(No Model.) 4 Sheets—Sheet 2.

G. GRISEL.

MACHINE FOR WRAPPING BLOCK MATCHES.

No. 419,851. Patented Jan. 21, 1890.

Fig. 4.

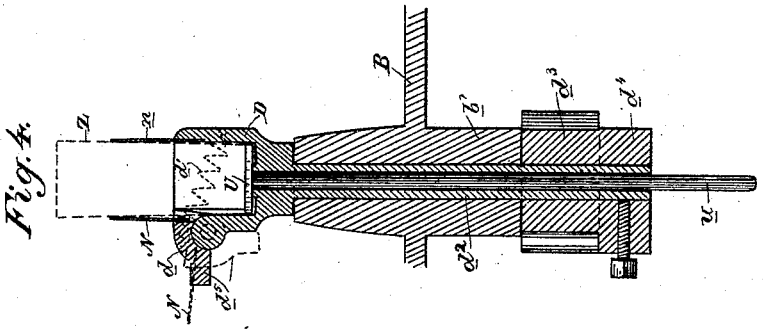
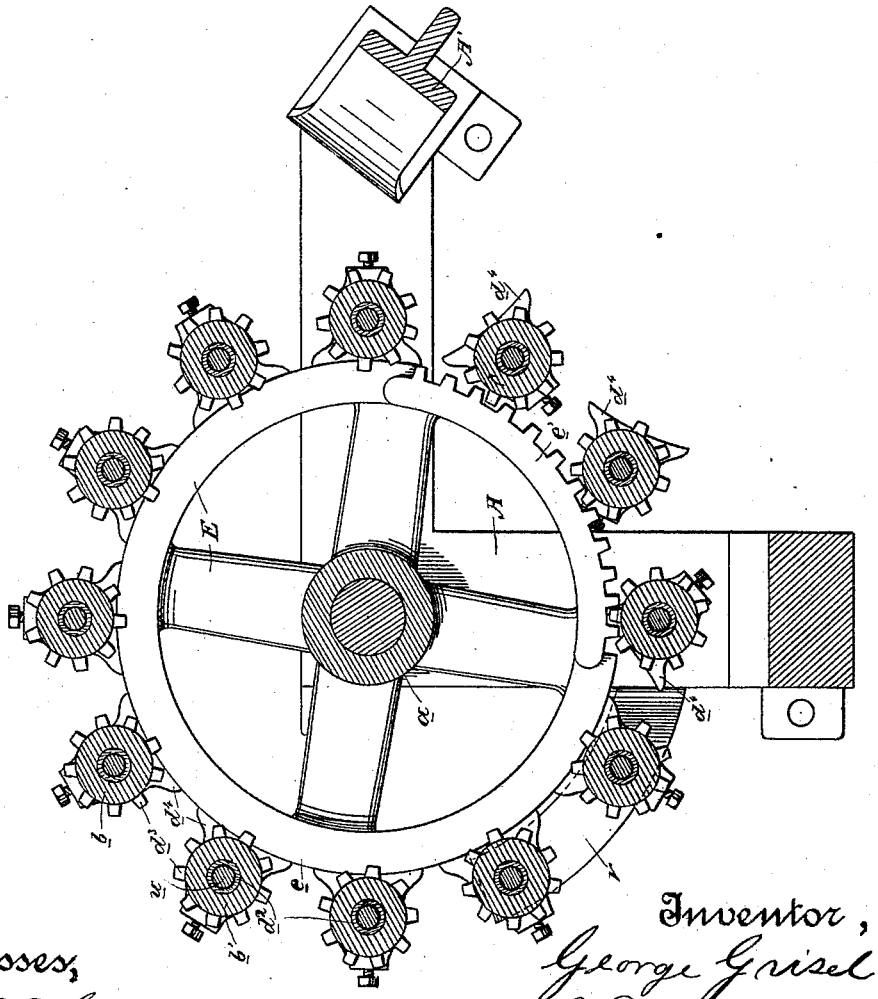


Fig. 3.



