

H. CÔTÉ & R. C. SNOW.
 DEVICE FOR PREVENTING REBOUND OF SHUTTLES.
 APPLICATION FILED SEPT. 24, 1908.

962,495.

Patented June 28, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

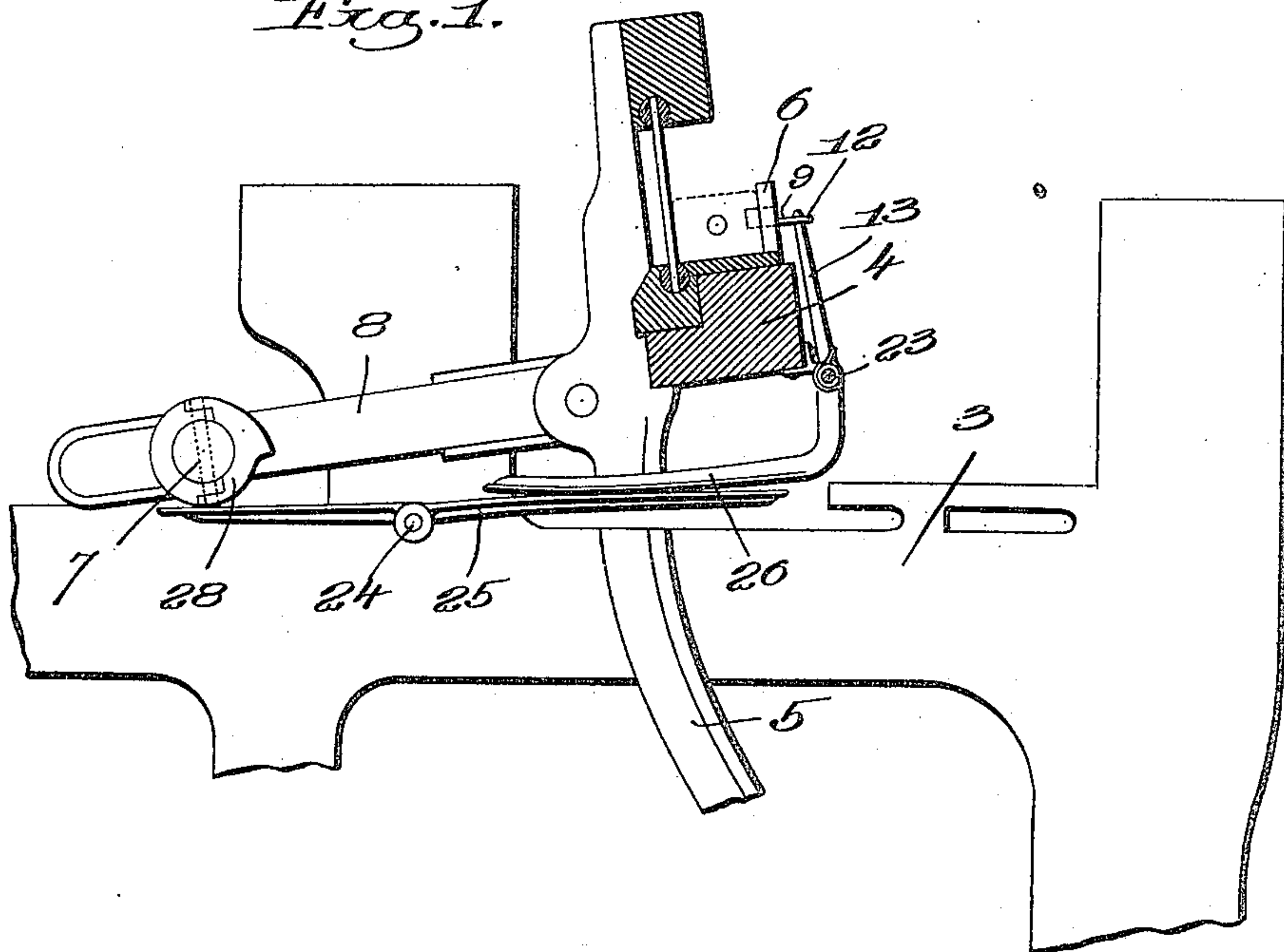
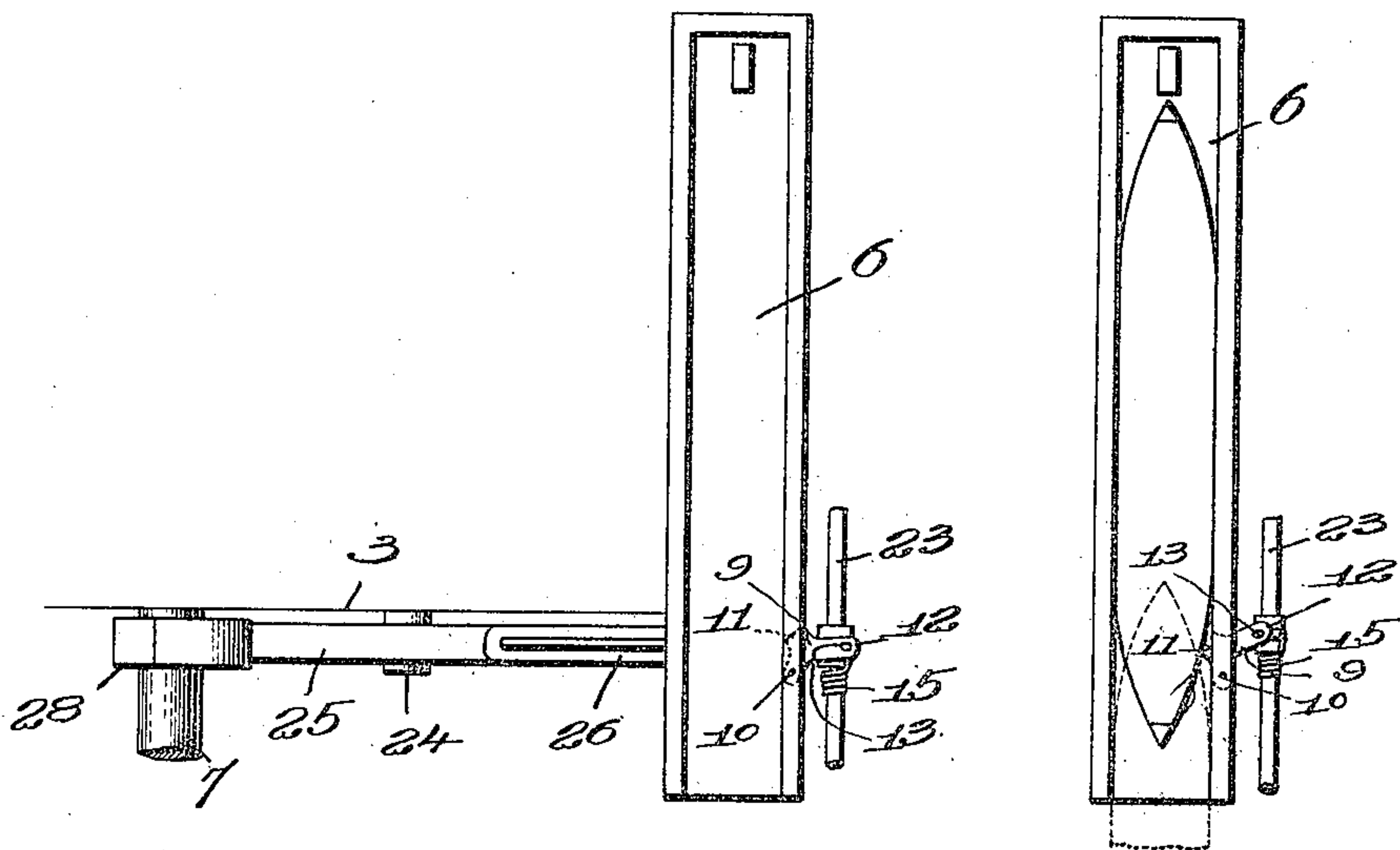


