

4 Sheets—Sheet 1.

MACHINE FOR MAKING TACK STRIPS.

Patented Sept. 13, 1881.



A. J. Ottinger.
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(No Model.)

4 Sheets—Sheet 2.

E. WOODWARD & M. BROCK.

MACHINE FOR MAKING TACK STRIPS.

No. 247,143.

Patented Sept. 13, 1881.

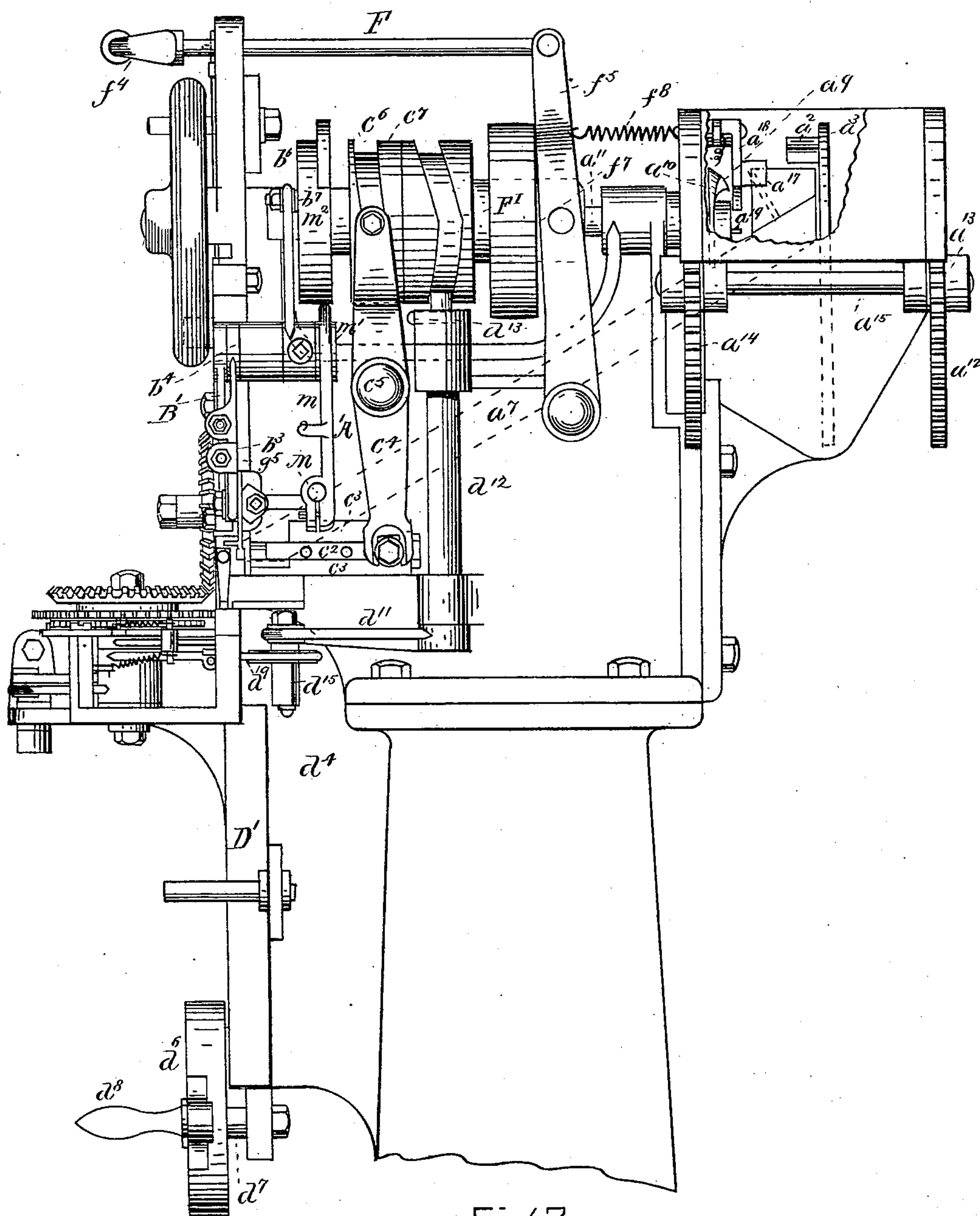


Fig. 2.

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(No Model.)

