(No Model.) 6 Sheets—Sheet 1.

P. GOLDSTEIN.

LEATHER CUTTING MACHINE.

No. 521,538. Patented June 19, 1894.

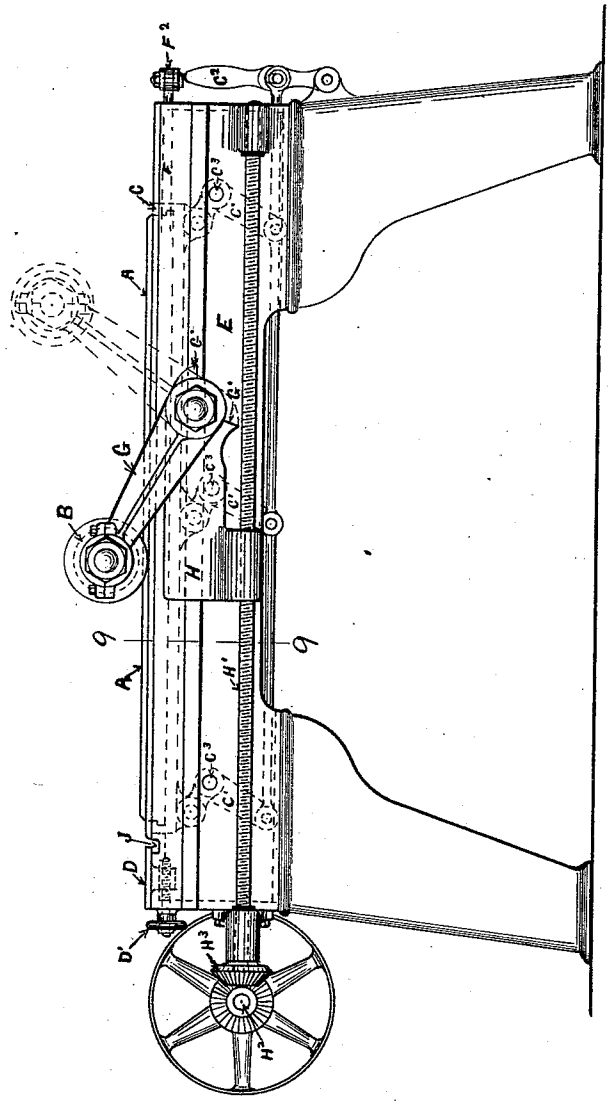

Fig 1

Witnesses
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(No Model.) 6 Sheets—Sheet 2.

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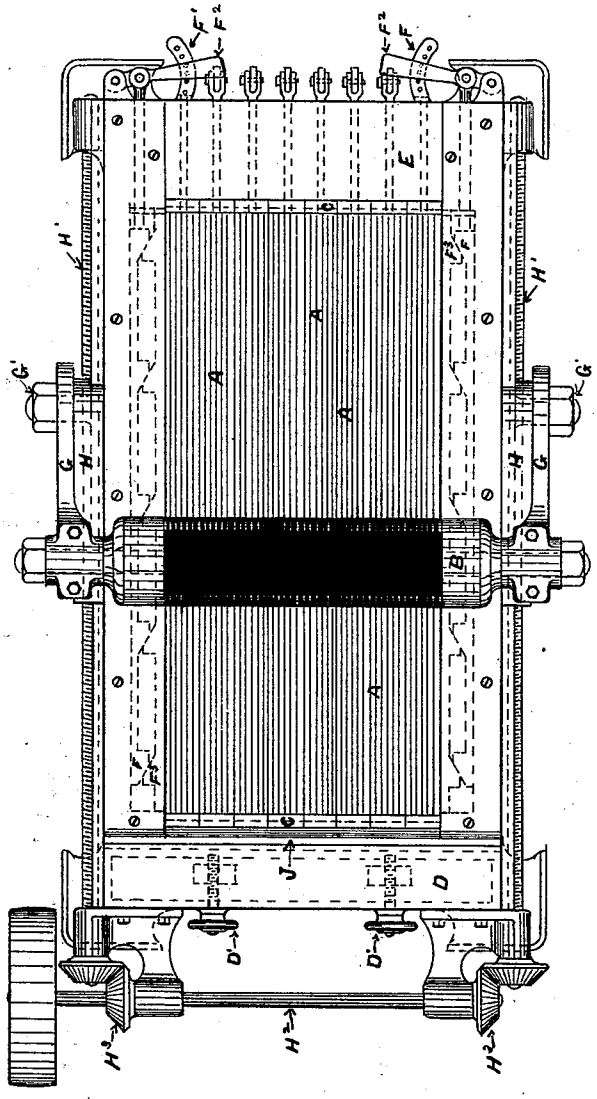

