

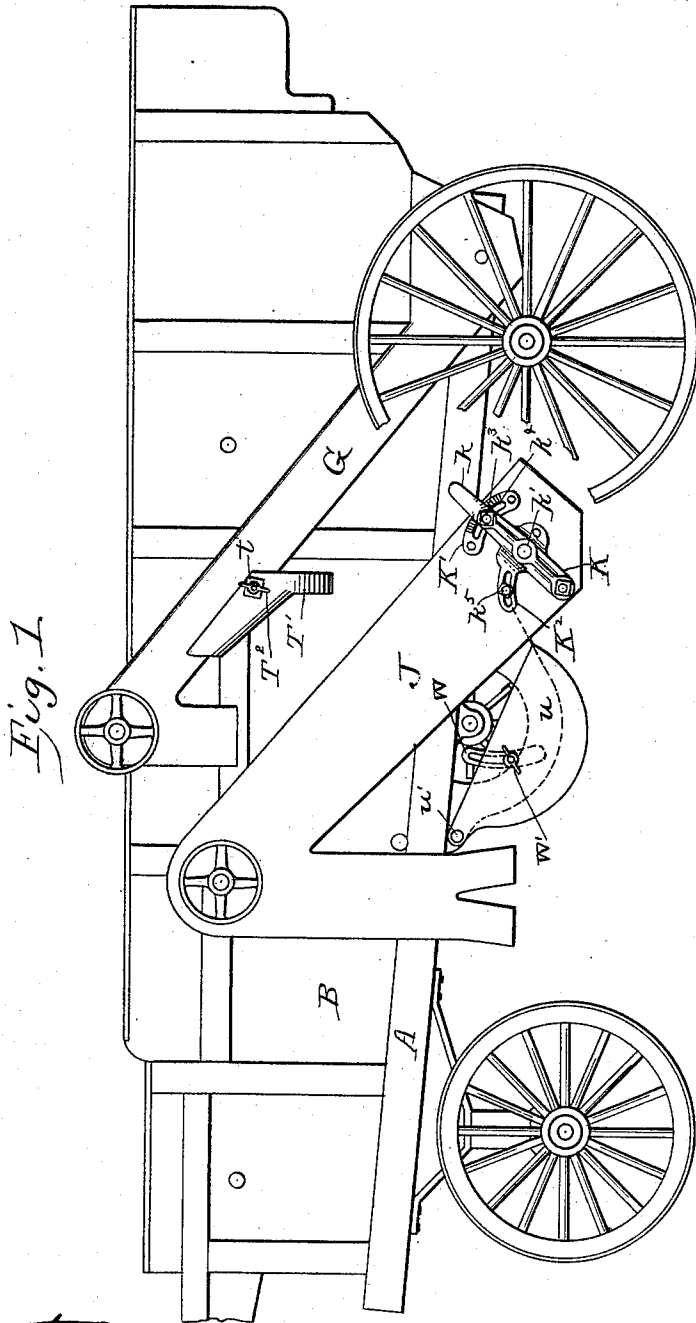
(No Model.)

3 Sheets—Sheet 1.

G. W. A. HANKEY.
THRASHING MACHINE.

No. 537,922.

Patented Apr. 23, 1895.



Attest
Celestine
G. A. Pennington

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by R. S. Bacon
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(No Model.)

3 Sheets—Sheet 2.

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Fig. 6.

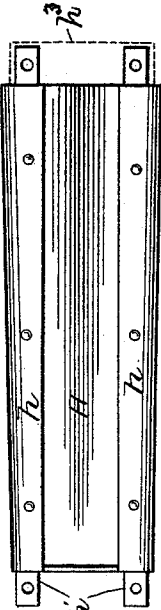


Fig. 5.

