A. T. CHAPLIN.

SHOE BEATING MACHINE.

APPLICATION FILED APR. 21, 1913.

1,166,511. Patented Jan. 4, 1916.

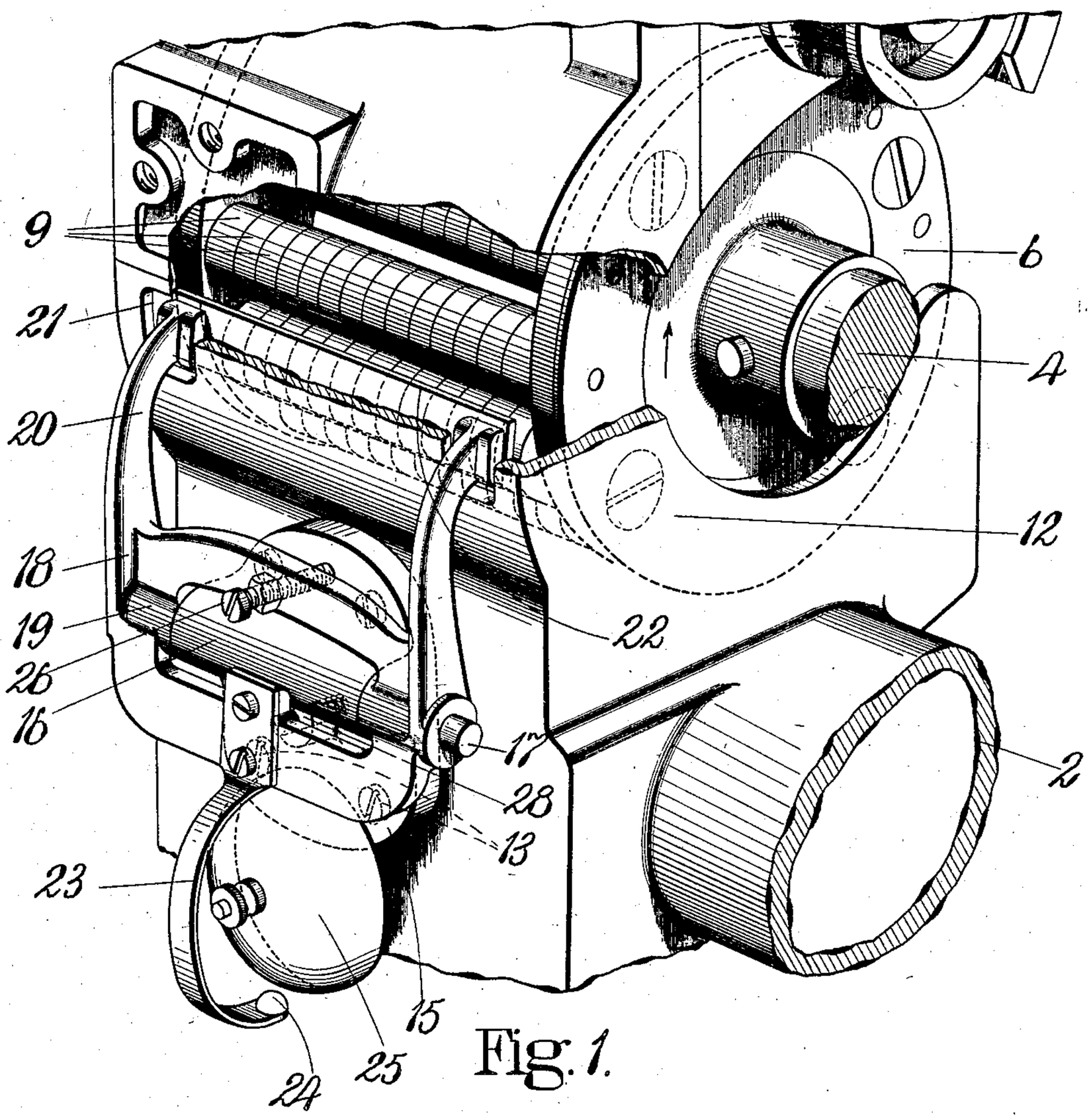

Fig. 1.

