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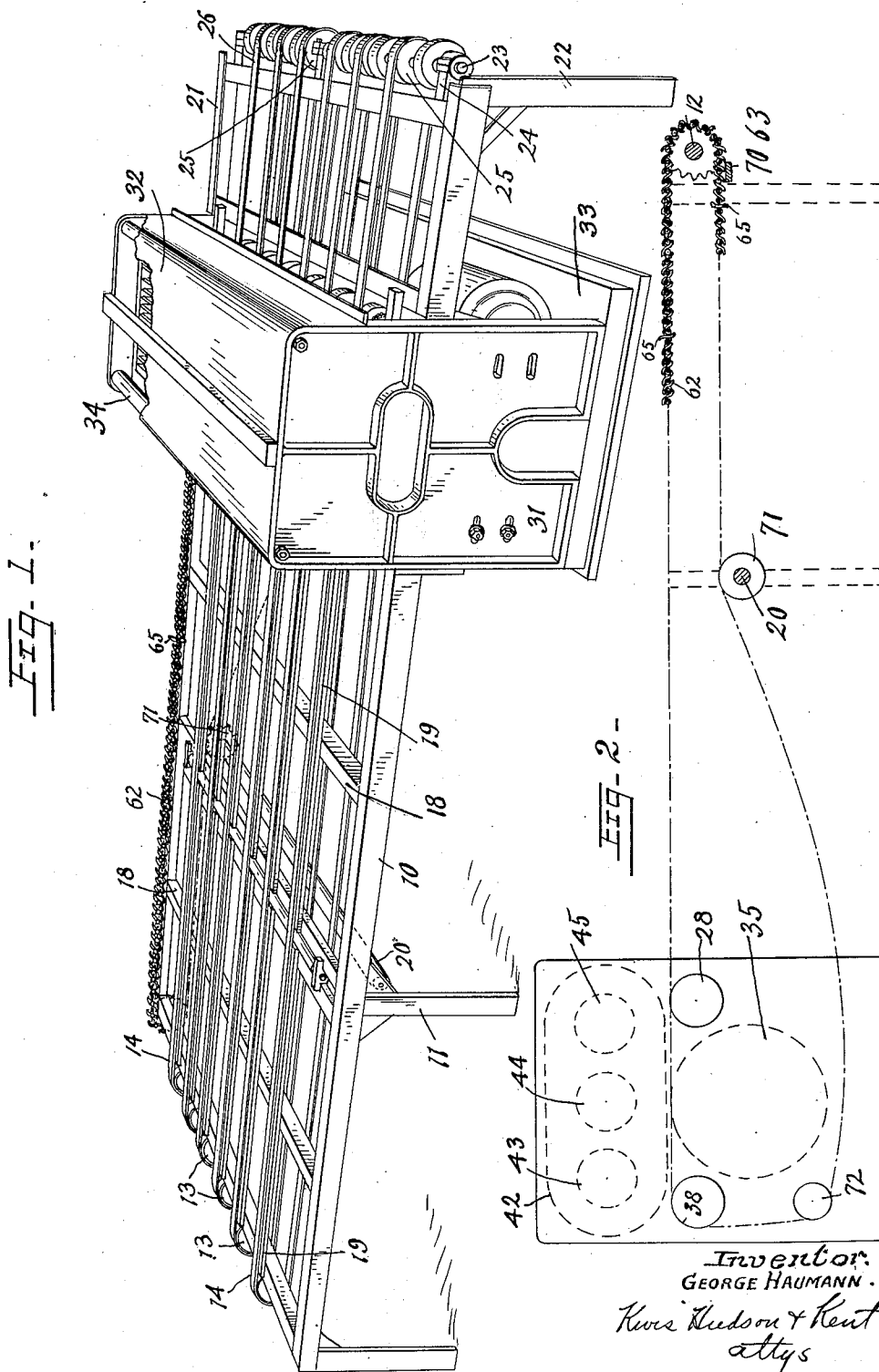
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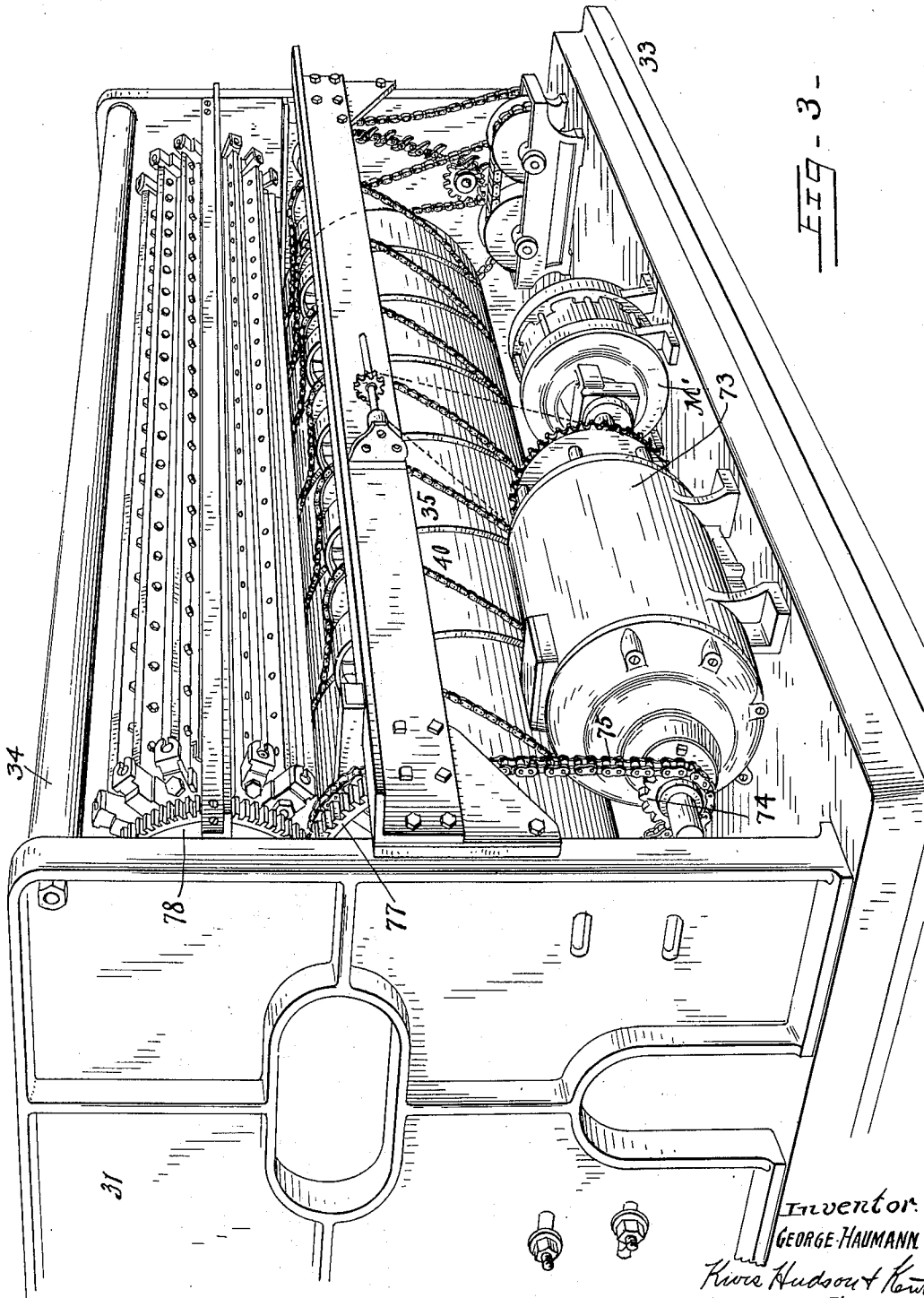