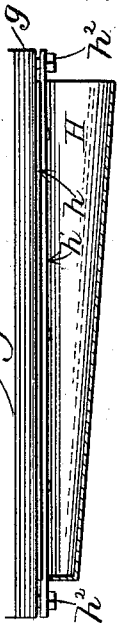
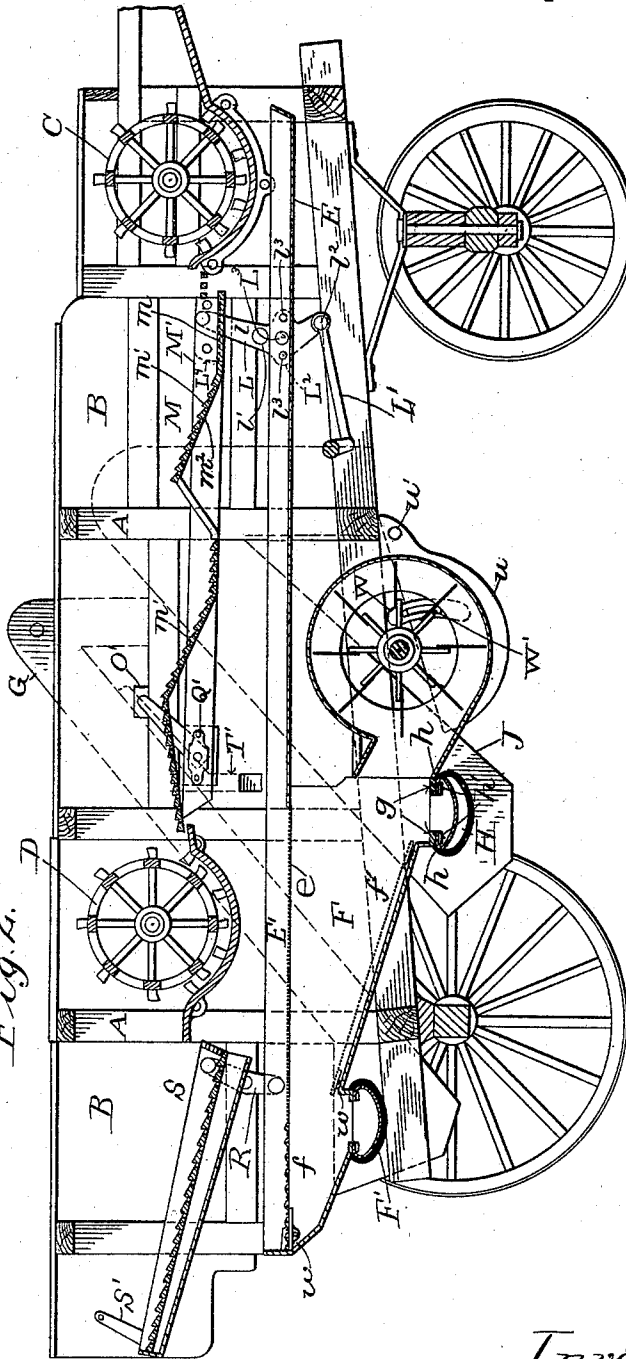


Fig. 2.



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Fig. 3.

Fig. 4.

Fig. 7. Fig. 8.

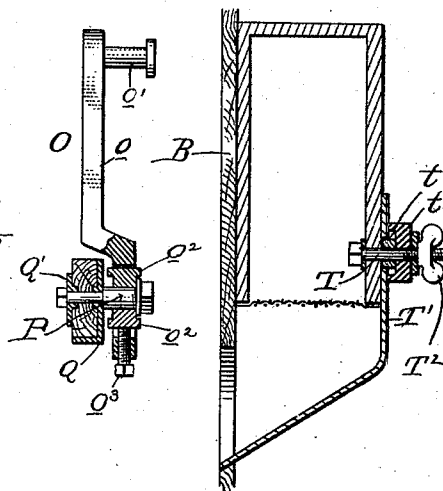
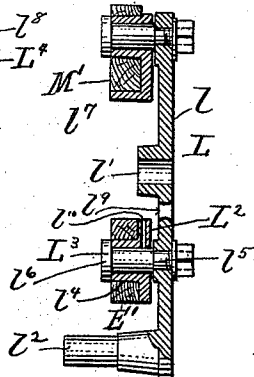
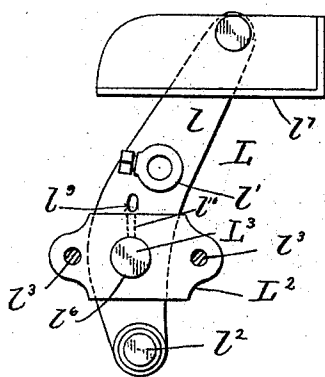


Fig. 9.

