

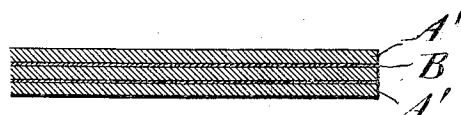
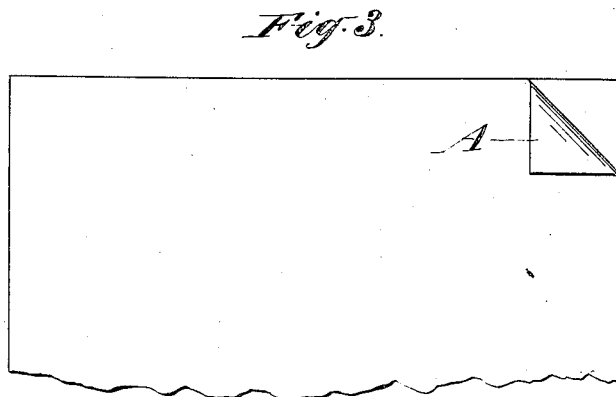
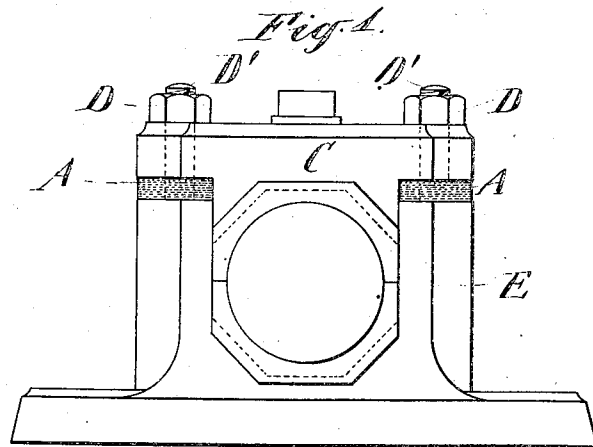
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SHIM.

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969,709.

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UNITED STATES PATENT OFFICE.

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SHIM.

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To all whom it may concern:

Be it known that I, ERIC G. LINDHE, a subject of the King of Sweden, residing in the city of New York, borough of Manhattan, in the county and State of New York, have invented a certain new and useful Improvement in Shims, of which the following is a specification.

The invention relates to thin spacing-plates introduced between the pillow-block and cap in machine bearings and analogous situations. These are usually single plates each of suitable thickness to hold the block and cap, or like parts, properly separated, or a series of thin plates arranged one upon the other is employed. As the bearing becomes worn it is necessary to reduce the thickness to lessen the distance between the block and cap to tighten the bearing. In the use of either form it is of the highest importance that the space be maintained uniformly and that the surfaces be true. The amount of reduction is very small and in the case of the single plate it is the practice to make the reduction by removing the shim and substituting a thinner one, or more commonly, to file or scrape the surface of the shim to produce the required thickness; this is an exceedingly delicate operation even when conducted under the most favorable conditions, involving considerable time, skill, and careful measurement, and in such emergencies as road-repairs in automobile work and the like, may be considered impracticable. When a series of thin plates is employed, it is found in practice to be extremely difficult to remove one or more without disarranging the remaining plates, with the additional danger of introducing grains of dust or other matter between the plates and thus impairing the true surface desired. Another serious objection to this form is the inherent quality of taking in from the bearing by capillary attraction a layer of oil between each plate and the next, which cannot be expelled by pressure in tightening the cap-holding nuts, but does eventually work out by vibration or otherwise, leaving the bearing loose.

The object of my invention is to eliminate the above objectionable features by providing a shim which in effect is a single plate with all the advantages of that form and capable of uniform reduction without the disadvantages of the series form, and which shall be inexpensive, and easily and quickly

reduced to the desired extent without change of shape.

The invention consists in certain novel features of construction and arrangement by which the above objects are attained, to be hereinafter described and pointed out in the claims.

The accompanying drawings form a part of this specification and show in exaggerated form the invention as it has been carried out in practice.

Figure 1 is a side elevation of a shaft-bearing equipped with the improved shim. Fig. 2 is an edge view, on a still larger scale, of the composite plate from which the shim is cut. Fig. 3 is a corresponding plan or face view. Fig. 4 is an edge view corresponding to Fig. 2 but showing a modification. Fig. 5 is a section of a portion of the plate on a greatly magnified scale.

Similar letters of reference indicate like parts in all the figures.

The improved shim comprises a series of thin sheets placed one upon the other and united by a binder of sufficient strength to hold the series together as a single plate while permitting one or more of the sheets to be stripped from the mass either singly or together.

For general machine purposes the sheets A are preferably of annealed brass joined over their entire adjacent surfaces by very soft solder B, which may be understood for the purposes of this description to be pure lead alloyed with a small quantity of tin. Thus joined a sheet may be easily loosened by inserting the point of a knife-blade or similar instrument at one corner or edge, and when thus loosened may be grasped by suitable pliers, or even by the fingers, and stripped free from the plate without affecting the remaining sheets or changing the shape they may have assumed in service. The soft easily broken solder permits such removal and the solder-coated surface thus exposed may then be smoothed by scraping or abrasion if desired but such is not generally necessary because the coating is practically uniform in thickness and is so soft as to crush readily any minute projection when subjected to pressure of the retaining nuts D of the cap C upon the stud-bolts D' of the pillow-block E, shown as illustrative of one use of the shim.

The preferred form of the invention shown in Fig. 2, is composed of leaves or

5 sheets of varying thickness, from the thin sheet on the upper face to the comparatively thick sheet on the lower face, in this arrangement the desired reduction can be made by removing either a thin sheet from one face or a thicker from the other as may be found desirable.

In the form shown in Figs. 4 and 5 the sheets A¹ are of uniform thickness.

10 As before stated the dimensions shown are greatly exaggerated in order to show the invention. In practice the sheets are very thin; as an example, one type of shim is one-thirty second of an inch in thickness composed of ten sheets, the removal of one of 15 which reduces the shim one-three hundred and twentieth of an inch, but it will be understood that the thickness of the shim, and number and thickness of the sheets employed may be varied, and any suitable materials may be used for the sheets and binder.

I claim:—

1. The shim described comprising a plurality of flat sheets of metal lying one upon 25 the other and each joined to the next by a separable metallic binder evenly distributed upon and between the adjacent faces.

2. A shim composed of a plurality of flat sheets of metal lying one upon the other and 30 each joined to the next by a binder to form a unitary whole, said binder being evenly

distributed over the entire adjacent surfaces of adjacent sheets and of separable character to permit the division of said shim by separation between two sheets.

3. A shim composed of a plurality of flat sheets of metal of different thickness lying one upon the other, and each joined to the next by a separable binder evenly distributed upon and between the adjacent faces of said sheets.

4. The shim described comprising a plurality of flat sheets of brass lying one upon the other and each joined to the next by soldering their adjacent faces, such solder being evenly distributed over the entire adjacent surfaces of adjacent sheets and of separable character to permit the division of said shim by separation between two sheets.

5. As an improved article of manufacture, a shim composed of a plurality of temporarily separably united flat metal sheets and means for causing said sheets to closely adhere throughout their entire adjacent surfaces.

In testimony that I claim the invention above set forth I affix my signature, in presence of two witnesses.

ERIC G. LINDHE.

Witnesses:

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