Fig. 2

Witnesses
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(No Model.) 6 Sheets—Sheet 3.

P. GOLDSTEIN.

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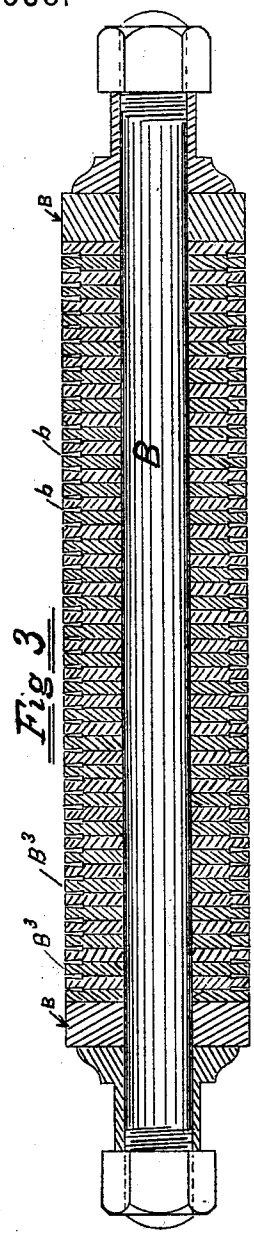


Fig 3

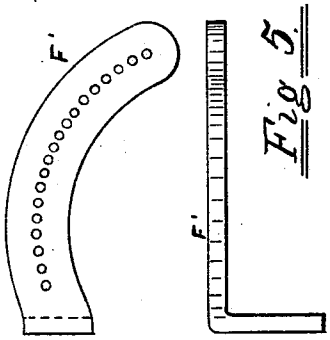


Fig 5

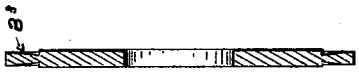
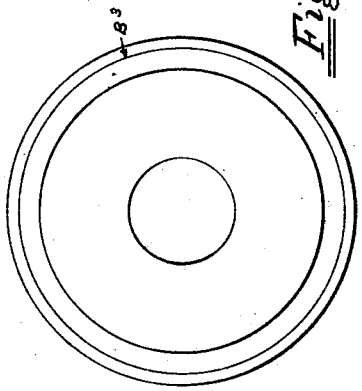


Fig 4



Witnesses
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P. GOLDSTEIN.

LEATHER CUTTING MACHINE.

No. 521,538. Patented June 19, 1894.

