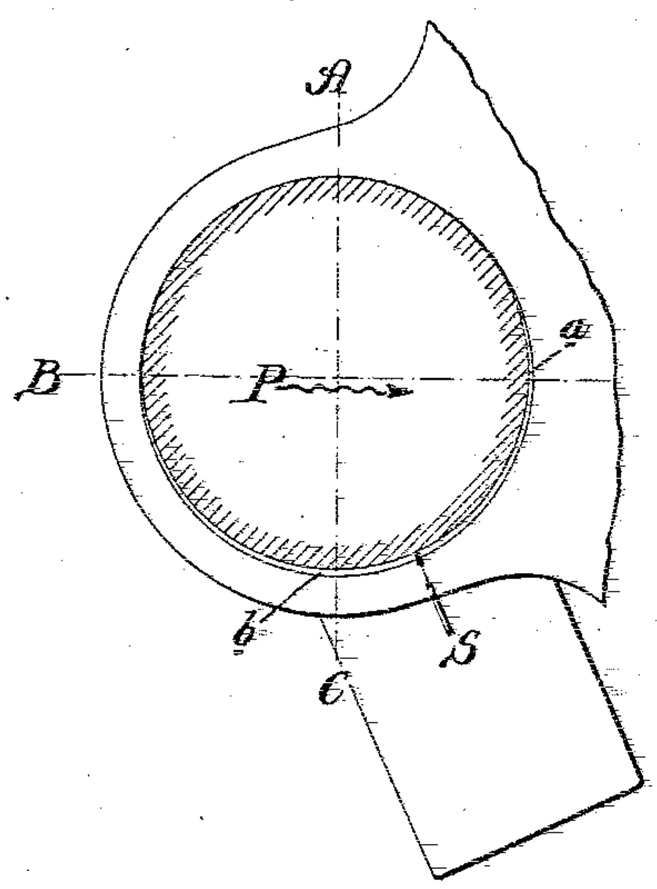


Fig. 7.

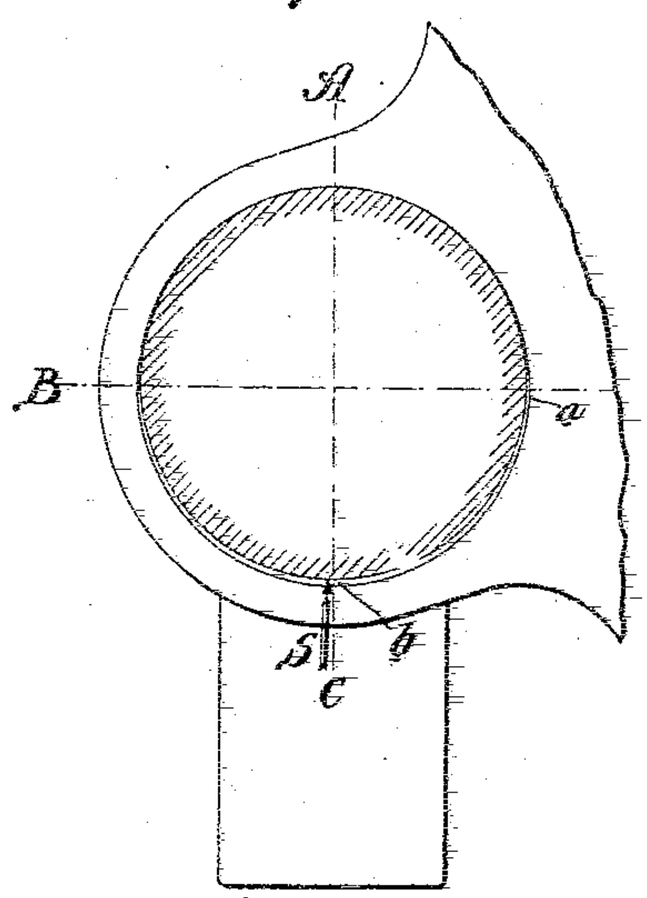


Fig. 8.