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(No Model.) 4 Sheets—Sheet 3.

G. GRISEL.

MACHINE FOR WRAPPING BLOCK MATCHES.

No. 419,851. Patented Jan. 21, 1890.

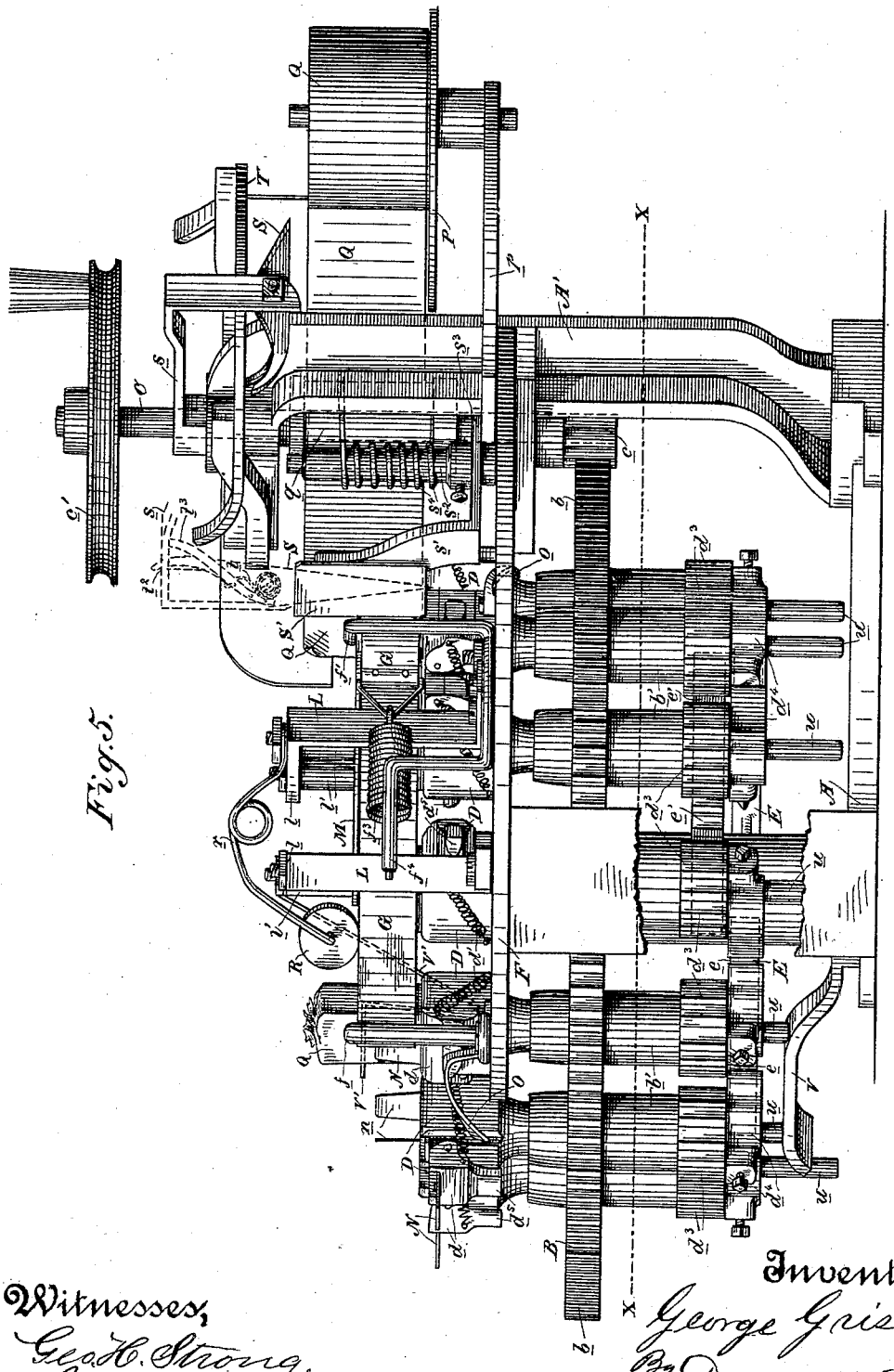

Fig. 5.