Fig. 2.

Fig. 3.



witnesses:
 Fred S. Grunke,
 Joseph M. Ward.

Inventors,
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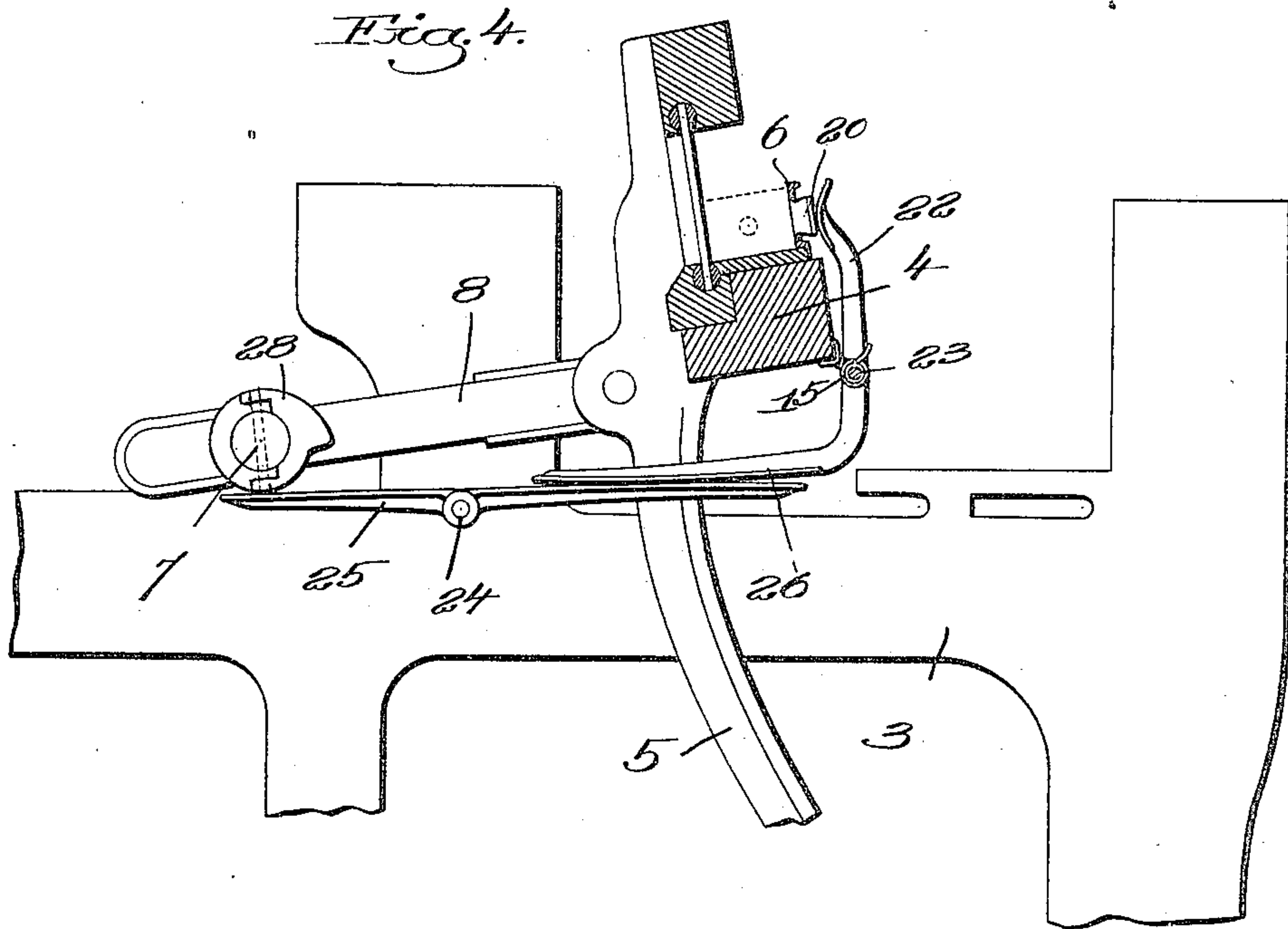
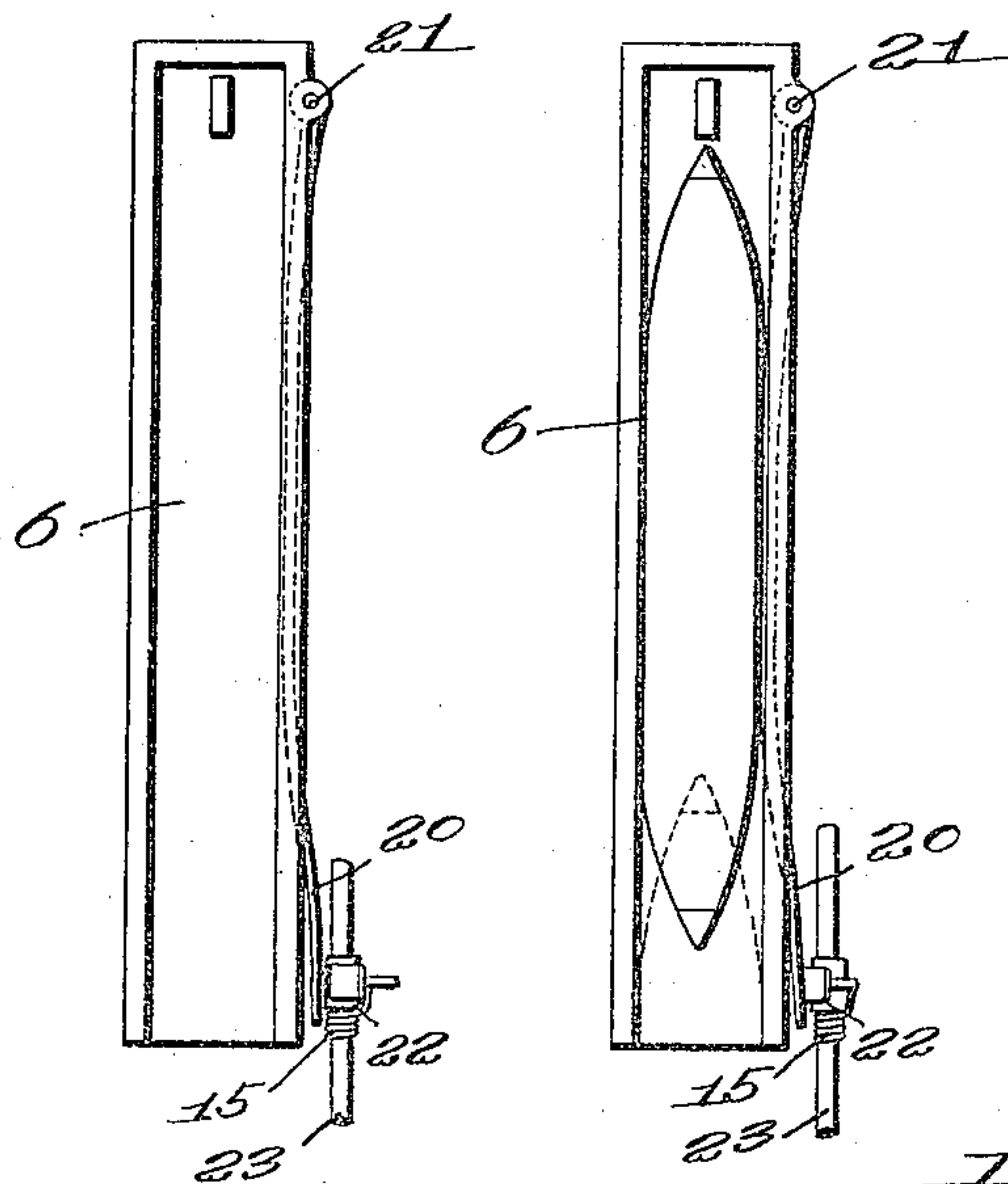


