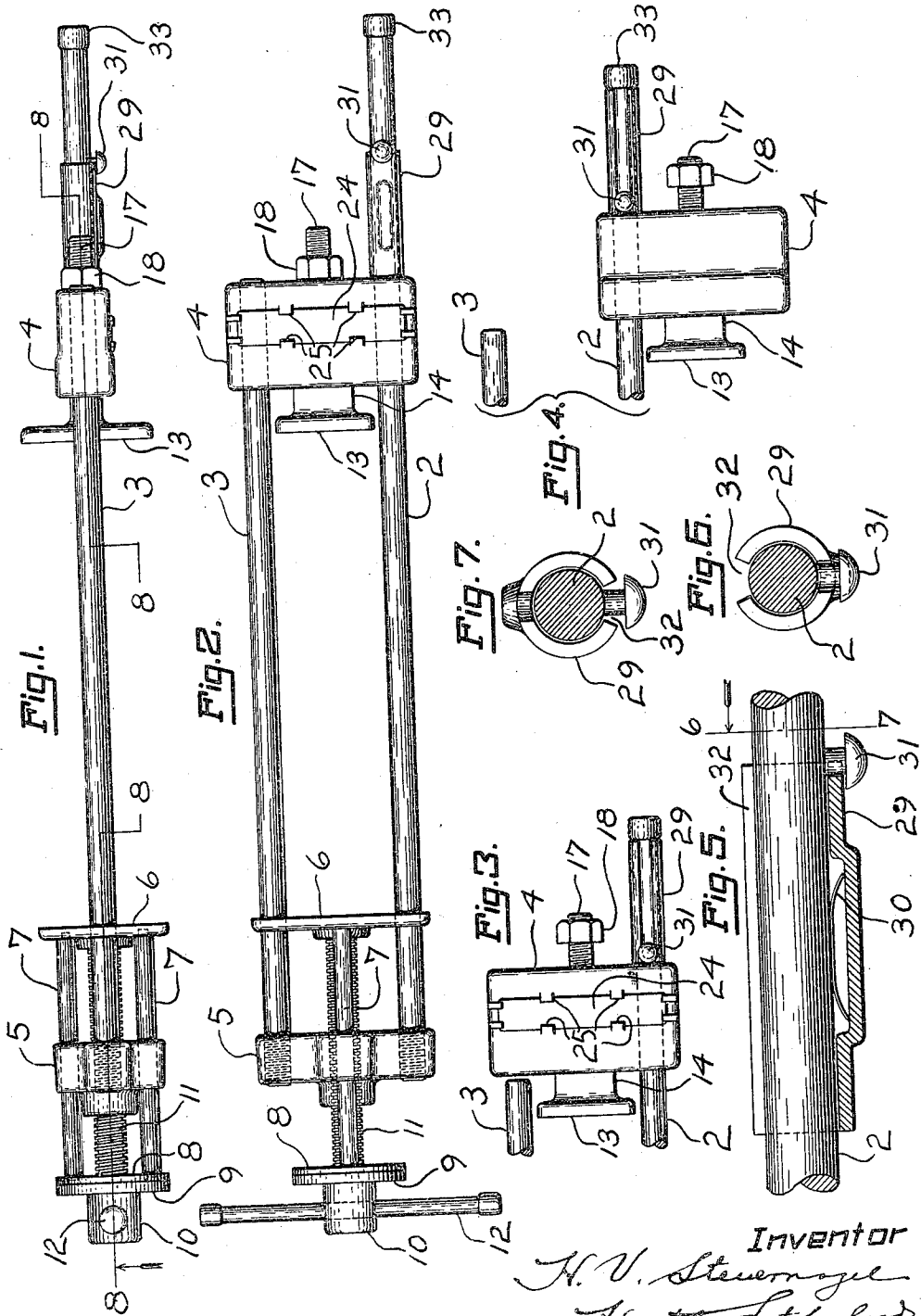


H. V. STEURNAGEL.  
 CLAMP.  
 APPLICATION FILED JAN. 20, 1916.

Patented Feb. 19, 1918.  
 2 SHEETS—SHEET 1.

1,257,040.



Inventor  
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 Attorney

1,257,040.

