(No Model.)

H. SMILEY.

BIT HOLDER FOR BIT STOCKS.

No. 376,557. Patented Jan. 17, 1888.

Fig. 1.

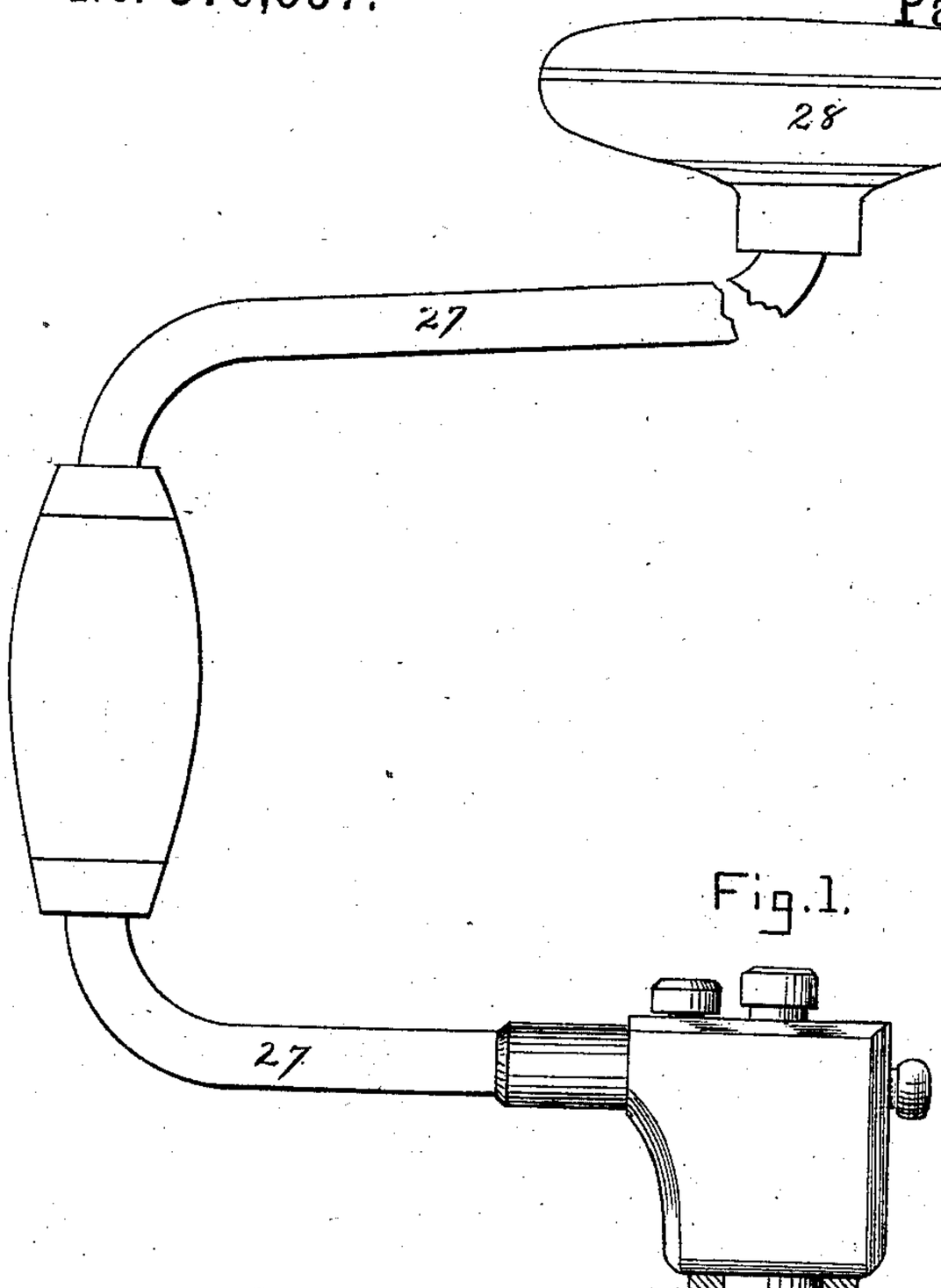


Fig. 2.

