

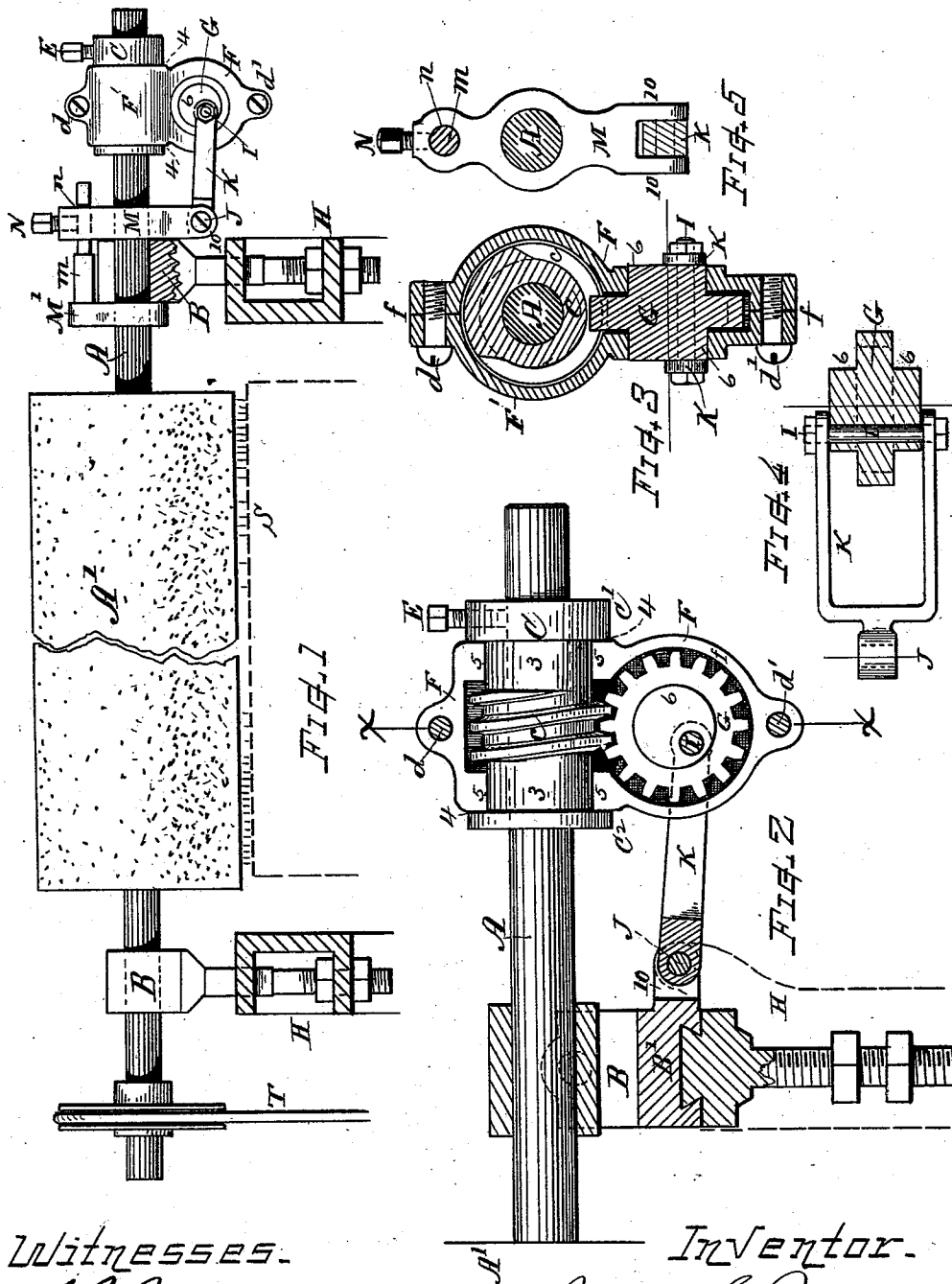
(No Model.)

B. S. ROY.

RECIPROCATING MECHANISM FOR SHAFTS, CARD GRINDING DRUMS, &c.

No. 540,926.

Patented June 11, 1895.



Witnesses.

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RECIPROCATING MECHANISM FOR SHAFTS, CARD-GRINDING DRUMS, &c.