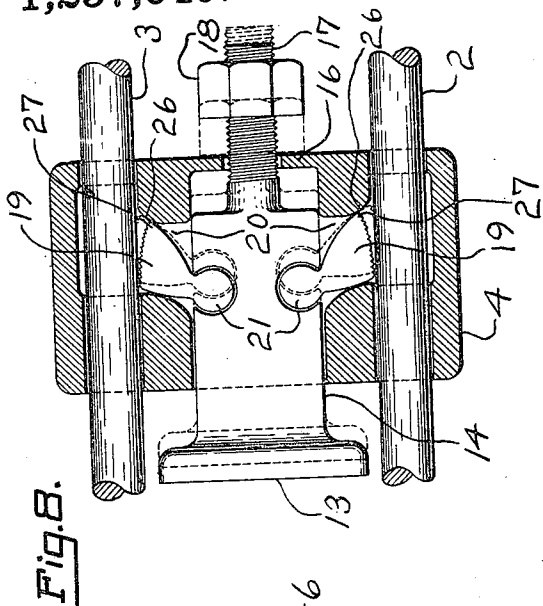


Fig. 8.

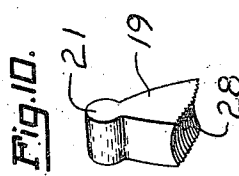
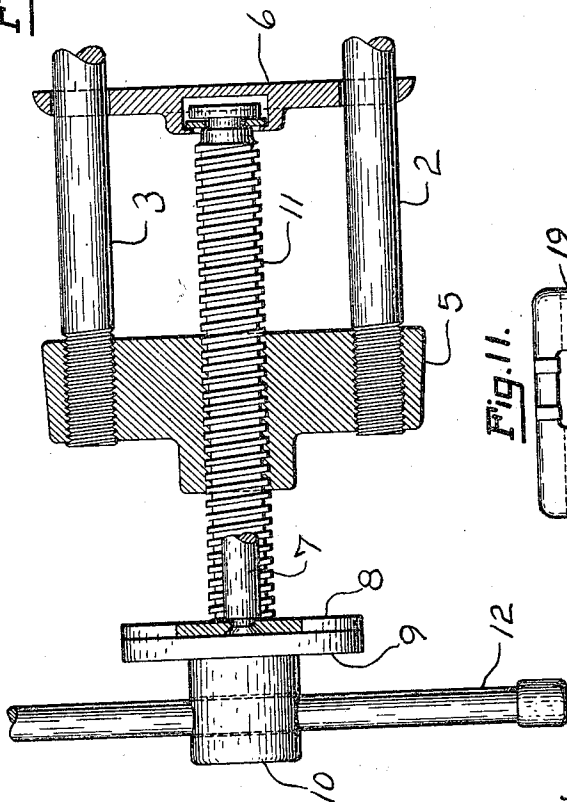


Fig. 10.

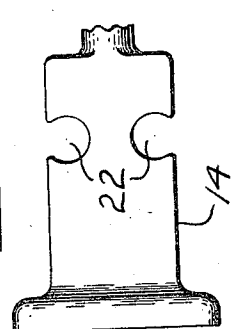


Fig. 9.

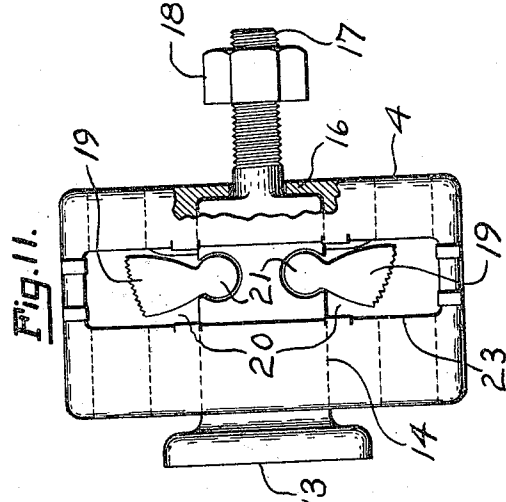


Fig. 11.

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# UNITED STATES PATENT OFFICE.

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## CLAMP.

1,257,040.

Specification of Letters Patent. Patented Feb. 19, 1918.