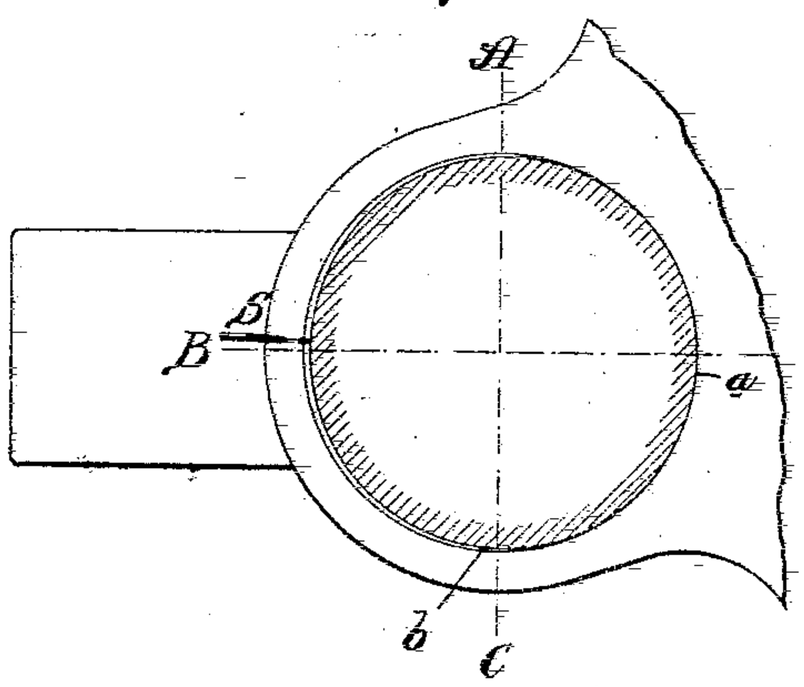
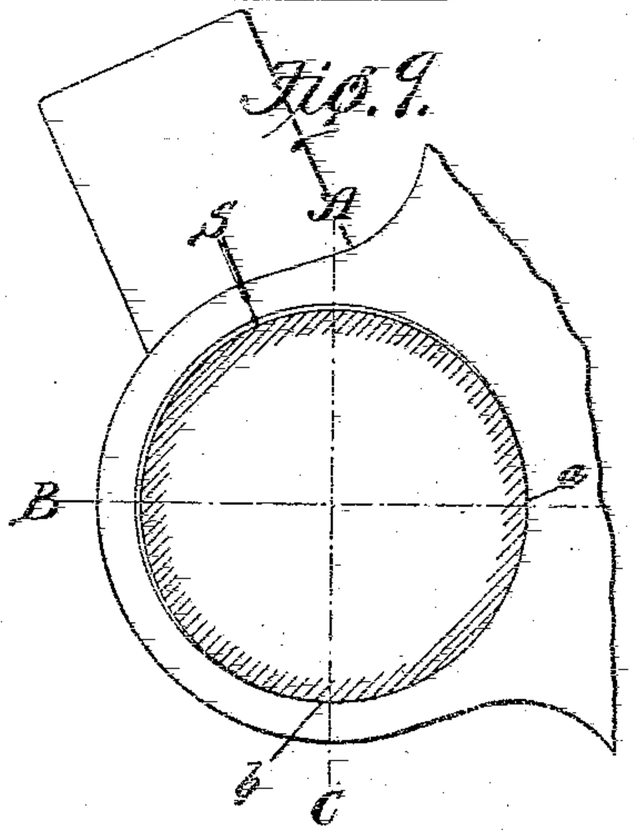


Fig. 9.



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UNITED STATES PATENT OFFICE.

HENRY B. ROBISCHUNG, OF CLOVERDALE, MICHIGAN, ASSIGNOR TO CHICAGO RAILWAY EQUIPMENT COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ADJUSTABLE BRAKE-HEAD.

939,094. Specification of Letters Patent. Patented Nov. 2, 1909.

Application filed May 11, 1908. Serial No. 432,183.

To all whom it may concern:

Be it known that I, HENRY B. ROBISCHUNG, a citizen of the United States, residing at Cloverdale, Barry county, Michigan, have invented a certain new and useful improvement in Adjustable Brake-Heads, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevational view, partly in section, of my improved adjustable brake head; Fig. 2 is a front elevational view of the same; Fig. 3 is a side elevational view of the brake head dismantled from the beam; Figs. 4 and 5 are side elevational views of modified forms of brake heads; and Figs. 6 to 9 inclusive are diagrammatic views.

This invention relates to a new and useful improvement in adjustable brake heads of that character shown in United States Letters Patent No. 485,823, granted to me November 8, 1892.

In my aforesaid patent the sleeves or caps constituting the thrust blocks which inclose the end of the beam are shown substantially in the form of a spool whose waist portion between the heads is provided with two sets of corrugations for coöperating with the locking spring-pressed block. The spring-pressed locking block of said patent is arranged on the underside of the brake head and in advance of a vertical line drawn through the center of the beam which forces the thrust block on the end of the beam upwardly and rearwardly, as shown diagrammatically in Fig. 6, the arrow S in said figure indicating the direction of pressure of the spring-pressed locking block.