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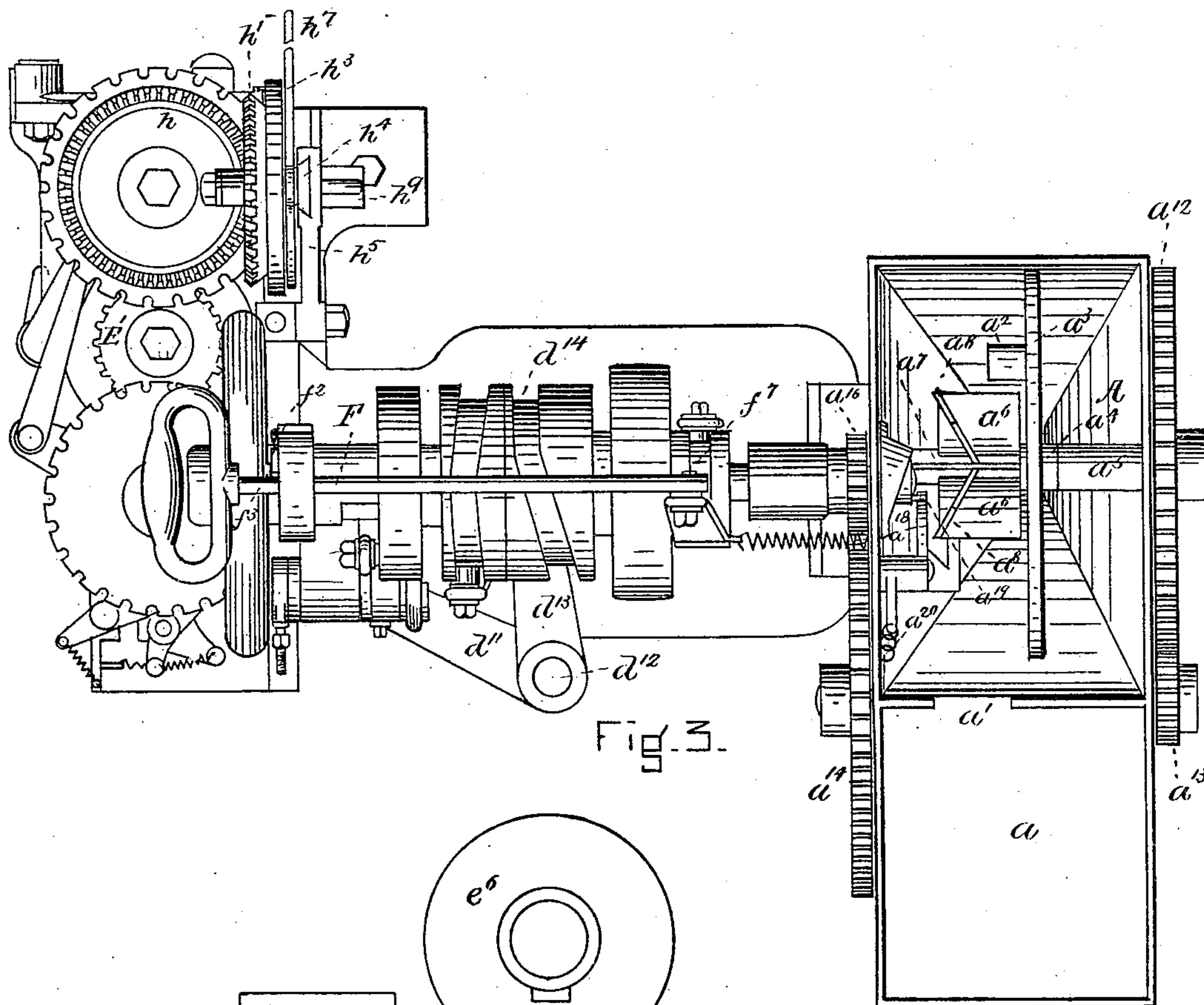


Fig. 3.

