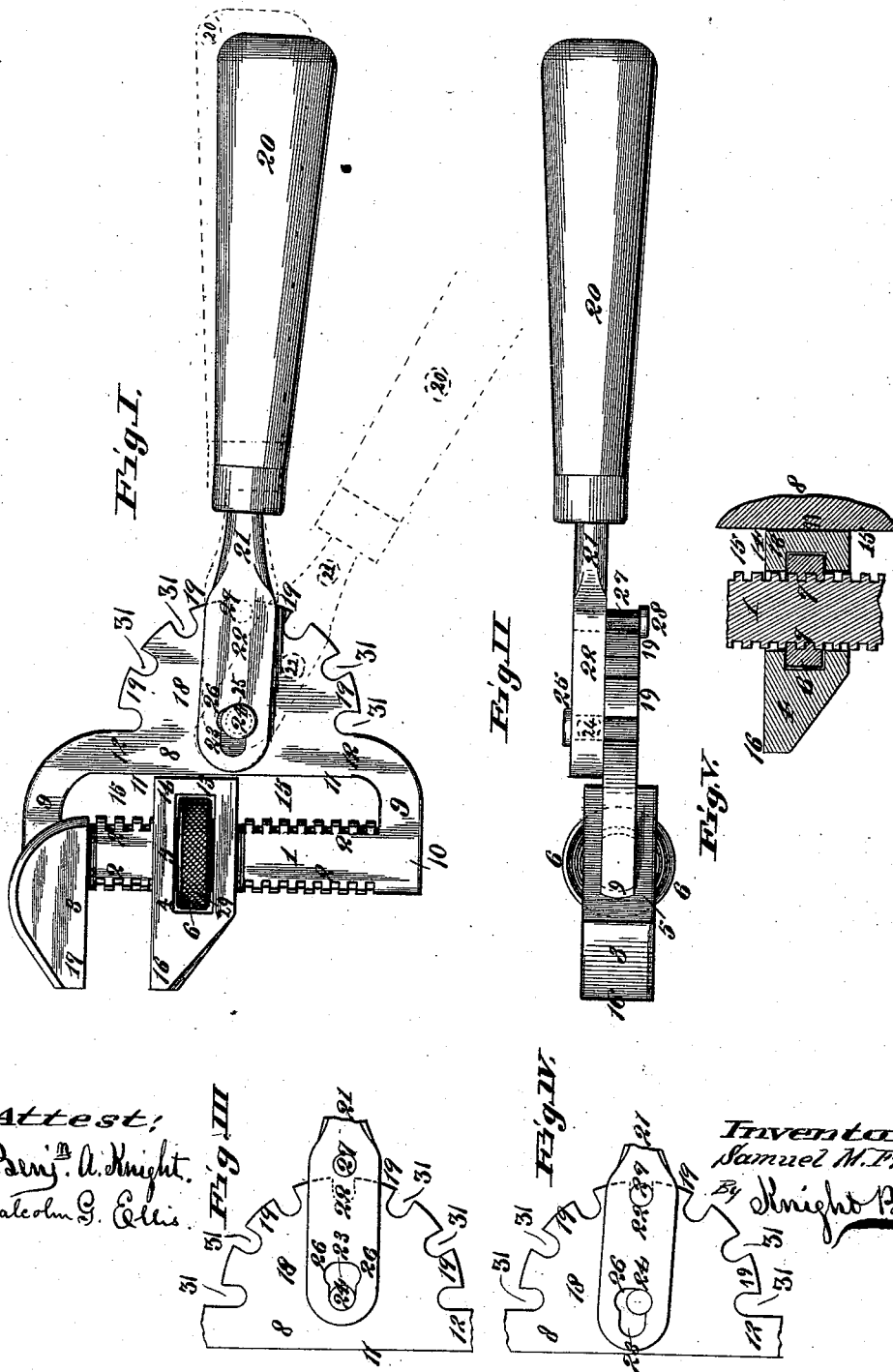


(No Model.)

S. M. FRIEDE.
COMPOUND ACTION MONKEY WRENCH.

No. 525,318.

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UNITED STATES PATENT OFFICE.

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COMPOUND-ACTION MONKEY-WRENCH.

SPECIFICATION forming part of Letters Patent No. 525,318, dated August 28, 1894.

Application filed November 6, 1893. Serial No. 490,066. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL M. FRIEDE, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Compound-Action Monkey-Wrenches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 This invention relates to a monkey wrench, in which the tail grip moves to and from the stationary head grip, on a flattened screw-stem, by the impulse of a traveler wheel which it carries, and the square faced heel of said
15 tail grip, works inside a slot-way within a bail shaped operative commander frame, that is secured to the head and foot of the wrench stem; the square face of said heel of the tail grip traveling in brace contact with the inner
20 surface of said bail shaped frame; a semi-circular rag or spur gear edged plate projecting integrally from the rear of said frame; and the slotted attachment head of the operative handle, being adjustably worked on a holder
25 pin that projects laterally from said semi-circular integral plate to bring a laterally projecting holder key it carries respectively into and out of engagement with the respective spurs of said rag edged plate; and the inven-
30 tion consists in features of novelty hereinafter fully described and pointed out in claims.