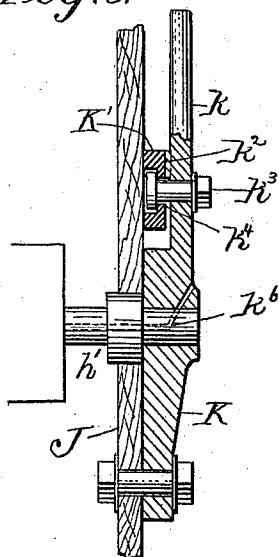


Fig. 10.

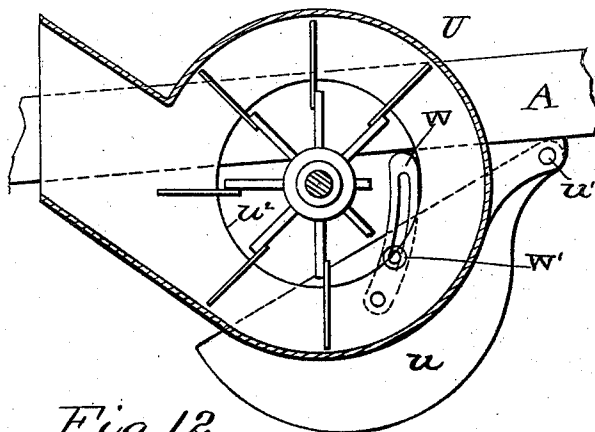


Fig. 12.

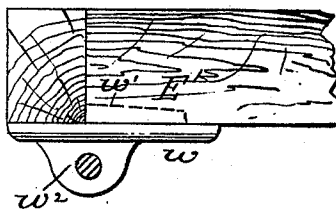
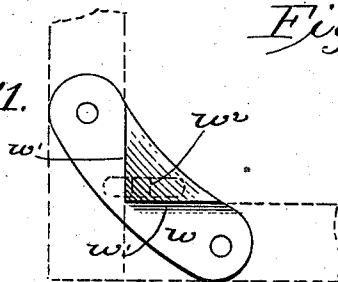


Fig. 11.



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UNITED STATES PATENT OFFICE.

GEORGE W. A. HANKEY, OF YORK, PENNSYLVANIA.

THRASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 537,922, dated April 23, 1895.

Application filed October 4, 1894. Serial No. 524,903. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. A. HANKEY, a citizen of the United States, residing at York, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Thrashing-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 an improvement in thrashing machines and it consists in the employment of improved details and general features and further in the construction and arrangement of the parts hereinafter described and definitely pointed out in the claims.

The aim and purpose of the invention are the provision of improved means which render and produce an accurate, positive and simplified working of the machine. These objects are attained by the construction illustrated in the accompanying drawings wherein like letters of reference in the different figures designate corresponding parts, and in which—

Figure 1 represents a side elevation of the machine. Fig. 2 is a longitudinal vertical section. Fig. 3 is a detail elevation of a forward hanger. Fig. 4 is a transverse vertical section through the same and sections of the shaker and grain bottom. Fig. 5 is a detail longitudinal section of the grain spout. Fig. 6 is a plan view thereof. Fig. 7 is a detail transverse vertical section of the adjustable hanger for the rear end of the shaker showing a section of the shaker attached. Fig. 8 is a vertical section of the coupling between the elevator box and the intermediate spout leading therefrom. Fig. 9 is a detail vertical section through the elevator adjuster. Fig. 10 is a section taken through the fan box looking toward the slide and showing the means whereby the adjustments are made. Fig. 11 is a detail plan of the sieve corner brace; and Fig. 12 is an elevation thereof showing the adjacent parts.

In the drawings, A designates the frame, B; the weather boards; C, the forward cylinder, and D the rear cylinder of any desired form.

The machine is mounted on suitable wheels

and is provided with the usual straw carrier, platform and feed table.

