June 16, 1925. 1,542,711

W. A. LOEVEN

PORTABLE PUNCH

Original Filed Jan. 4, 1923 2 Sheets-Sheet 1

Fig. 1.

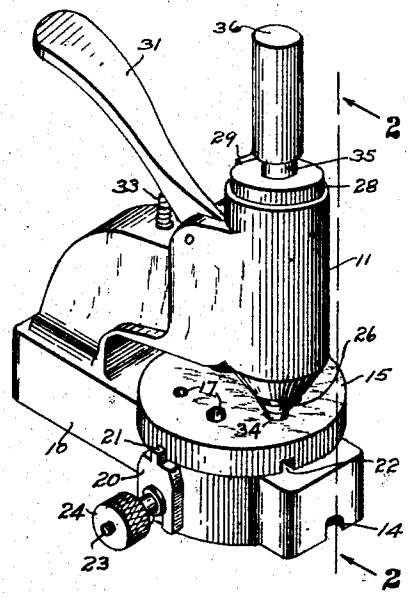


Fig. 3.

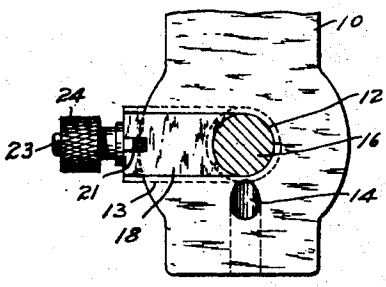


Fig. 2.

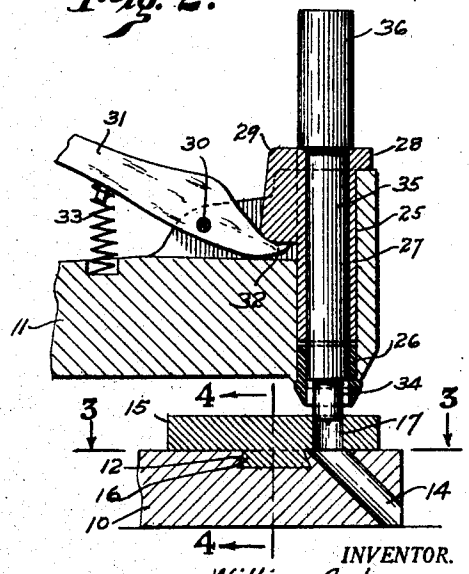
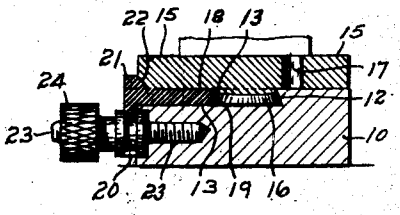


Fig. 4.



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Fig. 5.

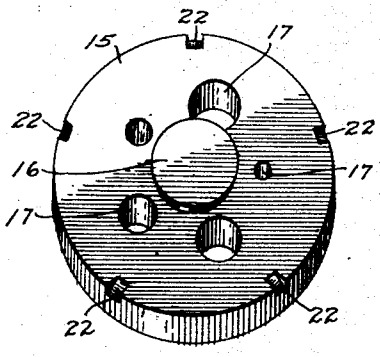


Fig. 6.

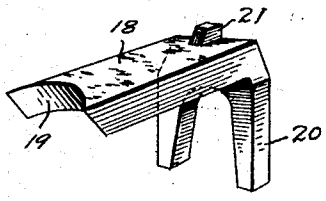


Fig. 8.

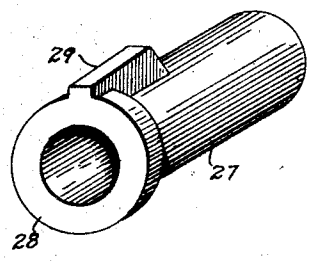


Fig. 7.

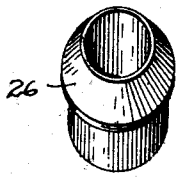
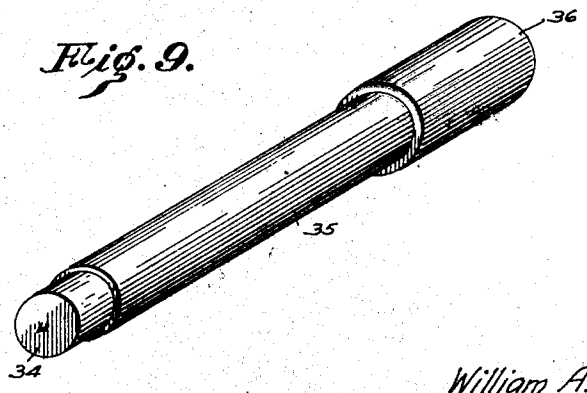


Fig. 9.



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Patented June 16, 1925. 1,542,711

UNITED STATES PATENT OFFICE.

