May 22, 1945. W. W. MORRIS 2,376,446

INVERTED SPOT-FACER

Filed Jan. 28, 1944

Fig. 1.

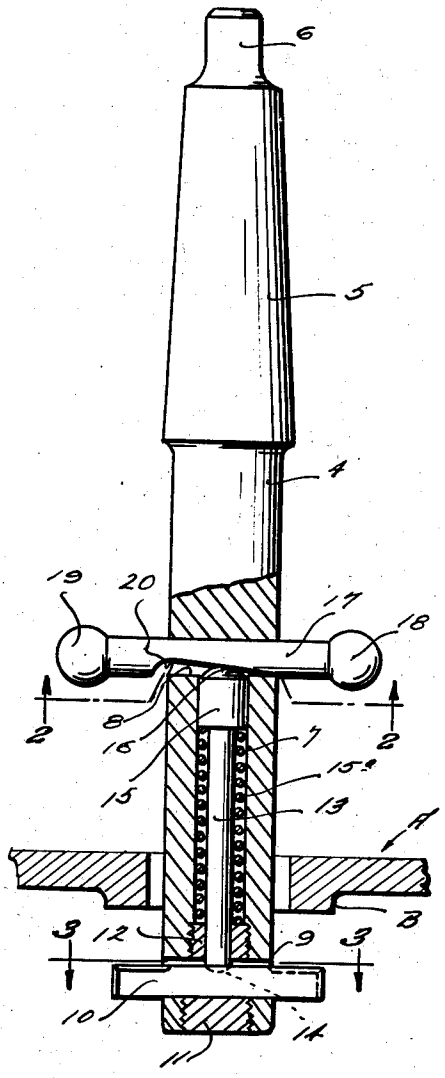


Fig. 2.

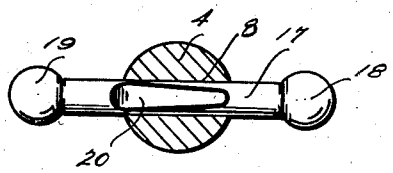
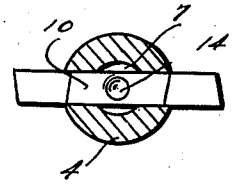


Fig. 3.



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INVERTED SPOT-FACER

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4 Claims. (Cl. 90—11)

This invention relates to an inverted spot-facer embodying a special adaptation and arrangement of coacting elements to render it particularly useful in spot-facing the underside of heavy duty and unwieldy flanges and equally well adapted for use where the surface to be acted on is virtually inaccessible and not given to ready use of ordinary cutting tools.

Needless to say, I am aware that various types of spot-facers have been patented and that some of these are on the market and in use, and so far as I have been able to ascertain these devices are often quite complicated and difficult in themselves for expeditious handling and utility. What is more, these devices, at least the ones which have come to my attention, are correspondingly expensive and require the use of difficult to attach and detach cutting tools.

It follows that my primary aim is to generally improve upon known patented and marketed spot-facers by providing one which lends itself admirably well for efficient and expedient use for so-called inverted work, the preferred embodiment being characterized by a conveniently fashioned tool holding slot, locking means in the form of a spring-released retainer pin, and readily available means for normally holding the pin in projected retention position against the tension of the automatic releasing spring.

Other features and advantages will become more readily apparent from the following description and the accompanying illustrative drawing.

In the drawing, wherein like numerals are employed to designate like parts throughout the same—

Figure 1 is a view partly in section and partly in elevation of an inverted spot-facer constructed in accordance with the ideas and principles of this invention.

Figures 2 and 3 are sections on the lines 2—2 and 3—3, respectively, of Figure 1, looking in the direction of the arrows.

