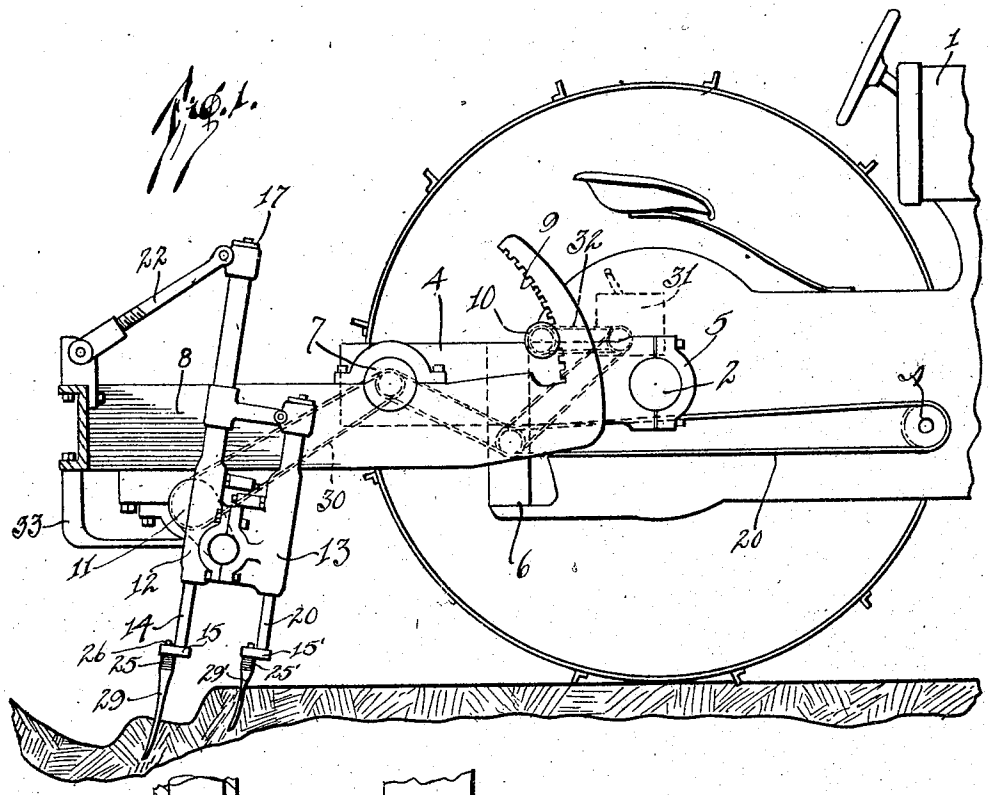
April 12, 1927. 1,624,610

O. A. MATSON

SPADING DEVICE

Filed March 6. 1926

Fig. 1.



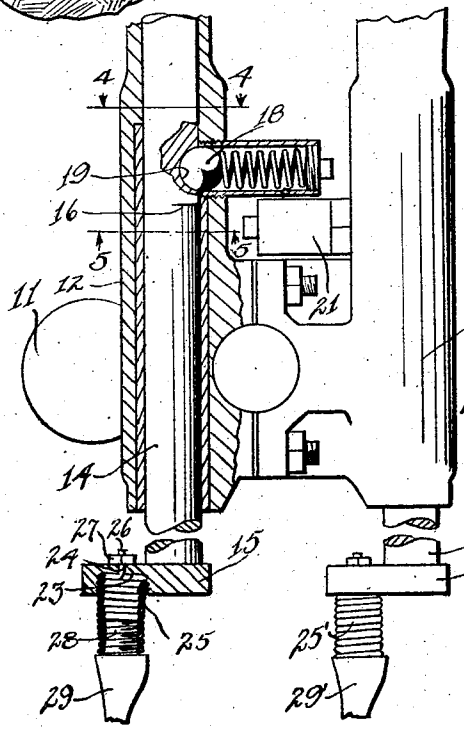


Fig. 2.

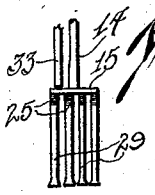


Fig. 3.

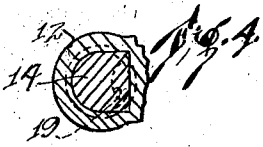


Fig. 4.

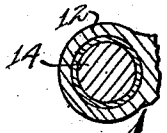


Fig. 5.

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UNITED STATES PATENT OFFICE.

OSCAR AKE MATSON, OF CHICAGO, ILLINOIS.

SPADING DEVICE.

Application filed March 6, 1926. Serial No. 92,869.

My invention relates to improvements in spading devices, and it consists in the combinations, constructions, and arrangements herein described and claimed.

An object of my invention is to provide a spading device which is adapted to dig into the earth with due pressure upon the spade members and when undue pressure is applied to the spade members, as when striking a stone, the spade members will be released in such a manner as to prevent the breaking of the device.

A further object of my invention is to provide a device of the type described which has positive means for resetting the spade members.

Other objects and advantages will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings, forming part of this application, in which

Figure 1 is a side elevation of the device, parts thereof being shown in section,

Figure 2 is a fragmentary view of the device, parts thereof being shown in section,

Figure 3 is a portion of the device,

Figure 4 is a section along the line 4—4 of Figure 2, and

Figure 5 is a section along the line 5—5 of Figure 2.