Application filed January 20, 1916. Serial No. 73,155.

*To all whom it may concern:*

Be it known that I, HUGO V. STEUERNAGEL, a subject of the Emperor of Germany, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Clamps, of which the following is a specification.

This invention relates to clamps. One of the objects of the invention is the provision of means of a simple and inexpensive nature by which a locker or jaw or lockers or jaws movable with a clamping member can be operatively associated with said clamping member. Another object of the invention is the provision of means of an effective character by which such a locker or jaw can be substantially and firmly set. Another object is the provision of means by which a block can be positively prevented from being separated accidentally from the shorter of two rods but which can at will be readily removed from said shorter rod. Another purpose is the provision of means by which rods used for transferring power from a screw to a clamping member can be acted on without undue wear on the rods. The invention comprises other features of novelty and advantage, which with the foregoing will be stated at length in the following description wherein I will set forth in detail that form of embodiment of the invention which I have selected for illustration in the drawings accompanying and forming part of the present specification. I do not limit myself to this particular disclosure; I may deviate therefrom in a number of respects within the scope of the invention defined by the claims following said description.

Referring to said drawings:

Figure 1 is a side elevation, and

Fig. 2 a top plan view of a clamp involving the invention.

Fig. 3 is a detail view in side elevation of a block with the controlling stop therefor in block releasing position, a part of the supporting rods being shown.

Fig. 4 is a similar view with the block swung back.

Fig. 5 is a longitudinal view partly in elevation of the outer portion of the longer rod, showing the stop in holding position.

Figs. 6 and 7 are cross sections on the line 6-7 of Fig. 5, showing said stop in its holding and releasing positions respectively.

Fig. 8 is a top plan view partly in section of the clamp.

Fig. 9 is a top plan view of the major part of a clamping member, and

Fig. 10 is a perspective view of a locker or jaw.

Fig. 11 is a top plan view partially in section of the adjustable block and its clamping member with the cap of the block removed and showing the jaws, this figure being intended especially to show how said jaws may be dropped into position.

Like characters refer to like parts throughout the several views. For instance, Figs. 1, 2, 3 and 4 are on smaller scales than the other views which in turn are on different scales somewhat.

The different parts of the device are carried in some suitable way for instance by supporting and guiding means, the parallel rods 2 and 3 answering my purpose. These rods 2 and 3 are made of any desirable length, the rod 2, however, being preferably longer than the rod 3 or its rear or outer end as distinguished from the front end projecting outwardly a greater distance than the corresponding end of the companion rod for a reason that will hereinafter appear. The length of the rods is not necessarily an important consideration, nor is their form. As a matter of fact as may be gathered from what I have already said, it is not necessary to use rods as supporting and guiding means in the structure. These rods carry blocks as 4 and 5. As shown the rods extend freely through the block 4 which for said purpose has perforations or holes for the passage of said rods, the former as will be clear being capable of sliding movement on the rods. In the present case the rods have a rigid connection with the block 5, their inner or forward ends being shown as threaded into said block 5 near the opposite ends thereof, the rods as a consequence being removably connected with both blocks.

Coöperative with the block 5 is a clamping member 6 which may as illustrated consist of a plate perforated near its ends to receive the two supporting and guiding