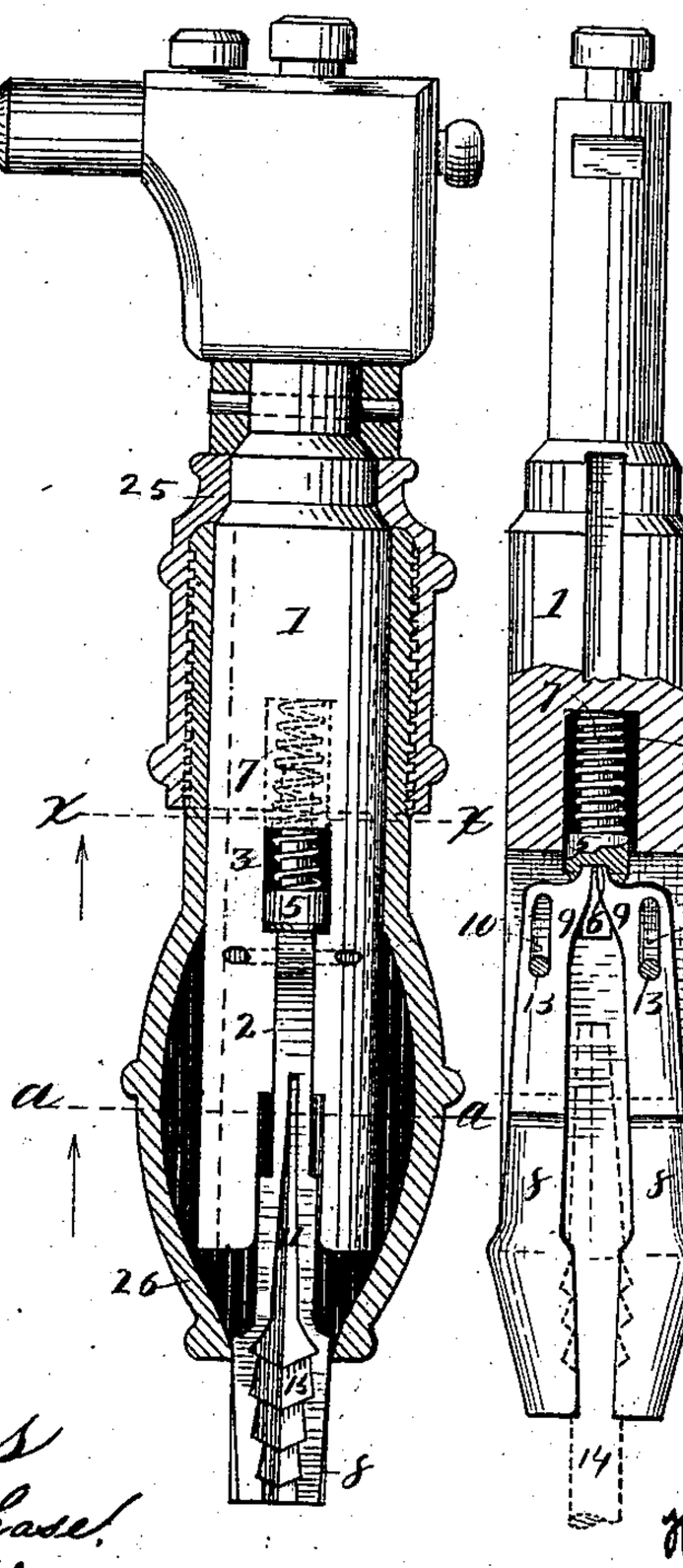


Fig. 6.

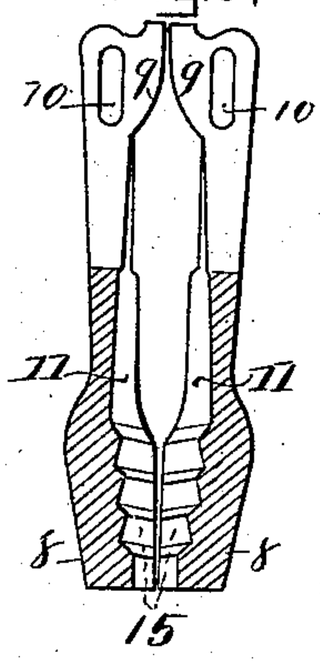


Fig. 3.

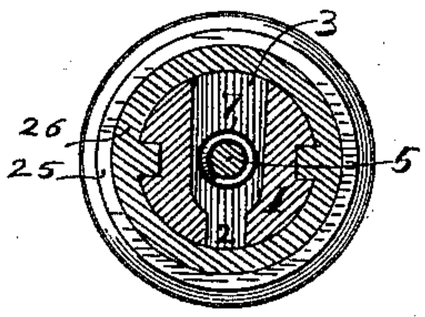


Fig. 4.

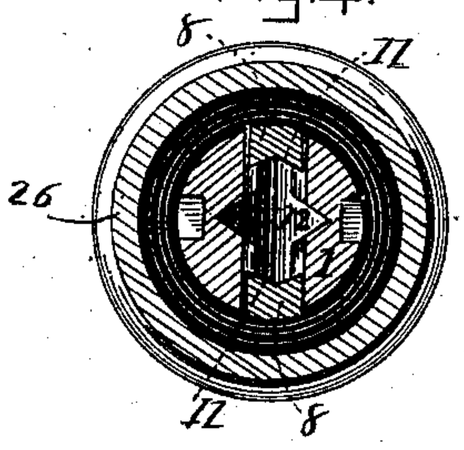
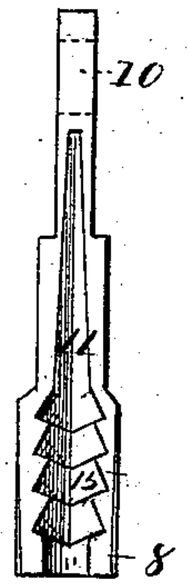


Fig. 5



Witnesses
George A. Chase.
Frederick Dunham.

