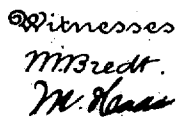


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3 SHEETS--SHEET 1.



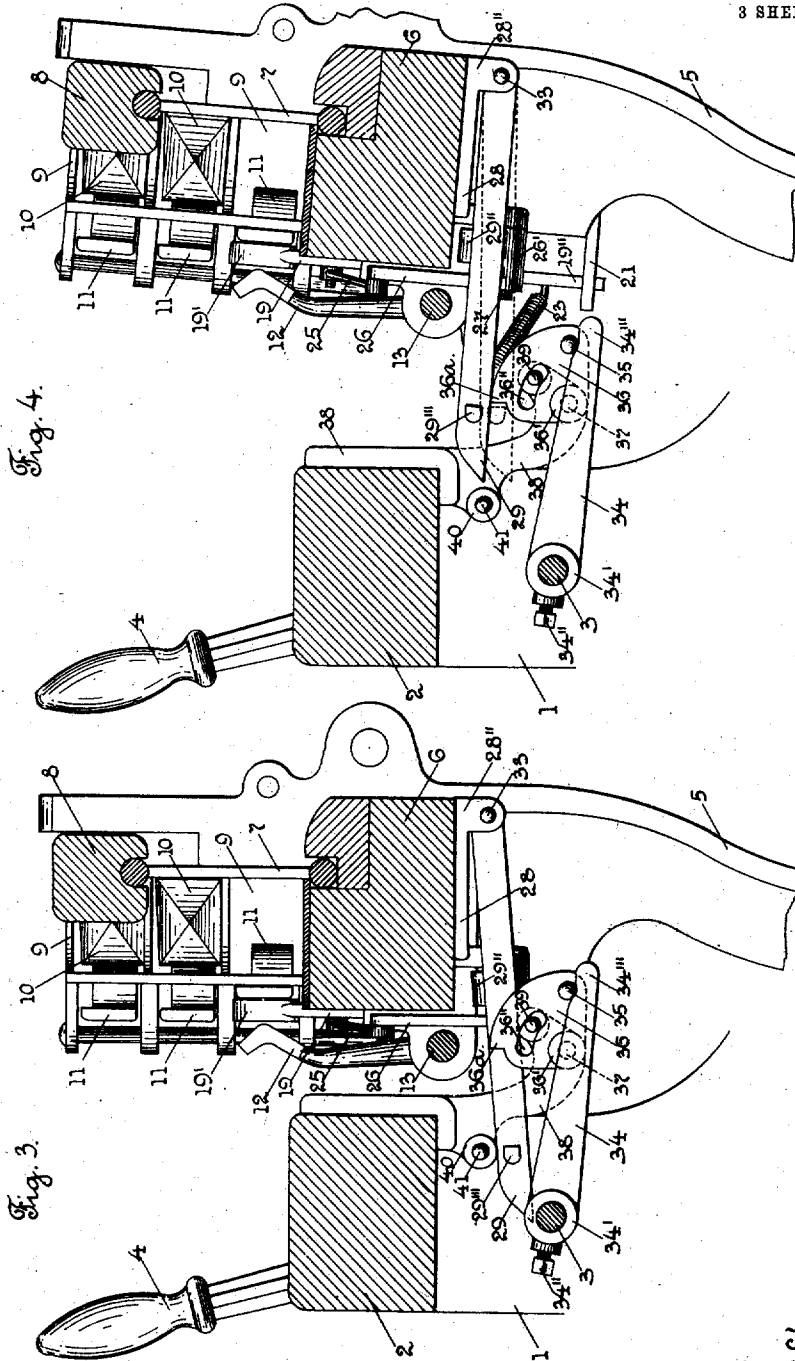
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 PROTECTOR MECHANISM FOR LOOMS.
 APPLICATION FILED MAY 23, 1910.

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Patented Mar. 21, 1911.

