

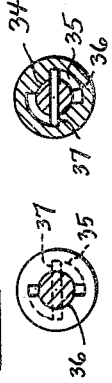
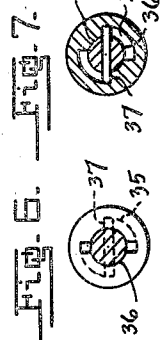
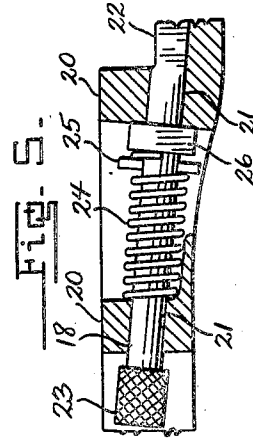
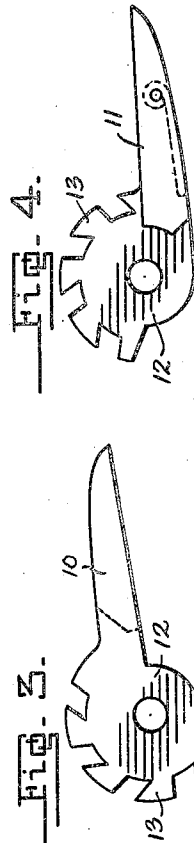
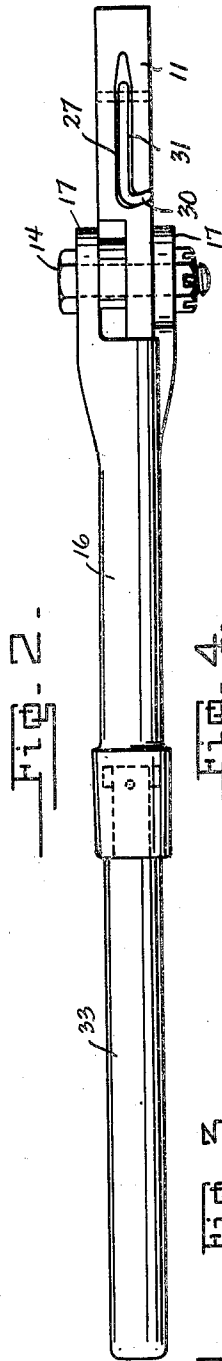
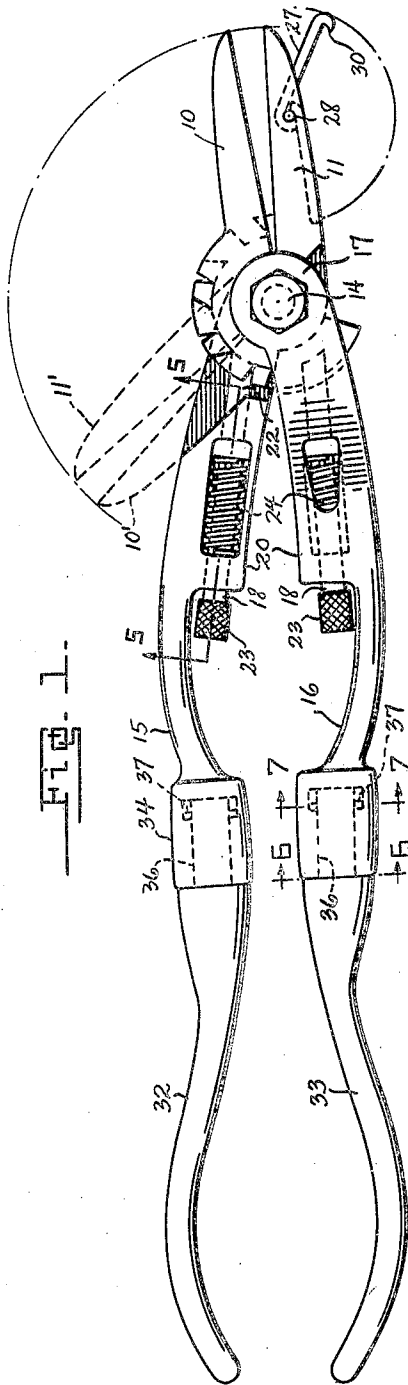
July 27, 1943.

