

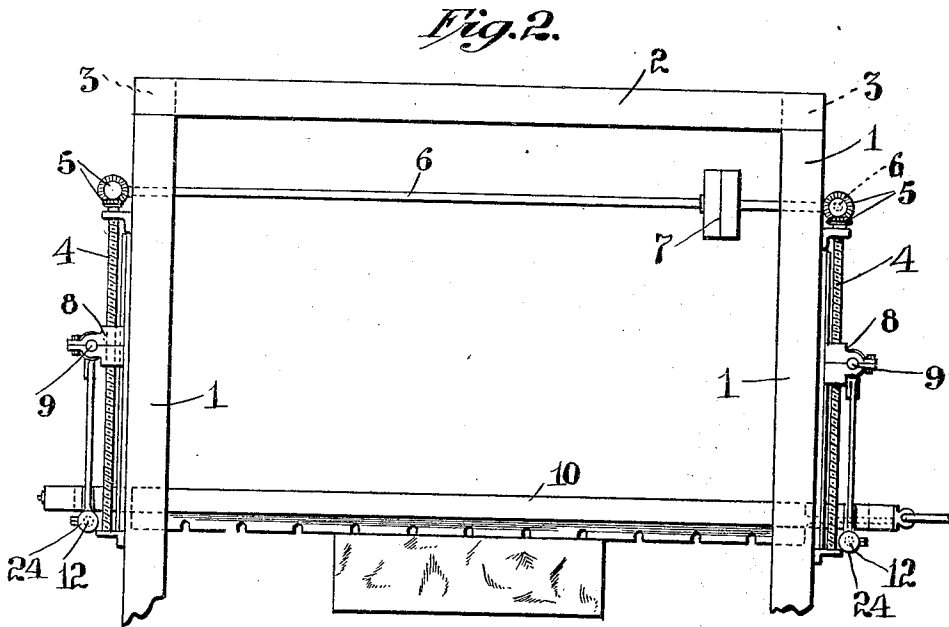
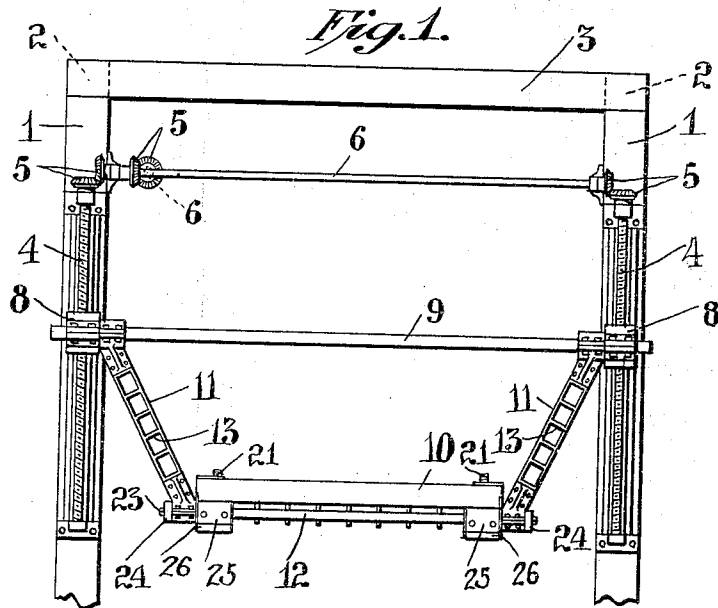
J. GILLIES.
STONE SAW.

APPLICATION FILED DEC. 21, 1908.

938,473.