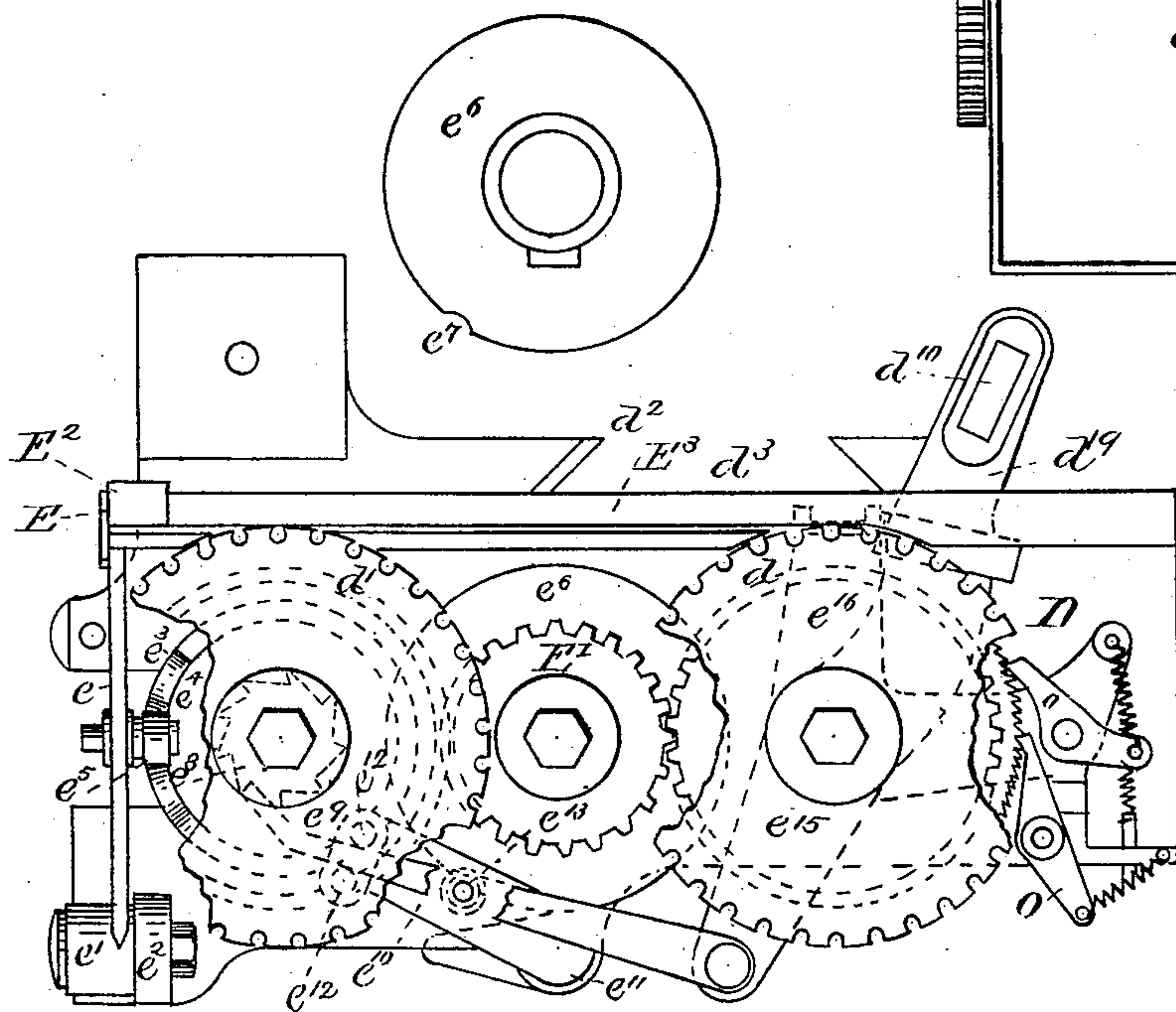


Fig. 4.