E designates the grain bottom which extends on the same plane throughout from a point below the forward cylinder to the extreme rear of the machine. The forward portion of this bottom is imperforated as is usual while the rear portion is perforated or formed of foraminous material *e*. The side bars *E'* of the bottom E at the rear have fixedly secured or formed thereon the side walls F of the shoe which latter has the usual sieves *f* *f'* thereon with the tailings spout F' from which the elevator G leads in the usual manner. The lower forward edge and end of the sides F are extended downward and are connected by the cross bars *g* spaced an equidistance apart.

On the parallel cross bars *g* is secured the semi-elliptical vertically and laterally tapering delivering spout H which is formed with the inwardly extending flanges *h* at its upper edge. The inner edges of the flanges are parallel and spaced apart a distance corresponding to the distance between the cross bars. The flanges are reinforced by parallel metal bars *h'* which extend below the same and slightly beyond the delivering end of the spout and supporting on their projecting ends the cap plate *h²*. The spout H is secured to the cross bars *g* by removable bolts *h²* passing through the flanges and bars so that the same may be readily removed.

I have found that by the employment of a semi-circular spout the vibrations of the shoe will cause the grain to strike the practically abrupt sides and jump or fly over the edges. By the use of the semi-elliptical form—that is to say a spout, the bottom of which is of elliptical curvature—this is wholly avoided as the pitch of the sides is slight and gradual rather than abrupt. Again the flanges which effectually prevent the grain from escaping over the edges of the spout are permitted to be used in connection with the elongated semi-elliptical form and yet maintain the proper throat or entering space. By forming the flanges with parallel edges and arranging the cross bars *g* parallel, the spout may be adjusted to either have its discharge end extending into the elevator trunk, or reversed to discharge

into a suitable receptacle at the opposite side of the machine. This is often desired when it is not wished to bag the grain.

J designates the trunk for the bagging elevator leading from the spout H upward and is provided with the usual discharge. In connection with the elevator of the trunk the load is usually heavy and the chains or belt often stretch or give, necessitating tightening. To permit of a rapid, positive and easy adjustment of the belt, I affix to the lower end of the trunk an adjustable bearing K which is composed of a lever k pivoted at its lower end to the lower end of the trunk and carrying the stub shaft k' projecting through a curved slot in the trunk on which the belt pulley is placed.

K' represents a segmental rack on the trunk with which teeth k^2 on the lever engage, a belt k^3 passing through the lever into a curved slot k^4 in the rack in which the same is slidingly secured. To add additional security to the adjustment I extend a curved arm K^2 from the side of the lever and form an elongated slot therein through which a suitable clamping bolt k^5 passes. By this means the adjustment of the lever k will draw the pulley down or forward as the case may be and the same can be firmly locked in place. The shaft k' has an oil aperture or channel k^6 formed therein terminating at the outside of the lever so that the pulley bearing may be quickly lubricated. A somewhat similar construction may be employed at the top of the trunk. The grain bottom at its forward end is supported by rock arms or hangers L, one on each side. The arms consist of a curved metal bar l having a bend therein at a point below the center and are pivotally supported at or near their centers by journals or pins l' journaled in suitable boxes or bearings in the frame of the machine. The lower ends of the hangers L have the wrist pins l^2 thereon with which the pitman L' is connected, which latter extends to the crank on the drive shaft as is usual in such cases. On the sides of the side bars of the bottom are secured by countersunk bolts l^3 plate l^4 having the cylindrical bushings l^4 on their inner faces which project into apertures in the bars E' . These bushings have longitudinal bores in which the pivot pins L^3 are placed the same being formed with reduced outer portions l^5 and heads l^6 on their inner ends. At the end of the reduced portions are shoulders flush with the faces of the plates, so that the danger of undue binding by overtightening of the pins is avoided, the tightening means being suitable nuts on the pins which engage the outer faces of the hangers as shown. By this means a strong rigid connection is formed which will readily withstand the sudden movements of the bottom.

Oblong oil apertures l^7 are formed in the hangers in close proximity or in line with the top of the plates L^2 and these plates have the vertical oil channels l^{10} formed therein, so that oil can be readily introduced into the bushings.

