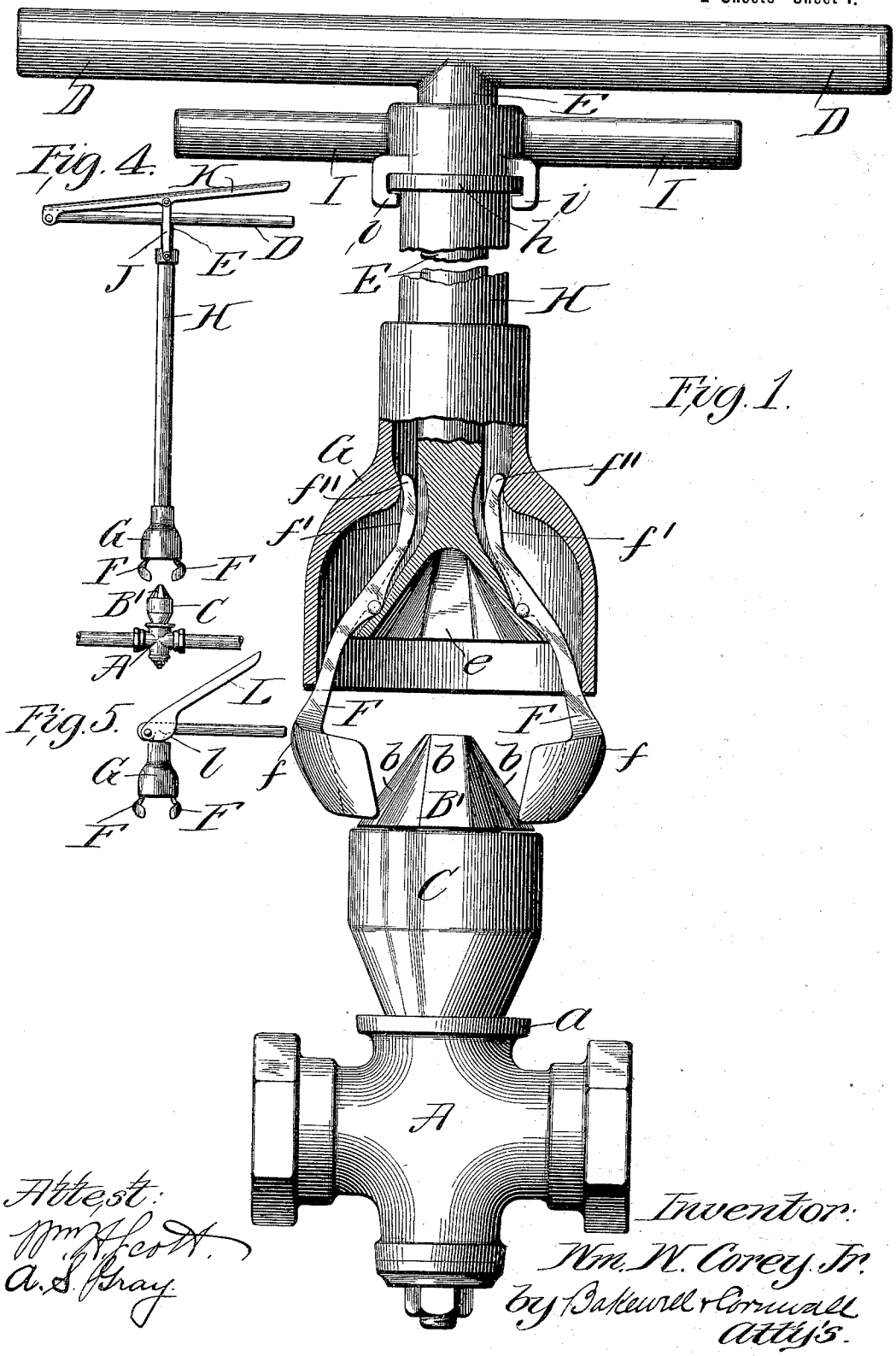
No. 624,628. Patented May 9, 1899.

W. W. COREY, JR.

BOLT HEAD.

(Application filed Dec. 27, 1898.)