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(No Model.) 4 Sheets—Sheet 4.

G. GRISEL.

MACHINE FOR WRAPPING BLOCK MATCHES.

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Fig. 1.

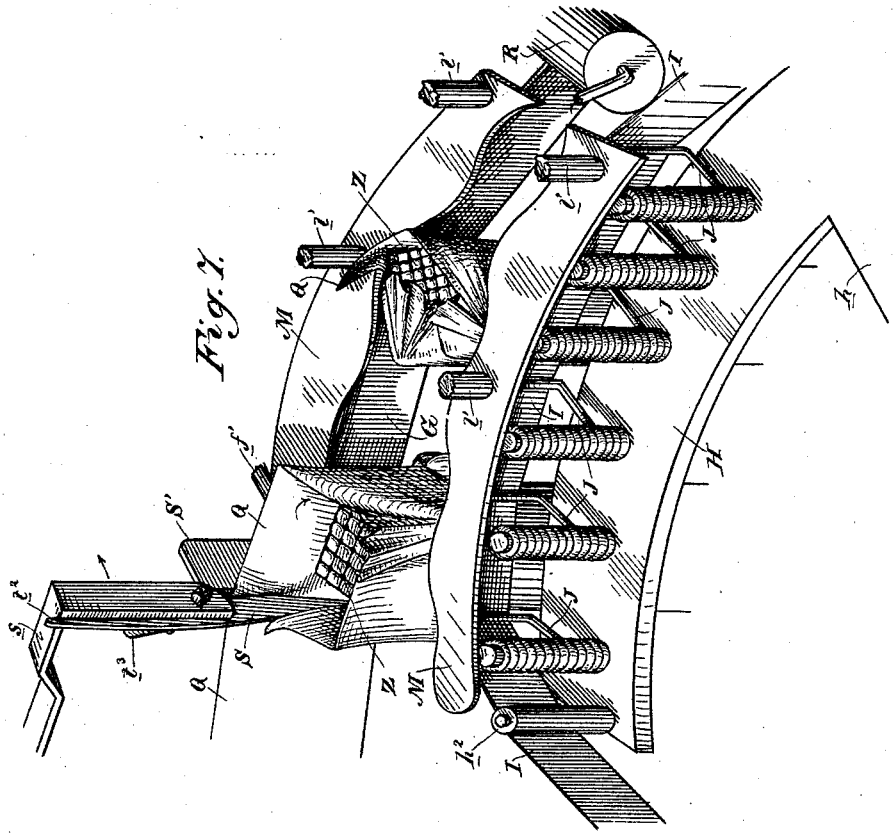
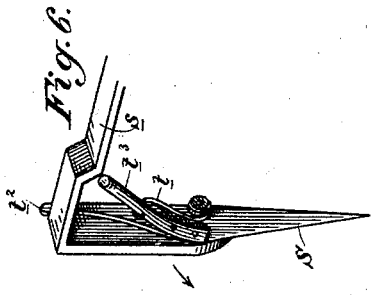


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE GRISEL, OF GOLDEN GATE, ASSIGNOR OF TWO-THIRDS TO FRANK SEVERIO AND JOSEPH D. CASE, OF SAN FRANCISCO, CALIFORNIA.

MACHINE FOR WRAPPING BLOCK-MATCHES.

SPECIFICATION forming part of Letters Patent No. 419,851, dated January 21, 1890.

Application filed February 23, 1889. Serial No. 300,930. (No model.)

