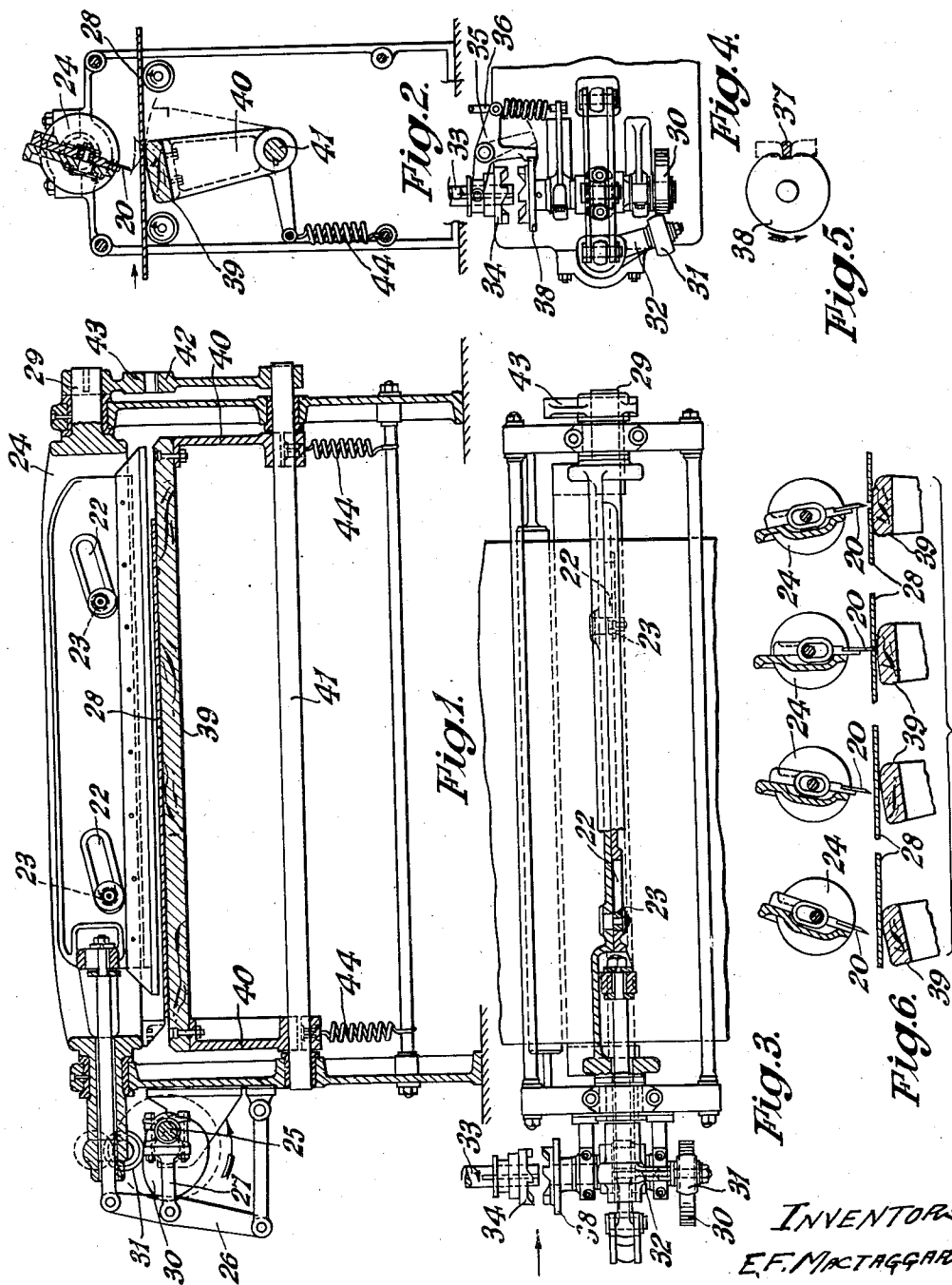


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 APPARATUS FOR USE IN CUTTING SHEET MATERIAL
 INTO SECTIONS OF PREDETERMINED LENGTH
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APPARATUS FOR USE IN CUTTING SHEET
MATERIAL INTO SECTIONS OF PREDE-
TERMINED LENGTHEdmonds Frank Mactaggart, London, and Oliver
Margetson, Gateacre, EnglandApplication January 15, 1936, Serial No. 59,280
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2 Claims. (Cl. 164—53)