(No Model.) 2 Sheets—Sheet 1.



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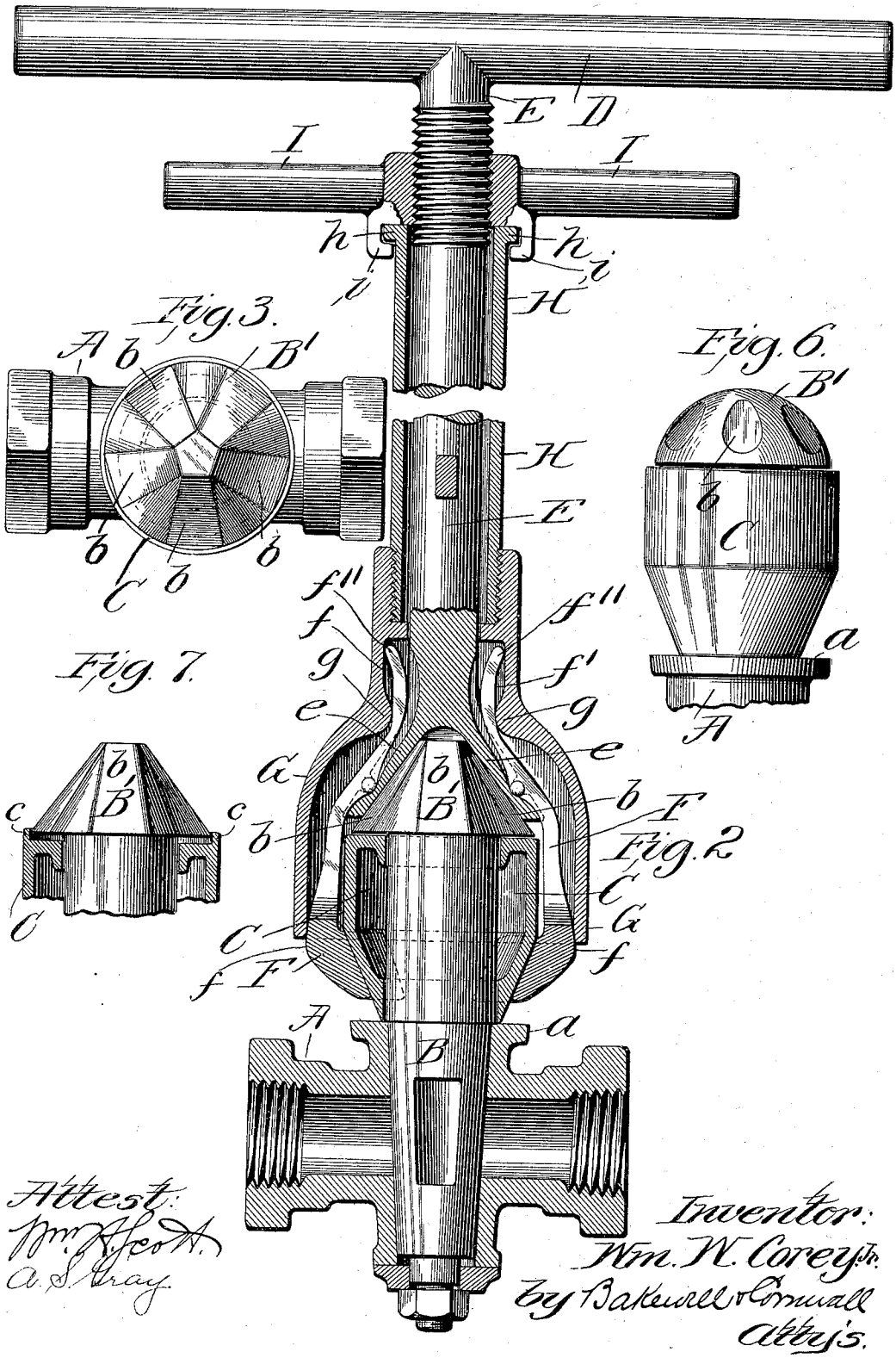

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UNITED STATES PATENT OFFICE.

WILLIAM W. COREY, JR., OF ST. LOUIS, MISSOURI.