Figure I is a perspective view of the wrench; showing its means of adjustment. Fig. II is a rear edge view of the same. Fig. III is a detail elevation of the operating frame, with the adjustable rag spur geared connection of the operative handle, showing the same in its withdrawn, inoperative position. Fig. IV is a like, detail elevation, showing the same in its inserted, operative position; and Fig. V
40 is a transverse section, showing the tail grip member of the wrench on its flattened screw stem, the operator wheel that commands its movements, and its square heel face, that
45 braces against the slotted frame.

Referring to the drawings:—1 represents the flattened stem of the monkey wrench proper, and 2—2 are the forward and rear screw threads, in the edges of said stem. 3
50 is the grip head that projects from said stem. 4 is the tail grip, the holder slot 5 of which

travels on said flattened screw-stem, and 6 is an operator wheel, the internal screw thread 7 of which travels on the screw-threads 2—2
55 of said stem, as the impulse is given it by the action of the thumb of the operator on its milled periphery, 29, and as said wheel works within said holder slot 5, as it turns on its screw-seat, it carries its tail grip respectively toward and from the head grip. 60

8 represents a bail shaped frame, the attachment arms 9—9 of which are immovably respectively secured to the rear of the grip head 3 at one end, and to the foot 10 of the flattened screw stem 1. The flat contact side
65 11 of the back extension bar 12 of said frame is held sufficiently aloof by said arms 9—9, from the screw stem 1 of the monkey wrench, for the square face 13 of the heel 14 of the tail-grip 4, to travel back and forth on line
70 and in brace contact with said flat side 11, within its slot-way 15, so as to brace hold its projecting nose 16, in exact parallel line with the corresponding projecting nose 17 of the stationary grip-head 3. 75

18 represents a semi-circular rag or spur edge geared plate that extends integrally rearward from said bail shaped frame 8, and round the periphery of which are a series of rag-geared spurs 19. 80

20 represents the operative lever or handle, that works the wrench, on the projecting shank 21 of which is the commander head 22, a T slot 23 in the forward end of which, works
85 on the holder bolt 24 that is firmly seated in and projects from the face of said semi-circular rag geared plate 18, and the flat head 25 at the outer end of said holder bolt, holds said head to its work while it allows free adjusting slide movement, within the limits of
90 said T slot, including the locking limits of the T head 26 of said slot, in which when said bolt is turned into said T head, it is locked therein.

27 represents a journal key-pin that is 95 firmly seated in and projects laterally from near the inner end of the commander head 22, and 28 is the flat-head of said key-pin that holds it from lateral divergence from its hold between the rag-spurs 19 of the key-seat, 100 while it works from one curve bed key-seat 31 to another, and the said journal key-pin

turns therein to facilitate the turning of the holder bolt 24 as it locks into its T-slot seat.

The operation of the device has, in some measure, been indicated in the course of their descriptive introduction, but may be still further elucidated as follows:—The tail-grip, which is the adjustable movable member of the grip portion of the wrench, is set by the turn of its adjustable set wheel 6, on the flattened screw stem 1, to bring its point 16, to the required distance from the point 17 of the stationary grip-head 3, to accord with the diameter of the nut or other object, that is required to be gripped and held or turned by the monkey wrench. It will be seen that as the heel 14 of said adjustable tail-grip, moves in the adjustment of said grip, its square face 13 moves parallel and in loose contact with the flat holder side 11, of the bail shaped frame 8, within the slot-way 15; and said square face 13 of said tail-grip is thus brace held by said flat contact or holder side 11, so as to brace hold the grip-point 16 of the tail-grip 4, and thus braces it to maintain its parallel position in relation to the point 17 of the stationary grip-head 3. A square and reliable hold is thus effected for the grip of the monkey-wrench. It will also be seen that by means of the adjustable handle, and the compound lock engagement of its commander set-head 22, with the rag-spurs 19 of the semi-circular gear plate 18, the command of the operator over the monkey wrench is renewed for a certain number of times and to a certain extent. This is a very important feature of the invention, as monkey wrenches have frequently to be used in cramped places, where the wrench will only turn a short distance without coming into contact with some obstructive wall or other object; in which case, after turning until the obstruction is reached, the compound action provides means for setting back the handle 20 on its adjustable rag spur gear lock and effecting a further turn of the wrench without removing its grip hold. Thus also it will be seen that when the common, single action monkey wrench is used in holding or wrenching a joint, or other object, in close proximity to a wall which is generally the case, only slightly over a half turn can be effected without releasing the hold to take a fresh grip; but with my compound action wrench, the same turn can be effected by its first simple action, as with the common monkey wrench, and then by releasing the key-pin 27 of the commander head of the handle from its initial rag-spur hold and turning it back and entering it in its farthest rag-spur seat, a draw of the handle, more than completes the balance of the circle turn of the wrench, without removal of its grip hold. It will also be seen that in cases where the screw joint to be effected by the monkey wrench is in so cramped a position that there is only room for the handle to move a short distance, before it comes in contact with some