To all whom it may concern:

Be it known that I, GEORGE GRISEL, of Golden Gate, Alameda county, State of California, have invented an Improvement in Machines for Wrapping Block-Matches; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of wrapping-machines designed for folding or laying paper about any material or articles requiring it—such, for example, as block-matches.

My invention consists in a series of traveling axially-rotary holders for the match-blocks, whereby said blocks are rotated and wrap the paper about them.

It consists, also, in separated frictional surfaces between which the blocks pass and rotate, whereby the paper is securely and positively held and wrapped about the blocks. In connection with these parts are separated plates for holding the upper portion of the paper while the lower portion is wrapping about the block, whereby said upper portion is twisted down on top of the block. There is also a paper-feed, clamps for holding the paper to the blocks, knives for cutting it into suitable lengths, a roller for pressing down the paper on the blocks, means for discharging the wrapped blocks from the holders, and various mechanical powers and movements to effect the several operations, all of which I shall now fully describe.

The object of my invention is to wrap such articles by machinery.

Though the invention is applicable for the purpose of wrapping paper or other such material about any articles which it is deemed advisable to so treat, I have, for convenience, entitled my invention a "machine for wrapping block-matches," and shall so describe and illustrate it, though I do not confine myself to such use.

Block-matches are those ordinary sulphur matches which are made in splints formed by splitting or cutting blocks of wood down a certain distance, so that the splints all hold together by a web below. The split ends of the blocks are suitably treated with a match composition, and then the larger blocks are subdivided into smaller blocks, and are so put upon the market. It is customary to wrap with paper the upper or composition ends of the blocks to protect them, a block so wrapped being shown in Fig. 1.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a block of matches wrapped. Fig. 2 is a plan of the machine. Fig. 3 is a horizontal section on line $x\,x$ of Fig. 5. Fig. 4 is a vertical section of one of the match-block holders. Fig. 5 is an elevation of the machine. Fig. 6 is a detail view of knife S. Fig. 7 is a perspective view of the separated straps G and I, the springs J, and the holding-plates M, and showing a block partly wrapped. The rotary knife S and the fixed knife S′ are also shown.

A is the bed-plate of the machine, by which it is secured upon any suitable stand or foundation, and A′ is the standard for the power-shaft. From this bed-plate rises a vertical pin a, upon which is mounted and adapted to be rotated the holder-carrier wheel B. This wheel is provided with a cogged rim b, with which meshes a pinion c on the lower end of the drive-shaft C, mounted in the standard A′, the upper end of said shaft being provided with a pulley c' or other device for transmitting power. Through this pulley and vertical shaft C and the pinion c below the holder-carrying wheel B is rotated.

D are the holders for the match-blocks. These are four-sided sockets, one of the sides d being hinged so that it forms a flap to open and close the holder. Springs d' are connected one end with the body of the holder and the other end with the hinged flap d, whereby they hold the said flap either open or closed. The holders have downwardly-extending spindles d^2, which pass down through bearings b' in the carrying-wheel and have secured to their lower ends pinions d^3, which said pinions have formed below or connected with them curve-faced guides d^4.

Secured firmly to the upright center-pin a, and at a point below the holder-carrying wheel, is a fixed guide-wheel E, against the rim e of which the curved-faced guides d^4 move, whereby the spindles of the holders are held in fixed position for a portion of their revolution. Secured to the rim e of the guide-wheel E at one portion is a curved rack

tween them while the match-block turning below effects the twist of the paper. Thus when the match-block emerges from between the flexible straps and the holding-plates it is wound with the paper, which is twisted upon the top.

R is a roller, supported by a spring-arm r, and is adapted to bear down on top of the paper as it emerges from between the holding-plates, thereby pressing down the top of the paper on the match-block. Now, in order to cut the paper off into suitable lengths, I have the following arrangement of knives. S is one knife, and S′ is the other. The knife S is carried by an arm s, which is secured to the rotary power-shaft C, whereby said knife is caused to make a complete revolution with said shaft. The knife S′ is mounted on an arm s', which is pivoted on a fixed fulcrum s^2, and has a backwardly-extending portion s^3, which is held by a spring s^4 against the rotary power-shaft. The knife S′ is located at about the entrance to the flexible straps, and the knife S in revolving passes knife S′ and cuts off the intervening paper.