BOLT-HEAD.

SPECIFICATION forming part of Letters Patent No. 624,628, dated May 9, 1899.

Application filed December 27, 1898. Serial No. 700,419. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. COREY, Jr., a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Bolt-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, showing the wrench in position to be slipped over the head of the bolt. Fig. 2 is a sectional view showing the wrench in engagement with the head of the bolt. Fig. 3 is a top plan view of the cock polygonally-shaped bolt-head. Fig. 4 is a side elevational view illustrating a modified form of mechanism for causing relatively longitudinal movement between the two members of the wrench. Fig. 5 is a similar view of another modification, and Fig. 6 is a side elevational view of a slightly-modified form of head. Fig. 7 is a modified form of the rotary member.

This invention relates to a new and useful improvement in a bolt-head provided with means for preventing rotation or partial rotation thereof by unauthorized persons or persons not having the key or proper wrench with which to rotate said bolt.

I have shown in the drawings a cock in which the valve-stem or upper end of the plug-valve is provided with a head according to my invention, said stem also carrying means for preventing rotation of said valve by unauthorized persons or persons who are not in possession of the proper wrench.

The object of this invention is to prevent the turning of a valve or bolt by unauthorized persons or persons not in possession of the proper wrench and is designed particularly for use in connection with the water-supply to houses.

It sometimes happens that a consumer will have the water turned off from his premises for some reason and immediately thereafter will turn the water on without authorization from the proper authorities. In warm climates, where the stop-cocks are sunk in the ground but a short distance—say twelve inches below the surface—it is possible if an ordinary forked stick will not answer the purpose to dig down with very little trouble and provide space for the operation of a suitable wrench, whereby the valve of the cock can be turned so as to open the same. I have sought to provide means for preventing this unauthorized tampering of the valve, and my invention is designed particularly for that purpose, although it is obvious that there are other uses to which the same can be put without materially changing the construction of the essential features thereof. These other uses which I have in mind are spigots for whisky and other barrels, gas-pipes, fire-hydrants or fire-plugs, and bolts, which when once clamped or unclamped are designed not to be tampered with by unauthorized persons. In showing this peculiarly-shaped bolt-head and its protecting means I have also illustrated a key or wrench which is adapted for operating this construction and coöperating therewith, and so far as I am aware this wrench is unsuited for any purpose other than that for which I have designed it, and therefore I claim the same as part of my present invention, because when the same is in an operative position it practically becomes part of the device, but is removable therefrom at the will of the operator.

In the drawings, A indicates an ordinary valve-casing, in which is arranged a plug-valve B. This valve B is of the usual construction and projects above the valve-casing in the form of a valve-stem, and so far as its upper end outside of the valve-casing is concerned it may be termed a "bolt," "rod," or other name, depending upon the particular uses to which this part may be applied in the application of my invention to various uses.

Stem B is provided or has formed on its upper end, preferably integral therewith, a head B′, which as shown in Figs. 1, 2, and 3 is in the form of a frustum of a cone and as shown in Fig. 6 is semispherical in form, having one or more of its sides flattened, as at *b*, for the engagement of the key therewith. I have shown this head as being provided with five flat faces, the intervening space between being curved, as shown more clearly in Fig. 3, so that should

an ordinary wrench be applied thereto but one flat face can be engaged, and when the attempt is made to turn the head by the application of power to the wrench the wrench will not hold, but will slip off of the head. This feature of my invention while it forms an essential part thereof is still open to the objection that a pipe-wrench might be applied to the lower edge of the head and thereby turn it. I have, however, met this condition by mounting a member on the stem B of larger diameter than the base of the head to prevent the application of a wrench in the way I have just described. This member if fixed to the stem would still be susceptible of being turned by a pipe-wrench, which would likewise cause the rotation of the stem, and I therefore permit said member, which I have marked C in the drawings, to turn independently of the stem. If power is applied to member C, it is obvious that stem B will not be affected. Member C, being of larger diameter than the base of the head B′, will not permit the application of a wrench to head B in such manner as to turn said head, and when an ordinary wrench is applied to head *b′* above the rotary member said wrench will slip off and not hold. Furthermore, should a wrench be applied so as to engage a flat face of the head B′ and said rotary member, there being but one fixed face upon which the wrench would operate, said wrench would likewise slip off and not rotate the head. I prefer to form this rotary member C with a cylindrical portion at its upper end, so as not to present parallel faces or engaging points of any character for engagement by any wrench other than that particularly made for the purpose, while its lower end is tapered, as shown in Fig. 1, for the reception of clamping-jaws of the wrench designed to coöperate with the head B′.

