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E. T. SMALL

2,541,007

TAMPING ROLLER FOOT

Original Filed Aug. 2, 1940

Fig. 1.

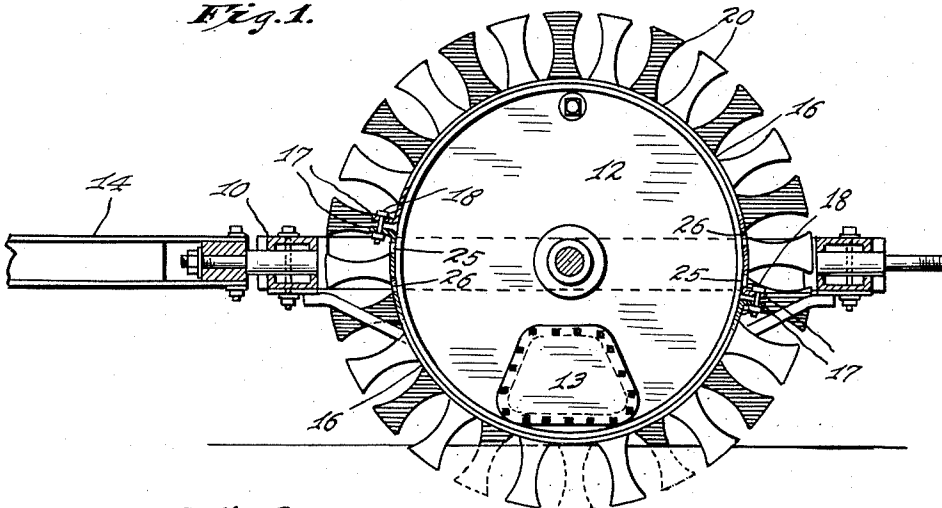


Fig. 2.

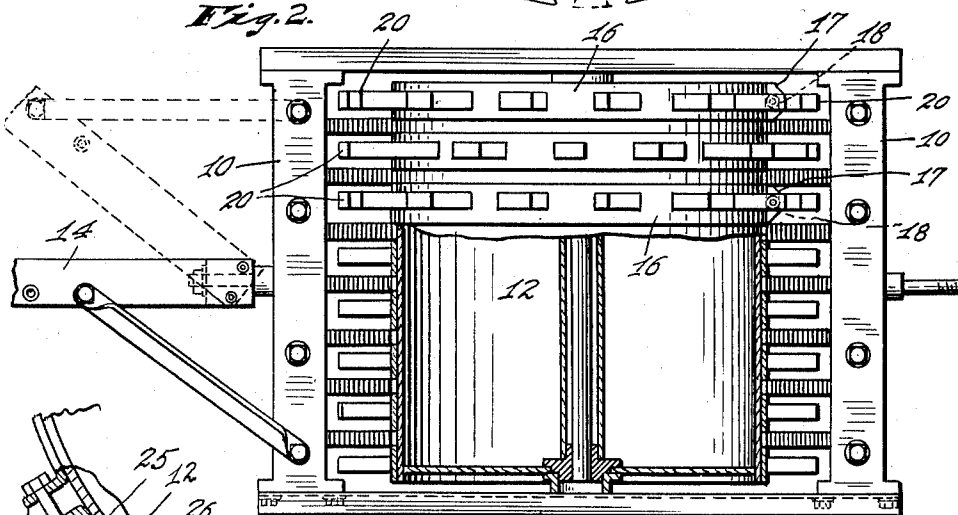


Fig. 3.

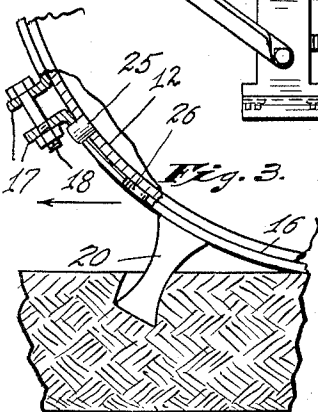


Fig. 4.

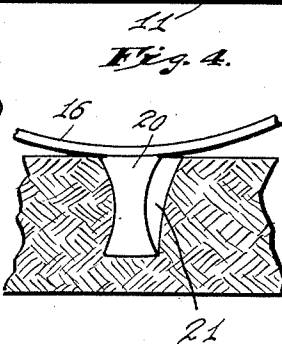
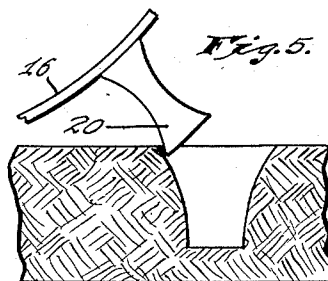


Fig. 5.



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UNITED STATES PATENT OFFICE

2,541,007

TAMPING ROLLER FOOT

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349,433. Divided and this application July 22,
1946, Serial No. 685,311

3 Claims. (Cl. 55—24)

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My invention relates to tamping rollers of the so-called "sheep's foot" type and has for its object the provision of a foot or tamping element which, in leaving the soil, will not disturb it and thereby interfere with the desired compaction.