On the upper ends of the rock arms or hangers, pivotally secured in a manner similar to the plates L^2 , are the shaker plates L^4 which have the bottom flanges l^7 and the end flanges l^8 on and against which the side bars M' of the shakers M rest. The shakers M are mounted independently of the bottom and vibrate in an opposite direction. They extend from a point near the forward cylinder to near the rear cylinder and are composed of the imperforated section m and the two stepped inclined sections m' which are formed of single piece boards having the steps or grooves cut directly out from their upper faces and at the base of the grooves suitable perforations m^2 are formed through which the grain passes.

The rear end of the shaker frame is mounted on hangers O each of which as shown in Fig. 7, is formed of the vertical section o having the wrist pins o' at its ends which are journaled in the boxes O' on the frame of the machine above the shakers. The lower ends of the hangers are curved inward under the supporting bar of the frame and are formed with a rectangular opening in which adjustable boxes o^2 are placed, adjusted to take up the wear by the set screws o^3 passing through the end bar or wall of the opening. The connection between the hangers and shaker frame is made by means of the journals P journaled and held in the boxes, their inner ends being reduced in size and passed through wear plates Q Q' on the outer and inner faces of the side bars of the shaker frame. The plate Q has a bottom flange projecting below the frame and both plates are secured to the frame by suitable bolts.

The rear ends of the grain bottom and shoe are carried by the rock arms R of a construction similar to the forward arms with the exception that the wrist pin is omitted. On the upper ends of the arms is pivoted the rear shaker sieve S which is pivoted at its rear end to the hanger S'. Below this sieve is the imperforated bottom for conducting the over-shot grain onto the grain bottom or sieves below.

The lateral discharge which is usually located midway the length of the elevator G for conducting the better material onto the grain bottom has heretofore been a source of great annoyance inasmuch as the vibrations of the machine usually loosen the connection between the spout (generally metallic) and the elevator trunk. To overcome this defect I pass a bolt T through the trunk securing it in place by a suitable lock nut t and around this nut I place the metal edge of the spout T'. Over the nut t I place a jam nut t' having a flanged inner edge which rests on or against the metal edge of the spout. I then adjust a winged nut T^2 on the outer end of the bolt and turn it down until a close union is formed thereby locking the nut t in place and securing the metal edge firmly against the trunk.

U designates the fan casing located at the base of the machine as is usual. At the end

of the casing is the slide or door *u* which is pivoted at one end as at *u'* to the casing. Below the opening in the casing is pivoted the adjusting and locking brace *W* which is

5 curved and has an elongated slot therein.

W' designates a bolt having its head slid-
ingly secured in the slot and passing through
the slide or door *u* and carries a butterfly nut
on its outer end. When it is desired to close
10 or open the door the nut is loosened and the
bolt moved to the proper point in the slot of
the brace and there clamped. The slot in the
brace is of a length sufficient to allow the door
to move down to a point which will open prac-
15 tically the entire end of the drum. While the
door is thus lowered the bolt in the same
comes in contact with the lower end wall of
the slot and is prevented from moving farther
downward, the combined length of the
20 brace from the slot to its pivot and the slide
from the bolt to its pivot being greater than
the distance between the brace and slide
pivot, thereby limiting the downward move-
ment of the slide. This construction avoids
25 forming long slots in the slide which greatly
weakens the same.

To securely connect the respective sieves to
the sides of the shoe and to strengthen the
joints of the sieve frames, I employ plates as
30 shown in Figs. 11 and 12 which consist of the
flat base sections *w* having the flanges *w'* on
their upper faces at right angles to each other
adapted to fit the inner sides of the frames.
The plates are secured to the frame by suit-
35 able screws and have the eyes *w²* on their
under sides through which the securing bolts
pass.

By the above described construction it will
be seen that the entire vibrating portions of
40 the machine are actuated by the pitman *L'*
through the hangers *L*, thus avoiding compli-
cated arrangements of levers and belts. The
manner of working the several parts will be
readily understood by the description.

45 It is to be understood that minor changes
can be made in the construction and arrange-
ment of the parts and substituted for those
herein shown and described without in the
least departing from the nature and principle
50 of my invention.

Having thus described my invention, what
is claimed as new, and desired to be secured
by Letters Patent, is—

1. In a thrashing machine, the combination
55 with a vibrating member of the machine, of a
delivery spout thereon formed with a base of
semi-elliptical curvature and inwardly ex-
tending securing flanges on the upper edges
of the spout having parallel edges and means
60 for securing the spout to the machine, sub-
stantially as described.