In Fig. 7 I have shown a modified form of rotary member, in which a flange *c* projects upwardly from said rotary member beyond the base of the head B′. This flange prevents the introduction of an ordinary wrench on the head should a slight space be left between the base of the head and the rotary member. It will be noted that the head B′ in this construction is partially countersunk into the rotary member.

D indicates a handle from which extends a rod E, on the lower end of which rod is a bell-shaped mouth or socket *e*, so shaped as to correspond with and receive the head B′. As the construction of head B′ is liable to throw off this socket in the event that stem B meets with resistance when it is attempted to rotate said stem through the medium of its head and this socket, I have provided a pair of clamping-jaws F, which are pivoted to the lower end of rod E and which extend down and engage the tapered face of the rotary member C and prevent the socket from rising, so as to ride over head B′. To operate the jaws, so as to cause them to open when required and close tightly upon the rotary member when the wrench is applied, I arrange a bell-shaped casing G on the lower end of rod E, whose mouth projects over the forward ends of the jaws F, as shown. Projections *g* coöperate with the upper ends of jaws F, which are bent outwardly at their extremities, to throw the jaws open, as shown in Fig. 2, when the bell G is moved upwardly or longitudinally along the shaft or rod E. The lower edge of bell G coöperates with cam-face *f* on the forward ends of the jaws F to force such jaws inwardly to clamp the rotary member C when the bell G is moved downwardly or forwardly along the rod E. The upper ends of jaws F are preferably provided with a straight outer face *f′* to permit the projections *g* to move upwardly without positively affecting said jaws, above which straight portions the upper extremities of said jaws are turned outwardly, as at *f″*, whereby when the edge of the bell-casing G has passed above the cam-face *f* on the jaws the projection *g* on said bell-casing will coöperate with the outwardly-turned extremities *f″* of said jaws and positively force the lower ends of the jaws outwardly, as shown in Fig. 2, so that said jaws will release the rotary member C and permit the wrench to be lifted out of engagement with the head B′.

In Figs. 1 and 2 I have shown a pipe or sleeve H, to which the bell-casing G is attached, said pipe or sleeve being preferably keyed to the rod E, so that it may move longitudinally along said rod, but not have an independent rotary motion. The upper end of this sleeve is provided with a flange *h*, which is engaged by lugs or projections *i*, arranged on an operating-handle I, which is threaded on the rod E.

The operation of the wrench as above described is as follows: Assuming the parts to be in position as shown in Fig. 2, wherein the wrench is in position to be applied to the bolt-head and the jaws F are open, the downward movement of the wrench would cause the jaws to slip over the rotary member C, embracing the conical portion thereof, in which position the head B′ would be in its socket in the lower end of rod E. Handle I is now turned so as to impart a longitudinal movement to the bell-casing G, forcing the same downwardly, so as to cause the jaws to tightly clamp or grip the conical portion of the rotary member C. This forces the rotary member tightly against the head B′, and when the parts are so clamped the handle of rod C may be turned in either direction to rotate the stem B without fear of the socket slipping around the head B′.

In Fig. 4 I have shown a slightly-modified form of means for imparting a relatively longitudinal movement between the socket and the bell-shaped casing, in which the sleeve H is coupled by links J to a lever K, whereby

when said lever is depressed the bell-shaped casing is slid longitudinally the rod E, so as to engage the jaws pivoted on the lower end of said rod and to force said jaws inwardly to clamp the tapered portion of the rotary member.

In Fig. 5 I have shown lever L, having a cam-face *l* for forcing the bell-shaped casing G longitudinally the rod on which it is mounted.