Fig. 3-

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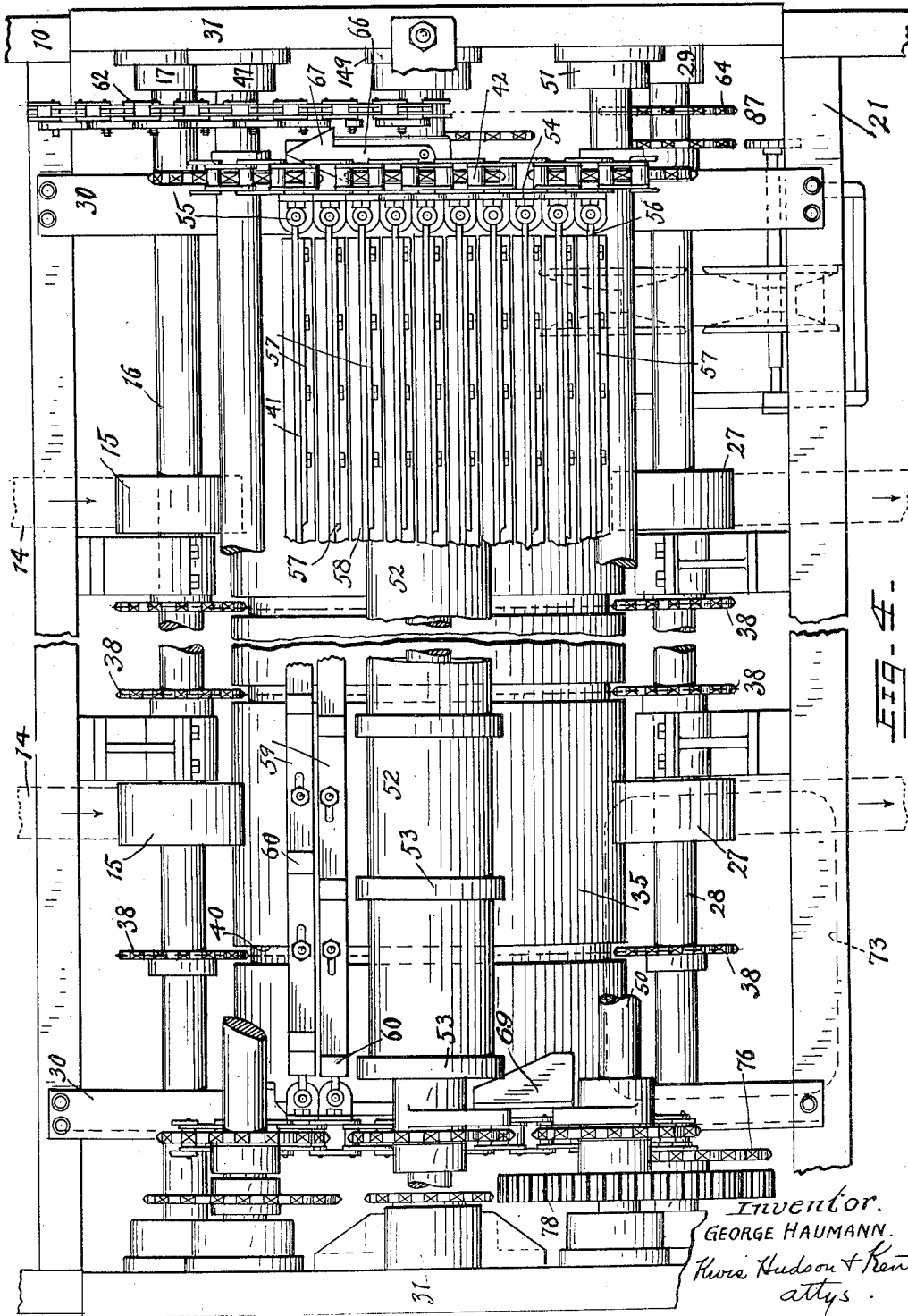
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