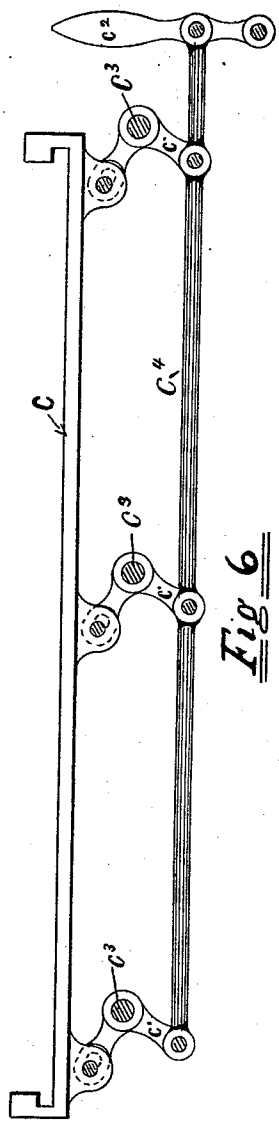

Fig 6

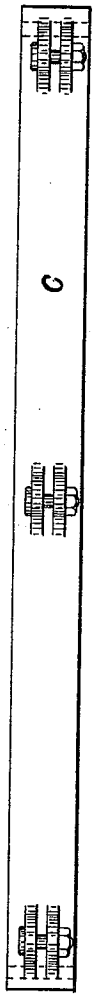

Fig 7

Fig 8

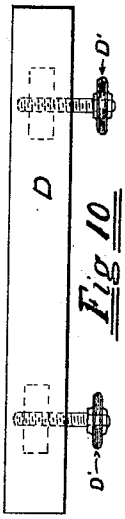

Fig 10

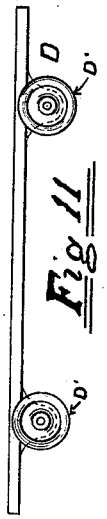

Fig 11

Fig 12

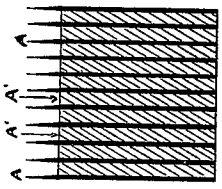

Fig 9

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P. GOLDSTEIN.

LEATHER CUTTING MACHINE.

No. 521,538. Patented June 19, 1894.

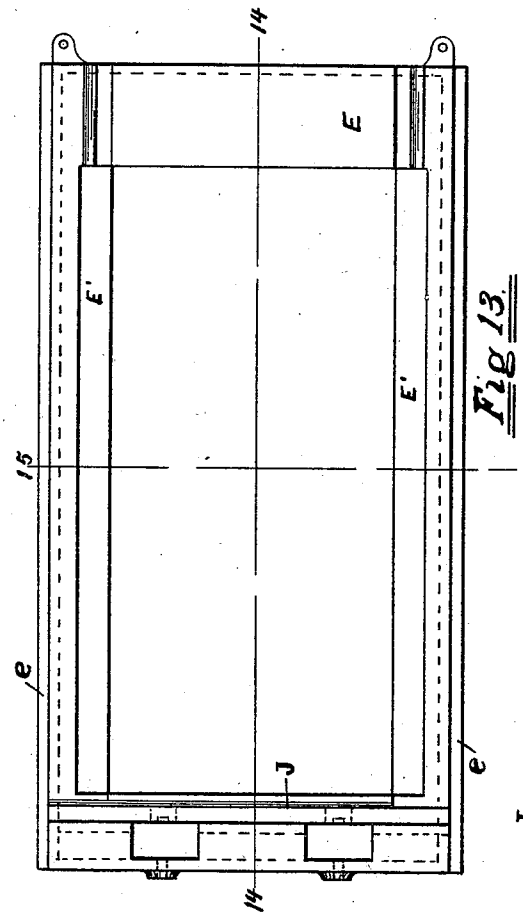

Fig 13.

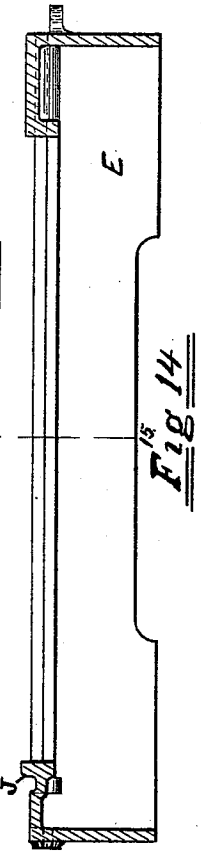

Fig 14.

Fig 15.

Witnesses
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P. GOLDSTEIN.

LEATHER CUTTING MACHINE.

No. 521,538. Patented June 19, 1894.