While I have described the jaws as engaging the tapered portion of rotary member C and in so doing forcing said rotary member firmly against the head B′, so that it practically becomes a part of said head by reason of the friction, it will be understood that these jaws are primarily designed to hold the socket firmly in position on the head B′, and any fixed device with which the jaws or their equivalents can engage to effect the seating of the socket on the head B′ would answer. For instance, instead of having the jaws engage the tapered portion of the rotary member C said jaws can extend down so as to engage a flange *a*, which is a fixed flange in this instance, but which would serve as a means of engagement for the jaws or their equivalents when the socket was placed in position over the head B′ to hold said socket firmly thereon and prevent its vertical movement to even a slight extent, which vertical movement would cause the socket to ride freely over said head without effecting rotation of the latter.

I am aware that many 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 my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a valve-casing and its valve, of a valve-stem formed with one or more faces for the application of power thereto, by which said stem can be rotated, and a rotary member mounted on said valve-stem for preventing the application of power by an ordinary wrench to said faces; substantially as described.

2. The combination with a normally stationary element, in the form of a stem or bolt, of a head on said stem or bolt, which head is formed with one or more faces for the application of power thereto, by which said element may be rotated or partially rotated, and a rotary member in juxtaposition to said head for preventing the application of an ordinary wrench thereto; substantially as described.

3. The combination with a stem or bolt, of a head formed thereon, and having one or more flat faces arranged at different angles to each other, and a rotary member mounted on said bolt in juxtaposition to said head, and rotating independently of said bolt and head, said rotary member having a cylindrical portion for a part of its length and a conical portion for the balance of its length, the cylindrical portion, of said rotary member being of larger diameter than the base of the head with which it engages; substantially as described.

4. The combination with a stem or bolt, provided with a tapered or conical-shaped head, having one or more flat faces, and a rotary member mounted on said stem or bolt, said rotary member having a cylindrical portion in juxtaposition to the base of said head, and a tapered portion; substantially as described.

5. The combination with a stem or bolt, provided with a head of the character described, of a rotary member in juxtaposition thereto, and a flange or projection on said rotary member for preventing the engagement of an ordinary wrench with said head; substantially as described.

6. The combination with a stem or bolt, having a tapered head, which is provided with one or more flat faces, of a rotary member mounted on said stem or bolt, a socketed rod for engaging said head, and means for clamping the socket into position on said head; substantially as described.

7. The combination with a stem or bolt, having a tapered head provided with one or more flat faces, of a rotary member mounted on said stem or bolt, a rod having a socket for engaging said head, jaws pivoted to said rod, and means coöperating with said jaws, for causing same to grasp the rotary member, and hold said socket in position; substantially as described.

8. The combination with a stem or bolt, having a tapered head provided with one or more flat faces, of a rotary member mounted on said stem or bolt, a rod provided with a socket for engaging said head, jaws pivoted on said rod, and a bell-shaped casing slidingly mounted on said rod for coöperating with the jaws; substantially as described.

9. The combination with a stem or bolt, having a tapered head provided with one or more flat faces, of a rotary member mounted on said stem or bolt, a socketed rod for engaging said head, jaws pivoted on the end of said rod for coöperating with the rotary member, a bell-shaped casing provided with projections *g*, for coöperating with the upper ends of said jaws, the lower edge of said casing coöperating with the lower ends of said jaws, and means for imparting a relatively longitudinal movement between said bell-shaped casing and said socket-rod; substantially as described.

10. The combination with a stem or bolt, having a tapered head provided with one or more flat faces, of a rotary member mounted on said stem or bolt, a socketed rod for engaging said head, jaws F, provided with cam-face *f*, straight portions *f′*, and outwardly-turned ends *f″*, said jaws being pivoted to

said rod, a bell-shaped casing, whose lower edge coöperates with the cam-face *f*, of said jaws, projections *g*, in said bell-casing to cooperate with the straight portions *f'*, and the outwardly-turned ends *f''* of said jaws, and means for sliding said bell-shaped casing longitudinally said rod; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 23d day of December, 1898.

WILLIAM W. COREY, JR.

Witnesses:
F. R. CORNWALL,
WM. H. SCOTT.