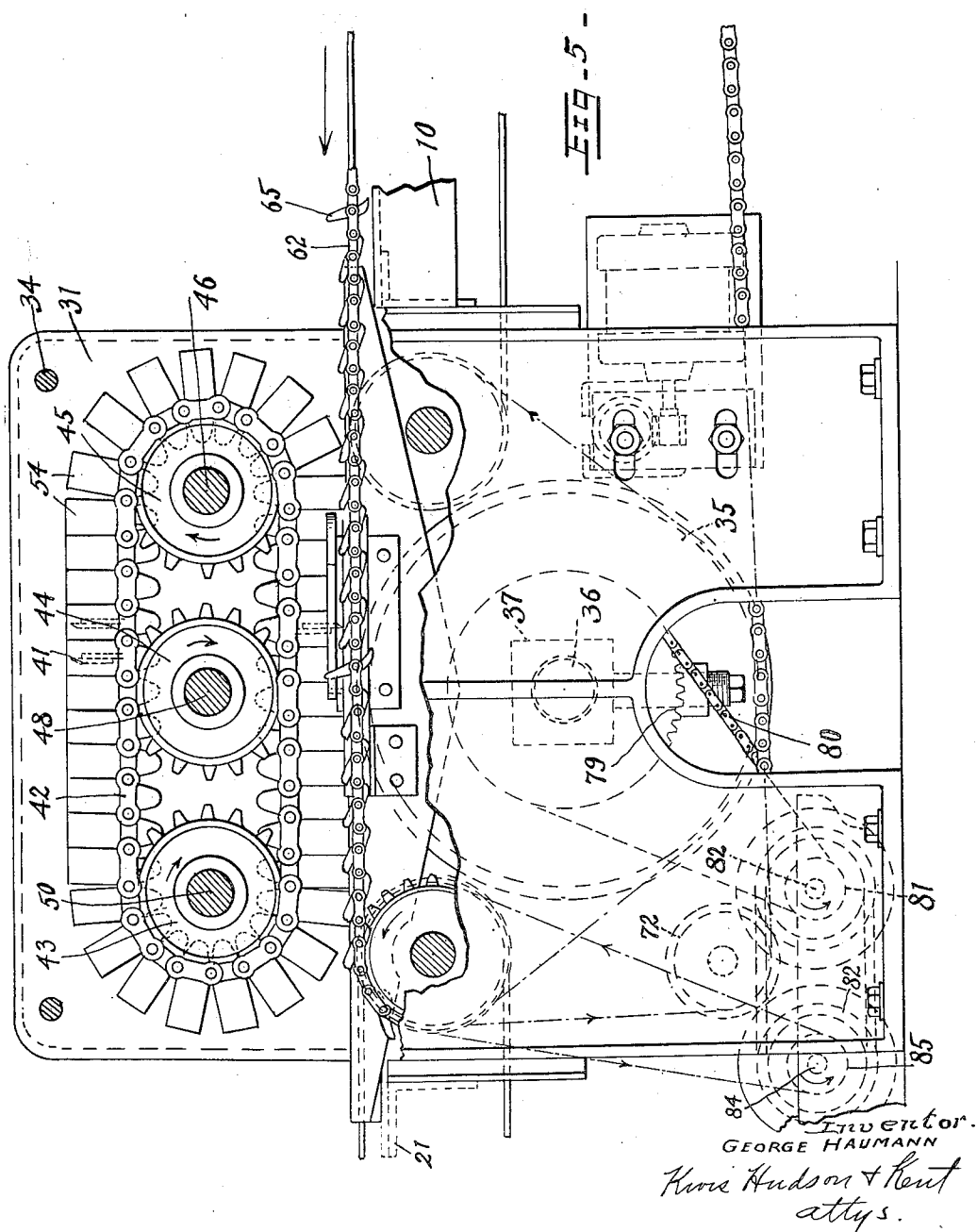
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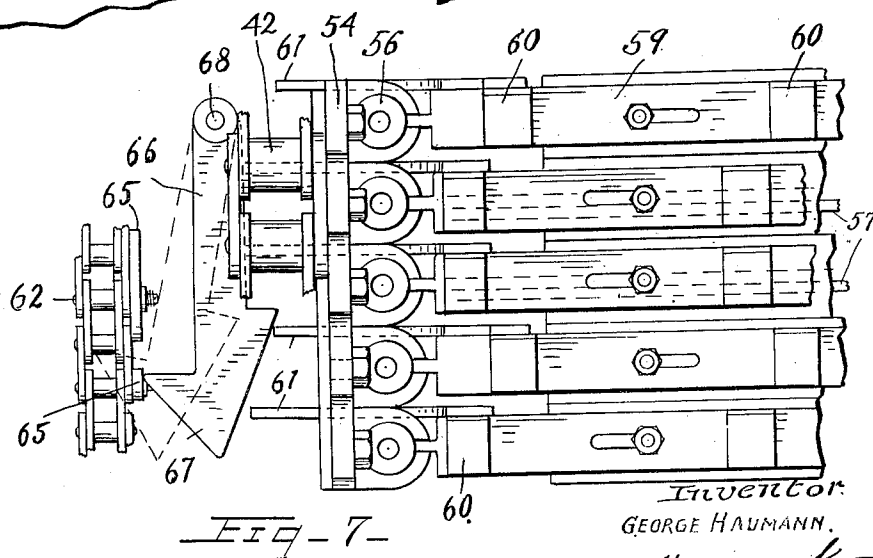
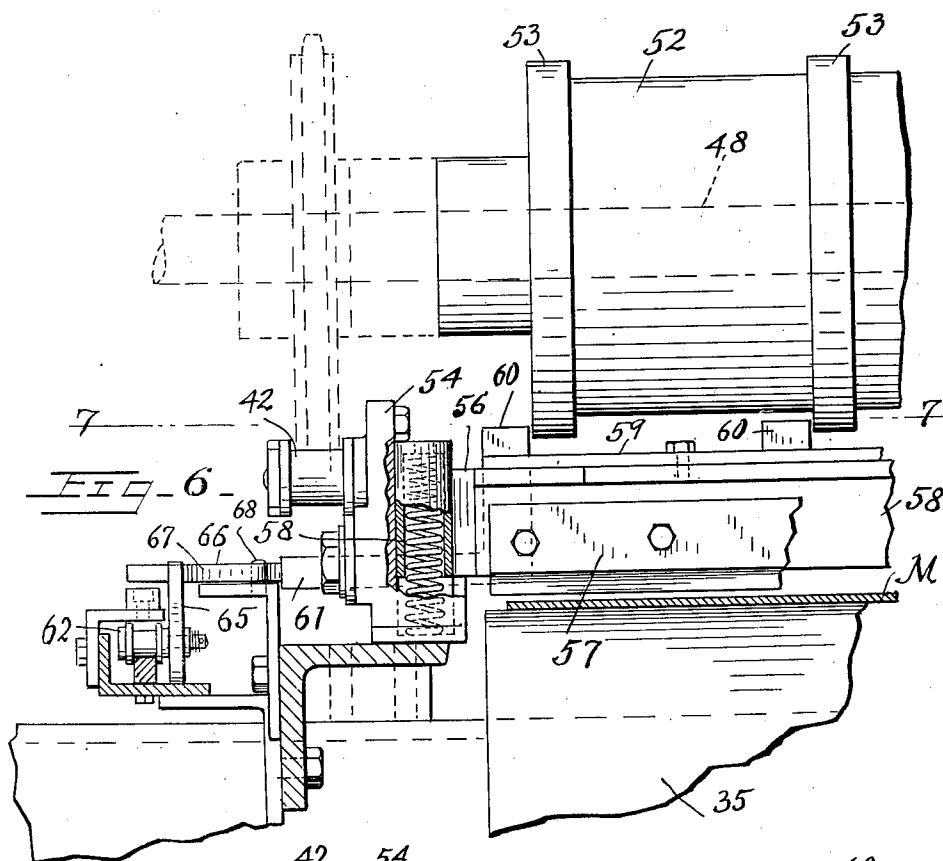