In order to make the knife S clear the paper at the back portion of its revolution, I pivot it to its arm and place a spring t to act upon it, so as to retain it in a vertical position, it being limited in this position by its upper end coming in contact at t^2 with the arm. A cam-arm t^3 is attached to said knife, and said arm is adapted to come in contact with the fixed cam-bar T, which is supported by a bracket from the main standard A′, and when this contact occurs the knife is thrown to a horizontal position, in which position it continues until after it has passed over the paper strip at the back, when, its arm being free of the cam, its spring returns the knife to a vertical position. The knife S′ is also pivotally mounted so as to adapt it to advance to and withdraw from the paper. The match-block begins to rotate just when it reaches said knife, which has been advanced to the paper, and said knife must withdraw for the purpose of avoiding the angle which the match-block at that position presents. The knife is advanced at the proper time by a cam c^2 on the power-shaft C, which comes in contact with the end s^3 of the arm of the knife, thereby forcing said knife inwardly to its position against the paper to meet the other knife; but as soon as the contact ceases the spring s^4 throws the knife backwardly again, thus withdrawing it from the angle of the rotating match-block. In the holders are the plungers U, the stems u of which pass down through the hollow spindles of the holders and project below. Secured to the base-plate of the machine is a cam V, against which the lower ends of the stems of the plungers U come in contact, just after the match-blocks have passed from under the pressure-roller R, whereby said plungers are moved upwardly in the holders, thereby raising the match-blocks until the paper which is wrapped around them is free of the clamps N and n, which said clamps were bound in by the paper as it was wrapped on the blocks; but by raising the blocks until the paper is clear of the said clamps the block is ready to fall out from the shallowed holder as soon as the hinged flap d is forced open by the cam O. A small spring-wire V′ has its end lying partly in the path of travel of the holder, and its position is such that as the holder passes it it is forced back, and at the moment the block is free it is relieved by the holder and flips the block out.

I need not repeat the operation heretofore described, but will supplement it by the following description: Just after the match-block has entered between the flexible straps G and I and the holding-plates M the succeeding match-block has arrived at a point where the cam o throws up its hinged flap d to cause its clamp N to bind on the paper, and, continuing forward, the block arrives near the knife S′, when the knife S passes it and cuts off the paper directly in front of said block, so that the preceding block has its full amount of paper to be completely wrapped about it. At each revolution of the knife S the paper is cut off into suitable lengths to be wound about the blocks. As each block emerges from between the straps the plungers U, beginning to rise, lift the blocks up, so that their paper clears the clamps at the moment when the cam O causes the hinged flaps d to open, thereby allowing the match-block to be flipped out of the spring V′.

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

1. In a machine for wrapping block-matches, a rotary holder for receiving and turning the match-blocks, provided with clamps for holding the end of the paper which is wrapped about the blocks by their turning, substantially as described.

2. In a machine for wrapping block-matches, rotary holders for receiving and turning the match-blocks, and having clamps for holding the paper, in combination with a revoluble paper-roll, the end of which is secured to the blocks by the clamps, and knives for cutting the paper-strip into lengths, substantially as described.

3. In a machine for wrapping block-matches, traveling rotary holders for receiving the match-blocks, in combination with separated pieces forming frictional surfaces between which the match-blocks are carried and rotated by the holders, whereby the paper is held to and wrapped about the match-blocks, substantially as described.

4. In a machine for wrapping block-matches, traveling rotary holders for receiving the match-blocks, in combination with separated straps forming frictional surfaces between which the match-blocks are carried and ro-

tated, whereby the paper is held to and wrapped about them, substantially as described.

