

K. A. WASS & B. A. E. JOHNSON.
 AUTOMATIC STOPPING DEVICE FOR BOX MAKING MACHINES.
 APPLICATION FILED APR. 25, 1911.

1,057,102.

Patented Mar. 25, 1913.

4 SHEETS—SHEET 1.

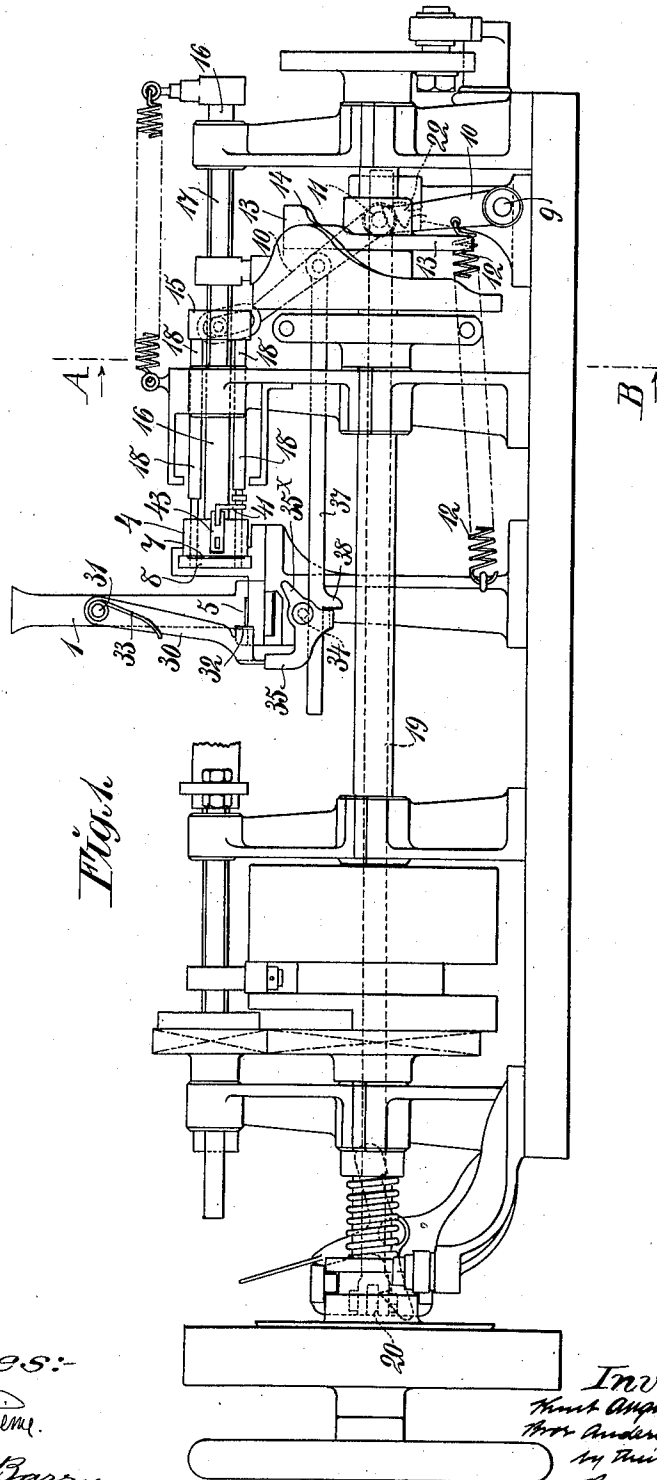


Fig. 1

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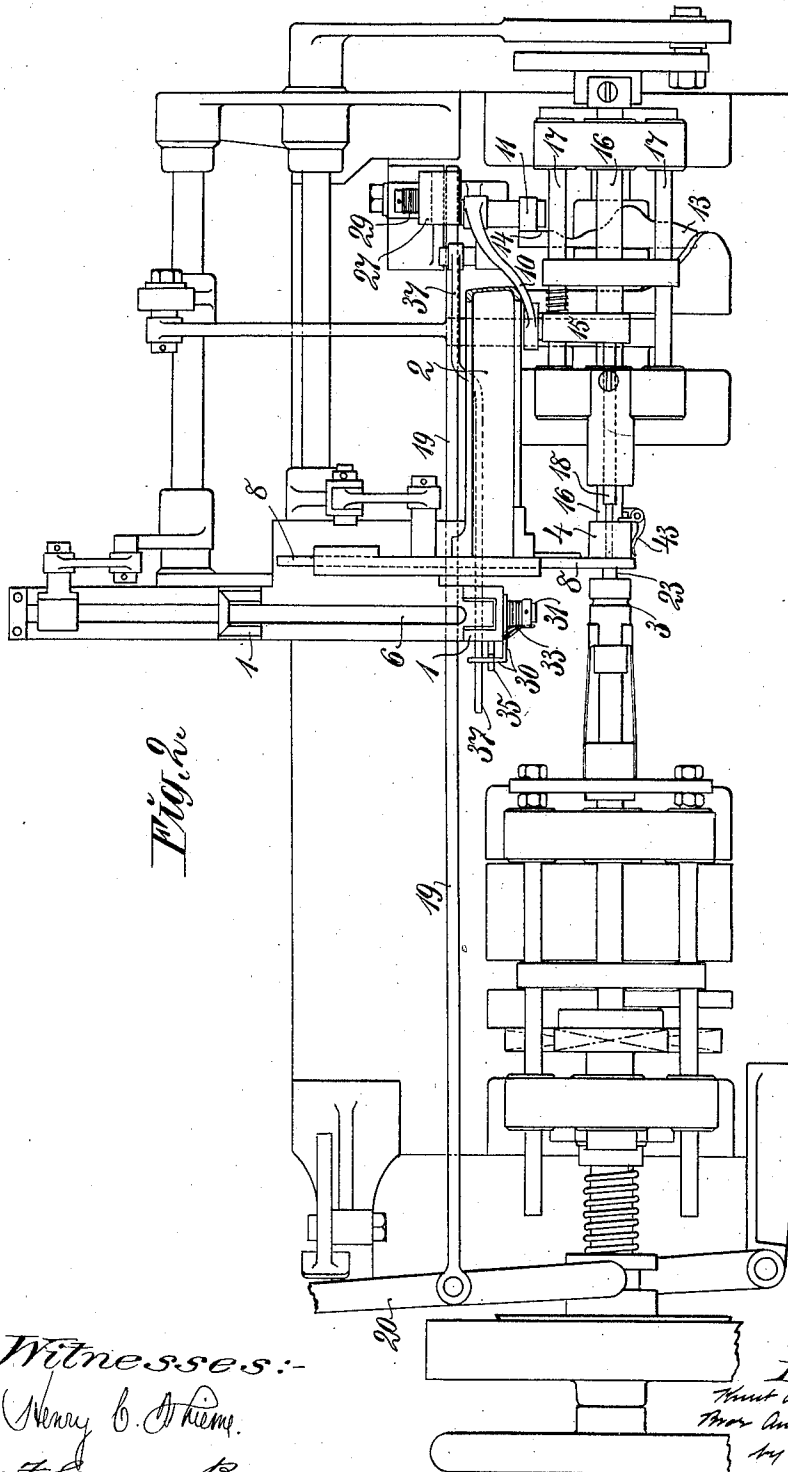