Patented Nov. 2, 1909.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

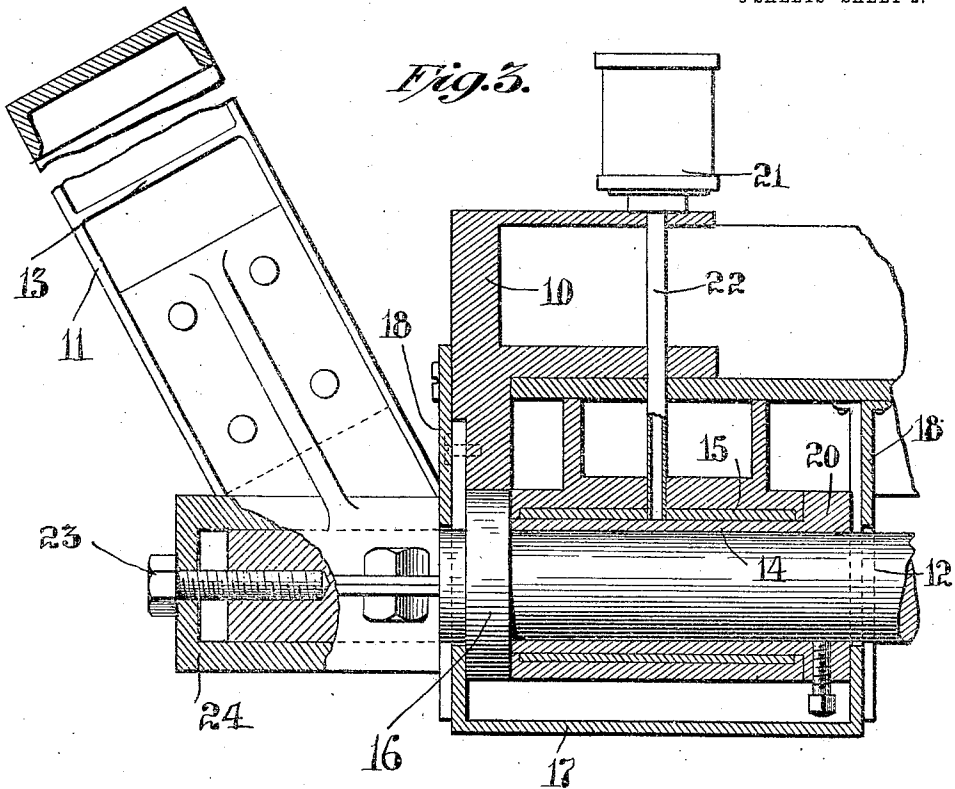


Fig. 3.

Fig. 4.

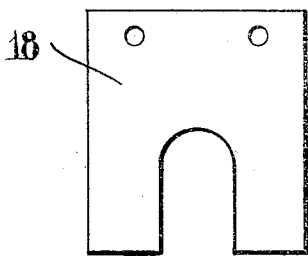
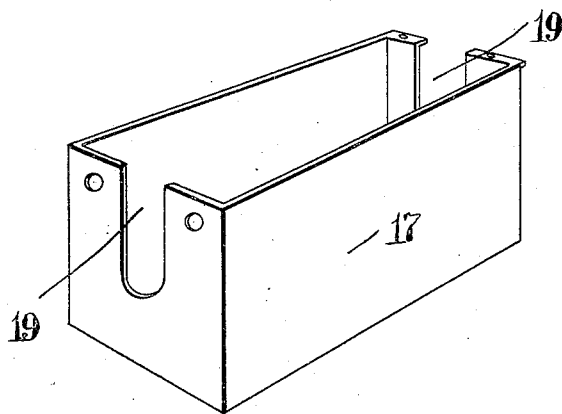


Fig. 5.



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3 SHEETS—SHEET 3.

Fig. 6.