3 SHEETS-SHEET 2.



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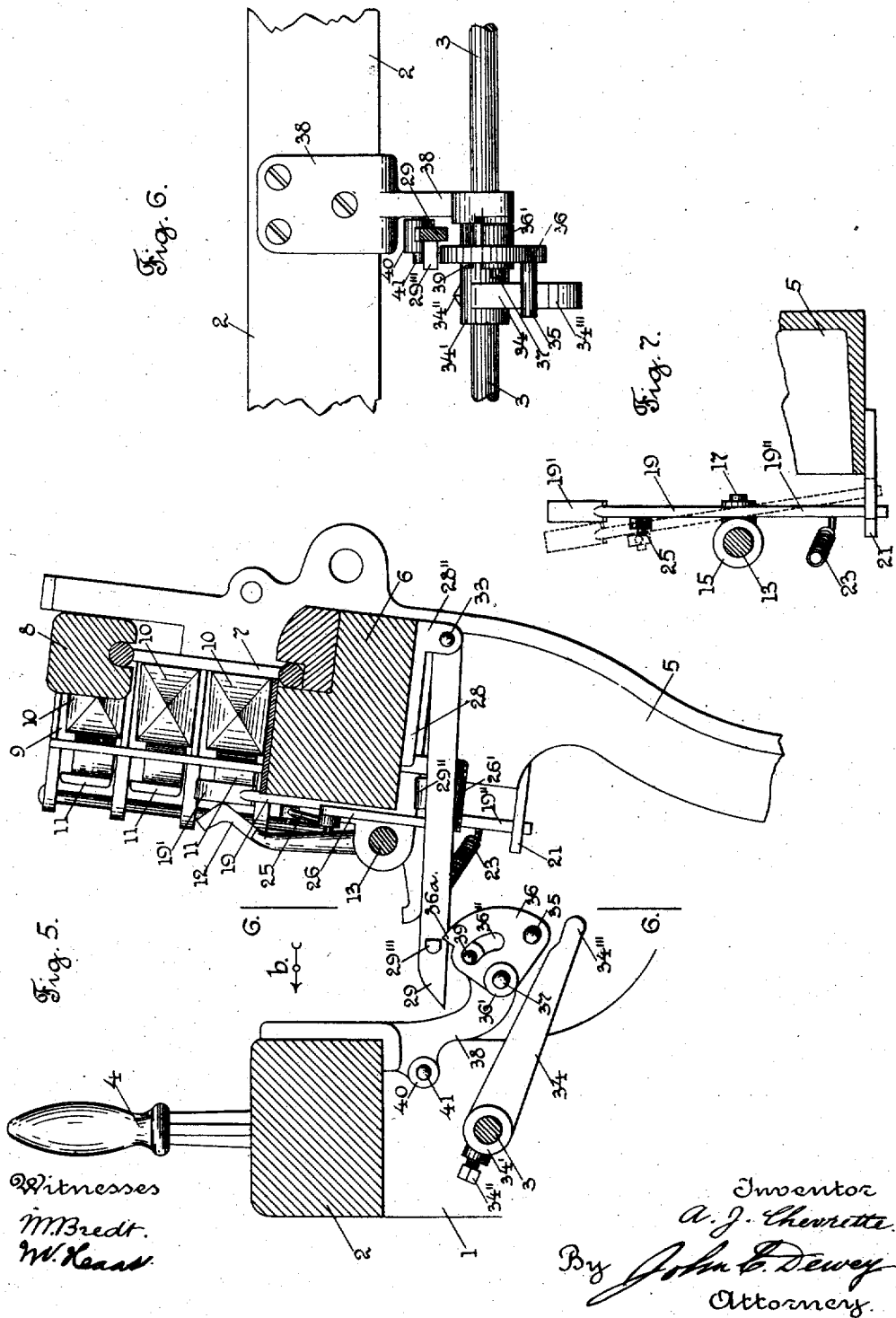
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3 SHEETS-SHEET 3.



UNITED STATES PATENT OFFICE.

AUGUSTIN J. CHEVRETTE, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, A CORPORATION OF MASSACHUSETTS.

PROTECTOR MECHANISM FOR LOOMS.

987,110.

Specification of Letters Patent.

Patented Mar. 21, 1911.

Application filed May 23, 1910. Serial No. 562,811.

To all whom it may concern:

Be it known that I, AUGUSTIN J. CHEVRETTE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Protector Mechanism for Looms, of which the following is a specification.

My invention relates to protector mechanism for looms, and more particularly to a shuttle smash protector mechanism for drop box looms, to stop the loom in case of the improper placing, or operation of the shuttles.

In operating the loom having drop shuttle boxes at each end of the lay, it may happen that the operator places in the shuttle boxes two shuttles on the same level, or there may be an improper operation of the box motion, in which case there occurs what is commonly termed a shuttle smash.

The object of my invention is to provide a protector mechanism, and more particularly a shuttle smash protector mechanism for drop box looms, of simple and inexpensive construction, and which can be combined with the ordinary type of looms, and will prevent the loom from having a shuttle smash, and will stop the loom instantly just before a shuttle is thrown, in case there is a shuttle on the same level at each end of the lay.

My invention consists in certain novel features of construction of my improvements as will be hereinafter fully described.