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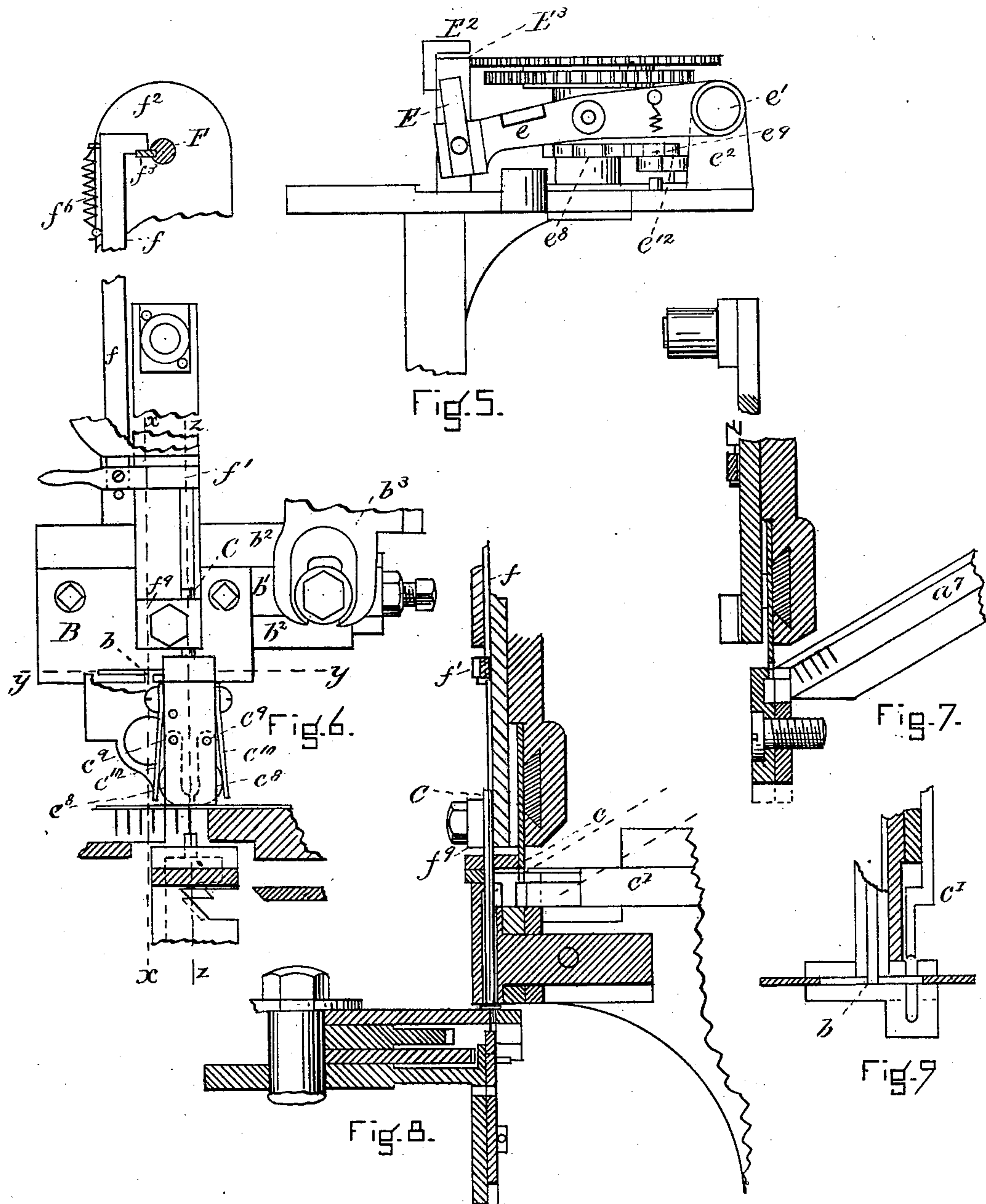
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MACHINE FOR MAKING TACK-STRIPS.

SPECIFICATION forming part of Letters Patent No. 247,143, dated September 13, 1881.

Application filed October 29, 1880. (No model.)

To all whom it may concern:

Be it known that we, ERASTUS WOODWARD and MATTHIAS BROCK, both of Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented an Improvement in Machines for Making Tack-Strips, of which the following is a specification.

This invention has for its object the following-described improvement in machines for making tack-strips, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature, in which—

Figure 1 is a front elevation of the machine. Fig. 2 is a side elevation thereof. Fig. 3 is a plan. Fig. 4 is a view, in plan, of the strip-feeding mechanism, with a portion of the feed-wheels broken away, to show the construction beneath. Fig. 5 is a detail view, representing a portion of the severing mechanism hereinafter described. Fig. 6 is a detail view, representing the construction of the mechanism for transferring the tacks from the feeding-chute to the driveway, and also a portion of the mechanism for preventing the strip-feeding devices from being actuated if a tack is not driven. Fig. 7 is a vertical section on the line xx of Fig. 6. Fig. 8 is a vertical section upon the line zz of Fig. 6. Fig. 9 is a horizontal section upon the line yy of Fig. 6.

This invention is an improvement upon the machine for making tack-strips described in the Letters Patent No. 230,386 granted us, and dated July 20, 1880. It embraces, first, a spiral device for wiping or brushing the tacks from the upper portion of the chute, arranged within the hopper and adapted to keep the tacks from collecting upon or in the chute at the point where the chute leaves the hopper, and from stopping the passage of the tacks; second, a reciprocating carrier-plate for transferring the tacks one by one from the lower end of the chute to the driveway, in combination with devices hereinafter described; third, devices for supporting the mechanism for feeding the strip into which the tacks are driven, having a vertical movement in relation to the driveway, whereby the parts of the machine are much more easily got at than if said strip-feeding mechanism were permanently located in relation to the driveway; fourth, mechanism for automatically cutting the tack-strips into given lengths, each length having a given

number of tacks; fifth, devices whereby the tack driving and feeding mechanism is automatically stopped if the tack becomes lodged in the driveway or is not properly driven into the strip; sixth, various modifications and details of construction, all of which will hereinafter be more fully described.