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2,325,035

ADJUSTABLE JAW PLIERS

Filed March 19, 1942



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2,325,035

ADJUSTABLE JAW PLIERS

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Application March 19, 1942, Serial No. 435,262

6 Claims. (Cl. 81—51.4)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

This invention relates to pliers or wrenches and has for an object to provide a pair of pliers wherein the jaws are adjustable, not only to each other, but also with relation to the angle to their operating handles.

Pliers, as conventionally made, usually have the jaws at a fixed angle to the handles, although in some cases, such as in U. S. Patent No. 1,670,188, means are provided for adjusting one jaw relative to the other so as to take care of objects of varying width. With the present invention this same function is provided, but in addition it becomes possible to change the angle between the pair of jaws and the pair of operating handles. It thus becomes possible with this invention to manipulate an object around a corner so that the handle may extend in one direction and the jaws will extend at a desired adjusted angle in a different direction.

With the foregoing and other objects in view, the invention consists in the construction, combination and arrangement of parts hereinafter described and illustrated in the drawing, in which:

Fig. 1 is an elevational view of the pliers of this invention.

Fig. 2 is an edge view of the bottom of Fig. 1.

Figs. 3 and 4 are detail views of the jaws per se; and

Figs. 5, 6 and 7 are sectional views on lines 5—5, 6—6, and 7—7 of Fig. 1.

There is shown at 10 and 11 the individual and complementary jaws of the pliers of this invention. Each of the jaws 10 and 11 is provided with a circular hub 12, the hubs 12 being complementary to each other and therefore of approximately one-half the thickness of the jaws. Each hub 12 is provided with a ratchet consisting of a plurality of projecting teeth 13 extending from the periphery thereof, the teeth on the hub 12 of jaw 11 commencing at the gripping face of the jaw 11 and extending around approximately one-half of the periphery thereof, while on the hub of the jaw 10 the teeth 13 commence adjacent the back of the jaw and extend about approximately three-fourths of the periphery of the hub. It will also be observed that these teeth extend at an angle to the radius of the hub, the teeth on one jaw sloping in a reverse direction to the teeth on the other jaw.

The jaws 10 and 11 are mounted on a common pivot 14 which also extends through ears 17 of shank handles 15 and 16. The essence of this invention is in the fact that each of the jaws is angularly adjustable relative to its shank handle;

that is, shank handle 15 may be adjusted relative to its jaw 10 and the shank handle 16 may be adjusted relative to its jaw 11. The means for adjusting each jaw relative to its shank handle is substantially identical and includes a plunger 18 extending through its shank handle. The shank handle is provided with a pair of spaced apart ears 20 having aligned apertures 21 through which the plunger 18 extends, plunger 18 being provided at one end with a pawl or tooth 22 shaped to fit between the ratchet teeth 13, and at its other end with a knurled enlarged handle 23 for retracting the plunger against the force of a spring 24 about the plunger 18 between the ears 20. An anchor pin 25 and washer 26 serve to provide a base for the spring 24 to exert its pressure on the plunger 18.

It will be apparent that by withdrawing the plunger 18 by means of its handle 23 against the spring 24 the plunger pawl or tooth 22 may be withdrawn from between the ratchet teeth 13 of the jaw, permitting the jaw to be rotated relative to the shank handle. The jaw may then be held in a different angular adjustment relative to the shank handle by permitting the plunger tooth 22 to project between a different pair of ratchet teeth 13.

One of the jaws, as 11, may also be provided with a cotter pin extractor 27 pivoted on a pin 28 through the jaw 11 and provided at its other end with a cotter pin hook 30. When not in use, the extractor 27 and its hook 30 may be rotated and countersunk into a suitably shaped recess 31 provided in the back of the jaw 11.