In carrying out my invention, I make use of a tractor 1 having a rear axle 2 and a power take-off 3. I provide a stationary frame 4 secured to the axle 2 by means of a clamp 5, and to the frame of the tractor, as shown at 6. A shaft 7 is rotatably mounted within the stationary frame 4. Upon the shaft 7, I have mounted a movable frame 8. At the forward end of the movable frame 8 is an integral arcuate-shaped rack 9 which is in engagement with a gear 10. On the under side of the movable frame 8 and near the rear end thereof, I have mounted an eccentric shaft 11.

Upon the eccentric shaft 11, I have mounted a spading unit. The spading unit is composed of an elongated housing 12 and a short housing 13. A rod 14 is slidably disposed within the housing 12. The rod 14 is round from the block 15, which is secured to the lower end thereof, to the point indicated at 16. From the point 16 to the end 17, the rod 14 is of the shape shown in Figure 4. This is to prevent rotation of the rod. The rod 14 is normally held in the position shown in Figure 1 by means of a spring-pressed ball 18, a portion of which is adapted to be received within a recess 19 in the rod. A rod 20, which is slidably disposed within the housing 13, is similar in construction to the rod 14 and is held in normal position by a spring-pressed ball within the casing 21. The spading unit is pivotally connected to the frame by means of an adjustable link 22.

A block 15 is provided with a threaded portion 23 and an opening 24 therein. Into the threaded portion 23, I screw a tension spring 25, the upper end 26 thereof being turned upwardly and extending through the opening 24. The upper end 26 of the spring is threaded and a nut 27 is screwed in place. Into the lower end of the tension spring, I have placed the threaded shank 28 of a tool 29. A plurality of springs 25 and tools 29 can be secured to the block 15, as shown in Figure 3. The tools 29′ are secured to the springs 25′, and the springs are secured to the block 15′ in a like manner.

The means for rotating the shaft 11 consists of chains or belts 30 which indirectly connect the shaft to the power take-off 3. The power take-off consists of a shaft which is rotated by the motor of the tractor. The movable frame 8 can be swung about the shaft 7 by rotating the gear 10. The gear 10 is connected to a transmission 31 by means of a chain 32. The transmission 31 is indirectly connected to the power take-off 3.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. To operate the device, the tractor is first set in motion, and at the same time, the power take-off starts the rotation of the shaft 11. The shaft 11 causes the spading unit to move in a circle, the tools 29 thereon being forced into the ground, as shown in Figure 1. Upon continued movement, the tools are forced backwardly and upwardly, thus freeing the dirt in front of them. Upon each revolution of the shaft 11, the tractor has moved forwardly a short distance, allowing the tools 29 which are longer than the tools 29′ to dig into the earth where the tools 29′ had previously dug, and the tools 29′ to dig into a new portion of the earth. If either the tools 29 or the tools 29′ should strike a stone, the force would be upwardly upon the rod 14 or 20. When such undue pressure is applied to the rods, the spring-pressed balls, such as 18,

will be forced against the springs and allow the rods to pass upwardly within the casings. This will prevent the breaking of any of the various parts.

The means for positively returning the rods 14 and 20 to their normal position consists of a plate 33 which is secured to the lower portion of the movable frame 8. For example, if the tool 29 should strike a stone or other object too difficult to pass therethrough, and the rod 14 be forced upwardly within the casing 12, when the unit is rotated far enough for the block 15 to strike the under surface of the plate 33, by continued movement of the shaft 11 the rod 14 will be forced downwardly through the casing until the ball 18 is again forced into the recess 19. In like manner, the plate 33 will return the shaft 20 to its normal position. The purpose of the springs 25 and 25′ is to permit the tools 29 and 29′ to be freed from any object which they are strong enough to project through, but not strong enough to pass therethrough in their rotative movement.

The purpose of the rack 9 on the movable frame 8 is to allow the frame to be moved about the shaft 7. This is controlled by the transmission 31.

I claim:

1. In a device of the type described, a spading unit, means for moving said unit in a circular path, rods having recesses therein disposed in said unit, spring-pressed balls carried by said unit and adapted to be received within said recesses for holding said rods in a predetermined position, and a plurality of excavating tools flexibly disposed at the lower ends of said rods, said spring-pressed balls being forced out of the recesses when said tools strike an obstacle, and means for moving said rods back into operative position.

2. In a device of the type described, a housing having a round opening therein, the upper portion of said opening having a substantially flat wall, a round rod having a flat surface for a portion of its length disposed in said opening, a semi-spherical recess in the flat surface of said rod adjacent the round portion thereof, a spring-pressed ball disposed in said recess, and excavating tools disposed at the lower end of said rod.

3. In a device of the type described, a housing, a rod disposed in said housing, means carried by said rod and cooperating with said housing for holding said rod against rotation, a block disposed upon the lower end of said rod and provided with a relatively large threaded opening and a relatively small opening therein, a tension spring having an upwardly extending threaded end receivable in said relatively small opening, said spring disposed for a portion of its length in said relatively large threaded opening, means for holding said spring in place, and an excavating tool having a reduced threaded portion disposed in the free end of said spring.

OSCAR AKE MATSON.