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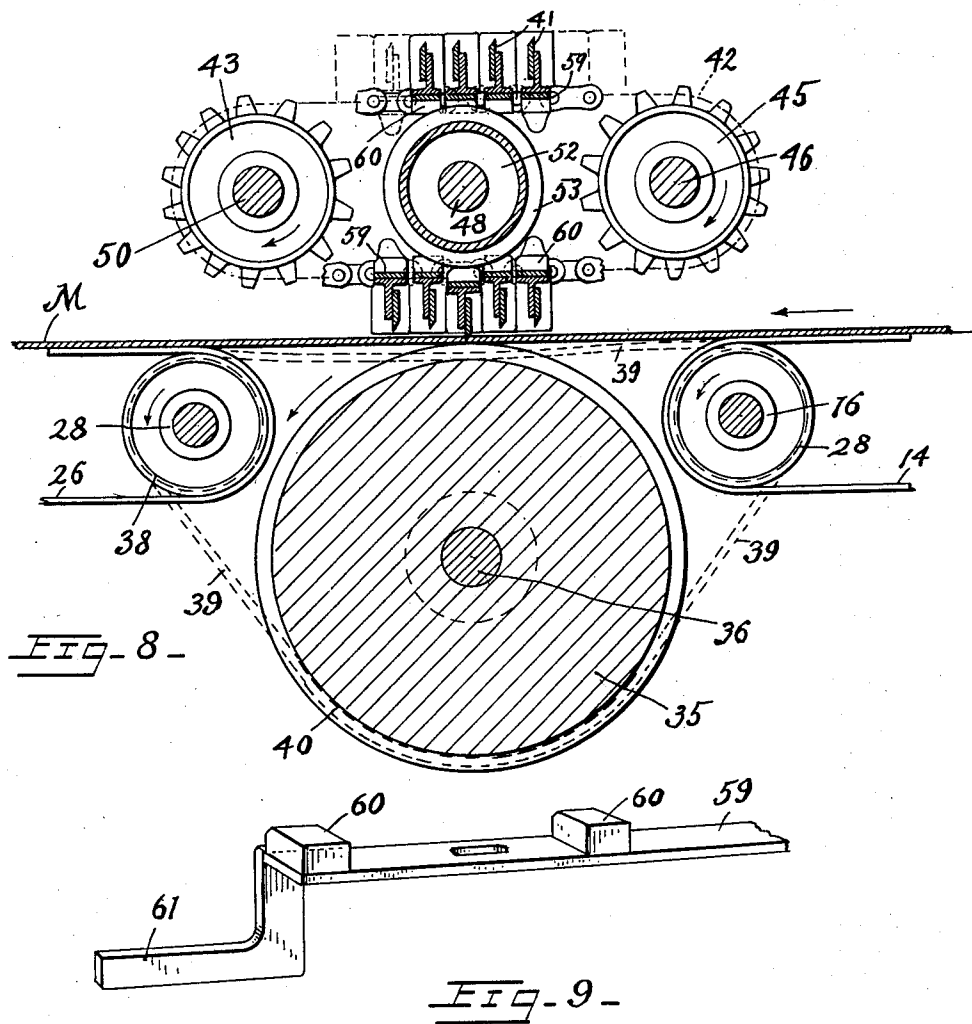
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17 Claims. (Cl. 164—68)