While the shank handles 15 and 16 may be of any desired length, it may be found more convenient to make these shank handles 15 and 16 fairly short, permitting the pliers to be used in close quarters when necessary. It may also, however, be desirable that the shank handles be of substantial length, and to provide for this contingency each of the shank handles 15 and 16 is provided with extension handles 32 and 33. In order to quickly attach the extension handles to the shank handles, each shank handle is provided with a socket 34 having an internal bayonet joint slot 35 formed therewithin. The ends of the extension handles 32 and 33 are each provided with complementary shaped extensions 36 through which extend suitably located bayonet pins 37 to cooperate with the bayonet slots 35, thereby permitting the extension handles to be quickly and easily attached or detached, as desired.

In operation, by holding plunger 23 in re-

tracted position, the jaws 10 and 11 may be angularly adjusted relative to the handle shanks, either for the purpose of gripping a larger object or for the purpose of gripping an object located around a corner from the direction that the handle shanks can be extended. Thus, the jaws set to grip an object around a corner are shown in dash outline 10' and 11'. In this case, the jaws in adjusted position are close to each other but at an angle to the handle shanks. If desired to grip a wide object, the jaws 10 and 11 would be placed at a desired angle to each other. Obviously, instead of straight jaws, as shown, the gripping faces may be made arcuate or serrated, or both, as conventional.

Other modifications and changes in the number and arrangement of the parts may be made by those skilled in the art without departing from the nature of the invention, within the scope of what is hereinafter claimed.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

Having thus set forth and disclosed the nature of this invention, what is claimed is:

1. An instrument or tool comprising a pair of jaws mounted for operation on a common pivot, a pair of handles for said jaws mounted on the same pivot and positive locking means for quickly fixing each handle to its respective jaw in selectively adjusted angular relations so that each jaw will be positively locked from turning in either direction relative to its handle.

2. An instrument or tool comprising a pair of jaws mounted for operation on a common pivot, a pair of handles for said jaws mounted on the same pivot and positive locking means for quickly fixing each handle to its respective jaw in selectively adjusted angular relations so that each jaw will be positively locked from turning in either direction relative to its handle, said locking means including a ratchet portion on each jaw having substantially rectangular teeth and a spring-pressed complementary lug mounted on each handle adapted to slide into a selected space between the ratchet teeth on the respective jaw portion.

3. An instrument or tool comprising a pair of jaws mounted for operation on a common pivot, a pair of handles for said jaws mounted on the same pivot and positive locking means for quickly fixing each handle to its respective jaw in selectively adjusted angular relations so that each

jaw will be positively locked from turning in either direction relative to its handle, said locking means including a ratchet portion on each jaw having substantially rectangular teeth and a spring-pressed complementary lug mounted on each handle adapted to slide into a selected space between the ratchet teeth on the respective jaw portion, said lugs being provided with means whereby to manually retract them against the spring pressure.

4. An instrument or tool comprising a pair of jaws mounted for operation on a common pivot, a pair of handles for said jaws mounted on the same pivot, positive locking means for quickly fixing each handle to its respective jaw in selectively adjusted angular relations so that each jaw will be positively locked from turning in either direction relative to its handle, and extensions for said handles joined thereto by bayonet connections for quick attachment or removal.

5. An instrument or tool comprising a pair of jaws mounted for operation on a common pivot, a pair of handles for said jaws mounted on the same pivot, positive locking means for quickly fixing each handle to its respective jaw in selectively adjusted angular relations so that each jaw will be positively locked from turning in either direction relative to its handle, said locking means including a ratchet portion on each jaw having substantially rectangular teeth and a spring-pressed complementary lug mounted on each handle adapted to slide into a selected space between the ratchet teeth on the respective jaw portion, and extensions for said handles joined thereto by bayonet connections for quick attachment or removal.

6. An instrument or tool comprising a pair of jaws mounted for operation on a common pivot, a pair of handles for said jaws mounted on the same pivot, positive locking means for quickly fixing each handle to its respective jaw in selectively adjusted angular relations so that each jaw will be positively locked from turning in either direction relative to its handle, said locking means including a ratchet portion on each jaw having substantially rectangular teeth and a spring-pressed complementary lug mounted on each handle adapted to slide into a selected space between the ratchet teeth on the respective jaw portion, said lugs being provided with means whereby to manually retract them against the spring pressure, and extensions for said handles joined thereto by bayonet connections for quick attachment or removal.

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