This invention relates to apparatus for use in cutting continuously moving sheet material into sections of predetermined length such for example as a continuously moving length of plaster board and throughout this specification the apparatus according to this invention will to avoid ambiguity of language be referred to as plaster board cutting apparatus although limitation to such a specific use is not intended.

Heretofore the apparatus used in cutting a continuously moving length of sheet material into sections has either necessitated an interruption in the movement at each cut or reliance is placed upon the cutting action being sufficiently rapid as to negative the effect of the movement of the material on the cut.

The object of the present invention is to provide an improved apparatus for cutting a continuously moving length of sheet material into sections by means of which each severance is effected by a cutting action without interruption of the forward movement of the sheet material.

Broadly the invention consists of apparatus for cutting a continuously moving length of plaster board into sections which comprises a knife blade and means to give to said knife blade at each cutting operation, a movement which is synchronous with and in the same direction as the travel of the board to be cut, and which is independent of the movement required to effect the cut.

The invention also consists of an apparatus as above which includes a support, such for example as a wooden block, for the plaster board beneath the line of the cut which support has a movement similar to that of the knife blade whereby the two have a movement in unison in the direction of travel of the board and a continuous support is provided for the underside of the board to resist the cut without imposing any retarding action on the moving board.

In one embodiment of the invention the knife blade is of the guillotine type and is given a combined lateral, downward, and circular movement during each cutting operation whilst the supporting block is given an oscillating or otherwise effected forward movement which is synchronized with the corresponding movements of the board and the knife blade.

In order that the invention may be clearly understood and carried into effect such an embodiment of the same will now be described by aid of the accompanying drawing in which:—

Fig. 1 is a cross section showing the guillotine knife and its operating mechanism.

Fig. 2 is a transverse section through the same.
Fig. 3 is a plan view of the mechanism shown in Fig. 1.

Fig. 4 is a view looking in the direction of the arrow shown in Fig. 3.

Fig. 5 is a detail view of the locking device shown in Fig. 4.

Fig. 6 is a diagrammatic view showing four positions of the guillotine blade and the supporting block assumed during each cutting operation.

The apparatus shown in the drawing is adapted to form part of a plant for the continuous manufacture of plaster board such as that now in general use or such as is described in the specification of our co-pending application No. 45,486 from which the present subject matter has been divided.

In such an application of the present invention the completed board continues to feed forward until it comes beneath the guillotine knife, the operation of which is so synchronized as to cut the board into sections of the required length without any interruption of the forward feeding movement of the board.

The cutting mechanism shown in the drawing comprises as stated above a guillotine knife blade 20. This blade which extends transversely of the machine and the full width of the board to be cut is mounted to have a combined lateral, downward, and circular movement during each cutting operation. For this purpose the blade is formed with inclined slots 22 which are engaged by pins or rollers 23 carried by a yoke or frame 24. The required lateral movement is imparted to the blade by means of a crank 25 through a lever and connecting rod 26 and 27 respectively. In consequence of this lateral movement, and the engagement of the rollers 23 in the inclined slots 22, the blade is given simultaneously with the lateral movement, a downward movement towards the upper surface of the positioned board, which is indicated in the figures by the reference numeral 28. Owing to the fact that the board to be cut has a continuous forward motion and as this would result in the plaster being heaped up by the knife blade during the cutting operation were not a further movement provided, the knife blade at the same time as it approaches the board is given a circular motion in the direction of travel of the board the speed of the two movements being synchronized so that during cutting there is no relative movement between the knife blade and the board apart from the lateral movement of the knife blade. By this combination of three movements the

knife blade is able to cut cleanly through the plaster board without disturbing the plaster layers which it must be remembered are still in a plastic condition.