5. In a machine for wrapping block-matches, traveling rotary holders for receiving the match-blocks, in combination with separated pieces forming frictional surfaces between which the match-blocks are carried and rotated, whereby the paper is held to and wrapped about them, and knives operating upon the paper between the match-blocks for cutting it in strips of suitable length, substantially as described.

6. In a machine for wrapping block-matches, traveling rotary holders for receiving the match-blocks, in combination with separated frictional pieces between which the match-blocks are carried and rotated, whereby the paper is held to and wrapped about them, and separated holding-plates above the frictional pieces, and between which the upper end of the paper travels and is held so as to be twisted by the rotation of the match-block below, substantially as described.

7. In a machine for wrapping block-matches, traveling rotary holders for receiving the match-blocks, in combination with separated frictional pieces between which the match-blocks are carried and rotated, whereby the paper is held to and wrapped about them, and separated holding-plates above the frictional pieces and having their edges converging, and between which edges the upper end of the paper is held, so as to be twisted by the rotation of the match-blocks below, substantially as described.

8. In a machine for wrapping block-matches, the combination, with traveling rotary holders for receiving the match-blocks, of the separated holding-plates M, having their edges converging, each edge having a serpentine outline, whereby the paper projecting between them is held by them with equal pressure during the entire rotation by the match-block below, substantially as described.

9. In a machine for wrapping block-matches, the combination of traveling rotary holders for receiving the match-blocks, separated straps forming frictional surfaces between which the match-blocks are carried and rotated, whereby the paper is held to and wrapped about them, separated holding-plates between the edges of which the upper portion of the paper is held, so as to be twisted on the top of the match-block by its rotation, and a pressure-roller bearing on top of the paper so as to force it down upon the top of the match-block, substantially as described.

10. In a machine for wrapping block-matches, the combination of traveling rotary holders for receiving the match-blocks, separated straps between which said blocks are carried and rotated, whereby the paper is held to and wrapped about them, separated holding-plates above, between the edges of which the upper portion of the paper is held, so that it is twisted as described, and knives for cutting off the paper between each block into suitable lengths, substantially as described.

11. In a machine for wrapping block-matches, a socketed holder having the spring-controlled hinged flap *d*, for opening and closing said holder, substantially as described.

12. In a machine for wrapping block-matches, a socketed holder having the spring-controlled hinged flap *d*, with clamp N, for seizing and holding the paper, substantially as described.

13. In a machine for wrapping block-matches, a socketed holder having on one side the clamp *n* and on the other side the spring-controlled hinged flap *d*, with clamp N, whereby the match-block is held between the clamps and the paper held to the block, substantially as described.

14. In a machine for wrapping block-matches, the traveling socketed holder for receiving the match-blocks, and having side clamps for holding them in place, in combination with the vertically-moving plungers in the holders for raising the match-blocks, so that the paper with which they are wrapped will clear the clamps, whereby the block may be discharged, substantially as described.

15. In a machine for wrapping block-matches, a rotating carrier-wheel having upon it an annular series of holders for receiving the match-blocks, said holders having downwardly-extending spindles, in combination with the means for rotating the holders to wrap the paper about the blocks, consisting of the pinions on the holder-spindles, and the fixed rack with which the pinions engage, substantially as described.

16. In a machine for wrapping block-matches, the rotating carrier-wheel and the annular series of holders on the wheel, said holders having spindles, in combination with the pinions on said spindles and the curve-faced bearing-guides, the fixed guide-wheel against which the curve-faced guides travel, whereby the holders are held fixed, and the fixed rack with which the pinions engage, whereby the holders are rotated, substantially as described.

17. In a machine for wrapping block-matches, the carrier-wheel having the holders for receiving the match-blocks and provided with the toothed periphery, in combination with the rotary power-shaft having the pinion engaging the toothed periphery of the carrier-wheel, whereby it is rotated, and the knife carried by the power-shaft, whereby it is revolved and cuts the paper into suitable lengths between the match-blocks, substantially as described.