obstructive object, then the succession of rag spur holds round the periphery of the semi-circular plate 18, enables the commander head of the handle to renew its hold for a number of times, and thus effect the turn in cramped positions where a common monkey wrench could not work. And still further by the compound action and reaction in the rag-spur locked positions of the handle, the operator both avoids having to pass the dead center in the turn of the wrench in cases where great force is required to effect the turn, and also the action of the operator's arm need not be used to the great disadvantage it has to be with a common wrench, in the lateral movement of his arm in passing the dead center of the elbow joint. So also where the turn of the joint, &c., is barely within reach, either in elevation or otherwise, my compound wrench can effect the turn that a common wrench could not. Attention is also called to the fact that when the commander head of the handle is locked in its operative position, not only is the key pin 27 seated between certain of the rag spurs 19, but also the operative movement of the handle when either turned from or toward the operator, in the first instance locks the holder bolt 24 in one end of the T head 26 of the slot 23, and in the other case in the other end of said T head, so that in either case, while the handle operates the commander head self locks itself in its operative position. It will also be seen that when, (as is sometimes necessary,) the points 16 and 17 of the grip jaws, grip end on to the object to be wrenched, so that there is a lateral strain of the combination commander head lock 22, then the flat retention heads 25 and 28 respectively of the holder-bolt 24 and key-pin 27, retain their lock hold of said commander head, and thus prevent any slipping cogs or escape from its work and also said bolts act as a reinforcement so as to mutually strengthen and brace each other.

31 are the curve bed interspaces between the spur-cogs that allow the key-pin 27 to journal therein, as the holder bolt 24 locks into the respective ends of the T-slot 23, as shown in Figs. I, III and IV.

I claim as my invention—

1. In a compound action monkey wrench, the combination of the stationary clamping grip-head or jaw 3, the screw adjustable clamping tail-grip or jaw 4, having the rear projected heel 14 and square bracing face 13, the rag-spur attachment frame, against which said square faced heel braces, the rag-spur plate 18, the projecting holder bolt 24, the rag-spurs 19, provided with curve bed interspaces 31 the handle 20 with its commander head 22, provided with the locking T-slot 23, and the key-pin 27, that works and journals in said curve bed interspaces 31 between said rag-spur gear, and adjusts the hold of the wrench; substantially as shown and described.

2. In a compound action monkey wrench,

the combination of the flat screw stem 1, the stationary grip-head 3, the adjustable tail-grip 4, the frame 8 having the attachment arms 9 secured to said grip-head and to said screw-stem, and having the flat contact side 11, and said tail grip having the projected heel 14 with the square brace face 13 that braces against said contact side 11, the lever 20, the commander head 22, the locking T-slot 23, the lock holder bolt 24 and the rag-spur 19 provided with curve interspaces 31; substantially as shown and described.

3. In a compound action monkey wrench, the combination of the screw stem 1, the stationary grip-head 3 with the grip nose 17, the adjustable tail-grip 4, adjustably mounted on said stem, and provided with the holder slot 5, the operator wheel 6 having the milled periphery 29, and the internal screw 7, the frame 8 having the attachment arms 9, and straight flat contact face 11, the said adjustable tail-grip having the grip nose 16, and the projecting square heel 14 with the square contact brace face 13; substantially as shown and described.

4. In a compound action monkey wrench, the combination of the screw stem 1, having the screw threads 2, the stationary grip-head 3, the adjustable tail-grip 4, the operator wheel 6, adjustably screw mounted on said

screw stem, the bail shaped frame 8 having the flat straight contact side 11, the said adjustable tail grip having the projecting square heel 14, with the straight contact brace face 13, the semi-circular rag spur geared plate 18, integral with said frame, the rag spurs 19 on the periphery of said plate, provided with curve bed interspaces 31 and the keyed operative handle having the projecting key-pin 27 that works and journals between said spurs; substantially as shown and described.

5. In a compound action monkey wrench, the combination of the stationary grip head 3, the adjustable tail grip 4 having a projecting square faced brace heel, the rag-gear attachment frame 8, having the integral semi-circular plate 18, with the rag-spurs 19, the laterally projecting holder bolt 24, having the flat retention head 25, the handle 20, the shank 21, the commander head 22, and the key-bolt 27 having the flat retention head 28, the said commander head provided with the slot 23, having the locking T head 26; substantially as shown and described.

SAMUEL M. FRIEDE.

In presence of—

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HALCOLM G. ELLIS.