This invention relates to an apparatus for cutting or severing sheet or web material such as veneer wall board or the like and has for its primary object to produce such an apparatus which is efficient in operation, and simple in construction.

Veneer or sheet material of a like nature is usually formed from a continuous forming machine and in view thereof it is desirable to cut such continuous sheet of material into the desired lengths so that the same may be used practically. It is desirable that the sheet material be cut into suitable lengths without interrupting the travel of the material and various types of machines or apparatus have been designed for accomplishing this result.

It is therefore another object of the present invention to provide an improved material severing apparatus which will fulfill these requirements and sever the material much more efficiently.

It is a further object of the invention to provide settable means which cooperate with the material severing means to actuate the latter to sever the material at the locations selected and to arrange such settable means so that the same is predeterminately operable to effect severance of the material at a location adjacent the selected settable member.

With the objects above indicated and other objects hereinafter explained in view, the invention consists in the construction and combination of elements hereinafter described and claimed.

Referring to the drawings.

Figure 1 is a perspective view of a material severing apparatus embodying the present invention.

Fig. 2 is a diagrammatic view in side elevation of the settable mechanism showing the chain and support therefor.

Fig. 3 is a perspective view taken from the rear of the apparatus and showing the main drive source.

Fig. 4 is a top plan view of the apparatus with various portions broken away to more clearly illustrate the operating parts.

Fig. 5 is an end elevational view with part of the end frame removed to more clearly illustrate the knife carriage.

Fig. 6 is a fragmentary view on an enlarged scale showing the operating mechanism for the knife bar and its relationship to the operating roll when in normal inoperative position.

Fig. 7 is a transverse sectional view taken approximately on line 7—7 of Fig. 6.

Fig. 8 is a longitudinal vertical sectional view

of a portion of the apparatus showing the relative position of the knife blades with respect to the anvil roll, one of the knife blades being shown in material cutting or severing position.

Fig. 9 is a fragmentary perspective view of one end of the knife blade actuating bar.

In the drawings the apparatus is illustrated and consists of a frame 10 made of angle irons or any other suitable material which is disposed in a horizontal plane and supported by suitable legs 11. This frame 10 is provided with a transversely extending shaft 12 at its forward end which is suitably journaled at its opposite ends in bearings (not shown) secured to the end of the frame. The shaft 12 is provided with a plurality of sheaves 13 secured to the shaft 12 and spaced at intervals therealong. Belts 14 pass around the sheaves 13 at one end of the frame 10 and at the opposite end of the frame 10 about sheaves 15 secured to a transversely extending shaft 16 having its outer ends journaled in bearings 17 more clearly shown in Fig. 4. These sheaves 15, like the sheaves 13 are likewise secured to the shaft 16 and receive the opposite ends of the endless belts 14 thereby providing a material supporting and conveying means for the loading end of the apparatus.

The frame 10 is further provided with transversely extending members 18 upon which is supported a plurality of longitudinally extending members 19 preferably of wood and upon which the belts 14 are adapted to ride. A roller 20 is rotatably mounted in one pair of the legs 11 and positioned so as to engage the return portions of the endless belts 14.

The discharge end of the apparatus consists of a frame 21 similar to the frame 10 except somewhat smaller and is supported in horizontal position and in the same horizontal plane as the frame 10 by means of legs 22. This frame 21 is provided with a transversely extending shaft 23 having its opposite ends journaled in bearings 24 secured to the ends of the frame 21 and has secured thereto a plurality of sheaves 25 about which a plurality of endless belts 26 pass while the opposite ends pass around sheaves 27 secured to a transversely extending shaft 28 having its opposite ends rotatably supported in bearings 29. The belts 26 likewise form a suitable material supporting and conveying means at the discharge end of the apparatus and these conveyor belts 14 and 26 should preferably form a substantially continuous conveyor.