I have only shown in the drawings a detached portion of a loom with my improvements applied thereto, sufficient to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawings:—Figure 1 is a front view of a detached portion of the lay, and drop shuttle boxes at each end thereof, with my improvements applied thereto; the reed, and hand rail are shown partially broken out at the center. Fig. 2 shows, on an enlarged scale, the parts shown at the left in Fig. 1. Fig. 3 is a section, on line 3, 3, Fig. 2, looking in the direction of arrow *a*, same figure, and also shows a cross section of the breast beam with the knockoff mechanism combined therewith, and not shown in Fig. 2. Fig. 4 corresponds to Fig. 3, but shows some of the parts in a different position. Fig. 5 corresponds to Fig. 4, but

shows some of the parts in a different position. Fig. 6 is a section, on line 6, 6, Fig. 5, looking in the direction of arrow *b*, same figure, and, Fig. 7 shows the protector finger or feeler shown at the left in Fig. 2, detached, looking in the direction of arrow *c*, same figure.

In the accompanying drawings, 1 is a detached portion of the loom side or end frame, 2 the breast beam, 3 the shipper rod having its bearings on the loom sides, 4 the shipper handle or lever, mounted on the shipper rod 3, to be operated to start or stop the loom in the usual way.

5 are the lay swords which carry the lay beam 6; 7 is the reed, and 8 the hand rail. 9 are the movable shuttle boxes, 10 the shuttles therein, 11 the shuttle binders, and 12 the binder fingers, which are operated by the shuttle binders in the usual way, to stop the loom if a shuttle fails to enter a box at the proper time. The binder fingers 12 have their hubs secured on the protector rod 13, which is mounted in suitable bearings at the front of the lay beam.

All of the above mentioned parts may be of the usual and well known construction.

I will now describe my improvements, which in this instance consists of a dagger, and intermediate connections to the shipper rod, to stop the loom when the shuttle boxes are on a level with the race-plate of the lay, and contain a shuttle at each end of the lay. The protector rod 13 has in this instance loosely mounted thereon, at each end thereof, sleeves 15 and 16, respectively. The sleeves 15 and 16 are provided with studs 17 and 18, respectively, to loosely receive the hub on a feeler or protector finger 19 and 20, respectively. The feelers 19 and 20 have a pivotal movement in the direction of the length of the lay, and a rocking movement with the sleeves 15 and 16, transversely of the lay, and extend upwardly from the protector rod 13, and are provided at their upper ends with engaging ends 19' and 20', respectively, adapted to engage with the inner end or tip of a binder 11 in the direction of the length of the binder, as shown at the right in Fig. 1, and also in Fig. 5, in case the binder is held out by a shuttle in its box. When a shuttle box or cell is vacant, as shown at the left in Fig. 1, and in Figs. 2, 3, and 4, the engaging end 19' or 20' of a feeler 19 or 20, respectively,

will not engage the end of the binder, but will pass by the end, upon the outer surface of the binder to the position shown. The feelers or protector fingers 19 and 20, engaging with the tip or extreme end of a binder, in the direction of the length of the binder, instead of transversely or in the direction of the width of the binder, as is customary, relieve the binders from any inward pressure and consequent friction on a shuttle entering or passing out from the shuttle box.

Extending downwardly from the hubs of the protectors 19 and 20, are arms 19'' and 20'', respectively, which are suitably guided in slots in plates 21 and 22, respectively, secured on the lay swords. The slots in the plates 21 and 22 limit the movement of the feelers 19 and 20, but allow them to be rocked with the sleeves 15 and 16, as shown by broken lines in Fig. 7, when the engaging end rests upon the binder, and the binder is moved out by a shuttle entering a shuttle box. Helically coiled contraction springs 23 and 24 act respectively, to yieldingly move the feelers 19 and 20 in an outward direction at their upper ends.

The feeler 19 has pivotally connected thereto one end of a rod or wire 25; the other end of said rod or wire 25 is pivotally connected to the upwardly extending arm of an angle lever 26, which has its hub 26' loosely mounted on a stud 27 on a stand 28, secured to the lay beam 6. The other arm 26'' of the angle lever 26 is adapted to engage a side projection 29' on a dagger 29, to raise said dagger, in case no shuttle is in the shuttle box, as shown at the left in Fig. 1, and also shown in Fig. 2. The other feeler 20 has pivotally connected thereto one end of a rod or wire 30. The other end of said rod or wire 30 is pivotally connected to the upwardly extending arm of an angle lever 31, which has its hub 31' loosely mounted on a stud 32 on an extension 28' on the stand 28, secured to the lay beam 6. The other arm 31'' of the angle lever 31 is adapted to engage a side projection 29'' on the dagger 29, said projection being on the opposite side from the projection 29'.