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

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DEVICE FOR PREVENTING REBOUND OF SHUTTLES.

962,495.

Specification of Letters Patent. Patented June 28, 1910.

Application filed September 24, 1908. Serial No. 454,594.

To all whom it may concern:

Be it known that we, HENRY CÔTÉ, a citizen of the United States, residing at West Warren, county of Worcester, State of Massachusetts, and RENCELER C. SNOW, a citizen of the United States, residing at Ware, county of Hampshire, and State of Massachusetts, have invented an Improvement in Devices for Preventing Rebound of Shuttles, of which the following description, in connection with the accompanying drawing, is a specification, like numerals on the drawing representing like parts.

This invention relates to looms and has for its object to provide a novel device for relieving the shuttle of all pressure at the time it is to be picked. Most looms are provided with binders which are arranged to frictionally engage the shuttle as it enters the box for the purpose of bringing the shuttle to rest, and also for the purpose of preventing rebound of the shuttle. The pressure of the binder on the shuttle develops considerable friction between the binder and the shuttle which it is necessary to overcome when the shuttle is to be picked. This necessitates causing the picker to strike the shuttle a much harder blow than is actually necessary to throw the shuttle across the lay, for the blow of the picker must not only be sufficient to throw the shuttle across the lay, but must also be sufficient to force the shuttle out of the box against the pressure of the binder.