5 The above mentioned circular motion is imparted to the knife blade through the yoke 24 which for this purpose is mounted at each end upon trunnions 29 about which the yoke is oscillated. This oscillatory motion is simultaneously
10 imparted to the knife blade through the connection afforded by the rollers 23.

The above mentioned oscillatory movement is applied to the yoke 24 at the required intervals through a cam 30 and a roller 31 mounted on
15 the end of a rocking arm 32, such rocking arm in turn being mounted upon the outer end of one of the trunnions 29. This cam 30 is driven from the same shaft as the crank 25 and such shaft receives its intermittent rotation from a continuously driven shaft 33 through a clutch 34. This
20 clutch device 34 is engaged and disengaged automatically through the medium of an operating lever 35, and such lever in turn is operated from a suitable mechanism not shown, through a connecting rod 36. Extending from the lever 35 is
25 an arm 37 the outer end of which is adapted to engage in a gap formed in the periphery of the flange 38 of one of the members of the clutch 34 so as to lock the shaft which operates the
30 cam 30 and associated mechanism against movement when the clutch is disengaged. This locking mechanism is shown in detail in Figs. 4 and 5.

During each cutting operation the plaster
35 board is supported by a wood or other suitable block 39 mounted upon the upper end of a quadrant 40. This quadrant with the block is given a forward movement equivalent to and synchronized with the circular movement of the knife
40 blade so as to follow the plaster board in its forward movement whilst cutting is being effected and thus provide a continuous support for the underside of the board whilst it is being cut without imposing any retarding action on the
45 board. This forward motion of the quadrant 40 is imparted through the shaft 41 on which it is mounted by means comprising a pair of toothed sectors 42 and 43, the sector 42 being mounted upon the shaft 41 and the sector 43 being
50 mounted upon one of the trunnions 29. By this means the two motions of the quadrant 40 and the yoke 24 are synchronized. The return motions of the quadrant and the yoke are effected through the same connection by the
55 springs 44.

We claim:

1. Apparatus for cutting a separately fed and continuously moving flat sheet of material into sections comprising an oscillatably mounted yoke extending across but out of contact with the material to be cut, a guillotine knife blade supported
5 by and parallel to said yoke so as to be free to move relatively to said yoke, means for reciprocating said knife blade longitudinally with respect to its length at each cutting operation, connecting means between said knife blade and
10 said yoke whereby the knife blade is moved towards the material to be cut when the knife blade is reciprocated, means for oscillating the yoke and the knife blade at each such cutting
15 operation to cause the knife blade to move synchronously with and in the same direction of travel as the material to be cut, an oscillatably mounted support disposed on the underside of the material to be cut, and means for oscillating
20 said support at each cutting operation to cause the same to move synchronously with and in the same direction of travel as the material and the knife blade to provide continuous support for the material at the cut.
25

2. Apparatus for cutting a separately fed and continuously moving flat sheet of material into sections comprising an oscillatably mounted yoke extending across but out of contact with the
30 material to be cut which is supported by its extremities transversely above the material to be cut so as to be oscillatable about said supports, a guillotine knife blade supported by and parallel to said yoke so as to be free to move relatively
35 to said yoke, means for reciprocating said knife blade longitudinally with respect to its length, means comprising a pin engaging in an inclined slot serving to couple said knife blade to said yoke and to cause the knife blade to move
40 towards the material to be cut when the knife blade is reciprocated, means for oscillating the yoke about its ends at each such cutting operation to cause the knife blade to move synchronously with and in the same direction of travel
45 as the material to be cut, an oscillatably mounted support disposed parallel to and directly beneath the knife blade on the underside of the material to be cut, and means for oscillating said support with the knife blade at each cutting operation to cause the same to move synchronously with and
50 in the same direction of travel as the material and the knife blade to provide continuous support for the material at the cut.

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