Fig. 2

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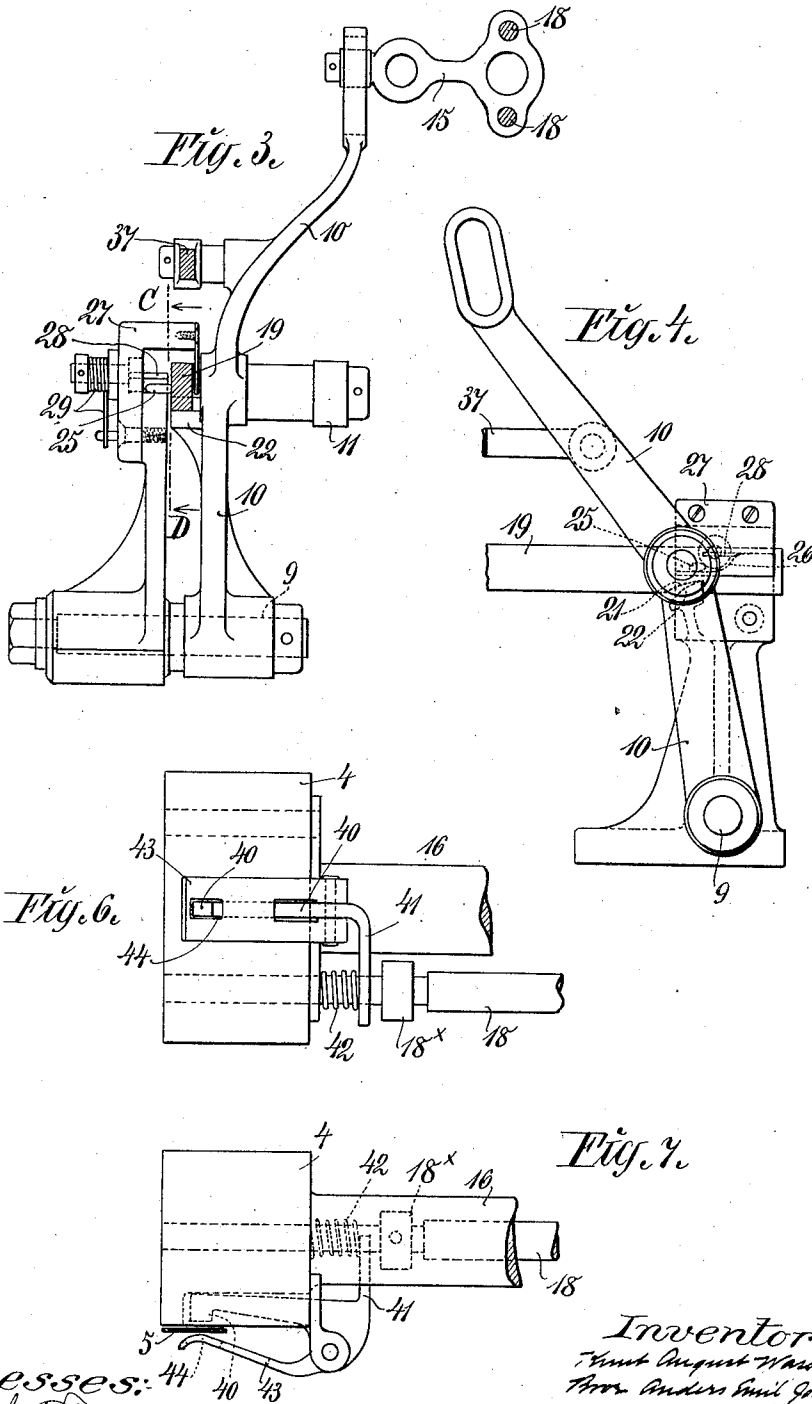
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

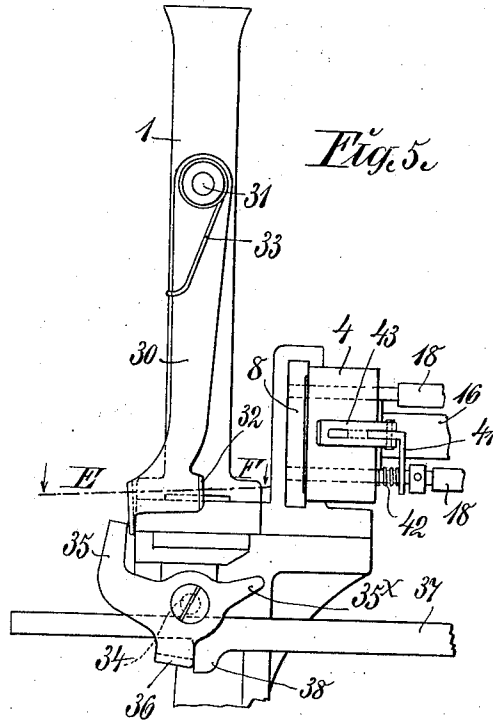


Fig. 5.

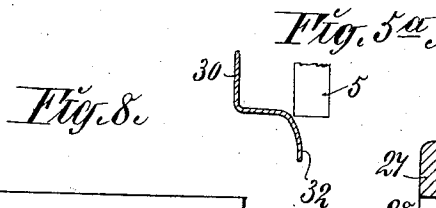


Fig. 5a.

Fig. 8.

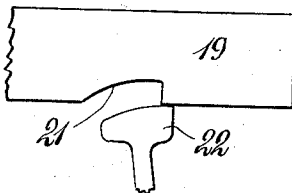
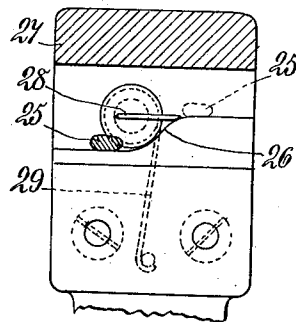


Fig. 9.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC STOPPING DEVICE FOR BOX-MAKING MACHINES.