The space between the thrust block and the brake head is a clearance space necessary for the introduction of the brake head upon the thrust block, and in effect constitutes lost motion which has to be taken up before any pressure can be applied to the brake shoes. For instance, if braking pressure is applied to the beam through the levers in the direction of the arrow P the space *a* in the nature of lost motion must be taken up before any pressure can be applied to the brake shoes. This space *a*, regardless of how small or how large it might be, is multiplied many times through the leverage back of the brake cylinder, and the piston in the brake cylinder is thereby compelled to make another stroke in applying the brakes because of the presence of this space *a*. In ordinary brake rigging the extra movement of the piston necessary to take up this lost motion would be practically sixteen times (more or less) the distance consumed by the lost motion. Furthermore, with the pressure of the spring-pressed locking block applied as in Patent No. 485,823 before referred to, and as illustrated by the arrow S in Fig. 6, a space *b* on the under-side of the thrust block and between the thrust block and brake head is provided, which space permits constant vibration of a spring back of the locking block, which tends not only to deteriorate said spring but to wear the rubbing surfaces between the thrust block and brake head, which wear increases the clearance opening under consideration.

In order to understand the last-mentioned feature more clearly it might perhaps be well to say that the brake beam is hung usually by brake hangers which are received in appropriate openings 1^b, in Fig. 1, or 1^c in Figs. 3, 4 and 5, whereby the weight of the brake beam and its connected brake levers according to the construction of my aforesaid patent, which is diagrammatically illustrated in Fig. 6, is supported by the spring behind the locking block, whose pressure is indicated by the arrow S. The springs behind the locking block are not intended to support this weight, and the weight of the brake beam and its levers is considerable, and consequently there is a tendency of the brake beam to rattle in the brake head and thereby increase the clearance spaces *a* and *b*.

One of the objects of my present invention is to so locate the spring housing on the brake head that the pressure of the spring behind the locking block will be applied in such a direction that the clearance space in the nature of lost motion to be consumed in applying the brakes will be reduced or eliminated entirely, depending upon the location of the applied spring pressure represented by the arrow S in Figs. 7 to 9 inclusive.

By referring to Fig. 7 it will be observed that by locating the spring pressure as indicated by the arrow S behind the position in which it is located in Fig. 6, or approxi-

mately at a point coincident with the central line C under the brake beam, the clearance space *a* has been decreased somewhat.

By referring to Fig. 8 it will be seen that by locating the spring pressure, indicated by the arrow S, immediately behind the brake beam, approximately coincident with the line B, lost motion of space *a* is entirely eliminated from in front of the brake beam and is located behind the brake beam where it does not have to be taken into consideration in applying the brakes. The location of the spring-pressed locking block with its pressure indicated by the arrow S coincident with the line B is an ideal condition so far as eliminating lost motion occasioned by the space *a* is concerned, but due to restrictions in space and other practical conditions it is not possible to arrange the housing containing the locking block and its spring at substantially right angles to the brake head, as shown in Fig. 4, although it is highly desirable to do so where practical conditions such as ample room in hanging the brakes permit of this arrangement.

Another object of my invention is to locate the spring housings at some point above the brake beam, as for instance between the lines A and B, Figs. 7 to 9, so that the thrust block or part of the brake beam passing through the brake head will rest in the lower portion of the socket in the brake head to prevent rattling and wear, which have a tendency to increase lost motion.

By referring to Fig. 6 it will be observed that the arrow S indicates the tendency of the spring behind the locking block to support the brake beam and its carried brake levers. In Fig. 7 this tendency is even greater than in the construction shown in Fig. 6; while in Fig. 8, where the pressure is applied behind the brake beam (the ideal position to eliminate lost motion of space *a*), there is still left an appreciable clearance space *b* between the underside of the thrust block and the brake head.

As conditions connected with the use of this particular type of brake beam demand the use of a circular thrust block, and as it is desired to not only reduce the lost motion space *a* to the point of elimination if possible, but to likewise reduce clearance space *b* to substantially a point of elimination, it follows that the best location of the spring-pressed locking block is diagrammatically illustrated in Fig. 9, where both the spaces *a* and *b* are practically eliminated. In this figure it will be noted that the direction of spring pressure coincides with the arrangement of the spring housings in Figs. 3 and 5, which are mounted upon brake heads having different throws.