rods, said clamping member or plate being therefore, slidable on said rods. The means for advancing and retracting the clamping member 6 may be of any desirable kind, although those shown and now to be described are suitable for the purpose. Extending freely through perforations in the block 5 are push pins 7 of duplicate construction connected at their forward ends with the clamping member 6 and at their rear with a plate 8 which as illustrated consists of a disk. These rods or push pins 7 are opposite each other and it, therefore, follows that they are connected at their rear or outer ends to the disk 8 at approximately diametrically opposite places. The connection between said rods or push pins 7 and the disk 8 may be a rivet one. The disk 8 bears against the flange 9 of practically circular form constituting a rigid or integral part of the cap piece 10 rigid with the screw 11 extending through and in threaded connection with the block 5 from which as will be obvious, said block functions as a fixed feed nut. The cap piece 10 may be provided with a manipulating handle 12. By turning the screw 11 to the right through the action of the handle 12, provided the thread of the screw be a right-hand one as is the case in the organization shown, the screw will be moved to the right in Figs. 1 and 2 and its cap piece 10 through the flange 9 acting against the plate or disk 8 will impart a forward thrust to said disk or plate to thus advance the push pins or rods 7 and hence move the clamping member 6 to the right. The screw 11 has a swiveled connection with the clamping member 6, so that when the screw 11 is turned toward the left, the clamping member 6 will be retracted and will thus impart a corresponding movement to the rods or push pins 7, so that the disk or plate 8 will follow up the circular flange 9 on such action of the screw 11. As may be obvious the thread of the screw may be either right or left; as illustrated it is of the former type. The parts immediately associated with the clamping member 6 are very much like those shown in Letters Patent No. 1,126,116 granted to me January 26, 1915 and to which reference may be had. The principal difference in this particular between what is shown herein and what is represented by the patent is the manner in which the push pins 7 receive their advancing thrusts through the operation of a flange 9 or its equivalent. In the Letters Patent mentioned these rods acted directly against a part virtually corresponding to the flange, the consequence being that they dug or bit into the flange or operating part. By connecting them with a plate or bridge piece as 8 and having the latter take the thrust, there is no undue wear on the rods or push pins. This cap piece 10 with its flange 9 presents

a suitable actuator for advancing the push pins or rods 7, but does not apply its effect directly thereto.

The adjustable block 4 is provided with a clamping member 13 provided with a shank 14 the block 4 having a chamber 15 closed at its rear end as at 16 to receive for sliding movement said shank 14. The latter in turn is equipped with an extension or stud 17 extending freely through a plain hole or perforation in the wall 16, the extension or stud being fitted with a nut 18 which may as shown by dotted lines engage the adjacent and rear wall of the block 4 to hold the clamping member 13 in a fixed position. The clamping member 13 is provided with means movable therewith for automatically locking the block 4 or its equivalent to the supporting and guiding rods 2 and 3 or analogous means, and one or more dogs as will be hereinafter described may be utilized for this purpose. These dogs are movable with the shank 14 and on retractive movement of the shank they are automatically set. For securing the locking action I have shown duplicate dogs 19 adapted to swing in cavities as 20 opening into the chamber 15 and through which cavities the rods 2 and 3 respectively project. Each of the dogs 19 is provided at its inner end with a pivotal portion 21 adapted to enter a seat as 22 in the shank 14. As shown the seats 22 consist of drilled holes of circular form and preferably a little greater than half a circle, intersecting the side edges of said shank. While as may be inferred I do not restrict myself to this type of seat for a pivot portion as 21, still it is an easy one to form, in that it can be made simply by a drill. In addition to this the seats in question present a convenient way of dropping the dogs 19 into place. The block 4 as illustrated has an elongated slot 23 extending from side to side thereof and through which the dogs can be passed when they are to be connected with the clamping member 13 or shank 14 thereof. In assembling the parts the shank 14 is introduced into the chamber 15 from the open side thereof and the threaded extension or stud 17 is passed through the hole in the wall 16, the motion continuing until the back part of the shank abuts against the wall 16. This brings the two holes or apertures 22 about central of the width of the slot 23 which extends practically from one side to the other of the block and which intersects the chamber 15. When this abutting relation is present the dogs will be passed through the slot 23 and their pivot portions 21 will be dropped into the holes 22, the dogs bottoming against the under surface of the chamber 15 and their upper and lower faces being practically flush with the corresponding surfaces of the shank. After the dogs are thus positioned the slot 23 will be

covered by the cap or plate 24 held in position by lugs 25 and the clamping member 13 will be moved forward to practically its extreme advanced position as shown in Fig. 8 for instance by full lines, thus carrying the dogs 19 therewith so that the rods 2 and 3 can be freely passed through the block 4. The rear walls of the cavities 20 are shown as having cam or wedge faces 26, the tips 27 at the free ends of the dogs being near the entering ends of these cam faces 26 when the clamping member is in its extreme advanced position, so that as the clamping member is retracted and carries the swinging dogs 19 therewith, the tips 27 of the dogs will ride along the cam or wedge surfaces 26 and thus apply to the dogs a powerful thrust to force the same in solid engagement with the respective rods 2 and 3. The dogs 19 are slightly concaved as at 28 and roughened on their operative faces, the concavity or arch agreeing practically with the radius of the respective rods, which in the present instance are cylindrical in cross section. The roughening of the operative portions of the dogs also insures the latter gripping the rods in a thoroughly substantial manner.