Fig 16

Fig 17

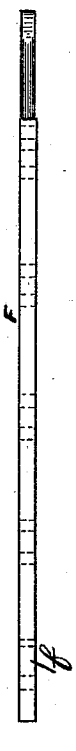


Fig 18

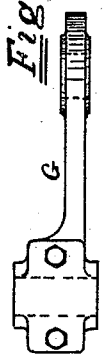


Fig 19

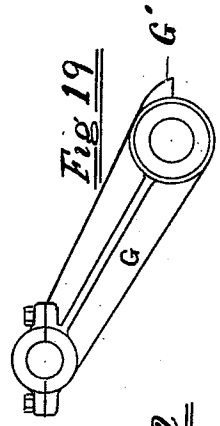


Fig 22

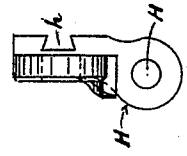


Fig 20

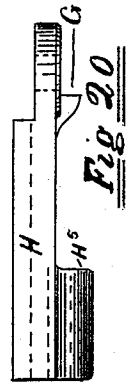
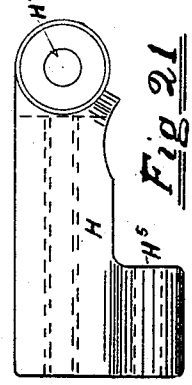


Fig 21



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UNITED STATES PATENT OFFICE.

PHILIP GOLDSTEIN, OF NEWARK, NEW JERSEY.

LEATHER-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 521,538, dated June 19, 1894.

Application filed March 28, 1893. Serial No. 467,939. (No model.)

To all whom it may concern:

Be it known that I, PHILIP GOLDSTEIN, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Leather-Cutting Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to leather-cutting machines, and particularly to such of said machines as are used to cut from a hide or side of leather a series of parallel sided strips, as for example, shoe-strings, straps, binding strips, welts, &c.

My invention is illustrated in the accompanying drawings as follows:

Figure 1, is a side elevation of a machine embodying my invention. Fig. 2, is a top or plan view of the same machine. Fig. 3, is a longitudinal section of the cutting roll of the machine, with the shaft and nuts in elevation. Fig. 4, shows a side view and a section view of one of the cutting disks of which the cutting roller is composed. Fig. 5, shows a top and a side view of a sector-formed bracket F′, to be hereinafter located, and described. Fig. 6, is a side elevation of one of the knife-holders, C, and its connections, to be hereinafter located and described. Fig. 7, is a plan view of the under side of said knife-holder. Fig. 8, is a side view of one of the knives carried by said knife-holder. Fig. 9 is a transverse section of a series of knives carried by one of said knife-holders, the line 9—9 in Fig. 1, being the line of section. Fig. 10 is a top view; Fig. 11, a side view and Fig. 12, an end view of the hide or blank clamp, D, also seen in Figs. 1 and 2. Figs. 13, 14 and 15 are detail views of the bed of the machine, Fig. 13 being a top or plan view, Fig. 14 being a longitudinal section on the line 14—14 in Fig. 13, and Fig. 15 being a transverse section on the line 15—15 in Figs. 13 and 14. Fig. 16 is a top view and Fig. 17 a side view of the knife clamping devices F, shown also by dotted lines in Fig. 2. Fig. 18 is a top view and Fig. 19 a side view of one of the arms which carry the cutting roll B. Fig. 20 is a top view, Fig. 21, a side view and Fig. 22 an end view, looking from the right of Figs. 20 and 21, of one of the cutting-roller carriers.

The essential features of the machine are as follows: The knives extend longitudinally along the bed of the machine, and are supported in sets or gangs in a series of knife holders. Each knife holder may have as many knives as are necessary to effect the result desired, and the knives are separated by spacing strips which are of the width or thickness necessary. For example, if the machine is to be used to cut shoe-strings, the knives will be set much closer together than when the machine is arranged to cut binding strips, welts or straps, and hence each knife holder will contain more knives in the former case than in the latter. The knife holders are made so as to be held in a plane of action or depressed below it so as to be out of action. The object of this is to so adjust the knives as to suit the hide to be cut. For instance, if the hide is wide there will be many of the knife holders in position to bring their knives into action and if the hide is narrow or small or it is desired to slit up only certain portions of it then only the requisite number of knives will be brought into action. These are matters always to be regulated by the operator to suit the condition of the material to be acted upon.

The hide to be cut lies upon the knives and is held fast at the end from which the cutting commences. The cutting is effected in a shear-like manner by rolling over the hide a roller made of cutting disks, which receive the knives between them. The effect of the roller is to force the leather down between the bed-knives and in so doing the leather must be slitted or cut into as many strips as there are spaces between the bed-knives in action.