1,057,102.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed April 25, 1911. Serial No. 623,184.

To all whom it may concern:

Be it known that we, KNUT AUGUST WASS, a subject of the King of Sweden, and resident of Arbetaregatan 35, Stockholm, in the Kingdom of Sweden, and BROR ANDERS EMIL JOHNSON, a subject of the King of Sweden, and resident of Observatoriegatan 7, Stockholm, in the Kingdom of Sweden, have invented certain new and useful Improvements in Automatic Stopping Devices for Box-Making Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a device in machines for the manufacture of boxes for matches and the like and the object of the said device is to stop the machine automatically in case of a fault in the feeding of the material, used for the forming of the box and consisting of veneer and paper, or if the said material has given out in the magazine or on the roller.

In the accompanying drawings Figure 1 is a front view of the machine and Fig. 2 a plan view of the same. Fig. 3 is a cross section on the line A to B of Fig. 1. Figs. 4 and 5 show some of the parts in positions different from those shown in Fig. 1. Fig. 6 is a front view and Fig. 7 a plan view of means for controlling the side veneer and the paper. Figs. 8 and 9 show details. Fig. 9 is a section on the line C to D of Fig. 3. Fig. 5^a shows a detail in a sectional view.

The box is manufactured, in the ordinary manner of a veneer, extended in length, which, in order to form the side walls of the box, is wound around a rotated mandrel and is wrapped with paper, and of a further piece of veneer, which in order to form the bottom of the box, is fixed to the side walls by means of the paper strip wound around the same, the fixing operation being effected after the paper strip and the side veneer have been transmitted to an auxiliary mandrel, which is located on a line with the mandrel first mentioned and against the end surface of which the bottom veneer has been located previously to the said transmitting operation.

1, Figs. 1 and 2, is the magazine contain-

ing the side veneers, 2 the magazine containing the bottom veneers, 3 the main mandrel and 4 the auxiliary mandrel. The side veneer 5 is fed to the mandrel 3 by the slide 6, and the bottom veneer 7 is fed to the auxiliary mandrel 4 by the slide 8. The mandrel 3 is rotatable and the mandrel 4 is moved forward longitudinally, but does not rotate. As the said mandrels are moved in the well known manner, their movements need not be explained. A lever arm 10 is pivoted at 9 to the frame of the machine and provided with a roller 11, which by a spring 12, acting upon the said lever, is forced against the disk 13 provided with a lateral cam surface 14. The lever 10 is connected with the slide 15, which can be reciprocated longitudinally of the shaft 16 of the mandrel 4. The slide 15 embraces the said shaft and one of the guide rods 17, 17 and is guided by the same. The slide 15 is provided with one or preferably two long pins or pistons 18, 18, which are passed through the auxiliary mandrel 4, longitudinally of the same, so that the pistons, as the slide is moved toward the left, may extend outside the front end of the mandrel 4, facing the mandrel 3, or bear against the bottom veneer located at the same. The slide 8 for the bottom veneer is provided with slots for the pistons 18, 18, so that the said slide does not prevent the movements of the pistons and vice versa. A rod 19 is provided between the lever arm 10 and the disengaging hand lever 20. One end of the said rod is pivoted to the said hand lever or with a part equivalent to the same, by means of which the machine can be started or stopped manually. The other end of the rod 19 is provided in its lower edge with a notch 21, so that the rod, forming a catch, can engage a suitable projection 22, provided on the side of the lever arm 10. The bottom veneer 7 is moved in the ordinary manner to the auxiliary mandrel by the slide 8, and into such a position, that it covers the said end of the mandrel against which it is forced in the ordinary manner by a beveled yielding pin 23 or the like extending from the main mandrel. As the said operation has been effected, the cam

disk 13 has such a position, that the lever arm 10 and the slide 15 can be moved toward the left, Fig. 1, acted upon by the spring 12, a weight or the like substituted for the same.