The action of the present clamp in a general way is not unlike that shown in the prior Letters Patent to which I have already referred. Initially the adjustable block 4 is moved outward or toward the rear so as to separate the clamping member 13 from the clamping member 6 a distance slightly more than the width of the work which is received between the two rods 2 and 3 or between the two clamping members. In mounting the work it will be clear that the clamping member 13 is in its advanced position. When the work is received between the two clamping members 6 and 13 the manipulating portion 12 is operated to advance the clamping member 6 or move it toward the right in Figs. 1, 2 and 8, thus moving the work and causing the work to retract the clamping member 13, the latter as it is retracted moving the dogs 19 rearward and causing the tips 20 of the dogs to ride along the cam or wedge surfaces 26 and thus to force the dogs into engagement with the rods 2 and 3, the greater the range of movement retractively of the clamping member 13, the greater will be the bite of the dogs on the rods so as to preclude any possibility of movement of the block 4.

For the same purpose as recited in said prior Letters Patent, the rod 2 extends rearwardly of the rod 3 a distance sufficient to permit the block 4 to be disconnected from the rod 3. I provide means such as those now to be described which will permit positively the block from being accidentally separated from the rod 3 but which when desired can be operated to secure such condition. The

longer rod 2 as shown is provided with a stop 29 in the form of a longitudinally split tube embracing and slidable on the extended portion of the rod 2. This stop or tube 29 houses a spring 30 to engage the circumferential portion of the rod 2 to hold said sleeve against accidental turning movement. Projecting from the rod 2 is a stop 31. In Figs. 1 and 2 the solid or uncut rear end of the sleeve or tube 29 is against the stop or abutment 31 at the outer or rear end thereof, while the inner end of the said tube or sleeve is against the block 4 which at this time is connected with the rod 3, the consequence being that the block at this time cannot be slid over on the rear or outer end of said rod 3. To permit the disconnection of the block 4 from said rod 3, the following procedure may be adopted. The sleeve 29 will be turned on the rod 2 to bring its longitudinal slot 32 in register with the shank of the stop or pin 31, so that the stop 27 can then be slid rearward or outward as shown for instance in Fig. 4, the stop 31 traversing the slot 32 on such movement which will continue to an extent sufficient to permit the rearward or outward sliding of the block 4 to carry it free of the rod 3 as shown in Fig. 4 at which point the block 4 can be swung back so that work can be passed into the space between the two rods 2 and 3 at this time not bridged, and when the work is thus received, the parts can be returned to their initial positions as best shown in Fig. 2. The rod 2 may be provided with an abutment as 33 at its extreme rear end which is engaged by the sleeve 29 when the latter is moved to block releasing position. This abutment 33 which may be in the form of an enlargement of the rod 2 prevents the removal of the sleeve from its supporting rod and thus guards against the possibility of its being lost.

What I claim is:

1. The combination of long and short rods, a block carried by the rods for sliding adjustment and provided with clamping means, the extended portion of the long rod being provided with a sleeve and a stud, the sleeve being longitudinally slotted and the stud engaging the solid outer end of the sleeve, the sleeve being turnable on the long rod to bring it into a position where its slot can receive the stud, and means to normally prevent accidental turning movement of the sleeve.

2. The combination of long and short rods, a block carried by the rods for sliding adjustment and provided with clamping means, clamping means cooperative with the other clamping means, the extended portion of the long rod being provided with a sleeve, and a stud, the sleeve being longitudinally slotted and the stud engaging the solid outer end of the sleeve and the latter abutting

against the block when the same is on the shorter rod, the sleeve being turnable on the long rod to bring it into a position where its slot can receive said stud, whereby the sleeve can be moved rearwardly or outwardly to free the block and permit its separation from the shorter rod.

In testimony whereof I affix my signature in presence of two witnesses.

HUGO V. STEUERNAGEL.

Witnesses:

L. L. MARKEL,  
HEATH SUTHERLAND.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."