WILLIAM A. LOEVEN, OF LOS ANGELES, CALIFORNIA.

PORTABLE PUNCH.

Application filed January 4, 1923, Serial No. 610,686. Renewed October 28, 1924.

To all whom it may concern:

Be it known that I, WILLIAM A. LOEVEN, a citizen of the United States, and resident of Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in a Portable Punch, of which the following is a specification.

This invention relates to a device for perforating sheet stock and pertains particularly to a punching tool operable by a hammer.

The primary object of this invention is to provide a tool having a set of interchangeable punches, the punch operation being effected by a hammer. Another object of this invention is to provide a punch of the character described having means for withdrawing it from the stock after the perforating operation has been performed. A further object of this invention is to provide a portable punch having a magazine type of die. In addition to the broader objects of this invention there are certain details of structure, whereby a strong, durable, simple, and economical construction is obtained.

These objects together with other objects and corresponding accomplishments are obtained by means of the embodiment of my invention illustrated in the accompanying drawing, in which:

Fig. 1 is a perspective view of the complete punch; Fig. 2 is a fragmentary sectional view as seen on the line 2—2 of Fig. 1; Fig. 3 is a section as seen on the line 3—3 of Fig. 2; Fig. 4 is a section as seen on the line 4—4 of Fig. 2; Fig. 5 is a perspective view of the die; Fig. 6 is a perspective view of the die locking member; Fig. 7 is a perspective view of the punch bushing; Fig. 8 is a perspective view of the punch extracting sleeve; and Fig. 9 is a perspective view of a punch.

Referring more particularly to the drawings, the punch frame comprises a base portion 10 and an overhanging head 11. The base portion has a semicircular undercut recess 12 communicating at one end with a corresponding undercut slot 13 of a width equal to the diameter of the circular portion below. Extending from the top of the base to the bottom thereof is a passage 14 to receive the pieces punched from the stock.

The die consists of a disk 15 having a concentric boss 16. The boss is undercut and of such size that it will snugly fit in the recess 12 of the die and can be inserted in position by sliding the boss into the slot 13 and therealong to the recess 12. In the disk are holes 17 of sizes corresponding to the punches to be used and so disposed upon the disk that they may be positioned to exactly register with the punch inserted in the head. The position of a hole, when in operative position, is over the passage 14 in the base. The locking device for the die comprises a finger 18 having its sides bevelled so that it may be slidably disposed within the slot 13. The end of the finger 19 is cut semicircular and undercut, so that when the finger is inserted in the slot there will be a circular recess formed by it and the recess 12 in the base. The outer end of the finger has a stop portion 20 of yoke form. On the upper side of the stop is a lug 21 adapted to engage in a notch formed in the disk 15. There are a number of notches in the disk indicated by 22, these being for the purpose of aligning the disk to make a hole properly register with the punch. Extending from the base in the recess 13 is a stud 23. Mounted upon the stem is a nut 24 having a recessed portion in which the branches of the stop 20 are disposed. By screwing the nut 24 back and forth upon the stem 23, the finger 18 may be moved into and out of the slot. The lug 21 is registered with a slot 22 whereupon by tightening the nut 24 the boss 16 of the disk will be clamped in position.

The head is provided with a vertical bore 25. Mounted in the lower end thereof is a bushing 26. Slidably disposed in the upper portion of the bore is an extracting sleeve 27. This sleeve has a shoulder 28 formed on the upper end thereof to engage the head at the top of the bore and limit its movement. On one side thereof is a rib 29 for disposal in a slot formed in the head. The walls at the side of the slot serve to support a pivot pin 30 upon which is mounted a lever 31. The toe 32 of the lever is disposed under the rib 29. A compression spring 33 is so positioned that it will tend to maintain the lever in position with the toe depressed. A punch comprises a punch end 34 to cooperate with the guide, a cylindrical shank 35 which will fit slidingly within the sleeve 27 and the bushing 26, and a head 36. A shoulder is formed between the shank and head so that the head may engage the top of the sleeve when the punch

is in position after perforation of the stock. There may be a series of punches, each of which differ in the end 34, but whose shanks and heads are the same.

Suppose it is desired to punch a certain hole in the stock. The nut 24 is loosened to withdraw the finger 18 from the boss of the disk and permit its rotation. The disk is rotated so that the proper hole is in punch position. The nut 24 is then tightened, the lug 21 entering in the recess corresponding to the hole.

The nut 24 is tightened, the lug 21 entering into recess 22 and properly aligning the selected hole with the punch. The disk is clamped firmly in position by the finger. The corresponding punch is inserted in the sleeve 27, and the tool is now ready for use. The stock is placed between the die and the punch. In this position, the shoulder of the head will be elevated a slight amount above the shoulder of the sleeve. The punch is now struck upon the head by means of a hammer, thereby punching the stock. Lever 31 is then pressed downwardly, the toe engaging the rib and lifting the sleeve 27. The shoulder 28 engages the head of the punch and causes the latter to be lifted and extracted from the stock.