5 If there is a bottom veneer at the mandrel 4, the said parts 10, 15 are stopped in a position, in which the pins 18, 18 bear against the said veneer. The catch 19 supported by the projection 22, will then not engage the

10 projection on the lever arm 10, owing to the fact that the said lever arm has not been swung sufficiently far toward the left to permit the said engagement, Fig. 8. If no bottom veneer has been fed to the mandrel,

15 the lever arm 10 is swung for a farther distance toward the left until the roller 11 strikes the cam disk 13, the catch being thereby permitted to engage the projection 22. During the subsequent rotary movement of

20 the cam disk it moves the lever arm 10 toward the right carrying with it the hand lever 20 or acting upon the starting and stopping mechanism in such manner, that the machine is stopped. The pressure exerted by the pins 18, 18, which thus serve

25 as feelers and ascertain if there is a veneer at the mandrel or not, is very slight, and, besides, the veneer is supported by the slide 8, Fig. 2. In order that the catch 19 may

30 then be disengaged from the lever arm 10, so that the said parts may be able to act after the next stroke of the slide, the machine is provided with a device based upon the fact that for the starting of the machine

35 the hand lever 20 is first moved for a farther distance toward the right, for the engaging of a catch belonging to the starting mechanism, and then toward the left.

The catch 19 has a side pin 25, Fig. 4, located above a slanting, stationary track 26, Fig. 9, provided on the upright or bearing 27 or any other stationary part of the machine and so located, that during the movement toward the right just mentioned

40 the catch is raised and disengaged from the projection 22 by the pin 25 sliding upward on the track 26. A tongue 28 is pivoted to the bearing 27 and located above the track 26, which tongue the pin 25 of the

45 catch 19 passes during the said movement. As the hand lever 20 is then swung toward the left, the said pin 25 slides on the top side of the tongue 28, without the catch touching the projection 22, and finally the

50 catch 19 falls down, so that the catch 19 is returned to its initial position on the projection 22 without engaging the same. The spring 29 forces the tongue downward in a yielding manner, so that the pin must pass

55 the described way.

The side veneers are controlled in the following manner: To the magazine 1 of the said veneers a swingable arm 30 is connected, the pivot 31 of which is located on

a higher level than the veneer, which is to 65 be fed to the mandrel, and the lower end of which has a projection 32 or the like, which is located in the path of the veneer and is so bent or beveled, that the veneer, when fed forward, can swing the arm laterally 70 against the resistance of the weak spring 33. Below the magazine 1 a bell crank lever is pivoted at 34. One arm 35 of the said lever extends upward toward the arm 30, and the other arm 36 of the lever, the end of which 75 extends laterally, forms a support to the free end of a rod 37, which is pivotally connected with the lever arm 10 and is provided with a projection 38 by means of which it can act upon the lever arm 36. The projection 80 35* bearing against the frame, keeps the bell crank lever 35, 36 in one of its terminal positions. While the veneer 5 is advanced past the arm 30, the cam disk 13 has such a position, that the spring 12 can swing the lever 85 arm 10 toward the left for the engaging of the catch 19 in the manner described above. If a veneer is being fed forward, the arm 30, bearing against the same, has the position shown in Fig. 1, and consequently, the 90 bell crank lever 35, 36 is supported by the arm 30, so that the rod 37 and the lever arm 10 are prevented from moving toward the left for such a distance, that engagement is effected. If, on the other hand, there is no 95 veneer, the arm 30 is not moved into the path of the bell crank lever 35, 36, Fig. 5, and consequently engagement is effected. During the subsequent rotary movement of the cam disk 13 the machine is stopped in 100 the manner described above. Owing to the fact that the side veneer consists of a rather long piece, there is plenty of time to act for the arm 30, which in this case forms the feeler, and for the other parts. According 105 to the drawings the said feeler 30 bears against the edge of the veneer, but the parts may easily be so arranged, that it bears against the side of the veneer.

The mandrel 4 is provided with a further 110 feeler, which controls the side veneer as well as the paper strip. The said feeler consists of a bell crank lever, provided in the mandrel, Figs. 6 and 7. One arm 40 of the lever can bear against the inner side of the 115 side veneer wound around the mandrel, and its other arm 41 is located in the path of a collar 18* provided on one of the pistons 18. If there is no paper, no side wall for the box is formed, which can be pushed over the 120 auxiliary mandrel, and owing to this fact the lever 40, 41 can be swung toward the left by the spring 12, acting by means of the parts 10 and 18 and overcoming the tension of a spring 42. The catch 19 then engages 125 the arm 10, so that the machine is stopped as described above. If there is a veneer at the auxiliary mandrel, the bell crank lever