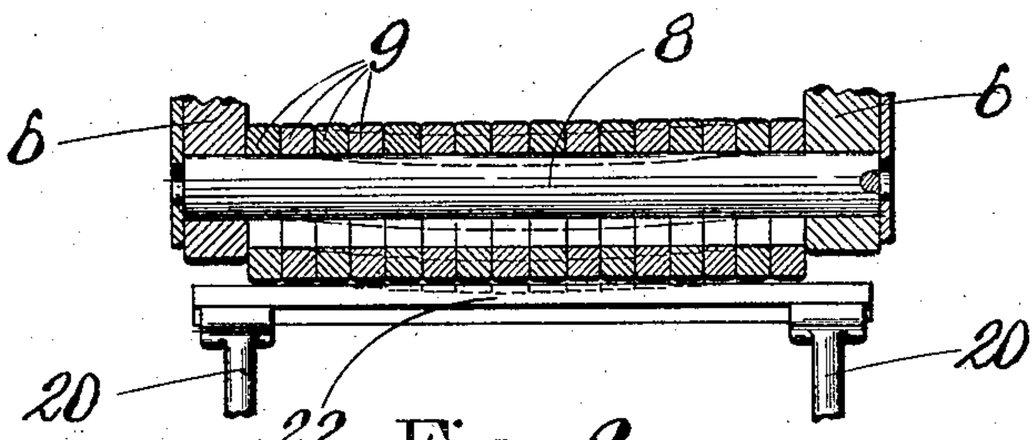

Fig. 2.

WITNESSES

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SHOE-BEATING MACHINE.

1,166,511. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed April 21, 1913. Serial No. 762,590.

To all whom it may concern:

Be it known that I, ALFRED T. CHAPLIN, a subject of the King of England, residing at Leicester, Leicestershire, England, have invented certain Improvements in Shoe-Beating Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to devices for detecting wear in the moving parts of boot and shoe machinery.

According to this invention, there is provided a "tell-tale" device, that is automatically actuated by a moving part of the machine when that part departs from its normal path of movement by reason of wear or failure in itself, or its support or its actuating means. Although the invention is particularly applicable, and is hereinafter described as applied to a machine in which the said part is a tool which describes a circular path, it is to be understood that it is also applicable to machines in which the said part moves in any other curvilinear path.

An important feature of this invention consists in the combination with a rotary carrier and finishing tools mounted thereon and having movement relatively thereto tending to wear their mountings of a tell-tale or signal device normally inoperative and arranged to be rendered operative automatically in response to a change in the path of a tool which is permitted by wear upon its mounting.

Conveniently, the tell-tale device comprises a member located out of the normal path of rotation of the tool but in such proximity thereto that when the said part departs to a predetermined extent from its normal path the member will be struck by it, thus indicating or operating means that indicate to the operator that wear in the machine parts has occurred to the extent to which the device is constructed to indicate. The device may be arranged to be adjustable so that the member may be moved into a position nearer to or farther from the normal path of the tool. This adjustment provides means for variably determining the amount of wear that shall be permitted to the machine parts before the device is actuated.

The tell-tale device may comprise any suitable signal means and is preferably shown as a gong, which is actuated by the motion of the member or of means controlled by it when the member is operated by the said part.

The features of this invention, comprising not only those above indicated but the novel combinations of parts and details of construction hereinafter set forth, will now be explained more fully in combination with the accompanying drawings and will then be pointed out in the claims.

A convenient construction according to the present invention is illustrated as applied to a pounding-up machine of the rotary type disclosed in United States Letters Patent No. 1,030,837, dated June 25, 1912. The invention, however, is not to be considered as limited to the particular construction described or in its application to the type of machine referred to as it could be embodied in other constructions or applied to other types without departing from the spirit of the invention.

Figure 1 is a perspective of the back of a pounding-up machine of the type shown in said patent, showing the device of the present invention applied thereto; Fig. 2 is a detail view illustrating the operation of the device.

The machine to which the invention is herein described as applied comprises a frame 2 provided with bearings in which a horizontal tool shaft 4 supporting a rotary carrier 6 is continually rotated by any suitable means from the source of power. This carrier 6 consists of two end disks or flanges secured at a suitable distance apart on the tool shaft 4, the space between the two flanges being bridged by rods 8 arranged parallel with the tool shaft and joining the edge portions of the flanges. Upon these rods are mounted in the illustrated machine beating rings 9, or finishing devices that are carried around with the carrier as the latter is rapidly rotated. A plurality of rings are carried by each rod, and the inside diameter of the rings is larger than the diameter of the rods, so that as the carrier revolves centrifugal force normally maintains the rings at the limit of their outward movement. However, when the rings 9 contact with the work presented against their peripheries, they are permitted to yield inwardly and also to roll or turn about the rods, thereby forcing the work yieldingly

toward the last and also rubbing it in the direction of their movement.

The machine frame carries a casting 12 extended to surround the rear side of the carrier and form a guard therefor. The front part of this casting is formed as shown in said patent to carry the work rest.

The continual friction between the beating rings 9 and the rods 8 and the jolting of one upon the other due to the "lost motion" between them causes the surface of the rods and also the inside of the rings to wear. In time, these rods would be worn so thin that they would be in danger of breaking. If the operator failed to notice this and continued working the machine, such a condition would be particularly dangerous owing to the high speed at which the machine works, and might result in serious injury to the operator and to the machine. According to the present invention the operator's attention is directed to a worn condition of the machine by means of a "tell-tale" device which is operated as soon as the wear between the finishing devices and their supports has reached a certain amount.