A is a hopper. It is preferably somewhat concave on its lower inner surface, and an auxiliary chamber, a' , may be arranged to open therein, at a' , into which tacks may be deposited in bulk, and from which they may be passed into the hopper from time to time, as required.

A series of buckets or scoops, a^2 , fastened to arms a^3 , projecting radially from the hub or center a^4 , which is fastened to the shaft a^5 , serve to lift the tacks from the bottom of the hopper and to deposit them upon the inclined platform a^6 , which slopes from either edge downwardly to the chute a^7 .

The guides a^8 , projecting upwardly from the platform, serve to direct the tacks to the chute. There is also arranged within the hopper a wiper or clearing device, a^9 , which consists in a disk, a^{10} , fastened to the end of the main shaft a^{11} and revolved thereby, and having formed thereon a spiral wedge-like device or projection, so shaped that it shall commence to operate in freeing the chute from tacks which have become lodged therein at the point nearest the wall of the hopper, and from that point shall move the tacks that are in the chute and upon it gradually upward until the end of the wiper leaves the top of the chute, when the tacks that have been lifted up are allowed to move back until the wiper has revolved sufficiently to operate again.

The arms a^4 , carrying the buckets, are revolved by means of the shaft a^5 , the spur-gear a^{12} , intermediary connecting gear-wheels a^{13} a^{14} , and their connecting-shaft a^{15} , and the gear a^{16} on the main shaft, which meshes with the gear a^{14} .

A hammer, a^{17} , attached to an arm, a^{18} , pivoted to the side of the hopper, and operated by a cam-pin, a^{19} , on the disk a^{10} and spring a^{20} , jars or vibrates the platform attached to the chute sufficiently to prevent the tacks from lodging therein.

The chute a^7 extends downwardly, and the lower end is arranged upon a line with the T-shaped opening b in the sliding plate B, and

said plate is reciprocated from the end of the feedway in the chute to a position opposite the driveway by means of a carriage, b' , which slides horizontally in ways b^2 , the link or rod b^3 , which has a bearing at b^4 on the stud b^5 , projecting from the bracket A^2 , the bent lever B' also having a bearing on the stud b^5 , and adapted, in connection with the spring B^2 , to provide the link with a swinging movement on the stud, and cam-groove b^6 in the face of the cam-disk b^7 , which is fastened to the main shaft a^{11} .

The sliding plate B , by means of the T-shaped carrier b , transfers the tack from the lower end of the chute to a position opposite the upper end of the driveway, into which, through the passage c , it is transferred by the transferring-plate c' , which is fastened to a block, c^2 , arranged in the ways c^3 upon the frame A' of the machine, and is reciprocated in the vertical part of the T-shaped passage in the tack-carrier plate, and said passage by the lever c^4 , pivoted at c^5 , and operated by the edge cam-groove c^6 in the cam-disk c^7 upon the main shaft a^{11} . The tack, being transferred to the driveway by the transferring-plate, drops therein, and is supported by the jaws c^8 , which are adapted to yield against the pressure of the springs c^9 .

The drive-rod C drives the tacks from the jaws into the strip. The drive-rod is reciprocated by means of the cam-groove c^{10} in the cam-disk c^{11} and the connecting-rod c^{12} , which is provided with the cam-pin c^{13} , and has suitable bearings in the frame of the machine.

The table or plate D supports the tack-strip feeding and severing mechanism, which consists, in part, of the feed-wheels d d' and their connecting and operating mechanism. It is cast upon or attached to the vertical plate D' , which has a dovetailed recess, d^2 , fitting the dovetail d^3 on the outer edge of the bracket d^4 , fastened to the frame-work of the machine.

The plate D' is adapted to be moved vertically upon the dovetail, which furnishes a guide as well as a support for it, by means of the cam-groove d^5 in the cam-block d^6 , which is pivoted at d^7 to the bracket d^4 , and is provided with a handle, d^8 . A cam-pin, d^9 , upon the plate D' enters the cam-groove and forms the connection.