40, 41, bearing against the veneer forms an obstacle preventing the arm 10 from swinging toward the left, owing to the fact that the arm 10 by means of the piston 18 bears against the lever arm 41, swung outward. Consequently, the catch 19 does not engage the arm 10 and the machine operates continually. The ordinary, outer support 43 for the veneer, in which support an opening 44 is provided for the lever arm 40, prevents the veneer from being bent outward by the lever 40, 41. As the arm 30 controls the feeding of the side veneer from the magazine the device shown in Figs. 6 and 7 is superfluous, owing to the fact that no veneer, evidently, arrives to the mandrel 4, if no feeding of the side veneer is effected, but for additional security both devices are provided. The lever 40, 41 may also be so formed, as for instance U-shaped, that it can bear against the edge of the veneer. Also for the feeler 40, 41 like the feelers 18 and 30 there is plenty of time to act, contrary to what would be the case, if a feeler operates at the very rapidly rotating main mandrel 3.

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

1. In a box manufacturing machine, the combination with magazines containing pieces of box material, means for feeding the said pieces and a non-rotatable mandrel on which the box is shaped, of an automatic stopping device comprising a piston arranged to move axially in said mandrel and a cam under the control of the box material on the mandrel to coact with the piston to stop the machine when there is no box material in position to engage the piston.

2. In a box manufacturing machine, the combination of magazines containing bottom and side pieces, means for feeding the said pieces to the assembling point, a mandrel on which the box is shaped and an automatic stopping device arranged to act when no bottom piece for the box is fed to the mandrel, the said device comprising spring actuated pistons passing through the mandrel in position to bear against a box bottom piece applied to the mandrel, a lever connected with the said pistons and a cam disk in position to act upon the lever and stop the machine when a box bottom piece is not fed.

3. In a box manufacturing machine, the combination of magazines containing box bottom and side pieces, means for feeding the said pieces to the assembling point, a mandrel around which the box is formed, spring actuated pistons passing through the said mandrel and arranged to bear against the box bottom piece when the piece is fed to

the mandrel, a lever connected with the said pistons, a catch in position to engage the lever when no box bottom piece is fed and a cam arranged to act upon the lever and stop the machine.

4. In a box manufacturing machine, the combination of a mandrel around which the box is formed, pistons passing through the mandrel and directed toward the bottom piece of the box material on the mandrel, means for normally forcing the pistons toward the mandrel, a slide carrying the said pistons, a lever connected with the slide, a hand lever, a catch in position to connect the aforesaid lever with the hand lever when there is no box bottom piece fed and a cam disk arranged to coact with the parts connected by the catch to stop the machine.

5. In a box manufacturing machine, the combination of magazines containing pieces for forming the sides and bottom of the box, a mandrel around which the box is formed, a spring actuated device located in the mandrel in position to bear against the side piece of the box on the mandrel, and a cam disk arranged to coact with the said spring actuated device for stopping the machine when the box material is not in position to engage the said spring actuated device.

6. In a box manufacturing machine, the combination of a mandrel around which the box is formed, a lever located in the mandrel in position to bear against the side wall of the box material when the latter is on the mandrel, a slidable rod in position to bear against the said lever, a machine stopping hand lever, a lever connected with the said slidable rod, a catch connected with the said machine stopping hand lever and a cam disk arranged to coact with the foregoing parts to stop the machine when no side wall material is in position on the mandrel.

7. In a box manufacturing machine, the combination of magazines containing the box forming pieces, a mandrel around which the box is formed, means for feeding the said pieces to the mandrel, a movable arm located in the path of the side wall forming pieces as they are fed and arranged to be moved out of the said path by the advancing piece, a spring actuated lever in position to engage the said arm when so moved, a catch and a cam disk arranged to coact with the said levers and catch to stop the machine when the said movable arm is not acted upon by a piece being fed.

8. In a box manufacturing machine, the combination of magazines containing box forming pieces, a mandrel around which the box is formed, a spring actuated lever, a catch arranged to engage the lever when in one position and disengage it when in an-

other position, the said positions of the lever being determined by the presence or absence of a box forming piece, a cam disk and levers arranged to coact with the said
5 catch and spring actuated lever to stop the machine when the catch engages the spring actuated lever and means for releasing the catch.

In witness whereof, we have hereunto signed our names in the presence of two sub- 10 scribing witnesses.

KNUT AUGUST WASS.

BROR ANDERS EMIL JOHNSON.

Witnesses:

TORVALD NYSTRÖM,

ROBERT APELGREN.

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