2. In a thrashing machine, the combination
with a vibratory shoe having a discharge open-
ing therein, parallel cross bars at the opening,
65 a semi-elliptical grain spout having parallel
inwardly extending flanges, reinforcing strips
below the flanges, and means for securing the

spout to the cross bars, substantially as de-
scribed.

3. In a thrashing machine, the combination 70
with the separating mechanism, of a vibratory
grain spout formed tapering and having in-
wardly extending flanges at its upper edge,
and means for securing the spout to the ma-
chine, substantially as described. 75

4. In a thrashing machine, the combination
with the shakers and grain bottom, of the
hangers or rock arms having the wrist pins
at their lower ends, an intermediate support-
ing pivot, plates on the side bars of the bot- 80
tom having bushings *l⁴* projecting into the
bars, pivot pins passing through the bushings
and arms, means for securing the pins on the
arms, plates having bushings thereon secured
on the shaker frame, and pivot pins passing 85
through the bushings and arms, substantially
as described.

5. In a thrashing machine, the combination
with the grain bottom and shakers, of the rock
arms *L* having the wrist pins *l²* thereon and 90
the oil openings *l³*, the plates *L²* having the
channels *l¹⁰* therein and the bushings *l⁴*, and
the shouldered pivot pins passing through the
bushings and arms, substantially as described.

6. In a thrashing machine, the combination 95
with a vibratory frame, of a rock arm there-
for, a plate on the frame having a bottom and
end flange and a bushing passing into the
frame, and a pivot pin passing through the
bushing, plate and rock arm, substantially as 100
described.

7. In a thrashing machine, a laterally mov-
able tapering semi-elliptical grain spout hav-
ing inwardly extending flanges at its upper
edge, substantially as described. 105

8. In a thrashing machine, the combination
with a shoe having parallel cross bars, of a
semi-elliptical spout having extending rein-
forced flanges secured to the cross bars, sub-
stantially as described. 110

9. In a thrashing machine, the combination
with the shakers and grain bottom, of the
hangers or rock arms comprising the bars *l*
having wrist pins at their lower ends and
intermediate pivots, plates on the shakers 115
having bearing therein, pivot pins passing
through the bearings and upper ends of the
arms, plates on the bottom having bearings
therein, pins passing through the bearings and
arms at a point below the pivots of the arms, 120
and pitmen connected to the wrist pins, sub-
stantially as described.

10. The combination with the rear hangers
for the shakers, of plates on the outer faces of
the shaker frames having flanges at their 125
lower edges extending below the frame plates
on the inner faces of the frame, bolts passing
through both plates, and journals passing
through the plates and frame and journaled
in the hangers, substantially as described. 130

11. In a thrashing machine, the combina-
tion with an elevator trunk and its elevator,
of a pulley over which the elevator travels, a
shaft on which the pulley is mounted, and an

adjustable support for the shaft comprising a lever pivoted beyond the shaft and having teeth on its inner face opposite the pivoted section, a toothed plate on the trunk, and a clamping bolt between the lever and toothed plate, substantially as described.

12. In a thrashing machine, the combination with a fan casing, of a slide therefor, pivoted at one end to the casing, a curved brace pivoted at one end to the casing and having an elongated slot therein, and a bolt in the slide at a point between the pivots of the slide and brace and having its end adjustably secured in the slot, the combined length of the brace from its slot to the pivot and the slide from the bolt to its pivot being greater than the distance between the brace and slide pivots, substantially as described.

13. In a thrashing machine, the combination with the elevator trunk, of the lateral spout leading therefrom having openings in

its edges, bolts passing through the wall of the trunk, nuts on the bolts seated in the apertures in the spout, and a flanged nut spanning the other nut and engaging the spout edge, substantially as described.

14. In a thrashing machine, the combination with a shoe and the sieves thereof, of plates secured on the corners of the sieve frames having flanges resting against the inner faces of the frames, and eyes formed in the opposite faces of the plates, and bolts passing through the eyes and connected with the frame of the shoe, substantially as described.

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

GEORGE W. A. HANKEY.

Witnesses:

I. L. HANKEY,
L. S. BACON.