The mechanism for preventing the feeding of the tack-strip when a tack is not inserted therein is similar to that described in our said patent, and the lever d^{19} (which is the equivalent of the lever h^3 in our said patent) is provided with a slot, d^{10} , and is operated by the arm d^{11} , connecting-rod d^{12} , arm d^{13} , and cam-groove d^{14} , in the disk c^7 upon the main shaft. The arms d^{11} d^{13} and connecting-rod d^{12} constitute substantially a bell-crank lever. The vertical bar d^{15} , entering the slot d^{10} , makes the connection between the ends of the arm d^{11} and the said lever d^9 , and also permits the lever to be moved vertically thereon as the strip-feeding mechanism is being moved vertically.

The mechanism for operating the knife or

severing device E consists in the lever e , at one end of which the knife-stock is secured, and which is pivoted at e' to the standard e^2 ; the cams e^3 , on the upper face of the cam-disk e^4 , which has a bearing on the shaft supporting the feed-wheel d' ; the cam-pin e^5 , which projects inwardly from the lever e in a position to be lifted upon the successive cams, and which may be provided with a friction-wheel; the disk e^6 , which is adapted to be revolved with the intermediary spur-wheel E' between the feed-wheels d d' , provided with a notch, e^7 ; the ratchet-wheel e^8 , fastened to the cam-disk e^4 ; the pawl e^9 , and the pawl-carrying plate e^{10} , which is pivoted at e^{11} to a standard projecting outwardly from the plate or table D , and has the two pins e^{12} , between which the pawl passes, and the pin e^{13} , which is adapted to be engaged by the notch e^7 on the disk e^6 . The pin e^{13} is kept in contact with the edge of the disk e^6 by the spring e^{14} . The lever or pawl e^9 is reciprocated by means of the arm e^{15} , which is attached to the lever e^{16} , which corresponds to the lever h^4 of the said patent.

A bed, E^2 , is arranged above the grooved bed E^3 , supporting and guiding the tack-strip, and has a slit or recess across it, into which the knife closes, and the tack-strip is severed by the joint operation of the lower edge of the bed and the knife.

It will be observed that the pawl e^9 has a reciprocating movement for each tack inserted into the tack-strip, but that it is held off from the ratchet-wheel e^8 by means of the disk e^6 and hinged carrier-plate e^{10} until the notch e^7 receives the pin e^{13} , when the pawl engages with the ratchet-wheel e^8 and moves to the distance between two teeth. This movement of the ratchet-wheel causes the disk e^4 and the cams e^3 thereon to be revolved sufficiently to reciprocate the lever carrying the knife.

The mechanism for automatically stopping the tack-feeding and tack-driving devices consists in a rod, f , which is parallel, or substantially parallel, with the bar carrying the drive-rod, and has a block, f' , at its lower end surrounding, or partially surrounding, the drive-rod bar, and a latch, f^2 , at the upper end, which is adapted to shut automatically behind a catch, f^3 , on the rod F , connecting the operating-handle f^4 with the clutch-lever f^5 . A spring, f^6 , serves to draw the latch and its rod downwardly behind the catch when the rod having the catch has been drawn outwardly sufficiently to engage the clutch f^7 with the clutch on the driven pulley F' . A spring, f^8 , serves to automatically retract the rod F when the latch has been moved upwardly sufficiently to clear the catch, thereby disengaging the clutch f^7 . The drive-rod is fastened to the drive-bar by a friction-block, f^9 , sufficiently to enable it to drive the tacks without slipping therein, but not sufficiently to prevent slipping if any obstacles—such as a bent tack—become lodged in any part of the driveway or bed, and when the drive-rod is thus arrested in its descent it slips upwardly in its holding-

block and finally comes in contact with the block f' , moving it upward, and causing it to trip the catch, thereby stopping the machine.

The mechanism for operating the slide B is provided with devices whereby it may be easily adjusted, so that the chute and the recess b in the carrying-plate B and the drive-way may accurately register. They consist in the lower arm, g , of the lever B' and the set-screw g' , which is carried by a bracket, g^2 , on the lower portion of the operating-arm b^3 , and which bears against the end of the arm g , whereby the distance between the arm g and the arm b^3 may be increased or diminished, thereby affording means for varying the extent of movement of the sliding plate B outwardly or in the direction of the passage to the driveway, and in the screw g^3 , supported by the bracket g^4 on the end of the block b' , which is adapted to strike against a stop, g^5 , at the end of the inward throw of the plate, thereby providing means whereby the limit of inward movement of the plate B is obtained.