In the construction of tell-tale device herein described, there is secured to the rear side of the casting 12, as by suitable screws 13 entering the casting, a small vertically-disposed bracket 15 formed with a boss 16 through which passes a horizontal pin 17 upon which a rocker frame 18 is mounted for movement about the pin 17 as a center. This rocker frame straddles the boss on the bracket, being provided on either side of the boss with a hub 19 that receives one end of the said pin. The parallel arms 20 extending upwardly from the hubs and forming part of the rocker frame have their upper ends curved forward to pass through holes 21 made in the guard 12 for the carrier, the said ends being joined by a horizontal contact bar 22 which is secured to the arms by suitable screws. This bar extends the width of the carrier parallel with the surface described by the outermost points of the beating rings and is just clear of the rings when the machine is in proper working condition. The bar is located inside the guard and is intended to be struck by any of the revolving beating rings 9 that are farther from the axis of the tool shaft 4 than they would be if the machine were in proper working order and should this contact bar be so struck, a signal is operated by which the operator is notified that the machine requires attention. In the present construction the contact bar 22 is arranged to warn the operator by sounding a gong 25 and accordingly the rocker frame 18 has secured to its lower end a leaf spring 23 carrying at its free end a knob or clapper 24 adapted to strike the gong 25 which is fixed to an arm depending from the bracket. In order that the clearance between the contact bar 22 and the beating rings 9 can be adjusted, a portion of the rocker frame has screwed through it a set screw 26 that is normally held in yielding contact with the surface of the bed plate by a light spring or spring-pressed plunger 28, the screw 26 being locked in adjusted position by a suitable lock nut.

In the operation of the machine, the work is supported on a work rest as explained more fully in the patent and is held by the workman with the surface to be beaten in position to be engaged by the beating members or rings 9 as they are held outward on the carrier by centrifugal force during the rapid rotation of the carrier 6. When the machine is in good condition and properly adjusted the contact bar is so located that the beating rings in their passage past the bar just clear the bar and the "tell-tale" device remains out of operation as long as the beating rings keep to their normal path of movement and the machine is in proper working order. Should, however, wear occur either on the rods 8 or on the rings 9 supported by them, due to the continual rubbing or turning movement between the rods and the rings, the distance from the rings to the center of the tool shaft 4 will increase. As the wear increases the rings will pass nearer to the contact bar, and, according to the adjustment of the rocker frame by its set screw 26, sooner or later the rings will contact with the bar. When this occurs, the rings will make the rocker frame vibrate and the latter will act to set the clapper-carrying spring 23 in motion, this spring amplifying the vibrations at least sufficiently to cause the clapper to ring the gong 25. In this way the operator is given notice that the machine requires attention and it indicates to him either that the rods of the carrier are worn to such an extent as to be in danger of breaking or that the beating rings are worn sufficiently to require their renewal, or both.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. A machine of the class described having in combination, a rotary carrier, a plurality of annular series of independently rotatable beating elements disposed about the periphery of the carrier, and an indicating device comprising a gong and a rocker frame the upper end of which is yieldingly held in such proximity to said annular series of beating elements that it is vibrated mechanically to engage said gong when any one of said beating elements departs from its normal path of movement.

2. In a machine of the class described, a rotary shoe beater comprising a carrier and a plurality of annular series of independ-

ently rotatable beating elements disposed about the periphery of the carrier, a bar extending adjacent to said annular series of beating elements in position to be engaged by any one of the beating elements which for any reason departs from its normal path of operation, a gong, a clapper, a rocker connecting the bar and the clapper, means for yieldingly returning the bar into the path of a beating element which has engaged and displaced it, and means for adjustably limiting the approach of the bar to the normal path of the beating elements.

3. In a shoe finishing machine, a rotary carrier, a series of rods extending endwise of the carrier, ring-shaped shoe finishing devices loosely mounted on the rods for movement radially thereof whereby they are normally held outwardly by centrifugal force while the carrier is in motion, a bar extending adjacent to said finishing devices in position to be engaged by any one of the devices which departs from its normal path of operation, a gong, and a clapper connected with the bar and extending into position to engage the gong when the bar is displaced by the passing of a finishing device which is out of its normal path, said parts being constructed and arranged to maintain the bar yieldingly in and return it automatically to its normal position after displacement by a finishing device whereby the bar and clapper are vibrated mechanically while a finishing device remains out of its normal path of movement.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALFRED THOMAS CHAPLIN.

Witnesses:

FREDERICK WILLIAM WORTH,

WALTER WATTS BALL.