18. In a machine for wrapping block-matches, the rotary table having the paper-roll upon it, in combination with the rotary power-shaft having an arm secured to it, a knife pivoted to the arm, a spring controlling

and holding the knife in a vertical position, a fixed cam, and a cam-arm on the knife engaging the fixed cam for throwing said knife to a horizontal position, so as to enable it to pass over the paper at the back portion of its revolution, substantially as described.

19. In a machine for wrapping block-matches, the combination of the traveling rotary holders carrying the match-blocks and having clamps for holding the paper strip to the blocks, the stationary knife, and the revolving knife, between which the paper travels and is cut between the blocks, substantially as described.

20. In a machine for wrapping block-matches, the rotating carrier-wheel and the series of axially-rotary holders mounted thereon and adapted to receive the match-blocks, in combination with the knife S′, having a pivoted arm, and a spring controlling the arm to hold it away from the angle of the match-block, the rotary power-shaft, the revolving knife carried thereby for cutting the paper off between itself and the knife S′, and the cam on the power-shaft acting against the pivoted arm of the knife S′ for throwing said knife up to the paper, substantially as described.

21. In a machine for wrapping block-matches, the rotating carrier-wheel and the rotary holders mounted thereon, having the spring-controlled hinged flaps provided with lugs on their backs, in combination with the cam O, for throwing said flaps up to position to close the holder, substantially as described.

22. In a machine for wrapping block-matches, the rotary carrier-wheel and the rotary holders thereon, having spring-controlled hinged flaps provided with clamps and with lugs on their backs, in combination with the cam O, with which the lugs engage, whereby the flaps are thrown up to position and their clamps caused to bind on the paper, substantially as described.

23. In a machine for wrapping block-matches, the rotating carrier-wheel and the rotary holders thereon, having spring-controlled hinged flaps with lugs on their backs, in combination with the cam O, with which the lugs engage, whereby the flaps are thrown down to a horizontal position to open the holders, substantially as described.

24. In a machine for wrapping block-matches, the rotary carrier-wheel, the axially-rotary holders mounted thereon and having the spring-controlled hinged flaps with clamps, in combination with a cam for throwing the flaps to a vertical position and clamping the paper, separated straps forming frictional surfaces between which the match-blocks travel and are rotated, whereby the paper is held to and wrapped about them, the separated holding-plates above for twisting the upper portion of the paper, and the cam O, for throwing the flaps of the holders to a horizontal position, substantially as described.

25. In a machine for wrapping block-matches, the rotary carrier-wheel and the rotary holders mounted thereon and having the spring-controlled hinged flaps, in combination with the vertically-movable plungers within the holders, said plungers having downwardly-extending stems, the fixed cam with which the stems come in contact to vertically move the plungers, and the fixed cam O, for throwing down the flaps, whereby the match-blocks are discharged, substantially as described.

26. In a machine for wrapping block-matches, the holders for receiving the match-blocks, having the spring-controlled hinged flaps for relieving said blocks when wrapped, in combination with the vertically-movable plungers for raising the match-blocks in the holders, and the spring V′, for flipping the match-blocks out of the holders, substantially as described.

27. In a machine for wrapping block-matches, the holders for receiving the match-blocks, said holders having the clamps *n*, and spring-controlled hinged flaps *d*, with clamps N, in combination with the vertically-moving plungers in the holders adapted to raise the blocks so that the paper with which they are wrapped may clear the clamps and enable the blocks to be discharged, substantially as described.

28. In a machine for wrapping block-matches, the separated straps forming the frictional surfaces between which the match-blocks are carried and rotated, said straps having spring-connections whereby their tension and position are regulated, substantially as described.

In witness whereof I have hereunto set my hand.

GEORGE GRISEL.

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(No Model.) 2 Sheets—Sheet 1.

J. T. HAMBAY.

HOISTING BLOCK.

No. 419,852. Patented Jan. 21, 1890.

FIG. 1.