SPECIFICATION forming part of Letters Patent No. 540,926, dated June 11, 1895.

Application filed July 21, 1892. Serial No. 440,776. (No model.)

To all whom it may concern:

Be it known that I, BOZIL S. ROY, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Reciprocating Mechanism for Shafts, Card-Grinding Drums, and Rolls, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of my present invention is to provide an efficient, neat and desirable mechanism for imparting endwise reciprocating motion to rolls or rotating shafts; more especially for reciprocating the grinding drums used on different kinds of carding engines for grinding the faces of the main cylinders, doffers, or other rolls or parts of machinery; also to provide a reciprocating mechanism which shall be automatically operated from the reciprocated shaft by means of the power applied to rotate the latter.

Another object is to provide a grinding drum or roll with an automatically operating reciprocating mechanism complete and portable in structure: that is, one in which the drum has the reciprocating devices combined therewith in such manner that the apparatus can be bodily transferred from one carding machine to another, lifted onto and from the supports and disposed at different positions, or in different puppet-heads, without disengagement of the reciprocating devices, which retain their relation on the shaft always in condition for immediate operation when the drum is placed, without the necessity of making special attachments and connections, or requiring the re-organization of the apparatus at each instance of use.

Another object is to render the reciprocator mechanism neat and compact, and to provide therein a hanger whereby the wearing parts are inclosed and protected from accumulation of dust, lint or grit that is liable to clog or wear the adjacent working surfaces of the gear and worm-screw.

I attain these objects by mechanism such as shown in the drawings and explained in the following description; the particular improve-

ments or features claimed being hereinafter definitely specified.

In the drawings, Figure 1 is a side view of my improved reciprocator mechanism combined with a card-grinding drum or roll and arranged in the puppet-heads of a carding-machine. Fig. 2 is a sectional view on a somewhat larger scale, showing the reciprocator mechanism with one side of its hanger or inclosing case removed; also a section of an adjustable journal-box for supporting the shaft or drum-axle at position other than in the puppet-head bearings. Fig. 3 is a transverse vertical section at line *xx* of Fig. 2. Fig. 4 is a plan view of the swing-link and section of the worm-gear separate from other parts, and Fig. 5 is a detail view of the link-pivot bracket employed when the reciprocator and drum are intended for use in puppet-head bearings.

Referring to parts, A denotes the shaft or arbor of the grinding-drum, roll or cylinder A' which is to be reciprocated. Said shaft is mounted in bearings B within which the shaft can move both endwise and rotatively. These bearings may be the puppet heads on a carding machine, or any suitable kind of bearing, either rigidly fixed or adjustable upon the frame of the machine whereon the apparatus is employed.

Fig. 1 shows an instance of the puppet-head and Fig. 2 a bearing arranged to slide or adjust in a direction transverse to the axis of the shaft A for carrying the grinder to or from the work.

C indicates a sleeve fitted internally to slip onto the shaft A, and externally formed with a worm-screw *c*, bearing surfaces 3, and end flanges or hubs C' C² of a different diameter from the surfacer 3, with offsets or shoulders, as at 4.

A suitable fastening device or set-screw E is provided for firmly securing the sleeve C to shaft A and conveniently releasing it therefrom if desired by the operator.

F indicates a hanger made in two parts or shells that together form a case or box for inclosing the worm-screw *c* and the worm-gear G that engages with said screw. The head or upper portion F' of the hanger is of cylindrical form fitted to cover the worm *c* and

made of a length to fit between the shoulders 4, with end bearing surfaces to match the shoulder faces, and with internal surfaces 5 to match the surfaces 3; while the lower part 5 F is of disk shape with central openings and bearing surfaces to receive the axles or projecting centers of the worm-wheel G which is mounted therein in the manner shown.

The two shells or parts of the hanger F 10 match together along their edges *f* and completely inclose the worm *c* and gear G within their hollow interior, thus protecting the working gear from accumulation of dust, lint or flying grit from the grinding operation, while 15 at the same time giving exteriorly a compact, neat and desirable shape to the mechanism. The two shells or sides are held to each other by screws or bolts *d d'* that pass through ears formed for their reception, as indicated.