Referring now to the drawing by distinguishing reference numerals it will be observed that the cylindrical stem or body 4 is provided with a tapered shank 5 and driving lug 6, which latter parts fit into a holding and operating chuck of appropriate construction (not shown). The opposite end of the shank 4 is provided with a bore centrally arranged and defining a socket 7. At its inner end this bore communicates with a somewhat smaller transverse bore or passage 8. At the outer end there is a transverse slot 9 intersecting the bore and fashioned to accommodate the bladed cutter tool 10. Also at the outer end I provide screw-threads on one side of said slot to accommodate a screw plug 11. On the opposite side of the slot and in the socket proper I provide a screw-threaded guide bushing 12 through and beyond which the detent end of the retainer pin 13 projects. The central portion of the cutter tool is provided with a depression forming a keeper seat 14 for the detent end of the retainer pin. At its inner end the retainer pin is provided with an enlarged head 15 fitting snugly but slidably in the socket 7, the extreme inner end of said head being of concavo-convex configuration as at 16 and this projecting into the transverse bore 8 to function as a cam. A coiled spring 15a is arranged in the socket and surrounds the stem portion of the pin, the spring bearing at one end against the bushing 12 and at its opposite end against the shoulder forming head 15. The tendency of the spring is to expand and to force the head 16 into the bore 8 and to detach the detent from its keeper seat 14 in the cutter tool.

The numeral 17 designates a manually manipulated release device, this being in the form of a substantially cylindrical rod member sliding snugly in and beyond opposite ends of the transverse adapter bore 8. This member is provided at opposite ends with spherical or ball-heads 18 and 19 for convenient finger-grips. The intermediate underside of the rod 17 is provided with a tapered recess 20 which defines and functions as a wedge, this to engage the cam 16. It is obvious, therefore, that by pushing the device 17 in a direction from right to left in Figure 1, the wedge comes into play to force the retaining or locking pin 13 down into the keeper seat 14 to thus hold the cutter tool 10 in operative position. The return tension of the coil spring tends to hold the parts in this coacting retaining relationship. Then by forcing the device 17 in the opposite direction, that is, from left to right, sufficient clearance between the wedge 20 and the cam 16 is provided to allow the spring to function.

It is evident that the cutter tool 10 is removed, to start with, in order to pass the body 4 of the tool holder through the aperture in the work A. Then the cutter tool is inserted and fastened in place by the retaining means just described after which the protruding portion B can be spot-faced. This accounts for the so-called "inverted" spot-facing feature.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with

the drawing. Therefore, a more lengthy description is regarded as unnecessary.

Minor changes in the shape, size and arrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

Having described the invention, what is claimed as new is:

1. In an inverted spot-facer of the class described, a body including a tapered chuck shank at one end, the opposite portion of the body constituting a stem and having a transverse slot therein to accommodate a quick insertable and removable cutter tool, a retaining pin slidably mounted in said stem and engageable with said cutter tool resilient means biasing said pin away from said cutter tool, and a wedge slidably mounted in said stem and engageable with said pin to move the same against the pressure of said resilient means.

2. An inverted spot-facer of the class described comprising a body having an opening therein and having chuck accommodation means at one end and a slot at the opposite end, a removable cutter tool in said slot, a second slot in the intermediate portion of the body, a spring, a retaining pin adapted to be returned by said spring slidably mounted in said opening the body between the slots, the detent end of said pin projecting into the cutter slot, the opposite end of the pin projecting into the second-named slot, a manually manipulated wedge slidable in said last-named slot and engageable with the adjacent end of said pin.

3. In an inverted spot-facer of the class described, a body provided with transverse slots parallel to one another and at longitudinally spaced points, a bore intersecting and communicating at its opposite ends with the respective slots, a headed retainer pin slidably mounted in said body, a coiled spring in the bore surrounding the pin and engaging the head, and a pin actuating and holding device slidable in one of the transverse slots, this being in the form of a cylindrical rod having ball-heads at opposite ends having its intermediate portion formed with a wedge surface, the head of the retainer pin having a cam engageable with said wedge surface.

4. An inverted spot-facer of the class described comprising a body including chuck engaging and driving means at one end, the opposite end being formed with a longitudinal centrally arranged bore, the outer end of the bore being threaded, a plug threaded into said outer end, a transverse slot in the body intersecting the bore and adapted to accommodate a cutter tool, said bore being provided with a bushing, a retainer pin having its stem portion slidable through and beyond said bushing and into the slot, the pin at the opposite end having a cam-equipped head, a coiled spring in the bore surrounding the stem and engaging the bushing at one end and the head at the opposite end, said body having a second transverse slot, the inner end of said bore communicating with said second slot, a cylindrical member slidable in said second bore and provided with a wedge engageable with the head, and finger-gripping elements at opposite ends.

WESLEY W. MORRIS.