I am aware that leather cutting machines have heretofore been made in which the knives were disk formed and combined or gaged upon a common shaft and acted through the leather into grooves in the bed plate below the leather; but such machines have proved faulty for several reasons, among which are the following: A disk formed knife is not as easily sharpened as a straight edged knife; unless the circumference of the disk knife is equal to its traverse it is brought into action at each given point in its periphery as

many times as its circumference is less than its extent of traverse, for example; if the knife is three inches in diameter or nine inches in circumference, and is to cut strips that are twenty-seven inches long then each given point on its cutting edge is brought into action three times in cutting each of said strips. The result is that disk formed knives are of such a form as to be more difficult to keep sharp than straight knives, and they are subjected to much more service than straight knives that are of the full length of the extent of the material to be cut.

Another very important objection to cutting by a series of knives in the form of a roller is that it is very difficult to regulate the cutting operation to suit the form, size or condition of the hide, so as not to slit up the undesirable parts thereof.

Hides are irregular in form and in condition, some parts being unfit for strings, straps, or welts, but fit for other purposes, and hence such parts as are unfit to be used in lengths should not be so cut.

A roller formed of disk-knives acting upon a cutting table will cut all such parts of the hide as come below it, and it would require much waste of time to change the length of the roller to suit each hide to be cut. But it will be seen that by using long straight knives and placing them in the bed of the machine in proper holders so they can be depressed out of action or brought into action as desired, and using a roller formed of blunt disks, the operator can quickly and easily so adjust the machine as to cut only such parts of the hide as it is desirable to cut into lengths.

From the foregoing the objects of the construction shown in the drawings and now to be described will be apparent. The framework of the machine will be designed to suit the requirements or the fancy of the designer. The husk or body of the frame as I have made it heretofore is shown in Figs. 13, 14 and 15 and is marked E, and the legs or supports are shown in Fig. 1.

As illustrated in the drawings the operator's stand is at the right of Figs. 1 and 2. At the opposite end there is a driving shaft H^2 properly mounted in brackets attached to the frame work. Along the sides of the frame are screw-shafts H', H', properly mounted and driven from gearing H^3, H^3, on the shaft H^2. Mounted on guide-ribs *e* on the side of the frame E parallel with the screw-shafts H', are sliding blocks H, having grooves *h*, which embrace the ribs *e*, and there are nut boxes H^5 on said sliding blocks H, which embrace the said screws H' (see Figs. 20, 21 and 22.) There are arms G pivoted to the sliding blocks H, at H^4 which carry the roller B in journals at their outer ends, and there are lugs G' on said arms and on the blocks H which abut and sustain said arms G when the roller is thrown back out of operation as shown by dotted lines in Fig. 1. It will be seen that if the screw-shafts H' are revolved in one direction the sliding blocks H with the arms G and the roller B, will be carried in one direction along the bed of the machine, and if revolved in the opposite direction they will be carried in the opposite direction. Part of the outer rigging of the machine, but forming no part of this invention, will be devices whereby the driving shaft H^2 may be driven in either direction as the operator may desire, and thereby enable him to move the roller B, in either direction as he may desire. In Fig. 1 the roller B is shown in operative position by full lines, and by dotted lines it is shown thrown up out of action where it is held by the shoulder-lugs G' that are on the parts G and H.

The cutting roller B is composed of a series of disks B^3 clamped together on a central shaft, each disk being slightly cut away or rabbeted on its sides at the circumference so as to form interspaces *b*, between the disks to receive the cutting knives.

The cutting knives A, are placed longitudinally of the machine and are arranged in sets, each set being supported by a separate and independent vertically movable holder C. Between the knives are strips A' (see Fig. 9) which hold them at proper distances apart to correspond with the interspaces *b*, of the roller B. The thickness of the disks of the roller and the strips A' will be regulated to correspond with the width of cuttings to be made.

The knife holders C, are supported on bell-crank levers C', that are pivoted on shafts C^3 and they are moved vertically by the pivotal action of the said bell cranks, which are moved by a connecting rod C^4 and a hand lever C^2, as clearly shown in Fig. 6. The hand levers C^2, are all arranged in front of the operator along the end of the machine and he can by moving any of these levers throw its corresponding set of knives out of or into action.