In carrying out my invention I employ a circumferential drum, preferably hollow, to the exterior surface of which there are secured a plurality of circumferentially extending rows of tamping feet. Each of such feet projects radially from the drum, is at least as thick, axially of the roller at its outer end as over the remaining portions of its radial extent, and has circumferentially presented side faces which are concavely curved so that each foot is narrower near the middle of its radial extent than at its ends. As more fully brought out hereinafter, such a foot leaves the soil cleanly without disturbing the soil and thereby lessening the degree of compaction which otherwise would exist.

The accompanying drawing illustrates my invention: Fig. 1 is a side elevation of a roller with portions thereof broken away to show the construction more clearly; Fig. 2 is a plan view of the roller; and Figs. 3, 4, and 5 are related views illustrating the action of each tamping foot in compacting the soil.

The roller shown in the drawing embodies a generally rectangular frame having across members 10 and longitudinally extending side members 11 interconnecting the ends of the cross members. Within the rectangular frame thus formed there is rotatably mounted a hollow cylindrical drum 12 having in one end wall an opening through which the drum may be filled with varying amounts of water or sand to control the effective weight of the roller. Such opening has associated with it a closure 13 which prevents loss of the drum-contents. A draw-bar 14 connected to one of the cross members 10 and in turn connectible to a tractor or other vehicle enables the roller to be drawn over the surface to be compacted.

Mounted on the cylindrical surface of the drum are an axially extending series of pairs of semi-circular bands 16. The ends of these bands are turned outwardly to form ears 17 (Fig. 3); and clamp bolts 18, extending between the adjacent ears of the two bands of each pair, clamp the bands firmly to the drum.

On each of the semi-circular bands 16 there is mounted a circumferentially extending series of tamping feet 20. These feet are of substantially uniform thickness axially of the drum, but their circumferentially presented faces are con-

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cavely curved, as will be clear from Fig. 1, so that each foot, as viewed axially of the drum, will be wider at its ends than at its middle. In the preferred foot-shape, each side face of the foot corresponds substantially to a curve such as would be traced by a point at ground level on a disk having a radius equal to the distance between the roller-axis and the outer end of the foot and rolling on a plane surface depressed below ground level by a distance equal to the radial extent of the foot. The narrowest portion of a foot so shaped will be located somewhat nearer to the inner end of the foot than to the outer end, and the radius of curvature of each side face will gradually increase from the inner end of the foot to the outer end. Desirably, the inner and outer ends of the foot are of approximately the same width.

Feet of the kind just described have an advantage in operation in that they do not tend to pick up the soil being rolled. Since the feet are of uniform thickness throughout their radial extent and are set in planes perpendicular to the roller axis, there is no tendency to pack the soil between the feet of different circumferential series. Owing to the above described shape of the side faces of the feet, each foot enters and leaves the ground cleanly without picking up any soil. The action of each individual foot is illustrated progressively in Figs. 3, 4, and 5, Fig. 3 showing a foot just entering the ground, Fig. 4 a foot at its lowest point, and Fig. 5 a foot just leaving the ground. It will be clear from Fig. 4, that each foot, as it enters the ground, forms therein a depression having a rear face which, when the foot reaches its lowermost point, will be spaced from the rear face of the foot as indicated at 21. This space provides clearance for the outer rear corner of the foot as it leaves the depression in the progression of the roller. As a result, the outer rear corners of the feet do not pick up any soil. Moreover, the front face of the foot imparts to the front face of the depression a conformation which will not be disturbed by the outer front corner of the foot as the latter leaves the depression. This is of material advantage, since it is the purpose of a tamping roller to compact the soil, and if the feet disturbed the soil in their upward movement compaction of the soil would to that extent be interfered with.

In order to prevent slipping of any pair of bands 16 upon the outer surface of the drum, the drum is provided in the plane of each pair of bands with diametrically opposite, outwardly projecting

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pins 25 adapted to enter holes 26 in the respective semi-circular bands. By providing each band with a plurality of holes 26 spaced apart a distance equal to a fraction of the circumferential foot-spacing, it is possible to vary the extent to which the feet of the adjacent pairs of bands are staggered.

The mounting of feet of the type above described upon the bands 16 and the securing of such bands to the drum 12 by means which permits them to be angularly adjusted constitutes the subject matter of my co-pending application Serial No. 349,433 (now Patent No. 2,410,465), of which the present application is a division.

I claim as my invention:

1. In a tamping roller, a plurality of axially spaced, circumferentially extending series of tamping feet, each of said feet being at least as thick, axially of the roller, at its outer end as over the remaining portions of its radial extent and having circumferentially presented side faces which are concavely curved so that each foot is

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narrower near the middle of its radial extent than at its ends.

2. The invention set forth in claim 1 with the addition that the narrowest portion of each foot is located somewhat nearer to the inner end of the foot than to the outer end, the radius of curvature of the side faces of each foot gradually increasing from the inner end of the foot to the outer end.

3. The invention set forth in claim 1 with the addition that the narrowest portion of each foot is located somewhat nearer to the inner end of the foot than to the outer end.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,410,465	Small	Nov. 5, 1946