Where the rattling of the brake beam in the head is a matter of import and it is desired to eliminate ~~this~~ feature regardless of the lost motion occasioned by space *a*, the arrangement shown in Fig. 1 can be employed; and where it is desired to entirely eliminate the lost motion without regard to the rattling of the brake beam in the head, the arrangement shown in Fig. 4 can be employed. The structures shown in Figs. 3 and 5 embrace a compromise arrangement where the clearance spaces *a* and *b* are practically eliminated.

Another object of my invention is to provide a fixed lug on the brake head and extending into the socket of the same, which lug fits between the flanges or head of the thrust block, and in the event of breakage of the spring behind the locking block or for other reasons which occasion the displacement of the locking block, will hold the brake head in position on the beam. Heretofore the locking block has been relied upon to hold the head on the beam, but where the spring became broken or for other reasons the locking block became displaced, the head would fall off. By my present construction the lug extending into the socket of a brake head passes through the groove in the outer head or flange of the thrust block, and then the brake head is rotated to its designed position. In the event of impairment of the spring or disarrangement of the locking block it would be impossible for the brake head to become lost unless the head should be turned to an abnormal position, in which position the lug would register with the groove, which would be not at all likely.

In the drawings, 1 indicates the brake head whose jaws and lugs are preferably constructed to conform to the Master Car Builders' standard, which brake head is provided with a socket 2 for receiving the thrust block or brake beam, as the case may be. I have shown this socket in the drawings as being circular, but it is obvious that the shape of the socket has nothing to do with my invention, as the socket may be of such shape as to conform to the requirements of the beam into which the head is applied.

In Figs. 1 and 2, 3 indicates the thrust block in which are received the compression member 4 and the tension member 5 of the brake beam, the latter being threaded and having a nut 6 on its end, which nut impinges against the thrust block 3. This thrust block is provided with a series of teeth 3^a for coöperating with a spring-pressed block 7 mounted in the spring housing 1^a of the brake head. A spring 8 bears against this block, and a bolt 9 passing through the spring and having its head engaging the spring-pressed block, is preferably provided with a nut 10 on its end whereby when it is desired to retract the spring-pressed block for the purpose of adjusting the head on the beam or removing

the brake shoe from the beam, this nut 10 is turned down, as is fully explained in my aforesaid patent.

According to the construction shown in Figs. 1 and 2, pressure of the spring-pressed block is directed downwardly upon the thrust block, and consequently the thrust block is seated in the bottom of the socket in the brake head, the result being that when the brake beam is suspended in position, the brake hanger, not shown, passing through an opening 1^b in the brake head, the weight of the brake beam in the head, assisted by the spring behind the spring-pressed block, will serve to prevent the parts from rattling. In the construction shown in Figs. 1 and 2, however, the space *a* before referred to will have to be taken up when pressure is exerted in the direction of arrow P to apply the brakes.

In the construction shown in Fig. 3 it will be observed that the brake hanger opening 1^c is located above the brake beam and behind this is arranged the spring housing 1^d, by which arrangement it will be observed that the pressure of the spring block used in said housing, will be such as to throw the brake beam forward with respect to a perpendicular line through the center of the socket opening in the brake head, and reduce the space *a*. A similar arrangement is shown in Fig. 5 where the angle of the spring housing is reduced; whereas, in Fig. 4, the spring housing is arranged substantially horizontal with respect to the plane of the center of the socket in the brake head, by which arrangement it will be observed from the dotted line indicating the circumference of the thrust block, that the clearance space is behind the brake beam and no lost motion has to be overcome in applying the brakes.

11 indicates a lug extending into the socket of the brake head, which lug is of a width substantially equal to the distance between the heads or flanges of the thrust block 3.

3^a is an opening in the outside flange of the thrust block large enough to admit the projection 11 in introducing the brake head into position on the end of the beam. When the head is introduced by longitudinal movement and the projection 11 lies between the flanges of the thrust block, the head can be rotated and locked against longitudinal displacement by the lug 11 which is immovably connected to the brake head. This construction is what is known in mechanics as a bayonet lock, and so far as I know has never been employed in brake beam construction to lock the head on the beam. The usual locking block 7 fits between the flanges of the thrust block and prevents longitudinal as well as lateral displacement of the brake head as long as it remains in its intended position; but, as before stated, where the spring 8 is broken or from other causes the thrust block 7 becomes disarranged there was a possibility of the brake head being lost by moving longitudinally and falling from the beam. By the presence of the bayonet lock described longitudinal movement of the brake head on the beam is impossible until the lug registers with its coöperating groove.