The frames 10 and 21 are spaced apart a suitable distance for a purpose to be later described and are held in spaced relation by means of angle

members 30 more clearly shown in Fig. 4. The frame members are connected at their adjacent ends with side members 31 of a housing 32, the side members 31 or standards being preferably formed as a casting and connected at their lower ends so as to maintain them in spaced relation with a base 33. At the upper ends the side members or standards 31 are connected by spacer rods 34 so as to provide a rigid structure.

The bearings 17 and 29 which support the ends of the shafts 16 and 28 respectively are bolted to the inner faces of the side members 31 as clearly shown in Fig. 4. Disposed between the shafts 16 and 28 is a drum 35 preferably composed of laminated wood and secured to its ends are stub shafts 36 rotatably journaled in vertically adjustable bearings 37 which in turn are secured to the inner surfaces of the side members 31. This drum 35 is positioned so that the upper surface thereof will normally engage the under surface of the material M in a line transverse to the direction of travel of the material as shown more clearly in Fig. 8, and it is to be pointed out that it is along this line that the sheet material is severed during the severing operation.

It is important that the conveyor on the frame 10 and the conveyor on the frame 21 be driven at the same speed and to accomplish this feature the shafts 16 and 28 are provided with aligned sprocket wheels 38 which are secured thereto and spaced at intervals therealong. Endless sprocket chains 39 pass around the sprocket wheels 38 on the respective shafts and lie within circumferential grooves 40 provided in the face of the drum 35, the portion of the sprocket chain at the top of the drum being sufficiently lowered so as not to engage with the under surface of the material M in its travel movement.

Directly above the drum 35 and in spaced relation thereto is the knife blade conveying means which consists of a plurality of transversely extending knife blades 41 which are supported in longitudinal spaced relation at their opposite ends upon conveyor chains 42 which pass around sprocket wheels 43, 44 and 45 respectively. The sprocket wheels 45 are secured to the opposite ends of a transversely extending shaft 46 which has its opposite ends suitably journaled within bearings 47 secured to the inner surfaces of the side members 31. The sprocket wheels 44 are secured to a transversely extending shaft 48 having its opposite ends suitably journaled in bearings 49 secured to the inner surfaces of the side members 31. The sprocket wheels 43 are secured to the opposite ends of a transversely extending shaft 50 which has its opposite ends supported in bearings 51 secured to the inner surfaces of the side members 31. The axis of the shaft 48 is in vertical alignment with the axis of the drum 35 and the shaft supports a drum 52 which is provided with circumferentially extending flanges 53 spaced apart longitudinally of the drum 52 for a purpose to be later described.

The sprocket chains 42 which extend around the sprocket wheels 43, 44 and 45 respectively have secured thereto a plurality of castings 54 which have longitudinally extending circular slots 55 therein to receive correspondingly shaped members 56 secured to the ends of the knife blades 57. Coiled springs 58 are disposed between the ends of the blades 56 and the bottoms of the slots 55 and tend to normally maintain the blades 57 out of engagement with the material M or in other words in inoperative position. Slidably mounted upon the knife blade supports 58

are plates 59 having inwardly extending lugs 60 spaced apart longitudinally thereof to correspond with the spacing of the flanges 53 upon the roller 52, these lugs 60 being normally out of engagement with the flanges 53 as clearly shown in Fig. 6. These plates 59 have extensions 61 which extend outwardly and are adapted to be moved inwardly by a means to be later described, to move the lugs 60 on any selected knife blade support into alignment with the flanges 53 upon the drum 52 with the result that during the movement of the knife blade past the flanges 53 the latter will cause the knife blade 57 to be depressed to thereby sever the material M by reason of the engagement between the flanges 53 and the lugs 60. The severing of the material takes place as shown in Fig. 8 directly over the vertical axis of the anvil drum 35 and there being no relative separating movement between this roll and the roll 52 a positive severance of the material M is assured.

As many of these knife blades 57 may be employed as is desired and the spacing thereof should be such as to cover a wide range of lengths, the minimum length of course being between any two adjacent knife blades. It is also essential that the knife blades 57 travel in the same general direction as the direction of travel of the material M during the severing operation.

It is of course desirable to provide an automatic means for shifting the member 59 so as to cause actuation of the knife blades 57 and this is accomplished by providing endless chain 62 which is supported at one end upon a sprocket wheel 63 secured to the outer end of the shaft 12 and at the opposite end upon a sprocket wheel 64 secured upon the outer end of the shaft 28, this chain extending preferably beyond the shaft 50. This chain 62 has mounted thereon a plurality of manually operable members or fingers 65 which are pivotally supported and adapted to be moved from their normal inoperative position to their operative position as shown in Fig. 5. Wherever it is desired to sever the material M one of these fingers 65 is raised and in the travel of the chain 62 it engages a member 66 having an arrow head portion 67 at one end and being pivotally connected at 68 at the opposite end. The member 66 is normally under spring tension and its normal position is indicated in dotted lines in Fig. 7. The member 65 in its movement with the chain engages the arrow head portion 67 and forces the same inwardly about the pivot 68 where the opposite side of the arrow head engages with the extension 61 on the slidable member 59 and moves the same inwardly as shown in Fig. 7. As soon as the member 65 has caused the member 66 to move the extension 61 inwardly to its innermost position, the member 65 passes beyond the arrow head portion 67 and the latter is returned to its normal position before any engagement with the succeeding extension, thereby insuring the operation of only one knife blade by reason of any one manually operable member or finger 65. As explained before, engagement of the arrow head member with the extension 61 causes the slidable member 59 to be moved so that the lugs 60 thereon will lie directly in the path of the flanges 53 with the result that as the knife blade associated therewith approaches the roller 52 it will be depressed by engagement between the flanges 53 and the lugs 60 causing the knife blade 57 to sever the material M. When the knife blade has performed its severing operation and has passed therebeyond a cam 69 secured to the angle mem-