The dagger 29 has its hub pivotally mounted on a pin 33 in ears 28'' on the stand 28, and extends toward the front of the loom, see Figs. 3, 4, and 5. The dagger 29 is provided with a stud 29''' extending out from one side thereof near its front end, which is adapted to operate the knockoff mechanism, in case the shuttles are not properly boxed. The knockoff mechanism consists in this instance of an arm 34, which has its hub 34' adjustably secured on the shipper rod 3 by a set screw 34''. When the loom is started, by moving the shipper handle toward the left, Figs. 3, and 4, the end 34''' on the lever 34 is raised, and is adapted to engage and raise, through a pin 35 on a

cam 36, said cam, from the position shown in Fig. 5, to the position shown in Figs. 3, and 4. The cam 36 has its hub 36' loosely mounted on a stud 37 on a bracket 38 which is secured to the breast beam 2. A pin 39 on the bracket 38 extends into a curved slot 36'' in the cam 36, and holds said cam in its lowered position, shown in Fig. 5. The cam 36 has an engaging end 36^a, which when the cam is in its raised position extends in the path of and is adapted to be engaged by the projection 29''' on the dagger 29, when said dagger is lowered, as shown by broken lines in Fig. 4. A roll 40 mounted on a pin 41 on the bracket 38, is adapted to depress the dagger 29 when the lay is in its forward position, see Fig. 3, and through the engagement of the side extensions 29' and 29'' on said dagger with the arms 26'' and 31'' of the angle levers 26 and 31 move down said arms, and through connectors 25, and 30, move inwardly the feelers 19 and 20, to free them from engagement with the binders 11 on the shuttle boxes, during the change of the shuttle boxes.

The operation of my shuttle smash protector mechanism will be readily understood by those skilled in the art, and briefly is as follows:—When the loom is running normally, the parts are preferably in the position shown in Figs. 1 to 4, inclusive. The dagger 29 has the side projections 29' and 29'' resting on the arms 26'' and 31'', respectively, of the angle levers 26, and 31, and remains constantly in its raised position, and on the backward movement of the lay, the projection 29''' on the dagger 29 will clear the engaging end 36^a on the cam 36, as shown in Fig. 4. When the lay moves to its extreme forward position, as shown in Fig. 3, the dagger 29 engages the roll 40, and moves downwardly, and through the side connections 29' and 29'' on the dagger 29, moves the angle levers 26 and 31, and through connectors 25 and 30, the feelers 19 and 20, to disengage said feelers from the binders 11, while the drop shuttle boxes change their position. In case there is a shuttle improperly placed, or each of the shuttle boxes, which are on a level with the race-plate of the lay, contains a shuttle, both of the feeler levers 19 and 20 will bear on the ends of the shuttle binders 11, causing the dagger 29 to remain lowered on the backward movement of the lay, and the projection 29''' on said dagger will engage the engaging end 36^a on the cam 36, to move said cam and cause the pin 35 thereon to engage the end 34'' on the arm or lever 34, fast on the shipper rod 3, to rock said shipper rod and stop the loom in the usual way.

It will be understood that the details of construction of my improvements may be varied if desired.

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

1. A shuttle smash protector mechanism 5 for drop box looms, comprising a protector finger at each end of the lay, pivotally mounted, and having a pivotal movement in the direction of the length of the lay, and a rocking movement transversely of the lay, 10 and adapted to engage the inner or tip end of a binder in the direction of its length, in case the binder is held out by a shuttle in its box, and connections intermediate said protector fingers and the shipping mechanism 15 of the loom, to stop the loom when there are two shuttles on the same level at opposite ends of the shuttle race.

2. A shuttle smash protector mechanism for drop box looms, comprising a protector 20 finger at each end of the lay, pivotally mounted, and having a pivotal movement in the direction of the length of the lay, and a rocking movement transversely of the lay, and adapted to engage the inner or tip 25 end of a binder in the direction of its length, in case the binder is held out by a shuttle in its box, connections from said protector fingers to angle levers, and said angle levers, adapted to engage a dagger,

and said dagger, pivotally mounted and 30 adapted to engage and operate the knockoff mechanism, to stop the loom when there are two shuttles on the same level at opposite ends of the shuttle race.

3. A shuttle smash protector mechanism 35 for drop box looms, comprising a protector finger at each end of the lay pivotally mounted on a sleeve on the protector rod, and having a pivotal movement in the di- 40 rection of the length of the lay, and a rocking movement transversely of the lay, and adapted to engage the inner or tip end of a binder in the direction of its length, in case the binder is held out by a shuttle in its box, a spring for moving said protector 45 finger by the end of the binder, in case the end of the binder is not in the path of the finger, and connections from said fingers to the shipping mechanism, comprising con- 50 nectors, angle levers, and a dagger, to operate the shipping mechanism and stop the loom when there are two shuttles on the same level at opposite ends of the shuttle race.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."