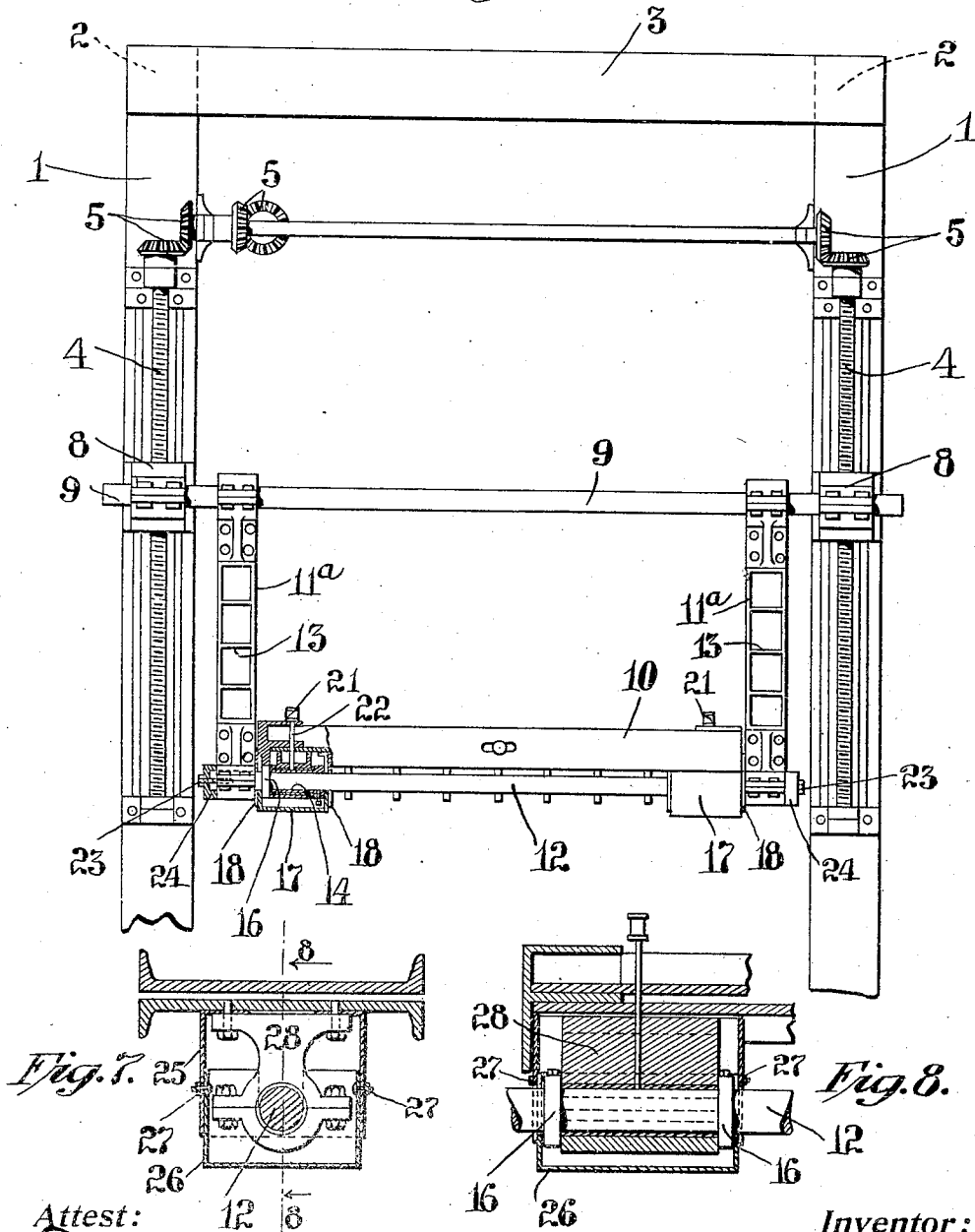


Fig. 7.

Fig. 8.

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UNITED STATES PATENT OFFICE.

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STONE-SAW.

938,473.

Specification of Letters Patent.

Patented Nov. 2, 1909.

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To all whom it may concern:

Be it known that I, JOHN GILLIES, a citizen of the United States of America, and a resident of the city of New York, county of Queens, and State of New York, have invented a certain new and useful Stone-Saw, of which the following is a specification.

My invention relates to gang saw stone-cutting machines, and involves improvements in the support of the sash or saw frame and improved bearings for said sash or frame, and means for preventing grit from reaching said bearings.

The objects of my invention are to improve stone saws of the type referred to, to make the supports for the sash or saw frame more steady, to improve the bearings of the saw frame, to prevent the entrance of grit and the like to said bearings, and generally to make the machine more simple, durable and accurate.

I will now proceed to describe my invention with reference to the accompanying drawings, illustrating one embodiment thereof, and will then point out the novel features in claims.

In said drawings: Figure 1 shows an end elevation of the machine; Fig. 2 shows a side view of the machine; Fig. 3 shows a detail vertical section of one suitable type of bearings for the saw frame, and adjacent parts, illustrating one construction of means for preventing dust and the like from entering the bearings; Fig. 4 shows a side elevation of one of the bearing guards; and Fig. 5 shows a perspective elevation of one of the bearing guard boxes by which the bearings of the saw frame are inclosed. Fig. 6 shows an end elevation of an alternative form of machine, comprising an alternative arrangement of suspender links. Figs. 7 and 8 illustrate another suitable construction of bearing for the saw frame, Fig. 7 showing a transverse section through the bearing and Fig. 8 a longitudinal section on the line 8—8 of Fig. 7.