ber 30 at the opposite side of the bar engages the adjacent lug 60 on the slidable member as shown in Fig. 4 and returns the same to its normal position, in which the lugs 60 are out of the path of the flanges 53. This slidable member 59 is more clearly shown in Fig. 9 in detail. The fingers 55 upon the chain 62 are returned to inoperative position upon the return movement of the chain by means of a plate 70 attached to the frame 10 adjacent the sprocket wheel 63 as clearly shown in Fig. 2 and the chain 62 is further guided in its movement by means of a sprocket wheel 71 secured upon the transversely extending shaft 20 and a sprocket wheel 72 rotatably supported upon the inner surface of the side 31.

It is essential of course that all of these movable members be coordinated in such a manner that they operate properly and furthermore that the operation of the severing of the material is automatic. A main source of power in the form of a motor M' is connected with a speed changer 73 which has a sprocket wheel 74 secured to the shaft of the rotor and is connected by a sprocket chain 75 to a sprocket wheel 76 secured upon the outer end of the shaft 28. An external gear 77 is also secured to the shaft 28 adjacent the sprocket wheel 76 and meshes with an external gear 78 secured to the end of the shaft 50 to thereby positively drive the shaft 50 directly from the motor 73. It will therefore be seen that in view of the fact that the sprocket wheel 64 is secured to the opposite end of the shaft 28 the chain 62 is driven directly therefrom. An external gear 79 is mounted upon the end of the drum 35 and is connected by a sprocket chain 80 with a sprocket wheel 81 secured to the shaft 82 of a variable speed mechanism 83. The shaft 84 of the variable speed mechanism has connected to one of its ends a sprocket wheel 85 which is connected by a sprocket chain 86 with a sprocket wheel 87 also secured to the end of the shaft 28 adjacent the sprocket wheel 64. It will therefore be seen that through this variable speed mechanism the drum 35 may be rotated at the desired speed with respect to the travel of the material upon the conveyor.

While I have described the preferred embodiment of the invention it is to be understood that I am not to be limited thereto inasmuch as changes and modifications may be resorted to without departing from the spirit of the invention as defined in the appended claims.

Having thus described my invention I claim:

1. In an apparatus of the character described, a material supporting and conveying means continuously operating, a material severing means having a plurality of transversely extending knife blades spaced apart longitudinally and movable lineally in the same general direction as the material, and settable means movable with said conveying means and adapted to actuate said knife blades to cause the latter to sever the material.

2. In an apparatus of the character described, a material supporting and conveying means continuously operating, a material severing means having a plurality of transversely extending knife blades spaced apart longitudinally and movable lineally in the same general direction as the material, and knife blade actuating means predeterminedly settable and movable with said conveying means, said means being adapted to actuate one of said knife blades to cause the latter to sever the material at the desired location.

3. In an apparatus of the character described,

a material supporting and conveying means continuously operating, a material severing means having a plurality of transversely extending knife blades spaced apart longitudinally and movable lineally in the same general direction as the material and normally in inoperative position, and settable means movable with said conveying means and adapted to actuate the knife blades to cause the latter to sever the material at the locations predeterminedly selected.

4. In an apparatus of the character described, a material supporting and conveying means continuously operating, a material severing means having a plurality of transversely extending knife blades spaced apart longitudinally, and normally in inoperative position, said blades being movable lineally in the same general direction as the material during the severing operation, means associated with said knife blades for rendering them operative, and means movable with said conveying means and having settable members thereon for engagement with said last mentioned means for rendering said knife blades operative to cause the latter to sever the material at the locations selected by the predetermined setting of the settable members.

5. In an apparatus of the character described, a material supporting and conveying means continuously operating, a material severing means including an endless conveyor disposed in spaced relation with respect to said material conveying means, a plurality of transversely extending knife blades movably supported upon said conveyor and in spaced longitudinal alignment, said conveyor being movable so that said knife blades move lineally in the same general direction as the material during the severing operation, and means movable in unison with said material conveying means and having settable members thereon adapted to actuate said knife blades to cause the latter to sever the material at the predeterminedly selected locations.

6. In an apparatus of the character described, a material supporting and conveying means continuously operating, a material severing means including an endless conveyor disposed in spaced relation with respect to said material conveying means, a plurality of transversely extending knife blades supported upon said conveyor and in spaced longitudinal alignment, said knife blades being normally in inoperative position and movable in the same general direction as the material during the severing operation, means associated with each of said knife blades and adapted to render the latter operative, and means movable in unison with said material conveying means and having settable members thereon adapted to actuate said last mentioned means to render said knife blades operative to cause the latter to sever the material at the locations corresponding to the predeterminedly selected settable members.