Our invention aims to provide a novel device for positively relieving the shuttle of all pressure just at the time that it is acted on by the picker so that it will be necessary for the picker to strike the shuttle only with sufficient force to throw the shuttle across the lay, without however eliminating the frictional pressure to which the shuttle is subjected as it enters the box.

We have shown our invention as embodied in a loom having a binder and as also embodied in a loom which does not employ a binder.

Figure 1 is a portion of a loom showing a lay and a shuttle box with our improvements applied to the loom where no binder is used; Fig. 2 is a top plan view of the parts shown in Fig. 1; Fig. 3 is a top plan view of the shuttle box showing the manner of preventing the rebound of the shuttle; Fig. 4 is

a view similar to Fig. 1 showing the invention applied for relieving the pressure of the binder; Figs. 5 and 6 are top plan views of the shuttle box shown in Fig. 4; Fig. 6 showing the shuttle in the box.

The parts which are old and form no part of our invention are the loom frame 3, the lay 4 which is carried by the lay swords 5, the shuttle box 6 at the end of the lay, the crank shaft 7, and the connecting rod 8 by which the lay is given its movement. These parts are or may be of any suitable or usual construction.

In applying our invention to a loom, we equip the loom with cam-actuated means for positively relieving all pressure from the shuttle just at the time that said shuttle is actuated by the picker. Where the invention is applied to a loom employing a binder, our improvement acts on the binder to positively relieve the pressure thereof against the shuttle. Where the invention is applied to a loom which does not employ a binder, we substitute for the binder a device adapted to prevent the rebound of the shuttle, and equip the loom with means for removing said device from the path of the shuttle at the time that the shuttle is picked.

Referring first to Figs. 4-6, wherein a loom is shown with a front binder, 20 designates such binder, it having any usual construction, and being pivoted to the shuttle box at 21. 22 is the usual finger which is secured to the protector shaft 23 that is journaled to the lay and is acted on by a suitable spring 15 tending to turn the shaft in a direction to force the finger 22 against the binder. This protector shaft has the usual dagger thereon (not shown) which acts to prevent a smash when the shuttle is not properly boxed. In applying our invention to a loom of this type, we pivot a lever 25 to the loom frame at 24 and attach to the protector shaft 23 a rearwardly-extending arm 26 that normally overlies the end of the lever 25. The crank shaft 7 has applied thereto a cam 28 which is adapted to act on the rear end of the lever 25. This cam is so positioned that when the crank is on the top center, the projection of the cam engages the rear end of the lever 25 and rocks said end of the lever downwardly, thus elevating the front end of the lever. The front end of the lever acts against the

arm 26 thus positively turning the protector shaft 23 and relieving the binder from all pressure of the spring. The cam 20 is so shaped and so positioned that it will act on the lever thereby to relieve the binder from the pressure of the spring just prior to the time that the shuttle is picked, and will release the lever thereby permitting the spring to again act on the binder in usual manner before the shuttle enters the other box. As a result, each time that the shuttle enters a box, it is subjected to usual frictional pressure of the binder, and this pressure is relieved only at the time that the shuttle is to be picked. With our improvements, therefore, all the advantage of the binder is retained while the shuttle is entering the box, but the frictional pressure of the binder against the shuttle is removed as the shuttle is picked, so that the picking of the shuttle can be accomplished with the expenditure of much less force than is necessary with the ordinary construction of loom.

Since the protector shaft 23 extends across the lay, it will follow that the pressure on the binders at both ends of the lay is relieved each time the shuttle is picked. It will be within our invention, however, to provide for relieving the pressure of the binders on the two shuttles independently.