Inventor,
Henry Smiley
by H. Dunham.
his Attorney.

UNITED STATES PATENT OFFICE.

HENRY SMILEY, OF BOSTON, MASSACHUSETTS.

BIT-HOLDER FOR BIT-STOCKS.

SPECIFICATION forming part of Letters Patent No. 376,557, dated January 17, 1888.

Application filed March 19, 1887. Serial No. 231,617. (No model.)

To all whom it may concern:

Be it known that I, HENRY SMILEY, a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Bit-Stocks, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to improvements in bit-holders for bit-stocks; and the objects of my improvements are to provide serrated jaws to hold the bit securely when used and to adjust the jaws on any size of bit, so that it may be held firmly against the ridges of the jaws when so adjusted. I attain these objects by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a bit-stock with the loose barrel and loose jacket in part section, showing the tool-holding shaft inserted in position and one jaw removed. Fig. 2 is a front elevation of the tool-holding shaft in part section, with jaws in place and a bit inserted with its shank on the inner ridges of the jaws. Fig. 3 is a sectional view on line X X in Fig. 1. Fig. 4 is a sectional view on line A A in Fig. 1. Fig. 5 is an elevation of the inner part of the jaw. Fig. 6 is a detailed view of the jaws, with a longitudinal section through the center.

Similar figures refer to similar parts throughout the several views.

The tool-holding shaft is adjusted with a loose barrel, 26, and loose jacket 25, as shown and described in my Letters Patent of the United States granted to me January 18, 1887, No. 356,214, to which reference is hereby made. Figs. 3 and 4 of the drawings forming part of the specification of said patent illustrate the loose barrel and jacket, and Fig. 5 the adjustment of the said shaft in the head of a bit-stock. The bit-stock is operated by the well-known means of a crank-arm, 27, and presser 28, as described in said Letters Patent hereinbefore referred to.

1 is the tool-holding shaft, of metal, and has the slotted openings 2 2 on each side, which extend from the outer end of said shaft 1 to a distance one-half an inch below the outer end of the fixed loose jacket 25, as shown in Fig. 1. The slotted opening 2 on one side of the shaft has a lower portion, 3, made wider, as shown in Fig. 1, to receive the wider portion of the jaws 8 8, as hereinafter described.

4 is a chamber in said shaft 1, in which is adjusted, as shown in Fig. 2, the plunger 5.

The plunger 5 (shown in Figs. 1, 2) has in its head the recess 6. (Shown in Fig. 2.) Upon the shank of the plunger 5 is adjusted the spiral spring 7. (Shown in Figs. 1 and 2.)

8 8 are jaws having curved parts 9 9, as shown in Fig. 2, having the toes resting in the recess 6 of the head of the plunger 5. Said plunger 5 as thus arranged, in conjunction with the pivots 13 13, hereinafter described, adjusted in the slotted openings 10 10 of said curved parts 9 9, serves to keep the jaws 8 8 together, so that they may have a parallel motion when pressed backward or forward, and also keeps the jaws 8 8 even at the ends and prevents them from sliding past each other.

11 is an angular recess in each of the jaws 8 8, which vary in width from the outer end of said jaws to the curved parts 9 9, as shown in Fig. 5, so that the jaws 8 8 may bind equally on any tapering shank of a bit desired to be held. In Fig. 6 a longitudinal section cut through the center of the jaws 8 8 is represented, showing the ridges 15 and the angular recesses 11 as they meet in the center of said jaws. These angular recesses 11 extend to the curved parts 9 9 of the jaws 8 8, as shown in said Fig. 6.

The jaw 8 at its outer portion, which receives the bit, is serrated with the ridges 15, which are about one-quarter of an inch apart. The tool-holding shaft 1 is provided with the angular recesses 12, one on each side of said shaft, as shown in Fig. 4, and extend from the outer end of the shaft 1 to the inner end of jaws 8 8, at opposite angles to said jaws, and the function of said recesses 12 is to hold and center the shank of the bit when inserted, the other two angles of the shank of the bit being held in the angular recesses 11 of the jaws 8 8.

13 is a pivot which passes through the tool-holding shaft 1 and the slotted openings 10 of the jaws, holding them to the said shaft, but permitting said jaws to move forward and backward.