7. In an apparatus of the character described, a material supporting and conveying means continuously operating, an anvil roll extending transversely of said material conveying means and positioned so as to engage the under surface of the material during its travel, means for rotating said roll at a definite speed with respect to the speed of said conveying means, a plurality of transversely extending knife blades in spaced longitudinal alignment in substantially the same plane and positioned in spaced relation with respect to said conveying means, said knife blades being normally in inoperative position, means for

moving said knife blades in the direction of movement of said material during the severing operation and at a definite speed with relation thereto, and means movable in unison with said conveying means and having settable members adapted to actuate said knife blades to cause the latter to sever the material at locations determined by the settable members selected.

8. In an apparatus of the character described, a material supporting and conveying means continuously operating, an anvil roll extending transversely of said material conveying means and positioned so as to engage the under surface of the material during its travel, means for rotating said roll, a plurality of transversely extending knife blades in spaced longitudinal alignment and positioned in spaced relation with respect to said conveying means, said knife blades being normally in inoperative position, means for moving said knife blades in the direction of movement of said material during the severing operation, members slidably mounted upon said knife blades and having spaced abutments, a member extending transversely of said material conveying means and having portions engageable with said abutments but normally out of engagement therewith, and means movable in unison with said conveying means and having settable members adapted to actuate said slidable members to move said abutments into engagement with the portions of said members to cause said knife blades to sever the material at the locations selected.

9. In an apparatus of the character described, a material supporting and conveying means continuously operating, an anvil roll extending transversely of said material conveying means and positioned so as to engage the under surface of the material during its travel, means for rotating said roll, a plurality of transversely extending knife blades in spaced longitudinal alignment and positioned in spaced relation with respect to said conveying means, said knife blades being normally in inoperative position, means for moving said knife blades in the direction of movement of said material during the severing operation, members slidably mounted upon said knife blades and having spaced abutments, a member extending transversely of said material conveying means and having portions engageable with said abutments but normally out of engagement therewith, means movable in unison with said conveying means and having settable members adapted to actuate said slidable members to move said abutments into engagement with the portions of said members to cause said knife blades to sever the material at the locations selected, and means engageable with said slidable members after the severing operation to return the latter to their normal inoperative position.

10. In an apparatus of the character described, a material supporting and conveying means continuously operating, an anvil roll extending transversely of said material conveying means and positioned so as to engage the under surface of the material during its travel, means for rotating said roll, a plurality of transversely extending knife blades in spaced longitudinal alignment and positioned in spaced relation with respect to said conveying means, said knife blades being normally in inoperative position, means for moving said knife blades in the direction of movement of said material during the severing operation, members slidably mounted upon said knife blades and having spaced abutments, a member extend-

ing transversely of said material conveying means and having portions engageable with said abutments but normally out of engagement therewith, means movable in unison with said conveying means and having settable members adapted to actuate said slidable members to move said abutments into engagement with the portions of said members to cause said knife blades to sever the material at the locations selected, means engageable with said slidable members after the severing operation to return the latter to their normal inoperative position and means engageable with said settable members to return the latter to inoperative position.

11. In an apparatus of the character described, a material supporting and conveying means continuously operating, a material severing means having a plurality of transversely extending knife blades movable lineally in the same general direction as the material and mounted for independent relative movement, and settable means movable with said conveying means and adapted to actuate said knife blades to cause the latter to sever the material.

12. In an apparatus of the character described, means for supporting the material to be operated upon, a severing means comprising an anvil positioned beneath the material and mounted on a fixed axis, a plurality of knife blades mounted for independent movement above the material and normally in inoperative position, a portion of said blades extending in a plane substantially parallel with the material means relatively movable and internengageable to actuate said knife blades, and means for moving said last mentioned means.

13. In an apparatus of the character described, means for supporting the material to be operated upon, a severing means comprising an anvil positioned beneath the material and mounted on a fixed axis, a plurality of knife blades mounted for independent movement above the material, some of said knife blades being disposed in spaced relation longitudinally and in the same plane, and means operable to actuate said knife blades to sever the material.

14. In an apparatus of the character described, means for supporting the material to be operated upon, a severing means comprising an anvil positioned beneath the material, a plurality of knife blades mounted for independent movement above the material, resilient means adjacent the opposite ends of said knife blades for maintaining the latter in inoperative positions, slidable members mounted upon said knife blades, and a member normally out of engagement with said slidable members, said slidable members being movable so as to be engageable with said member to actuate said knife blades to operative position.

15. In an apparatus of the character described, a material supporting and conveying means continuously operating, a material severing means having a knife blade extending transversely of the material and movable lineally in the same general direction and in substantial parallelism therewith during the severing operation, an anvil mounted for rotation about a fixed axis beneath the material and means for actuating said knife blade.

16. In an apparatus of the character described, a material supporting and conveying means continuously operating, a material severing means having a plurality of knife blades extending transversely of the material, each blade being movable lineally in the same general direction as

the material and in substantial parallelism therewith during the severing operation, an anvil mounted for rotation about a fixed axis beneath the material and means for actuating said knife
5 blades.

17. In apparatus of the character described, a material supporting and conveying means including an anvil, a plurality of knife blades in opposing relation to said anvil and arranged to
10 extend transversely of the conveying means, means for supporting and moving said knife

blades in a series in the same general direction as the conveying means including resilient means normally retaining said blades in inoperative position but adapted to permit independent relative movement of a knife blade toward said anvil
5 and into cutting engagement with the material, and means operable in timed relation to said conveying means for causing said independent relative knife blade movement.

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