The mechanism for applying the covering-strip consists in the bevel-gear h , fastened to the feed-wheel d' , the bevel-gear h' , having a bearing upon the shaft h^2 , and the wheel h^3 , which is adapted to bear upon the bed of the machine in compressing the covering-strip upon the main strip or that portion of the strip carrying the tacks. The shaft h^2 is supported by a block movable in the guideway h^4 of the standard h^5 , and a curved cam-groove, h^6 , in the lever h^7 , which is pivoted at h^8 . By means of this lever the roll may be adjusted vertically in relation to the bed, and, in connection with a thumb-screw, h^9 , which clamps the roll-supporting block, the amount of pressure of the roll upon the bed may be varied.

The device for applying the paste or cement is similar to that described in Letters Patent before mentioned.

The machine is further provided with a hammer, M, which is reciprocated against the frame Δ' by means of the lever m , which supports it, and which is pivoted at m' , and an edge-cam, m^2 , on the cam-disk b^7 . The object of this hammer is to cause the chute to be vibrated sufficiently to prevent the tacks from stopping therein in their descent.

The operation of the machine is as follows: Tacks are deposited in bulk either in the chamber a , from whence they are fed in sufficient quantity to the hopper A, or are deposited directly in the hopper, and by the revolution of the buckets are scooped from the bottom of the hopper and deposited upon the inclined table a^6 , and those that fall point downward, with their heads resting upon the platform on either side of the chute, commence to descend. The wiper a^8 prevents the tacks from descending too rapidly and clogging in the chute. The tacks descending in the chute are taken from the end thereof successively by the sliding carrier-plate, which is adapted to receive but one, and to carry it to a position opposite a passage

leading into the driveway, from whence it is removed by the reciprocating transferrer, that carries it in a direction at right angles to the line of movement of the carrier and deposits it in the driveway, whence it falls to a position between the jaws c^8 , where it is held until the descent of the driver, when it is driven into the tack-strip, which is carried by the reel N, and which, after receiving the first tack, is fed by the contact of the feed-wheel with the driven tack, as described in our said Letters Patent.

The bed for supporting the tack-strip and for guiding it is like that described in our said Letters Patent. The tack-strip is then fed to a position to receive the covering-strip, which is applied in the same manner as described in the said Letters Patent, and the tack-strip is then severed into uniform lengths by the mechanism heretofore described. The vibration caused by the hammer prevents the tacks from lodging in the chute.

In case tacks become lodged in the driveway or are not driven properly into the tack-strip the tack feeding and driving devices are automatically stopped.

The mechanism for operating the feed-wheels is provided with a detainer-pawl, O, in addition to the devices described in our said Letters Patent, for the purpose of preventing the backward movement of the ratchet-wheel operated by the feed-pawl o upon its backward movement.

In case it is necessary to inspect or remove any part of the tack-strip feeding or severing mechanism, the table D, supporting it, may be lowered upon the bracket d^4 , thereby exposing the same in a desirable way to the operator.

Having thus fully described our invention, we claim and desire to secure by Letters Patent of the United States—

1. In a machine for setting tacks, the combination of the auxiliary chamber a , hopper A, and one or more revolving buckets, a^2 , adapted to lift the tacks in the hopper and to deposit them upon the chute, with said chute and a wiper, all arranged to operate as described.

2. In a machine for setting tacks, the combination of the chute, arranged within the hopper as described, and a spiral wiper, a^9 , adapted to clear the tacks from the chute, substantially as and for the purposes described.

3. As a means for preventing tacks from clogging in the inclined chute, a wiping or clearing device consisting of the revolving spiral projection a^9 , substantially as and for the purposes described.

4. In a tack-setting machine, the combination of the platform a^6 , attached to the chute a^7 , with a hammer, a^{17} , operated to strike the platform at intervals to jar the same, substantially as and for the purposes described.

5. The combination, in a tack-setting machine, of the hopper A, one or more revolving buckets or scoops, a^2 , for lifting the tacks and

depositing them upon the inclined platform a^6 , the chute a^7 , and the wiper or clearing device a^9 , all arranged to operate substantially as and for the purposes described.

5 6. The combination of an inclined tack-carrying chute with a reciprocating tack-carrying plate, B, having a T-shaped tack-receiving recess adapted to receive a tack from the chute and to transfer it to a position from whence it
10 is advanced to the driveway, substantially as and for the purposes described.