I insert the plunger 5, with the spiral spring 7 adjusted on its shank, through the opening 3 into the chamber 4 of the tool-holding shaft 1. I then place the jaws 8 in the slotted open-

ings 2 of the tool-holding shaft, pivoting them, as described, by pivots 13. The toes on the curved parts 9 of said jaws I adjust in the recess 6 of the plunger 5. When the jaws are adjusted as described, pivots 13 are at the end of the slotted openings 10, as shown in Fig. 1. The slotted openings 10 10 in the inner portion of the jaws 8 8 are to allow the jaws to move backward or forward. The pivots 13 13, passing through said openings, keep the jaws in place, and at the same time guide said jaws in a parallel plane to each other. The curved portions 9 9, with the toes, when forced outward by the spring 7 under the head of the plunger 5—the head of the plunger 5 acting on the toes of the curved portions 9 9 and the pivots 13 13 as fulcrums—cause the jaws 8 8 to be thrown outward and open and then ready to receive any bit that may be placed in said jaws. Then a bit, 14, as shown in Fig. 2, may be inserted between the jaws, and by turning the loose jacket 25, described in my Letters Patent No. 356,214, the loose barrel 26, described in the same patent and operating as therein described, closes the jaws upon the bit 14, and the ridges of the jaws catch upon the stock of the bit and force the stock back in the tool-holding shaft, the angles of the stock adjusting themselves in the angular recesses of the said shaft and said jaws, the ridges holding the stock firmly in place, so that it cannot be drawn out. The plunger 5 being pressed back contracts the spring 7 in the chamber 4 of the tool-holding shaft. The function of the plunger is to keep the spring in place and to regulate the jaws, so that the motion back and forward may be even or parallel. The ridges of the jaws adjust themselves upon the various sizes of the stock of the bits which may be inserted in the tool-holding shaft. The bit is illustrated in Fig. 2 by a small stock, on which is adjusted the inner ridge of the jaws; but on a longer stock would be adjusted one of the other ridges, according to its length. By turning the loose jacket, which throws the loose barrel outward, as described in my Letters Patent No. 356,214, the spring expands, and the head of the plunger, acting on the toes of the jaws as a leverage, throws the jaws open and forward, and it is obvious that the bit is then released.

When a bit is adjusted as above described, it cannot become loose while boring, as frequently happens in the use of ordinary bit-stocks.

In my above description I have shown the ridges in the jaws arranged with the apex of their angles toward the outer end of the jaws; but it is obvious that said ridges may be arranged with the said apex toward the inner end of the jaws and accomplish a like purpose; but preferably I use the ridges as described.

It is obvious that the jaws above described must be used with a loose barrel; but any loose barrel, however operated, may be used, and not necessarily the loose barrel described in my Letters Patent No. 356,214.

Having described my invention and the operation thereof, what I desire to secure by Letters Patent and to claim is—

1. The jaws 8 8, provided with curved parts 9, in which are slots 10, and having inside angular recesses 11, extending from said parts 9 to the end of said jaws, which angular recesses are serrated with the ridges 15 near the outer end of said jaws, in combination with the tool-holding shaft 1, provided with slotted openings 2 2, in which said jaws 8 8 are pivoted by pivots 13 13, all arranged substantially as described, and for the purpose set forth.

2. In a bit-stock, the tool-holding shaft 1, provided with angular recesses 12 12 and interior chamber, 4, and having slotted openings 2, extending through said shaft, in combination with the jaws 8 8, adjusted in said openings 2 and pivoted therein by pivots 13, which pass through the slotted openings 10 of said jaws, the said jaws being provided with angular recesses 11, serrated with the ridges 15, as described, having curved parts 9, the toes of which are adjusted in the chamber 4 of said shaft 1, all arranged as described, and for the purpose set forth.

3. In combination, the tool-holding shaft 1, having slotted openings 2 and 3 and chamber 4, the serrated jaws, provided with slotted openings, adjusted in the slotted openings of said shaft by pivots 13, passing through said shaft and said openings, the plunger 5, having the spring 7 upon its shank, resting against the head, and arranged in the chamber 4 of said shaft, as described, and provided with a recess, 6, in which are adjusted the toes of said serrated jaws, all substantially as described, and for the purpose set forth.

4. The tool-holding shaft 1, provided with slotted openings and chamber and angular recesses, and having serrated angularly-recessed jaws pivoted in said openings by pivots 13, and the plunger 5, with the spring 7 upon it, adjusted in the chamber 4 of the said shaft, with its head recessed to be adjusted on the toes of said serrated jaws, in combination with a bit the stock of which is adjusted in the angular recess of said shaft and jaws and against the ridges of said jaws, all arranged as described, and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 16th day of March, A. D. 1887.

HENRY SMILEY.

Witnesses:
FREDERICK DUNHAM,
H. DUNHAM.