The stone cutting machine herein illustrated, comprises the usual main frame consisting of uprights 1, 1 connected longitudinally by frame members 2 and connected transversely by frame members 3. On these columns 1 are suitable vertical feed screws 4 mounted in bearings and connected by bevel gears 5 to transverse and longitudinal drive shafts 6, one of which is arranged to be driven from some outside source by suit-

able means, as for example, by a driving belt passing over belt pulley 7, the other shafts being driven from this shaft through the gearing mentioned. On the feed screws 4 are sliding nuts 8 connected in pairs by transverse rods 9, from which rods 9 the sash or saw frame 10 is suspended by means of suspender-links 11. The saw frame 10 is, according to the construction shown, underhung, transverse shafts 12 being provided to the ends of which the links 11 are secured, said shafts 12 working in bearings on the underside of the saw frame, as hereinafter described.

As these stone cutters have usually been constructed in the past, the suspender-links have hung vertically so as to oscillate in vertical planes. It has been found that with this construction, excessive wear of the bearings connecting the suspender links and saw frame, is inevitable, the result of this wear being looseness which renders the frame unsteady, the frame having then more or less lateral motion, which interferes with the accuracy of the operation desired. It has also been found that, when the construction referred to has been used, the suspender-links are not themselves sufficiently stiff. To stiffen these links, and also to reduce the side motion of the frame, diagonal braces have been provided, these braces being adjustable for wear; but it has been found that these diagonal braces when employed also work loose and do not give the desired rigidity.

One portion of my invention consists in arranging the suspender-links at angles, instead of vertically, the main frame of the machine being customarily broader than the sash or saw frame, the suspender-links projecting inwardly and downwardly from their point of pivotal support on the rods 9, so that said rods 9, the suspender-links 11, and the shafts 12, together form two trusses of very great inherent stiffness; and to make the structure yet more rigid, I make these links 11 of considerable breadth transversely, said links being preferably of I-section with stiffening ribs 13 between their flanges. Such a structure may oscillate back and forth with practically no transverse motion whatever, there being in the truss structure no joints subject to wear; and, to insure accurate movement of the saw frame, it only remain to provided proper bearings of said frame on the shafts 12 and to protect these bearings against the entry of grit—which latter is

always present in large quantities about machines of this sort and will work into the bearings unless the latter be protected very efficiently.

5 The bearings of the saw frame are on the underside of said frame, where they are protected by the frame itself, to a considerable extent, against the entry of grit and the like. Fig. 3 illustrates one suitable construction of bearing for the saw frame, and Figs. 10 7 and 8 another suitable construction. In the construction shown in Fig. 3, each bearing comprises a removable journal bushing 14, secured to the shaft 12 on which it is mounted, and working within a babbitted bearing-box 15 formed in the frame 10. At the outside of each bearing there is a collar 16 formed on the shaft 12. The bearing is inclosed by a box-like member 17 (Fig. 5) 20 slotted at the ends so that it may be passed over the shaft 12 from below, and may be secured to the saw frame 10; and at the outer side of the saw frame there is a protecting plate 18, likewise secured to the saw frame, 25 covering the end of the protector 17, and the end-slot 19 in said box 17, this plate 18 being slotted to permit it to be passed over the shaft from above. There is also a corresponding plate 18 on the inner side of the box 17. It will be seen that the plates 18 substantially close the slots 19 in box 17 and that said box in turn substantially closes the slots in said plates 18; the combination of these plates 18, box 17, the collar 16 and 30 the flanged head 20 of the journal bushing 14, together forming efficient means to prevent the entry of grit to the wearing surfaces of journal bushing 14 and bearing-face 15.

40 As shown particularly in Fig. 3, the outer side of each box 17 is set into a corresponding recess in the saw frame, so that its outer surface is flush with the side of the saw frame; and the protecting plate 18, secured 45 directly to the side of the saw frame, therefore fits the side of the box closely.

The bearings of the saw frame are lubricated by suitable oil cups 21 connected by ducts 22 to the bearing.