7. The combination of an inclined tack-carrying chute, a reciprocating plate, B, having a T-shaped tack-receiving recess, and a reciprocating transferring-plate, c' , adapted to remove the tack from the tack-supporting recess in the plate B and to transfer it to the driveway, substantially as and for the purposes described.

20 8. The combination of the reciprocating tack-carrying plate B, having a T-shaped tack-receiving recess, with the reciprocating transferring-plate c' , all adapted for use substantially as and for the purposes described.

25 9. The combination of the reciprocating tack-carrying plate B, provided with a T-shaped tack-carrying recess, b , with means, substantially as described, for removing the tacks at stated intervals from the recess, and for inserting them in a strip or holder, substantially as
30 and for the purposes described.

10. The combination of the tack-supporting plate B, provided with a T-shaped tack-receiving recess, b , the transferring-plate c' , for removing the tack from said recess and to transfer it to the driveway, and the jaws c^8 , for holding the tack in the driveway until the descent of the driver, substantially as and for the purposes described.

40 11. The combination of the reciprocating tack-carrying plate B, having a T-shaped tack-receiving recess, b , the reciprocating transferring c' , the driveway, and means for supporting the tack therein, with the driver C, substantially as and for the purposes described.

45 12. The combination of the inclined tack-carrying chute a^7 , the driveway, and means for supporting the tack therein, and the driver C, and intermediary tack separating and transferring mechanism, consisting of the reciprocating tack-supporting plate B, having a T-shaped tack-carrying recess, b , and the reciprocating transferring-plate c' , all adapted to operate substantially as and for the purposes described.
55

13. The combination of the driver C, yieldingly held to its operating-rod, with the block f^1 , connecting devices, the latch f^2 , the catch f^3 , and the rod F and its spring, all arranged
60 so that upon the sliding of the driver in its support the rod F will be automatically retracted, substantially as and for the purposes described.

14. The combination, with the tack feeding and setting mechanism, of the table or bed D, for supporting the tack-strip feeding and other mechanism, the plate D' , adapted to slide upon

the bracket d^4 , and the cam-block d^6 , all adapted to operate substantially as described.

15. The combination of the tack-carrying plate B, and the link or rod b^3 , with the lever B' , the cam-groove b^6 , and the spring B^2 , substantially as and for the purposes described. 70

16. As a means for varying the extent of the outward horizontal movement of the tack-receiving plate B, the lower arm, g , of the lever B' , and the adjusting-screw g' upon the arm b^3 , substantially as and for the purposes described. 75

17. As a means for varying the extent of the inward movement of the tack-supporting plate B, the adjustable screw-stop g^3 and the spring B^2 , substantially as and for the purposes described. 80

18. The combination of the transferring-plate c' , the lever c^4 , and the cam-groove c^6 , for delivering the tack to the action of the driver, substantially as described. 85

19. The combination of the lever d^{19} , provided with the slot d^{10} , with the operating-lever d^{11} , carrying at its end the bar d^{15} , adapted to enter the slot d^{10} , for feeding the tack-strip, substantially as described. 90

20. The combination of the tack-strip-feeding mechanism with a severing device adapted to cut the tack-strip automatically at fixed times into uniform lengths, substantially as and for the purposes described. 95

21. The combination of the reciprocating pawl e^9 , the carrier-plate e^{10} , the notched wheel e^6 , and the ratchet-wheel e^8 , all arranged to operate the cams e^4 , substantially as and for the purposes described. 100

22. The combination of the pressure-wheel h^3 , the lever h^7 , having a cam-groove, h^6 , and the block h^4 , substantially as and for the purposes described. 105

23. The combination of the block h^4 , lever h^7 , and tension-screw h^9 , substantially as and for the purposes described. 110

24. In a machine for manufacturing tack-strips, the combination, with tack feeding and inserting mechanism and strip-feeding mechanism, of a wheel, h^3 , adapted to compress the covering-strip upon the main or holding strip after the tack has been inserted, all substantially as and for the purposes set forth. 115

25. The combination of the pressure-roll h^3 , having a bevel-gear, h' , with the bevel-gear h upon the feed-wheel d' , substantially as and for the purposes described. 120

26. In a machine for the manufacture of tack-strips, the combination of devices for feeding the tacks separately to the driving mechanism, the tack-driving mechanism, the tack-strip-feeding devices, and a tack-strip-severing mechanism, substantially as set forth, all adapted to operate as and for the purposes described. 125

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