20 The axles or journals 6 of the gear G are of comparative large diameter, and extend through the opening of the shell; their ends being finished at or about flush with the outer faces of the hanger. A hole is formed through 25 the gear parallel with but eccentric to the axis thereof, and a pin or shaft I is fitted therein and projects at either side and serves as a crank or wrist-pin for the connector K which consists of a fork-shaped link or crank arm, 30 (see Fig. 4) one end of which is arranged in connection with the eccentrically disposed pin I, while its other end is pivoted by a bolt, pin or stud J at stationary position to a holder or boss connected with or rigidly fixed on the 35 bearing-box B, its carrier B', or to the side of the frame H whereon the apparatus is mounted, so that while the link can swing up and down on its pivot it can have no endwise movement. A single or double link K may be 40 employed if desired, but I prefer the forked link shown.

It is obvious that in lieu of the pin I passing through the gear G a stud or projection could be fixed in or formed on the side of said 45 gear to serve as the crank, or cranks, for attachment of the link K.

When this reciprocator mechanism is combined with a shaft or drum-arbor intended for use in puppet-head bearings, and to be 50 shifted from one machine to another, I provide a pivot-holding bar M and an adjustable brace-collar M' upon the shaft A, as in Fig. 1. Said pivot-holding bar is made with ears 10 for receiving the end of the link K, an opening 55 through which the shaft passes, and an opening *n* parallel therewith for the reception of the slide-bar. The brace-collar M' is fitted to slide on the shaft A, and has a bar or finger *m* rigidly fixed therein that extends 60 through the opening *n* in the pivot-holding bar M, and is confined at any position by a set-screw N fitted in the bar M as indicated.

The bar or bracket M and collar M' rest against opposite ends of the puppet-head B 65 constituting a clamp and thus confine the

pivot J to a fixed position. Said parts go with the shaft and reciprocator-devices when the drum is transferred from one carding machine to another, and if the puppets are of 70 different dimensions the distance between the pivot-holding bar and collar M' can be varied accordingly by simply loosening the screw N and adjusting the collar to the position required.

In some instances, or where the grinder-arbor 75 is journaled in regular journal-boxes, the pivot connection for the link K is best made as shown in Fig. 2; the pivot passing through a boss or ears 10 formed on the side of the journal-box support B'; or in case the box is 80 non-adjustable then directly upon the frame, as indicated by dotted lines in Fig. 2.

In the operation, the drum being in position for grinding the card S, it is rotated by the belt T. The worm-screw *c* revolves the 85 gear G and the pin or crank I being linked to the frame or box causes the gear to carry the hanger back and forth, and the hanger having its head confined by the hubs and shoulders 4 effects endwise movement of the 90 shaft and grinding drum to an extent corresponding to the swing of the crank I. While adjusting the drum to the card-teeth, the operator, if he desires to regulate the degree of grinding at the two ends of the cylinder by 95 sound, can loosen the set-screw E and thereby release the shaft from vibratory action while listening to and comparing the sounds of the grinding at the different points. Then 100 when the adjustment is right tighten the screw E and proceed with the operation as usual.

By connecting the gear and frame or bearing with a pivoted swinging link or crank, a very durable and free working device is produced which is simple, compact and easily 105 constructed; and by making the hanger as an inclosing case for the mechanism it is not liable to become clogged by accumulation of dust and can be easily wiped up on the exterior. 110

In Letters Patent No. 276,884 heretofore granted me, there is shown, described and claimed, means for effecting endwise vibration of a shaft or drum, comprising a worm- 115 screw and a worm-gear carrying an eccentric cam that engages between two parallel surfaces on a rigidly attached arm. It will therefore be understood that my present invention relates to the mechanism of improved or special construction substantially as defined. 120

I claim as my invention herein to be secured by Letters Patent—

1. A portable shaft-reciprocating mechanism comprising a sleeve provided with a worm 125 and with means for adjustably clamping it upon the shaft, a gear-supporting case or hanger supported by said sleeve, a worm-wheel journaled in said hanger, a clamp mounted upon the shaft and a link or crank- 130

arm pivoted at one end eccentrically to said worm-wheel and at its other end to said clamp, substantially as described.

5 2. In shaft-reciprocator mechanism, the combination with suitable gearing, of a clamp comprising a bracket and a brace-collar adjustably connected together, and a connecting link or crank-arm connecting the recip-

rocator gearing with said clamp, substantially as described.

Witness my hand this 19th day of July, A.
D. 1892.

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Witnesses:

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