In Fig. 1 we have shown another form of the invention wherein the binder is omitted and in lieu thereof a device is employed for preventing the rebound of the shuttle after it enters the box. This device is shown at 9 and it is in the form of a stop pivoted to the side of the shuttle box at 10 and which is shaped to present a projecting portion 11 which is adapted to enter the shuttle box and stand in the path of the shuttle when said device is in its operative position. Said device is also provided with the outwardly-extending slotted arm 12 in the slot of which is received an arm 13 projecting from a shaft 23 journaled on the lay and acted on by a suitable spring 15 which tends to turn the shaft 23 in a direction to throw the arm 13 inwardly. Said shaft 23 may conveniently be the protector shaft with which looms are usually equipped. The shaft 23 has fast thereto the rearwardly-extending arm 26 which overlies the end of the lever 25 which is pivoted to the loom frame at 24, all as described with reference to Fig. 4. The crank shaft 7 is also provided with the cam 28 which acts on the lever 25 as above described. When the parts are in normal position the projection 11 stands within the shuttle box in the path of the shuttle, but since the pivotal point 10 is situated between the portion 11 and the entering end of the box, the incoming shuttle will readily force the device 9 backwardly out of the way. After the shuttle has fully entered the box, however, the spring 15 operates to

throw the device 9 into the position shown in Fig. 3, in which position the portion 11 thereof engages with the tapered part of the shuttle and thus prevents the shuttle from rebounding. Owing to the construction of the device 9 and the way in which it is pivoted, any tendency of the shuttle to rebound or move out of the box will only result in causing the projection 11 to bind with still greater force on the shuttle and thus the shuttle will be effectually prevented from any rebounding. The cam 28, however, operates to positively move the arm 11 out of the path of the shuttle just at the time the shuttle is picked, thus permitting the shuttle to freely leave the box. In this embodiment of our invention also the cam operates to move the projection 11 just prior to the time that the shuttle is picked, but the action of the cam ceases before the shuttle reaches the other shuttle box so that the projection at such shuttle box is in position to frictionally engage the entering shuttle and help to retard the same.

The arm 26 is of sufficient length so that it is not carried forward beyond the end of the arm 25 when the lay beats up.

The cam 28 is preferably made in two parts, as shown in the drawings so that it can be readily applied to or removed from the shaft. This construction permits the device to be applied to a loom which is now already in use.

Our invention makes it possible to utilize less force in driving the shuttle across the lay and consequently provides for running the loom with an expenditure of less power. It is not essential to our invention that the cam for positively operating the lever should be situated on the crank shaft, but this is our preferred construction.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. In a loom, the combination with a lay, a shuttle box at the end thereof, and means associated with each shuttle box and adapted when in normal position to frictionally engage the shuttle as it enters the box, of a shaft journaled on the lay for controlling said means, an arm rigid with said shaft, a lever pivoted to the loom frame and having one end overlying said arm, and a cam on the crank shaft arranged to operate said arm just prior to the time when the shuttle is thrown thereby to remove the frictional pressure on the shuttle and also arranged to release said arm during the flight of the shuttle and before the shuttle enters the opposite shuttle box.

2. In a loom, the combination with a lay, a shuttle box at the end thereof, and means associated with said shuttle box and adapted when in normal position to frictionally engage the shuttle as it enters the box, of a

shaft journaled on the lay for controlling
said means, an arm rigid with said shaft and
extending rearwardly beneath the lay, a
lever pivoted to the loom frame and having
5 one end overlapping said arm, a divided cam
secured to the crank shaft and provided with
a single point arranged to engage said arm
just prior to the time when the shuttle is
thrown thereby to remove frictional pres-
10 sure on the shuttle, said point being ar-
ranged to release the arm during the flight
of the shuttle.

3. In a loom, the combination with a lay,
of a shuttle box thereon, a friction device
15 pivoted to the side of the shuttle box, and a
spring acting on the friction device and tend-

ing to hold it normally in the path of the
shuttle, the pivotal point of said device be-
ing situated between the open end of the
shuttle box and the portion of the device 20
that engages the shuttle, and means to relieve
the pressure of the friction device on the
shuttle just prior to the time when the shut-
tle is thrown.

In testimony whereof, we have signed our 25
names to this specification, in the presence of
two subscribing witnesses.

HENRY CÔTÉ.

RENCELER C. SNOW.

Witnesses:

LOUIS C. SMITH,

THOMAS J. DRUMMOND.

It is hereby certified that in Letters Patent No. 962,495, granted June 28, 1910, upon the application of Henry Côté, of West Warren, and Renceler C. Snow, of Ware, Massachusetts, for an improvement in "Devices for Preventing Rebound of Shuttles," an error appears in the printed specification requiring correction as follows: Page 2, line 111, the article "the" should read *each*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 19th day of July, A. D., 1910.

[SEAL.]

F. A. TENNANT,
Acting Commissioner of Patents.