After the operator has fixed the proper number of knives in operative position the whole knife bed is clamped together by a series of wedges that act laterally from the sides of the machine. These wedges are seen in dotted lines in Fig. 2, and in detail in Figs. 16 and 17. There are two wedge bars F, F^3, on each side of the knife bed, each of which have a series of wedges *f*, along their length. The bars F, are movable longitudinally and the bars F^3 are stationary. At the operator's end of the machine are hand levers F^2 by which the bars F are moved, and on a quadrant bracket F' is means for locking the levers F^2.

At the end of the machine opposite the operator there is a clamping device for holding the end of the hide to be cut. This consists of a movable jaw-plate D, actuated by screws D', and acting against a fixed jaw-rib J, formed on the bed of the machine.

The operation of the device is as follows: After completing a cutting, the roller B is

turned up as shown by dotted lines in Fig. 1. The screws H′ are then reversed and the roller is moved to the end of the machine opposite the operator's stand, that is to say, to the left end of the machine as shown in Figs. 1 and 2. A new blank is put upon the machine and its end is clamped by the jaws D, J. The operator then determines what portion of the hide should be cut into strips and what portion should not be, and he adjusts the knives accordingly and then relocks the knives by operating the wedge bars F. The roller is then turned down so as to rest upon the hide and the screws are put into action and the roller B moves over the hide toward the right end of the machine and as it does so it forces the leather in between the knives and thereby cuts it into strips.

I am aware that heretofore it has been common to provide machines for cutting leather into strips, and that in such machines grooved rollers have been used with knives fitting in the grooves of said rollers, but, so far as I am aware the rollers acted like feed rollers to draw the leather forward against the knives which had their cutting edges set at an angle to the plane in which the leather was moved by the rollers. For example, see Letters Patent of the United States No. 60,764, of January 1, 1867; No. 111,533, of February 7, 1871; No. 417,268, of December 17, 1889. But such machines embody none of the distinctive features of my invention. I am also aware that it has been, heretofore, common to cut cloth for garments by pressing the same, by a presser roller, down upon a system of knives arranged on a knife bed below the roller. In all such machines the knives are curved to conform to the pattern of the garment, and the presser-roller is ungrooved. Such machines embody none of the distinctive features of my invention, and I do not intend to be understood as claiming any of the features shown in such machines. See, for example, Letters Patent of the United States No. 472,715, of April 12, 1892; No. 487,840, of December 13, 1892; and English Patent No. 767 of 1871.

What I claim as new is—

1. In a leather cutting machine, the combination with a cutting roller composed of a series of disks clamped upon a common shaft and having interspaces between their edges forming annular grooves on the surface of said roller, of a knife bed composed of a series of parallel knives arranged longitudinally of said bed and spaced to coincide with the grooves of said roller, and means for moving said roller over said knife bed longitudinally.

2. In a leather cutting machine, the combination with a cutting roller having a series of annular grooves, of a knife-bed upon which said roller acts, said knife-bed being composed of a series of sets of longitudinal knives, spaced to coincide with the grooves of said roller, each set of knives being held by a suitable holder that is movable independently of the other holders, whereby the set of knives held by it can be brought into or removed from action.

3. In a leather cutting machine, the combination with a cutting roller having a series of annular grooves, of a knife-bed upon which said roller acts, a series of parallel contiguous knife-holders that hold one or more of the knives comprising the knife-bed, said holders being movable vertically so as to bring its contained knife or knives into action or out of action, and means for clamping said knife-holders together so as to hold them against movement when being acted upon by said roller.

4. In a leather cutting machine, the combination with the knife holders, C, containing knives, A, with separating strips, A′, of means, substantially as shown, for clamping the said knife holders together.

5. In a leather cutting machine, the combination with a knife bed formed of parallel longitudinal knives, of cutting roller, B, mounted on the tilting arms, G, which are pivoted to slide-blocks, H, the screws, H′, on the sides of the machine which engage said slide-blocks, and means for operating said screws.

In testimony whereof I affix my signature in presence of two witnesses.

PHILIP GOLDSTEIN.

Witnesses:
JOS. D. GALLAGHER,
HARRY E. RICHARDS.