50 It will be obvious that the bearing construction shown is not restricted to use with angularly arranged suspender links, such as shown in Fig. 1; and in Fig. 6 I have shown this bearing construction in a machine in 55 which the suspender links hang vertical, these links being, however, of considerable breadth so as to have considerable stiffness. In general, I prefer to arrange the suspender links angularly, as shown in Fig. 1, except 60 where the conditions of use forbid making the frame of the machine considerably broader than the saw frame. As shown particularly in Fig. 3, I not only bolt the suspender links 11 to the shafts 12, but in addition 65 tion provide end screws 23, screwing into the

ends of shafts 12, and collars 24, pressed by said screws against the ends of the links, said screws 23 and collars 24 forming additional means for securing the links and shafts together and for preventing possible 70 looseness at the joints between the links and shafts 12. In the other form of bearing-protector construction shown in Figs. 7 and 8, the bearing protector comprises two boxes, 25 and 26, both located on the under side of 75 the saw frame, the box 26 fitting up inside the box 25 and being secured thereto by bolts 27. The upper box, 25, is secured to the saw frame by the same bolts which secure the bearing strut 28 to said frame. 80

What I claim is:—

1. A stone-sawing machine such as described, comprising a main frame, transverse shafts suitably supported, a saw frame, saw frame-supporting links mounted on said 85 shafts, and projecting inwardly from their points of support on said shafts, means pivotally connecting said saw frame to said links, and means for preventing looseness at the joints between said links and said pivotally-connecting means. 90

2. A stone-sawing machine such as described, comprising a main frame, transverse shafts suitably supported, saw frame-supporting links mounted on said shafts, 95 and projecting inwardly from their points of support on said shafts, shafts connecting the ends of opposite links in pairs and forming, with said links and the transverse shafts, rigid trusses, and a saw frame carried by said trusses. 100

3. A stone-sawing machine such as described, comprising a main frame, transverse shafts suitably supported, saw frame-supporting links mounted on said shafts, 105 shafts connecting the ends of opposite links in pairs and forming, with said links and the transverse shafts, rigid trusses, and a saw frame carried by said trusses.

4. A stone-sawing machine such as described, comprising a main frame, transverse shafts suitably supported, saw frame-supporting links mounted on said shafts, shafts connecting the ends of opposite links 110 in pairs and forming, with said links and the transverse shafts, rigid trusses, and a saw frame having bearings on the shafts connecting the ends of said links. 115

5. A stone-sawing machine such as described, comprising a main frame, transverse shafts suitably supported, saw frame-supporting links mounted on said shafts, and projecting inwardly from their points of support on said shafts, shafts connecting the ends of opposite links in pairs and forming, with said links and the transverse shafts, rigid trusses, and a saw frame having 120 bearings on the shafts connecting the ends of said links. 125

6. A stone-sawing machine such as de- 130

scribed, comprising a main frame, transverse shafts suitably supported, suspender links carried thereby, means connecting the ends of said suspender links and forming there-
 5 with and with said transverse shafts, rigid trusses, and a saw frame having on its under- side bearings by which it is supported by said links.

7. A stone-sawing machine such as de-
 10 scribed, comprising a main frame, transverse shafts suitably supported, suspender links carried thereby, shafts connecting the ends of said suspender links and forming there- with and with said transverse shafts, rigid
 15 trusses, and a saw frame having on its under- side bearings on said shafts connecting the ends of said suspender links, by which bearings it is supported by said links.

8. A stone-sawing machine such as de-
 20 scribed, comprising a saw frame, suspender links and shafts connecting said links in pairs, and bearings for said shafts and frame comprising bearing boxes on the underside of the frame, said shafts provided with bear-
 25 ing journals having shoulders at their ends, bearing-protecting boxes inclosing said bearings and slotted at their ends to per- mit them to be passed over said shafts, and protector plates covering said ends of the
 30 boxes.

9. A stone-sawing machine such as de- scribed, comprising a saw frame, suspender links and shafts connecting said links in pairs, and bearings for said shafts and frame comprising bearing boxes on the underside 35 of the frame, said shafts provided with bear- ing journals, having shoulders at their ends, bearing-protecting boxes inclosing said bear- ings and slotted at their ends to permit them to be passed over said shafts, and protector 40 plates covering said ends of the boxes, said plates likewise slotted to permit them to be passed over the shafts and secured to the saw frame.

10. A stone-sawing machine such as de- 45 scribed, comprising a saw frame, suspender links and shafts connecting said links in pairs, and bearings for said shafts and frame, said shafts provided, outside of said bearings, with collars, and bearing protect- 50 ing means comprising two boxes inclosing one of said bearings and fitting one within the other.

In testimony whereof I have signed this specification in the presence of two subscrib- 55 ing witnesses.

JOHN GILLIES.

Witnesses:

H. M. MARBLE,
 FRANK E. RAFFMAN.