I am aware that minor changes in the construction, arrangement, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. The combination of a brake beam, a brake head provided with a socket within which a portion of the brake beam is mounted, a spring-pressed locking block carried by the brake head and so disposed with relation thereto that the forward wall of said socket is yieldingly forced against the part of the brake beam on which the brake head is mounted; substantially as described.

2. The combination of a brake beam, a brake head provided with a socket within which a portion of the brake beam is mounted, a spring-pressed locking block carried by the brake head and adapted to yieldingly force the bottom of said socket toward the brake beam; substantially as described.

3. A brake head having a socket and a locking block pocket opening into said socket, said pocket being above the lowest point of said socket; substantially as described.

4. The combination of a brake beam, a brake head mounted thereon, and means for taking up the clearance below the center of the beam and between the brake head and beam so as to prevent the head from rattling on the beam; substantially as described.

5. The combination of a brake beam, an adjustable head mounted on said beam, said head having means for the attachment of a brake hanger, and means on the head for taking up the clearance space between the head and the beam, said means assisting gravity in preventing the parts from rattling; substantially as described.

6. The combination of a brake beam, a brake head mounted thereon, and means for taking up clearance space between the head and beam so that no lost motion will have to be overcome in applying the brakes; substantially as described.

7. The combination of a brake beam, a movable brake head, and an automatically yielding locking block or bolt for preventing the tilting or gravitation of the head on the beam, said locking block being located above a horizontal line through the center of the

beam to prevent rattling between the parts; substantially as described.

8. The combination of a brake beam, a brake head mounted thereon and provided with a pocket, a locking block yieldingly mounted in said pocket, said locking block being located above the lowest point of said brake beam; substantially as described.

9. A brake head having a socket and a locking block pocket opening into said socket, which pocket is above the horizontal line through the center of the socket; substantially as described.

10. A brake head having a socket and a locking block pocket opening into said socket, which pocket is located at a point to the rear of the central line vertically through the socket; substantially as described.

11. A brake-head having a socket and a locking block pocket opening into said socket, which pocket is located at a point rearwardly between a central line vertically, and above a horizontal line with respect to said socket; substantially as described.

12. A brake head provided with a pocket for a yielding locking block, said pocket being located above the center line of the head; substantially as described.

13. A brake head provided with a pocket for a yielding locking block, said pocket being located behind the vertical center line through the head; substantially as described.

14. A brake head provided with a yielding locking device and having an integral locking lug extending into its socket; substantially as described.

15. The combination of a brake beam and a brake head connected thereto by means of a bayonet lock and means for holding the head in adjusted positions on the beam; substantially as described.

16. The combination of a brake beam, and a brake head, one of said parts having a mutilated flange, and the other of said parts having a lug adapted to pass through the mutilated portion of the flange, whereby when said parts are assembled by relative longitudinal movement and a lateral movement they are locked against longitudinal displacement and means for holding the head in adjusted positions on the beam; substantially as described.

17. The combination of a brake beam having a flanged end member, the outside flange of which is provided with a notch, a brake head having a lug extending into the socket which receives said flanged end member, said lug being passed through said notch and finally located through said notch and between the flanges of said end member; substantially as described.

18. In a brake beam, the combination of a flanged thrust block whose outside flange is notched, and a socketed brake head having an integral lug extending into its socket designed to be passed through said notch, whereby the parts are capable of being locked together by a bayonet locking movement; substantially as described.

19. A thrust block for brake beams having a pair of flanges, one of said flanges being provided with a notch; substantially as described.

20. The combination of a brake-beam, a brake-head adapted to fit and turn on said brake-beam, a bayonet-joint connection between said brake-head and brake-beam, and means to clamp said brake-head on said beam to maintain the same in adjusted angular position, substantially as described.

21. The combination of a brake-beam, a sleeve on the end of said brake-beam, a brake-head adapted to fit and turn on said sleeve, a bayonet-joint connection between said brake-head and sleeve, and means to clamp said brake-head on said sleeve to maintain the head in adjusted angular position, substantially as described.

22. The combination of a brake-beam, a cylindrical sleeve on the end of said beam, said sleeve having on its exterior surface a curved groove extended transversely thereof, and having one or more entrance grooves communicating therewith and extended to the end of the sleeve, a brake-head with an internal projection adapted to enter and coact with the walls of said curved groove to prevent lengthwise shifting of the head on the sleeve, and means to clamp said head on said sleeve to maintain the head in adjusted angular position, substantially as described.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this fourth day of May 1908.

HENRY B. ROBISCHUNG.

Witnesses:

FRED. E. GIBSON,

H. LARABEE.