It is obvious that the disk 15 may be removed and another inserted. By this means a set of dies for a set of corresponding punches may be placed in position. Unless the nut 24 is removed from the stud 23, the disk 15 cannot be moved. By the construction just described the die is maintained upon the base secure against loss in moving the punch from place to place.

What I claim is:

1. A punch comprising the combination of a frame, a holding member slidably mounted therein, a punch slidably mounted in said holding member and arranged so that its downward movement therein is limited, and means on said frame for lifting said holding member and thereby extracting said punch from the stock.

2. A punch comprising the combination of a frame, a holding member slidably monted therein, a punch slidably mounted in said holding member and arranged so that its downward movement therein is limited, and a lever on said frame engaged with said holding member for lifting the latter and thereby extracting said punch from the stock.

3. A punch comprising the combination of a frame, an extraction sleeve slidably mounted in said frame, a punch having a shoulder at its upper end for limiting its downward movement slidably mounted in said sleeve, and means on said frame for lifting said sleeve and thereby extracting said punch from the stock.

4. A punch comprising the combination of an extracting sleeve slidably mounted in said frame, a punch having a shoulder at its upper end to limit its movement slidably mounted in said sleeve, and a lever on said frame engaged with said holding member for lifting the latter and thereby extracting said punch from the stock.

5. A punch comprising the combination of a frame having a bore therein, an extracting sleeve slidably mounted in said frame, said extracting sleeve having a shoulder at its upper end to limit its downward movement, a punch having a shoulder at its upper end to limit its movement slidably mounted in said sleeve, and means on said frame for lifting said sleeve and thereby extracting said punch from the stock.

6. A punch comprising the combination of a frame having a bore, an extracting sleeve slidably mounted in the bore of said frame, said extracting sleeve having a shoulder at its upper end to limit its downward movement, a punch having a shoulder at its upper end to limit its movement slidably mounted in said sleeve, and a lever on said frame engaged with said sleeve for lifting the latter and thereby extracting said punch from the stock.

7. A punch comprising the combination of a frame having a cylindrical bore therein, an extracting sleeve slidably mounted in the bore of said sleeve, said extracting sleeve having a shoulder to limit its downward movement and a projection for engagement by a lever, a punch having a shoulder at its upper end to limit its movement and slidably mounted in said sleeve, a lever on said frame having its toe engaged with the projection on said sleeve for lifting the latter and thereby extracting said punch from the stock.

8. A punch comprising the combination of a frame, a holding member slidably mounted therein, a punch slidably mounted in said holding member and arranged so that its downward movement therein is limited, means on said frame for lifting said holding member and thereby extracting said punch from the stock, a disk die having a series of holes for cooperation with said punch revolubly mounted on said frame so as to register a selected hole with said punch.

9. A punch comprising the combination of a frame, an extracting sleeve slidably mounted in said frame, a punch having a shoulder at its upper end to limit its downward movement slidably mounted in said sleeve, a lever on said frame engaged with said sleeve for lifting the latter and thereby extracting said punch from the stock, and a disk die having a series of holes rotatably mounted on said frame so as to register a selected hole with the punch.

10. A punch comprising the combination of a frame, an extracting sleeve slidably

mounted in said frame, a punch having a shoulder at its upper end to limit its movement slidably mounted in said sleeve, a lever on said frame engaged with said sleeve for lifting the latter and thereby extracting said punch from the stock, a disk die rotatably mounted on said frame and having a series of holes so disposed that a selected hole may be presented to register with the punch, and means to lock the disk in adjusted position.

11. A punch comprising the combination of a frame, an extracting sleeve slidably mounted in said frame, a punch having a shoulder at its upper end to limit the movement slidably mounted in said sleeve, a lever on said frame engaged with said holding member for lifting the latter and thereby extracting said punch from the stock, a disk die rotatably mounted on said frame and having a series of holes for cooperating with the punch, said disk being arranged so that a selected hole may be presented to register with said punch, and means for aligning a selected hole and locking said disk in adjusted position.

12. A punch comprising the combination of a frame, an extracting sleeve slidably mounted in said frame, a punch having a shoulder at its upper end to limit its movement slidably mounted in said sleeve, a lever on said frame engaged with said sleeve for lifting the latter and thereby extracting said punch from the stock, said frame having a slot with the end thereof semicircular and marginal walls undercut, a finger slidably mounted in said slot and having a semicircular end undercut to form a circular recess, a disk die having a concentric boss to fit within said recess and a set of holes for selective registration with the punch, and means to force said finger against said punch and to align said disk.

In witness that I claim the foregoing I have hereunto subscribed my name this 28th day of December, 1922.

WILLIAM A. LOEVEN.