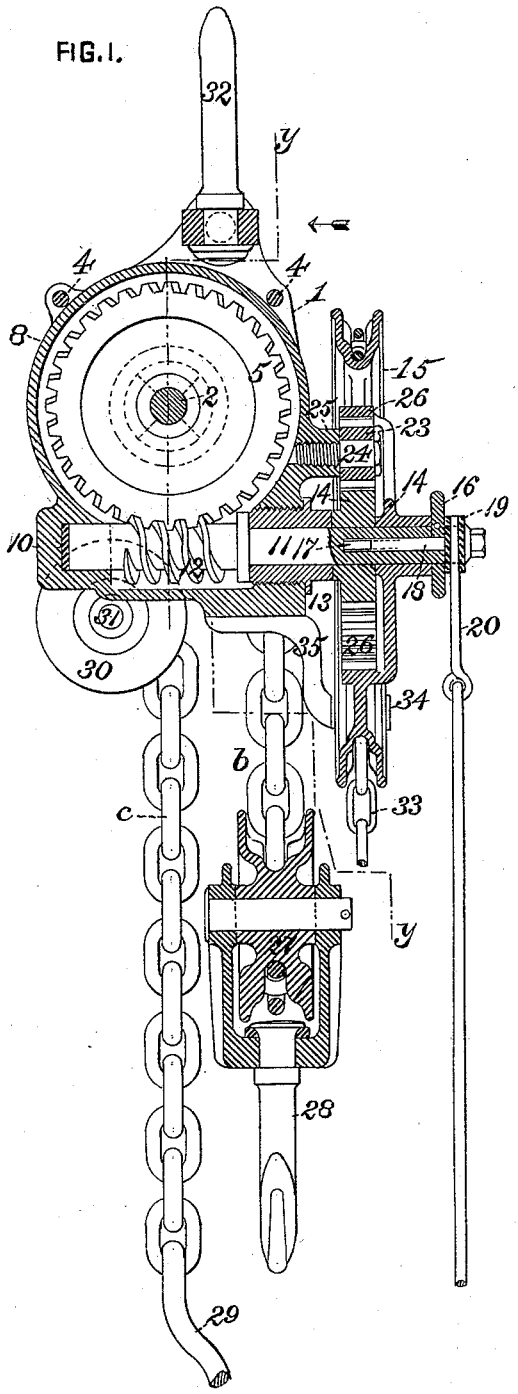
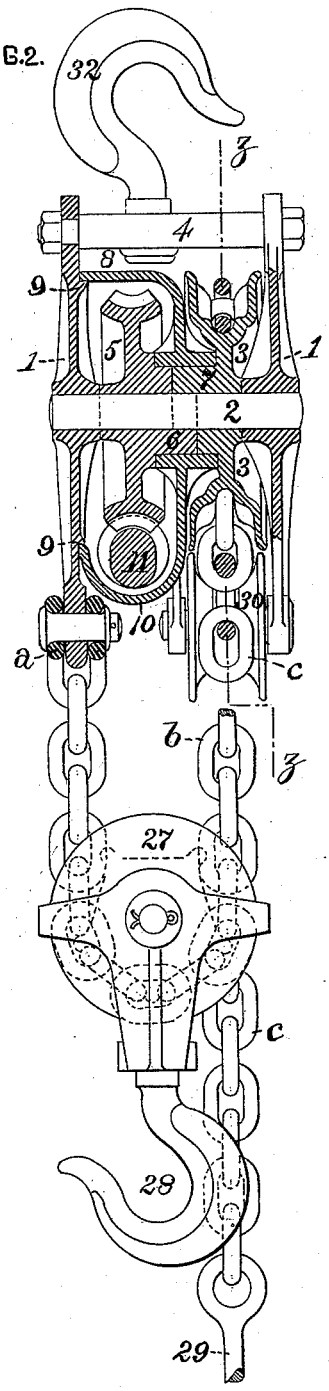


FIG. 2.



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